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MACHINE FOR SKIVING BOOT COUNTERS.

S. J. & C. H. Trofatter, of Salem, Mass., have invented a machine for skiving boot counters, of which fig. 1 is a plan view, and fig. 2 a longitudinal section. The same letters refer to corresponding parts. It was patented the 29th day of November last.

A represents the main frame or table of the machine. On the top of this frame is a stationary cutter or knife, B, arranged with respect to a stationary curved guide, C, as seen in figure 1. The cutting edge of this knife is made to stand at such an angle with the top surface of the table as shall not only enable it to reduce one edge of a boot counter to its proper bevel, but to do this with a drawing stroke. A spring bearer, D, is fastened to the top of the guide, C, and is made to rest on the leather near to the cutting edge of the knife, the same serving to press the leather firmly down upon the bench or table. Another spring, D′, a curved guide, E, and a cutting knife, F, made like those previously described, are arranged as seen in fig. 1, and so as to operate on the opposite edge of the counter. The inner edge of the guide, E, is convex and parallel to the inner edge of the guide, C, which is concave. The said knife, F, spring, D′, and guide, E, are connected to a movable metallic plate, which is placed on the table with its top surface on a level with that part of the table which is between the two guides. This plate may be moved so as to carry the portions of the mechanism attached to it nearer to or further from the other guide, spring

Figure 1.

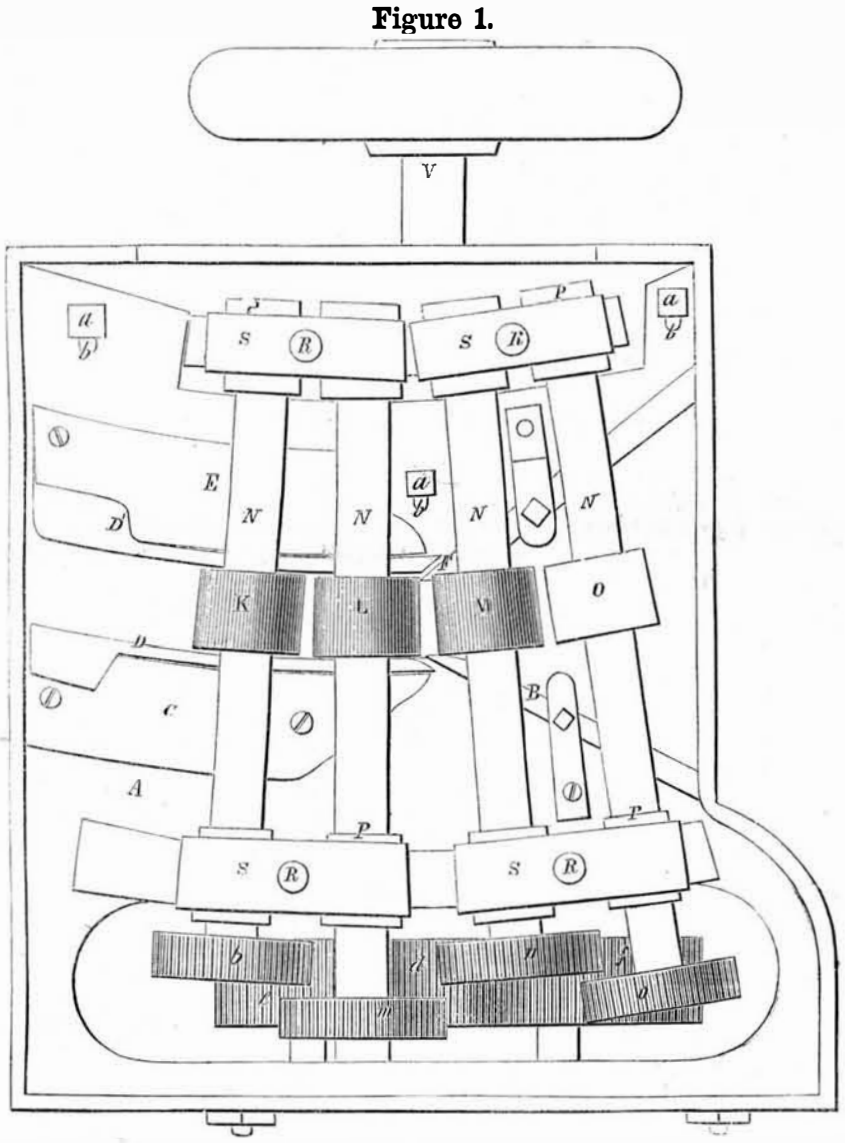
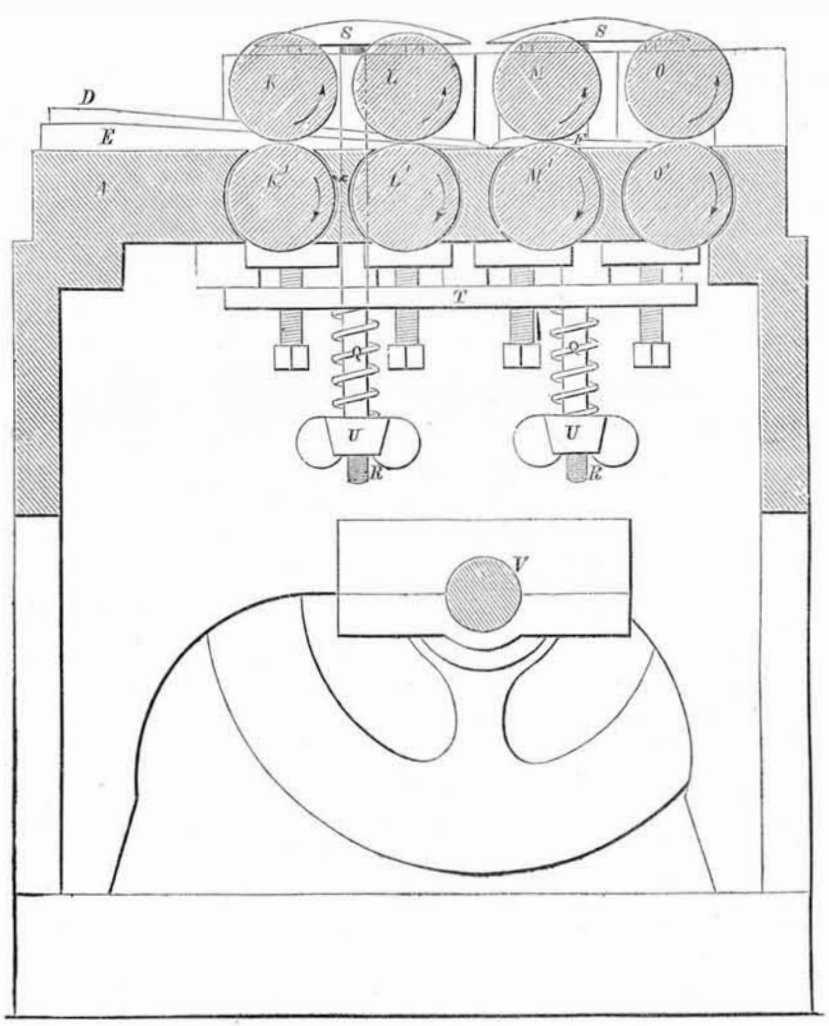


Figure 2.



and knife, as occasion may require, for the reduction of counters of any width.

Three sets of feed and pressure rollers, K K′, L L′, M M′, are disposed between the guides, each set being composed of two rollers, one of which is arranged within the table top, so that its upper edge will be a little above it, while the other is disposed entirely above the table top. The leather counter, during its passage through the machine, rests on the lower rollers, K′, L′, M′, and is pressed down upon them by the rollers, K, L, M, the peripheries of each roller being scored or fluted.

The axles of the upper rollers and that of another or smoothing roller, O, are disposed in radial lines, all of which tend to the common center of the curves of the inner edges of the two guides. The same may be said in regard to those of the lower rollers. The axles of the upper rollers are sustained in sliding boxes, which are supported so as to have a free vertical movement, and are pressed down by springs, Q; each of these springs is made to encircle a screw, R, which is formed with a cross-head, S, that is made to bear on the top of the two boxes. This screw rod passes down through a rest bar, T, and the spring, receiving a nut, U, upon its end.

The several feed, pressure, draught, and smoothing rollers are made frustro-conical, and derive their motions from the driving shaft, V, which is arranged underneath them, and carries a gear which engages with two connecting gears that are wide enough to engage each with two others placed upon the axles of the lower rollers. These in turn engage each with others upon the axes of the upper rollers. The last pair of rollers, O O′, is made plain to take out the creases made by the fluted rollers.

This is, we should think, a good machine, and we would recommend it to the attention of boot manufacturers. Any further information can be obtained as above, or a machine can be seen at No. 12 Beaver street, in that city.

The Oyster Crop of Baltimore.

According to "The Baltimore American," the product of the oyster trade of the city is equal to or greater than the product of all the wheat and corn raised in the State of Maryland. The whole shores of the Chesapeake Bay and its tributaries are adapted to the growth of the oyster, and as but one year is required for their full growth, an immense profit accrues to those engaged in the business—a profit which is estimated at some three hundred to six hundred per cent. There are 250 vessels engaged in the business, which average about 900 bushels to the cargo, and require nine or ten days to the trip. These vessels, making in the aggregate 6,000 trips during the eight months in which they are engaged, give a total of 4,800,000 bushels per year sold in the Baltimore market. The oysters bring an average price of 50 cents per bushel, which gives a grand total of $2,400,000 per year paid for oysters by the dealers in the city. Some of the houses send by the Baltimore and Ohio and Baltimore and Susquehanna Railroads, to say nothing of the other modes of transportation, from eight to twelve tons of "canned" oysters per day. The shells are carried for manure, to all parts of Virginia and North Carolina. In the shucking of oysters, the shells will increase about one-fourth, which would give a total of about 6,000,000 bushels of shells, which sell for two cents per bushel, making a return of $120,000 per year for the shells alone.

Substitute for Common Brick.

I think a substitute for brick, as good and cheap, can be manufactured as follows:—Take a metal mould, first filled with heated gravel, and then pour melted glass into it, and leave it to cool gradually. I think each mould would not require more glass than is contained in a common black bottle. These are sold for a cent each, the blowing of which must cost half that sum. MARTIN KEENAN.

Milford, Mass.

[Not a bad idea this.

Lord Palmerston has resigned his seat as a member of the British Ministry; he does not seem to possess enough of the democratic principle for Sir John Russel, or Lord Aberdeen, who are men of much finer personal characters.

The Persians have declared war against the Turks, in pursuance of a treaty existing between that government and the Czar of Russia.

Imponderable Agents.---No. 5.

[Second Series.]

LIGHT—FOUCAULT'S EXPERIMENTS—The principal phenomena of light, its reflection from polished surfaces, its refraction or deviation from its path when passing through media of varying density, its decomposition into several colors when passing through a prism of glass, can be very well explained by the emission theory of Newton. But this theory involves many difficulties which it cannot solve. It cannot explain, except by a dubious hypothesis, how part of an incident ray is reflected, and the other refracted. The undulatory theory solves difficulties which the emission cannot. If there is a subtle fluid in the universe, the vibrations of which produce the phenomena of light, then it is evident that the velocity of its motion must experience a certain modification according to the density of the media in which it occurs. Such is the question which Foucault undertook to prove by a series of beautiful experiments, in which he was entirely successful. It struck that eminent philosopher, recently deceased, M. Arago, that Prof. Wheatstone's revolving mirror, for testing the velocity of electricity, would answer well to test the velocity of light in passing through media of varying densities. The plan was to evolve an electric spark, direct it toward a revolving mirror —after having divided it—and cause one part to travel through air, and the other through a tube filled with water, then to receive and study the reflected images. If the water should *accelerate* or *retard* the motion of the light, the two rays could not arrive on the mirror simultaneously. The ray which was to arrive first was to fall on the mirror in a certain position, and the ray subsequently arriving would meet the revolving mirror in a more advanced position of its revolution.

Foucault, after much mental labor, devised a machine to accomplish this difficult problem of measuration. A beam of light was made to pass horizontally through a narrow aperture in a dark chamber, and was suffered to fall upon a revolving mirror. The rapid rotation of this mirror threw upon the sides of the chamber a slight luminous track, in which another mirror was so set that it reflected the rays thrown off by the revolving mirror. The rotary motion of the latter was very rapid—800 revolutions per second. The duration of the journey taken by the ray in passing from the revolving to the fixed mirror, and back again, was sufficiently long to allow the first mirror to change its position so that the ray, in return, would take the new direction given it by the altered angle of that mirror. M. Foucault succeeded in measuring this deviation, which he found to be proportional to the velocity of rotation as well as the length of space travelled over by the ray. He also found that this deviation was greater when the ray was passed through water than through air, and the former being a denser medium it was concluded that it presented an obstacle instead of favoring the transmission of light. Foucault's experiments were published in most of the foreign scientific journals, in 1851, and they attracted no small amount of attention. At the present moment almost every eminent man of science, believes in the undulatory theory.

