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Instrument for Curing Deafness.

We have received several inquiries relative to an instrument for curing deafness which was said to accomplish the desired effect by a simple insertion in the ear. An instrument of this kind has been advertised by a party in this city, under the name of an Organic Vibrator, and from an inquiry referring particularly to it, we were induced to investigate it. We find it a very simple contrivance, but rather dear at the price charged we should think. We present a sectional view of the instrument and should judge it might answer a very good purpose, when deafness is produced from the closing of the "meatus auditorius" or orifice of the ear. This is probably not the instrument invented by those London Professors, a notice of which we published a few weeks since; still their invention must be similar—any silversmith can make one of this kind for a few shillings. If both ears are affected, two must be employed. The cup of the instrument is oval, our section is the longest diameter. The engraving is the full size.

Ocean Steamers in Congress.

A bill has been introduced into Congress, relative to ocean steamships, providing that it shall not be lawful for the master or owner of any sea-going or ocean steamship to use or employ such ships for the transportation of passengers between any port or place in the United States and a foreign country, or between any ports or places in the United States, distant from each other more than five hundred miles, until the said ship shall have made one voyage to sea and her engine shall have been practically tested. It provides that the master or owners of any sea-going or ocean steamship which shall transport or carry any passengers for hire before her engine and machinery shall have been practically tested in the manner set forth in the bill, shall forfeit and pay to the United States for each passenger so transported or carried, the sum of $100, and shall not be entitled to recover any passage money from the passengers.

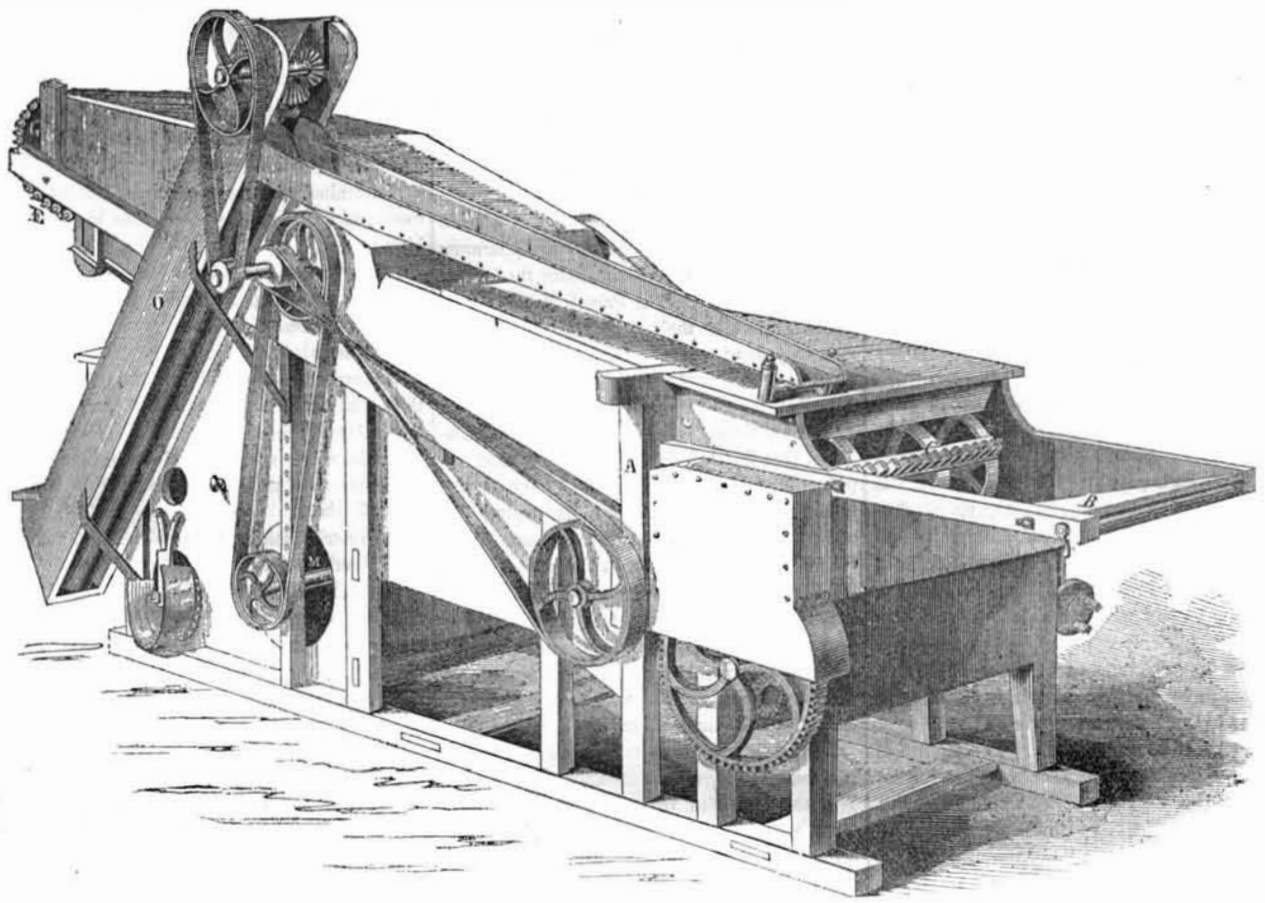
Improved Grain Separator.

We present our readers this week with illustrations of Moffitt's improved grain separator, patented, Nov. 30, 1852. Fig. 1 is a perspective and fig. 2 a sectional view. The same letters in each refer to corresponding parts.

The machine consist of an ordinary frame A, having at one end the feed table, B. C, is the cylinder, made of wrought iron and sixteen inches in diameter. It works in a spiked concave having two rows of teeth, seventeen in each, of the same length as those of the cylinder; these latter are fixed in the bars by screws, and are also seventeen in each bar. But this although somewhat new in England, where this machine has been introduced and extensively used is an ordinary mode of construction in this country.

The prominent points of improvement in this machine consist in devices for the prompt and thorough separation of the grain from the straw,

MOFFITT'S IMPROVED GRAIN SEPARATOR.---Figure 1.

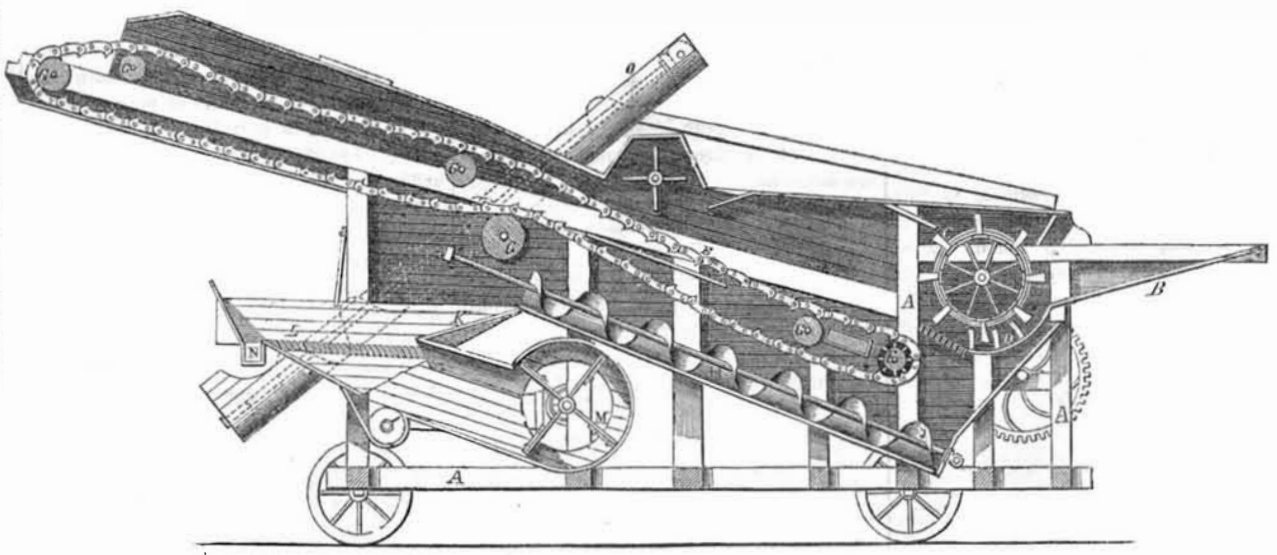


which in the usual machinery for this purpose is liable to carry off and waste a portion of the grain.

D, is a continous revolving apron for carrying off the straw from the grain, the major part of which falls through the grating, for conveyance to the winnowing mill, as hereafter described. This apron has two metallic belts, composed of links E, of cast iron, and curved concavely on their inner edge, to fit the wheels, F, which drive the belts, and wheels, G, which stretch them. Slats connect the opposite links of the two belts, the said slats being firmly wedged in mortices in the links by keys driven into their ends after insertion. The links are provided with teeth enough to enable the cog wheels, F, to revolve the apron by their means. Placed at intervals beneath the belts are rollers, R, which serve not only to support the belt but by the collision of the curved and toothed links with their upper sides, an intermittent jerking motion is imparted to the apron which keeps the straw loose, and effectually separates from it all the grain which has been among it. The narrow iron chain or belt as above described is preferable to the usual leather bands. The iron belt is also more durable and is effectually desirable on account of its applicability to impart the jerking motion before described. The grain and small chaff thus separate from the straw drops on to the sloping sides of troughs, I, at the bottom of which, revolves conveyors J, which as fast as the grain falls move it forward and upward, and deposit it upon the riddle, K, of the winnowing apparatus, through which the milled grain cheat, &c, pass and are separated in the usual way.

While the heads or unpulled grain are passing onward along the riddle, K, they drop

Figure 2.



therefrom into the trough, L, whence they are removed by a conveyor into a shoe, M, which returns them to the beater of the machinery apparatus around two thirds of whose circumference having passed and being mostly rid of their mills they are thereby enabled to pass through the winnowing apparatus, but any which pass a second time unpulled, are sure to be introduced again to the threshing machinery.

What is claimed in this arrangement as new, s the continuous open apron having its belt formed of links, whose cogs are at one part of their rotation, in connection with the pinions, or means of propulsion, and are at another part of their rotation in connection with the rollers or the stationary objects, a means of agitation of the said apron.

This is the machine which has created so great a sensation in England, under the patronage of Mr. Mechi, the celebrated agriculturist of Tiptree Hall. One of them is on exhibition at the Crystal Palace. We should think, from an examination of it, that it was a durable and efficient machine, embracing all the recent improvements upon separators. Our readers are probably aware that the English are far behind us in this class of agricultural implements, and the "American Threshing Machine," seems likely to obtain a notoriety almost as great as the "American Reaping Machines" of McCormick and Hussey.

Any information desired can be obtained by addressing the patentee at Piqua, Ohio.

[For the Scientific American.]
Parker's Water Wheel.

As you are frequently asked by many of your correspondents which is the best iron water-wheel, it may be some advantage to your inquiring friends to have a statement of the performance of a set of Parker Turbines (if you choose to call them so), that have been in successful operation for two years in the paper mill of Mr. C. Van Reed, residing in Reading, Berks Co., Pa. There are four of these wheels working on vertical shafts, all geared by bevel cog-wheels to one line shaft, from which the power is taken to three rag-engines by belts. The water-wheels are four feet diameter, each wheel issuing 350 square inches, or the four wheels jointly 1400 square inches of water, and make at work 65 revolutions per minute. The whole head or pressure of water on the wheels when at work is but two feet three inches.

Mr. Van Reed gives as a statement that his mill is regularly started on Monday mornings, at 3 o'clock, and runs steadily till Saturday night at 12 o'clock, making 141 working hours per week, and that their regular week's work is to turn out 4,000 pounds of paper, from coarse hard stock, suitable for books or newspaper. Previous to getting the Parker Wheels he used for his motive power an undershot wheel, the gate orifice of which was 2200 square inches, the power of the wheel was only sufficient to drive two of the rag-engines at a time; and he had a steam engine to drive the paper machine, and to assist the water wheel when there was back water, or a scarcity, to make up the deficiency of the power required. Since he has adopted the Parker wheels above described, with an addditional one to drive the machine, he has dispensed with the use of the steam engine entirely, finding he has abundant power without it. The amount of water discharged per minute by the four wheels is 5,248 cubic feet; and the estimated power at 70 per cent. of effect is 15·65 horse-power. The amount of work performed is usually estimated to require 20 to 24 horse-power, which would indicate a very high percentage of power for these particular wheels. And we think the world might be safely challenged to produce as high a performance with the same amount of water and under the same head. O. H. P. Parker.

Philadelphia, Feb. 9, 1854.

Governor's of Engines.

