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The Franking System versus Cheap Postage.

It appears from the Report of the Postmaster General that there is a very heavy deficiency in the revenue of the Post Office Department, and those who opposed the present Cheap Postage System are disposed to lay this deficiency to the System itself, alleging that the present postage will not pay the cost of transportation. But we are by no means willing to concede this point. We fully believe that if the mails were not burdened with any "dead-head" letters, riding in the mails without paying their fare, —and if proper means were taken to stop some of the other enormous leaks in the treasury of this Department, the present rates of postage would not only pay the cost, but prove an actual source of revenue to Government.

So long as Members of Congress and the officers of the Departments are allowed to burden the mails with their own forwarding and that of their *friends*, (of whom they seem to have many); it is not to be expected that the letters of the public can pay their own way, and carry these mammoth packages to boot.

If Members of Congress are allowed to frank their dirty linen home to be washed, we don't wish to hear any complaints about a deficiency in the Post Office revenue.

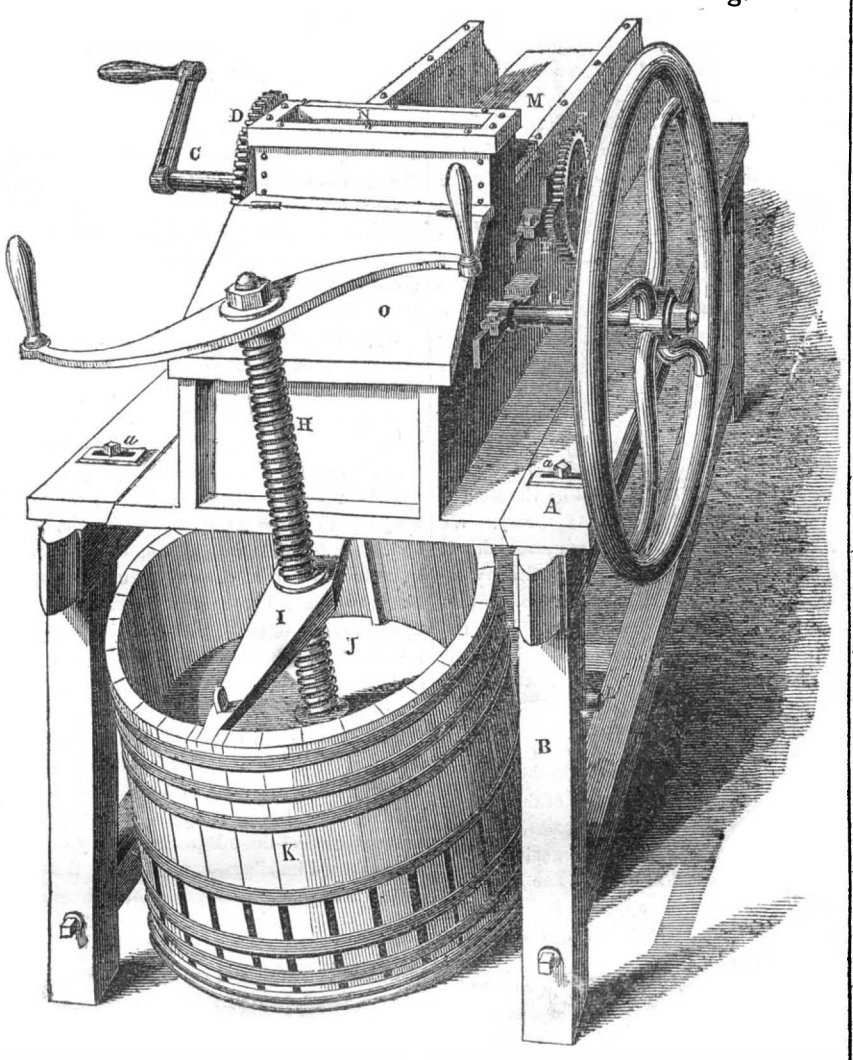
But as we intimated before, M. C.'s are in the habit of not only franking their own letters and parcels, but of extending these kind offices to their friends. We have, during the Sessions of Congress, frequently received letters from parties upon business of a private nature, the parties themselves having no connection, however remote, with Government, which letters, nevertheless, bore the frank of some obliging M. C.. And it is well known that the mails are burdened in this way to the exclusion, frequently, of matter which has been honestly paid for. If Members of Congress are bent on abusing the exclusive privileges thus granted them, it is high time the people should insist on their being taken away. The way the franking system is at present conducted, renders it a disgrace to all concerned.

Novel Steamer.

An iron vessel, named the "Enterprise," intended for the Deep Sea Fishing Association of Scotland, has been launched on the Clyde. She is about 100 feet in length, and 16 feet beam, her measurement about 100 tons, and her engines are 100 horse power. The propelling power, on a totally new principle, by Messrs. Ruthven, of Glasgow, the patentees, requires neither paddles nor screw. One important feature of the invention is, that by a simple movement the vessel can be either stopped, turned, or backed, almost instantaneously, without requiring the steam to be let off, or the machinery stopped. The principle of propulsion is the injection of water through pipes, to act upon the mass of water in which the vessel is moving. James Rumsey employed this principle, but Ruthven's improvement relates to the exit tubes.

Of two adjacent bodies, if one emits less than 1-60th as much light as the other, it becomes invisible.

CIDER MILL AND VEGETABLE CUTTER.---Fig. 1.



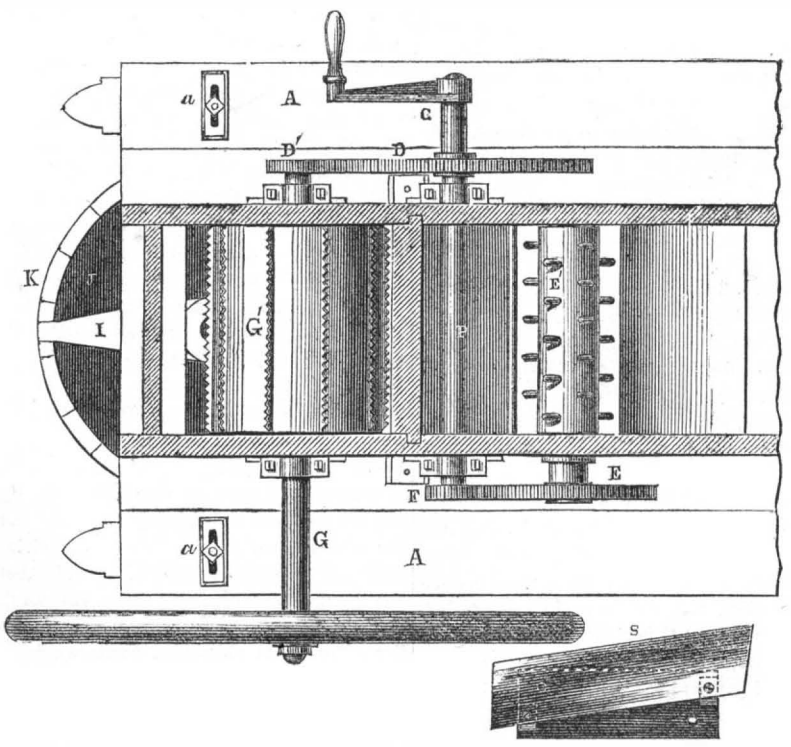
The engravings presented on this page are illustrations of an improved Cider Mill and Vegetable Cutter, patented on the 26th of July last, by F. B. Hunt, whose present address is Richmond, Ind.

Figure 1 is a perspective, and figure 2 a plan view of the machine, with the casing removed. The same letters in each figure refer to corresponding parts.

This machine is, as exhibited in the engraving, for grinding and pressing apples, but it is also so constructed that it may be change into a straw or vegetable cutter, as will be hereafter described.

When used for grinding and pressing apples, the fruit is poured into the hopper, N; it is

Figure 2.



hen crushed by the serrated plates on the cylinder, G' (fig. 2), which is upon the shaft, G, and is rotated by the pinion, D', gearing with D, which is turned by the crank, C. The ground apples (pumace) fall from this hopper into the tub, K, and the juice is expressed by the follower, J, forced downward by the screw, H, working through the cross-piece, I.

When used as a vegetable or straw cutter the cylinder, G', is removed, and the knives, S (fig. 2), are fastened with set screws upon the shaft in its stead. The straw is then placed in the box, M (fig. 1), and is fed up by the cogged roller, E' (fig. 1), the wheel, E, on the end of the shaft of this roller receiving its motion from the driver, F, on the shaft, P.

Potatoes, turneps, and other vegetables, can be sliced in a similar manner. The object of the invention is to furnish a machine which shall be convertible into a variety of uses, thus saving to the farmer the expense of providing several machines for these purposes. As a cider mill alone, we should think it a convenient implement, enabling each farmer to make his own cider, instead of carting off his apples to a mill at some miles distance, and as it is portable, it can be carried readily from one orchard to another, more easily than the apples and cider carted back and forth.

But the great merit of the machine is, that after being used through the season of cider making, as a mill, it can then be converted into a straw and vegetable cutter or the winter.

For any further information address the inventor as above.

Telegraphs of the World.

The first American Magnetic Telegraph Line —the invention of Prof. Morse—was established in 1844, between Washington City and Baltimore, some thirty-six or forty miles in extent. One wire was put up, and the usefulness and value of the invention were at once practically established. Private enterprize has since carried this line to New York, and it is now the most perfect and reliable line of telegraph in the country, or in the world. The company have two separate and distinct lines from New York to Washington City, one with five wires from New York to Philadelphia, and four wires from Philadelphia to Baltimore and Washington, and the other with two wires, the entire distance from New York to Washington City. In nine years, the brief period since its invention, there have been 17,500 miles of telegraph put up, and in working order, under the Morse patent alone. This amount is about two thirds of the total number of miles of telegraph in operation in the United States.

The aggregate number of main and branch lines in the United States is stated at about one hundred. There are completed and in operation, 27,000 miles, and 10,000 more are in progress of construction. The route selected for a telegraphic communication to the Pacific by the Committee on Post Office and Post Roads, as appointed by Congress in the Session of 1851, commences at the city of Natchez, Mississippi, extends through Texas, crosses at the head of the Gulf of California to San Diego, and then passes along the coast to Monterey and San Francisco. The entire distance is 1,400 miles.

The extent of telegraphic lines completed and in operation throughout the world at the commencement of the present year, is estimated at 40,000 miles. Of this amount there were 4,000 miles in Great Britain, and 27,000, in America. Russia has commenced a system of telegraphs between St. Petersburgh, Moscow, Cracow, and the ports of the Baltic and Black Seas, and about 4,000 miles are shortly to be constructed in India. A line of telegraph is now in operation between Vera Cruz and the city of Mexico, with stations at all the intermediate cities and towns. A line is contemplated to extend from the city of Mexico to Acapulco on the Pacific, a distance of 300 miles. There are now in the course of construction on the Island of Cuba, telegraph lines to the extent of 1,200 miles.

The citizens of Cambridge, Mass, have voted $50,000 to supply that city with water.

A pendulum, to vibrate once an hour, must be 85 miles longer than the diameter of the earth.

Imponderable Agents.---No. 1.

[Second Series.

LIGHT.—Theory, in Science, is better, even when wrong, than facts without any arrangement: for, as Bacon has said in his own peculiar manner, "Truth is more easily evolved from error than from confusion." Thus premising, we will proceed to present a number of articles, of which this is the first, on "Light," "Heat," and "Electricity;" our attention having been more immediately directed to these questions by the series of articles which have recently appeared in our columns, on the "Imponderables." In a scientific sense, "light" is a term employed to denote that "substance," or "action," or "quality," of matter by which we are enabled to perceive and distinguish objects without hearing, feeling, tasting, or smelling. In a certain sense, Light is a matter of pure *hypothesis*, hence it becomes us to receive with caution the terms used by writers in referring to it: we can speak of Light as "reflected," "conveyed," "evolved," and "absorbed," and yet these terms are merely convenient modes of describing facts, and not really explanations of them; for all these terms are just as applicable to a "force," an "action," or a "motion," as to a substance. A "motion," may vary in intensity, and be treated like an arithmetical quantity, and may be propagated from place to place, and yet who would be so blinded to common observation as to say that "motion in itself is a substance?"