We are totally ignorant of first causes; that is, we cannot explain why certain effects should be produced, when certain conditions are fulfilled—we can only tell that when these conditions are fulfilled certain effects will invariably follow. Why the three primitive colors should be developed in a ray of light by a prism, we cannot tell; we only know that such are the effects produced—the division of a white ray of light into three colors, when that ray falls on a prism of glass. The undulatory theory, no more than the emission theory, can explain this. Neither can the phenomenon of the sun beating like a huge heart upon the subtle ether, throwing out light from the center of our astral system, as the life blood is thrown from a human heart, be explained, any more than we can explain the principle of life.

"The laws of nature," be they relating to light or any other subject, is an expression employed to describe the operations of bodies or matter, and that is all.

Although light is, in the eloquent language of Milton, "the offspring of heaven's first dawn," we are still very ignorant of many of its phenomena. New discoveries are being continually evolved. In a lecture recently delivered before the Royal Institution of London, by Prof. Stokes he communicated some new and interesting observations on Internal Dispersion. He found that the blue flame of sulphur burning in oxygen is a source of rays which exhibit the phenomena extremely well. Letters written upon white paper, with a solution of chinin, immediately become visible when illuminated with this light, particularly when it is passed through blue glass, although such writing is invisible in gas light. By employing the light of the powerful galvanic battery of the Royal Institution, the Professor obtained, by lens and prisms of quartz, a spectrum from six to eight times as long as the ordinary visible spectrum, and it was crossed from one end to the other with bright bands. The interposition of a plate of glass shortened the spectrum to a small fraction of its original length, the highly refrangible portion being entirely absorbed. The discharge of a Leyden jar gave a spectrum which was about as long, but it was not similar to the others, as it consisted only of insulated bright bands. He also found that our atmosphere was not perfectly transparent for the very highly refrangible rays of the sun's light.

Introduction of the Potato into New England.

The Scotch immigrants, who were the first to introduce the manufacture of linen in the American colonies, were also the first to introduce the potato on the shores of the New World. In referring to this fact, the Boston "Transcript" mentions the following interesting particulars:—

"These frugal and industrious persons were descendants of a Scotch colony, who settled in Ireland about the middle of the seventeenth century; but on account of religious persecution were obliged to flee to this country, where they arrived in 1718. They came over in five ships and landed in Boston, having previously sent over an agent to make necessary arrangements.

They introduced the culture of the potato, which they brought with them from Ireland. Until their arrival this valuable vegetable, if not wholly unknown, was not cultivated in New England. They passed the previous winter in Andover, before settling in Londonderry, and there left some potatoes, which were planted and came up luxuriantly. The family who raised them cooked the balls instead of the vegetable, and after trying them in various ways, pronounced them unfit for use, and the mistake was not discovered until the plow turned up the real potato."

[By recent foreign papers we learn that two intelligent Irishmen, from the same part of Ireland as the above-mentioned New England settlers, have, in the potato line, put forth the theory that the potato can only propagate by cuttings for a certain number of years, when its propagating force, by such a plan, fails, and thus they account for the potato disease. To recruit or renew the propagating force of this apple of the earth, they propose to renew the new stock from the plumbs. This theory is not new, yet we think favorably of the recommendation to raise new seed potatoes from the balls. The cause of the disease, as set forth is not correct, in our opinion.

(For the Scientific American.]

The Governor.

The following remarks would probably have never been made, were it not that the Report of J. E. Holmes, in No. 15 "Scientific American," on the trial of steam engines in the Crystal Palace, would appear to attach more importance to the subject than I did at the time I made my experiments.

All the governors that I have ever seen applied to steam engines, are not governors, properly speaking; I might call them ameliorators, inasmuch as thay govern the variation of speed only partially. I discovered this fact at the time I made experiments with my Fan and Fly in 1849. I had a machine driven by a very powerful mainspring making six turns; it was governed by the usual fan with which I obtained these results. When the spring was entirely wound up, the machine made 34 revolutions per minute, and within the last turn it made 28 revolutions, variation 0·176. Removing the fan and substituting an ordinary governor, the latter intended to regulate the speed by the increased and decreased effect of inertia alone, consequent upon the convergent and divergent positions of the balls of the governor, I found that when the machine was fully wound up, it made thirty and in the last turn but 20 revolutions per minute, variation 0·333. At this I was somewhat astonished, but from repeated and careful experiments I invariably obtained the same results; and I was reluctantly constrained to doubt the efficacy of this simple and beautiful instrument that has been so long and universally applied, but finding that it did fail, I set about discovering the cause.

The action of the Governor, applied to a steam engine, depends upon two forces, "centrifugal" and "gravity," each tending to counteract the other; and it is as the one or the other predominates, that the balls attain their different attitudes. These forces act at right angles to each other: centrifugal force acts horizontally and gravity perpendicularly. Now the balls are, by the present arrangement, made to describe a circle. The question arises whether that is the proper curve to move in. I have tried all the known curves, and have found them to fail; so much so that I have kept no record of their performance. At length I found that the right angle was the proper plane for the balls to move in, which I proved to the satisfaction of myself and friends by two experiments. The one consisted in having a funnel, the sides of which inclose 90 degrees, it was made of common tin, having small strips, radiating from the vertex to the base, soldered inside, which cone or funnel I placed with the vertex fitting tightly upon the spindle of the machine in such a manner that the base was uppermost. I filled it partially with shot; then trying it as before, I discovered not the least variation between the two extremes of the mainspring. A mainspring making six turns exerts six times more power when fully wound up, than when run down to the last turn. It is hardly necessary to remark that the shot by the action of centrifugal force was thrown to a certain distance from the axis of the funnel proportionate to the power, and that by the variation of the inertia of the shot, my machine was kept at equal velocity. My other experiment consisted in making the arms with the balls of the usual governor, having slots cut in them (the arms), working in guide pins fixed upon the axis or spindle, and making the upper ends or present bearings by means of a pin to work upon a peculiar curve, which I discovered upon the occasion, which curve I have never been able to find described, and therefore I believe that I am the discoverer. I have called it the Eggoid, from its resemblance to an egg. I found the balls to move from the axes, at an angle of 45°, to the horizon, and the machine, as before, performed its revolutions in equal times. Now, notwithstanding the assurance of the satisfactory performance of the engines at the Crystal Palace, there was a variation of their revolutions per minute, for at the commencement of the experiments the Lawrence made 46 and the Corliss 37 revolutions per minute, and that when the pressure of steam had been reduced down to 10·2 pounds, the former made 10 and the latter 14 revolutions per minute, which is a variation for the Lawrence of 0·782 and for the Corliss of 0·621,—not so flattering as one might be led to suppose from the Report.

I wonder what a "calico singer" would think were he to be interrupted in the midst of his operations by the engine making even one-quarter of that variation? The governor of the "Southern Belle" works upon a different but equally erroneous principle with the other engines. The balls move upon circular ways, but the ways are segments of a circle, whose diameter is much larger than that described by the balls of the other governors. I am sorry that we have not the Report upon this engine also, for it is my opinion that this governor governs perhaps just as much *too much* as the others govern too little. I am very glad that this report emanating from such a distinguished source has been made, and hope that it, with these few remarks, may stimulate our machinists to obviate these glaring defects, so that at the next World's Fair we may not have these living monuments reproaching us for our ignorance.

JNO. F. MASCHER.

Large Ships---Conflagration.

MESSRS. EDITORS.—I noticed your interesting article of the 24th inst. on "Large Ships—Ancient and Modern."

I have a friend, who frequently said, "Some how I happen always to be right in my opinion." I have frequently thought you might, if disposed to be egotistic, use the same language.

Your opinion, however, "that we shall yet see much larger ships in our harbor than any which now float there," I think is an error of yours for once.

I once heard of a ship carpenter who wanted to surprise his competitors by building a fine boat. He constructed and finished it in the garret of his house; but when thus finished, the thought occurred to him for the first time, "How am I to get it out?"

The "Great Republic" when laden cannot be got out of our harbor, neither could it be got into the Liverpool docks.

My opinion is, the builder of the Great Republic will forever have the unenviable reputation of building "the largest ship in the world."

Yours truly, G. B. Jr.

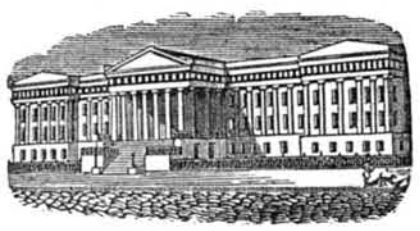
Brooklyn, Dec. 26, 1853.

[Our correspondent may be right, but "time will try all better far than tongue can tell."—The vessel which called forth our article and the above letter will never pass out of our harbor. On the night of the 26th ult., her rigging caught fire from the sparks of a conflagration of buildings at a short distance from where she was lying, and the flame spread from spar to spar, until in a short time she was enveloped in a sheet of living fire. On the next evening all that was left of this once magnificent vessel —the wonder of the world—was that part of the hull which was sunk beneath the surface of the water. It was a sad sight to us. Two other ships—the "White Squall" and "Joseph Walker"—were also burned to the water's edge.

The "Great Republic" was loaded with a valuable cargo, it consisted of the following articles, eight hundred tierces of beef, 97 tierces lard, 53 barrels of lard, 20,406 bushels of wheat, 33,500 bushels of corn, 6,630 barrels of flour, 1,023 bales of cotton, 639 boxes of tea, 4,046 barrels of resin, 14 hogsheads of tobacco, 70 casks of argola, and 367 pieces maple and cedar wood, all valued at $250,000.

This great cargo of provisions might have supplied the Turkish army for a month. She was ready to sail for Liverpool, and it it is said would have left her dock the previous evening, but could not get over the bar on account of low water. All the great ships which have yet been built have been unfortunate—is the finger of fatality pointed in anger against them? We do not know whether or not Mr. McKay will ever build such a large ship again, but to us it seems very discreditable to large cities like New York, that a depth of water cannot be maintained in the harbor, greater than will float a vessel drawing but about 21 feet. If the size of ships is to be restricted by such considerations, let the disgrace rest where it should. As we have said before, a large ship is the most profitable for long voyages, because it can carry 4,000 tons as easily as one of half the capacity can carry 2,000 tuns the same distance in the same time. In one voyage to Australia, a large ship will save 140 days sailing by this method of computing advantages. It may indeed be said that two small ships—half the size—will effect the same object. Not exactly, for upon that principle of reasoning, we would still have been navigating the Atlantic with 100 tun brigs, and 60 tun "smacks."

We invite the attention of our readers to the advertisement of D. W. Whiting. In the shipment of machinery it is very important—where it is possible to do so—to consign it to some agent who has had experience in handling it. Mr. Whiting has every facility for doing this.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 3, 1854.

MACHINE FOR SAWING BEVEL SURFACES.—Alfred C. Cook, of Russelville, Ky.: I claim the employment in the manner described of an adjustable swinging bevel gauging platform provided with a sliding carriage, which has adjustable guide rails, and adjustable heel and side rest, and pointer, in combination with an index plate and cutter, the whole being constructed, arranged, and operating in the manner and for the purpose herein described.

IMPROVEMENTS IN FEATHERING PADDLE WHEELS.—Samuel Champion and Thomas Champion, of Washington, D. C.: We claim no particular shaped blades for our paddles, as various shapes may be used, but as a general principle we prefer, where it can be applied, the narrow oar-shaped blade reaching deep into the denser water, so as to make the engine labor in forcing it through without much disturbing the surface, we are encouraged in this view by the narrow oar, the fins of the fish, and particularly by the long deep propellers of the deer, that animal being among the very fastest of swimmers as well as runners.

We claim the continuous arm or arms through the shaft, hub, or rim, with a blade on each end thereof, placed permanently at right angles to each other, so that when one is feathered in the water, the other is placed in proper position for propulsion by that act, also the reversing cam frame in combination with the oblong projections at the shank of the blades.

IMPROVEMENT IN RUNNING GEAR OF WAGONS, &C.—Isaac Crandal, of Cherry Valley, N. Y.: I am aware that John Jones obtained a patent dated January 14, 1851, which by the introduction of a helical spring, and slot or sliding bar connecting the hounds or partial reaches (between the front and rear axles) in connection with his perch swiveling on both axles; purposes to prevent the effect of whipping the horses with the tongue, and drawing it back to the line of travel when moved. I therefore disclaim any part of such devices.

But I claim the arrangement of the spring bar (or partial reach) furnished with a slot, G, the bar, H, connecting the sand bar, C, and upper sway bar, K, in which is inserted a pin, S, in combination with the ordinary reach or perch and running gear of wagons for the purpose of not only giving direction and steadiness to the tongue under all circumstances, but also preserving the set of the axle at the same time, as set forth.

RULING MACHING.—John Collman of Silver Creek, Ill.: I claim the case alternately sliding upon and secured to the bar as specified, in combination with the cam, lever, spring and stop, arranged and operating as described, for moving the box upon the transversing bar, any required distance, substantially for the purpose herein fully set forth.

IMPROVEMENT IN STRAW CUTTERS.—William S. Dillehay, of the County of Shelby, Ky.: I claim the diagonal knife with two edges, in combination with the movable scraper, with its proper appendages, and the manner of its movements parallel with the edges of the knife, thereby cleaning the gauge table of all the cut straw.

