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## Rail-Road News.

### New York and Boston Railroad.

AIR LINE.—We have received a pamphlet advocating a new railroad between this city and Boston on a more direct route than those which now connect the two cities. The present routes now diverge nearly forty miles from a direct line, and the new route, it is stated, lies through a country more favorable for the construction of a level and straight road. Charters have been secured by the New York and Boston Railroad Co., to make an unbroken line over this direct route, from New Haven to Boston, and have put the control of the line under one board of directors. The distance from New Haven to Boston is 133 miles —100 of which have yet to be constructed. No grade will have a greater inclination than 40 feet per mile. By this direct route it is believed that the entire distance between this city and Boston can be run in six hours—an event much to be desired, indeed. We should like to see this line "go a-head." We believe it will pay well, we have no fears of this. One fact is prominently brought before us in this pamphlet, namely, the true reason of the success of New England Railways,—it is owing to the population of Massachusetts, Connecticut, and Rhode Island being nearly double to the square mile of the population of this State.

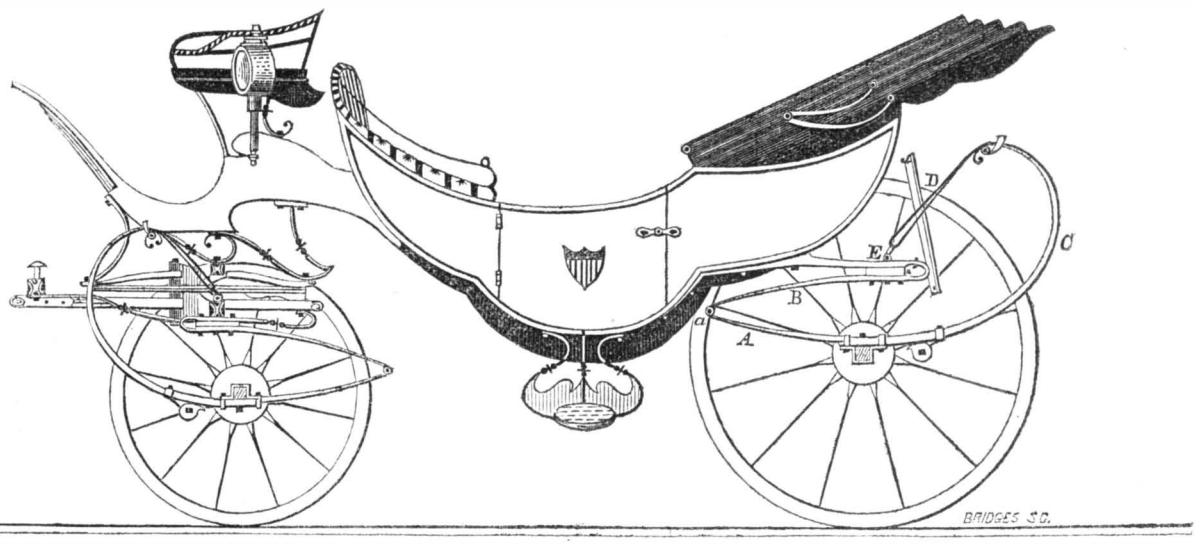
### The Great Railway in Egypt.

The Viceroy has made final arrangements for the construction of a railway between Cairo and Alexandria, and has signed an agreement, for that purpose with Mr. Borthwick, now in Egypt, on the part of Mr. Robert Stephenson. Mr. Borthwick intends returning to England, to send out a staff of engineers to commence operations forwith. This undertaking will confer inestimable advantages on Egypt by bringing forth the resources of the country, besides facilitating the transit of passengers and merchandise to and from India. It is calculated that the line will be completed in about two years and a half. The whole length will be about 130 miles, and it will cross the Nile at the barrage, where a substantial bridge is already nearly finished, having been made by French engineers with the object of damming the Nile for the better irrigation of the land—an attempt in which they have signally failed after having spent an immense amount of money.

### Railways in Italy.

Letters from Vienna of the 18th of July, state the railway treaty concluded between Austria, Parma, Modena, and Tuscany, to have been ratified by all the parties. The line that will join the Austrian Railway to Tuscany will, it is believed, lead from Montera, by Borgoforte, Modena, and the Poretta, to Pistoja, so that, by that means, and by the Italian railways already existing, the Mediterranean will be connected with the Adriatic.

## IMPROVEMENT IN CARRIAGE SPRINGS.



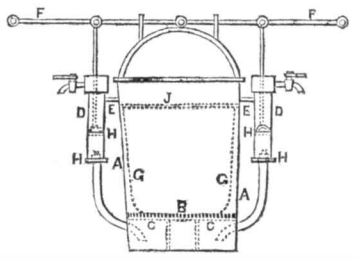

The accompanying engraving represents an imovement in Carriage Springs, invented by Mr. G. Haussknecht, of New Haven, Conn., and for which a patent was granted to him on the 15th of last month. As there is no country in the world where so many carriages are made as in ours—every improvement, however small, is a valuable one, on account of the general interests with which it is associated. We pay no taxes on our coats-of-arms, and our citizens no tribute for riding in their carriages, therefore it is a subject of no small wonder to foreigners, who travel among us, to see so many equipages in our cities and villages. Some of our farmers have as fine carriages as British Baronets—yea, more so, and in presenting the above improvement on carriage springs, we strongly recommend our universal republican nobility—all the sovereigns, young and old—to give it their attention. The engraving is a side elevation of the carriage, with the improvement attached, and the two nigh wheels removed to show the arrangement; and here let us present the claim to impart a clear account of the invention. Says the patent:—

"I claim the employment of a semi-elliptical spring, in combination with a C spring, formed by the extension of one of the arms, the combined springs thus produced being set transversely with the axle and attached thereto, and the body of the vehicle, in the manner substantially as described."

A B are the upper and lower parts of a semi-eliptic spring united by the joint, *a*. C is the C spring united by metallic straps to the portion, A, of the semi-eliptic spring. D is a loop attached to the C spring and to the end of the outside brace, E. The way in which the upper portion of the semi-eliptic spring is secured to the brace is clearly represented. The same arrangement and combination of springs are also applied to the front part of the carriage. C springs are well known to play easier on a carriage than any other kind, but never have been used for carriages without a perch, but by the combination and arrangement of the springs in the above carriage the perch and some other parts are dispensed with. The carriage has a light and graceful appearance, and recommends itself decidedly to our favor.

More information about rights, &c., may be obtained by letter addressed to the patentee.

### Purifying Oils.




The accompanying engraving is, in part, to illustrate a an improvement in the purifying of oils recently patented, as we learn by our worthy cotemporary, Newton's London Repertory of inventions, by Mr. John Lienau, of London. Into a vessel containing crude oil that is desired to be purified, the inventor puts in one gallon of creosote to the 100 of oil, and this makes the oil ferment. After the oil is fermented, which requires some days, the impurities fall to the bottom, and the clear is drawn off into filtering apparatus, as is illustrated by this engraving.

G is a bag fastened in the interior of a vat, A, by the iron hoop, J, and it rests at the bottom of the perforated cover, B, the latter resting on the iron frame, C. The oil is then poured into the bag and the pump, D, set in motion to draw off the filtered fermented oil. The oil may be pumped from the fermenting vat into the vessel. A is a vat; B E are the supports of the pumps; H the valves; F the levers. The process appears to be new, so far as the creosote and fermenting are concerned; but how valuable we are not informed.

### To Make Various Kinds of Inks in the best Manner.

INK, SIMILAR TO CHINA INK.—Six parts of isinglass in twelve of water, one part of Spanish liquorice in two of water, mix the solutions while warm, with one part of ivory black, you must add or mix the parts in small portions stirring them well. When the mixture is complete, the composition must be slowly evaporated of its water, and the paste can be formed into any shape, and the drying completed. This is considered to be a good substitute for China Ink. It is simple and easy made.

JAPAN WRITING INK.—Boil four ounces of logwood one hour in six quarts of water, supplying the deficiency as it wastes, strain the liquor and add more water to make the quantity five quarts (if it be deficient), and while the liquor is still hot add twenty ounces of bruised Aleppo galls, four ounces of sulphate of iron (copperas), burned to whiteness, three ounces of brown sugar, or loaf, six ounces of gum arabic, half an ounce of acetate of copper (blue vitrol), keep all in a vessel for fourteeen days, frequently agitating it during that time, afterwards let it stand to rest till the coarse parts fall to the bottom, then pour off and bottle for use.

N. B. The logwood must be the best Campeachy.

This is the best ink for writing with steel pens, as the copperas is deprived of its sulphuphuric acid, and does not so readily injure the pen.

BLUE INK OF THE FINEST DEEP COLOR.—Prussian blue and one-sixth part of oxalic acid pounded together, diluted in a small quantity of water; keep this solution or rather mixture until the ingredients are perfectly combined. Nine days is the time it ought to stand. Make it a writing thickness by adding pure water and a little dissolved gum arabic.

GOOD RED INK.—Boil a strong decoction of Brazil Wood, and add a little alum and gum arabic. A strong solution of cochineal with cream of tartar and alum, or muriate of tin, in very small quantities, makes a most brilliant red ink, but it is too expensive for common use. It would be beautiful for illuminating parchment writing, as it gives it a more brilliant color when used upon some animal substance, than vegetable like paper.

GREEN INK.—Dissolve distilled verdigris in strong vinegar, and make it into a proper consistency for writing, by a solution of gum arabic.

YELLOW INK.—A little alum added to saffron and water makes a good yellow ink. Thicken with gum.

EXPLANATION.—The reason why gum is required in all ink, is, that most of the vegetable and animal substances used in making colors combine with the water in which they are boiled or scalded, so intimately, that some other substance or substances are needed to set the particles of color free from the water, so that they may leave an impression upon the paper. Thus copperas, alum, muriate of tin, acetate of lead, and a number of other substances are used to set free the particles of color, or what is called *precipitating*. Gum arabic or some other glutinous substance, holds the particles of color in solution, in other words from falling to the bottom and leaving the water by itself, and the coloring matter nothing but a thick sediment.

We have given receipts for making various kinds of ink; those who are fond of illuminating cards, will find them invaluable.

The Louisville Journal says that Warren county has voted by a majority of 300 in favor of a subscription of $300,000 to the Louisville and Nashville railroad.

Two Englishmen have received a charter for the construction of a submarine telegraph between the Danish Islands and the Dutchy of Schleswig.

# Miscellaneous.

Special Correspondence of the Scientific American

London, July 30th 1851.

Hobbs, our American locksmith, has dumbfounded all the great London locksmiths, by picking his way into the best patented locks made by the English manufacturers. This feat was done by Mr. Hobbs, who operated upon a lock placed upon the vault door of the State Paper's Office, and considered proof against picklocks. In twenty-five minutes he was in among the State records, and in ten minutes after he re-locked the door, a feat, the lock being a detector, that was thought impossible. He is to experiment on another patent lock, which is to be enclosed between two boards, sealed by the committee, and nothing but the hole for the key is to be exposed to view, and thirty days is to be the period allowed for opening it. The experiment is looked forward to with considerable interest by all persons connected with the trade. Mr. H. is to get £200 for opening it, and he says he *will do it*. Mr. Hobbs exhibits a lock, and offers a reward of £200 to any person who can pick it or form a false key which will open it, after examining the lock and key for any period they may please. The Lock is Day & Newell's American Parapeutic.