Light has been considered by Sir Isaac Newton as a distinct substance in itself, or else his language means nothing. Descartes' theory is, that Light is an action, or rather the quality of an action, namely, the property of the motions of a subtle "ether" pervading all space. The Descartian theory embraces Light as a substance and a quality, and there is no room in philosophy for any other intelligent opinions respecting it. Euler, the ablest exponent of the Descartian theory, is termed by Sir David Brewster—and justly we think—"the profoundest philosopher that ever wrote." In the articles which have appeared in our columns, both the Newtonian and Descartian theories have been condemned, and a new one claimed. We will state the three, in order to discover what is new and what is old.

1. DESCARTIAN THEORY—"All bodies and space are filled with a very light and very elastic "ether," much lighter than air, composed of *small globules*, the vibrations (motions) of which eliminate light, the different colors are the result of different vibrations."

2. NEW CLAIMED THEORY.—"In Nature there is an element existing in a form exceedingly more rare than the lightest fluids, which may be called an etheroid (etherform); it may be called "lumenism" (lightism). Light is lumenism in motion; the different colors in the spectrum are caused by the different motions of its particles."

NEWTONIAN THEORY.—"Light is composed of emanations, the particles of which are sent with great velocity from luminous bodies—such as the sun—to distant places; these particles are also possessed of inertia, and endowed with attractive and repulsive properties."

We do not know how many pens have been worn out by philososophers writing against the *undulatory* theory, on the one hand, and the theory of *emanations* on the other: but there is no difference between the two in essence; the only difference consists in the words employed by the reviewers of both theories, in darkening their own ideas, and the ideas of their respective champions. Both of these theories have been condemned in the articles which have appeared in our columns; if both are wrong, what place must we assign for the new claimed theory.

It is well known to philosophers how Leibnitz and Maclaurin, and their followers, disputed for thirty years about the true method of estimating the force of moving bodies, and to the no small disgrace of great mathematicians, the controversy was dropped not ended. It was at last discovered by D'Alembert that both were right, and that they had been hammering for years at one another with mere *terms*. The same may be truly said of the two theories of Light—the Descartian and Newtonian—they are identical, and we think we shall be able to show this clearly.

Euler adopted the theory of Descartes because his strong common sense could not allow him to adopt any other. This, as we have said, supposes all space filled with an elastic subtle fluid, the motions of which produce what we term "light." Well, what are Newton's emanations?" "Fine particles of matter."—These particles in the aggregate must form a subtle elastic fluid—an ether—etheroids. What difference is there between this and Descartes' fluid? None. Again: if Newton's emanations are always being given off from the Sun and other luminous bodies, throughout all space, these emanations must fill all space. Is there any difference between this part of the theory and that of Descartes? None. What kind of a motion will be given to an elastic fluid, by a mechanical action impressed upon it? A vibratory motion. What difference is there, then, between the theory of emanations and that of undulations? None at all, excepting that Newton had not a clear idea of it, inasmuch as he considered that these emanations were shot from luminous bodies to distant places, in straight lines, with inconceivable rapidity, which, if it were true, would make our earth a sun in itself at some distant day.

By any view which we can take of the question, the Emanations of Newton must form an elastic fluid, and its motion must be vibratory—undulatory—the real Descartian theory. We have a fine example of this in our atmosphere; the breath of the tiniest insect that floats within it, produces undulations; it is the same with water; the smallest pebble thrown into the sleeping ocean will produce undulations that will gently ripple the yellow sands at a thousand miles distance.

(To be Continued.)

President's Message and Inventors.

If we mistake not, a President of the United States has for the first time *condescended* to notice the inventors and men of genius of our country in his annual message. The following gratifying paragraph appears in President Pierce's first message to Congress, and although brief it is full of truth and should attract proper attention. "I commend," he says, "to your favorable consideration the men of genius of our country, who, by their inventions and discoveries in science and art, have contributed largely to the improvements of the age, without, in many instances, securing for themselves any adequate reward. For many interesting details upon this subject, I refer you to the appropriate reports, and especially urge upon your early attention the apparently slight, but really important modifications of existing laws therein suggested."

We copy from the Report of the Secretary of the Interior, the following, reserving our comments until next week:—

"The Commissioner of Patents, who communicates directly to Congress, will, at an early day, report the operations of his Bureau. By his indefatigable and unremitting exertions, system has been restored, and the business of his office is now conducted with much order and regularity.

The number of applications is constantly increasing, and the force, though augmented by the act of 1853, is still insufficient to bring up the old, and dispatch with promptitude the new business. As the public is so deeply interested in the speedy examination of the applications for patents, and the fund for this purpose is ample, every facility for dispatch should be afforded.

No complaint is heard against the integrity, skill, or competency of those discharging the important duties of the Bureau, but the delays incident to the smallness of the operative force in the office, are vexatious and embarrasing. Since the present Commissioner took charge of the Bureau, the number of applications examined, and patents issued, have greatly increased. Still from four to six months, and in many cases a longer period unavoidably elapses, after the application is presented, before final action can be obtained. This is a severe trial to the patience of the inventor, and often a serious loss to him, as well as the public.

The law requires the models and specimens of unpatented inventions, to be preserved and arranged in suitable cases. Some of these are useful, as well to the inventors, desirous of ascertaining whether their inventions have been anticipated, as to the Examiners, in the discharge of their duties. But there are many that are worthless and unfit for any purpose. In some instances they represent contrivances altogether unpatentable; in others they are merely duplicates of models previously deposited. Where application is made for a patent for a design merely, the practice, under existing laws, has been to allow the applicant to deposit as his model a specimen of the article, on which his design has been placed, in its full size. Accordingly, a vast number of stoves and other cumbersome articles have accumulated to such an extent as to render it impossible to comply with the law requiring them to be arranged in cases.

As space is of so much value and importance to this Bureau, these defects in the law should be remedied, and a more enlarged discretion given to the Commissioner, there being no danger of its abuse.

Appeals from the decision of the Commissioner may be taken to the Chief Justice, or either of the Assistant Judges of the Circuit Court of the District of Columbia. It is optional with the applicant to which of them he will take his appeal, and the adverse party cannot have it decided by any of the others, although the judge to whom the appeal was made, may be unable, from absence, age, or other infirmity, to hear the case. The object of the appellant is to enable him to infringe with impunity upon the right of the appellee, and the law as it now stands, affords him this opportunity. As such cases have occurred and may again arise, the evil should be remedied."

"The Indian and Land Bureaus must be removed, and the only question appears to be whether the west wing of the Patent Office building shall be fitted up for the temporary accomodation of these Bureaus, or they be placed in rented buildings, not fire-proof, thus exposing to imminent peril papers of immense value to the General Government, the States, and private individuals. The building may be finished within a year, and until a suitable structure can be erected for this department, it will not be required of the Patent Office. Some opposition has been made heretofore to a somewhat similar proposition, but this, it is presumed, was based on the erroneous supposition that the cost of the entire structure had been defrayed out of the patent fund. The amount thus far expended and appropriated, is $1,367,750, of which $1,048,750 has been paid out of the treasury, and only $319,000 out of the patent fund. Such being the fact, there is no reason why a portion of it should not be temporarily used as proposed, until needed by the Patent Office. If this should even somewhat incommode that office, it would be of small moment in comparison with the evils that might result from withholding it from the Bureaus. Skillful artisans are of opinion that the necessa- improvements can be easily made, without interfering with or injuring the original design. Unless Congress by express enactmets otherwise determine, I intend to direct the completion of the West wing, so as to accommodate these Bureaus, and secure the public archives.

Within a few years the Patent Office will need the main building and the two wings for its exclusive use. In the mean time, a structure should be erected for this Department, and as it consumes much time to complete such a building, sound policy should induce its immediate commencement. One sufficiently large and commodious, and entirely separated from the other Department, can be constructed in a plain and substantial manner, for $250,000, and in the most approved style, with all the modern improvements, for less than half a million. Surely, at this time, there can be no more proper or profitable application of the public moneys. The considerations enjoining it are strong and apparent, and, it seems to me, cannot fail to convince every one, who reflects upon the subject, of its absolute necessity."

The Humboldt.

This noble American steamship belonging to the New York and Bremen Line, was wrecked last week on the coast of Nova Scotia, about 12 miles from Halifax, while on her way into that port for fuel. All the passengers were saved, and some of the cargo.

Early Manufactures of New England.

Fire arms were manufactured in large quan tities in colonial times. Hon. Hugh Orr, of Bridgewater, about 1748, made 500 stand of arms for the province of Massachusetts Bay, which were deposited in Castle William; nearly all, however, were carried off by the British when they evacuated the town of Boston. Mr. Orr was a pioneer in many articles of manufacture in the old colony, particularly of iron. He erected the first trip hammer known in this part of the country. By his exertions and experiments, scythes and axes were first introduced, and for several years he was the only edge-tool maker in New England.

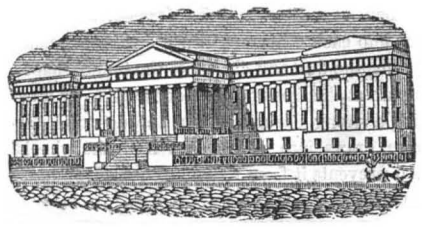
Powder was an article of much anxiety in regard to its manufacture. We find even as early as 1639, a record that Edward Rawson, who represented Newbury in the General Court that year, was granted by the colony "500 acres at Pecoit so as hee go on with the business of Powder if the salt Peter come." But he did not succeed, as in 1748 he is granted 500 acres to indemnify for his losses. "In 1643 the General Court made an order about preparing houses for saltpeter that there might be powder made in the colony, but as yet it has not gone on."

In 1775 Gov. Richard Penn, who was in England charged with a petition for redress from the Continental Congress, stated "that the Pennsylvanians perfectly understood the making of gunpowder, and also the manufacture of small arms." Probably the first powder mill erected in this part of the country was at Andover. It was built by Hon. Samuel Phillips, Jr., in 1776, and some remains of it are still to be seen. The colony supplied him with saltpeter and sulphur, and he was to receive eight pence per pound for manufacturing.

The resolve under which the contract was made, is dated June 8, 1776, and requires him to give bonds for the faithful performance of the contract; also, he was to cause to be published all the discoveries he might make relative to the construction of the mill and the manufacturing of powder. During the year 1776, that mill turned out 30,000 pounds of powder. In 1778 the mill was blown up, and after that time the manufacture was given up, and that of paper substituted by the same gentleman. Subsequently, about 1794, a smaller powder mill was erected, which was blown or burned down in 1796. This ended the manufacture in Andover.

Although but little had been done in manufacturing woolen and cotton articles previous to the Revolution, yet each family in the country supplied in a great measure their own wants. A woolen factory was erected at Ipswich, in 1792, and some blankets made, but, being a losing business, it was continued only a few years, and a cotton factory exhibited similar results.

[The above is from the "Boston Transcript," and relates mostly to fire arms and powder. By the Report of the Commissioner of Patents for 1852, we learn that the first cold cut nail in the world was made in America. This was done in 1777 by Jeremiah Wilkinson, of Cumberland, R. I., who is still living at a very advanced age. During the revolution he followed the business of making cards by hand, and finding great difficulty in obtaining a supply of English tacks to nail them on, he tried the experiment of cutting some with a pair of large shears, from the plate of an old chest lock, then heading them in a smith's vice. Finding this plan to succeed very well for his wants, he afterwards made all the tacks he wanted from sheets of iron. Subsequently he made larger nails, such as those used for fastening laths and shingles. This veteran inventor also made pins and darning needles of wire drawn by himself. He is a Quaker, and followed the peaceable trade of *fighting* iron, while others of his countrymen were fighting their foes. He, however, has not labored in vain for his country, as he laid the foundation for vast improvements in cutting nails by machinery, which is exclusively an American Invention.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 6, 1853.

INDICATING ELECTRO MAGNETIC TELEGRAPHS—By John Davis, of New Bedford, Mass.: The improvements that I claim consist in operating the electro-magnetic telegraph by means of the index or escape wheel, slider and impeller, as set forth, and thereby spelling intelligence by pointing out the letters composing the words of the communication on a similar contrivance at the distant office to which the intelligence is sent by telegraph, disclaiming any right to other methods of telegraphing.