Messrs. Editors.—In vol. 9, No. 18, of your paper, Mr. Mascher says:—"All governors that I ever saw applied to steam engines are not governors, properly speaking. I might call them ameliorators inasmuch as they govern the variations only partially." This defect I have spent a great deal of time and money to remedy. In examining the principles of action of the old fly ball governor, I found there was much more motion in the balls than in the hub that actuates the valve, in consequence of the balls depending on centrifugal force for their action, and the more speed, the less power is there to act on the throttle valve. To remedy this I found that the weights or balls should run parallel with the spindle, and move the valve an equal distance with the weights so as not to have any lost motion. I have attached four disks, (two will do) with flat surfaces to four arms cast solid in the hub. To the hub is attached a spiral, so that a spindle passes through both freely. The spindle has a pin and roller for the spiral to rest upon. When the spindle is put in motion, the weights or disks will not immediately partake of the same motion as the spindle, consequently the roller will be driven under the spiral and raise the disks, arms, and hub, together with the valve attachment equal hights—the atmosphere assisting to keep it up by retarding the weights or fans, —and will hold them there. But if the spindle slacks its motion in the least, the weights by their momentum will continue to move on and drive them down in proportion as the spindle is changed, and so on alternately, acting on the principle of a fly wheel loose on the crank shaft. Mr. M. says, "the action of the governor depends on two forces, centrifugal and gravity," and "the balls should move in a certain curve."—You will see that this spiral governor has no "centrifugal" force to actuate it, neither do the balls "move in a curve," the curve being in the spiral near the centre of action, this curve usually being semicycloid or any other curve to suit the work, and the goveror may be driven at any speed and can be varied to suit any requirement. Mr. M. hopes these glaring defects will be obviated before the next World's Fair. The defects were removed before there was a Worlds Fair—in this country at least. I had it on exhibition at the Crystal Palace but found it difficult to attract the attention of the knowing ones. Not an editor to my knowledge noticed it as any thing novel or useful, neither did the jury apparantly see in it anything worthy of more than honorable mention, an article that I have plenty of, from those that have them in use, notwithstanding it has all the qualities you or any other person desire, being unlimited in its mode of construction and action. John Tremper.

[This governor was illustrated on page 244, vol. 8, Scientific American. Mr. T. must excuse the editors and reporters of our daily papers for their oversight: they cannot be expected to possess an accurate knowledge of what is new, good or bad in engineering apparatus. The same apology may be made for the awarding Juries at the Crystal Palace, if we may be permitted to take their decisions for a criterion to judge from.

Putrifaction of Fish by Moonlight.

Messrs. Editors:—It is a very general tradition that fish and meat decompose most rapidly during moonlight nights. I have recently had my attention directed to an explanation of it, which I copy verbatim from page 143 of "Familiar Science," by R. E. Peterson, of Philadelphia. He says:—Ques. "Why is meat very subject to taint on a moonlight night?—Ans.:—Because it *radiates heat* very freely on a bright moonlight night; in consequence of which it is soon covered with *dew*, which produces rapid decomposition."

Now, dew may produce decomposition, but is moonlight essential to the deposition of dew? Will not a deposite take place on a moonless night, when the other conditions of clearness, calmness, &c., are present, as effectually as on a moonlight night? I was not aware that radiation was more rapid on a moonlight night than any other, if the latter were equally clear and still.

Another explanation I have heard, viz., that the chemical ray predominates in the light of the moon, and hence chemical action is produsced more rapidly in it than in sun-light, in which the calorific and colorific rays predominate.

At any rate, be the explanation what it may, all the old housekeepers say it is a fact, and on that account they never hang out their beef in moonlight, when curing it. T. R. J., Jr.

Accomac, Va., Feb. 9, 1854.

[The last explanation of the phenomena appears to be philosophical; but we are not yet positive that fish putrifies more rapidly in a moonlight than any other night: we know it is not so during frosty weather. The question of frozen fish coming alive again, was settled for ever, last year, through the columns of the "Scientific American." Who will settle the question of the effect of moonlight upon meats and fish.—Ed.

To Detect Cotton in Woolen or Silken Fabrics.

Messrs. Editors—I have just read an article in your excellent paper of this week, headed with the above title, in which Dr. Pohl is shown to employ a certain chemical preparation for the detection of "cotton in woolen or silk fabrics," to which you add your more simple yet equally effective test, for this detection, and more readily practiced by every one.

It appears evident that your aim and object is to benefit the whole human family, "both great and small." Therefore I conclude to give another means to test the above, still more simple than yours, or at least more readily attained, inasmuch as the majority of purchasers in retail stores would not feel free to apply a lighted match to ascertain the material of which the cloth is composed, however important it might be to know the fact. My plan, long since adopted, is to draw out a thread and put it between the teeth, by which the material is easily detected; silk, wool, and cotton, each has its own peculiar feeling to the teeth, which, with very little practice, can readily be detected by any one, not only without expense but without attracting particular attention.

L. A. S.

Oakendale Farm, Feb. 10, 1854.

Trial of Reapers.

Messrs. Editors:—As a manufacturer, I desire to enter my protest against any more petty trials of reapers. They cost a great deal and amount to nothing. The decision at one trial is reversed the next week at another, perhaps with the same machines, and often the competitors can show their defeat was owing to some extraneous circumstance, as not having a suitable team, bad driving, or unfortunate management in some way.

A reaper trial is not like a horse-race, where the sole object is to beat, regardless or everything except the coming out ahead; it is, or ought to be, to ascertain surely which is the best machine, and not so much to benefit the owner, as the farmers, who wish to know what kind to buy.

How absurd is it for any set of men—I care not how great their experience and judgement—to take from three to a dozen reapers, perhaps all of acknowledged merit, and by the cutting of two acres each, as was done at the Wooster, Ohio trial where mine was defeated; or even by cutting five or six acres as at the Richmond, Ind. trial where mine was victor, deside positively and absolutely that one reaper is better than all others.

Such a trial might show whether a reaper would work or not, but to judge between rival reapers, of which there are over twenty of established reputation, each having its points of excellence; a long and thorough trial must be requisite, to see how they work in different kinds of grain, and under varied circumstances, and how they wear. A trial to be decisive should go through an entire harvest. One, too, that was thorough and reliable, would be equally available in one State as another. They are also expensive to all concerned. I would therefore propose a general trial on something like the following plan:

Let several State Agricultural Societies unite, each appropriating $200 to $500, and appointing one or two committee-men, in whose experience, judgement and fairness, entire confidence could be placed. Let the committee make their arrangements early as possible, adopt their rules, and appoint time and place of first meeting. They might begin South and proceeding North continue the trial for weeks if necessary, leaving out one machine after another as its inferiority became manifest.

The committee should have all their expenses paid, and perhaps compensation besides; and the cost of removing reapers from place to place might also be borne by the committee, in order to enable every builder to come into the trial; and for this reason I would not require any entrance fee, though some of the larger builders would doubtless be willing to contribute to the general fund. If five or more societies can be got to unite in such a trial, I will contribute $200 to $500, or as much as any other builder.

The surplus funds should be divided to the best machines, say half to the first, one-third to the second, and one-sixth to the third, to be paid in plate or money as might be desired by the winner.

To save time and expedite arrangements, I would suggest to parties interested to correspond with Col. B. P. Johnson, Secretary N. Y. State Agricultural Society, Albany, N. Y. I have not communicated with him, but am quite sure his interest in agricultural matters will cause him to bear the labors with cheerfulness. J. S. Wright.

Chicago Ill. Feb. 7th, 1854.

Electricity as a Motor.

Prof. Lovering, in his eighth lecture on Electricity, before the Boston "Lowell Institute," said:—"Electricity would never be used generally for the purposes of mechanics or locomotion because of its expensive character, twenty-five cents expended in steam being as productive of power as two dollars expended in electricity. It is true that it is used in producing some of the very finest portions of astronomical instruments, in operations where extreme delicacy of motion is requisite, yet *electro-magnetism can no more supercede steam than steam can supercede gunpowder*. Each has its peculiar sphere."

[This is also our view of the subject as it relates to expense, but there is a more fatal objection still to the use of galvanism as a motive power,—we allude to the delicate nature of electro-magnetic conductors in machines, and the sensitiveness of the current to atmospheric influences. Steam is perfectly under the control of machinery, but the electric current is not, at least by any known appliances. An electro-magnetic engine of 10 horse power, by the simple disarrangement of one wire (not easily discovered) will not give out over 1 horse-power. The management of the batteries, also, is difficult and troublesome, and not to be compared in simplicity to the furnaces and boile rs of a steam engine.

Spinning Zinc.

John Newell, of New York City, has invented an improved mode of spinning zinc. Owing to the brittleness of this metal, the production of forms having deep depressions or high projections, by the process termed spinning, has been very difficult, and this improved mode is intended to overcome this diffieulty and render the metal ductile. This is accomplished by the application of coup oil to the zinc before and during the process of spinning, the action of which, upon the metal, tends to increase its tenacity. By this process, lamps and all articles now made of Britannia metal can be produced cheaper than by its use. The inventor has applied for a patent.

Immense Steamship.

A new and powerful steamship called the Himalaya has been built in England for the Peninsular and Oriental Steam Navigation Company. From the Thames to Southampton, her average progress during thirteeen hours that she was under way, notwithstanding unfavorable weather during part of the time, was 13½ knots per hour.

The Himalaya is said to be the largest steamship in the world. She is 3,550 tons register, and equal to over 4,000 tons burden. She is 372 feet 9 inches in length, exceeding the length of the Boston clipper, Great Republic, lately burned at New York, by 47 feet, but not of equal tonnage. The Himalaya is a screw steamer built of iron, and has engines of 700 horse power. She has accommodation for 200 first and second class passengers—stowage for 1000 tons of measurement goods on freight, and can take 1200 tons of coal.

The Steamer Wm. Norris.

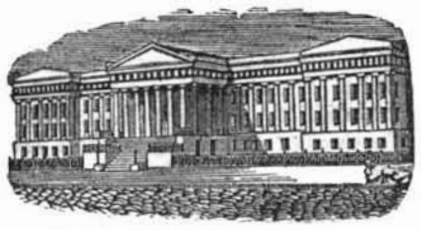
We have seen it stated in one paper that this steamer which is now building, and which Mr. Norris declared would cross the ocean in six days, has been sold to the Czar of Russia, and by another paper to the Sultan of all the Turks.—Both of these reports are no doubt untrue.—These Royal persons—Bear and Turkey, what do they know about the Wm. Norris. Neither the builder nor the engineer can for a moment be accused, of being afraid to stand before the world in endeavoring to fulfil their promise of crossing the ocean in six days.

Half Bricks.

We believe that a benefit would be conferred upon masons, if brickmakers would mould half-sized as well as whole bricks. Half bricks are often wanted for beginning and finishing rows, so as to have every alternate row break joint. To obtain these, the masons have to break whole or trim broken bricks. This occupies considerable time which would all be saved by half mould bricks, of which a certain number might be made for every thousand of whole bricks of the common kind.

Another American Yacht Victory.

A very exciting and agreeable aquatic race lately took place at Melbourne, between the "Pride of the Seas," an American schooner of 240 tuns burthen, by G. W. Steers, of this city, the designer of the "America," and a yacht named the "Lelia," recently built in England, and of a beautiful model. The latter was fairly beaten in a race of about 30 miles.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING FEBRUARY 14, 1854.

PICKING AND CLEANING FLAX.—A. H. Caryl, of Sandusky City, Ohio,: I claim the employment of a picker having teeth hooked in the direction of the rotation and arranged on separate bars so connected with the shaft as to leave open spaces for the free passage of foreign substance as specified, when this is combined with hooked teeth in a series of bars above with open spaces between them substantially as specified, with a current or currents of air to act on the pickers during the operation of combing, and with the rotating brush acting on the picker teeth as specified.

VERTICAL TUBE FEED WATER HEATERS IN LOCOMOTIVE SMOKE STACKS—M. W. Baldwin, and David Clark of Philadelphia, Pa.: We claim the arrangement of the exhaust pipes with a vertical central passage of large section and surrounding passages of similar section, said central pipe and similar passages being open above and below as described.

MACHINE FOR CLEANING WOOL—L. S. Chichester, of Brooklyn, N. Y.: although I have described and represented the form of the ribs, barbs and picker teeth I do not wish to be understood as limiting myself thereto.

Nor do I wish to limit myself to the use of a rotating brush for presenting or feeding the fibers to the ribs and picker teeth, as this makes no part of my invention.

Nor do I wish to limit myself to the form number or manner of making or operating the teeth.

I claim making the edges of the ribs when combined with picker teeth for catching and drawing the fibers through as specified with lateral inclined or curved slats terminating in an enlargement or hole to receive the fibers and guide them away laterally from the picker teeth to prevent them from being chafed or cut between the teeth and ribs as specified.