From the opening of the Exhibition till Saturday, July 26, no less than 2,929,778 visits have been paid to it. £66,638 5s. has been received from the sale of season tickets, and the amount taken in payments at the doors has been £181,011 6s. With subscriptions, therefore, the total incomings of the Royal Commission now considerably exceed £300,000 (moee than one million and a half of dollars). Mr. Abbott Lawrence, having requested that his son, Col. T. B. Lawrence may be allowed to take out of the Great Exhibition three of Mr. Colt's revolving pistols, to be forwarded to the Cape of Good Hope, for the use of an officer in Her Majesty's service, the Lords of the Treasury have given directions to the proper authorities to permit the pistols to be removed from the Exhibition Building, and delivered to Col. Lawrence, as requested.

In raw materials America stands unapproachable, at least in that material upon which so much of England's manufacturing superiority depends, viz., cotton. The southern planters have not shown the least disposition to produce any effect apart from inherent excellence, because here are not merely neat packes of samples, but full-sized bales. The chief cottons shown are from Georgia, Alabama, Tennessee, and South Carolina. Among the first may be specified that shown by Mr. Jones, of Burke County, which is beautifully fine, soft, and silky. The cotton from Mr. J.B. Merriweather, of Montgomery, Alabama, is soft, strong, fine, of good color, well handled, and in all respects most excellent. The same also may be said of the cotton from Mr. W. Hampton, of Charleston, S. C., which closely resembles the preceding in all its good qualities. These two bales are probably the finest of the whole series, but undoubtedly some of the others are very nearly, if not quite as good. The cotton from Mr. W. Seabrook, of South Carolina, especially may be mentioned as first-rate. Amongst the contributions from Tennessee, the specimens shown by Mr. D. Lak, of Memphis, Shelby Co.; Mr. G. L. Holmes, of the same place; Mr. J. Pope, and Mr. Samuel Bond, also of Memphis, are as good as can be desired. Inlook ing over the cotton samples, in the East India department I must say our planters need have no fears about such competition, all they have to do, is to progress as they have hitherto done. The indigenous cottons of India are all of them, by nature, short staple; they are wanting in that long, silky lustre which is so eminently characteristic of the best varieties of the American species. But on looking over the extensive series of the native cottons of Hindostan, there is another fact which cannot fail to strike the observer—and that is, the careless and imperfect mode in which the fibre itself has been prepared and collected. One series of cotton from the East India Government Farms, and made into Manchester goods, look very well, but they are of short staple. There are some good samples from the British West Indies, and to that quarter let the American planter have his eyes wide open. There are beautiful specimens of Sea Island from Trinidad and Barbadoes, and a splendid sample of the New Orleans kind from Jamaica. Small samples of nankeen, and some very short staple cotton are shown in the Chinese department; and a single specimen of good and long cotton is shown from Peru. The African cottons do not show to much advantage.

A beautiful little specimen of a marine steamer has come up to London from the Clyde, in Scotland; she is named the "Tourist," and was built by Denny & Brothers, Dumbarton; her length of keel and fore-rake are 155 feet, breadth of beam 16½ feet, depth of hold 7 feet 9 inches. Her two engines are oscillating, 70 horse-power each, and go like chronometers, driving her at 16 knots per hour. Her paddle wheels are feathering—quite a common kind here, and I would advise our North River Engineers to try them, they add greatly to the speed of a vessel.

In the Exhibition I have noticed a gem for printers: it is a specimen of type, said to be the smallest ever manufactured in this country. The whole of Gray's Elegy, consisting of thirty-two verses, is contained in two columns, 3¾ inches deep.

There is also another for watchmakers, it is a watch made of ivory, with gold screws and steel moving powers. It works in ten rubies, and weighs (glass and vase included) only half an ounce.

There is another for musicians, and it belongs to America. It is an invention by T. S. Wood, of Virginia, that is never without a crowd about it, when the doors are opened. It is the attachment of a violin to a piano. It is a bona fide fiddle, played with four bows—producing the softest vibrations of sound; Paganini could not have excited more wonder in the meridian of his celebrity. If the performer is master of the piano, the horse hairs run to and fro on inclined planes with an activity that puts all common elbows at defiance. It is an original idea, clearly an American one, to fiddle by machinery. Sir George Smart, the distinguished composer and organist, the oban man of the music jury, contemplated its movement a long time with evident amusement.

In my last I presented some information relative to the proceedings of the British Association for the advancement of Science, and in my next I will present some more, as it is very interesting to scientific men.

A trial has taken place to test the quality of the French and the English Sheffield files, the English proved to be superior.

By a vote in Parliament, of 75 to 47, the Exhibition Building will be left standing to the 1st of May, 1852, in order to collect opinion relative to its permanence in Hyde Park. I think it should be removed, for however fine it is—and it is the greatest wonder to be seen, the green trees and the blue sky above are more valuable to the Londoners than the Crystal Palace. Excelsior.

[We had some conversation, a few days ago, with a gentleman of this place, direct from London. The greatest wonder to be seen, he said, is the Crystal Palace itself. The American department, he stated, was wretchedly managed, or we would have made a much better appearance. Too much room was demanded in the first place, for if the articles in the department were as closely packed as in other departments, they would have appeared to better advantage. It was the general opinion there, he said, that the Commissioner was not very well qualified for his office; the whole business, as is generally the case with our political managers, has been a political blunder. A mere politician does very well to blow, but he is evidently out of his element among machinery.—[Ed.

Endeavors are about to be made by some gentlemen in Liverpool to naturalize American quails and prairie-fowls in England. The quails are to be turned into close preserves, where they will be kept together and fed till the breeding season, when they will be allowed to lead their young at full liberty, and find their food as they please. The prairie-hens are to be tried in the woods, pheasant-preserves, moors and meadows.

### The Cotton Crop.

The calculations regarding the cotton crops this season exhibit a very wide difference. The crops, by some, it is said, will yield three millions of bales. A New Orleans cotton merchant says this calculation is utterly fallacious, the drought has affected both upland and lowland cotton. It will be impossible to make more than four-fifths of the usual or upland crop, and as three-fourths of the entire crop of the United States are derived from upland sources, the ultimate extent of the production can easily be prognosticated. He says:—The best that can be expected of the upland regions of Tennessee, North Alabama, Western Louisiana, Mississippi and Georgia, is a crop twenty per cent. less than last year, while over the lowland, an alluvial cotton region, hangs the contingency of a fine or foul autumn, and a long or a short season.

### Lard Oil.

America is the land of bacon and lard. It raises more of those gentry named "Alexander Campbell," than all the world beside. The lard of the United States, is a great source of revenue and Ohio is the head quarters of this magnificent fat business. In Cincinnati there are forty manufacturers, large and small, of Lard Oil. These consume on an average, each week, the year round, 1000 packages of 300 lbs. each; equal to 52,000 packages or 15,000,000 lbs. per annum. From this is to be deducted, for sterine, one-third or 5,120,000 lbs, leaving 10,480,000 lbs., equal, allowing 8 lbs. to the gallon, to 1,110,000 gallons. This may be considered a fair average of the amount manufactured and consumed yearly in Cincinnati. To the latter account must be set its five large candle factories, which consume the sterine in combination with tallow. As manufacturers are unwilling to divulge the quantity of candles made, we are left to infer it from the large amount of sterine which enters into their composition,—two pounds being consumed for each pound of candles. Lard oil is fast superseding other oils, and were it cheaper than it is at the East, the common whale oil would soon be driven entirely from the market.

### Opposition to Robjohn's Balloon.

M. Poiteven, the celebrated French aeroneaut, is constructing a most wonderful propeller balloon, at Paris. It consists of three balloons, each 120 feet high, attached to the two ends and centre of a carcass of wood, about the length of a Brooklyn ferry-boat. The steering and advancing apparatus consist of two screws, moved each by a steam engine of four horse power, and acting upon the air precisely as the screw of a propeller does upon the water, and of sixteen inclined planes.

The three balloons are ready—and their immense folds fill the whole length ef the Palais National, where fifty seamstresses have been hemming and binding and stitching away at them for the last two months and a half.

He was to ascend on the 1st inst. By the next steamer we shall hear how he succeeded. A great number are very anxious to know when the American balloon propeller will make her trial trip from Hoboken.

### Railroad in Spain.

In the Spanish Cortes on the 28th of June, the Minister of public works presented a bill for a grant for the establishment of the Aranjuez and Almanza Railway. The grant is of 220,000,000 reals, three per cents, equal to 220,000,000 cash, for the construction and equipment of the centre road, the distance being 144 English miles. The contractors pledge themselves that it shall be finished in three years, and that they will have eight principal stations, 20 carriages (1st class) 27 carriages (2nd class,) 40 carriages (3d class,) 78 wagon platforms for goods, and 20 locomotives. There is to be a single track only.

### Bridging the Nile.

The editor of the Boston Medical and Surgical Journal, now on a visit to Egypt and Nubia, gives the following account of the bridge in progress of construction across the Nile near Cario:

"A French engineer is constructing a beautiful bridge across the river, where the water is both deep and swift. The arches are of large brick. Another appears to be building over the Damietta branch, as seen in the distance. Mud machines, all iron, worked by steam; pile-drivers, and machinery of all kinds suitable for carrying on a heavy business; besides immense piles of stone, brick, timber, and other materials, independently of laborers, soldiers, carts, horses, boats and mules, give the s pot for six miles round, an active and bustling appearance. Six years, we are informed, have elapsed since the piers were commenced. This is the first bridge, it is believed, ever built across the Nile. It was commenced by Mahommed Ali some years since, and a fear is entertained that it will never be finished. The diving bell is an extraordinary machine, with which sixty men are at once sunk to the river-bed to drive piles, lay the stones, &c. The water at the lowest point is thirty feet deep, and the mud thirty more below that, down through which the foundation of the pillar is sunk, in iron boxes, till its weight lodges on the firm bottom. The whole length of piers for receiving the arches, is ninety feet. Last season 25,000 men were employed, at present only 2,000, the Pacha having used up his funds in building and furnishing costly palaces in all directions. Every three months the Governor of a district is called upon for a certain number of villagers for this public work."

### A Metallic Rudder.

The rudder of the San Jacinto now in the Brooklyn dry dock, is about 24 feet in length, composed of a centre wrought iron spindle weighing 2,249 lbs., turned and finished; upon this spindle is cast, for nearly the entire length, a composition casting of copper and tin, of 1,940 lbs.; to this casting, flanges project nearly the entire length of the spindle, to which are riveted the copper plates which form the rudder. The object of the casing is to prevent rust on the iron. The whole weighs about 6,350 lbs., and was manufactured at the Washington Navy Yard.

### A Monster Engine.

Messrs. Rodgers, Ketchum & Grosvenor, of Paterson, have built a locomotive for the New York & Erie Railroad, which went upon the line on Monday week, calculated to draw fortty loaded cars, or a weight equal to 800 tons—a large freight for a ship.

### Coal in Dutchess Co., N. Y.

The Poughkeepsie Telegraph notices the discovery of a coal mine on the farm of F. B. Schultz, in Clinton, Dutchess Co. The coal lies near the surface of the earth, and is similar to that taken from the Lackawana mines. —[Exchange.

[This coal will no doubt turn out to be mica—it looks like coal, smells like coal, but burns like brick.