ARRANGEMENT OF SCREW CUTTING DIES IN THE DIE STOCK—By Simeon Goodfellow, of New Orleans, La.: I claim the arrangement of the circular dies, having threaded scores or recesses in their peripheries of various depths, or sizes in the die stock, as described.

PEN HOLDERS—By E. W. Hanson, of Spring Garden, Pa.; I claim the peculiar mode in which I construct and apply thumb and finger rests to pen holders, viz.: I claim the projecting part of the thumb and finger rests of an oblong or parallelogramic form, so that they shall cross the thumb and finger respectively when held for use, whether the rest be fixed or made adjustable.

SPARK BURNER AND WATER HEATER FOR LOCOMOTIVES—By David Matthew, of Philadelphia, Pa.: I claim the arrangement and application of the two concentric pipes, the curved plate rings, the pipes, I I I, the furnace grate, the cover, and pipes, K K K K, forming a combined apparatus in the smoke box for burning the sparks and heating the feed water, as described.

SOAP INGREDIENTS—By Ira F. Payson, of New York City: I claim the use of salammoniac as an ingredient of my soap, in combination with the other ingredients, the effect of which is to retain a sufficient amount of moisture to prevent drying up, and at the same time not enough to cause it to become damp by exposure to damp air.

VALVE ARRANGEMENT FOR STEAM HAMMERS—By James Watt, of South Boston, Mass.: I claim, first, the revolving valve rod, the barrel, and the adjustable screw stop constructed, arranged, and operating, as described, by which I am enabled at any instant to admit the steam beneath the piston during any portion of the fall of the hammer, without altering the effective force and length of the stroke.

Second, I claim, in connection with the above the arrangement for throttling the steam on its way from beneath the piston, by which means I am enabled to regulate the intensity of the blow of the hammer to any degree of nicety, or to hold the same suspended above the anvil, as set forth.

CLEANING MACHINE CARDS—By George Wellman, of Lowell, Mass.: I claim, in combination with a series of top cards of a carding engine, not only a mechanism for raising one or more of such top cards, and holding the same upwards, and afterwards depressing the same back into place, but a mechanism for acting on, and cleansing such top card or cards, when or while so elevated, not meaning to claim either the mechanism for moving the top card or cards, or that for cleansing it or them, in their separate combination with the series of top cards, but to lay claim to both in their joint combination, and with the series of top cards, as described.

And in combination with the series of top cards and mechanism for raising and cleaning a top card and restoring it to its seat, I claim the mechanism for moving the raising and cleansing mechanism in succession, from one top card to the other, and whether from one card to the next one throughout the series, or from one to another of them to the next but one, or in any other order, as specified.

I claim, also, the combination of the grooved block (or the grooves and circular arcs), the arm with its stud (or the equivalent of said arm and stud), and the notched wheel as applied to the shafts and made to operate together, as specified.

OVERSHOT WATER WHEELS—By J. E. Whitmore, of Joliet, Ill.: I claim the construction of the buckets with the covers, operating as specified.

I claim, the levers, springs, and bolt rods, as described, in combination with the cams or their equivalents, for closing and opening the buckets, as set forth.

RINGING FIXED BELLS—By Alfred Carson, of New York City, ante-dated June 6, 1853: I am aware that stationary bells have been rung from the inside, by vibrating the clapper; this I do not claim. But I claim the device described, as applied to the working of the clapper of a bell hung in the usual manner, as set forth.

REPLACING CARS UPON RAILROAD TRACKS—By L. B. Flanders, of Dunkirk, N. Y.: I claim replacing rail cars and locomotives upon the track, or replacing the car wheels upon the rails, as described, viz., by means of flanges, having inclined bottoms, and secured or attached to the rails, when designed to be used by the lips or projections on the sides of the flanges, said lips or projections clasping or fitting over the rails. The flange being provided with a movable guide, which directs or guides the wheels upon the rails, and which guide, by being movable, will act upon the wheels, the flange being adjustable to either side of the rails.

[This very useful device is described on page 132, Vol. 8, Sci. Am.]

ILLUMINATING CLOCKS—By James Glenn, of New York City: I claim the construction of two circular dial plates having the figures of time cut through them in such a manner that, being made to revolve by means of clockwork and by means of a light and two magnifying lenses, the time is represented on a plate of ground glass in front in white light, which may be perceived to a greater distance and more distinctly than by any other method at present in use, whether used with or without a magnifying lens.

SHOWER SYRINGES—By Ira Warren, of Boston, Mass.: I claim as a new and useful surgical instrument for the treatment of diseases of the air passages of the throat and nose, a syringe constructed of the form and materials described, as set forth.

CUTTERS FOR PLANING MOULDINGS—By R. M. Evans, of Gilford, N. H. (assignor to himself and Asa Weeks, of South Boston, Mass.): I do not claim making the cutters of shapes suited to the different parts of the particle to be turned either straight or curved, and securing them to a cutter wheel.

But I claim making the cutting irons of moulding planes or turning tools of thin sections in the manner described, which, after being set to a pattern and confined in a clamp, may be brought to an exact edge by filing or grinding, as set forth.

CONDENSERS FOR STILLS—By Carl E. Werner, of New Castle, Ill.; I claim the construction of the condenser, consisting of an outer upright cylinder, with its upper chime projecting above the head, so as to form a circular trough, and an inner refrigerating cylinder, traversed by vertical tubes, which connect the vapor spaces above and below, the whole being situated above and discharging the condensed fluid back into the rectifier.

The ladies of Manchester, N. H., it is said, have contributed a stone to the Washington Monument, with the inscription, "From the Home of Stark."

Reaping and Mowing Machines.

MESSRS. EDITORS—I have read your article in No. 9 of the present volume with much interest, and must come to a different conclusion from yourselves; I draw my conclusions from experience, as I have tried and helped try nearly all of the cutting parts now used in the reapers of the present day. In the first place you say the sickles require a reel; and that they will not cut green straw without choking. Now I can assure you that I have cut as green straw as ever grew, with a sickle, without clogging or choking, and also have cut with a sickle without a reel; and if grain is cut when it is green it will not shell unless the reel revolves too rapidly. I have cut perfectly ripe grain without having it shell. You say also that sickles will not cut the Eastern grasses, but may cut the coarse grass of our prairies; your idea of our prairie grass is not correct if you suppose that it cuts easier than timothy or clover,—the kind of grass which we cut for hay throughout the West, or nearly all of the West, is much harder to cut than either clover or timothy—(a sample I enclose for your examination); in some localities coarse grass may be cut, which grows in the ravines or low bottoms, but this is unfit for hay, and is not generally cut.

You say that Ketchum has prevented his mowing machines from choking by punching elongated apertures through the blades of his knives. Now, I will state that he has not successfully prevented his machines from choking by this device. We have some of Ketchum's improved machines here, and find that our upland prairie grass will choke them as often, if not oftener, than some other machines which cut with a sickle. We have had several of Ketchum's improved sickles at our shop this summer to mend, having been broken by the knives choking with our fine grass; the grass clogs in between each section on the sickle bar as well as between the fingers, often clogging so tight as to tear off a sickle bar one inch by three-eighths of an inch. I find also that a plain finger or guard tooth is just as good as any other, if the sickle or cutting part is made as it should be.

You have no hesitation in saying that Ketchum's is the best machine for cutting grass. I also have no hesitation in saying that there are other machines better for cutting grass than Ketchum's, and that they will cut the different kinds of grass better than Ketchum's:—Rugg's of Ottawa, and Danforth's, and one or two more. The best kind of knife that we have yet found is one invented by Bronson Murray, I believe, of Ottawa, Ill.; it will cut all kinds of grain and grass without clogging or choking, and has been thoroughly tried during the past season, and has cut in fields with Ketchum's, and has been much preferred. The sickle referred to, has a sickle edge behind and before, and is a different angle from either of the others; it is made in sections about fourteen inches long, and is riveted on a bar about a quarter of an inch thick and three-fourths wide; this form of sickle not only prevents clogging but prevents fine grass from getting in between the sections when they are made like Ketchum's or Hussey's, or McCormick's. I agree with you that machines for farmers' use should be made as simple as possible, because in the harvest field farmers generally have from six to ten hands, and one hour lost in mending a machine is almost or quite one day's work lost for one man.

JAMES M. THOMAS.

Wyoming, Ill., 29th Nov., 1853.

Since the publication of our article on reapers, we have received many communications from the East and from the West in relation to the matter. Some have disagreed with us and others have emphatically endorsed our statements. All our correspondents, however, have fallen into the error of supposing that we speak from theoretical considerations only, but we beg leave to assure them that they are entirely mistaken. We have "tried and helped try nearly all" the prominent machines before the public, and probably not one of our correspondents has had more, if as much *practical experience* in the matter as ourselves, and we still unhesitatingly assert that in the *East* sickles will not cut grass without choking. We have no interest in endorsing Ketchum's machine except as we believe it to be the best for the purpose that has ever been in use here; but, as we said in our article, it is not what a machine should be, because it will not cut both grass and grain, and we hope yet to be the medium of presenting to the public one that will do this successfully. Our correspondent expressly states that the Western grasses are *harder to cut* than those of the East, and this is the very point. It is the soft grasses that choke these machines. A hard grass, in the composition of which silex largely enters, as it does in the specimen sent us, is brittle and is much more easily broken by the sickle or other means than those in which a less proportion of this substance is found. The Eastern grasses are tough, and are not readily snapped between the fingers, while even the leaves of the specimen sent us break readily.

As to the reel, unless it is used with the sickle, the grain will be pressed forward, and thus fall away from the apron instead of upon it, unless V-shaped *sickles* are used like those described by our correspondent. The reason is, the angle in a V-shaped knife or sickle is such as to press against the guard tooth, while in the other case it presses forward, and sickles having a large angle with the guard tooth will not *saw* as their principle requires.

Interesting Patent Case.

As briefly noticed by us last week, Judge Nelson, in this city, granted an injunction restraining Anson G. Phelps and others from manufacturing Car Springs of Vulcanized India Rubber, as being an infringement of Goodyear's patent. The following is an abstract of the charge of the Judge:—

This is a motion for an injunction against the the defendants for an alleged infringement of Goodyear's patent, "for a new and useful improvement in india rubber fabrics," The plaintiffs, the New England Car Spring Company, are the assignees of Goodyear for the exclusive right to use the improvement or invention in the manufacture of india rubber springs for railroad cars, locomotives, and tenders. The first patent was issued to Goodyear, June 15, 1844, and was afterwards surrendered and reissued December 25, 1849, on an amended specification. The bill sets forth a suit in the Circuit Court for the district of New Jersey, between Goodyear and Day, one of the defendants, and that after a hearing in that court, involving the validity of this re-issued patent, a decree was rendered in the September Term, 1852, in favor of the complainant, holding that Goodyear was the first and original inventor of the improvement claimed, and that the letters patent were valid in all other respects. The bill further charges that after the hearing of the case referred to in New Jersey, and while under the advisement of the Court, the defendants, Phelps, W. E. and D. S. Dodge, Pratt and Davis, combined with H. Day, with a knowledge of the facts respecting the suit in Jersey, and that it involved the validity of Goodyear's patent, to infringe the same, and commenced manufacturing car springs out of india rubber, mixed or compounded in some form with sulphur, and cured or vulcanized by a high degree of artificial heat in violation of the patent. In addition to the case of Goodyear against Day, decided in the Circuit Court of the United States, at the September term in New Jersey, already referred to, the opinion of that Court has been furnished on a suit of these plaintiffs against the Central Railroad of New Jersey, in which an injunction was granted, and in which the principal objections were presented and over-ruled, that are now relied on before me.—They were:—First—That the complainants are not the proper parties to the suit. Second—That the rubber used in the defendants car springs was made by a process in which steam is the chief agent, and is, therefore, no infringement of complainants patent; and Third—That Goodyear's patent is for a process of curing rubber, and not for the product or manufacture, and consequently the product is no infringement. These several questions were very fully considered by the learned Judges of the Circuit Court in New Jersey, and the grounds of their decision stated at large, and I need only say, in disposing of this case, at this stage of it, that, in my judgment, they are such as well warranted the granting of the preliminary injunction. The originality of the invention was then most thoroughly examined by the respective parties, as is shown by the seven large volumes of proofs then taken, and to which I have referred. A point has been made that the defendants are not liable for the infringement charged, as the only participation alleged in the same is as stockholders of an incorporated company, which company is engaged in manufacturing and selling the patented article. However that may be, it appears that the defendants are either Directors of the Company, who have the mangement and superintendence of the business, and under whose direction the articles are manufactured and sold, or are the agents of the same, concerned in conducting the business. On this ground, I am of opinion they are responsible and properly made defendants. Injunction ordered. E. N. Dickerson and James T. Brady, for complainants. George Gifford and Francis B. Cutting for defendants.