METHOD OF FORMING PLATES FOR POLY-CHROMATIC PRINTING.—John Donlevy, of New York City: I claim the method of producing intaglio graphic printing and other plates from forms of types by surrounding the types whilst in contact with a glass plate or its equivalent, with plaster of Paris or some equivalent therefor, so that when set, the surface of the plaster will be on the same plane with the surface of the types, and then stereotyping the form of types, thus surrounded substantially as and for the purpose specified.

I also claim the method of producing embossing plates by taking a cast, in plaster or its equivalent, from an intaglio graphic plate and then stereotyping such plaster cast, substantially as specified, thus producing a reverse duplicate in relief as set forth.

I also claim the method of producing what are called illuminated printing plates for printing shaded intaglio-graphic letters, characters, or figures, by producing an intaglio graphic plate in accordance with the first part of my invention, from a form of shaded types, and then removing the plaster from the form of types, substantially as described, so that after printing in intaglio with the intaglio graphic plates, the shadows can be printed either with the form of types, after the plaster has been removed, or with a stereotype taken therefrom as set forth.

And finally I claim producing poly-chromatic printing plates from an intaglio graphic plate by taking a cast therefrom in relief, substantially as described, and from such relief obtaining what I term a stencil plate or plates, from which the plate or plates is or are obtained, to have the letters, characters, or figures in whole or in part in duplicate of the intaglio graphic letters, &c., and in relief substantially as described, so as to register therewith as described.

IMPROVEMENT IN STEAM BOILER FURNACES.—By F. P. Dimptel, of Philadelphia, Pa.: I do not claim lining the fire box with water tubes, nor making the tubes of water linings separately detachable, but I claim forming the walls or sides of the furnaces of steam boilers of a series of water tubes extending above and below the grate, and open to water spaces above and below, said spaces being so connected with each other or with the body of the water in the boiler as to allow free circulation in the manner and for the purposes set forth.

IMPROVEMENT IN QUARTZ CRUSHING MACHINES.—By J. Hamilton, of New York City: I do not claim the cylindrical pestle or roller in itself, as it has been used on a flat surface, and I am also aware that the cylindrical pestle has been used in a concave dish or basin, but in this case, so far as the rolling motion is concerned, the same operates similarly to the ordinary rollers in oil mills, &c., but the sliding motion is dependent on the weight of the pestle causing the same to slip on the inclined part and rub the ore, whereas in my machine the ore is first cracked by the grooved upper surface of the pestle, which I am not aware has ever been before used, and the grinding is performed by a pestle set on a shaft, and having a partial rotary motion, which grinds the ore against the sides of the basin, without having any rolling motion at all.

I claim the means described for cracking and grinding metallic ores consisting of the cylindrical pestle provided with grooves in its upper part to crack the lumps of ore, and set on a shaft, on which it has a partial rotary motion, and operating in connection with the basin in which said pestle moves, to grind the ore into powder by the gradual approach of the sides of said basin to the cylindrical pestle, said pestle being also provided with a scraper or agitator, its lower surface to operate as specified.

HANGING AND OPERATING SAW GATES—By M. W. Helton, of Bloomington, Ind.: I claim the driving of the pairs of saw gates, the saws of which operate in the same log by means of a bifurcated pitman hinged to the rocking cross beam by its two arms, and connected by a wrist upon its other end with the crank of the driving shaft, by which means a conical gyratory motion is imparted to the pitman, as described.

TUYERES—By G. D. Miller, of New Berlin, Pa.: I claim the combination of the notched segment of a cylinder with two egress passages, for regulating and changing the direction of the blast, as set forth, when the apparatus is constructed with the additional passage, D.

SCREW BOLTS AND NUTS—By Lucius Page, of Cavendish, Vt.: I claim forming the helical thread of a right-handed screw with notches or teeth, as specified, in combination with applying to its screw nut a dog catch or spring pawl, to operate in the said teeth or notch, and prevent back rotation of the nut on the screw, as set forth.

I also claim the improvement of so applying the catch lever, or dog, or catch, to the nut, that it may project beyond one prismatic side of the nut, so that when a wrench is applied to such side of the nut and its opposite side, it may press inwards the dog or catch or lever thereof, or so act upon the same as to throw such dog or catch out of engagement with the teeth or notches of the right-hand screw so as to allow the nut to be unscrewed from the same, as specified.

CUTTING IRREGULAR FORMS—By Jonathan Russell, of Philadelphia, Pa.: I claim so combining the spur wheel on the mandrel, which directs the pattern and the spur wheels, for controling the rough material with the main wheel which moves or turns them, through their respective carriages, as that the carriage which carries the pattern may have an uniform or differential and receding longitudinal motion relatively with regard to the carriage for carrying the rough material for the purpose of cutting to the same to a greater or less size than the pattern, as described.

I also claim hanging the tracers in independent frames within the frames which carry the cutters, so as to allow the cutters to bring the rough material to the same, a greater or less size than the pattern in its transverse diameter, as described.

I also claim giving to the pattern and rough material a half or less than a halt revolution at each traversing motion of their respective carriages, for the purpose of cutting or reducing in longitudinal sections, without revolving the pattern or rough material, as described.

FLOOR PLATES OF MALT KILNS—By Mathew Stewart, of Philadelphia, Pa.: I do not claim the use of perforated sheet or plate iron in the construction of malt kiln floors.

But I claim, first, the characteristic mode in which I construct the plates with downward edges at right angles with the surface of the plate, as described.

Second, I claim the bearing and combining block with the peculiar arrangement of the slots or grooves, or its equivalent, as described.

Third, I claim the combination of the plates with the bearing and combining blocks, or its equivalent, and the peculiar manner of securing the plates and blocks down to the wrought-iron bars by means of the wire holes in the vertical edges of the plates or their equivalents, for the purpose described.

HOT-AIR REGISTERS—By E. A. Tuttle, of Williamsburgh, N. Y.: I do not claim the rack and pinion movement or the crown wheel and segments; but I claim the improvement upon said William Turton's Patent Register which consists in the improved method of maintaining the connecting rod in its proper position, as described, namely, at the bottom by a prong or prongs of the rod inserted into and working in cast raised openings on the fans or valves, and at the top by a slot or otherwise in the register front together with the slide plate, by which arrangement the register is greatly simplified and cheapened in its cost.

MACHINE FOR STICKING PINS.—J. B. Terry of Hartford Conn.: I claim the circular guard and circular slide in combination with the wheel and spring, or its equivalent whereby the pins are brought from the conductor and dropped at the required place as described and shown."

LOWERING, RAISING AND FASTENING CARRIAGE TOPS.—By Z. S. Ogden, of Glenn's Falls, N. Y. (assigner to L. C. Ogden): I claim the application of the lever, the shafts, eccentric circles, hooks, and the two belts, to lower, raise, and fasten carriage tops, with stationary bows, as herein before described."

BANDING PULLIES FOR SAWS.—By D. H. Chamberlain of Boston, Mass. (assignor to himself and Nehemiah Hunt) "I do not claim the combination of three pulleys, (viz. a driving pulley, and two others) and an endless belt, nor the application and arrangement of such, wherein the belt runs against, or on the periphery of the driving pulley or wheel, and is strained between the two pulleys, and pinched between them and the driving pulley: nor an arrangment wherein one of the driven pulleys or rollers is placed, between, and in contact with the peripheries of the driving and other driven pulleys, while the endless belt is made to play around the two external pulleys. Whereby the axles or journals of the driving and driven pulleys are relieved from friction caused by the contractile power or strain of the band, such strain being borne by the pullies.

I claim the improved arrangement of pullies and endless belt, whereby the driven pulley is sustained on the periphery of the driving wheel or pulley, the same consisting in placing the peripheries of the two lesser pulleys in contact with the periphory of the driving wheel and so as to extend beyond the side thereof, and running the endless belt around the extensions of the said two pulleys, and down by the side of the driving wheel, and without any pressure or contact with its periphery, as specified.

I also claim the combination of two endless belts (arranged on opposite sides of the driving wheel) with the bearing and belt pulleys, or their equivalents; and the driving wheel as made to operate together as described, the same enabling me to relieve the bearings of the shafts of the several pulleys from the contractile strain of the belts.

I also claim the improvement of arranging two or more endless belts on one side of the driving wheel and not only running all of the said belts around one shaft or drum, (or the equivalent) supported on the periphery of the driving wheel, but respectively around other shafts or drums, or equivalents arranged and supported on the opposite portion of the periphery as specified.

BOOKBINDERS BOARDS.—By J. H. Longbotham of Brooklyn N. Y.: I claim the use of the driving box or chamber endless belts for carrying the paper boards. Coil of pipes arranged therein, in combination with a blower and case, having a series of coils of pipes therein for rarifying currents of air for drying book binder's boards, and other substances as set forth.

CORN SHELLERS—By G. A. Xander of Hamburg, Pa.: I claim the improvement on the cylinder disc, that is its oval shape, the spring being attached to the side all as set forth.

I would further state that by riveting two half cylinders together, the cylinder may as readily be constructed double as in fig. No. 2, A, and should I find it more practicable to construct them as in fig. 2. A, I therefore do not limit my claim, merely to the single, but also the double cylinder.

MACHINES FOR CASTING TYPE.—By C. Muller of New York City.: I claim, first, suspending the mould below its axis of oscillation, as described, whereby its tendency towards its centre of gravity, will act in opposition to the momentum required in its movement towards and from the mould and its movement and degree of opening are enabled to be reduced, producing the results set forth.

Second, the combination of the cam, lever, I, rod, I, lever K, and rod L, arranged as shown, for the purpose of opening and closing the mould.

Third, tilting the matrix by means of the lever attached to the oscillating mould arm, combined as described with the lever, M, which receives an oscillating motion from the arm or lever by which the oscillating motion is given the shaft or axis upon which the mould oscillates.

BEDSTEAD FASTENINGS.—By W. H. Price of Philadelphia Pa.: I claim the arrangement of the tenon, mortise, and wedge in such a manner, that the wedge will begin to act before the tenon is inserted in the mortise, and draw it gradually into said mortise so as to completely close it when the fastening becomes firm, for the purpose of excluding vermin, &c., as set forth.

MACHINES FOR POLISHING LEATHER.—By P. P. Tapley of Lynn, Mass.: I claim the described combination and arrangement of the crank wheel the connecting rod K, the swing bar, the lever, and the connecting rod O and also the improvement of making the connecting rod, P in two parts jointed together, and to operate as specified, whereby the contact of the dicing or polishing ball or surface with the leather is prolonged under circumstances as stated.

GUITARS.—By W. B. Tilton of New York City: I do not claim extending the strings from the foot to the head of the instrument; but claim depressing the strings of guitars slightly below the bridge, by passing them through perforations in the ordinary pins or pegs, or by any means substantially the same: when the strings are fastened at the foot of the instrument, for causing the bridge to act as a fulcrum in producing the tension of the strings, and so relieving the sound board as to give the instrument a richer, fuller, and a more complete tone as set forth.

TURNING THE LEAVES OF BOOKS.—By C. Desbeaux of Paris France.: I do not confine myself to the dimensions mentioned, but reserve to myself the construction of the apparatus of any material and of any dimensions; the placing of the pulleys vertically or horizontally; I may find it desirable to make the boxes of the "turn pages" of wood or of metal according to the circumstance, to cover or not to cover them with cloth or leather, to use wood or metal in the construction of the stands to produce the lengthening or shortening by means of rack gearing or of levers to change the relative proportions of the pieces if necessary, to make the stamps or discs of polished or damaskined metal, in conclusion to modify the details of construction or such limits which do not change the nature of my invention of the "Magnetic turn page" as herin set forth.

[There is certainly no claim here and there may be some mistake in reference to the matter.]

POWER LOOMS.—By John Shuttleworth, of Frankfort, Pa.: I claim first, the connecting rod and lever in combination with the reciprocating frame, for the purpose of giving a reciprocating motion and a rocking motion to the shaft.

Second, I claim the rockingshaft, arm F, the vibrating lever and arms B and T, in combination with the reciprocating frame for the purpose of giving an intermittent rotary motion to the wheel and discs.

Third, I claim the discs constructed as described, in combination with the horizontal sliding stops, for the purpose of forcing out and drawing in said stops in the manner described, and also for the purpose of operating the picker bar as described.

CUTTING SCREWS IN LATHES.—By Joseph Nason, of New York City: I claim, first, the mode of constructing and combining the stud, the tube, and the guide screw, by which guide screws of the various patterns used in screw cutting may be put on or taken off expeditiously.

Second, the mode of constructing the tool bearer generally, particularly as regards placing the slide rest behind the work, whereby the cutting tool is brought into such relative position with the shaft and mandrel that the operation of raising the tool bearer from the rail removes the tool from the work.

Third, the tool lifter constructed as described.

Fourth, the combination of the guide screw, the threaded block, and the tool bearer with the shaft as set forth, by which the requisite traversing motion is imparted to the cutting tool. The operation of releasing the block from the guide screw and removing the tool from the work are simultaneously performed, and the tool bearer may be turned back out of the way when not in use.

HAY AND MANURE FORKS.—By Reuben M. Hines, of Mentz, N. Y., (assignor to Horace C. Silsby, of Senaca Falls, and Reuben M. Hines, of Mentz, N. Y.): I claim the fork with the upper part of its prongs and its tang constructed as described, in combination with the ferrule, the sockets, and slot as described.