### Imposing Stones.

Mr. J. W. Sanders, one of our most experienced pressmen, has invented a new iron imposing stone, which is pronounced a capital invention. This is the age of iron. One of the advantages of this stone is the easy manner in which the form is taken off and replaced, by having gear wheels attached to it, so that the form can be raised or lowered by means of a crank, which brings it down to the floor without the labor of lifting, or the great danger of falling out. For large forms, especially, this stone must become indispensable. It is also a very neat ornament to the composing room, and will last forever.—[Baltimore Sun.

[We agree with our cotemporary; this is a good improvement for large forms, that is, the way of moving them on and off the stone, we like it decidedly; iron imposing stones, however, are not new by any means.

Communications which come to this office, without proper signatures are disregarded. There will be no variation from this rule.

For the Scientific American.

**Linen from Unretted Flax---Errors Corrected.**

Some errors seem to prevail on the subject of flax which ought to be corrected. It is quite natural for those who have always done their work in one certain manner to think no other will answer, and especially when new modes of doing the same thing have been often attempted and as often failed.

The first error I would notice is, that flax cannot be used for making linen where the seed has ripened—that flax for linen must be taken up before the seed is mutured. This was formerly the opinion in Ireland, but when it was found that the Belgians saved their seed, and at the same time, produced better flax than the Irish, the course was changed, and, for several years, the Irish flax-growers have adopted the recommendations of the "Royal Society for the Promotion of the Growth of Flax in Ireland," and saved their seed, which frequently amounts in value to $20 per acre.

Another error is, that flax must be rotted or steeped. This is necessary when only mechanical means are relied upon to prepare it for spinning, as by the present mode of manufacture adopted in Ireland, and to some small extent in this country.. The steeping or water-rotting process takes out a portion of the gluten, which, in the unrotted flax, connects the fibres together, making them too harsh and wiry for fine spinning. But, by the new mode, previously described in your paper, which I adopt, rotting is entirely unnecessary, and, indeed, injurious, as all rotting more or less injures the fibre. By a little over-rotting, to which it is always liable, it is much weakened in strength or entirely spoiled.

The linen made by the new process will have the advantage of having not only all the strength of the fibre, but being in strength entirely uniform.

Another error is, that the processes of refining the fibre before spinning, by the use of chemical means, or such solvents as are necessary to take all this glutinous or incrusting matter from the fibre, takes out the essential oil, which is said to be necessary to the spinning. Now there is no essential oil in flax, besides, experience has shown that it can be spun as well when so refined as the rotted flax. Besides if there were any such oil or other analgous material, it cannot be of any value to the linen, for by the universal practice of boiling the yarns in alkali before offering them in the market, and by the subsequent severe process of bleaching, all such materials are entirely removed from the fibre.

Another error is that flax for linen must be pulled, and that the American mode of cutting flax when grown for seed, renders it unfit. Thirty years ago it was the practice to pull hemp, but it is found much better as well as more convenient to cut it, and if any one will carefully examine the flax plant, he will see that it would be better cut, and if well done, close to the ground, it will result in no great loss of lint, and especially by the new process, can be much more conveniently managed than if pulled, since the root contains very little fibre, and is seen to be broken off and wasted in the process of breaking.

The correction of these errors will do much to prepare the way for the introduction of linen manufactures into this country, especially as cotton factories can easily be altered for linen, and as it is now rendered certain that linen may be produced as cheap as cotton goods, when cotton is not below 7c. per lb.

O. S. Leavitt.

Pacific Hotel, New York, Aug. 16th.

[Mr. Leavitt has devoted a great number of years to this subject, and has visited Europe to obtain all the information that could be acquired there. We have seen some of his samples, and beautiful they are. We hope that our manufacturers will give the subject their candid and serious attention.

The Paris journals announce that the first railway in Sweden has just been completed; it extends from the Lake of Dangbar to that of Yngen, in the district of Filipstand, and is about seventy-five miles in length. America has as much railroad as all other nations.

## THE PATENT OFFICE---ITS ARCHITECT.

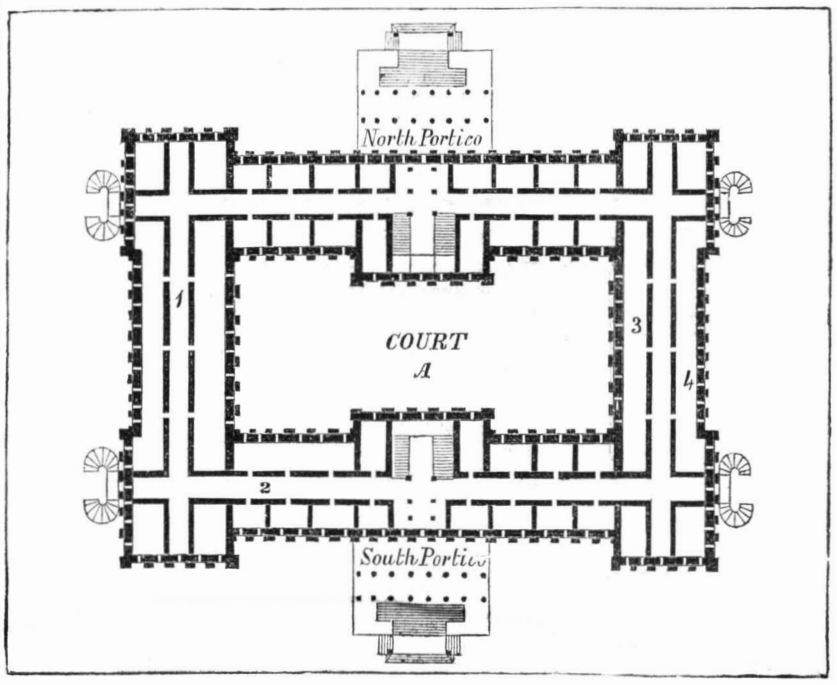
To the Editors of the Scientific American.

Gentlemen:—My attention has been drawn to an article, published in your valuable journal, under date of February 1, 1851, in relation to the Patent Office Building, erecting in this city. This article bears the following heading:

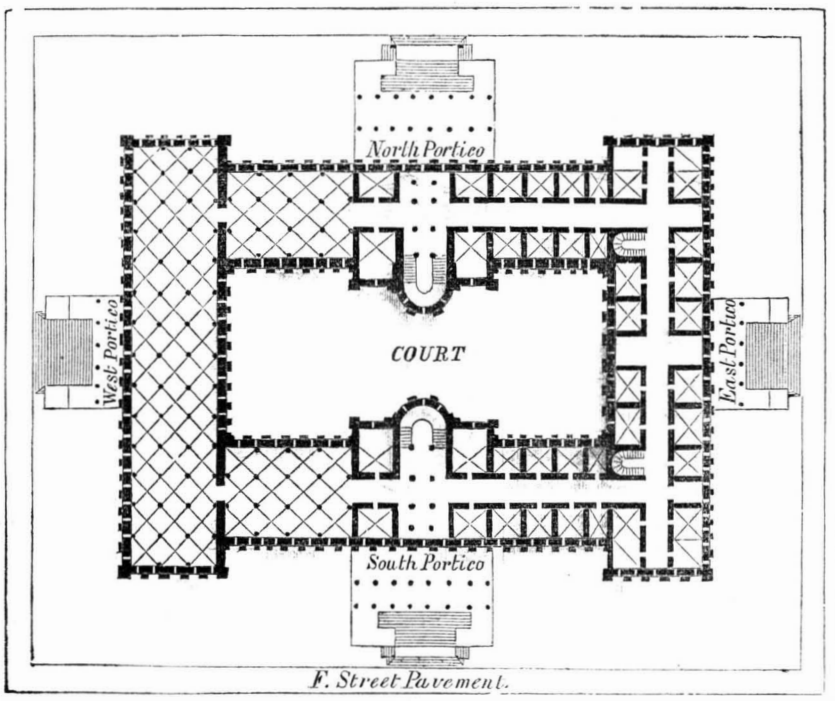
"*History and Description of the U. S. Patent Office Building, Designed by W. P. Elliot, Architect and Engineer, of Washington, D. C.*"

Whoever is the author of this article has overlooked material facts in the case of this building, and thereby done great injustice to the bona fide architect of this building, Robert Mills.

The facts in the case are these:—In 1836 a

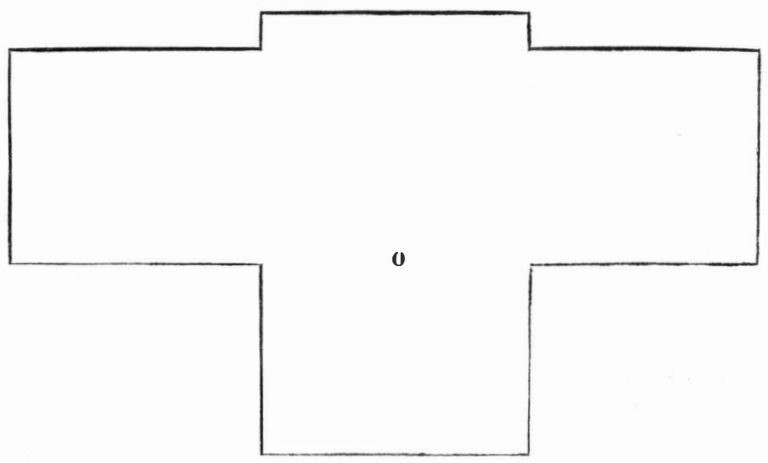



Plan of this building was presented to the Committee of Congress, by Town & Elliot, which, being approved, an appropriation was made of $110,000 to erect the portion of building now occupied by the Patent Office. The bill, as passed by the Senate, contemplated a *brick* building, with *wooden floors*, filled in with brick; when the bill went into the House, the material for facing the walls was changed from brick to *cut stone*, but no change was made in the Appropriation List to provide for its additional cost, by the use of cut stone; in this shape it passed both Houses, and the whole subject was referred to the President of the United States. The plans were laid before the President, and he adopted, substantially, that presented by Town & Elliot, and I was appointed the Architect to carry out, substantially, this plan, according to the appropriations made by Congress.




When I commenced operations I was furnished by Town & Elliot with an *outline* plan, designating the foundations (of digging) for that portion then required by the Office. (See Plan.)

When we were ready for laying the founda-




tions, I called on the Commissioner of Public Buildings, with whom the drawings ought to have been left, to furnish me the plans as approved by the President, but no such plans were to be found, and, as they never came into my possession even to this day (fifteen years), I was compelled, *de novo*, to form plans of my own conception, following substantially the outline of that approved by the President; a large drawing, in perspective, of the whole façade was soon after made in my office for exhibition, first to the President, then to Congress, and which has been exhibited in both Houses of Congress, from time to time, ever since, and in the Patent Office proper.

I then proceeded with the work, arranged all the details externally and internally, according to the requirement of the office—made the building thoroughly fire-proof by arching every story with brick, and was gratified in finding the accommodations proved satisfactory to the government business.