Recent Foreign Inventions.

MANUFACTURE OF STARCH.—Edward Tucker of Belfast, Ireland, patentee.—This invention relates to the application and use of certain salts (both alone and in combination with mineral acids), for the more speedy and effective separation of pure starch from the glutinous and other foreign matters with which the starch itself is originally combined, as well as to the neutralizing or counteracting of the injurious effects of the vegetable acids generated in the process of starch-making, and the increase in the amount of good starch from a given quantity of wheat or other grain. By the same means, any pure water is rendered suitable for starch-making, although such water may be ill adapted for this purpose in its natural state. In carrying this invention into effect, the patentee submits the wheaten meal, or reduced grain, to the usual process of fermentation, and washes it, so as to separate the bran from the rest of the materials forming the substance to be treated. The starching liquor is then run into a vat and allowed to remain for about 36 hours, for precipitation. The supernatant liquor is next run off, or removed, and the precipitate is broken up. A solution of sulphate of soda, or Glauber's salt, in boiling water, is prepared, in the proportion of about 13 lbs. of the salt to one ton of the wheat, or other grain under treatment; and after cooling down this solution, it is poured into the precipitated starch; and the vat being filled up with water, the entire contents are thoroughly mixed, and intimately incorporated by stirring. The mass is then allowed to stand for 24 or 30 hours perfectly quiescent. In the subsequent process, technically known as the "fine shift," when the water and slimes are removed, another solution of the same salt is employed, but in much smaller proportions; about 3 lbs. weight only being applied to one ton of wheat. At this stage, in combination with the sulphate of soda, a portion of sulphuric acid is used, in the proportion of about one quart of the acid to the produce of 4 tons of wheat. The acid, in a diluted state, is poured gradually into the vat, which is then nearly filled up with fresh water; and the whole contents are thoroughly mixed by agitation. When the starch has been precipitated, it is finished, and prepared for sale, and used in the ordinary manner. The patentee remarks, that he has found sulphate of magnesia, muriate of soda, and other salts and acids, available for a similar purpose. This general process renders all pure water suitable for manufacturing starch, however hard and unsuitable it may have been originally. The pure starch is also better separated from the glutinous constituent of the grain; whilst the manufactured starch is superior in purity, sweetness, strength, fineness of texture, and whiteness, as compared with all starch made in the usual way; and the yield is greatly increased.

This is an interesting invention for our starch manufacturers.—[Lonon Journal.

We see it stated in a number of our exchanges that large deposits of cannel coal have been discovered in Western, Pa. When are we to have cheap gas in this city. We hope the time is not far distant when it will be so cheap as to be used in every family.

New Inventions.

Improved Stone Drill.

W. C. Wright, of Boston, Mass., has applied for a patent on a machine for drilling rocks, which consists in an arrangement by means of which two sets of gripers are made to operate alternately, the one set griping and carrying the drill upward, while the other is sliding downward upon the drill bar, preparatory to the succeeding movement. This arrangement allows the drill to strike two blows during every revolution of the driving shaft, and saves the time lost in raising the bar when only one set of gripers is employed. It also consists in certain means of giving to each pair of the gripers a movement upon the axis of the bar, whereby the latter is turned the desired distance between its successive strokes.

Shower Bath.

Daniel P. Baldwin, of San Francisco, Cal., has invented an improvement in the manner of constructing shower baths, which consists in employing two revolving trumpet-shaped shower baths connected together by a collar, in combination with a passage in the horizontal end of the main supply pipe; one serving, when fixed in the proper position, to throw the water upward, so that it shall descend in the form of spray, while the other may be so placed as to direct the stream of water against any portion of the body. The cock connected with the bath is so constructed that by its action either warm or cold water, or both, may be supplied to the sprinklers. He has taken measures to obtain a patent on his invention.

Potato Planter.

Alex. Anderson, of Markham, C. W., has invented an improved potato planter. His machine has an endless apron at the bottom of a hopper, which is provided with a series of apertures, which receive the potatoes and carry them to the discharge spout, through which they fall into the furrow at equal distances apart —these apertures also conveying those potatoes which are too large for seed, to a knife at the bottom of the hopper, by which they are cut into pieces of suitable size. The inventor has applied for a patent.

Machine for Copping Sash Stuff.

J. F. Finger, of Marion, S. C., has invented a machine for cutting the curved portions at the ends of sash stuff, technically called "copping." The noveky of the invention consists in cutting sash stuff by means of a chisel or cutter secured to a vertical arbor having a reciprocating motion. The sash stuff is properly adjusted or placed upon the upper surface of a box, by means of a guide and adjustable strap. The inventor has applied for a patent.

Improved Harrow.

W. B. & G. M. Ramsay, of South Strabane, Pa., has taken measures to secure a patent upon an improved harrow, the nature of which consists in constructing a harrow of three separate parts or squares, and so arranging them that one of their diagonal lines will run parallel to the line of travel, and the other transversely thereto, so that greater breadth of sweep is secured than with a harrow composed and jointed, as is common in these implements. One of these harrows is on exhibition at the Crystal Palace, and has attracted considerable attention. G. M. Ramsay, the assignee, is at present residing in this city.

Self-Acting Carrier for Lathes.

J. Zook, of Harrisburg, Pa., has invented a self-acting carrier or dog for lathes. It is arranged, he says, with levers and cams, which are operated by the motion of the lathe. By starting the lathe in one direction, the carrier is made to operate; by reversing the motion of the lathe, it (the carrier) disengages itself. It is held in position by springs, and has an appearance similar to a universal chuck.

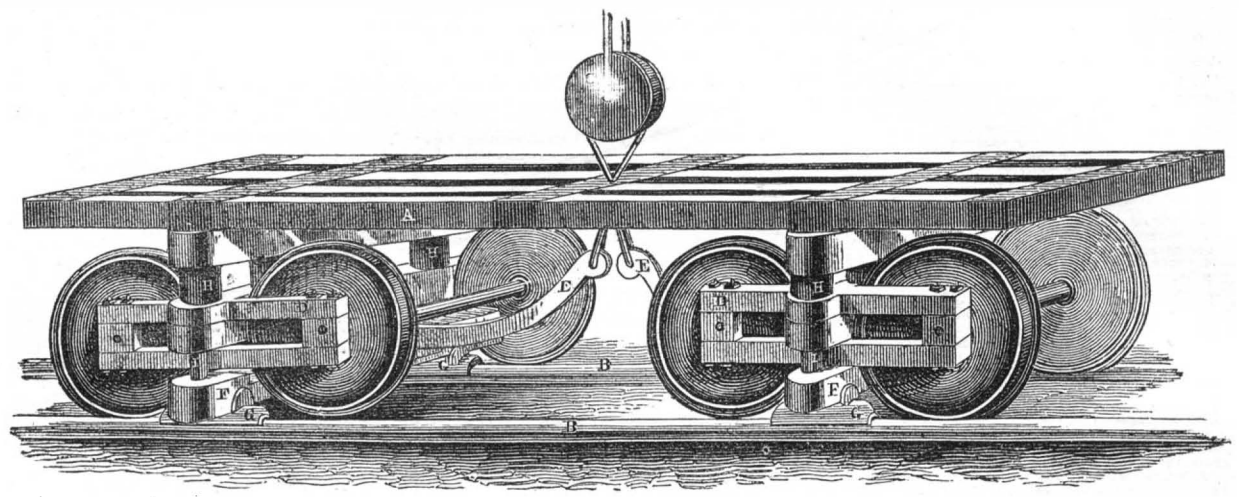
Improved Mode of Straining Saws.

James Fishwick, of Lexington, Ky., has invented an improved method of straining and driving reciprocating saws, which consists in attaching the upper and lower ends of the saw to jointed arms, which are secured by pivots to arms projecting from parallel rock shafts. The saw is strained by forcing apart the ends of the arms attached to the parallel rock shaft by means of a screw rod connected to levers at the ends of the parallel rock shafts. The inventor has applied for a patent.

Dust Concentrator for Rail Cars.

Daniel S. Darling, of Brooklyn, N. Y., has invented an improvement in deflectors or concentrators for purifying the air for rail cars, on which he has applied for a patent. The invention consists in arranging a series of deflectors along the sides of the locomotive and the entire train, in such a manner that a series of funnel-shaped chambers will be formed, which will run into each other and form a continuous channel for the dust and air, while the funnel-shaped mouth at the front of the locomotive, by creating a strong draught of air through this passage, draws into it the dust from the wheels, and prevents it from rising. The deflectors are reversible.

STRAIT'S RAILROAD ANCHOR.



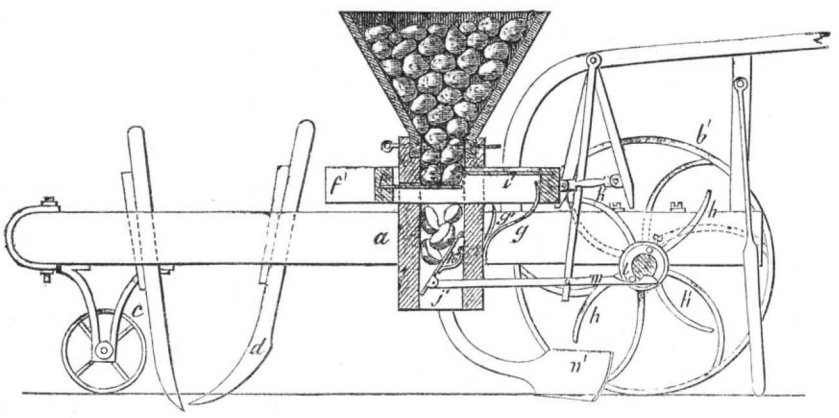
The engraving annexed is an illustration of a Safety Truck, invented by H. Strait, of Covington, Ky., and termed by him a "Railroad Anchor." Its objects are numerous,—it is claimed by the inventor that it will serve as a Brake in place of the ordinary Wheel-Brake; as a support when a wheel or axle is broken; as a Track-Keeper when obstructions are on the track or in case of collisions: as a protector of wheels and axles, by relieving them of their weight in all emergencies, and as a preventive of collisions by serving as a more effectual brake.

A is the platform of the car, secured to the cross ties by a turn bolt in their center; H H are the india rubber springs between the upper and middle cross ties; D D are the axle ties, connecting together the boxes in which the axles run. G G are the friction rubbers or brakes, which are pressed against the rails by the lower cross ties, F F, which, in turn, are thrust downward by means of the levers, E E. These levers are three-pronged at their lower ends, the two outside prongs being attached to the lower and the middle one to the middle cross tie, which being suspended a little back of the others, serves as a fulcrum for the downward thrust, and by elevating the inner wheels the brakes, G G, are pressed firmly against the rails, B B. I I are bolts passing through the ends of the cross ties and the centers of the india rubber springs.

The levers work in corresponding bevels formed in the middle and lower cross ties, and may be operated either above or below the axles. The friction rubbers or *anchors* are attached firmly to the lower cross ties, which act with them. To retain the lever always in its place, the turn-bolt passes through an eye in the middle prong. The friction rubbers are double-flanged, to prevent the train from being thrown off the track, as when the train is in motion they glide along the rail at but a small distance from it. C is the pulley, by means of which the levers that depress the brakes upon the rails, are actuated.

For any further information address the inentor as above.

HUTCHINSON'S POTATO PLANTER.