I also claim making the lateral slots in the edges of the ribs, as specified, and in combination with the picker teeth at or near the portion of that length of the ribs, where the fibers begin to be drawn through, as specified, whereby I effectually avoid the cutting of the fibers.

I also claim uniting the contiguous barbs of any two ribs, and extending them down below the points of the picker teeth, as specified, to prevent fibers from passing without being picked or drawn through.

Finally, I claim in combination with the ribs having lateral slots, as specified, the employment of card teeth interposed between the picker teeth, as stated.

VALVE COCKS—John Griffiths, of Philadelphia, Pa.: I claim the combination of the hollow fixed stem, the solid stem, and the yoked nut, as described.

FIRE AND BURGLAR-PROOF SAFES—F. C. Goffin, of New York City: I do not claim forming safe or door with double casing, for fire-proof safes are at present constructed in that manner.

I claim the use of glass or slag in a vitrified state, for filling the space between the two casings of a safe or vault door, the glass or vitrified slag being poured molten into the space, or inserted in plates which may be secured to the outer casing in any proper manner, and an air space left around the inner casing, as set forth.

PROCESSES FOR TREATING VEGETABLE FIBER—Jonathan Knowles, of Trenton, N. J. Patented in France, April 4, 1853: I am aware that Claussen has proposed to use in his process several of the salts I have mentioned, but in a different manner and with a different effect, but I make no claim to the use of any substance in any process such as he describes, nor in any other in which the bleaching and splitting of the fiber are effected separately.

I claim the method described of preparing vegetable fiber for picking, carding, spinning, and manufacturing into fabrics by such machinery as is usually employed for performing the corresponding operations on ordinary cotton and wool, by first steeping or boiling it in a solution of alkali; second, washing it with water; third, steeping it in a solution of chlorine bleaching compounds, mixed with a solution of splitting salts, to bleach and split it simultaneously; and lastly, washing it with water, and then drying it, as set forth, whereby the reduction of the fiber to its elementary filaments is expedited, and the expense thereof lessened, by dispensing with much of the tedious manipulation and treatment heretofore practiced, while at the same time the quality of the product is improved.

MAKING THICK PAPER—S. G. Levis, of Delaware Co., Pa.: I do not claim the employment of two forming cylinders for the purpose of making paper of increased thickness, as cylinders have been thus used before.

I claim the combination of the two forming cylinders, the two endless felts, and the two squeeze rollers, arranged and operating as described.

FIRE-ARMS—Thomas Cook (assignor to Starkie 'Livesey), of New York City: I claim, first, cutting slots in the tubes of the magazine, and with each tube a spring connected with a ring moving on the outside for feeding up the spring and maintaining the compressed position given at the time of charging the tubes with ammunition, as described, whereby I am enabled to force such charge into the conveyor by power independent of gravity, and to force the hole communicating with the powder, as described; and this I claim, whether the feed ring be combined with a screw exteriorly placed or within the interior of the cluster of tubes, or whether the same effect be produced by or in any manner analogous.

Second, I claim combining the tube magazine with the conveyor, in such a manner that it will be revolved so as to bring each tube of the series successively opposite to the hole through which the charge is fed to the conveyor, whenever and as often as a charge has been transferred to the barrel, as described.

Third. I claim the follower in combination with the cavity of the conveyor and the lever for ejecting the charge into the barrel, as described.

Fourth, I claim the cam groove, in combination with the finger levers, and the cap case to regulate the feed, as described.

MACHINES FOR PEGGING BOOTS AND SHOES—John Standish (assignor to John Standish & H. A. Miller), of Cuyahoga Falls, Ohio: I claim, first, the vibrating guides, in combination with the peg-feeding rack and driver, as described.

Second, the arrangement for feeding up the boot or shoe to be pegged; that is to say, the combination of the boot or shoe, held in a proper clamp, with the traversing frames, and with the irregularly curved rails or guides, as described.

Third, the method of regulating the feed by the rack, pawls, and weight or spring, as described.

DRYING CLOTH—Robert Preston, of North Pownal, Vt.: I claim the arrangement for bringing the bottom layer of the cloth within the drying chamber, to a suitable distance from the bottom of the chamber, so that it may be exposed to a proper and not too intense heat, consisting of the rollers, which are adjustable by racks and pinions or their mechanical equivalents, substantially as described.

SHIPS' VENTILATORS—Warren Robinson, of New Haven, Conn.; I do not claim any part claimed by Enoch Hidden, of New York' in his patent.

I claim the combination of the movable part, with the two inclined planes, when the whole is arranged and combined as described.

HANGING THE FORE PLATE TO IRON ROLLING MACHINERY—Jacob Reese, of Sharon, Pa.: I claim hanging the fore plate of a rolling mill on centers, placed either above or below the level of the rolls, by adding arms to the fore plate, working on a bar or on pivots, for the purpose of removing the fore plate out of the way when the rolls are to be scoured without detaching it from the frame of the mill, as described.

PLANTING HOES—W. G. Sterling, of Bridgeport, Conn.: I do not claim the blade with a tubular handle attached, nor the opening and closing orifice for the discharge of the grain.

I claim the cylinder in connection with the tubular handle and the lever, with the sliding plate attached, as described.

APPARATUS FOR CONTROLLING THE PRESSURE OF STEAM—By H. S. Williams, of Malta, Ohio: I do not claim admitting water from a steam pump or "doctor," for controlling the pressure of steam in boilers, when said water is let on and shut off, by the agency of a float. Neither do I claim causing an alarm to be sounded when the supply ceases or when the pump is not running, through the agency of a float and steam cylinders combined.

I claim opening the water cock of the steam boiler for the purpose of letting on water for reducing the temperature and pressure of the steam, and thereby preventing explosions by means of a plunger and slotted arm, as described, when the supply should be let on by the pressure of the escape steam of the safety valve, and by means of a spring attached to the boiler and slotted arm, when the supply is being shut off. as specified.

I also claim starting the steam pump or doctor running, in case it should not be in operation when the pressure of the steam in the boiler rises above the given point, by means of the escape steam from the safety valve, when admitted to the steam chest of the pump through a branch pipe of that carrying the plunger, said branch pipe being provided with a valve, which prevents the steam from the "doctor" passing into the boiler, when the pump is running, but allows of the steam being admitted to the steam chest when the pump is not running, as set forth.

DROP BRIDGES—J. D. Woodruff, of Newark, N. J., and Joshua H. Butterworth, of Dover, N. J.: We claim the construction of a bridge or draw, which may be dropped below the surface of the water so as to admit the passage of vessels over the same, as described.

MAKING LINKS OF JACK CHAINS—Arcalous Wyckoff, of Wellsburgh, N. Y.: I claim the two fixed stud pins placed at right angles to each other, in combination with the wiper and cutter, operated as set forth, for the purpose of bending the two eyes of the link of the jack chains simultaneously.

GAS BURNERS—John Webster & Orsen Spencer (assignor to John Webster), of Cleveland, Ohio: We claim affixing or applying to a gas burner an oblong or elliptical shaped tube, so constructed and arranged as to deflect a portion of the gas escaping from the burner into the draught of air which passes up between the burner and the tube, so as to produce a more brilliant flame, and more light from a given quantity of gas, as described.

SADDLE-TREES—G. B. Ambler, of Trumbull, Conn.: I claim the combination of the crouper loop in one piece with the water hook, for the purpose of securing either in their respective positions without the aid of screws or other appendages than those herein set forth, and to be used as described.

WATER CLOSETS—F. H. Bartholomew, of New York City: I do not claim the use of the chamber when combined with the supply pipe or hydraulic main, and the basin, by means of the common three-way plug turning cock, operated by the seat, as such combination has been before used in the water closet of Jordan; nor do I claim the puppet valve cock, with two valves, and three ways, as new in itself.

I claim, first, a three-way cock, with parts constructed and combined in the following manner, viz., having one principal chamber through which the water always passes, whether being received or discharged, two openings into which chamber being governed by two valves operated by one stem, so that when one is opened the other is closed by tha same action of the stem, the third way being without a valve, when these are combined with a second chamber for the accommodation of a short continuation of the valve stem, through which the cock is operated, and one of the ways is placed between the principal chamber and the stem chamber. as described.

Second, placing such a cock, as described, above, under the seat, or where it may be out of the way and may be operated by a single rod, when said cock is connected by a tube with a chamber, for the reception and discharge of water under pressure.

Third, I claim in combination with a double valve an eduction way, employable for the double purpose of wasting out the water remaining in the pipes above the cock, when not in actual use, and through means of which, or whereby a communication is provided with a chamber for the purpose of keeping it charged with air, by means of a valve or otherwise, at the same time that the said way is closed by a valve against the escape of water from the chamber, while the seat is depressed.

HORSE BELLS—Jason Barton, of Middle Haddam, Ct.: I do not claim the employment or use of two clappers or balls in each bell, for they have been previously used.

I claim hanging or suspending the tongues within the bells, as described, viz., having the tongues placed over curved holders, which are attached to the pad, said holders being within the bells, and so arranged that the tongues may be placed over them at different points, and thereby be suspended in the centers of the bells, irrespective of the positions which the pad and bells may have when attached to the body of the animal.

MACHINERY FOR PAGING BLANK BOOKS—J. L. Burdick, of New York City: I claim, first, the type holders, as set forth, in combination with the vertical type cylinder, for the purpose specified.

Second, I claim the use of the vertical sliding rod or frame, having a rack attacked thereto, in combination with the double acting crank shaft, and levers for operating the printing hammers, or substantially the same device, for the purposes set forth, and also the combination of the rack with the lever, and rod for drawing out the type holders, or their equivalent devices, substantially as set forth.

Third, I claim the use of the vertical sliding rod or frame, having a rack attached thereto for working the distributing inking rollers, in combination with the tape holding lever or their equivalent devices. as set forth.

Fourth, I claim the use of the vertical sliding rod or frame, having a rod attached thereto, in combination with the lever for operating the type inking rollers or their equivalent devices.

Fifth, I claim the use of the vertical sliding rod or frame, having an arm attached to the cap piece of the frame, in combination with the sliding plate and lever and pawl, or their equivalent devices, for the purposes set forth.

Sixth, I also claim the use of the adjustable table and clamps for holding the book while paging, in combination with the paging apparatus.

MACHINES FOR STUFFING HORSE COLLARS—J. W. Howell, of New Paris, Ohio: I claim the construction of the hopper with an adjustable grate or crib bottom, in combination with the piston, funnel, clamps, and lever, acting thereon, as set forth.

FIRE-ARMS—Horace Smith & D. B. Wesson, of Norwich, Conn.: We do not claim the employment of a carrier or slide for transferring the cartridge from the magazine to the barrel, nor the employment in combination therewith of a piston or slide to force the cartridge out of the carrier and into the barrel. Nor do we claim the employment of a piston slide as a breech to the barrel, nor the firing by "concussion" instead of "percussion."

Nor do we claim the employment of making or applying the percussion hammer so as to strike on the rear end of such piston slide, instead of directly against the cartridge or its priming, and so that the priming at the front end of the slide shall be exploded by concussion produced by the percussion or blow of the hammer on the other end of it. as specified.

But we claim the arrangement and application of the percussion hammer with respect to the breech slide and the trigger guard lever, so that the hammer may be moved and set to full cock by the pressure or back action of the slide induced by the action of the trigger guard lever, as specified.

We also claim the improvement of making the front end of the piston slide with a dove-tailed recess, or its equivalent, for the purpose of enabling the slide to seize the metal of the cartridge, as explained, and so that the refuse metal or cartridge may be withdrawn from the barrel by the piston slide when next retracted and discharged by the upward movement of the carrier, as specified.

MACHINE FOR SCRAPING AND TOOTHING VENEER—Allen Goodman & Lyman Wheeler, of Dana, Mass.: We claim a machine for scraping and toothing veneer, which has a large feeding bed roll around a portion of which the veneer is bent and held, and a revolving cylinder with scraping or toothing tools or knives inclined back from the axis of the said cylinder, so as to have a scraping instead of a cutting position, as described.

BALL VALVES FOR PUMPS—J. R. Bassett, (assignor to C. H. Williams), of Cincinnati, Ohio: I claim the method of aiding and ensuring the operation of the ball valve by means of an intervening or dividing ridge placed between the openings, and forming part of the semi-annular chamber, as described, by which the valve is made to seek apd occupy its appropriate seat when acted on by the discharge water in one or the other direction.

SMUT MACHINES—Jacob Benner, of Liberty, Pa. Additional to original Letters Patent dated Sept. 11, 1847: I claim making the slotted openings in the concave horizontal instead of vertical, as they were in the original patent, as described.

Second, the arrangement and combination of my machine in a close cover, together with the spouts in the manner, as set forth.