In 1849, the increasing business of the Patent Office, and the creation of a new Department (the Department of the Interior), to which was attached the Patent Office as a bureau, demanded a further extension of this building, and Congress made the necessary appropriations to carry out the two wings of the same, according to the "original plan." The question of "the original plan" coming up in the Senate, I was compelled to present my plan to explain what were its requirements, this was satisfactory, and the appropriations passed. In the spring of 1849 I submitted plans of the interior arrangement for these wings to the Secretary of the Interior, which were approved, and I am now proceeding with the work (the east wing first), with the prospect that, before Congress shall assemble in December, to have all the office rooms prepared for occupancy by the Secretary and his officers; there will also be a grand model room, 270 by 65 feet, and 30 feet high. After making all my plans, and, in a measure, settling upon all the details of the building, which have been for more than a year made public, I was not a little surprised to see in your journal of February last, the *main* features of my arrangement of this building exhibited in various plans engraved on its face, and not a word of the name or the services of the *practical* architect. Is this, Messrs. Editors, doing justice to me? I have always accorded to the original inventors, or designers, of this plan of the Patent Office Buildings, the credit of the outline and the architectural order used, but as they never favored me with any plans of their views of the interior or the exterior of the building, I claim some little merit in the business of carrying out the plan to their satisfaction (as I understand), and also that of the public, and especially of the Government.

The only plans that were laid before the Committee, or the President, exhibited simply the arrangement of the second or principal floor, and it was of this character—(see Plan A). Nothing of the upper story arrangements was laid down; the only character of large rooms for models in the plan A were those on each side of the passage, at 1, 2, 3, 4, about 21 feet wide; whereas, in plan B, now exhibited, according to my arrangement, the whole width of the building is taken for the Model Rooms—the vaulted ceilings being supported on columns, as shown in the plan. The principal, or third floor, throughout, has been thrown into one Grand Exhibition Room, each section being 270 feet long, 64 feet wide, and 30 feet high, all vaulted with groin arches, supported on massive columns.

The original plan contemplated above, no doubt, the same arrangement as below, viz., long and narrow rooms each side of the passage. This may be denied by your correspondent, but no evidence has been given otherwise, until February last, in your journal, after the lapse of fifteen years, and my plans made public.

My only object in making this communication is to exhibit facts to the public, the mind of which should be disabused, that justice should be meted to whom it is due. Very respectfully, your obedient servant,

Robert Mills, Architect P. B

City of Washington, D. C., August, 1851

# New Inventions.

### Machine for Cutting Veneers.

Mr. Joseph H. Goodell, of Yonkers, Westchester, Co., N. Y., has invented and taken measures to secure a patent for improvements in machinery for cutting veneers or other thin slats of wood. The improvement consists in giving the cutting knife a peculiar motion in connection with its feed motion, whereby it cuts much faster, cleaner, and produces veneers of an extremely thin but uniform thickness throughout.

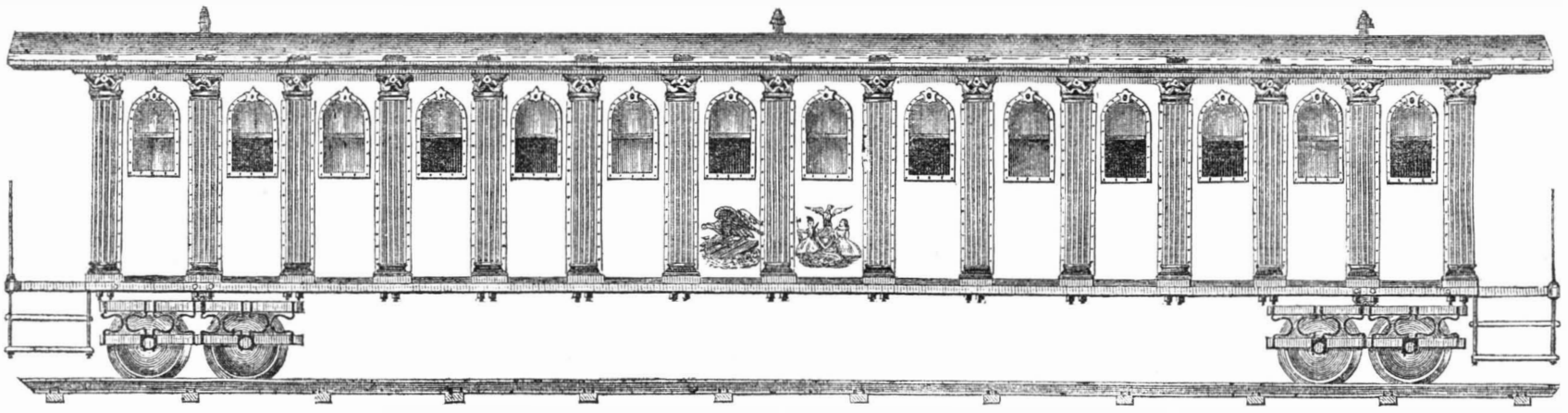
### Machine for Gathering Clover Seed.

Mr. George A. Smith, of Winchester, Randolph Co., Indiana, has invented and taken measures to secure a patent for a machine for cutting and gathering clover seed. This machine exhibits a great deal of ingenuity, although its construction is very simple. A wooden roller is constructed with thick spiral-shaped projections, at a short distance apart, running on it lengthwise with the axis. On these spiral projections are secured knives or blades set in such a way that the cutting edge of each projects over the concavo part of the wooden spiral of the cylinder. A rake is placed on the carriage below like that of a grain reaper, and a straight knife extends across the rake behind, to hold up the clover, so that as the spiral cylinder revolves, the knives of it cut off the heads of the clover, and the concave receptacles under the knives carry the heads of the clover round, and thus deposit the seed in a proper receptacle at the turning vertical point. There is also an arrangement for securing the wheels on the axle of the carriage, which is a very good improvement. The collars of the wheel boxes have ratchet teeth, whereby the axle is made to turn when moving forward, but not when moving back, thus throwing the wheels out of gear with the cutters, by a spring, when necessary. The rake can also be adjusted to any required distance to or from the revolving cutters.

### Improved Door Spring.

Messrs. Herman Hartman & Gregor Frink, of Jersey City, have invented and taken measures to secure a patent for a new door spring which has some very good qualities. A steel rod is made fast to the back or hinge edge of the door, while its other end is secured to the post or framing, so that on opening the door, the steel rod, which is a spring, is twisted, and this makes it tend to recover its original posture to close the door. It is an exceedingly simple door spring and can be made very cheap, and will find a ready market.

## WARREN'S IMPROVEMENT IN RAILROAD CARS.---Figure 1.



### Improved Machine for Bending Wood and other Fibrous Materials.

Mr. Cyrus Clapp, of Montague, Franklin Co., Mass., has invented and taken measures to secure a patent for improvements in bending wood, &c., to prevent the separation of the fibres in the act of bending. There is provided a bar or strap of metal with a hook at one end, and an inclined piece at the other, on which the screw of a clamp is made to act so as to draw the hook close to one end of the material to be bent, which is placed between the two ends of the strap spoken of. The metal strap, in all cases is applied to that side of the material which is to form the outside or convex part of the bent material, that being the side on which the tensile or tearing strain comes. Any force may be applied to act on the strap to bend it along with the wood. The hook and clamp confine the fibres endwise, and the strap circumferentially, so that the outside of the bent piece of wood is kept firm and solid without rupture.

### Improved Lock.

We hear a great deal about American locks in London, they bore the bell there, and justly so, Day & Newell's being allowed on all hands to have the best ever seen in Europe; but the end of American lock improvements is not yet Mr. F. C. Goffin, of this city, has invented and taken measures to secure a patent for a very excellent improvement in locks. It is not possible to give a correct idea of its construction without figures, we can only say that we have seen quite a number of great locks, and this one combines more good qualities, with a simpler arrangement, than any we have ever seen.

### Horse-Power Ditching Machine.

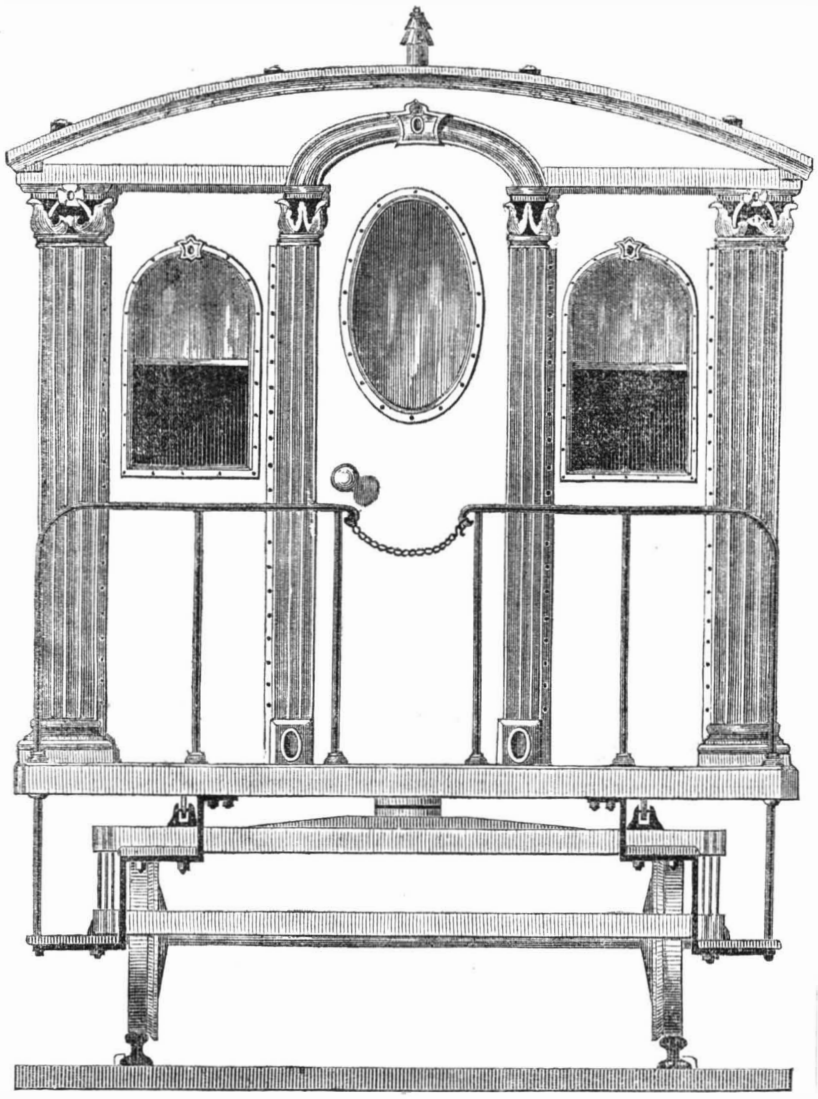
Mr. Charles Bishop, of Norwalk, Ohio, has invented and taken measures to secure a patent for a good improvement in Ditching Machines, whereby the old spade method of ditching by manual power is entirely thrown into the shade. His machine is worked by horse-power, and is provided with a revolving excavator, the shaft or axle of which lies in the direction of the length of the ditch. The excavator is of a screw form, and is operated by an endless chain. The ditch is cut of a semi-circular form, and it deposits the cut clay or other kind of excavated earth in a box, from whence it is delivered at one side on the road by scrapers attached to the endless chain, the machine being propelled forward by a friction wheel or roller moving in the ditch and operated by the excavator shaft.

Mr. St. John, of New York, has taken out a patent in London, for a new kind of soap, in which starch forms a principle feature.