This engraving is a longitudinal vertical section of a machine for cutting, dropping, and covering seed potatoes, patented by Samuel Hutchinson, of Rockport, Ind.

a is a frame supported on three wheels, two being behind and one, *c*, in front; *d* is a share for making the furrow to receive the potatoes; *e* is a box or hopper, the upper part of which is filled with potatoes, this is traversed by sliding floors, *f f*, which, being held to their rearmost position by springs, retain the potatoes until such time as the wipers, *h h'*, on the axle of the hinder wheels, by pressing the floors forward, cause the knives, *i i'* (one only is seen) to slice the lowermost stratum of potatoes, which being accomplished, the sliced portions drop through the spout, *j j'*, and the floors return to their original position. The sliced portions are received by a trap door, *k*, which being suddenly drawn downward by a pin, *l*, acting on a notched rod, *m*, attached to the door, drops a charge of potatoes into the furrow. Two blades, *n n'* (one only is seen) scrape the earth back over the potatoes, and effectually cover them.

There are two sliding floors or platforms and corresponding wipers and cutting blades.—One set of the wipers is adjustable on the wheel shaft, so that they can be arranged to act in concert or alternately, thus planting the potatoes in distinct hills, or in a continuous row; in the latter case the trap-door is held permanently back by a catch, so as to present no interposition to the constant dropping of the potatoes. A ratchet and pawl, preventing a backward movement of the driving wheel, remove any liability to disarrangement of the action, so that by starting at the right spot, the hills are properly distanced across the entire field.

The inventor claims that by means of this machine, a man and horse can plant five acres a day.

For any further information address the inventor as above.

Improvement in Steam Boilers.

Henry S. Williams, of Malta, Ohio, has invented certain improvements in steam boilers, for the purpose of more perfectly controlling the pressure of the steam, and he has applied for a patent. The invention consists in admitting water in small jets into the boiler by means of a plunger and slotted arm, or their equivalents, when operated by the pressure of the escape steam of the safety valve, and in closing the cock through which the water is admitted as soon as the safety valve closes, by means of a spring. The pump is also started at the same time, if not already in operation, by admitting the steam from the safety valve into a pipe leading to the steam-chest of the pump, through a branch pipe of that carrying the plunger, which is provided with a valve, to prevent the steam from the chamber from passing into the boiler, when the pump is running.

Great Fire—Harper's Establishment in Ruins.

On Saturday the 10th inst., the large establishment of Harper & Brothers, this city, consisting of nine buildings burned down, together with seven other buildings in the vicinity. The total loss has been estimated at $1,600,000. By this fire no less than 2,000 persons have been thrown out of employment. The Harper's loss is $1,400,000, on which there was only $220,000 covered by insurance. The most of their stereotype plates, however, were saved, they being packed in vaults under the street. It was reported at first that a number of persons had perished in the flames, but this happily turned out to be untrue. The fire, however, was communicated from room to room, and from story to story, with such amazing rapidity, that many of the male and nearly all the female operatives had to be rescued by ladders. It is stated to be the largest fire which has occurred since the memorable canflagration in 1845. While the public sympathize with the losers by this calamity, we hope they will not forget the condition of those 2,000 male and female laborers who have so suddenly been flung out of employment, and thus deprived temporarily of any means of support. Let us do something for them.

Locomotive Shops.

In addition to the locomotive engineering establishments in the Western States already noticed in our columns, there is one in Nashville, Tenn., called the "Nashville Manufacturing Co.," which was established about a year ago, and has turned out some seven or eight engines, which are all doing good service on the Nashville and Chattanooga Railroad. This establishment employs about 200 persons on locomotives, stationary engines, and other work. Seven new locomotives are in the course of construction, and the company has the reputation of doing excellent work.

Scientific American.

NEW YORK, DECEMBER 17, 1853.

The Patent Laws—Their Defects and Remedies.

The "Washington Union" of the 3rd inst. discusses the defects of our presentpatent laws, and makes some very just observations upon them, but the *remedies* proposed in our opinion, will only aggravate the evils instead of curing them. Respecting the old Patent Act of 1793, it says, "it is believed by many to be the best ever passed," and it characterizes the Acts of 1836 and 1839, as ambiguous, and in many respects incomprehensible." It says:—

"The rays of judicial light, usually so clear and powerful, have scarcely been able to penetrate them. Although included in a few printed pages, there is more to bewilder those most interested in them, and to puzzle the courts, than in any hundred pages of law to be found in statute books. They bid fair to out-rival the celebrated English statute of frauds in creating labors for the judiciary, and in confounding the common understanding. Good laws define the rights of those subject to their operation, in a manner easily understood by the public at large, and protect the rights which they create. The present patent laws almost wholly fail to accomplish either. They nowhere clearly and fully define what is patentable, or what constitutes an invention. They leave the public and the courts substantially in the dark on these points. This occasions innumerable controversies."

We in a measure agree with what is here said respecting the obscurity of some portions of our patent laws, but not respecting "what is patentable and what constitutes an invention." If the present patent laws are obscure in many points, they are very clear on the point of what is patentable, and the courts, so far as our experience goes, never found any difficulty in defining what constitutes an invention; these are not *dark* but *luminous points*. Section 6 of the Act 1836, says: "Any person or persons having discovered or invented any *new and useful* art, machine, manufacture, or composition of matter, not known and used by others before his or their invention or discovery thereof, upon due and proper action may have a patent for the same." This is very precise language; what better language can be used for judging of an invention than "new and useful?" No law can be framed to define the question more clearly. When a patentee sues for an infringement, if the defendant proves that the invention claimed is not new, the patent then becomes null and void; if the defendant pleads that "it is not useful," this is easily settled, by making him pay for confessing to the *use* of that which he asserts is not useful—for he thereby convicts himself of tergiversation.—The "Union" also says:—

"A good and valid patent may be fought from its birth to its death, often costing in litigation more than it produces, while an invalid one may be the basis of endless legal controversies, without the possibility of being vacated, either by the Commissioner who issued it, the judiciary, or Congress. Where a large amount of capital has been invested, and time has shed its mists upon disputed facts, the interest of the parties often induce them to scruple at nothing which promises success in litigation. Perjuries but too often contribute to the result. The talents, dexterity, and skill of those who are witnesses by trade, in giving their own and combating the opinions of others, not unfrequently turn the scale of victory. Neither the patentee nor the contestant has a fair chance. So great is the evil of this endless and expensive litigation, that many now refuse to take out patents at all, but use their improvements as well as they can in secret. Professor Morse has advised inventors to do so."

There can be no doubt but all stated in this extract is true, except the two last paragraphs, and the last is true as a statement, but is not as a sentiment. We believe that Prof. Morse has, in one case, given such advice, while he himself is a living example of the benefits of our Patent Laws. At the present time, we are informed, he is comparatively wealthy, by the profits of his *patent*; had he kept it secret, we have no doubt but he would be as poor to-day as when the first idea of it flashed across his mind. Prof. Morse must have given bad advice. There are very few, *not many*, as we have very good opportunities of knowing, who keep their inventions secret. Those who do so are liable to have their improvements stolen. The following are the remedies proposed by the Union:—

"First, divest the patent laws of their obscurities, uncertainties, and catalogue of discretions, whether developed upon the Patent Office or the courts. Second, when patents are applied for, notify the public to show cause, if any they have, why they should not be issued. Third, make ample provision for hearing and trying the objections raised, if any. Fourth, when granted, make the patent conclusive, as extensions now are, against all the world, so that on a trial the infringement and the damages will be the only questions to be considered. Fifth, to protect the public, authorize parties interested to take direct proceedings, to set aside and annul the patent. If the patentee is beat, cancel the patent and let that end the matter. If the Commissioner of Patents has not time to hear these preliminary questions, clothe some court or judicial officer with power to do so. If justice requires it, send an issue of facts to a circuit or district court to be tried. Have all questions preliminary to issuing the patent determined before the interests involved become large, and while the facts are recent and easily proved. By this course, the courts and juries will be relieved, and the patentee's rights protected—"secured."

With the *first* remedy we entirely agree.—The *second* and *third* may be embraced in one, and excepting "notifying the public" (which would do no good) is fully embraced in the present Patent Laws. The *fourth* and the *fifth* remedies contradict one another, for the *fourth* makes the patent *conclusive*, and the *fifth* provides the means to make it *inconclusive*. With the fifth remedy, by itself, we agree; it simply provides for a writ of *scire facias*—it belonged to the old Act.

It would be impossible to notify the public intelligently of the application for a patent; because it would require the publication of a particular description, with drawings of the invention claimed. Who would pay for this? "The inventor," the proposer may say; this would prevent all men in moderate circumstances, and especially poor inventors, from applying for patents, and would thus be the means of injuring the inherent rights of the great majority of American inventors. It would also be undemocratic for Congress to make patents *final*, it would convert that body into a huge monopoly grantor, and violate the principles of the Constitution. Extensions, are not final against the world. The 'Washington Union' is mistaken about this; they come under the same laws and rules as they did during their first terms. All questions preliminary to issuing the patent can never be tried, for *all* questions cannot be raised until the interests involved are understood; the majority of these never arise, until the patent is in operation for some time.

It requires very few improvements in our Patent Laws to make them as perfect as any laws can be. The present laws in fact are no worse than most other laws. No law can be framed where great interests are involved that will provide against litigation. Look at the "Gaine's case," the one of the "Methodist Book Concern," and many others we might mention.—The "Union" has no interests at stake, but that of the welfare of inventors, and it is no doubt sincere in the remedies pointed out.—The discussion of this question at this time is appropriate; we present our objections to the propositions advanced, and next week will point out some remedies which we think, if acted upon, would be beneficial to inventors and the public at large.

Railroad Association.

We would like to suggest to our friends, the Directors of the various Railroad Companies in our country, the propriety of forming an association for the purpose of testing many of the numerous railroad inventions which are continuallybeing presented to the public. In this way a small amount contributed annually by each, would amount to an aggregate of which all would reap the benefit, and if judiciously expended by suitable persons, appointed by the association, it would enable all the improvements promising to be of any value, to be fully and fairly tested. We are confident that it would be the means of saving hundreds of thousands of dollars every year. Any other business which could as well be done by an association of this kind as by the separate companies, might be confided to them. Whoever will take the initiative in this matter will confer a benefit upon inventors, and we will gladly give the use of our columns to any person who can present a well-devised scheme for this purpose.

Patent Office Report for 1852---No. 8.

Examiner F. S. Smith's Report (Continued.) One of the seven patents granted on sewing machines, in 1852, was that of Wilson's, which was illustrated in our last volume. In this machine the lock stitch is formed with two threads, but no shuttle is used, as is stated in this Report. There is a revolving hook and spool on it, but no shuttle; it would be just as correct to call the hook a needle as a shuttle. It is entirely different from the needle and shuttle machines, and embraces the most ingenious device for locking the stitch ever invented.

Four patents were granted for knitting machines. For spinning machines seven patents were passed; one was for the self-acting mule, in which the machinery is greatly simplified. One long irregular cam regulates the motion of the spindle, the backing off, and formation of the cop.

Three patents were issued for improvements in making batting, and we understand that a very powerful company has been formed in this city, combining a number of cotton batting patents, and embracing the patent of Col. Robinson (our acting Consul at Havana), for making cotton mattresses.

No less than twenty patents were granted for power looms; three of these were for pincers and pile wires, for pile fabrics, such as the printed warp tapestry carpet. A foreign loom patented for weaving Brussels carpets without the use of pile wires, is thus described:—"Certain *picks* of the weft thread are partially beat up, as they are woven into the warps; that is, leaving a space between two of the picks of weft, and then throwing in a number of close shots; after this is done, the whole of these successive picks or shots of weft are driven firmly up on the foundation warps, by which means the terraced work, occupying the space between the open pick, will be packed into loops on the surface of the fabric, and form the raised portion of the warp. In effecting this object, it is necessary to loosen such portions of the warp as are necessary to form the loops, and also to tighten the ground warp threads whilst the lay is beating up the weft to make the loop first."

This ends our brief review of Examiner Smith's interesting Report.