DISCLAIMER.

FIGURE AND FANCY POWER LOOMS—Your petitioners hereby enter their disclaimer to that part of the aforementioned specification, which commences "The modes of elevating and depressing the lifter," and ends "true and essential principle of my invention is preserved,"—being the fourth paragraph from the end of the specification; and also enter their disclaimer to the first, second, and fourth claims of said patent, which disclaimer is to operate to the extent of the interest in said Letters Patent vested in your petitioners, who have paid $10 into the Treasury of the United States, agreeably to the requirements of the Act of Congress, in that case made and provided.

M. A. FURBUSH,
GEO. CROMPTON.

DESIGNS.

COOKING STOVES—(Three patents)—Samuel D. Vose, of Albany, N. Y. Ante-dated Dec. 30, 1853.

PARLOR STOVE—Saml. D. Vose, of Albany, N. Y. Ante-dated Dec. 30, 1853.

PARLOR STOVE—N. S. Vedder (assignor to A. T. Dunham & Co.), of Troy, N. Y.

Crystal Palace—Report of the Directors.

The Directors of the Crystal Palace have just published a Report, containing a statement of their affairs. This document is not calculated to raise the stock *greatly* above par. The Company comes out minus $125,000; that is, instead of having made any profits, they have run in debt to that amount—for a part of which they have mortgaged the building. The capital stock is $500,000, and the total receipts were $891,070 72. The amount received for tickets was $330,702 90. The Report states:—"It is apparent, from the foregoing statement, that the disappointment in regard to the financial result of the enterprise is due mainly to the fact of the building not being completed at the time which it was intended, viz.: the first of May, 1853." This was owing to causes over which the Directors had no control. The Exhibition was, with great effort and difficulty, got ready for opening on the 14th of July, and then in a very incomplete state.

"Instead of a period of exhibition of seven months, the Association had in fact but about three; during that three months the sum received, from the sale of daily tickets, was $245-399 90." This is not a satisfactory apology. The largest amount of receipts was taken in the month of October, viz., $108,139 01; since then they have gradually fallen off.

The expenditures have been excessive. The persons who have come off best in the affair are the conspicuous, enterprising, know-how-to-make-money Edward Riddle, the American Commissioner to the London Exhibition. Mr. Riddle and the officers of the Association obtained a lease from our City Fathers of Reservoir Square, for five years, at the nominal rent of $1 per annum, and with their fiush way of paying out the stockholder's money, the Directors paid him $10,000 for this lease. This was cool and bright, was it not? No less than $15,412 97 were paid to Chas. Buschek, Gen. Agent, and Col. Hughes, Special European Agents. The Company purchased the bronze statue of Kiss's Amazon, from the former gentleman, for $10,000. The cost of erecting the building, independent of decorations was over $500,000, an enormous sum. It is a beautiful building, but it would have been well if the Association had taken our advice, and adopted the plan of Mr. Bogardus, as it would have been quite as imposing, and could have been taken apart afterwards, and erected into a number of beautiful iron houses, in any part of the world. The adopted building cannot be used for any other purpose than the one for which it was erected, *i. e.*, it cannot be taken apart and re-erected. An election of managers, is to take place next month. We hope that good ones will be chosen,—men who will infuse a new spirit into the affairs of the Association for the benefit of exhibitors and stockholders. It is intended to make the Exhibition permanent; this we think is not an unwise conclusion,—perhaps the only really wise one the present Directors ever made. Such an Exhibition, in New York City, under proper management, we believe, can be made to pay good dividends, and render a great benefit to the public at large. The present Directors have mismanaged all but their own affairs, badly; this is very evident. How much stock they now own we cannot tell—probably they sold out when the shares were 100 per cent., higher than they are at present, and they no doubt had much to do with their temporary inflation. We are quite positive that the Exhibition would have paid well this year, had it been properly managed; let able Directors now be chosen, and it will rise, Phœnix-like, into prosperity.

Steamships Beaten by Clippers.

The clipper ship Red Jacket made a recent voyage from this city to Liverpool in 13 days, 1 hour, and 25 minutes, which is something remarkable considering the extremely boisterous weather she encountered throughout the passage. On one day she ran 413 miles.

She had the wind from the S. E. to W. S. W., the whole passage with very stormy weather, either snow, rain or hail the entire voyage, bnt she received no damage, and arrived in port without the loss of a single rope yarn.—She run 15 knots on the wind, and 18 with the wind abeam.

The Red Jacket is a beautiful clipper ship of 2400 tons burden, and was built in Rockland, Me., by George Thomas.

Not one of the Collins or Cunard steamers have ever run 413 miles in one day, so that we may safely conclude, that our marine Steamships, have not yet attained to their maximum speed.

India Rubber Patent Case.

On the 16th inst. by Judge Betts, U. S. Circuit Court, this city, an injunction was granted against the New England Car Spring Co., on the petition of Horace H. Day, for infringement of the Chaffee patent. The injunction was ordered to issue unless security to abide the decrees of the Court is put in by the defendants in the sum of $25,000. Horace is now turning the table on his former pursuers; such is the mutability of human affairs; india rubber is a tough subject.

Zinc Applied to Ship-Building.

A sloop built of zinc, with iron framing and wooden decks, called the "Comte Ldhon," has been constructed at Nantes, France, by Mr. Gulbert, and named after one of the directors of the Vieille Montagne Company. She is elegant in form, draws but little water, and is considered in every respect a first-rate vessel. The command was given to Capt. Jouanno, of Lorient, and her first voyage was to Rio Janeiro, from which place she has just returned. The captain reports that the experiment has been highly satisfactory; she has proved an excellent sea-boat in repeated gales, which she had to encounter; and one fact is stated of much importance—that her compasses had never been in the slightest degree affected, a circumstance which often happens on iron ships, by which serious casualties have occurred.

Guano from Sea Weed.

A new patent substitute for guano, consisting of decomposed and concentrated sea weed, is about to be introduced in England, by a Mr. Longmaid, with the purpose of claiming the prize of $5000 offered by the Royal Agricultural Society. The material is reduced to powder so as to be applicable by the drill. A large number of experiments to test its fertilizing properties have been made dmring the past year. An analysis has been published by Professor Way. The process is stated to be very simple, and the price estimated at $25 per ton or under, and it is proposed starting manufactories at various points on the coast.

Another Gas Explosion.

An explosion of gas took place at Nashua, N. H., one evening last week by which a number of persons were injured and a house shattered to pieces. It was caused by introducing a light into a cellar, where there was a strong odor of gas, caused by its escape from a leaky pipe.—The person who introduced the light was not a reader of the Scientific American, or he would not have acted so unwisely, after what we have said in reference to such cases.

New Inventions.

Improved Car Axle.

John Case, of Millford, N. J., has invented an improvement in car axles, on which he has application for a patent. The nature of this invention consists in strengthening the axle and wheels by means of a strong wrought-iron tube in combination with strong elbow-shaped braces. The tube extending from the inner face of one wheel to that of the other, serves to encase the axle, and fits snugly over hubs projecting from the inner space of the wheels, and is secured fast to said hubs by means of strong bolts and wrought-iron straps, which are riveted to the tube and bolted fast to the hub.

Improved Slotting Machine.

P. Williams, Sec., of Barre, Mass., has invented an improvement in slotting machines for cutting key seats in hubs of wheels, pulleys, and all articles required to be keyed on shafts. The invention consists in securing the mandrel in the top of the column which supports the hub, so that it may serve with the aid of a key to hold the hub in place, containing also a slot on the side in close contact with the hub, which serves as a guide for the tool while cutting the slot in the hub. A peculiar combination of parts, consisting of a wedge, screw, and spring, and the mode of attaching the tool to the stock are also embraced in the claim.

Improved Cannon.

W. H. Harbaugh, of Piqua, Ohio, has invented a new mode of loading and discharging cannon, which consists in having a rod pass longitudinally through the bore of the cannon, on one end of which rod is a plunger corresponding in size with the bore. The cannon is loaded by attaching the cartridge to the plunger, and drawing it inward to the breech, where it is exploded by a rod inserted within the plunger, said rod being, by striking against the breech, forced against percussion powder at the end of the cartridge. The inventor has applied for a patent.

Screw Cutting Machinery.

Ebenezer H. Plant, of Southington, Conn., has invented an improvement in machines for cutting screws, on which he has made application for a patent. The machines commonly employed for screwing bolts contain only one mandrel and set of dies, and each machine requires one attendant. The object of this invention is to arrange and combine in the same machine two or more mandrels and sets of dies, in such a manner as to bring all the dies at one end of the machines within the control of one attendant, so that two or more bolts can be cut at the same time.

Improved Temple for Looms.

Heman Turrell, of Birmingham, Conn., has invented an improved jaw-temple, on which he has made application for a patent. The invention consists in an improved method of opening the jaws of the temple to liberate the cloth at the termination of every beat of the lay, and also in certain mechanism by which the temple is held in place during the proper operation of the loom, but is set free so as to be driven forward when the shuttle fails to enter the box, and is arrested in its motion, and thereby caught between the temple and the reed.

Improved Water Closet.

Alex. Edgar, of New York City, has invented an improved water closet, which consists in the employment of a double cock connected with a reservoir and outlet pipe, and operating in such a manner that the water is admitted alternately into the pipes. The cock is connected with a system of levers attached to the seat, so that a person using the closet will depress the seat and open the cock. The inventor has applied for a patent.

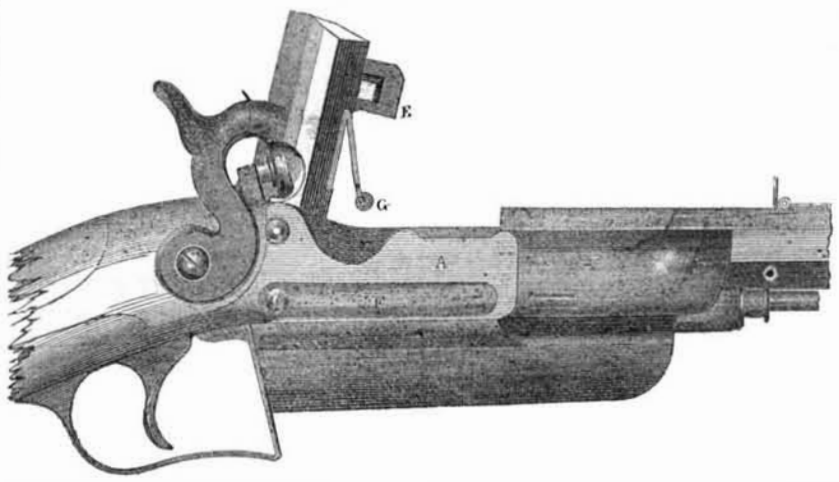
Card Grinder.

P. Z. Freeman, of Natick, R. I., has invented an improvement in machinery for grinding cotton cards, on which he has made application for a patent. The nature of this invention consists in providing one end of the shaft which carries the emery roller with a right and left-hand screw thread, so as to give the roller a horizontal reciprocating motion in addition to its rotary one, for the purpose of rendering the grinding more accurate and uniform. This is effected by combining with the screw threads a forked reversible follower or roller. It is a very ingenious contrivance.

A New Fire-Arm.

The Boston "Courier" mentions a pistol now in the market, which it says is entirely different from any ever before offered to the attention of the public. It has a revolving hammer instead of a revolving cylinder, is loaded by unscrewing the barrel, which exposes the chambers, and is not at all liable to become inoperative by corrosion or rust, as all the working parts are contained within the stock or breech. The great objection to it is, that it requires a barrel for every charge in the cylinder.

BREECH-CHARGING AND SELF-PRIMING RIFLE---Fig. 1.



This new arm, which has been patented by the inventor, M. J. Gilby, of Beverley, England, in Europe and the United States, is assumed to possess the following advantages:—

1st. Peculiar facility for rapid charging at the breech, either with flask and ball, or with cartridge.

2d. Superior strength, with accuracy and security in firing.

3d Freedom from fouling, until after very long and rapid shooting.

4th. May be used without "patches" over the ball, as well as with them.

5th. Is as light and handy as a common rifle and balances better in the hand, and, of course, requires no ramrod.

6th. Being simple, and easily managed, it is equally well adapted for sporting or military purposes.

Fig. 1 of our engravings is a side external elevation of the rifle lock, with portions of the stock and barrel; and fig. 2 is a corresponding longitudinal section of the same parts.