It is well known that very great improvements have been made in every branch of our railroad economy since the introduction of the system into our country. Who can forget the miserable flat rail, and the serpentine eccentricities of our first railroads? And who can forget the dumpy prison-looking cars that were originally employed? Our tracks are now firm, and laid down in a workmanlike manner, and the "low-backed car" has given way to the elegant and majestic eight-wheeled vehicle. Our Railroad Economy, however, is not perfect by any means, and our cars—splendid though they be—are capable of further improvement; and here the accompanying engravings present such an improvement to the public.

Figure 1 is a side elevation, and figure 2 is an end elevation of a Railroad Passenger Car, constructed upon new principles by the inventor, T. E. Warren, Esq., of the city of Troy, N. Y. Mr. Warren is the inventor of

## Figure 2.



the spring metal chairs, bedsteads, and the railroad car seat, reprerented on page 220, this volume of the Sci. Am. The posts or pillars are made of thin wrought-iron plates, and so constructed as to be tubular, thus combining great strength with extreme lightness. The panels are made of lighter wrought-iron plate than the posts. The roof is of thin sheet iron, and is of an arched form. The car is lined with a non-conducting material so as to render it cool in summer and warm in winter. It can be ornamented in a great variety of ways by beautiful cast ornaments secured to the plates. It will be observed that the car is placed on trucks, which have springs like those of the chair seat illustrated on the page referred to above.

In each panel is an arched window which is intended to be easily opened and closed. The frame and platform may be made of the same material, and corrugated plates used instead of plane surfaces. The substitution of thin wrought iron plates, for wood, in the construction of railroad cars, is, in our opinion, a happy idea. In cases of collision there will, at least, not be the same danger from splinters as in the case of wooden cars. The metal, too, can always sell for something more than fuel, however old. It is but a short time since that we published an account of an accident which very nearly proved fatal to Mr. Paxton, and some other celebrities, on an English Railway, by the car taking fire from a heated journal box We have seen a car on fire more than once, by the sparks from the engine; by having railroad cars constructed upon Mr. Warren's plan, such dangers would be obviated entirely, at least if due attention were paid to their construction inside likewise.

### Improvement in Filters.

Mr. A. Fessenden, of Boston, has invented and taken measures to secure a patent for a very excellent improvement in Filtering Apparatus. In the filter case or shell, there is inserted a box containing a suitable filtering medium, and its top and bottom surfaces are formed of fine wire cloth; a packing of vulcanized india rubber is placed between the upper part of the box and a shoulder on the interior of the case, which prevents the water from passing down the space between the sides of the box and case, said box being firmly pressed up against the packing of the lower part of the case, which screws on to the upper part of the box. All the water, therefore, which passes into the case, is compelled to pass through the filtering medium in the box. The force of the water is broken before it comes in contact with the wire cloth on the upper part of the box, by a perforated disc, which is placed in the upper part of the case, leaving a space between it and the filtering medium. The water is thereby made to pass through the filtering medium with but a moderate velocity and in a thin stratum as it were. The filter can be easily cleansed out by just turning the bottom side up, and letting the water run for a short period through it, contrary to its common direction. Fresh filtering medium can also be easily inserted by taking off the lid of the box. This improvement is a very excellent one, and must commend itself to all.

# Scientific American

NEW YORK, AUGUST 23, 1851.


**What Inventors are Doing for the World.**

By the late news from Europe, accounts have been received which are not a little flattering to our American inventors. In Great Britain and Ireland, the usual method of reaping grain is by the sickle: hundreds of reapers may be seen in the harvest season cutting down the golden grain. The wages paid are very fair,—women get from half a dollar to five shillings per day and board; men more, but how much it does not matter. The British agriculturists, having to pay such high rents, have long desired and hoped for the invention of a good machine to supersede the sickle, but although many machines have been brought forward there to reap by horse-power, they have all failed to give satisfaction. The American cradle, even, is unknown and unused in England; and in respect to cutting down the grain and harvesting in a hurry, as we do here, they are far behind the American age. Their eyes have been opened at last. a great reaping match was held on the 24th of last month, in Essexshire, and thither were invited all the reaping machines exposed at the Great Fair. A number were tried but proved abortive in their attempts to work well. It was then the stout but unprepossessing machine of Mr. McCormick, illustrated on page 164, this volume of the Scientific American, made its appearance, ready for action. Those who estimated the worth of the machines by a polished piece of brass here, and a burnished piece of steel there, shook their heads as the driver mounted his seat; but with a snap of his whip he started his team, applied his hand to the lever of his clutch, and set his wheels and cutters in motion, and away he went, sweeping a wide swath and raking it up on the platform at one operation, with such a velocity as to elicit repeated cheers from the on-lookers.

The success of this experiment will lead to the introduction of the American Power Reaper into Britain, and it will be the means of saving millions of pounds during some seasons.

At a plowing match which was held by the Agricultural Committee of the Exhibition, the plow of friend Starbuck, of Troy, N. Y., received the highest praise, and was acknowledged to work with greater ease than any of its rivals. We hope this excellent plow will not be pirated on the other side of the Salt River, but that friend Starbuck will receive orders for making 30,000, at least, so as to pay back the exact number of the Eddiston Scotch plow, which were imported into to this country before our mechanics gave their decided attention to the improving of our farming implements.

The London Expositor, a beautiful weekly paper devoted to illustrate and describe meritorious machines and works of art, has published engravings of Dick's Anti-friction Press, which had been illustrated in our columns; also Burrell's Straw Cutter, thus showing that with the influence of a respectable press in presenting good inventions at home, that same influence is not bounded by our own shores, but reaches to the other side of the Atlantic.

**Important Patent Cases---Planing Machines.**

In the U. S. Circuit Court for the Northern District of New York, at Cooperstown, 7th of August, 1851, Judge Nelson presiding. Wilson versus Allen, Law, Beardslee, and Barlow. The complainant prayed for an injunction to restrain the defendants from using what is known as Woodworth's Planing Machine. The defendants are all patentees, and each has a patent for a planing machine, as being a different invention from the other; and no doubt there is a great dissimilarity between them. There is no resemblance between some of them; as one has stationary cutters, like Law's, and the other reciprocating cutters, like Barlow's. It was alleged that every one of them was an infringement on the Woodworth Patent. The defence pleaded non-infringement. After three days' submission of testimony on both sides, to show cause that injunctions should issue on the one hand, and to show cause that injunctions should not issue on the other; and after considerable discussion on both sides the prosecution was abandoned for the present. We have been informed, that the assignees of the Woodworth patent intend to apply for an amended specification to cover mechanical pressure on the plank in the act of planing, and also to apply to Congress for an extension of the Woodworth patent. It would be a very imprudent move to get an amended specification covering such a device, for it would assuredly be a wedge to split itself. The present prosecutions, we think, were not fully weighed in the balance by the assignees of the Woodworth patent.

**Short Conversations on Mechanics---No. 3.**

Q. "Last week I desired to know something more about the laws for governing forces."

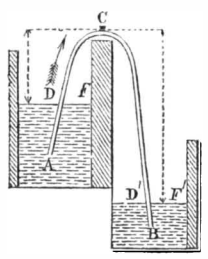
A. You mean the methods of applying the forces to propel machinery, &c.

Q. "No. I mean the nature of the forces—their mode of action, and as you have stated that a static pressure cannot produce motion, I would like to know how you can account for the raising of water thirty feet high by a syphon, and discharging it over a bank, as is done by the static pressure of the atmosphere?"

A. Are you sure that this is done by the static pressure of the atmosphere?

Q. "I have heard those say it was who pretended to know: for example, the waters of the Pacific are some feet higher than those of the Atlantic: now supposing the two are separated by a wall 30 feet high, would the waters of the Pacific not be discharged by the static pressure of the atmosphere into the Atlantic, by means of a syphon?"

A. The waters of the Pacific would be discharged into the Atlantic, but not by static pressure. Have you forgotten what static pressure means? It means forces in equilibrio. The natural pressure of the atmosphere is equal to 15 pounds to the square inch, and the reason why we do not see water running up hill, 30 feet high, is owing to the equilibrium of forces—those of the atmosphere and fluids—their static or equilibrium state. Disturb this equilibrium and we have no more a static but a dynamic question to deal with, as I can explain to you quite easily. But, first of all, you seem to have great courage in attempting to drain the Pacific Ocean with a syphon. If you pay strict attention to the conversation of learned and unlearned men, you will soon perceive that the latter deal always with mighty questions, the ocean or the sun—something unapproachable and grand. But let us test this question, as we easily can, by a simple experiment.




Here you see we have the syphon, which is a bent tube of unequal branches; here are two vessels, A and B; you may call A the Pacific ocean, if you please, and B the Atlantic. Well we wish to bring the waters of A into B by atmospheric pressure, and you see they have to be carried over the wall at the bend, C, of the syphon. Well, this figure exemplifies your proposition exactly. When the syphon is plunged into the two liquids, whose upper surfaces are D E, D′ E′, and when a vent is made at C by drawing out the small plug, the waters will stand exactly as they are represented in the figure—the Pacific will have no fears of being drained, you see, by a static pressure—the pressure of the atmosphere being balanced on both sides. But withdraw the air from the syphon by an air-pump applied at the plug, and the water will rise in both branches—in both branches of the syphon, mind you—by the atmospheric pressure without, and unite; and when the orifice at C is stopped, the water will flow from the vessel, A, into B, so long as the level, D′ E′ is below D E, and the short leg of the syphon below the water surface in A. The atmospheric pressure upon the two surfaces in the separate vessels, tends to force the water up the two legs of the syphon; and when the syphon is filled, these pressures are counteracted in part by the weight of the water in the long leg; and as the atmospheric pressure is very nearly the same for a difference of level of some 28 feet, by reason of the slight density of the air, the weight of the suspended columns of water will, for the difference of the level of the water represented, differ considerably by reason of the different density of the water; a cubic foot of air weighs only 1·2 oz., a cubic foot of water weighs 62 lbs., a very great difference. The atmospheric pressure opposed to the long column of water, is therefore less in proportion than that opposed to the short column, thus leaving an excess of pressure in favor of the short column to produce and continue the motion, until the water in both vessels is about on a level; in other words, the pressure changed from dynamic to static or equilibrium. There is no stationary pressure, either, about the action of this instrument, for the air moves downward on the surface, D E, as the water rises in the short leg, and the air on the surface, D′ E′, rises. The action is exactly like pressing the water up the short leg by the plunger of a pump, until the resistance is equal to the pressure (P=R), when, of course, the water must cease to flow. The velocity with which the liquid will flow through the syphon is thus beautifully expressed by Professor Bartlett: $V=\sqrt{2g(h'-h)}$; the velocity of the water flowing through the syphon is equal to the square root of twice the gravity into the difference of level of the fluid in the two vessels; or, if you please, your two oceans.

Q. "I confess that I now see clearly into a subject respecting which I have been profoundly ignorant, but thought I was well acquainted with. I should like to know something now about the motions of solid bodies, their momentum, velocities, &c."

A. The questions I have been explaining to you all relate to gravitating forces, and I will still treat of them in discussing velocities, as this branch of mechanics is but very imperfectly understood by the great mass of our fellow men.