Examiner Schaeffer's Report.—This Examiner fills the situation formerly occupied by S. Cooper, a faithful officer, who was connected with the Patent Office for about ten years. Examiner Schaeffer has charge of the engineering class of inventions; he pays a compliment to his assistant, Dr. D. Breed, who has labored faithfully with him to extricate his desk from an accumulation of applications. The number of applications passed was 141, the number rejected 268—less in proportion to the number of patents granted than by any other Examiner. The majority of the examinations were made by Mr. Cooper before he retired. Thirty eight patents were issued for improvements in civil engineering and architecture. In respect to railroad inventions, the Report states that owing to their recent rapid development in the Western States, applications for patents were made by residents in those districts, which were but revivals of old inventions. "Still," says the Report, "amidst such a large amount of ingenuity, many very happy hits are sometimes made, and for the sake of these it is desirable to encourage invention." For increasing the safety of railroad travel, it says, "the records of the Patent Office, for the last few years, show some very beautiful inventions, which afford a promise of better things yet to come." Four patents were granted for railroad switches; one for making wrought-iron railroad chairs from plate iron. A large hearing ear trumpet for engineers on locomotives, was patented, and the improved safety car for inclined planes, illustrated on page 180, Vol. 8, "Scientific American," is favorably noticed. It speaks approvingly of the patent granted to M. Maillefert, for blasting rocks under water; which was illustrated on page 8, Vol. 8; how this patent came to be granted has always puzzled us, for the *invention* is an old one and should be public property.

The tubular wooden bridge, illustrated on page 24, Vol. 7, "Scientific Ametican," is also favorably noticed. Ten patents were granted for car wheels; in respect to this class of inventions, it is stated that the Office has been exceedingly liberal in granting such patents. About 80 forms of car wheels have been patented in our country, and as many in England, but this should not lead any person to suppose that every design and form of car wheel can be patented.

Thirty-six patents were granted on mills, of which 8 were for grinding and crushing ores; these were called forth by the great amount of gold quartz found in California, which it is hoped, can be ground, and the gold extracted at such a small expense, as to make this metal at some future day, as cheap as lead. In itself gold has no positive natural value, excepting as it is useful in the arts. We believe that if it were as cheap as lead, many operations in the useful arts would be greatly improved.

Thus ends our brief reviews of the Reports of the Commissioner and Examiners of the Patent Office for 1852. As we remarked in our first article, we are glad that the Reports of the Examiners have been presented. We took occasion, in reviewing the Report of 1851, to condemn the action of the Patent Office in not presenting the usual brief and interesting abstract of inventions patented: our remarks have not returned void, for we assure the Commissioner and the Examiners, that the condensed reviews of their reports, which have been presented to the public through the "Scientific American," have been read with great interest by tens of thousands, and have been the means of showing to our people the importance of the Patent Office, and the benefits which are being conferred annually, by our inventors, upon the general interests of the country.

Testing Bridges.

Messrs. Editors.—As I anticipated another and more general trial of models of bridges is to come off here, and as it is a matter of great importance that the most scientific—because the surest—construction of bridges should be generally known, I would respectfully submit the propriety of calling the attention of the public through your paper to the coming test.

The trial will come off during the present winter, and all interested in the various plans of railroad bridges should be represented, and the earliest notice of the time when they will be ready, addressed to me.

Required Materials and Dimensions of model.

Length	16 ft. 2 in.
Span between bearings	14 ft. 9 in.
Height (greatest)	1 ft. 2½ in.
Width	9 in.
Weight (as near as may be)	64¾ pounds.

Materials—White pine with brass bolts.

Joseph E. Holmes, Director of Machinery.

Crystal Palace, Dec. 9, 1853.

Flax Culture.—In addition to what we said last week on linen and the flax culture, we will proceed to present more information on the subject.

When the crop of flax is taken from the field, it is divided; the seed being directly serviceable to the farmer as a valuable feeding substance, or for sale in the market to produce oil. The straw is of little value until it undergoes certain processes, which change its character entirely. The bundles of flax after being taken from the field are first rippled, which is done by drawing it by handsfull through an iron comb set upon a horizontal beam; this removes the seed; the seeds, however, if the flax is fully ripe, can be removed by passing the straw between rollers.

Flax straw consists of two distinct parts, the woody and fibrous, the latter is the only part used for making thread, cloth, &c., and must be separated from the woody parts, which are i nthe interior of the stalks, and named *boon* and *shives*. It is very difficult to separate the woody from the fibrous parts, hence many plans have been tried for this purpose. The old way is to ferment the flax by steeping it in pools for some days, or by dew rottings, whereby the chemical action leads to the easy separation of the parts, afterwards, by scutching. A patent for *steam* rotting was taken out in the United States in 1825 by A Chinn, of Ky., and about 115 patents have been taken out at different times for improvements in flax machinery. When we look at such a list, we are more than surprised at the little which we have done in the manufacture of linen. For *water*-rotting flax the bundles are placed in layers over each other in the water, or they may be placed upright. They are covered with boards, and these are pressed down with stones to keep the flax about one foot beneath the surface. The fermentation makes the flax buoyant, so that care must be exercised to keep it under the water. When fermentation ceases, the bundles sink, and whenever this is noticed, samples of the flax should be examined twice each day, in order to guard against over-rotting, which injures the fiber. The rotting is completed when the *boon* is found to break without bending, or when several stalks knotted together sink to the bottom if thrown into the water. The time occupied in rotting is from 5 to 15 days. A tank with soft water is a good place for rotting, but the water must be changed two or three times during the operation. A running stream or stagnant pool will answer, but it is best to have a small stream running through the pool. When the flax is properly rotted, it should be rinsed in clean water, then dried in the sun.—By rotting it loses 30 per cent. in weight. Water rotting is an unhealthy operation, and should always be avoided if possible. By exposing flax to the dews and sunshine, on meadow lands for about 28 days, the same object will be obtained and a better quality of flax produced. Three other processes of fermentation have recently been introduced into Ireland, one from Germany named Schenk's process, the other two from Scotland are considered the best. These are as follows:—

Watt's Process.—The straw is placed in steam tight chamber, of a suitable size and shape, the top being formed by an iron tank containing cold water, and the lower end having a perforated false bottom, at about 12 inches from the other. Steam at a low pressure s then blown from a boiler, through a pipe into the steaming-chamber, and passing up through the straw, comes in contact with the iron top, by which it is condensed; then, trickling down the spikes, fixed there as points of dispersion, through the mass, it is passed through the false bottom, carrying with it the extractive matter thus dissolved out of the straw, which is drawn off by a waste pipe into a vessel or tank below, in which it is preserved for use as a feeding substance. This is continued for from 10 to 12 hours. The straw is then removed, and is passed through four sets of smooth rollers, which squeeze out about 80 per cent. of the water, and at the same time crush the stems, breaking up the central woody core or "shive," and materially assisting its subsequent separation from the fiber. From these rollers it is carried to the drying-house, which is heated by steam pipes from the boiler, and thence to the scutching frames, where the operation is performed more rapidly and efficiently than when the flax is prepared by the ordinary method, owing to the thoroughly crushed state in which it comes from the rollers. This flax is then ready for market, having passed through the whole process, from the raw material to the prepared fiber, in the short space of about 36 hours.

Buchanan's Process.—In this the steeping is effected by repeated immersions in a tank of heated water, arrangement being made by which the temperature is never allowed to exceed a certain degree—a point of great importance, both as regards the abstraction of the azotized extractive matter, and also the quality of fiber produced. Still another improvement is claimed by Buchanan, in his method of drying the steeped straw preparatory to scutching, which he does by dry warm air driven through the same vat in which the flax is steeped.

Some plan should be adopted by our farmers for saving their flax straw, and paying back to Ireland with the raw material at least, part if not all, of the large sums we pay for linen.—This will not interfere with the cotton trade, for at the present moment England and Ireland get their outside supplies principally from Russia; they would rather get it from the United States. England imported from Russia and other European ports in 1851, 124,784 tons of dressed flax and hemp, which was valued at $25,500,000. We could supply all this, and yet we pay about $15,000,000 for linen goods every year, and our farmers do not seem to be aware of what they can raise, and pay for by a fair exchange. They should see well to this.—We will close our article on flax by describing the mode of saving flax straw to be steeped by Watt's or Buchanan's process.

The flax stems are to be put together in bunches, about one half larger than can be grasped in one hand, spread out a little, and laid in rows after each puller, the roots and tops alternately, which will prevent the seed-balls from adhering in being lifted. Except in settled weather, the *stooking* should never be allowed to remain undone over night, but gone into at once. The flax should be handed to the stooker by the tops, the handsfull as pulled being set up against each other, the tops joining like the letter A. The stooks are made 8 or 10 feet long, a strap keeping the ends firm; they should be thinly put up, narrow at the top, so that they may get the full benefit of the exposure. In six or eight days after pulling, the flax should be ready to be put up in sheaves similar in size to those of oats. It is then put up into ricks, and allowed to stand until ready for stacking. The sheaves should not be made too large, as in this case the outside straw is discolored by the sun before the interior is dry. In making the rick, lay two poles parallel on the ground about one foot asunder; they should be laid north and south, so that the sun may beat on both sides of the rick during the day. A strong, upright pole is put at each end of the horizontal ones. The flax is then put up between them, the length of a sheaf in breadth. The sheaves are to be placed top and root alternately, from 7 to 8 feet high; the top finished by laying a single row lengthwise, or across the others; another row as before, but with the tops all one way; by this arrangement, a slope is formed for drawing off the rain; the rick is finished by placing stones on the top, and secured with a rope. Thus built, the rick will stand for months—it can be stacked at leisure, put into a barn, and kept stacked for years without any injury.

Other Linen Articles.—It was our original intention to notice briefly each case and parcel of every linen exhibitor in the Crystal Palace.—Such a task, amid such a display, our readers must acknowledge would not be easily accomplished. We have still a few to add to our previous list. We believe that we have left no parcel unexamined in the whole Exhibition.

Holland Linens.—A. I. Ten Dosschate, but whether of Amsterdam or Haarlaem, we could not learn, exhibits some of the famous Holland sheeting, and drilled goods, and damask table linen—in all 20 pieces. None of them are fine, or to be compared with the Irish linen, excepting in strength; they are strong, well woven, and made of the best flax.

Austrian Linen.—Wodl & Gorgias, of Vienna, exhibit a very large assortment of linen goods—about 50 pieces. One piece of shirting equals, we believe, any in the Irish Department. This Austrian Linen House must carry on the manufacture on an extensive scale. They display fine shirting, bleached and unbleached, white and green drilling, damask table linen and toweling. Two pieces of plain sheeting 4 feet wide, are splendid specimens of goods, The Austrian linen does great credit to the manufacturers of it.

Another Case of Irish Muslin.—We had omitted to mention one very important case of Irish sewed muslin, namely, that of John Holden & Co., of Belfast, the largest manufacturers of sewed linen muslin goods, it is stated in the world. The embroidery is all done by hand; the pieces are all given out, and the work performed by females in their cottages throughout every county in Ireland. No less than 10,000 persons are employed by this house, and they pay out for wages alone, about $10,000,000 annually, according to statements made by themselves—this is a large sum truly, and we are inclined to accept the statement with caution. The case Exhibited by this House contains collars, robes, handkerchiefs, &c., a most beautiful and elegant assortment.

American Linen Thread.—The only productions of American flax, that we have been able to search out, is one case of linen thread by James French, of the Lambertville Flax Mill, N. J. The articles embrace fine linen twine, yarn, and shoemakers thread, put up in balls. This thread is good and well put up.

Flax.—There is but a mere handful of American Flax on exhibition, prepared by F. A. Bevans, of New Haven, Conn., and dressed on Chichester's machine, which has been illustrated in our columns. These few specimens look well; we are sorry that they exhibit so small a quantity; we could put it all in a snuff-box.

American Hemp.—There are six bales of American hemp on exhibition; one is from Newmarket, N. J., by W. Vail & Co.; the other five bales are from Missouri and Kentucky. Holiday & Dickey, of Weston., Mo., Baker, Bell & Co., same place, and Glass & Beer, of St. Louis, Mo., exhibit one bale each of beautiful undressed dew-rotted hemp. John Hunter, of Lexington, Ky., and Thomas Hemingway, of same place, exhibit one bale of dew-rotted hemp. We must say that these five bales of hemp do credit to their exhibitors; the color is good and the quality excellent.

American Silk.—We witnessed with pleasure some additions to the articles of American silk previously exhibited. The skill displayed in the manufacture of this beautiful fabric, affords us much satisfaction. One case of silk thread of various colors, put up in balls, is worthy of attention. The articles consist of handkerchiefs, checked, striped, and flowered, striped silk for ladies' dresses; vestings and thread, and some beautiful samples of raw silk, impresses us very favorably with the kind of silk which can be raised in our country. We are confident that it is equal to the Italian. We have always been of the opinion that silk can be raised, and goods manufactured in the United States, of as good quality as any in the world. These articles afford conclusive proof of this opinion. The factory where these goods were made, and the only one, we believe, in our country—using American silk—is located opposite Cincinnatti, in Newport, K y.