MACHINES FOR STICKING PINS.—By Thomas W. Harvey, of New York City, (assignor to John B. Terry, of Hartford, Conn.): I claim allowing one pin at a time to pass down the conductors by means of a vibrating slide or its equivalent, so as to supply one row of pins at a time by the conductors to the forceps as specified.

HEMMING AND CORDING UMBRELLA COVERS.—By Sherburn C. Blodgett, of Philadelphia, Pa., ante-dated July 3, 1853: I claim the guide for cording or hemming umbrella covers arranged upon a stand with a curved slot to fold the hem around the cord, and a hole through which the cord is passed to its place, and this I claim whether the guide be used alone or attached to a sewing machine.

REGULATING THE DAMPER OF STEAM BOILERS.—By Patrick Clark, of Rahway, N. J.: I do not claim operating the damper of a steam boiler fire by means of the pressure of the steam in a boiler. Nor to have invented the diaphragm, nor its use to avoid friction where fluid pressure is used to produce motion, but I claim the combination of a cylindrical diaphragm with a cylinder and piston as described, for the purpose of operating the damper of a boiler fire by means of the pressure of the steam.

[We are unable to publish all the claims this week on account of the late hour at which they were received, and their extreme length. The remainder will appear next week.

Recent Foreign Inventions.

TANNING—Stephen Garrett, of Surrey, Eng., patentee. The skins or hides are secured on a frame, which is made to be raised and lowered in the tan vats. This mechanical action is kept up until the hides or skins are fully tanned.

BOOTS AND SHOES—J. Jaques Jamin, of London, patentee. The improvement is on clogs—shoes with wooden soles. The improvement consists in making grooves along the edge of the sole, and securing the upper leather in the said grooves. This kind of shoes is not used in America, but is very common in England. The peasantry of Lancashire, generally, wear clogs; they are very warm for the feet, the wood being a good non-conductor. In our severe winters, especially when the roads are so slippery under foot, it would be very difficult to walk with them, because the soles are not elastic. Were it not for this defect, we would recommend their use.

MAKING MANURE—E. T. Simpson, of Wakefield, York, Eng. This method of making manure, consists in taking woolen rags, shoddy, and other waste products of wool, and dissolving them with an acid, such as nitric, exposed to artificial heat, and then combining the fluid so obtained with bones, coprolites, or animal charcoal.

ROASTING COFFEE, &C.—George Berry, of London, patentee. This inventor places his coffee beans, or cocoa, &c., for roasting, in a vessel, from which he extracts all the air, and during the roasting process he also draws off all the steam by an air pump. By this method he says he retains all the aromatic products in the beans, &c.

TREATING FLAX—C. J. Pownall, of Addison Road, Middlesex, Eng., patentee. This inventor takes flax, while wet and swollen, by steeping and fermentation, and subjects it to the action of water falling from a hight of 6 feet and upwards, for the purpose of more effectually washing away the gummy and glutinous matters in it.

GRATES AND STOVES—J. L. Stevens, of London, patentee. The improvement consists in the admission of currents of hot air behind the back plates of the stove or grate, above or about the level of the fire, such currents of air being made to pass through channels formed underneath or at the sides of the fire, and partly heated thereby and partly by the back plate of the stove or grate. The object of this invention is to improve the combustion of the fuel, and to reduce the quantity of smoke given off, either by the use of wood or bituminous coal. Those who think there are no improvements to be made on our stoves, are greatly mistaken. Indefinite complexity more than simple utility, prevails in all our stoves.

EXTRACTING JUICE FROM SUGAR CANE—J. T. Manifold, C. S. Lowndes, and J. Jordan, of Liverpool, patentees. The patent obtained is simply for reducing the cane into very minute pieces, then subjecting these pieces to the action of steam in close vessels, and after this pressing out the juice in a hydrostatic press. The sugar cane is reduced to fine pieces, like dye-wood chips, by a series of circular saws. This is certainly, so far as we are aware, a very novel mode of treating sugar cane. The reduced canes, when steamed, can be placed in bags and easily subjected to hydrostatic pressure, but what effect the steaming may have upon the sugar (its quality) so obtained, we are unable to say. The subject is at least worthy the attention of our sugar planters.

STEAM BOILERS—C. Cowper, Kensington, Middlesex, Eng., patentee. The boiler is made of an assemblage of tapering cells connected by pipes with valves so arranged that in the bursting of a cell it can be immediately shut off from the rest of the boiler by closing the valve by hand, or by the pressure of the steam.

NEW METHOD OF OBTAINING MOTIVE POWER—E. J. Shollick, of Ulverstone, Eng., patentee. This new invention consists in obtaining powerful electric currents from a magneto-electric machine, and applying those currents to decompose water into its elementary gases—hydrogen and oxygen—then admitting them into a cylinder behind a piston, passing an electric spark through them and thus exploding them—resolving them into water again, and thus give motion to the piston, which is to work like that of a steam engine, and move machinery in the same manner. This inventor is stated to be an Esquire; this may be, but he is not acquainted with the laws of physics. Leaving out friction in the working parts of this machine—he can obtain no more power by the explosion of the gases of water than the power expended to resolve the water into its elementary gases; this is the law in physics, and no combination of machinery can alter it.

PRINTING COLORS ON TEXTILE FABRICS—F. A. Gatty, of Accrington, Lancaster, Eng., patentee. Milk of lime is about 1·10 specific gravity, is saturated with a stream of chlorine gas, whereby a solution containing chloride of calcium is obtained; 600 lbs. of alum are then dissolved in 200 gallons of water, and to this 100 gallons of the above chloride mixture is added, forming thereby chlorate and hydrochlorate of alumina in solution, and the sulphate of lime as a precipitate. The latter is separated by filtration or decantation. This solution is employed as an improved mordant, and is used in the ordinary manner in the preparation of colors. This may be a useful mordant for *bark* greens—as a substitute for aluminous pyroligneous acid; also in place of the common *red liquor*, and it may be a good mordant for madder colors, in place of the common mordant, which is made by mixing a solution of soda or the acetate of lead with alum.

IMPROVEMENT IN LOOMS FOR WEAVING.—Robert Boyd, of Paisley, Scotland, patentee. This improvement consists in having an air-tight cylinder (in which there is a piston) by the compression and exhaustion of which the shuttle is moved across the raceway of the lathe.

Le Verrier, the astronomer, in a paper which he recently read before the Paris Academy of Sciences, suggests that we may expect the discovery of a prodigious number of small planets.

New Inventions.

Machine for Turning Spokes.

Asa Landphere and Samuel Remington, of Ilion, N. Y,, have invented an improvement in machinery for turning spokes and other irregular forms, on which they have made application for a patent. The nature of the invention consists in planing the stuff longitudinally by means of two sets of rotary cutters which are arranged above the timber to be turned, and have their bearings in swinging frames, that rise and fall, according to the profile of a plateover which they pass. Another profile plate causes a transverse movement of the cutter shaft in its bearings.

Cutting and Grinding Corn Stalks.

Wm. G. Huyett, of Williamsburg, Pa., has invented an improvement in machines for the above purpose, on which he has applied for a patent. His invention consists in the employment of a revolving cutting knife in combination with a revolving disc, both secured on the same shaft, and revolving simultaneously. The knife is of such a shape, and is so arranged in relation to the feed hopper and grinding disc that it serves to cut up the stalks and prepare them and feed them to the grinding disc, which turns in a toothed concave, grinding them as fast as cut. If this machine should work well it will be a very useful invention.

Corn Harvesters.

Gardner A. Bruce, of Mechanicsburg, Ill., has invented an improvement in machines for harvesting corn stalks, on which he has applied for a patent. The nature of the invention consists in so arranging the cutters that they will be caused to revolve and cut in an upward direction and after cutting the stalks will give them a direction toward the center of the machine. Inclined revolving shafts are also employed with arms for bending and holding the stalks while being cut, and afterward throwing them into the receiver at the center of the machine. The propelling wheels are each provided with a separate axle, so that an open space is thus left at the center, and two revolving shafts with radial arms, in combination with a spring catch are employed for holding the stalks until a bundle is collected.

Hot Air Furnaces.

John P. Hayes, of Philadelphia, has invented an improvement in Hot Air Furnaces which consists in a peculiar arrangement of hot-air tubes, and passages, whereby the heat from the fire chamber of the furnace is more perfectly radiated. A perforated chamber is placed above the upper part of the fire-chamber, which is connected with an air pipe communicating with the external air. This chamber allows the cold air to escape in small jets into the fire chamber, and the oxygen uniting with the gases in the fire-chamber, causes a more perfect combustion. A patent has been applied for.

Improved Metal Drill.

Wm. Bushnell, of New York City, has invented and applied for a patent upon an improved hand metal drill. The nature of this invention consists in a novel and simple arrangement of mechanical devices for rendering hand drills perfectly self-acting in their feed-motion. The upper end of the mandril is connected with a screw rod, which is actuated by a worm gear taking its motion from the crank, so that it is fed downward with a slow and regular motion, thus removing all liability to chip off the iron when the hole is nearly bored, as is the case with those machines in which the feed motion is obtained from a weight or spring. This is an excellent improvement and we can recommend it to mechanics. A few of the drills have been left at our office for sale. Price $25.

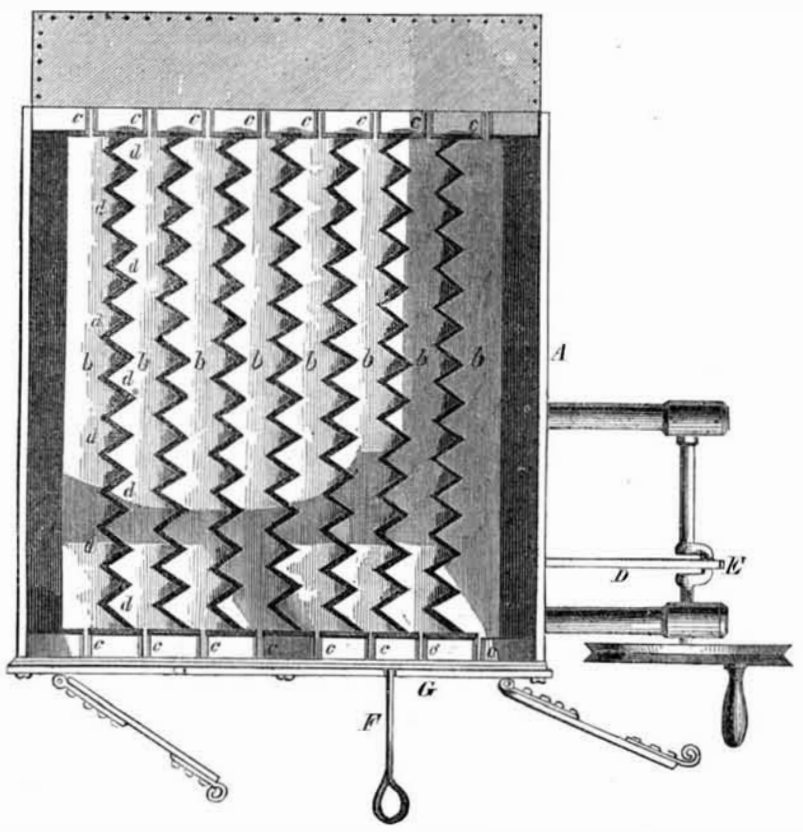
Improved Joint for Air Heating Pipes.

Jesse Young, of Franklin Furnace, Ohio, has applied for a patent upon an improved joint for connecting air-heating pipes, whereby a perfectly tight joint is obtained by the unequal expansion of the metals of which the joint is formed. The nature of the invention consists in boring out or forming a recess at the connection or joints of the pipes, sufficiently large to receive a thimble, the inner diameter of which will correspond with that of the pipes. The thimble is to be turned perfectly true on its outer side, and made of a metal more expansive than that of which the pipes are formed, so that when the thimble is heated it will expand and bind tightly against the sides of the recess, thus forming a tight joint.

Light-houses.

There are now in operation in the United States 347 light houses; 27 are in the course of construction, and 44 more authorized, but not yet commenced. There are 44 light vessels in operation, and 5 in the course of construction. The estimate for this service, for the fiscal year ending June 30, 1853, is $906,161.

IMPROVED GRATE BAR FOR FURNACES---Fig. 1.

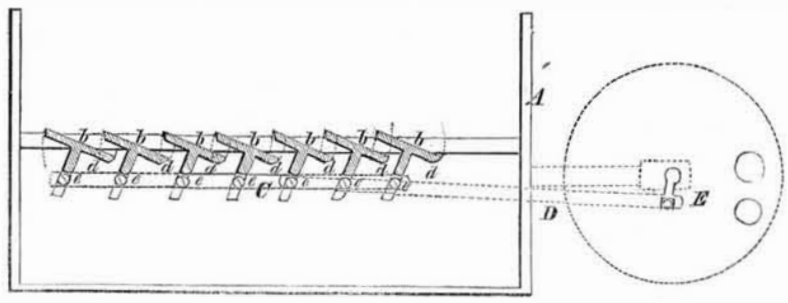


George W. Cotton, of St. Louis, Mo., has invented an improved grate bar of which the annexed engravings are illustrations. Figure 1, being a plan view, and figure 2 a vertical section. Similar letters of reference indicate corresponding parts.