**To our Subscribers.**

Our subscribers will see our new prospectus on the last page of this number. Three weeks before the expiration of all subscriptions, subscribers receive notice to that effect, in order to allow them plenty of time to renew the same before the paper is discontinued. Our terms are cash in advance. We do not employ agents to go round and collect subscribers. We have trusted to the worth of our paper to recommend itself and thanks to our subscribers we have not trusted in vain. Our next is the seventh volume, and we solicit the attention of our readers to our prospectus. In making remittances for the new volume, it would be well for subscribers to call for whatever back numbers they have missed through the mail; they will always be sent if we have them on hand. We sincerely request subscribers to be particular in sending us their address; write it full and plain. The Scientific American is now acknowledged on all hands to be the best mechanical paper in the world, and we hope our subscribers will do as they have done heretofore, viz., solicit their friends who are not subscribers to subscribe, for assuredly, Volume 7 will be the finest ever published.

**Steam Superseded.**

An invention is said to have been made at the west, in which carbon entirely supersedes the necessity for steam. The experiments show that a greater amount of power, with less heat, is obtained from the charcoal, and at one thirty-sixth of the cost incurred in the use of steam.—[Exchange.

[Carbon is coal, and when it burns, the result of its combination with the atmosphere is carbonic acid gas. This has been condensed into fluid and was employed years ago to supersede steam, but it was all a bam.

There are a great many men who never see or get beyond the edge of science, and there they revolve in centrifugal grandeur, never perpendicular nor straight in position, but buzzing like boys' tops which have been perforated for the admission of air, they not only amuse themselves with their own humming, but also astonish the groundlings. Miserable discoveries like the above, to supersede steam, are continually rotating before the public.

**Steamboat Question.**

Messrs. Editors.—Will you oblige several of your subscribers by answering the following question. Suppose a steamboat to be placed in a fair uniform (and not shallow) current of five or ten miles per hour. Turn her head up stream and run any given distance; then down stream the same, what will be the effect of said current upon the motion of the paddle wheels per minute, up and down, comparatively? O.

[The difference is, that the pressure is on the back of the paddles and with their motion, when running against the stream; and the reverse when running with the current. But with respect to the velocity of the boat, if the engines work with a uniform rate of power, we can see no difference, except that due to the floatage of the vessel with the stream. The reason of this is that when the vessel goes against the stream, although the back pressure is with the motion of the paddle, the water on which the paddle acts recedes with a velocity due to the current—in other words, slip. In the other, the pressure of the current is against the face—or motion of the paddle, consequently there is less slip. A still body of water affords the proper fulcrum for the action of the paddles; therefore all departure of the water from this state, must affect the paddles, as $x=y$ for the current; and if we consider $a$ the known and proper condition of the water, the equation will be $a-xy$. This is our opinion, and has reference only to the paddles acting against and with the current. If any experiments have been made we would like to know about them, for plain facts are sturdy things and cannot be refuted; but an experiment, and a *fair* and *proper* experiment are two different things. Great care must be observed in making experiments.

**Petition for the Extension of a Patent.**

United States Patent Office.—On petition of Sewall Short, of New London, Connecticut, praying for the extension of a patent granted to him, October 6th, 1837, for improvement in railway ovens for seven years, from the the expiration of said patent, which takes place on the sixth day of October, 1851.

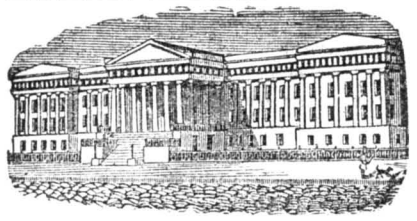
It is ordered that the said petition be heard at the Patent Office on the 29th day of September, 1851, at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specifically 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.

Thos. Ewbank, Com. of Patents.

**Worcester Mechanics' Fair.**

The Third Exhibition of the Worcester Co. (Mass.) Fair will be opened in the city of Worcester on Tuesday the 16th of next month, (September, and will continue for several days. The mechanics, manufacturers, artists, and inventors of Massachusetts and neighboring States are respectfully invited to furnish specimens of their productions. The Mechanics' Fairs at Worcester have always been distinguished by impartial decisions on the part of the judges, and great urbanity on the part of the managers. We have no doubt but the Worcester mechanics will have a good Fair. John Boyden, Esq., is superintendent, and all those who intend to exhibit will receive all the information they may want by addressing him at Worcester. The Worcester mechanics have a high character for skill.



☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than anyother journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

## LIST OF PATENT CLAIMS
### Issued from the United States Patent Office.
FOR THE WEEK ENDING AUGUST 12, 1851.

To L. W. Boynton, of South Coventry, Ct., for improvement in machines for cleansing Wool.

I claim the combination of the tub with the shaft and tube, when these are combined with the vat, with its trough, and the whole is constructed, arranged, combined, and operated, substantially as described, for the purpose of cleansing, or forcoloring wool, and other analogous substances, as described.

To L. S. Chichester, of Williamsburgh, N. Y., for improvement in machines for Jointing Staves.

I claim combining with the adjacent ends of my two plates of the chain, the hinged pieces provided with self-acting toes for clamping the stave while it is being jointed, and then releasing it, substantially in the manner and for the purpose described.

To M. M. Ison, of Etowah, Ga., for improvement in Spike Machines.

I do not claim the header or the holding die irrespective of their arrangement and operation; but I claim the arrangement of the carrier within the hollow table, substantially in the manner described; and also the combination of a carrier so arranged with a single griping die arranged with respect to it, in the manner substantially as shown, the die and the carrier assisting each other in holding the spike, while being headed.

[See No. 41 Sci. Am, for an illustrated engraving of this improvement.]

To A. S. Lyman, of New York, N. Y., for improved Water Gauge for Steam Boilers.

I claim the combination of the glass tube and a reservoir of fluid below it, heavier than that contained in its upper part with the legs of a syphon, so that they become a part of that syphon, substantially as described, by which means I am enabled to protect the glass tube from the heat of the steam and impurities of the water; and also to show, at any point above the boiler, the height of the water in the boiler.

I also claim the combination with the gauge of the sediment depositor, constructed and arranged substantially as described, for the purpose of preventing the impurities of the water from entering the tube leading to the gauge.

To John McAdams, of Boston, Mass., for improvement in machines for Numbering the pages of Account Books.

I claim the use of type chains in a machine for printing the pages of account books; and, second, a machine for paging account books, having the essential elements herein described, viz., the imprinting cylinders and rollers, against which they bear, together with the type chains, arranged together, substantially in the manner described.

To Hugh Lee Pattinson, of Scotts House, England, for improvement in the manufacture of Pigments. Patented in England, Feb. 14, 1849.

I do not claim this composition of matter; but what I do claim as my invention is the new manufacture of either a white or colored pigment, by the addition of one half of an equivalent of lime, or other earthy or alkaline base, with one equivalent of chloride of lead, or chloride of lead diffused in water, or however the solution may be obtained, the whole being substantially as herein specified.

To Ezra Ripley, of Troy, N. Y., for improvement in method of forming Teeth upon Cast-iron Grinders.

I do not claim the castings of ribs or floats, but I claim the mode, substantially as described, of making or forming teeth or grinders upon surfaces of cast-iron, by nicking, cracking, or chipping out parts of ribs or floats cast thereon, so as to leave the teeth, or grinders projecting, as set forth.

To I. M. Singer, of New York, N. Y., for improvements in Sewing Machines.

I claim giving to the shuttle an additional forward motion after it has been stopped to close the loop, as described, for the purpose of drawing the stitch tight, when such additional motion is given at and in combination with the feed motion is given at and in combination with the feed motion of the cloth, in the reverse direction, and the final upward motion of the needle, as described, so that the two threads shall be drawn tight, at the same time, as described.

I also claim controlling the thread, during the downward motion of the needle by the combination of a friction pad to prevent the slack above the cloth, with the eye on the needle carrier, for drawing back the thread, for the purposes and in the manner substantially as described.

I also claim placing the bobbin, from which the needle is supplied with thread on an adjustable arm attached to the frame, substantially as described, when this is combined with the carrying of the said thread through an eye or guide attached to and moving with the needle carrier, as described, whereby any desired length of thread can be given, for the formation of the loop without varying the range of motion of the needle, as described.

To Francis Wilbar, of Roxbury, Mass., for improvement in Construction of Roofs.

I claim the above described peculiar arrangement of the arched trusses, or framing of my improved roof, in combination with the suspending of both inclined sides of the roof, from the ridge timber, so that each inclined side shall be made to counterbalance the other inclined side, and by so doing operate to prevent lateral and horizontal thrust upon the side wall, all essentially as specified.

To A. B. Wilson, of Watertown, Conn., for improvement in Sewing Machines.

I claim, first, the combination of the rotating hook, to extend the loop on one thread, with a reciprocating bobbin to carry the other thread through the loop so extended, for the purpose of interlacing the two threads together, whether the parts be severally arranged and operated as herein set forth, or in any other way, substantially the same.

Second, the hollowing mandril, constructed substantially as set forth, with a groove on its periphery, to give a reciprocating motion to the bobbin, a segmental screw thread to feed the cloth forward as the sewing progresses, and a hook and groove on its extremity, to form loops on the needle thread, in combination with a reciprocating bobbin, the whole arranged and operating substantiall as set forth.

To J. S. Dare, of Knightstown, Ind., for improvement in Shoulder Braces combined with Abdominal Supporters.

I claim, first, the bars having a common point of junction to a centre bar at the back; passing thence under the arm pits, and thence forward, upward, and backward, until their padded extremities bear upon the clavicle; the bar being so formed as to fit snugly, without direct pressure upon the body, except at the points at the front and back, as herein explained, giving the desired support to the shoulders, without unnecessary confinement of the person or obstruction of its various function, and at the same time affording, through the medium of the bar, a firm point of attachment and support for a uterine or abdominal supporter.

Second, the jointed bar having pads located on each side of the spine, at the junction of the said bar, with the braces (two), the said bar being jointed midways so as to admit of easy flexion sideways, without compromising the rigidity which is necessary in other directions, and affording, by the limited extent of its pressing surfaces, free scope to the circulation, perspiation, muscular action, and other bodily functions.

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The steamer Humbolt, on her last passage from Havre to New York, made a very narrow escape from total destruction on Cape Race, by being carried off her course by the current.

### French and English Black Broadcloth.

It is well known that English broadcloth, at one time, carried all before it—none other could compete with it. It is not so at present; the French and Belgian are the favorites in the American Market, and the English cannot be sold. The French cloth retains its color until it is worn threadbare, the English grows white in those parts exposed to friction. The superiority of the French cloth is due to an invention in dyeing and finishing, made about twenty years ago. The improvement gives the cloth a silky lustrous surface, soft to the touch, with the nap laid close and smooth, and impervious to dust which can be removed by merely wiping with a handkerchief; moreover, it neither spots with rain nor shrinks by heat; and these qualities continue to exist so long as the fabric hold together. When French cloth began to obtain a footing in the American market, the English maker, instead of attempting to excel in the beauty and durability of the article, endeavoured to compete in cheapness; the evil was thus rather increased than otherwise, for in order to lower the price, inferior materials were necessarily employed in the manufacture, and likewise in the dyeing of the cloth, and thus additional discredit was thrown upon the English fabrics.

The principle of woolen dyeing is very simple, a great deal more so than cotton.