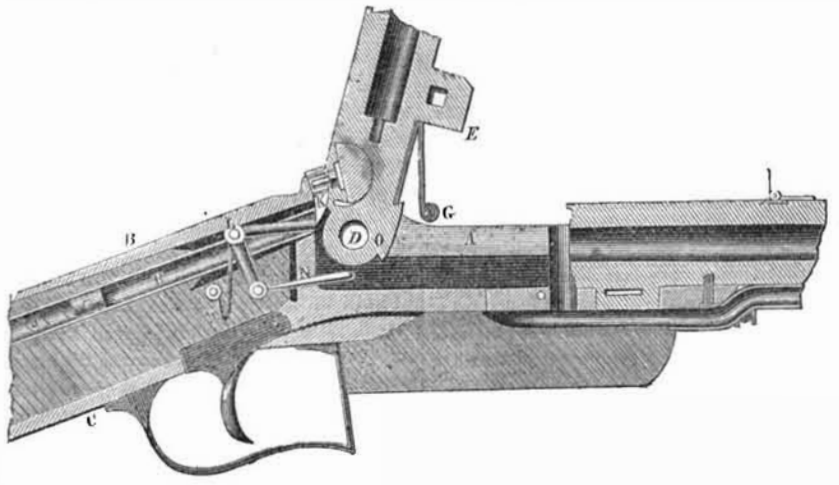
A breech-case, A, occupies a great part of the space usually taken up by the forestock, connecting the stock and barrel as firmly as if these parts were in a single solid piece. The fastening to the barrel is effected by transverse steel bolts, while a breech-plate, B, secures it to the stock above and trigger-plate, C, below. The breech is detached from the barrel, and has a joint at its end, D, the bore of the breech being slightly larger than that of the barrel.—

At its fore end is a loop, E, having a rounded projection, which works a spring-catch, F; so that, when the breech is shut down, after charging, the spring-catch enters the loop, and thus holds the breech securely.

In rifles of large bore, a steel bolt, passing through the loop, and completely across the breech-case, is substituted for this "catch," and, therefore, in no case can the breech be shifted during the discharge. A spring, G, with a roller attached to it, is fastened to the under side of the breech, to throw the latter up for charging; and it is readily liberated, when required, by a stud and pin on the left side of the breech-case, working against the catch or bolt, and moved by the left hand, as the rifle is held in the usual manner.

The ends of the barrel and breech are cut at similar angles, so that the fitting surfaces are

Figure 2.



brought into direct actual contact round the entire circumference of the bore. The gaseous escape during discharge is very slight; but to carry it off, a groove is cut in the circumference of the breech-case, round the junction of the barrel and breech, and an aperture is left in the bottom of the breech-case, opening into an escape tube, fastened along its under side. By this means, the "fouling," so often complained of in breech-charging guns, is effectually prevented.

The lock is situated on the left side of the rifle, and the tumbler-pin is brought through the stock, so that the hammer occupies its usual position. This leaves room for the priming apparatus, which fills the space commonly assigned to the lock. But when no primer is required, the breech-charging priciple alone being applied in the piece, the lock obviously occupies its usual position.

At H, in the stock, is a metal tube, of a bore sufficiently large, to admit the caps, running along it end to end, with a spiral spring, J, inside, to force them forward as required. This tube is inserted at the butt end of the stock, and is continued far enough to reach up to the detent, K, which moves on a pin at L, and is forced up by the spring, M. At N is a small connecting-rod, passing through the breech-case, and acted on by a shoulder or projection on the joint of the breech at O, when the breech is shut down, forcing the detent down at the same time. A hole in the part of the detent, just opposite the end of the tube, H, now receives a cap, forced into it by the spiral spring in the tube. Thus the store of caps is closed against the influence of the weather; and in this position they remain until they are brought up, one by one, by the action of the priming apparatus; and the nipple is projected into them as they arrive, by the upward motion of the breech, so that the latter is primed by its own movement. After charging, the breech again is shut down in its place, carrying with it the cup just put on. The primer is more especially adapted for rifles of a bore above 40, but it is capable of use in smaller pieces.

Locomotives for Steep Inclines.

John C. Trautwine, of Philadelphia, Chief Engineer of the "Coal Run Improvement R. R. Co." has made a report to the Directors, in which it is stated that the grading of five miles of the road will be 150 feet to the mile. This greatly exceeded the limits at which ordinary locomotives cease to be economically efficient, especially for heavy freight. He however confidently recommends it, in connection with the use of the locomotive of G. E. Sellers, of Cincinnati. The report says:—

"Mr. Sellers has for nearly twenty years been engaged in the planning and construction of locomotives, and is, at this moment, at the head of that department in one of the most extensive establishments in Cincinnati.

In his engine, adhesion is obtained, not by the weight of the engine alone, but by pressure produced by the load itself. This pressure is made to operate by means of two horizontal adhesion wheels or rollers, which act upon the opposite sides of a center rail. The force with which they press the rollers, is (by means of a most ingenious device) made to adjust itself instantaneously to the varying resistance to be overcome, whether that resistance be modified by an increase, or diminution of load, or by change of grade.

I have seen a small working engine on Mr. Seller's principle, ascend and descend a grade of 276 feet per mile, with the same loads that it could barely start on a level. On this grade the engine was under the most perfect control of the engineman. The experiments with this engine were witnessed, for some days in succession, not by myself only, but by several of the most eminent civil and mechanical engineers in the country."

We saw this model in operation in this city six years ago, and it performed well on the grade here mentioned. Since that time we have heard nothing of it, and it seems that it has not yet been applied on a large scale on any railroad. We hope it will now receive a fair trial.

Planing Machines—Interesting Patent Decision

On another page will be found an advertisement respecting a recent decision of the Supreme Court of the United States, in the case of the Woodworth and the Norcross Planing Machines. The decision was made on an appeal from a decree of the U. S. Circuit Court for the District of Massachusetts, wherein the machine of Norcross was held to be no infringement of the Woodworth patent. As the Supreme Court of the U. S., does not decide questions of fact, this decision (which we have not yet seen) circumscribes the claims set up by the owners of the Woodworth Patent. The decision of Judge Sprague, of Massachusetts, from which the appeal was taken, was to the effect that the Woodworth Machine was but a simple improvement on Hill's, and that the Norcross Machine was also an improvement, and a different one. This decision is confirmed. "Justice to whom justice is due," and "honor to whom honor is due."

Cementing Leather Belts.

We have received from H. Underwood, foreman at Rees & Hoyt's, 37 Spruce street, this city, a sample of leather belting composed of two layers of leather, cemented face to face, with a peculiar cement, which is adhesive, both in water and the atmosphere. It appears to have united the two pieces of leather as firmly as the fibres of the material are united to one another. It is the best piece of leather cementing for belting that we ever saw.

Since the discovery of gold in California, six hundred vessels have gone round Cape Horn and never returned.

Scientific American.

NEW YORK, FEBRUARY 25, 1854.

American Scientific Literature.

Invidious comparisons between the great men of our own and those of other countries, and of science as cultivated here and in other countries, exhibit either envy or vanity. The great and the truthful require no inflated panegyrics of friends, and they have nothing to dread from the censure of foes. The true fame of no country can be increased by detracting from that of another; and that man is the best friend of his country, who points out her faults, for he incites her to deeds of true glory.

There is, no doubt, a natural and honest national pride experienced in the consideration of our own native land being the birth-place of great men; and our feelings grow warmer when we speak of Franklin and Rittenhouse, than of Wollaston or Ferguson. America has added greatly to the domain of science, and we feel proud of her achievements, but she can and must do more.

What is our country now doing to increase her scientific fame? Much, no doubt, in every department of science and art. Our countrymen have made many valuable contributions to astronomy during the present age; and an American lady—Miss Mitchell—maintains an honorable position among the living explorers of the starry heavens. Learned societies and an admiring monarch have awarded her prizes, and presented her tokens of admiration. In electro-magnetic discovery, no nation, perhaps, equals our own. In chemistry and geology, we have many eminent names. For new and useful inventions, no country in the world, possessing an equal number of inhabitants, is so prolific, and it is to this feature in her progress, that we wish to direct attention, at present, by way of comparison.

Do we, as a nation numbering twenty-four millions of inhabitants, stand out equal to France or England in respect to scientific fame? Not if the general literature of some of our Scientific Associations, is to be taken as a criterion. We know that there are men in our country whose scientific reputation is inferior to that of no others in the world; we speak not of them, we merely allude to what may be termed the Scientific Literature of some of our "Learned Associations," which, in our opinion, does no great credit to our country. This opinion is formed, from reading some of the transactions of "The Smithsonian Institute," "The American Association for the Advancement of Science," and the "American Academy of Arts and Sciences." There is much in the proceedings of these Associations which is really valuable and instructive, but we really did not believe until latterly that such an amount of useless matter could have emanated from Bodies having such a reputation for learning and scientific acquirements—it is more conspicuous for futility than utility.

In all that relates to the practical and useful, our countrymen are pre-eminent, and we are not a little flattered that this should be so, in the particular departments to which the "Scientific American" is more immediately devoted. This is acknowledged by our foreign scientific cotemporaries, who speak of it in such flattering terms as to afford us no small reason for congratulation. The influence of such literature for good, is all powerful, and the more so as it is popular. This we know it is, both at home and abroad, among all men and all classes, for science is democratic. Learned professors in our colleges, and mechanics working at the forge, contribute equally to its columns—and being the mirror of American popular science, it has quickened the genius of thousands of our people, and incited them to useful and successful efforts in every branch of the useful arts. This is the spirit we have always cultivated—it tends to progress and improvement, the welfare, elevation, and true fame of our people.

Sewing Machine Controversy.

We are frequently questioned by those who feel interested as to the probable result of the controversy now pending before the Commissioner of Patents, upon the claim to the eye-pointed needle and shuttle for forming the interlock stitch in sewing machines. Our own impression is, that Howe's claim will be sustained; should, however, Hunt establish his claim to originality, we believe that the Commissioner will decide that he cannot be regarded as having a title to a patent, on the ground of abandonment. We cannot conceive of a subtlety sufficient to make out any just claim on the part of Hunt, and we shall be surprised if the Commissioner does not so decide. Seventeen years is a *little* too long to allow an invention to slumber in obscurity, after the inventor has had it in successful operation, as Hunt asserts that he has, with the eye-pointed needle and shuttle.

The Late Telegraph Decision.

Since we noticed the decision of the Supreme Court of the United States, on page 173, relating to the "Great Telegraph Case," on which the Court passed its opinion of the legality of the claims of Prof. Morse's patent, we have seen a great number of articles, *pro* and *con*, on the subject, in various papers. We stated on the page referred to, that the Court had decided according to the doctrines, we had advocated in the Scientific American, namely, that an art, independent of the means of carrying it out, is not patentable. The eighth claim of the Morse patent was declared by the Court to be invalid. That claim is as follows:—

"I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims, the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for the marking or printing intelligible characters, signs or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer."

This decision simply means, that independent of the means to accomplish a result—the machinery to produce the effect—a patent, if granted, is void. It was upon such grounds that we attacked the decision of Judge Kane, on page 67, Vol. 7, "Scientific American," wherein he stated that Morse's patent was founded on two patentable subjects; the one on the discovery of a *new art*; the other the means of practising it." What now becomes of the "discovered new principle," so strongly insisted upon by the Hon. Amos Kendall, in his letter to the "Scientific American," on page 170, Vol. 8."

The art of Telegraphing is not claimed in the patent of Prof. Morse, but the art of recording messages by the motive power of electro-magnetism as embraced in this eighth claim. The appeal on which the above decision was made, had no connection with the House *Printing* or the Bain *Chemical* Telegraphs, but as the fifth claim of the Morse patent is for the alphabet composed of recorded *dots*, *spaces*, and *horizontal dashes*, to represent words and numerals, it may prevent the use of the chemical telegraph, for which the same symbolic alphabet is used. But this has nothing to do with the principle of action of the two telegraphs, which are as different as night and day, and we think that for Morse to sustain a suit against the chemical telegraph, the result of the two being obtained by quite different means, his alphabet should be embraced in a separate patent, as the product of a process, independent of the means of obtaining it. In either case it does not affect the use of the Roman alphabet of the House Telegraph; nothing can do this but a decision that all methods of recording electro-magnetic telegraph messages, are infringements of the Morse patent, like that of Judge Kane; but this decision of the Supreme Court, rejecting the eighth claim, precludes the possibility of such a decision in any of the Circuit Courts. This very point is discussed favorably to the Morse claim in a letter to the Baltimore "Sun." As we believe the author of that letter to be mistaken in his views, and as truth is our aim, we will quote them, and present our opinions on the subject. He says:—

"The Court maintains the fifth claim, which patents Morse's Alphabet. The Roman Letters which House prints, though not the same in form, are precisely the same in substance.—Morse's dot is equivalent to House's E, and House's E, is equivalent to Morse's dot. Both convey precisely the same idea to the mind.—So it is through the whole Alphabet. Letters of precisely the same sound, and having the same name, assume different forms in our own language, and still other forms in other languages, and even other names. If I have a patent for making an E, in one form, can any other person get a patent to make the same letter for the same purpose in another form?