The nature of the invention consists in having T-shaped bars, the upper or horizontal portions of which having serrated edges. Each bar is hung upon pivots, and the serrated edges of the bars fit into or between each other. The several bars are connected at the ends by pivots to a transverse bar, from which a vibratory motion is communicated to the whole series of bars, as will be hereafter seen.

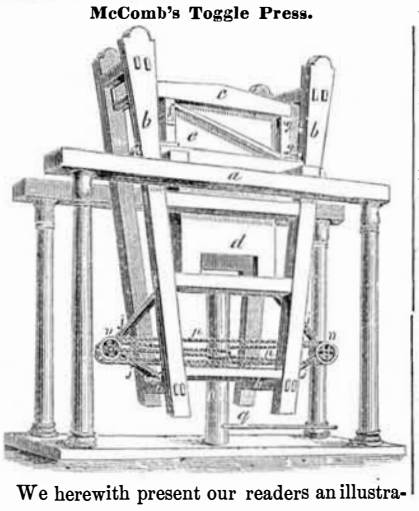
G is the front end of the furnace, and *b b* are the grate bars pivoted in the cross-bars, *c c*. *d d* are the serrated edges fitting into each other as shown, and *e e* are the pivots attaching the stems of the bars to the cross-piece, C, which is actuated by the lever, D, and the crank, E. All that is necessary, then, to stir the fire, is to turn the crank and the agitation communicated to the grate bars will be all that is required. Or if more convenient, the lever, F, can thus be inserted in a hole in the cross-bar, and having its fulcrum in the front plate of the furnace, the grate bars can be actuated the same as by the motion of the crank. A belt can be passed around the crank pulley, and a slow continuous motion given to the bars if desired.

Figure 2.



The advantages of this invention are that the fire may be effectually stirred with closed doors, and the fireman will thus be relieved from exposure to the intense heat. The grate bars are also less liable to become warped than when made in the ordinary form, neither are they liable to crack from alternate expansion and contraction. For further information address the inventor as above.

McComb's Toggle Press.



We herewith present our readers an illustration of an improved Press for baling hay, cotton, hemp, &c., patented on the 27th February, 1849, by David McComb, now residing at Memphis, Tenn. Its power is derived, as will be hereafter seen, from the combined action of the lever, pulley, and the toggle joint, and it must, if properly constructed, be very efficient. The illustration is a perspective view.

a a are two horizontal parallel timbers, between which the press is constructed. It is better that these should be securely framed in the building in which the press is erected. *b b* is the frame of the press suspended between them, the four corner posts inclining inward. *c* is the sliding head-block, against which the bale is pressed, it is made to slide in and out between timbers fastened to the frame in such a manner as to form two horizontal parallel grooves; *d* is the box in which the follower works, made in the usual manner. *e e* are the hinged doors of the box in which the substance to be pressed is placed, and these are secured by the dart-shaped fastener, *f*, while the bale is being pressed, opening afterwards upon the hinges, *g g*. *h h* are two horizontal timbers of the frame, upon which are supported the castings, *i*, forming the boxes or bearings of the lower ends of the toggles. *j j j j* are the four limbs of the toggle joints, pressing against a box secured upon the follower working inside of the box, *d*.

n n n n, are four channeled pullies working upon the connecting pins that pass through the ends of the toggles. Cords pass around these pulleys, leading to the windlass, *o*, placed under the center of the bale. This windlass is turned by the lever, *q*, to which the power is applied. *p* is the rope passing through an opening in the windlass, and after passing around the pullies, its ends are attached to the joint pins upon which the pulleys are placed.

From the description already given the operation of this press will be readily understood. The substance to be pressed is placed in the box, *e*, and the bagging or hoops properly arranged. By turning the lever, *g*, the rope will be wound around the shaft, *o*, the pulleys drawn towards the center, and the follower forced upward by the action of the toggles.

The claims upon this machine are lengthy and efficiently cover all its principal parts. Any further information may be obtained by addressing the inventor as above.

Apparatus for Condensing Smoke.

A patent was issued on the 29th of November last to J. Bloom, of Woburn, Mass., for an improved mode of condensing smoke and gases, rendering them innoxious. The nature of this invention consists in passing the smoke and other products of combustion through water, it being conducted in pipes to the hollow of a suitable reservoir made air-tight and nearly filled with water, which reservoir is kept constantly exhausted by air pumps. The smoke passes through a pipe leading nearly to the bottom of the water in the cistern, and as the air above the water is exhausted, the smoke will evidently pass through the water, and thus become purified from its soot and cinders. It is evident that the draught of the furnace will be increased by the exhausting force of the air pump, and the ordinary draught cannot act in opposition to the action of the pump so that no great amount of force will be rquired to produce the desired effect. Travelers on railroads would be very grateful if some such plan were adopted. We recommend this to the consideration of all concerned, and hope that some one will give it the attention it deserves. The inventor is at present in this city.

The Newly Discovered Sea Bank.

In accordance with information furnished by George W. Blunt, Esq., of New York, of the supposed existence of a bank of forty fathoms, about ninety miles east of Boston light, Lieut. T. B. Huger was despatched in the schooner "George Steers," one of the vessels of the U. S. Surveying Party, to search for it and determine its position. In a spot near lat. 42° 47′ N., and lon. 69° 13′ W., Lieut. Huger discovered a bank, about three miles in extent, from north to south, and two miles east and west, on which he got soundings at a depth of from thirty-six to forty fathoms. This was in a spot where one hundred fathoms are laid down in the charts. The character of the bottom, so far as he was able to obtain it, was coarse sand in the thirty fathoms water, and soft mud in the deeper water. Porf. Bache, Superintendent of the Coast Survey, says that this is probably Fippenies Bank, the true position of which is further to the eastward than is laid down in the charts.

Gold Resources of America.

Since the California discoveries were first made in 1849, the quantity entered at the United States Mint, in Philadelphia, has been constantly on the increase, and there are no signs of a falling off yet. In 1849 $10,491,675 were received; in 1853, $53,426,205. The whole amount received since 1849, amounts to $196,-143,988.

Scientific American.

NEW YORK, JANUARY 14, 1854.

Patent Plotters and Congress.

The granting of special privileges by legislation against well established principles of public policy, is deeply injurious to the interests of any country, but more especially a republic. The legislation of a republic is broad and open, and in this age of light and reason, nothing can be hid from public scrutiny. Monopolies are opposed to the spirit of free institutions, consequently every monopoly grant, no matter upon what pretence, unless it can be shown that it is for the public good, or as an act of justice, is sure, sooner or later, to work mischief, and redound upon the heads of those who unwisely forget their duties and obligations to their country and constituents. At the present moment there is imminent danger of our Congress being influenced by a powerful combination of individuals, who, under the pretence of *justice to inventors*, are endeavoring to obtain special grants for the extension of certain patents, in violation of existing statutes.

The patent law provides for extending a patent for seven years beyond the period of its original term of fourteen years, in every case where the inventor has not been sufficiently remunerated. All applications for such extensions are made to the Commissioner of Patents, accompanied by certified documents, showing the profits and the losses of the patentee. In every case, when it appears to the Commissioner that an inventor has not been fully remunerated for his invention during its first term, a renewal for seven years longer is granted, but if the evidence presented shows that the inventor has received sufficient compensation, the Commissioner cannot grant the renewal without violating the provisions of the Patent Law. Guided by this principle of law, Commissioner Mason refused to extend the patent of Col. Colt, and his decision in this case (which we publish on another page) is a document characterized by sound reasoning and upright feeling. This decision, substantiated by such incontrovertible arguments, every candid person will think, should have arrested any further attempts to obtain an extension of this patent; but such is not the case. The owners of this patent, and also the owners of two or three others, who, for the same reasons, could not obtain an extension of them by the plain path of established law,—we are credibly informed, are now besieging Congress for special grants, and it is seriously apprehended that they will accomplish their desires. Money is lavished freely in every way to exercise an influence in favor of the applicants, and as they are abundantly able to expend enormous sums in forwarding their designs, it is not unlikely that they may be ultimately successful. There never was a time since the first American Congress assembled, when such combinations and influences were brought to bear upon Congress for granting the extension of so many patents by special laws.

Applications have been or are about to be made for the renewal of seven or eight patents —such as Colt's (last) for revolving fire-arms: the india rubber patent of Hayward; Hoe's Printing Press; McCormick's Reaper, and others. None of these patents can be extended by the plain path of existing law, and the extension of the two former has been denied by respective Commissioners of Patents, after careful and candid examinations of submitted testimony. It looks more than impudent for these parties to seek to gain by special legislation that which they could not obtain in the manner provided by common statute. Will Congress violate the established principles of public policy, and grant the extension of these patents? It surely cannot be possible. If these patents are extended, a stain will be made on the character of our present Congress which can never be effaced. Let our Senators and Representatives look well to this matter before they vote for the extension of these patents.

We have no doubt but there may be some deserving cases—some inventors to whom Congress, in justice, may grant, with the approbation of our country, extensions of their patents: these must be judged of on their special merits. We are the advocates of the rights of inventors and those of the people, and these are not incompatible with one another. We only oppose all monopolies when we know they are sought to be obtained for other purposes than a fair remuneration to inventors.

Interested parties in the Woodworth Patent, we have been informed, are working at Washing upon a system for which they have always been distinguished, namely—great craftiness and deep subtility. Fearing that it would be in vain to apply again for an extension of the *Woodworth* patent, they have arranged matters in such a manner as to seek to obtain the extension of the old *Emmons' Patent*, so as to use it for their own benefit and secure all the privileges they enjoy under the Woodworth patent. The patent of Emmons was for the very same invention as that of Woodworth, and the interested parties of the Woodworth patent have heretofore accused Emmons of falsifying himself, and have even resorted to employing his dying confession—as they say—to subserve their purposes. Now Emmons, by the same parties, is to be represented as an injured man, an ill-used benefactor to his country, and the extension of his patent is sought for ostensibly as an act of justice to his relatives, but really to be used for the advantage of those who were his calumniators and detractors. We are loth to believe that this scheme, deep and cunning as it is, can be successful with Congress.

It is calculated that patent rights to the value of $20,000,000 are sought to be extended by the present Congress, and all those interested in these cases, support and encourage one another with a power and influence never before exerted in Washington. They may be successful in their designs, as they will leave no effort untried to accomplish their objects. The credit of rejecting, or the dishonor of granting such special privileges will belong to Congress. We sincerely hope that the honor of Congress will not be sacrificed by those who have it in their keeping, for the sake of any party or combination whatever; but certainly there is danger, unless the constituents of the Members exert their influence by protesting actively against such measures. We would recommend to our readers the propriety of their addressing letters to the Members of Congress from their respective districts, remonstrating against the enactment of such laws as will perpetuate these overgrown monopolies—the managers of which have become *sufficiently fat* from their proceeds already.

Candles Made from Minerals and Turf.

If all the reports which have come to us recently from abroad, with respect to new discoveries in making candles, are true, all our whaling ships will soon be laid up in port, or converted into *coal grunters*. In London beautiful wax-like candles have been made for years from palm oil; nothing of the kind has as yet, we believe, been made in our country. But more recently, new discoveries have been made, by which candles are now manufactured in Scotland from coal, and in Ireland from peat bogs, so there is every prospect of the palm oil trade being as clearly destroyed as is the whaling trade of England —which was once very extensive, but is now reduced, we believe, to four or five ships. In Scotland the "Edinburgh Witness" states that there is a quarry about twelve miles to the west of Edinburgh, in the immediate neighborhood of a picturesque group of trap-rocks, known as the Binny Crags, which quarry itself is of white sandstone, but there rests immediately above it a thick bed of dark-colored shale, over which the hot trap must of old have flowed, and which was subjected in consequence, to a sort of natural distillation. The distilled substance, shut very closely up, found its way into the vertical crevices of the bed of a white stone beneath, and in these crevices the quarriers now find it. It exists as a light waxy matter, varying in color in the mass from that of gamboge to that of dark amber, melts at nearly the same temperature as bees' wax, which it equals in hardness, and burns with a bright flame. Many years ago the quarriers employed at the work, struck by its peculiar qualities, learned to convert it into very dark-colored candles, which, though rather smoky, gave a not bad light, and which were occasionally purchased from them as objects of curiosity, but much oftener consumed in their cottages.

A few years ago, however, some one thought of distilling shales, and the result has been that some of them are exceedingly rich in an inflammable substance, resolvable into gas and tar, and which, from the paucity of its chemical affinities, has received the name of parafine. Of this substance, beautiful candles are made, in no degree inferior to those of wax.

Our readers will also remember the account of the famous lawsuit which we published on page 10, this volume, "Scientific American," about what was coal and was not coal, and how so many eminent chemists held contrary opinions on the subject. From *that* particular coal then in dispute, beautiful candles are now being made, as well as from the shales of Binny Crags. From every ton of coal, naphtha and parafine to the value of $28 can be extracted, and from the parafine snow white candles are manufactured for use and sale.