The first step consists in the cleansing and preparation of the wool to receive the coloring matter. Wool, when intended to receive a black of the best quality, is not in the first instance dyed of that tint, but receives a prepatory dye from either woad or indigo, or a mixture of both; this gives the wool the foundation for a permanent color; the after dyeing black by a salt of iron serving, as it were, to modify or determine the tint. The permanency of the black depends upon the depth of color given by the woad or indigo; and here, as well as the finish of his cloths, the English manufacturer has permitted his continental competitors to outstrip him; not from his inferior skill but from devoting his energies to the production of a cheap instead of a superior article.

In England indigo is chiefly employed, but, from its comparative expense can be used but sparingly. Now, as the permanency of the black depends upon the firmness and depth of the blue tint, and as the black derived from iron is in itself extremely attackable by chemical agents, it follows that black cloths in which the blue foundation color has been imperfectly produced, are liable to be affected by exposure to the atmosphere, light and heat. It is found that cloths dyed in France and Germany, where the woad is more used, are but slightly influenced by these chemical agents which are capable of entirely removing black color from the ordinary English cloth.

It appears, then, that there are two capital points in which the British manufacturers have permitted themselves to be rivalled by the French and Germans, viz., with respect to the finish and permanency of the color of their cloths.

Within a few years some of the English cloth manufacturers have devoted much attention to improving the cloth, and with that stamina which is peculiar to them they will no doubt be successful. They have got machines for finishing from both France and Belgium, and have and will make improvements on them. We have seen some samples of the cloth manufactured at Leeds by the improved machinery, and by a superior system of dyeing. The samples were soft, smooth, and of a brilliant black not liable to spot by water. It will be some time, however, before the English cloth manufacturers can win back the good name they have lost. In mechanical and manufacturing operations, it is impossible to be successful unless the utmost attention is given to push along improving.

### Steam Communication between New York and Genoa.

A new line of steam communication between New York and Genoa, is mentioned in the English papers as having been organized by Messrs. Livingston, Wells & Co., of the former city. A grant has been made to the company for the exclusive mining of this line for fifteen years, the annual sum of $50,000 being guaranteed for the transport of mails. These steamers will touch at Madeira, where letters or passengers will be transferred to the South American line of steamers, so that it may be looked upon as a double line, both to the south and north of the American continent. The company are also in treaty with the Portuguese and South American governments for the transport of their mails, and are likely to be successful in obtaining them on favorable conditions.

### Scientific Memoranda.

Iron Ore—New Discovery.—A valuable deposit of iron ore has been found by Mr. G. P. Smith, on the north shore of Lake Superior, at Groscap, near Michipoten river. Large quantities of iron are found in dikes, so near the coast that it can be wheeled on board a vessel. It is said that thousands of tons may be obtained at that place very readily.—Three men in one day got out five or six tons.

Loss of Speech by Lightning; its Restoration by Galvanism.—The following singular case we find recorded in a Scottish paper, the Glasgow Saturday Post:

On the 1st of July, during the thunderstorm, a man named Raeburn, residing in the Croft, Paisley, was struck dumb. Raeburn, it appears, was standing near a window, when one of the flashes of lightning, more vivid than usual, had such an effect on his organs of speech that he could not articulate a syllable. The advice of several medical gentlemen was obtained, but all to no purpose, and, what was strangest of all, no hurt or defect whatever could be observed. Next day, Raeburn was advised to try what galvanism could effect in his case, and he at once proceeded to Mr. Ferguson's galvanic operating rooms in Sneddon street. Here, after the application for a few minutes of the battery to his neck, he was able to articulate one or two syllables; his joy at this, it may be imagined, was very great; and we are happy to say, that after six applications from the galvanic apparatus, his speech has all but recovered its former fluency. Raeburn is about 23 years of age, and all that he felt at the time he was struck dumb was a kind of giddy feeling for about a minute.

Steam on Canals.—An entire revolution in the process of towing on canals seems likely to soon occur from the success attending an experiment at Albany, with a steam-tug. The Albany Journal says:

"The steam tug 'Jacob Hinds' left the canal basin this morning with a party composed of the Comptroller, the Auditor, Canal Commissioner Mather, several members of the press, and a number of other gentleman interested in canal navigation, on an experimental trip to Troy.

The tug is intended to be used for towing on the canal. It has 75 feet keel, 15 feet beam, draws 2½ feet water, and is propelled by an engine of fifty horse-power. The engine was built by Lowe & Co., for R. S. Dennie & Co.

The wheel in the centre of the boat is 10 feet in diameter, 6 feet face and 2 feet dip. The buckets are of iron, and saucer shape, thereby throwing the water into a narrow chamber, through a groove in the bottom of the boat. There is no swell caused by this motion or no more than is produced by any other boat of the same size moving at the same speed.

Her movement was at the rate of five miles an hour. It is proposed to tow boats at the rate of three miles an hour. The manufacturers guarantee that the engine will perform this amount of labor for 24 hours, with two tons of coal. This invention was patented by Mr. G. Parker, in 1849, and the the boat is now under his charge on her way to Buffalo."

We do not see any reason why steam cannot be used on our canals. With the Erie Canal fully enlarged, and its banks well walled up, boats, like the above, may work as well as on our rivers.

### TO CORRESPONDENTS.

T.B. H., of Ala.—Colt's revolving pistols, at retail, are worth from $20 to $25. If you have plenty of timber, a picket fence will be the cheapest for you; all depending, of course, upon the amount of labor bestowed upon it.

L. A. O., of N. Y.—We shall answer your letter as soon as we hear from the party.

H. V., of Pa.—We regret to state that the number you order cannot be supplied.

A. S., of Ind.—Your Flying Machine is under consideration; it appears rather feasible at first sight, and perhaps will prove to be all you expect of it.

T. L., of Va.—Next week you will see an article on the subject. The fact is, that there are various opinions about such things.

J. D. R., of Phila.—We refer you to the opinion of Faraday—the best of authority. We have not time, just now, to look over and refer to the place in our columns for his opinion, but if you look carefully over the back numbers of this volume, you will find it.

W. L. G. J., of Ct.—The envelopes are cut out by dies on the machine, and folded by machinery also; several are out out at once by some machines. Great improvements have been made within the past three years.

S. N. D., of N. Y.—Yours next week.

C. H., of N. J.—Yours has been received and will meet with just attention.

L. R., of N. Y.—We are not able to solve your queries; they are far beyond the reach of our experience or mental grasp. No man can tell wherein the power of electricity consists, he only knows there is such a power by its effects, and that power is exhibited when the electric forces are disturbed—non-static.

E., of N. Y.—The question you present has nothing to do with a vessel, it merely respects the power of the engines. There can be no difference in the power of a high pressure and a low pressure engine of the same size cylinders and length of stroke, if the high pressure uses steam at 26 lbs, and at the other at 13 lbs. on the square inch, because the vacuum is held to be about the value of 13 lbs. There would be a very great difference in the duty, however, and that in favor of the low pressure.

H. W. G., of N. C.—We procured a finely bound copy of Black "On Brewing," and sent it, paid, to Mr. L., bearing the inscription you requested. The funds sent were sufficient to cover all expenses.

A. G. B., of N. H.—Saw sets are in use, but yours may be different from any other. You had better forward one to us for examination.

S. H., of N. H.—Malleable iron is made from pig by a process of heating which takes some days to perform. The art must be learned to be performed. The annealing of castings is done by placing the articles in the annealing oven at the proper heat, and allowing them to cool gradually. Charcoal pig is the best for the purpose; good foundry scraps are preferable.

W. F., of S. C.—We are unable to answer your enquiry; it is too indefinite for us to comprehend its meaning.

P. F. D., of Wis.—Under the present post office law we are prohibited from sending circulars, and we hope you will send on the club without it.

W. S. & M. W., of O.—It would give us great pleasure to inform you whose machine for planing and matching boards, etc., is the best, but the newly patented and good machines for the purpose are so numerous that it is difficult for us to recommend one over another. For the most improved machinery for that branch of business, see files of the Scientific American for the past five years.

J. E. A., of Ct.—For an iron wheel, constructed nearly as you describe yours, and embracing the whole principle of your invention, see the patent of Lamb & Root, granted Jan. 1, 1851.

T. J. S., of N. Y.—The noiseless wheels referred to on page 292 Sci. Am., are not made in this country that we are aware of. A patent was taken out in England for it, but we think no application for one has been made here.

W. F. L., of N. Y.—The effect of peaches on the teeth to cleanse them, is no doubt owing to the same cause as that spoken of about the strawberry, a mild vegetable acid.

C. F. M., of Ill.—Do you mean, "Can Mr. Page stop a person from running a circular saw?" No.

J. M. & M. O. P., of Mass.—We cannot give you such a receipt. The best you can use is printer's ink. But that will rub off when wet; good black paint only will stand the water.

F. T. K., of N. H.—At present we do not know of a good work for making colors to print woolen goods. The art of printing on woolen goods is comparatively new, in comparison with that of calico. The same substances used to dye the wool are employed to make the colors, only they are boiled down, made strong, and thickened with gum. The steaming is a necessary process to incorporate the color with the fibre. If we find a suitable work we will let you know.

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Money received on account of Patent Office business since August 16:

J. J. A., of N. Y., $40; M. & F., of L. I., $30; J. B., of N. Y., $20; C. C., of Mass., $20; W. & M., of N. Y., $55; A. S., of N. Y., $25; B. & N., of Ga., $5; S. C., of Ct., $30; J. S. P., of N. Y.; $500; J. O., of N. Y., $15; W. Van A., of N. Y., $250; E. D., of Ga., $3.

Specifications and drawings of inventions belonging to parties with the following initials, have been forward to the Patent Office during the week ending August 16:—

S. I., of N. Y.; J. H. G., of N. Y.; C. C., of Mass.; E. W., of Ct.; J. S., of Ct.; B. & N., of Ga.; W. & M., of N. Y.; E. W., of Me.; E. D., of Ga.

### 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 Volumes 1, 2, and 3—none.

Of Volume 4, about 20 Nos, price 50 cts.

Of Volume 5, all, price, in sheets, $2; bound, $2,75.

Of Volume 6, all back Nos., at subscription price

### New Edition of the Patent Laws.

We have just issued another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office We hall continue to furnish them for 12 1-2 cts. per copy.

### Patent Claims.

Persons desiring the claims 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 one dollar as fee for copying.

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# Scientific Museum.

For the Scientific American.

### Tartar on the Teeth.

As much has been said respecting the tartar on the teeth, and the action of vegetable acids to remove it, a question arises, "is that substance usually found on teeth, denominated *tartar*, really so? Is it not a lime of some kind, and not tartar? And is not its action upon the teeth of an alkaline rather than an acidulous nature? Its action may only be on the albumen of the teeth, or the cause of decay in the teeth may be owing to the exclusion of the atmosphere from their roots. Where does the tartar come from? is another question, if tartar it is. It is well known that in wine growing countries, the people are not more famous for bad teeth than those of other countries, and yet our tartar is almost exclusively, if not wholly so, derived from wine, —it is itself a vegetable acid, and how has one acid such an effect upon another as to destroy it? If it is tartar, how is it that vegetable acids as is alleged, have such a wonderful property of removing this other acid, and at the same time are so destructive on the limeous formation of the teeth, too. These things are worthy of attention.