Letters used telegraphically are not *results*; but they are *instrumentalities*. They are apart of the means used to communicate ideas from one mind to another. The court decides that instrumentalities are the only proper subjects for protection by patents, and that when patented all equivalents are infringements."

These views in defence of the Morse alphabet are exceedingly funny. Letters, according to his theory, are not telegraphic *results*, only *instrumentalities*. The persons, therefore, who receive messages by Morse's Telegraph—the receiving operators—must be the *telegraph results*. How innocently he asks, "if I have a patent for making E in one form, can any other person get a patent for making the same letter for the same purpose, in another form?" Certainly he can, sir. Your views of the question, if sustained, would give Prof. Morse a patent for *all* written languages. Did he invent any alphabet but his own? Did he invent the old Roman alphabet? No. How in the name of common sense, then, can any of his friends claim for him the exclusive use of that which he never invented; of that which was used by a civilized people, when the forefathers of Prof. Morse and House could not scribble a sentence, although they no doubt knew the difference between a *result* and an *instrumentality*—a sword and a cloven head? It is very unwise for the friends of the Morse patent to set up such absurd claims; they do not require to do so, for they have so many strong ones to stand upon, that it seems to us they weaken their cause by assuming such untenable positions. We have always accorded to Prof. Morse the honor of being the first inventor of using the power of an electro-magnet, to record telegraph messages, and this claim, we think, he can sustain against the world. His invention is a beautiful and useful one; he is a benefactor to his race, and his telegraph is an honor to our country.

Fire-Proof Buildings for Places of Public Amusement.

We see it stated that a new Metropolitan Hall, is to be erected in this city to take the place of the one recently destroyed by fire. If this be so, we would direct the attention of the public to the necessity of having it, and indeed all other buildings of similar character wholly fire-proof. Motives of economy alone should lead to this if there were no more imperative considerations. An additional expense of a few thousand dollars properly expended at the time when the noble edifice of which we have spoken was erected, would have preserved it from the disastrous conflagration which has buried it in ruins. Indeed, the additional expense would not have been so much as the aggregate of insurance would have amounted to in a few years.

It is well known that the rates demanded by insurance companies on this class of buildings is enormously high, and we think we are speaking within due limits when we say that an insurance covering the whole value of the building, if such could be effected, would, in ten years, amount to much more than the expense incurred in rendering such a building fire-proof at the time of its erection.

But there are other considerations more important than these. Suppose the recent fire at the Metropolitan Hall had broken out when it was closely packed with human beings, as it was on some of the evenings during the continuance of Jullien's Concerts. The consequences would have been too horrible for pen to portray. Even an alarm of fire in such a building, though it was certain that it could not spread to a dangerous extent, would probably cause the death of many. To prove that this is not all fancy, we need only refer to the burning of the theatre in Montreal a few years since.

The means of egress from these buildings should also be ample. The vomitories of all our Theatres and Concert Rooms are altogether too small, and we would urge attention to this point. They might be usually closed, but if made to easily open outwards, they could be made available in case of an alarm of fire. At any crowded gathering there is generally much difficulty from the narrowness of the aisles and egress passages.

We think this should be made a subject of legislative interference. We know well that such buildings are generally erected by those who are not likely to be most careful of the public safety, and there is no good reason why they should not be compelled to do what they would otherwise be most likely to neglect.

Though the danger to human life is not so great in the case of other public buildings, yet there are ample reasons why all of these, of whatever kind should be built fire proof. They generally contain valuable public documents and the rescue of them from the flames, often endangers the lives of the firemen. There is a probability that several important public edifices will be erected in this city within the coming year, and we hope that due attention will be given to this matter by the authorities. The example, if several splendid structures of this kind should be erected would be very valuable. Let the press and the public speak out relative to this matter.

Pure and Impure Gas.

It is the duty of our Municipal authorities to see that our city is supplied with pure gas for illumination. They should therefore—not unfrequently—have the gas as it comes from the burner pipes, analyzed by a competent chemist. We are confident that much of the gas which is supplied by our city Gas Companies, is very impure. All coals contain carbon, hydrogen, oxygen, and nitrogen; and bituminous coals in general, contain some sulphur. In the distillation of coal to produce illuminating gas, a considerable quantity of ammonia comes over, which, if not completely separated, is carried off with the gas, and detracts from its illuminating powers. It is also injurious to the health of the people, by mixing with the atmosphere, and being inhaled at every respiration. Being exceedingly volatile, and yet not difficult to condense,—much of it escapes through leaks in the large gas conductors, and condenses in the soil beneath the streets and buildings; this is evident, when any of our streets are trenched for the purpose of examining pipes or opening drains. An odor of ammonia is always observable for a considerable space around an exposed street excavation. If this is the case now, how much worse must the evil be in nine or ten years from the present date? The continued accumulation of such an impurity in the soil beneath our streets, will, in the course of time, find its way into drains, ooze out into the atmosphere and pollute it. Nothing but pure carburetted hydrogen should ever be suffered to pass from the gas reservoirs into the conducting pipes; every impurity should be removed from it in the course of the manufacture.

If there is any sulphur in the coal from which gas is made, it results in the production of sulphuric acid, which, if not separated in the "Purifier," such a product will injure books and cotton fabrics which may be in the apartments where the gas is burned. Cannel coal being free from sulphurets, is to be preferred for making gas; and if *our* Gas Companies do not now use the American cannel in place of bituminous coal, they exhibit an amazing want of good sense and sound information, in relation to the best kind of coal to employ in their business. Will our Reform Common Council pay some attention to this subject?

Ointment for Chilblains.

Take olive oil 10 oz., turpentine 3 oz., yellow wax 1 oz., balsam of Peru 4 oz., and camphor 10 grains. Melt all these together in a clean earthenware vessel under a gentle heat, and when they are all well incorporated it is fit to be put up in boxes for use by rubbing. This is for broken chilblains. For unbroken chilblains, the following composition makes a good salve:—Olive oil, 2 oz., turpentine 1 oz., and 20 grains of sulphuric acid. These are all mixed together cold and well stirred. It is applied to the chilblains morning and evening, by being well rubbed in with the hand.

Characteristics of Gold, and the Manner of Distinguishing it when Found.

Gold *invariably* exhibits something of the peculiar yellow color which it is known to possess in a pure state; but this color is modified by various metals with which it may be mixed. Thus it may be described as having various shades of gold-yellow; occasionally approaching silver-white, occasionally resembling brass-yellow of every degree of intensity, and even verging on steel-gray in some specimens from South America.

The lustre of gold is highly metallic and shining, and owing to the small amount of oxydation at its surface, it preserves its shining lustre even after long exposure in contact with other substances. Thus the shining particles are often seen in sand when the quantity is barely sufficient to repay the cost of working, notwithstanding the value of the metal. Even however, if the surface is dull the true color and appearance are easily restored by rubbing, and when polished it takes a very vivid lustre, which is preserved for a long time in the atmosphere.

Native gold seems with some slight modifications to agree with the geological relations of its varieties; yet any mode of arrangement deserves little serious notice. The gold-yellow varieties comprise the specimens of the highest gold-yellow colors, though there are some among them which have rather a pale color; they include most of the crystals and of the imitative shapes, in fact the greater part of the species itself. The brass-yellow native gold is confined to some of the regular and imitative shapes of a pale color (which is generally called brass-yellow), and, as it is said, of a less specific gravity than the preceding one; but this does not seem to ever have been ascertained by direct experiment. The grayish-yellow native gold occurs only in those small flat grains which are mixed with native platina, and possess a yellow color a little inclining to gray; they are said to have the greatest specific gravity of them all. The real foundation of this distribution seems to be the opinion, that the first are the purest, the second mixed with a little silver, and the third with platina. It is not known whether the latter admixture really takes place, but is certain that several varieties of gold-yellow native gold contain an admixture of silver.

In color and lustre, inexperienced persons might mistake various substances for gold; these are chiefly iron and copper pyrites, but from them it may be readily distinguished, being softer than steel and very malleable; whereas iron pyrites is harder than steel, and copper pyrites is not malleable; for although the latter mineral yields easily to the point of a knife, it crumbles when we attempt to cut or hammer it, whereas gold may be separated in thin slices, or beaten out into thin plates by the hammer. There can thus be no possible difficulty in distinguishing these various minerals in a native state, even with nothing but an ordinary steel knife. From any other minerals, as mica, whose presence has also misled some persons, gold is easily known by very simple experiments with a pair of scales, or even by careful washing with water, for gold being much heavier than any other substance found with it (except platina and one or two extremely rare metals), will always fall first to the bottom, if shaken in water with mud, while mica will generally be the last material to fall. This is the case however fine or few the particles of either mineral may be.

Gold therefore can be distinguished by its relative weight or specific gravity, and by its relative hardness, from other bodies which resemble it. It is described generally as soft, completely malleable and flexible, but more accurately as softer than iron, copper or silver, but harder than tin and lead. It is useful to know facts of this kind, as a simple experiment that can be made with instruments at hand, is often more valuable than a much more accurate examination requiring materials not immediately available. Thus if it is found that a specimen (perhaps a small scale or spangle) is readily scratched by silver, copper or iron, and scratches tin and lead, it may, if of the right color and sinking rapidly in water, be fairly assumed to be gold.

The weight of gold, as of all substances, it is convenient to estimate relatively, and in comparison with the weight of an equal volume of water. The relative weight, or specific gravity as it is called, of gold is remarkably high, the lightest varieties being twelve times heavier than water, and pure gold nineteen times.—This is expressed by saying that the specific gravity of native gold is 12—19, and the number determined by comparing the weight of the mineral in water and air.

When a piece of gold is broken (which is not done without difficulty—greater in proportion to its purity), the fractured edges are very uneven and torn, exhibiting a peculiar fibrous appearance, known to mineralogists as "fine hackly." This fracture indicates that the mineral is torn asunder and not really broken, and is a proof of considerable toughness.

The form in which gold is found is various. It is sometimes crystalline, in eight or twelve-sided regular figures, passing into cubes, but the crystals are generally small and rare. In case of such crystals being found, it is well worth knowing that they possess a value as mineralogical specimens far beyond that of the gold which they contain.

More frequently the metal is found in lumps or grains, called by the Spaniards pepitas, varying in size from that of a pin's head to masses weighing nearly 100 lbs. troy.

The gold of California yields 89-58 per cent. pure gold, and is therefore about equal to that obtained from the washings of Miask (the richest district in Western Siberia, and that producing the largest pepitas), and superior, as the assayer remarks, to the gold dust from Senegal.

There is a remarkable mixture of native gold with silver occasionally found in Siberia, and known under the name of "Electrum." Its color is pale brass-yellow, passing into silver-white. It occurs in small plates and imperfect cubes, and possesses many of the characters of pure gold, but it consists of only 64 per cent. of that metal and 36 per cent. of silver. It is at once known by its low specific gravity, which does not exceed 12.

Other mixtures of gold are (1) a rhodium-gold found in Mexico, and containing 34 to 43 per cent. of rhodium, having a specific gravity of 15·2—16·8, and a clear, dirty yellow color; and (2) a palladium-gold (containing 9·85 per cent palladium, and 4·17 per cent silver) found in Brazil and elsewhere in South America, in small crystalline grains of pale yellow color.—All the varieties of gold are readily fusible into a globule, which, when the gold is pure, is unaltered by the continuance of the heat. In this respect it differs entirely from iron and copper pyrites, which, on being exposed to the flame, give off sulphur fumes and undergo considerable change. In the case of gold containing other metals, these, with the exception of silver, may generally be got rid of by continuing the heat in the exterior flame with the addition of a little nitre. Before the oxy-hydrogen blowpipe, the metal is volatilized in the form of a purple oxyd.

Gold is not acted on by any the acids alone. When exposed to the mixture of nitric with hydrochloric acid (in the proportion of one part nitric to four of hydrochloric) called aqua regia, it dissolves without residue, the solution giving a purple precipitate with protochloride of tin, and a brown precipitate with protosulphate of iron. Electrum, the mixture of silver with gold alluded to, is only partially soluble in aqua regia, giving a residue of chloride of silver. The solution is acted on by protosulphate of iron.

The following simple mode of detecting attempts at imposition in gold dust is worthy of being recorded in this place.

Place a little gold dust in a glass tube or earthenware saucer and pour nitric acid upon it: then hold the glass or saucer over a flame, or upon a few embers, until red flames (nitric vapors) arise; if it be pure gold, the liquid will not become discolored; but if pyrites or brass-filings should have been mixed with it, the acid will become turbid, green and black, discharging bubbles of gas. After the ebullition has ceased, the residue should be washed with water, and acid again poured upon it, when the same effect may be observed, but in a less degree; and if the experiment be repeated till all effervescence ceases, it will finally leave the gold-dust pure.