In Ireland there are extensive *peat bogs*, which from time immemorial have supplied the people with fuel. The peat is from 12 to 24 feet deep, and is a soft spongy mass, of a brown color near the surface, increasing in blackness and compactness, as it descends. If these bogs were suddenly submerged and subjected to severe superincumbent pressure, they would form coal beds. The turfs are cut into the form of bricks, and set up to dry in the sun, and when so dried are used for fuel like our coals, only they are all burned in grates, or else in piles on the middle of the floors of the wretched peasants' huts, the only chimneys being holes in the roofs.

These bogs cover no less than 2,900,000 acres of Ireland, and are exceedingly dreary and desert-like wastes.

A company has been formed and a manufactory is now in operation to render these waste places profitable, and to make candles from the deep black, spongy peat. This manufactory is situated near Athy, in the County of Kildare, and is erected at the verge of a great bog twelve miles long. The peat is cut in the bog and carted to the factory, where it is thrown into huge retorts and there distilled, the volatile products being condensed in a vessel which has a capacity of 8,000,000 cubic feet. From 100 tons of peat, as much tar is extracted as yields 350 lbs. of parafine, and 300 gallons oil. The parafine is obtained from the tar by boiling the latter for an hour, in water containing 3 per cent. of strong sulphuric acid, when the acid unites with the tar and falls to the bottom, separating it from the parafine, which is left along with the oil. The liquid is then re-distilled, and the parafine obtained in flaky cakes of a blackish color. These are then bleached with chlorine gas, then steamed and pressed into cakes, and afterwards made into beautiful white candles. Other valuable products besides the parafine, are obtained from the peat, as the small quantity of parafine realized from such a great mass of peat would not cover all the expenses. Thus it is that science is continually advancing the arts, and extending the dominion of man, for useful purposes, over the rocks, as well as the waters. We now cook our food, we heat our houses, and we obtain our light from minerals, long hid in the bosom of the earth, and once supposed to be as useless as the black mica formations of New York, which are employed for no useful purpose whatever.

The Prizes Again.

If we had delayed until the 3rd day of January before awarding the Prizes for the largest lists of subscribers, some of the successful competitors would have been doomed to disappointment. We, however, complied strictly with the proposition advanced at the beginning, and closed the lists on Saturday the 31st ultimo. Owing to the detention of the mails by the heavy snows, our letters were delayed several days —for example, a letter mailed at Fitchburg, Mass., Dec. 29th, did not reach us until the 3rd inst.—we should have had it the next morning after mailing. The result is, that one of the competitors increased his list sufficiently to have entitled him to the fifth prize, instead of the eighth, as published last week; and two others sufficiently to have entitled them to prizes otherwise awarded.

Under these peculiar circumstances we find a very agreeable duty imposed upon us—the only one which we feel willing to pursue. Without attempting to change the awards, as published last week, we will pay over the same amount that each of the following would have been entitled to had their letters reached us in due season:—

D. M. Sechler, of Ironton, Ohio, having sent 75 names, is awarded $40, instead of $25, as announced.

Charles Burleigh, of Fitchburg, Mass., having sent 65 names, is awarded $20.

John Boyd, of Xenia, Ohio, having sent 57 names, is awarded $10.

In pursuing this course our Prize List is increased to $500, instead of $450, but we feel confident that it will readily meet the approbation of our friends and secure a most perfect understanding.

The Water Ram.

We give the following extract of a letter as the text:—

"At a meeting of the Farmers' Club last summer you stated that a person in New Jersey had so arranged a watering ram (where there was no natural fall of water) that it threw water at a considerable distance on his farm, and referred to it as showing how an artificial stream could be made where no natural fall existed."

That we have seen done in several instances. Take any place that is naturally wet, and lay down under drains until you accumulate water enough at the outlet, which is easily done, to drive a water ram, and you can send one-eighth of the stream any distance you please through lead pipes, rising twenty feet to every foot fall.

Water rams can be set at any spring or stream where there is a fall, and will give a constant stream at the house on the hill, a mile from the spring and a hundred feet above.—[N. Y. Tribune 29th Dec.

[The idea conveyed by the above is, that upon a perfectly dead level—a ditch in a swamp for example—where water can be accumulated one foot deep, it will throw one-eighth of that quantity through three hundred or a thousand feet of pipe to the hight of 20 feet. A water ram will not operate unless there is a *natural fall*—an inclined plane. The factory canal at Cohoes, N. Y., is an artificial work, but the fall is no less natural (what is an unnatural fall.)—If one foot of water can throw one-eighth of its volume 20 feet high, then the result produced is to the cause as 156·20 is to 62·5 without allowing for friction. There are 62·5 lbs. in a cubic foot; the eighth of that is $7{\cdot}81 \times 20 = 156{\cdot}20$. What is this but perpetual motion. A water ram theoretically will throw one-twentieth of the water from the reservoir 20 feet high, for each foot of fall, and no more.

The last paragraph in the above is also wrong. A water ram cannot be set at *any* spring or stream where there is a fall, to throw a constant stream through a mile of pipe, to the top of a hill 100 feet high. The capacity of every water ram is circumscribed by the hight of the fall and the quantity of water which flows into it in a given time.

Fresh Isabella Grapes in January.

We are indebted to Geo. Clapp, Esq., of Auburn, N. Y., for a box of delicious Isabella grapes, raised from his grapery last season, and preserved in cotton up to this time. The specimens sent us were as fresh and retained their flavor as perfectly as though just plucked from the vine. It may interest some of our readers to know the process by which they were preserved, which was simply by placing the clusters between layers of cotton, in a box, until it was full, and then covering it, to exclude the air as much as possible.

Patent Extension—New Rule.

In all cases of application for the extension of a patent, the applicant must file his statement of the ascertained value of his invention, and of his receipts and expenditures, as required by law, within thirty days after the date of the first publication of the notice of such application. C. MASON, Commissioner.

Patent Office, 30th Dec., 1853.

Cotton Manufacture—Its Introduction into America.—The cotton fields of the United States extend from the Atlantic to the Rio Grande, and embrace an extent of 500,000 square miles. The cotton factories now in the United States require 600,000 bales per annum. One factory, at Salem, has 30,000 spindles under one roof. The capital engaged in cotton growing is estimated at $700,000,000. The exports of cotton from the United States exceed in importance that of all other raw materials.

The English government prohibited for many years the export of their cotton machinery. The first introduction of good machinery for spinning cotton into America was by Mr. Slater, an Englishman and practical spinner. He saw an advertisement in a Philadelphia paper, offering a reward for a machine to make cotton rolls, and he accordingly prepared himself to come to America. He brought no machinery with him, but came here and made it from his intimate knowledge of the whole process. He arrived in America January 3rd, 1790, and on the 18th of the same month he commenced making the machinery with his own hands. On the 20th December following, he had three carding frames going, with a drawing and roving frame and 70 spindles. These were driven by an old water wheel at Pawtucket, R. I. In 1793 Mr. Slater became a partner with Messrs. Almy & Brown, and built a small factory.

Our cotton trade is vastly greater than every other, and this greatness depends not so much on the price of the raw material as on its nature and adaptability to be rapidly manufactured by machinery. Cotton is of a peculiar rolling flexible nature, which allows it to be easily doubled and twisted.

When cotton is taken in bales to a factory, it undergoes a most thorough cleaning before it goes into the carding machine. This is called the *willowing* process, but the machine for so cleaning the cotton is named after his imperial majesty of the lower regions; he is indeed a fearful looking fellow, with great iron teeth, and capable of grinding any number of impure rascals.

After it has undergone the willowing operation described, it is taken to the scutching machine and beaten with blades revolving at a great speed, and this opens the fibers and the waste falls through a frame of wire work. It is then taken to the spreading machine where a set of rollers compress the wool for the cards. The carding cylinder has its surface covered with pointed wires, which completely separate and yet gather all the filaments together in a parallel position; they are then detached from the cards and carried between rollers, from which it comes out in the shape of a fine, round, soft snowy continuous wreath. It is then put through between rollers, every succeeding pair revolving faster than the others, and thus the soft wreaths are drawn first between rollers and finally twisted on a fly spindle, and the threads thus formed are received on bobbins.

Cotton is spun on two different spinning frames; the *throstle* and the *mule*. Some very fine yarns are now made in one of the Rhode Island factories—the place where the first cotton factory was erected seems to maintain an advanced position. The cotton yarn intended for warps of webs is reeled from bobbins into what is called a *chain*. A chain of warp is first boiled in warm water to expel all the air from the minute cells of cotton, then it is *beamed*, and is then fit for the dressing frame, where it is starched, dried, and fitted to be put into the power loom. The thread or yarn intended for the weft is not reeled into hanks, but kept on the *cops*.

The weaving operation consists in drawing up each alternate thread, so as to leave a space between the two sets, through which the shuttle with the thread is flung, leaving the thread all along, which is driven up by a slay.

If cotton cloth is intended to be made into blue calico goods, it is carried to the printwork, boiled for some hours in lime water, then it is bleached, then singed of all its surface wool by a red hot copper cylinder, (or by jets of gas), then it is calendered, then printed with a peculiar paste, then dipped in a blue vat, taken out and washed, when the whole surface will be blue, except where the paste was printed on to resist the dye, and after this it is dressed, brought to market, sold, and made into frocks for the rising generation. It may, instead of being dyed, have a number of colors printed on it by rollers, and this is the general way of printing most of our calicoes. White shirting is simply bleached, after it comes from the factory.

Cotton fabrics are the cheapest of all others, and they have been the means of conferring untold benefits upon the millions of the world. The poorest mechanic now wears a shirt far superior to that worn by Augustus, or even coming down later by the Dukes, in the days of Queen Bess. At present the cotton manufacture of England make her the center of the exchanges of the world. At some future date this will be said of America, for it is reasonable to suppose that the country which raises nearly all the raw material will yet manufacture her own natural products.

The cotton goods in the Crystal Palace will receive attention in our next.

Renewal of Colt's Patent.

It is stated that the Committee on Patents in Congress have unanimously reported in favor of the extension of Samuel Colt's patent for seven years, reserving to the government of the United States the right to make and manufacture the repeating and revolving arms in all of their own armories for military and naval purposes. The reasons for granting it are stated to be, that the inventor has not had the use of his patent in a profitable degree.—[Washington Sentinel.

[To show to our readers the amount of the difference between the reasons which satisfy the Committee in Congress, in reporting in favor of extension, and those which justified the Commissioner of Patents in refusing the extension of Col. Colt's patent, we present the following able Report of Judge Mason, on the subject, which, for logic and just discrimination, is a model document.

APPLICATION OF SAMUEL COLT FOR AN EXTENSION OF PATENT.

In June, 1836, the applicant obtained a patent for a rotary chamber for fire-arms. In 1839, a second patent was granted for improvements thereon, the most important of which was the loading lever. In 1850 the former of these patents was extended for seven years, and he now asks a like extension for the latter.

The statute requires the applicant in such cases to furnish a statement of his receipts and expenditures "sufficiently in detail to exhibit a true and faithful account of loss and profit in any manner accruing to him from and by reason of said invention." This requirement has not been duly complied with in the present case, but as the decision will turn upon another point, this defect will be no further considered.

The applicant avers "that he never has in any way, directly or indirectly, derived any reward for his said invention, patented in 1839." This statement certainly grows out of a mistaken basis of computation.

The testimony shows that the applicant has manufactured upwards of 100,000 pistols of various sizes. Taking into account the prices at which they have been sold, the cost of manufacture, and the commission allowed for selling, the net profit on these pistols will not fall far short of $1,000,000.

This testimony stands wholly uncontradicted—no opposing evidence was offered. Even the witnesses by whom these facts were proved were not cross-examined by the counsel for the applicant, although he was present at their examination. The fact then may be taken as conceded and indisputable.

Now the expenses of the applicant, together with his losses and the value of his time and services, are estimated by him at $60,000, which certainly leaves a very handsome balance in his favor. But he takes the ground that all these profits are due to his *first patent*, and none to the *second*.

Therein consists the mistake. All the pistols testified to as above stated, were constructed with the improvements embraced in the second patent. Are these improvements of no value? If so there is no ground for an extension. But if they are valuable they certainly augmented the value of the pistols to which they were attached.

But it will be said that the price of these pistols was not increased in consequence of the addition of these improvements. This may be true, but it does not follow that they have been productive of no benefit. The vender of a commodity often finds it advantageous to diminish its price in order to augment the amount of his sales. Adding to the worth of the commodity while the price remains unchanged, produces the like effect, at all events the pistol with all its improvements, was manufactured and sold as a whole. Large profits have been thereby realized. The applicant cannot be permitted to say these profits have all accrued from the manufacture and sale of the rotary chamber. They result from the whole pistol, as improved, with all its parts. The improvements embraced in the patent now sought to be extended, gave an enhanced value to the arm. This caused its general introduction and enabled the patentee to dispose of the vast number, which has changed his early losses into such abundant profits. A reasonable share of these should be credited to his last invention.