Tartar is deposited on the sides of casks during the fermentation of wine, and by looking into a wine cask, it will be found adhering to its sides in not very thin hard reddish scales. The name of it in that state is argal. All wines do not afford the same quantity of tartar; the Hungarian wines but little; the French wines much more; the Rhenish wines afford the greatest quantity and the purest, hence they are more sour to the taste. White wine gives out white argal, and the color is of the same hue as the wine in all cases. To make cream of tartar, the crude salt is dissolved in water and left to crystalize. The crystals are then boiled in another vessel with six per cent. of bone black and pipe clay, and set aside to crystalize again. (In France, white argillacious earth is used instead of pipe clay, as it is cheaper.) The crystals are dissolved a number of times and recrystalized, so as to make the salt as pure as possible. This is not the substance found on the teeth, said substance, if examined, will be found to possess the properties of the teeth themselves; in short it is a phosphate of lime, and the common opinion that it is *tartar* is a wrong one.

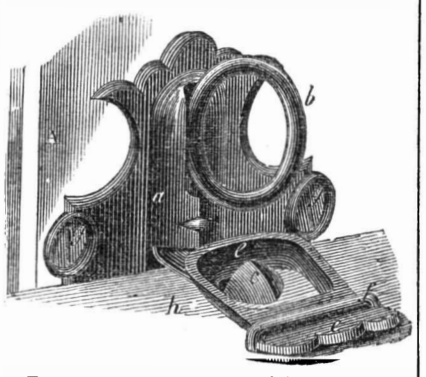
### New Calculating Machine.

An extraordinary calculating machine, says the London Times, is now placed in the Russian Court. It is the invention of a Polish Jew, named Staffel, a native of Warsaw, and works addition, subtraction, multiplication and division, with a rapidity and precision that are quite astonishing. It also performs the operation of extracting the square root and the most complicated sums in fractions. The machine which the inventor calls *Arithmetica Instrumentalis*, is about the size of an ordinary toilet, being about 18 inches by 9 inches, and about 4 inches high. The external mechanism represents three rows of ciphers. The first and upper row, containing 13 figures, is immovable: the second and third, containing 7 figures each, immovable. The words addition, subtraction, multiplication and division are engraved on a semicircular ring to the right, and underneath is a hand, which must be pointed to whichever operation is to be performed. The figures being properly arranged, the simple turn of a handle is then given, and the operation is performed at once as if by magic. The most singular power of the instrument is, that if a question be wrongly stated—as, for instance, a greater number being placed for subtraction from a lesser, it detects the error, and the ringing of a small bell announces the discovery. The inventor has exhibited the powers of this wonderful calculating machine to the Queen, Prince Albert, and several persons of distinction. The inventor also exhibited a machine for ascertaining by weighing the fineness of gold or silver, but this is to be submitted to further and more severe tests. Both machines are, to say the least, extremely curious, and have been rewarded with a silver medal by the Russian Government. During the week the directors of the Bank of England visited the machine.

[This is the most extraordinary calculating machine, we ever heard of. The one of Mr Nystrom, in No. 35, Sci. Am., is indeed a remarkable one also, and is much less complex than this Russian one. We hope to hear of Mr. Nystrom's machines being in our market some of these days.

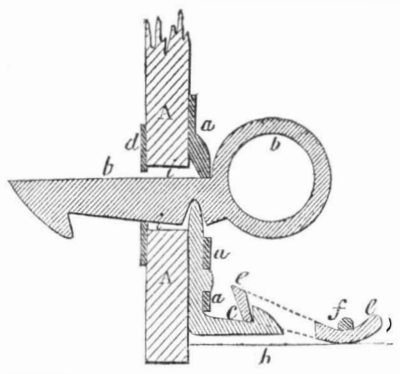
### Self-Acting Lock for Blinds and Window Shutters.

Fig. 1.



This is a very neat and useful improvement by W. Race & Co., extensive manufacturers of stoves, &c., at Seneca Falls, N. Y. Figure 1 is a perspective view, and figure 2 is a vertical transverse section of the blind or window shutter closed, with the lock in its catch. A is the blind or window shutter. The lock is composed of a vibrating latch or sneck, *b b*, to catch on the outside of the wall to retain the blind when it is open. This sneck passes through the blind, A, at *i i*, and is retained in its place by metal pieces, *a*, *d*, above —*a*, *a*, *c*, below the sneck, represent the catch of the lock for the inside. This catch is secured to the blind inside, and *c* is the catch or sneck of the same form as the reverse catch, *b*, above. On the bottom board, *h*, (fig. 1) of the window sash, is secured a vibrating metal loop, *e*; it rocks slightly on the curve at *f* (fig. 2). It is now represented in both figures, as being hooked over the catch, *c*. By pressing with the finger on the sole, *e*, inside of *f*, the loop at the outside, *e*, will be thrown up and the blind or shutter can be thrown open;

Fig. 2.



the loop then drops down by its own weight, as the distance from the sneck, *e*, to the axis, *f*, is much greater than from, *f*, to the sole, *e*. The blind locks itself as follows: it will be seen, in figure 1, that the point of the catch, *c* is an inclined plane; the bottom of the loop, *e*, is a reverse incline, therefore when the blind is drawn in, the point, *c*, slides under the loop, *e*, until it passes the notch of the catch, when the loop drops down by its own gravity, and the blind is locked as now represented in the above figure. This is a very cheap and neat blind lock. They are sold for 75 cents per dozen pair, for wood, or 87½ cents for brick.

### Chloroform and Etherization in Child-Birth.

The Half-Yearly Abstract of Medical Sciences, No. 13, 1851, besides many valuable articles to the profession, contains one of very general interest on the use of chloroform or etherization in cases of child-birth. Dr. Murphy gives 540 cases in which chloroform was used with the happiest effects and no accidents. Dr. Simpson gives 1,519 cases of females subjected to anæsthetic agents, without any accidents occurring. Other physicians have contrasted the natural labor with those under the influence of chloroform, with results entirely in favor of anæsthesia.

### Hydraulics.

### Maximum Velocity and Power of Water on Different Wheels.

[Continued from page 384.]

Of Undershot Wheels.—The term undershot is applied to a wheel when the water strikes at or below the centre. And the greatest effect is produced when the periphery of the wheels moves with a velocity of ·57 that of the water;—hence, to find the velocity of the water, multiply the square root of the perpendicular height of the fall in feet by 8, and the product is the velocity in feet per second.

*Example*—Required the maximum velocity of an undershot wheel, when propelled by a fall of water six feet in height.

$\sqrt{6}=2{\cdot}45\times8=19\,6$ feet velocity of water; and $19{\cdot}6\times{\cdot}57=11{\cdot}17$ feet per second for the wheel.

Of Breast and Overshot Wheels.—Wheels that have the water applied between the centre and the vertex are styled breast wheels, and overshot when the water is brought over the wheel and laid on the opposite side; however, in either case, the maximum velocity is two-thirds that of the water; hence, to find the head of water proper for a wheel at any velocity, say—As the square of $16{\cdot}083$, or $258{\cdot}67$, is to 4, so is the square of the velocity of the wheel in feet per second to the head of water required.

*Example.*—Required the head of water necessary for a wheel of 24 feet diameter, moving with a velocity of 5 feet per second.

$\frac{5\times3}{2}=7\,5$ feet velocity of the water.

And 258 67 : 4 :: $7{\cdot}5^2$ : ·87 feet, head of water required.

But one-tenth of a foot of head must be added for every foot of increase in the diameter of the wheel, from 15 to 20 feet, and ·05 more for every foot of increase from 20 to 30 feet, commencing with five-tenths for a 15 feet wheel.

This additional head is intended to compensate for the friction of water in the aperture of the sluice to keep the velocity as 3 to 2 of the wheel; thus, in place of ·87 feet head for a 24 feet wheel, it will be $·87+1·2=2·07$ feet head of water.

If the water flow from under the sluice, multiply the square root of the depth in feet by 5·4, and by the area of the orifice also in feet, and the product is the quantity discharged in cubic feet per second.

Again, if the water flow over the sluice, multiply the square root of the depth in feet by 5·4; and two-thirds of the product multiplied by the length and depth, also in feet, gives the number of cubic feet discharged per second nearly.

*Example* 1.—Required the number of cubic feet per second that will issue from the orifice of a sluice 5 feet long, 9 inches wide, and 4 feet from the surface of the water.

$\sqrt{4}\parallel 2\times5{\cdot}4=10{\cdot}8$ feet velocity,—and $5\times{\cdot}75\times10{\cdot}8=40{\cdot}5$ cubic feet per second.

*Example* 2.—What quantity of water per second will be expended over a weir, dam, or sluice, whose length is 10 feet, and depth six inches?

$\sqrt{\cdot5}={\cdot}2236\times5{\cdot}4=\frac{1{\cdot}20744\times2}{3}={\cdot}80496$

feet velocity; then, $10\times{\cdot}5=5$ feet, and $·80496\times5=4{\cdot}0248$ cubic feet per second nearly.

In estimating the power of water wheels, half the head must be added to the whole fall, because 1 foot of fall is equal to 2 feet of head; call this the effective perpendicular descent; multiply the weight of the water per second by the effective perpendicular descent and by 60; divide the product by 33,000, and the quotient is the effect expressed in horse-power.

*Example* 1.—Given 16 cubic feet of water per second, to be applied to an undershot wheel, the head being 12 feet, required the power produced.

$12\div2=6$ and $\frac{6\times16\times62{\cdot}5\times60}{33000}=10{\cdot}9$ horse-power nearly.

*Example* 2.—Given 16 cubic feet of water per second, to be applied to a high breast or an overshot wheel, with 2 feet head and 10 feet fall; required the power.

$2\div2=1$ and $\frac{1+10\times16\times62\,5\times60}{33000}=20$ horse-power Take off ½ of this nominal power.

### Quick Work.

During the last fire in San Francisco, one of the newspaper offices being in danger, a double cylinder fast press was taken down, all the small parts, screws bolts, &c., buried in a barrel under ground, and other portions removed out of danger. The press was in this situation at 5 o'clock in the afternoon, when, the danger being over, Messrs. Amerige and C. Stedman, two New York pressmen, took hold of it with their sleeves rolled up. They got it into operation again, and drove off the editions of four of the San Francisco papers, which made their appearance next morning as though nothing had occurred.

The proposition to subscribe $200,000 by the city of Lexington, Ky., to the Covington Railroad, was defeated on Monday, 4th inst., by a vote of 917 for the tax, to 1,022 against it.

## LITERARY NOTICES.

The Microscripist—Or a Complete Manual on the use of the Microscope; for Physicians, Students, and all lovers of Natural Science; by Joseph H. Wythes, M. D.: Philadelphia, Pa.: Lindsay & Blakiston.—Dr. Wythes deserves credit, as he will be sure to receive the thanks of the intelligent, for preparing a manual on the use of an instrument so elegant and useful as the microscope, which is every day obtaining greater popularity. The work, which forms a small volume of near two hundred pages, is a very valuable one, containing, with all the necessary engraved illustrations, full accounts of the instrument, its adjuncts, and use—the modes of procuring and preparing objects for inspection, instruction in physiological, chemical, and other collateral matters, &c. We hail this book as a most valuable addition to our library; its publishers have our thanks. They publish some most excellent scientific works.

American Railway Guide—Compiled by Charles Cobb, and published by Curran Dinsmore, 138 Fulton street. This useful publication is issued for August —every traveller should have a copy, as it is only 12 1-2 cents.

American Railread Journal.—We are glad to see our cotemporary push along improving. This Journal is beautifully printed and ably conducted, and contains a vast amount of useful information connected with railways.