The examination of rocks suspected to contain gold is a very simple matter, although the most convenient mode of actually obtaining the gold from the associated sand, mud or gravel, necessarily involves mechanical contrivances, and requires careful consideration. When a rock is supposed to be auriferous, or when the sands or other alluvial matter of a district are to be examined for gold, the rock should first be pounded fine and sifted:—a certain quantity of the sand thus obtained must be washed in a shallow pan, and as the gold sinks, the material above be allowed to pass off into some receptacle. The largest part of the gold is thus left in the angle of the pan; by a repetition of the process a further portion is obtained; and when the bulk of sand is reduced to a manageable quantity, the gold, if in too small a proportion to be readily removed (or the residuum in the latter case after the richer particles have been carried away), is amalgamated with clean mercury; the amalgam is next strained to separate any excess of mercury, and finally heated and the mercury expelled, leaving the gold.—In this way, by successive trials with the rock, the proportion of gold is quite accurately ascertained. Where the rock or gravel is rich, the amalgamation is unnecessary in a first trial, sufficient being obtained at once to give a large profit without any furthur process than simple washing.

Soap Moulds for Die Sinking.

Dr. Ferguson Branson, of Sheffel, writing in the Journal of the Society of Arts, says: "Several years ago, I was endeavoring to find an easy substitute for wood engraving, or rather to find out a substance more readily cut than wood, and yet sufficiently firm to allow of a cast being taken from the surface when the design was finished, to be re-produced in type-metal, or by the electrotype process. After trying various substances, I finally hit upon one which at once promised success, viz., the very common substance called soap; but I found that much more skill than I possessed was required to cut the fine lines for surface printing. A very little experience with the material convinced me that, though it might not supply the place of wood for surface printing, it contained within itself the capability of being extensively applied to various useful and artistic processes in a manner hitherto unknown. Die-sinking is a tedious process, and no method of die-sinking that I know of admits of freedom of handling. A drawing may be executed with a hard point on a smooth piece of soap, almost as readily, as freely, and in as short a time, as an ordinary drawing with a lead pencil. Every touch thus produced is clear, sharp and well defined.—When the drawing is finished, a cast may be taken from the surface in plaster; or, better still, by pressing the soap firmly into heated gutta-percha. In gutta-percha several impressions may be taken without injuring the soap, so as to admit of 'proofs' being taken, and corrections made—a very valuable and practical good quality in soap. It will even bear being pressed into melted sealing without injury. I never tried a sulphur mould; but I imagine an impression from the soap could easily be taken by that method."

[Dr. B. has also employed different kinds of wax, and other plastic bodies; and in some of these cases a heated steel knitting-needle or point, was substituted for the ivory knitting-needle. He has sent several specimens to the Society of Arts, which show that from the gutta-percha or plastic cast, a cast in brass may be obtained with the impression either sunk or in relief.

Bituminous Coal for Locomotives.

We have received a letter from J. Amory, of Boston—agent of Baker's patent furnace, in which it is stated, that a locomotive fitted with the said furnace is doing well on the "Eastern Railroad." The "Western Railroad" is about to try the use of bituminous coals in place of wood, the price of which, has increased the expenses last year to a very large figure. When we consider that wood is so dear, and occupies so much room as a fuel, we wonder that our Eastern railroads have not found means to substitute coal for it long before this. There is surely plenty of inventive genius in New England to overcome any difficulty to its successful employment. In Pensylvania, quite a number of anthracite coal burning locomotives, are now in use, and we are informed, with perfect and profitable success. Anthracite coal is more cleanly for use, than bituminous, but the fields of the latter are so extensive in our country—being larger than those in all the other parts of the world put together—that we desire to see means adopted for bringing supplies of it from the West to our sea board. We want more coal companies than we now have. The price of coal is extravagantly high; because of the great consumption and constantly increasing demand for it. Coal mining is a profitable business; the capital invested in such a business is safe.

Reaping Machines—Who was the Inventor?

In the Journal of Agriculture, a British publication, the Rev. Patrick Bell, of Forfarshire, publishes a somewhat lengthy article on the reaping machine invented by him in 1828. In this he says:—"I believe that every honest and impartial observer will be satisfied that in America there was no movement whatever in the matter of reaping machines before August 1828, that after that period the first attempts were mere copies of mine, that by and by one maker after another deviated a little from the original, until latterly there was considerable change in the aspect of the reaper. If however, I am not blinded by partiality, in the latest metamorphosis, the theory and design of the original may be traced as the basis of the implement."

Great credit is due Mr. Bell for his ingenuity manifested in the machine referred to, but he has suffered his partiality to blind his eyes considerably. On the 17th of May, 1803, a patent was issued to Richard French, and J. F. Hawkins of New Jersey, for a machine for cutting grain, another to Samuel Adams, Dec. 27, 1805, to John Comfort, Bucks Co. Pa. Feb 26, 1811, to James TenEyck, Bridgewater N. J. Nov. 2, 1825, all previous, some more than 20 years, to the one granted Samuel Lane, in August, 1828. What most of these inventions were we have no means of knowing, as the records and models were destroyed in the conflagration of the Patent Office in 1836. But the machine of TenEyck patented in 1825, embraced the reel and a vibrating knife or sickle, and these were the only features of Bell's machine that he claims have been introduced into America.

But although Bell may have been the inventor, he was not the first inventor in Great Britain, even of these features of his machine. It has been repeatedly shown that Mr. Salmon of Woburn, England, employed the "scissors" or vibrating knives in 1807, and the reel was used by Mr. Henry Ogle, of Rennington, in 1825, cotemporaneously with its employment in this country by TenEyck. Is it not very much more probable that the Rev. gentleman was indebted to his predecessors in England for these inventions, than that his successors in America were indebted to him when the inventions had been employed in this country previous to his using them, and when we consider the comparative ease of access between England and Scotland, and between Scotland and America? We are not disposed to depreciate the merits of the Rev. Mr. Bell, but we are tired of this disgusting attempt of his to assume to himself all the merit of the invention of the reaping machine, when he was more than 20 years behind American and other English inventors.

We hope that the early inventors referred to in our article if they be living (if not, their friends), will furnish us with accurate descriptions of their patent machines; if the original patents are still in existence, we should be very glad to get a sight of them. The object is one of considerable interest.

Trial Trip of the Ericsson.

This ship, with her *new* caloric engines, made a *private* trial trip down the Bay, on Friday last week. Owing to her cylinders leaking she made little progress, and came to anchor at Quarantine, and awaited fair breezes and a favorable tide to return.

TO CORRESPONDENTS.

H. T., of Ohio—You ask if a combination of devices are patentable where superior advantages are gained by the combination, the same having been used singly or in a lesser combination. We answer, "Yes," if such combination is new. We shall send you a copy of the Patent Laws soon.

D. H., of Ohio—The boat which you describe is not new—we have seen the same thing before. It is a clumsy contrivance.

B. J. S., of Ind.—The Blanchard patent for a lathe for turning irregular forms has about ten years to run,—no charge for the information.

R. D., Sen., of Ky.—We have received a great many letters from you, and have been unable to make out a single coherent sentence. This is the reason why you have not received any answers. We cannot get hold of a single tangible idea upon which we can base a reply. If you can employ some one to express your views in a proper manner, you will receive due attention, otherwise we must beg of you to withhold future correspondence. Our correspondents are usually very clear in expressing their ideas—this is gratifying to us and saves us much trouble.

R. C. Wrenn, of Mt. Gilead, Ohio—Wishes to procure a list of all the concerns in the country engaged in the manufacture of farming utensils.

M. J. W., of Mass.—Your application for feeding papers to presses is different from any thing we have ever seen. We cannot say much in favor of its practical qualities; it should be tested in order to ascertain its value in this respect.

C. P., of Ala.—You had better write to William Lebby, of Charleston, S. C.; we noticed his engines in No. 2.

C. W., Jr., of C. W.—From the description given of your alleged improvement in "Writing Pencils," we should think it nothing more than a fountain pen of the ordinary kind.

W. M. B., of Vt.—We do not know where a copy of Wolf's Practical Hand-Book for Jewellers can be obtained.

William, of Pa.—By sending us your proper address we can furnish you with a circular of information in regard to applications for patents.

G. W. W., of Ind.—We cannot advise you to build a machine according to your plan. Rotary reapers of almost every conceivable form, have been tried and abandoned. A reciprocating knife is in every way preferable. We advise you to abandon your plan, as it can never be successful in the field.

J. E., of Mass.—Your plan for operating railroad brakes by the employment of a steam cylinder to each car, admitting the steam at the center, thus operating two pistons, forcing the brake against the wheels in contrary directions, was patented in England by Stephenson some years ago.

E. M., of Pa.—We are still of the opinion that the Office would refuse you a patent even on your device for accomplishing the result, and we are certain they would on the "principle" of your mode of treatment, for it is very well known.

J. N., of N. J.—We have filed your description of the lathe for turning irregular forms, and we are obliged to you for the privilege of being LET OFF so easy. Your communications were getting too numerous, considering their extreme length,—and to be permitted to place them on file unanswered is certainly a relief. Any other papers you may desire filed for safe keeping you can send to us for that purpose—we have more room for filing your ideas than we have time for investigating and reporting upon so many of them.

P. S., of N. Y.—We have described in the Sci. Am. several devices for feeding papers to a printing press. You had better refer to the back numbers. The plan of boiler which you sent us last September is not new; we replied to your inquiry concerning it in No. 2 of the present volume.

B. K. R., of ———.—You had better apply to S. C. Hills No. 12 Platt st., in regard to slide rest and mortising machine.

A. B., of N. Y.—The only manner we think of, in which you can bring out your invention, will be to associate some one with you who is acquainted with your standing. See our article on the "Sale of Patents," in last week's paper.

M. K., of N. Y.—You can procure the "Annual of Scientific Discovery" of Gould & Lincoln, Boston, Mass. We do not sell them.

J. M. B., of Fla.—We have never published the Self-Acting Cheese Press; there are many presses which are classified as such, but considered in an abstract point of view they are not self-acting, because they do not act until weight is applied in some shape.

F. R., of Me.—The only durable cheap white paint for out-door work, is white lead; we know of no other. If you mean a whitewash, use some lime dissolved in warm water, to which add one pound of sulphate of zinc to the bushel, one pound of sugar, and one of salt; put it on with a brush in the usual manner.

M. P. N., of Vt.—Your fountain pen is not new that we can discover: the pen is not what is wanted—this we have repeated several times.

B. F. W., of Geo.—The manner in which you propose to fasten bedsteads is not new. Several references to rejected applications, we doubt not, could be given in support of our assertion, but it will be sufficient to say that we have seen the same device applied to bedsteads.

H. H. R., of N. Y.—We do not know the price of Chichester's flax machinery. You had better write to him again, perhaps your letter miscarried.

G. S., of N. Y.—We do not discover anything in the atmospheric matrass which in our opinion could be patented.

A. P, C., of N. Y.—Atmospheric churns, constructed in the manner described in your letter could not be patented. We are familiar with churns of the same kind.

S. K., of Mass.—Write to the proprietors of the Gwynne pump patent, state your case, and you will obtain all the necessary information; we do not know the price of the several sized pumps.

H. M., of Ohio—You never can expect to accomplish any good by the discharge of a current of air under a vessel to propel it; the principle also is not new; a boat was built in this city three years ago to test it.

A. S., of Phila.—There is no first rate work on Woolen Manufacturing in print. If the English spin finer yarn, it must be owing to a superior mode of working the wool.

B. P., of Ind.—Your plan of freeing ships from bilge water is illustrated on page 323, Vol. 45, London Mech. Mag.

D. C. G., of Ohio—A good water wheel which would answer your purpose very well, is made by Timo. Rose of Cortlandville, N. Y., to whom you are advised to write for more information.

G. P., of Geo.—A copyright will only extend to the labels of the articles which you sell. The article itself must be protected by a patent to cover its sale. We do not know that you can obtain a patent for it, as it must be new and useful to claim a patent: of this we cannot judge unless we know what it is.

Money received on account of Patent Office business for the week ending Saturday, Feb. 18:—

J. R., of Conn., $20; J. C., of N. J., $25; J. H. K., of N. Y., $30; E. O. P. A., of Mass., $30; H. B., of O., $25; W. D., of N. Y., $10; E. P. C., of Conn., $30; J. H., of Vt., $32; E. H. P., of Conn., $30; J. H. W., of Ga., $50; D. D., of Pa., $35: F. L., of N. Y., $25; F. & A. W., of Pa., $350: F. A. H., of Mass., $30; A. G. C., of Me., $15; J. B. of Ohio, $30; E. C. M., of N. Y., $50; S. T. F., of Mass., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Feb. 18:—

F. & R., of Pa.; J. C., of N. J.: C. A. W., of Mass.; N. F. T., of Ga.; H. B., of Ohio; F. L., of N. Y.; S. T. F., of Mass.; E. H. P., of Ct.