Such a course will appear the more just when it is recollected that the applicant charges the invention we are now considering with the early losses to which he was subjected in the endeavor to bring his pistol into general use. He even goes back in this reckoning to a time anterior to the date of the present invention, and makes up an account in the total of $60,000, to cover his expenses and losses of time and money. This debit accrued in the endeavor to introduce the *whole pistol* including the subjects of both patents. But it would seem further, as though the applicant intended to charge the whole of its debit against the subject of the second patent. At all events, there is no doubt but he intended a full proportion of that charge to stand against the patent now sought to be extended. Why, then, should not the subject of this patent be credited with its share of the profits.

But the applicant avers, under oath, that the patent now sought to be extended has, thus far been of no service, "and that for the purposes of his manufacture and the profits, thereof, he would have been as well off if the improvements described in the patent of 1839, had been public property," if this is correct, it furnishes a strong argument against the extension now sought.

The reason given by the applicant for the conclusion above stated, is, that the patent of 1836 has, till this time, protected the improvements patented in 1839, and that therefore the whole benefit of those improvements could have been monopolized thus far without a patent.

Now the patent of 1836 has been extended to 1857. If the first patent has protected the subject of the second up to this date, it will do the same thing for aught that appears, for four years longer. The profits already received have already accrued within the last six years. From the increased extent of the manufacture and use of these pistols, the profits in the four years to come will probably equal those for the six years past, so that the aggregate amount of profits resulting from the inventions embraced in his two patents, even without an extension of the patent of 1839, will probably amount to near $2,000,000.

The view evidently taken of this subject by the applicant is, that he is entitled to an extension of his patent unless he has derived from the patent already granted a sufficient compensation for his invention. Such is not the law. To justify an extension of this patent, the Commissioner must be satisfied that the applicant, without neglect or fault on his part, has failed to obtain "from the use and sale of his invention" a reasonable remuneration for the time, ingenuity, and expense bestowed upon the same, (Act of 1836, Sec. 18). It matters not then, whether the applicant has realized one dollar in consequence of the patent of 1839, which has been extended to 1857, has protected the subject of the patent of 1839, and thereby enabled the inventor to reap the full benefit of this latter invention, he is no more entitled to an extension than though the whole advantage had grown out of the patent of 1839.

The burden of proof to show that a proper case for an extension exists is thrown upon the applicant. In this respect he has wholly failed. Neither his sworn statement, nor the testimony of the witnesses who were sworn in the case shows that he has not received from his invention a sufficient liberal compensation. But on the contrary a degree of success and prosperity is shown which I can only wish were more generally realized by the authors of all other useful inventions.

The extension is therefore denied.

CHARLES MASON, Commissioner.

U. S. Patent Office, August 29, 1853.

Agricultural Power Machines—The American Threshing Machine in Europe.

The well known Mr. Mechi has sent the following letter to the "British Agricultural Gazette:"—

As I get some half-dozen letters daily on the subject of the American threshing machine, I had better at once state that I have threshed more than 100 qrs. of wheat and 50 qrs. of barley with it, and that it is, in my opinion, in every respect far superior to our English threshing machines, as exhibited at the great shows.—Although a very light implement on carriage wheels, its steadiness under steam power indicates the easy movements of all its parts, and it must be a very enduring machine. All its parts work continuously on the rotary or revolving principle, the only exceptions being two very light portions; whereas, in our great clumsy threshing machines, the jerking or checking movements sway them, in spite of their great weight, in a most destructive power consuming manner. In cleansing and dressing powers we have nothing, in my opinion, to compare with it. A three horse power steam engine, worked at 60 lbs. to 70 lbs. of steam per inch, and 120 revolutions per minute, would, I consider, work it efficiently, and thresh of reaped wheat 6 to 8 qrs. per hour, and of mowed wheat 5 to 7 qrs. It threshed for me last week 84 qrs. wheat in 5½ hours, and 54 qrs. barley in 6½ hours, at 44 to 55 lb. pressure, and two-thirds the power of a six horse engine, In fact, it is a simple question of being able to feed it fast enough.

I see clearly in perspective great changes and improvements in our agricultural steam engines—lighter and cheaper implements, with 100 lbs. per inch steam pressure. The steam cultivator, which progresses favorably, will show that a power equal to 10 pairs of real horses may be concentrated on a pair of wheels, and of a weight less than two tons. When not cultivating, the engine may be driving mill stones, a threshing machine, circular saws, irrigating pumps, or working Fowler's draining plow.

However inconvenient it may be to present arrangements, we must expect our agricultural placidity and stolidity to be assailed by scientific progression, involving more thought, action, and care, and greater ultimate economy. Our village blacksmiths must be transformed into, or make way for, a different class of workmen, capable of comprehending the action of a steam engine, and of repairing its defects. The use of horses in threshing machines is a barbarism, for my experience with Hornsly's and Ransome's steam engines of six horse power has shown them (and no doubt many others), to possess a power equal to that of 16 to 18 good horses. Strange to say, our go-ahead American friends, brought over with them a horse gear in connection with their machine, but after seeing the miserable contrast with steam, they have abandoned it for ever.

It appears the American farmers all use horse power for threshing; no doubt they can keep them cheaper than we can. The American threshing machine will remain at my farm until exhibited at the Smithfield Show, where Mr. Moffit will attend personally.

[This testimony in favor of American threshing machines in England, is indeed flattering to our inventors.

TO CORRESPONDENTS.

☞ Unsigned Communications are rejected unless there is abundant reason to believe that the writer is ignorant of his duty in this respect. It is not at all likely that we shall make an unwarrantable use of the names of our correspondents, therefore why withhold them.

A. C. R, of N. Y.—You say you do not understand how we can oppose the extension of any patent. Perhaps if you had made a valuable improvement upon a machine or process, but could not use it until some already existing patent had expired, you could see some reason for the limitation which is placed upon this species of property. Many an honest and hard-working mechanic has been compelled to lick the dust before these powerful combinations, who awe down all opposition. Such cases are indeed hard, and we shall defend the rights of the many against the encroachments of a few whose interests are turned into tyranical uses.

N. G. B., of Ill.—In Vol. 4, page 244, you will find an illustration of a mowing machine identical in principle with the drawing of the one you submit to us.

J. D. W., of Miss.—You will find an engraving of Du-Bois' Cotton Gin on page 404, Vol. 4, Sci. Am. Mr. Du Bois' post-office address was formerly Greensboro, Tenn., and for aught we know he resides there yet.

D. B. C., of Ga.—We are afraid your patience will be exhausted before your order for a Hot-Air Engine is filled. We have not heard that the "Evening Post" have got their engine yet, which was promised them nearly a year ago.

M. P. N., of N. H.—We do not discover any patentable novelty in either of the improvements which you submit for examination. The coupling is essentially the same as some others we have seen, and the arrangement of seats presents, in our opinion, no patentable features.

W. McB., of Ohio—Your views in regard to the Sciences being taught more generally in schools, are correct; more attention should be paid to this subject than has been done heretofore. It is really surprising to notice the great amount of superficial science which exists among the people generally. The simplest questions of philosophy are not familiar to hundreds of men who ought to know them well. We do not think you are justified in making application for the mortising machine; the novelty is very slight indeed.

J. H. P., of N. Y.—The scale is removed from castings of iron by steeping in warm water slightly acidulated with oil of vitroil for about two hours, then rub them down and wash well in clean water. The scale from cast-steel can be removed in the same manner. You must steep the castings a longer or shorter period according to the thickness of scale.

A. S. T., of Va.—There is no good work with which we are acquainted on taxidermy. We will try and publish the other information soon.

J. E. H., of New York City—Yours will meet with attention in our next.

J. M., of N. Y. City—We thank you for your attention: we will review J. McPherson's experiments in our next number.

R. B. G., of Pa.—If you write to the Brooklyn Glass Co., No. 30 William st, this city, they may be able to give you the proper information.

A. M., of Ky.—The device described in your letter of the 28th ult. does not appear to have novelty sufficient to justify an application for a patent.

T. P. K., of Pa.—The ball seating we think is new: it appears to be a good improvement in journal boxes.

C. C., of Mass.—The Hayward patent is one of the most important improvements connected with the india rubber business; it is a sort of key upon which the whole is turned, hence the desire for its extension. Commissioner Hodges acted in obedience to the law in refusing to extend it. How can Congress justly set aside the law of their own making, in special cases? Let the law be repealed at once if it is odious, but don't endeavor to violate it, the necessity does not exist.

A. B., of Ct.—We do not know about the machine for splitting felt tapering. Your experiment for conducting the electricity by induction, was just as good as any we could recommend; but remember that you should conduct the fluid away to a moist part of the earth or to a running stream.

E. C., of Ohio—You can make good soap from any kind of oil, if you employ the proper materials. Use caustic lye made from soda, with some quick lime. If you use lard for making soap, you will find it very difficult to harden, even though you use resin.

G. J., of Mo.—You can make a very good varnish for iron by boiling pitch, red lead, and some oil together, with a little lampblack, and stirring some turpentine in the mixture after it gets cool: about two hours' boiling is sufficient.

J. M. B., of Tenn.—We certainly would like to see an atmospheric railway constructed for Broadway, but there is no prospect of this being attained. We understand you as working the piston by the exhaustion of the air before it.

J. O., of N. Y.—Yours about the ear tube and plan of reporting, we do not think can be made serviceable, according to the practice of performing such work: our good reporters find no difficulty in taking down every word of a speaker.

R. C. B., of Mich.—Yours has been received and we will give it attention.

B. B. H., of Ct.—We have instructed the Commissioner to return your model to you for repairs, and after you have put it in good condition please return it direct to the Patent Office, not forgetting to pre-pay Express charges.

H. H. W., of Mass.—We hope you will cease to experiment upon such an unphilosophical project: hot-air, from its very nature, can never be employed as a substitute for steam in propelling machinery; its great bulk excludes it from competition, except by those who do not seem to comprehend this difficulty.

R. R. H., of Me.—You can easily measure the power of your lever by calculating the difference between the time of motion at the place where the effect is produced, and the end of the lever where the power is applied.

A. McA., of Texas—The oil made from cotton seed, we believe, burns with a clear and beautiful flame.

H. A. H., of Mich.—A telegraph wire can be enclosed in a non conductor and laid in a groove in the rail; but it would be better to enclose it in a glass tube, and lay it at one side of the rail. If anything were to go wrong with the rail or with the wire, by your plan, both the telegraph and railroad would have to suspend operations until the break was repaired. For what purpose do you want the globes described in your letter? They can be made.

S. K. O., of N. Y.—Such a balloon as that which you have described was illustrated in Vol. 1, Scientific American.

J. B., of Canada—It seems a hard matter; it is true that an inventor cannot have the privilege of using HIS OWN INVENTION, but it is so sometimes, and it will not be safe for you to introduce the article into Canada, even if a patent was not taken out until since you invented it.

W. W. P., of Va.—Morse's Air Distributor is constructed upon the same plan as you describe. Several unimportant modifications involving no patentable novelty have been made in devices for the same purpose. We do not think you stand any chance of procuring a patent.

C. E. T., of Me.—We do not think your pendulous arrangement for opening and closing doors could be secured by patent. We judge only from your description, which is not very full. If you wish more information you may send us a model for examination.

B. W. S., of Pa.—The concern to which you refer as being engaged in the manufacture of reeds for melodeons is Carhart & Needham, 13th street, this city.

W. R. H., of Geo.—The use of springs for propelling cars or any other machinery used in transportation is impracticable.

J. R. L., of Fla.—We cannot see how the oat meal can effect such an object as that which you inform us. How can it excite rapid evaporation, without which ice cannot be produced. We do not see how the heat of fluidity can be extracted by your machine, and unless you can do this you cannot make ice.

H. McN., of N. C.—The quantity of fuel required for a horse power per hour depends greatly on your boiler, and the way you work your steam—expansively or full pressure during the whole stroke. Seven pounds of coal per hour would be a fair estimate for each horse power of your boiler.

J. J. L., of La.—A revolving cannon is not a new invention. It has not been adopted for some cause unknown to us.

W. E., of N. Y.—We think your improvement in hollow mandrels for turning is new and patentable. Send on a model.

L. W. T., of Mass.—Do not trouble yourself about such phantoms as perpetual motion. It is singular that any person should devote any attention to such a question after what we have said on the subject.

E. J., of N. Y.—At five hundred and eighty degrees of heat steel becomes a deep blue.

R. M., of Conn.—As the length of an inclined plane is to its height, so is the weight to the power.

M. McD., of Pa.—One gallon of coal tar boiled with two and a half pounds of the sulphate of zinc makes an excellent paint for outhouses, &c.

T. W., of Va.—A very good cement for turners is made by melting one pound of rosin, and four ounces of pitch together, then thickening the same with brick dust.

R. S., of N. B.—In eighteen years there are usually about seventy eclipses, twenty-nine of the moon and forty-one of the sun.

J. J. T., of Me.—One part of lead and one of tin makes good plumbers' solder.

Money received on account of Patent Office business for the week ending Saturday, Jan. 7:—

T. R. & G. B., of N. Y., $30; G. W. F., of O., $35; E. H. S., of O., $55; J. H., of N. Y., $20; F. & R., of Pa., $55; C. F. P., of N. Y., $100; J. D., of N. Y., $28.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Jan. 7:—

T. R. & G. B., of N. Y.; D. A. F., of Pa.; J. D., of N. Y.; A. M., of Pa.

LITERARY NOTICES.