Inventors National Union.

We have received a copy of the Constitution and By-laws of an Association formed in this city, bearing the above title; we shall read this document carefully, and present our opinions on it next week.

Manufactures of the City.

We have been looking about town during the past week, visiting some of the principal manufacturing establishments, and thinking it may prove interesting to our readers, we propose laying before them a brief account of what is doing in here. We do not think our readers are aware of the immense industrial interests of this city. There are three establishments which employ 2100 hands. We will this week notice some of the principal iron foundries.

The Allaire Works, 466 Cherry street, are among the oldest in the city. They were founded by James Allaire, in the year 1810; they are engaged in the manufacture of steam engines and boilers, heavy machinery and indeed a general machine business, but principally engines for ocean, lake, and river steamers. T. F. Secor and J. Breasted are the proprietors; they have at present in their employ about 600 hands.

They are now engaged in constructing two beam engines with cylinders of 81 inches bore and 12 feet stroke for two boats being built at Buffalo, for I. Newton, of this city, and the Mich. Central and N. Y. Central Railroad Companies, to form a connection of the two roads between Buffalo and Detroit. They are also building a beam engine to run in connection with the Black Warrior, between this city and Mobile; cylinder 75 inches in diameter, 11 feet stroke. The ship is now building at Collyer's Yard, 19th street. They are likewise building an engine of the same size as the above for E. Mills' new steamer "Yankee Blade," which is now at the wharf receiving her engine and boilers. Another is being built with cylinder of 76 inches diameter, and 12 feet stroke, for the New York and Stonington line.

The Novelty Works, the largest in the city, are conducted by Messrs. Stillman & Allen. They are situated at the foot of East Twelfth street. The number of hands at present employed is about 900. Their business is a general machine business, but especially the manufacture of steam engines. They are now finishing a side lever engine for the "Nashville," of 85 inches diameter and 8 feet stroke of cylinder, and an oscillating engine of the same dimensions for the "Knoxville," Savannah Line, Capt. Ludlow.

They are also constructing for the Bay State Co.'s New Fall River boat, the largest engine that ever was built in this or any other country. The diameter of cylinder is 105 inches, and the length of stroke 12 feet. This is a monster indeed, but though the largest steam cylinder it is much less in size than those "hot air" cylinders, two of which succeeded in propelling the "Ericsson" last winter at the average rate of something less than three miles an hour.

The repairs of the Collins' line of steamers are all done at these works. The total amount of their business exceeds, annually, one and a half millions of dollars.

The Morgan Iron Works, Quintard, Merritt & Co., proprietors, employ about 600 hands; their business is much the same as those already mentioned. They have just finished a pair of engines for the "San Francisco," to run between that place and the Isthmus, in Howland & Aspinwall's line. They are oscillating engines 65 inches bore and 8 feet stroke; they are furnished with Ericsson's condensers, and the boat is fitted with a new plan of feathering wheels. They are also building two pair of engines for Pacific steamers of 50 inches bore and 10 feet stroke, one of 65 inches bore and 11 feet stroke for Harris & Morgan, of New Orleans, to ply between that place and Vera Cruz, and another 60 inches diameter of cylinder and 11 feet stroke of piston, to run between New Orleans and Galveston.

They are also building for the Union Ferry Co., between this city and Brooklyn, an inclined engine of 38 inches bore and 9 feet stroke, and for the Norwich and New London's Co., steamer, a vertical one of 76 inch bore and 12 feet stroke.

All these works turn out engines of superior finish, and excellent model, and some of the brass work, such as gauges, indicators, &c., are exceedingly beautiful.

TO CORRESPONDENTS.

J. W. T., of ——.—Three men will move a house 40x80 feet, with a capstan and a horse operating it. The house is raised by jacks, set upon long rollers and drawn by a cable passing round the capstan; the horse operates the cable by a long lever, like that of a clay pug mill. You can build an ice house above or below ground of wood, brick, or stone, by making the walls double, packing between them with saw-dust or charcoal. It must be placed in such a position that any moisture will easily drain through the floor and run off. To do this, make the floors with wide seams and cover them with clean straw: the work is an easy one.

W. R., of Ala.—We have never seen a cap like yours employed, but we cannot see any advantage that can be obtained by its use.

W. F., of Ohio—If you have any taste for the engine you could soon learn to operate one: a few months practice in an engine building establishment would be better for you than all the books you could purchase:—careful and experienced men are wanted as engineers; your age is no objection.

R. O. H., of Ireland—The wood planing machine you speak of as having been introduced into your country, three or four years ago, is the American Woodworth machine, and was patented here more than twenty years ago.

T. W., of Tenn.—It will take 250 cubic feet of water per day for a 25 horse-power engine, low pressure; if you use high pressure and expand, according to the gain by expansion, so will you use less water. You can therefore calculate from this data.

O. H. P. W., of Ala.—No common whitewash will stand exposure to the weather without rubbing off: make up your lime in the common way for whitewashing, and dissolve half a pound of common salt in every six gallons of it; it will turn yellow in the course of time. We will furnish a receipt next week.

J. F. O., of S. C.—The machines for splitting lath from round logs, we saw some two years since at the American Institute Fair, but do not know who makes them. The machine of Packard, Greenwich, Ct., noticed a few weeks since is a good one.

C. W. & Co., of Ohio—Sulphuric acid will act upon the oil contained in the alcohol made from corn; that substance is fusil oil, and when corn whisky is used for making chloroform, sulphuric acid is used to purify it by removing this oil.

M. K., of Ind.—Gold cannot be destroyed in a furnace: it can be melted, but this is all; steel is polished on emery cylinders, and finished on tripoli or crocus cylinders.

A. S., of N. Y.—Your method of securing hubs to axles is new, so far as we know; we have seen a great variety of devices for this purpose.

J. O. O. of Ohio—We learn upon inquiry that Wilkinson's press, to print on a continuous sheet, was invented some years since, but owing to want of means he could not complete it, therefore he must be before you in the business.

H. M. P., of Ct.—Your "new" discovery goes far beyond anything we ever heard of. Have you read what Regnault says about condensed carbonic acid gas? Just try your discovery in a working engine. It cannot operate.

E. M. H., of N. Y.—Nathan Brand, of Leonardsville, N. Y., is the patentee of the rotary anvil stock.

L. B. A., of Pa.—We are in correspondence with a party about constructing a new model for you, and as soon as we get a reply we will advise you.

J. F., of N. Y.—We expected to have published an engraving of Hutchinson's stave machine before this, but have been prevented for want of the necessary information in regard to it. We promised it and shall endeavor to fulfill our promise at some future time.

C. R., of Cin.—We have never seen a double grate like yours, but a long grate will accomplish the same object; by it you can push pack the red coals from behind the door, and supply their place with the fresh when you feed.

J. H. C., of N. H.—We do not discover anything in your modification of the "Hot Air Engine" which recommends itself to our approval. It is quite evident that you do not understand the nature of heated air as a motor. Our arguments so carefully elaborated in the last volume of this paper, are good against the success of your plan: read them carefully and you will doubtless abandon the scheme.

E. R. L., of N. Y.—Your suggestions in regard to feeding paper to presses in an endless web, is not new, neither is the Register for indicating the speed of trains.

H. L. R., of ——.—We can furnish you with "Ranlett's Architect. bound, two volumes, for $12, or in numbers at $10.

T. C. & W., of Pa.—Yours has been received.

O. A. B., of N. Y.—The oil we think will injure the vulcanised india rubber if submitted to heat, but it will last for a long time if kept cool.

D. P. B., of Ind.—Your communication in answer to "Toll Dish" we must decline for want of space: we do not wish to prolong any controversy after both parties have had their say, and we will if you desire it, forward your communication to his address.

W. W., of S. C.—Your contrivance for shaking and conveying straw seems to be novel, possessing patentable features. We shall send you instructions how to proceed with the case.

J. M. T., of Ill.—There is no striking novelty in your plan for an elevated railway. You had better drop it.

J. M. T., of Ill.—The construction of your stone dressing machine is different from any other in use we believe, but the steel disc cutter having an axis of its own patented to Chas. Wilson, therefore you cannot use it.

E. C. H., of Ohio.—We do not believe there is in existence a type distributing machine which is capable of performing the work "while its operator is asleep or absent," if there is we have never heard of it.

D. McK. of Mass.—It is to be hoped that you will be successful, and that a voyage will yet be made across the Atlantic with as much comfort as sitting in a parlor on land.

T. D., of Pa.—You should not pay so much attention to that which can do you no good. It is folly in you to pursue a mechanical phantom. The power which you can obtain by any machine, will always be less than the applied power, not greater.

F. S., of N. Y.—The plan of rotary engine which you submit for examination is old and well known. We cannot advise even an experiment, as we have no faith in its success.

Money received on account of Patent Office business for the week ending Saturday, Dec. 10:—

B. F. McL., of O., $55; J. McD., of Conn., $30; T. R., & Sons, of N. Y., $25; G. W. R., of Ky., $55; G. L. W., of Md., $40: J. L. B., of Mo., $35; D. S, of Pa., $10; D. G. of N. Y., $30; W. & G., of Pa, $50; C. F. S., of N. Y., $10; H. S. W., of O., $5; G. M. R., of N. Y., $15; W. H. & B., of Pa., $20; H. E. C., of N. Y., $15; S. S. H., of N. Y., $30: W. G., H., of Pa., $35; D. F. of Pa., $55; C. W., of N. Y., $55; J. Y., of O., $60.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 10:—

J. H. W., of Ga.; J. McD., of Conn.: H. N., of Pa.; J. C., of O.; D. & S. K. F., of N. Y.; C. V. A., of N. Y.; D. B., of N. J.; H. E. C., of N. Y.; J. F. F., of S. C.

A Chapter of Suggestions, &c

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

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

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75; of Vol. 9, NONE.

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

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

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

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UNITED STATES PATENT OFFICE,
Washington, Dec. 2, 1853.

ON THE PETITION of Henry Burden, of Troy, New York, praying for the extension of a patent granted to him on the 2nd day of September, 1840, and ante-dated 2nd March, 1840, for an improvement in Machinery for making Hook-headed Spikes, for seven years from the expiration of said patent, which takes place on the 2nd day of March, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Monday, the 13th day of February next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evenig National Argus and Pennsylvanian, Philadelphia, Pennsylvania; United States Argus, and Scientific American, New York; Boston Post, Boston, Massachusetts; Atlas, Albany, New York; Morning Post, Pittsburg, Pa., and Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the thirteenth day of February next.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 14 3

Scientific Museum.

(For the Scientific American.)

On the Trappean Rocks of Nova Scotia.

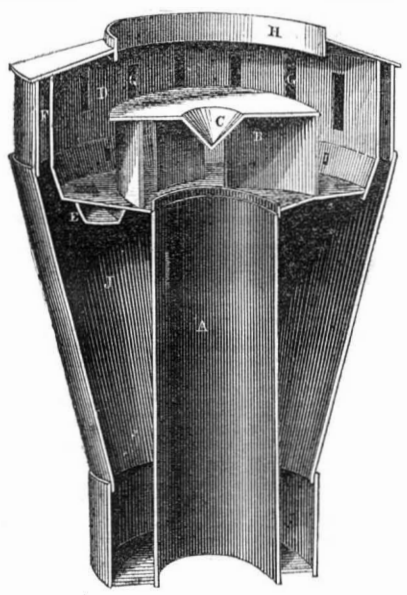
Having recently returned from a survey of this favored land of minerals, I purpose to lay before your readers some observations which may be of service to future explorers.