Scientific Museum.

Tanning.

The ancient process of tanning requiring a long period of time to produce leather, numerous processes have been latterly set forth, and many of them tried on a working scale, for the purpose of shortening this lapse of time. Although the end has been attained in a variety of ways, yet the quality of the leather has proved so inferior, that the slower process is still preferred for the finer qualities. The deterioration has been nearly, but not however quite, in direct proportion of the reduction of time in tanning, so that we may hope that methods will be devised for shortening the time without losing in quality. It is true that we are not thoroughly acquainted with the exact nature and progress of the change which a hide undergoes in its transformation, but we believe, on sufficient grounds, that it consists in the simultaneous metamorphosis of the hide into a gelatinous material and its combination with tannin. In some kinds of tanning, alumina, or aluminous salts, seems to act the part of tannin. It has been found that an elevated temperature hastens the transformation; that strong liquors, or the injection of liquors by force, hasten the combination of tannin. The same ends appear to be also attained by the free use of lime, whereby the hide is swelled and its pores opened. The precise action of acid is not well ascertained, except that the process is shortened. These are the main principles by which a shortened process of tanning has been accomplished. Where lime has been freely used, acid generally follows, and the hide is so puffed and porous, that tanning becomes expeditious; but the hide has been torn and rent asunder, and the organized structure must be necessarily impaired, and the strength and firmness of the leather consequently diminished. It will be observed that in the older processes the change was so slow that the organized structure of the skin was not impaired; that but little matter was removed from the hide, while a quantity was added to it. In accelerating the change, a portion of the matter is removed by solution while undergoing transformation, before it can unite with, and become fixed by, the tannin. Hence the greater looseness and levity of leather prepared by the more modern and rapid processes. It may perhaps be stated as an ascertained fact, that leaving the side in the vats during two years instead of one, the increase of weight and quality thereby, compensates for the loss of time, by paying a fair interest on the capital invested.

A patentee, in Lond. Journ. xxxvi. 310, proposes a combination of the white leather (alum and salt) process, with the tanning process by means of catechu. Another (Lond. Journ. xxxvi. 319) suggests the use of sulphuret of calcium instead of lime for unhairing.

Since liming tends to lengthen tanning, by preventing the more rapid union of tannin with gelatin, Turnbull treats the hides after liming with a concentrated solution of sugar, so that the access of air is prevented during the action of the bark-liquors on the hides, and the formation of gallic acid thereby prevented. In this manner, the same amount of leather is obtained in fourteen days from 100 lbs. oak-bark, as has been heretofore obtained in 18 months from 800 lbs. bark.

Tannin.—Kampfmeyer states, as a result of his comparative experiments with oak-bark, alder bark, catechu, dividivi, that sole-leather tanned with dividivi is, in dry weather, about as good as the oak-tanned, but that in wet weather it is inferior. It may, nevertheless, be used in conjunction with oak-bark.

Elsner states that in Wallachia, Moldavia, and Transylvania, the root of the tormentil or septfoil is largely and successfully employed in tanning, and that its value is shown by chemical analysis, which gives 17 to 34 per cent. tannin in it.

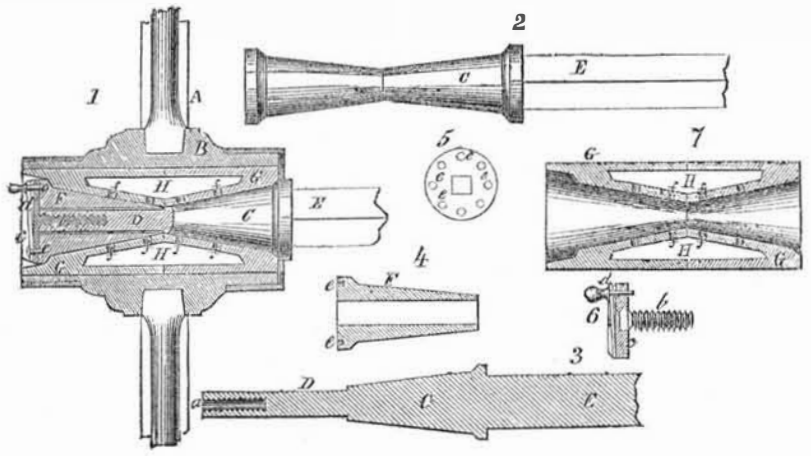
The best method of determining, practically, the amount of tannin in a substance is that proposed by Pelouze, which is to hang a strip of hide (freshly deprived of hair and ready for the tan-vat) in a tannic solution, and keep it there until it ceases to increase in weight. This increase is tannic acid, the gallic being left in the solution.—Prof. J. C. Booth.

Improved Carriage Axles.

The engravings herewith presented are illustrations of an improvement in Carriage Axles, the invention of W. D. Titus, and J. Atkiss, of Brooklyn, N. Y., of which a notice appeared in our columns three weeks since.

Fig. 1 is a vertical section of a hub and axle to which these improvements are applied. Fig. 2 is a side elevation of the axle. Fig. 3 is a section of one part of the same. Fig. 4 is a section of the remainder or movable part. Fig. 5 is an end view of the same. Fig. 6 is a section showing the screw for securing the axle to the hub, and the spring catch for preventing it from getting loose while backing. Fig. 7 is a vertical section of the box which holds the oil and serves as the bearing for the axle. Similar letters indicate correspondent parts.

This invention is designed to effect several important objects. The wheels will always run true in consequence of the arrangement of the cones giving them a tendency to throw the weight upon the center of the journal. No



washers will be required, and the wear at the ends of the hubs will hardly be perceptible, as it will be distributed over the whole surface of the cones. An equal and constant supply of oil will be obtained, thus insuring them against grinding and heating.

A represents a spoke inserted in the hub, B, which is made in the ordinary manner. C, D, E represent the axle, the conical part, C, serves as one half of the journal and the square part, D, serves for holding the movable cone, F, as shewn in fig. 2. *a* is an outer screw in the end of the square part, D, for the screws, *b*, of the cap, *c*, to fit in, as shewn in fig. 1. This cap is provided with a spring catch, *d*, which fits in either of the holes, *e*, in the outer end of the movable cone, and prevents the screw, *b*, from unscrewing when the wheel is turning backward. This cap may completely fill up the opening in the end of the hub, so as to give a neat exterior finish, and prevent the entrance of the dust. The screw serves to tighten up the hub and axle when necessary.

G is the cast-iron double journal box; it is fitted in the hub in the manner shown in fig. 2, being provided with feathers to prevent its turning. This box is cast with an oil chamber, H, of the shape shown in figs. 1 and 7; *f f* are passages through which the oil is supplied to the journals of the axle. This loose cone and the double conical box can be made of malleable iron. The oil is supplied through a hole in the hub, which is closed by a screw.

This is a very good invention, and a patent has been applied for. The claim is for the described method of making and combining the axles and journal boxes. Any further information can be obtained from the inventors as above.

Andrew's Planing w.

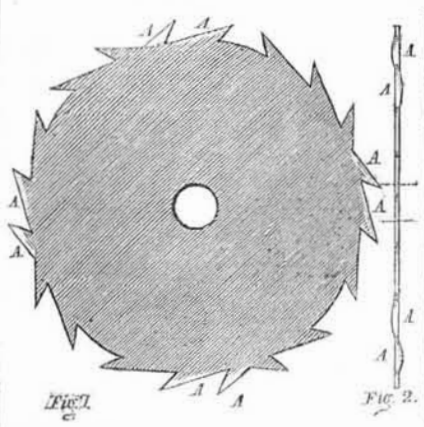


Fig. 1. Fig. 2.

The engraving herewith presented is an illustration of a circular saw patented by R. A. & A. T. Andrews, of Avon, Conn., on the 4th inst.

The nature of this invention consists in the peculiar form given to the teeth of saws for cutting wood, by which they are enabled to cut and plane at the same operation.

The saw plate is the same kind usually employed for circular saws, and upon this the teeth are cut, as shown, in the engraving. One portion of the teeth are cut in the usual manner for sawing, and the other portion are formed like those marked A A, having the appearance of being cut backwards; these teeth have a sharp chisel-shaped edge, and are intended for planing. It is the peculiar form of these teeth that gives the merit to this invention. These teeth, instead of being set in the usual way, are curved sideways a small distance beyond the thickness of the plate, each one being also the thickness of a shaving beyond the one preceding. The curve of the tooth commences well down into the plate, and gently curves outwards up to the point, which is turned inwards sufficiently to clear the point of the set of the cutting teeth.

This method of forming the teeth is applicable to all kinds of saws, whether straight or circular. It is particular useful in small work. The claim is for the position of the teeth.

We should think that for many purposes this was a very good invention. Further information can be obtained of the patentees by addressing them as above.

Davidson's Process of Rendering Fetid Whale Oil Inodorous.

This cheap method of purification consists in the employment of chloride of lime, the quantity depending on the degree of putrefaction of the whale oil. In general, one pound is sufficient for a hundred and twelve pounds of oil; but if it is in a state of putrefaction, then there may be one and a half or two pounds required.—With one pound of chloride of lime, about twelve times the quantity of water must be employed. The chloride is bruised in a mortar, and the water added by degrees till it forms a soft liquid paste, and afterwards by the addition of the remainder of the water it takes the consistency of cream. This is to be mixed with the oil, and often carefully stirred. After some hours one pound of sulphuric acid previously dilluted with from twenty to thirty parts of water is poured on the mixture, and the whole brought to boil with a moderate fire, and stirred continually, till drops of oil run off at the end of the stirring pole. It is then left for some hours for the oil to precipitate, and the acidulated water to be drawn off. A common cast iron boiler with sheets of lead at the bottom is the best adapted for this purpose, and likewise a copper or iron vessel may be used when the quantity of acid is not too great—the chloride of lime must not be bruised in a copper or iron mortar.

The Bahama Herald of December describes a terrific huricane, which destroyed a great amount of salt at Turks Island. The sea rose 15 feet.

The Paradise of Fishes.

In his narrative, (just published,) of the disastrous mission to Terra del Fuego, in 1851, Dr. Hamilton observes, that with its colossal sea-weeds, Fuega might well be the paradise of fishes. These gigantic weeds are the home and the pasture-field of countless mollusks and crustaceans. The leaves are crowded with shell-fish. The stems are so encrusted with coral-lines as to be of a white color. And "on shaking the great entangled roots, a pile of small fish shells, cuttle-fish, of all orders, sea-eggs, star-fish, and crawling nereidous animals of a multitude of forms, all fall out together."—To such a well-stored larder it is not wonderful that shoals should resort, forsaking for it brighter but less bountiful waters; and in the wake of these fishes come armies of seals and clouds of sea-fowl. Among the latter are shags petrels, ducks, red-bills, sea-pigeons, geese, steamer-ducks and penguins.

Cure for Corns.

A correspondent writes that a pint of alcohol poured in his boats caused all his corns and calluses to peel off, leaving his skin smooth and soft. If this be so, alcohol in the boots must have an effect contrary to the usual one, for we have known many individuals to get tremendously *corned* on much less than a pint of alcohol, largely diluted with Croton.

LITERARY NOTICES.

The Phrenological and Water Cure Journals.—Published by Fowlers & Wells, 131 Nassau st., are among the most readable of our exchanges. These journals are not devoted exclusively to the subjects from which they derive their name, as Phrenology is made by the publishers to embrace not only Phrenology, but Physiology, Magnetism, Education, Mechanism, Agriculture, and almost everything else of interest to the general reader. Water Cure also includes everything pertaining to Hygiene and Physiology. Our readers will do well to subscribe. Price of each $1 a year in advance.

Manufacture of Soap and Candles—A very neat volume on the above subject has just been published by Lindsay & Bliston, of Philadelphia. The author is Philip Kurten, a practical soap and candle maker in the city of Cologne. It is a very excellent and useful work as it describes clearly the different methods of making all the soaps, and much new information about lard and oils. An article on purifying oil—to be found on another page—is selected from its columns; it deserves an extensive circulation.

Mechanics—By Oliver Byrne. This is a neat little volume, published by De Witt & Davenport, this city. Its matter is certainly no addition to our stock of knowledge; it does not, so far as we can see, contain a single new idea.

The Student—A Family Miscellany and Monthly School Reader. This excellent publication for the student is very ably managed by N. A. Calkins, Editor, 131 Nassau street. Terms $1 in advance.