LITTELL'S LIVING AGE.—This excellent weekly magazine begins a new volume with the New Year, and has added a new and attractive feature to its other incomparable good qualities, namely a beautiful steel plate—one of which will accompany every number, and make 52 in the year. This magazine is a reprint of the very cream of foreign literature, selected with great judgment from all the foreign Magazines and Reviews. It is the best work of the kind in the world, as the articles are of the first quality: the genuine coin. The steel plate accompanying the first number for 1854, is a view of Sloperton Cottage the residence of Sir Thomas Moore, the poet. Littell Son & Co. of Boston are the publishers.

THE PARLOR MAGAZINE.—Conducted by Jethro Jackson and Alice Carey of Cincinnati, Ohio, is one of the most agreeable publications which we have met with. We should think the great and growing western country would extend to it a hearty support. No. 1 vol. 2 has a beautiful engraving of Mill Creek Valley at high water.

PATENT LAW DOCUMENTS.—Rail Road Cars.—We are obliged to W. W. Hubbel of Philadelphia for printed copies of his arguments and those of Mr. Whiting of Boston, in the patent case of Ross Winans on "eight wheel cars," before Justice Nelson at Cooperstown N. Y. in August 1853.

TELEGRAPH.—We are obliged to George Gifford, of this city, for a printed copy of his argument delivered before the Supreme Court U. S. in the telegraph case of H. O'Reilly et al vs. S. F. B. Morse, F. O. J. Smith et al in the appeal from the decision of the U. S. Court for the district of Kentucky.

A Chapter of Suggestions, &c

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, none comple, but about 30 numbers in sheets,, which will be sold at 50 cents per set; of Vol. 9, none previous to Jan. 1st, 1854.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

ADVERTISEMENTS.

Terms of Advertising.

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Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

Scientific Museum.

[For the Scientific American.]

Meteorological Calculations.

The following table of meteorological calculations is made for long. 6° West from Washington, for the months of January, February, and March, 1853; showing the time of passage of atmospheric influences, also their average velocity of movement in miles per day; being a continuation of a similar series of calculations published in the "Scientific American," Vol. 8, page 339.

Time of passage.	Velocity. Miles.	Time of passage.	Velocity. Miles.
Jan. 5, 11 A.M.	692	Feb. 16, 5 A.M.	908
" 8, 5 P.M.	888	" 21, 7 "	808
" 9, 4 A.M.	912	" 27. 1 "	907
" 16, 10 "	708	Mar. 4, 2 P.M.	1006
" 27, 7 P.M.	950	" 8, 2 A.M.	882
" 28, 5 A.M.	910	" 8, 8 "	673
" 29, 2 P.M.	732	" 14, 7 P.M.	885
Feb. 10, 5 A.M.	668	" 21, 9 "	1031
" 15, 1 "	970	" 27,10 "	876

REMARKS—1st. The general average movements of atmospheric influence, in our climate, is about 864 miles in 24 hours, or 36 miles an hour. The average movement of the influences around the earth for the first three months of 1854, will be about 856 miles a day—being about 8 miles less than the general average.

2nd. Atmospheric disturbances, or waves, may sometimes move with a less velocity than their accompanying influence; but if so, they cannot travel far before they will be dissipated and a new one formed in their advance.

3rd. Atmospheric influences have separately a sustaining cause, and their effects are more or less extensive according to their relation with the cause.

4th. The variableness of the accompanying phenomena in temperate climates is partly in consequence of the continually changing position of the influences, and of their peculiar relations.

5th. Two or more influences travelling together are generally sufficiently united in their action to produce more than a single ordinary result.

6th. Two or more influences moving in close proximity, have their usual results counteracted. The production of rain is of rare occurrence from a relation of this kind; but the unusual quantity of the cirrous cloud formed, is a sure indicator of such a position.

7th. When two or more influences are traveling nearly together, approaching or receding, their time of passage may be either before or after the calculated time. J. HALL.

Athens, Ill.

Cotton Seed.

It can be no longer questioned that the cotton seed, in many parts of our country is fast degenerating, and we hear frequent complaints from the planters on this subject.

The plants, in many places, are not so vigorous in growth nor in quantity and quality produced as formerly. We are assured that the staple of the cotton is being seriously affected by this degeneration of the cotton seed. Various reasons are assigned. One thinks it is owing to the condition of the soil or the weather; another thinks it is owing to the defective manner of culture; "I must change my seed," says a third; and thus a variety of conjectures are started. The reason of this degeneration is made to appear when we consider that, year after year, our planters pitch their crops with seed taken promiscuously from the field. In the very nature of things it must dwindle and become dwarfish in the course of time; and notwithstanding it depreciates under their eyes, they still pursue the insane policy. Upon the same principle your stock of horses, cattle, or hogs would degenerate and run out. We do not wonder, therefore, that your cotton is seriously affected—you do nothing to improve it—to give vigor of growth or constitution.

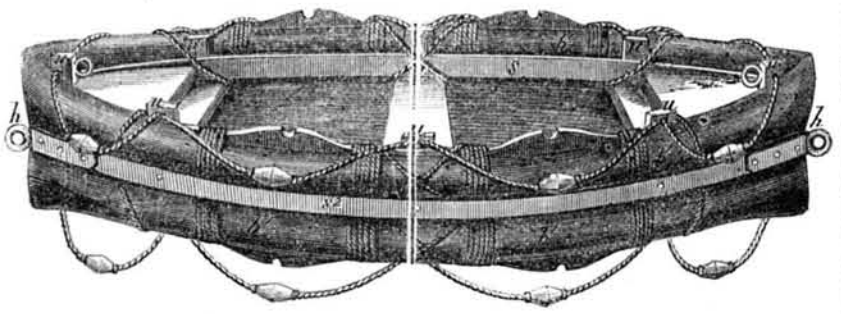
There is no need to change your seed—all that you have to do is to pass through your fields and select your seed from those plants that exhibit most vigor of growth and produce the greatest number of bolls. Plant those by themselves, and then cull again as before; or else select a few acres, and plant it exclusively with the best seed, selected as above, and in one or two years you will have superior seed, if not better than can be obtained anywhere else. If you are too negligent or lazy to make the necessary improvements, no complaints should fall from your lips.

The famous seeds, about which so much is said, and for which such high prices are paid, have been brought up to this high state of culture by the means stated above, and by proper crossing kept up for a series of years.

Try the plan indicated, and you will find a vast improvement in the quality and quantity of your cotton.—[Southern Organ.

[Our Southern cotton planters, we believe, would find it to their advantage to use seed grown in distant localities, such as Georgia seed exchanged for Mississippi seed, and vice versa. In the cultivation of many other plants this has been found to work advantageously, increasing both the yield and quality of the crop.

FRAZEE'S IMPROVED LIFE BOAT.---Figure 1.



We present our readers, on this page, two illustrations of an improved Life Boat, patented on the 22nd of November last, by L. F. Frazee, of New Brunswick, Middlesex Co., N. J.

Fig. 1 is a perspective view of the life boat complete, and fig. 2 is a cross section through the center. The same letters refer to like parts in both figures.

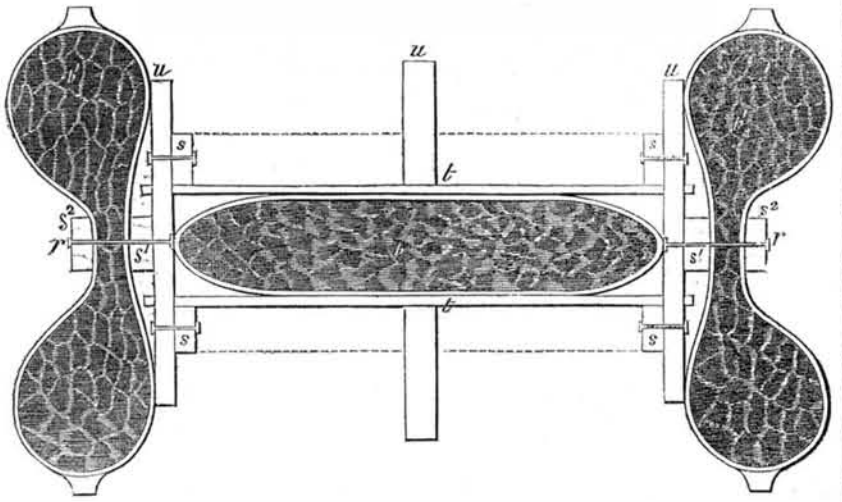
Any life-boat to be serviceable should be strongly constructed, so that it may not be liable to damage, rendering it unfit for use; it must be light in proportion to the number of persons that it will carry, it should be so constructed that it will be always right-side up, and if possible it should be so cheap that all will purchase it.

The nature of this invention consists in combining together buoyant vessels properly shaped and arranged, and constructed of india rubber or oil-cloth stuffed with cork or its equivalent, the combination constituting a life-boat possessing the desirable qualities above specified.

The frame of the float is constructed chiefly of slats of hickory or other strong and elastic wood. To this is attached three balsas or floats constructed and stuffed as before said. One of these balsas constitutes the bottom of the boat, and the other two the sides. The former is secured within a frame made of the slats above referred to, while the two latter are fastened to its sides chiefly by means of the external slats, rivets being passed through the internal slats, side balsas and external slats.

In the illustrations, *n n n* represent the uprights, two of which constitute the stern posts, the intermediate ones being more or less in number, according to the size of the finished boat. On the inside of the intermediate uprights are secured, by rivets or otherwise, the slats, *s s s*, they being also secured outside of the stern posts. The slats, *s' s'*, are secured outside of all the uprights, and from one upright to another reach the transverse pieces, *t t t*, notched over the uprights and resting on the slats. Two other pieces of plank are firmly secured to the forward and after transverse pieces and to the stern posts. Between the transverse pieces and within the slats is located the balsa, *b*. The planks give additional strength and afford firm footing for the steersman. As before stated, two other balsas, whose section is shaped something like an hour-glass, are now applied outside the slats, and outside of these are placed two other slats, s^2 s^2, and riveted fast. Breast hooks, *h h*, are attached to the ends of these slats, confining them firmly, and thus securing the outer balsas. Row-locks and lifelines, with floats upon them, are lashed to these, and the boat is ready.

Figure 2.



We cannot see any reason why this should not be a serviceable float, and as a surge boat it is certainly worthy the attention of all. Ship-owners and masters of vessels are certainly much to blame if they do not provide their vessels with the best life-boats that can be obtained.

Any further information can be obtained of the inventor as above.

Darien Ship Canal Exploration.

A London letter in the "Philadelphia American" says:—

"The Isthmus of Darien ship canal expedition for the purpose of effecting the junction between the Atlantic and Pacific oceans, and respecting which so much interest has been created, will sail on Saturday next from Southampton in the West India mail steamer Orinoco. It will consist, on the part of the Atlantic and Pacific Junction Company, of Dr. Cullen, the discoverer of the route and the conceptionaire, as pioneer; Mr. Gisborne, civil engineer-in-chief; Messrs. Forde and Bennett, and four assistant engineers. On behalf of the British government it will be accompanied by Lieut. Singen, R. E., and staff. The object is the making a detailed survey of the route from Caledonia Bay and Port Escoces to the Gulf of San Miguel, and inaugurating the important work of the junction of the two oceans. At Jamaica the expedition will be joined by Lieut. Strange, United States Navy, and the surveying party under his command, on board the United States sloop the Cyanne, Captain Hollins. The Cyanne will be joined by a British man-of-war from the Jamaica station, and by the French Admiral's ship, with French engineers on board, from Martinique, and the squadron will then proceed to Caledonia Bay, on the Atlantic coast of Darien, where it will be reinforced by her Majesty's surveying sloop Scorpion, which has already sailed from England for that purpose. The surveying party will then cross the Isthmus to the river Savana, where they will meet boat parties dispatched from a British man-of-war which is to be stationed at its mouth in the Gulf of San Miguel, on the Pacific, and then commence detached surveys of the route. As the distance between the tide influence of the two oceans is only thirty miles, the return of the expedition may be anticipated in May next.

Railroad Artesian Well.

The Camden and Amboy Railroad Company, N. J., have just tested one of Mr. Bolles' artesian wells, at Cooper's Point, which that gentleman sunk for the use of their car depot at that place. With a four inch pump there were elevated to the water tank about sixty gallons of water per minute. This pump, as are also all of the pumps on their road used to supply the engines with water, is driven by steam, and so arranged, that when a locomotive comes up to it, a steam pipe is attached, and the surplus steam of the engine pumps the water into the reservoir, from which the locomotive is supplied.

Another Great Railroad Project.

A convention has been held at Bentonville, (Ark.) to devise measures for the construction of what is called the Western Border Railroad. The projected line is to run from the northwestern corner of the State of Arkansas, through the counties of Benton, Washington, Crawford, Sebastian, Scott, Polk, and Sevier, to the Southwest part of the same State, terminating at some point on Red River; it is described as being a link in an extended chain of railway ultimately to be constructed, passing through the longitudinal center of that portion of the great Mississippi Valley lying west of the great river, and bringing into connection and commingling together all the various productions of that valley.

The shock of an earthquake was felt at Geneva in Italy on the 4th ult.