Trap (Swedish *trappa*, a "stair") derives its name from its terraced sides, and includes basalt, greenstone, trachyte, clinkstone, claystone, porphyry, and amygdaloid. It is an igneous unstratified rock, occurring along with the secondary and tertiary strata, and participating somewhat in the nature of the primary, but formed in all ages and under the cooling influence and pressure of the primitive ocean. It is very tough, is of a dark green or brown color, has a sp. gr. of 2·8–3·2, and is a mixture of feldspar and hornblende or augite. Perhaps in no region of the continent is this anomalous rock represented on so grand a scale as along the northern shore of Nova Scotia. There the formation extends over 150 miles in length, replete with objects of geological and mineralogical interest. For centuries this mural precipice has stood an insurmountable barrier to the mad waves ef the Bay of Fundy, which are continually dashing against it, driven on by tides and tornadoes, of which few have any adequate conception. The variety of trap most prevalent is columnar greenstone, resting on amygdaloid and red sandstone, and is sometimes found of cotemporaneous origin with the lower carboniferous strata.

After these general remarks I particularize. Brier Island, the western extremity of the range, is the sole property of Pluto. Crossing Grand Passage, we reach Long Island, where the trap is of a darker color than elsewhere, more irregular in form, and interspersed with veins of jaspar and chalcedony, and nodules of chlorite. Separated from this by Petit Passage is Digby Neck; here the trap occurs in regular prismatic columns of three, five, and nine sides. At Sandy Cove the mineralogist will find geodes of chalcedony lined with stilbite and mesotype, specular iron ore, laumonite, and rich agates—fortification, moss, and brecciated. Bowlders of jasper lie scattered along the shore. At Trout Cove, where the basaltic pillars are tumbled about in "confounded confusion," the geologist will find as much to interest him, as the antiquarian amid the fallen temples of Greece. Gulliver's Hole is another locality of fine agates, as also of stilbite and magnetic iron ore. At Nichol's Mount, the last occurs in hexahedral crystals, and yields about 80 per cent. of cast-iron. At the entrance of Digby Gut stands the Lighthouse on compact trap strengthened by jasper and chalcedonic veins. Snow's Head, on the opposite side, continues the columnar variety incumbent on amygdaloid. Here the traveler will find a harvest of thomsonite, and mammoth indentations and enormous fissures, which will fill him with wonder and bring to mind the days of Titanic power. Twenty miles easterly will bring him to Chute's Cove, presenting upright columns of greenstone; and the lofty precipices of St. Croix Cove—six miles further—will yield him beautiful heulandite and mesotype. Gathering the rich treasures of thomsonite, analcium, heulandite, and mesotype from the amygdaloidal rocks of Martial's Cove, and the Two Mountains, he must pause at Peter's Point, where, beneath its arches and overhanging precipices, he will meet with splendid apophyllite, mesotype, heulandite, laumonite, and thomsonite. At French Cross Cove the trap rises in tables and columns to the hight of 300 feet above the Bay. The lowest bed of amygdaloid abounds in zeolites. The next place interesting to the man of science is the dangerous but bold promontory of Cape Split—the turning point of that mighty tide of waters which rises to the hight of 70 feet—the highest in the world. Thence southward for a dozen miles, this wall of adamant gradually ascends till finally it culminates in the majestic Blomidon—500 feet above the level of the sea. Here the amateur will laugh to scorn his previous collections; amethystine geodes incrusted with cacholong, foliated, fibrous, and granular selenite, agates, and agatized hornstone, heliotrope, heulandite, jasper, analcime, stilbite, apophyllite, and needlestone, from the the talus at the base of this immense basaltic cliff.

Crossing the sheet of water before him at flood tide, let the traveler drop anchor at the Five Islands. Three are trappean; and two of sandstone and shale. The Leaning Tower is worthy of research; and on the main land opposite, carbonate of barytes and beautiful verd antique occur. A company has recently been formed in London for the exportation of the latter. On this side the shore, for a long distance, is fronted by a lofty bank of red sandstone capped with greenstone. The vesicular amygdaloid presents the usual zeolites, as also a peculiar mineral called silicious sinter—a light grayish white, cellular quartz. The Two Islands yield fine chabazite, analcime, and moss-agate. The next place worthy of notice is Patridge Island—a stupendous mass of trap several hundred feet high, surrounded by wild and picturesque scenery, and decked with those rich gems of nature which make up the *summum bonum* of the naturalist. He cannot leave without a cabinet. Next in order is Cape Sharp, a bluff of amorphous trap resting on sandstone and shale; but it is of no mineralogical interest. Fifteen miles to the west stands Cape D'Or. Here, too, the breccia, from the lashing of the angry billows, has given way to wide fissures and deep caverns, over which hang massive volcanic rocks spangled with native copper and brilliant representatives of the zeolite family. This is the last point in the trap formation, of interest to the scientific traveler—and here we leave him. J. O.

Cutting's Improved Spark Arrester.



The engraving herewith presented is a vertical section of James A Cutting's improved Spark Arrester for Locomotives, patented May 6, 1851.

At the top of the chimney, A, is placed an air-chamber, B, over which a small deflecting cone, C, is inverted. The smoke, as it passes out of this chamber by the openings seen, assumes a rotary motion, by which the sparks and cinders are thrown through the flues, G G, in the diaphragm, and fall down into the outer chamber, J. The current of steam and smoke passing upward tends to exhaust the chamber, J, of its air, by drawing it through the air flues, E E, and thus there is a tendency to draw the smoke and sparks through the flues, G G.

It is evident that at each pulsation of the exhaust steam there will be a draught of air from the spark chamber, J, and this will cause a contrary current during the intervals, which will will have a tendency to increase the draught of the fires.

This Spark Arrester has been assigned by the inventor to Cutting & Rehr, who manufacture them at 124 Arch street, Philadelphia, and to whom all orders should be addressed, or inquiries soliciting further information.

Atmospheric Railway for Broadway.

We have received two communications—one from T. M. Brennan, M. E., of Nashville, Tenn., and one from J. E. Holmes, Superintendent of the Machine Department in the Crystal Palace—upon the subject of an elevated railway for Broadway, in which it is proposed to propel the cars by condensed air. Mr. Brennan says,—"The atmospheric system presents itself as peculiarly adapted to the requirements of City railroads, from its complete absence of noise; its safety, and the lightness of track necessary." Mr, Holmes says,—"Sooner or later, according to the length of the reign of fogyism, there will be an elevated railroad up Broadway, the cars of which will be propelled by condensed air." It is remarkable that both of these gentlemen, living so far apart, should present nearly the same ideas, at the same time, upon the same subject. The means proposed in their letters, for carrying out the plan, are very similar, but do not require to be stated. We have no doubt but an elevated railroad, worked upon the atmospheric system could be successfully carried out for Broadway, but this never will be done without the consent of the owners of property in that street, and it will be a long time before this is obtained.

Atmospheric railways are well understood in all their phases; they are no "untried schemes," and when it is determined to build such a road in this city, the knowledge to carry it out in all its details, will be found ready furnished for application.

Baker's Furnace.

It will be recollected by our readers that we published on page 65 the economic results of Baker's furnace as tested at the Crystal Palace, in which it was stated that the amount of water evaporated was 11·457 lbs. of water by 1 lb. of coal. We also stated that this was the greatest amount of water evaporated by one pound of coal on record. We had been informed that the feed water used was taken cold from the Croton pipes; the statistics were furnished from the Crystal Palace. At that time we were aware that nearly 14½ lbs. of water from 212° had been set down as the theoretical evaporation of one pound of the best anthracite, and we referred to this in our remark. We therefore, with our usual caution, rather understated the results, because they appeared so extraordinary. Another trial of the furnace will be made in the Crystal Palace, and Mr. Holmes, the Superintendent has requested us to consider his opinion as suspended until then.

In reference to our article referred to, Samuel L. Dana, chemist of the Merrimack Print Works, at Lowell—good authority in himself—has published an answer in the "Lowell Journal and Courier," in which it would appear that he is in possession of furnace statistics of no ordinary value. In his article he states that in 1840 a locomotive boiler on board the steamer Anthracite, heated by Player's furnace evaporated 12·40 lbs. of water from 212° by 1 lb. of coal;" also that in 1841 "an upright boiler of J. B. Francis', C. E., at the Massachusetts Mills in Lowell, evaporated 13·015 lbs. of water from 212° by 1 lb. of coal,"—a four day's trial.—With two boilers, "Hayes' battery boiler," and an improved Cornish one, he (M. Dana) evaporated 13·69 and 13·60 lbs. of water by one lb. of coal—in each case—from 212°, for several days together. He presents a number of other cases, nearly as good as these, and says, he hopes the zeal of improvers of boiler furnaces will take its starting point from the goal long since established, and leave that point far behind them on their march." So say we; at the same time there is one interesting inquiry which we have to make here, of all those who send us statistics of boiler evaporation, namely, the time occupied in the evaporation, as well as the quantity of water, and weight of fuel.—It is quite possible that one furnace may consume double the amount of fuel another does, to evaporate the same quantity of water and be just as economical, for if the one evaporates the same quantity in one half the time of the other, although it may require twice as much fuel to do so, it is very evident that for many purposes it will be the most economical to its owner—time is as valuable as coal.

Death of a Venerable Lady.

Mrs. Elizabeth Ellicott, who died at Ellicott's Mills, Md., on the 29th ult., was in the 92nd year of her age, and two weeks previous, in a letter signed with her own hand, remitted in advance her fifty fourth year's subscription to the "National Intelligencer," a paper to the first number of which her husband, George Ellicott, Sr., was a subscriber, as he was also to the first number of the "Baltimore American." Mrs. Ellicott was the last survivor of the numerous family after whom Ellicott'sMills was named. The men were famous inventors and distinguished millwrights.

LITERARY NOTICES.

URE'S DICTIONARY OF ARTS, SCIENCES, AND MINES.—Reprinted from the fourth English edition, in two volumes, by D. Appleton & Co., New York. The fame of Dr. Ure, as a chemist and mechanical expert, is world-wide, and this work is a monument of his ability and great knowledge of every subject connected with the arts and sciences; it treats of almost every subject, not in vague and general descriptions, but in a full and general sense, and with a perfect understanding of the whole matter. It is illustrated with nearly 1690 explanatory engravings on wood. It would seem as if the old Doctor had engrossed all the knowledge of the world and daguerreotyped it in these two volumes, for it is a fact that they tell us something about EVERYTHING. The author has had excellent opportunities of being well acquainted with the machinery employed in various manufactures, and those who consult these volumes for any information, cannot fail to derive instruction. To this new edition many additions have been made, and former errors have been corrected. We heartily commend this work to our readers.

THE PEOPLE'S JOURNAL.—Our old friend, Alfred E. Beach, Esq., formerly of the New York "Sun," and recently one of the publishers of the "Illustrated News," has just started a new enterprise, in the form of a monthly illustrated periodical, which is designed to advocate ALL people's interests, as its title indicates, and illustrate every branch of industry. The two first (Novemeber and December) numbers are issued, and being illustrated with finely executed engravings, the paper looks remarkably well. We bespeak for the "People's Journal" a wide and influential circulation, and for the publisher well-lined pockets. Office of the "People's Journal," 86 Nassau st. Terms, 50 cents a Volume—six numbers.

DODGE'S LITERARY MUSEUM—One of the best literary papers which pays its weekly visits to our office, bears the caption above, and emanates from the Puritanical city of Boston: a new volume of the "Museum" commences this week, and leads off with a new title page almost as handsome in its design as the title page engraving which we had executed at an expense of $250 dollars and printed in the last number of the last volume of the "Scientific American." Any of our reader who may wish to subscribe for a literary paper of an unexceptionable character, to introduce into their famiiies, cannot do better than to patronize Dodge's "Literary Museum." Terms $2 per annum; address Ossian E. Dodge, publisher, 12 School street, Boston, Mass.

LITTELL'S LIVING AGE—No. 36, new series, of this excellent weekly magazine contains two articles on the "Arctic Regions," a very interesting subject at present, which every person should read. There is also a singular article on the "Dauphin of France."

PETERSON'S MAGAZINE—For January, contains a number of fine illustrations, one hundred pages of matter and over forty original contributions, many of which are of superior literary merit. This magazine is under the editorial charge of Chas. J. Peterson, and Mrs. Ann S. Stephens, and is exceedingly well managed. Terms $2. Office of publication 102 Chestnut street Philadelphia.

SATURDAY EVENING POST—The advertisement of this far-famed and widely circulated paper appears in another column. It is carefully and ably edited, and embraces among its numerous contributors some of the best writers of the day.