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."

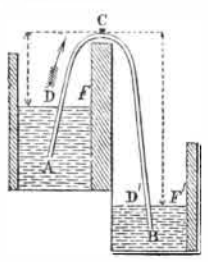
A. You mean the methods of applying the forces to propel machinery, &c.

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 ments 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.

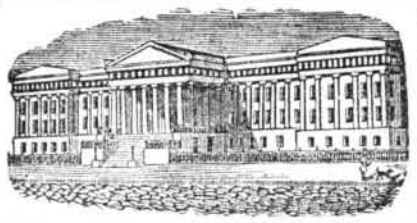
It is ordered that the said petition be heard at the Patent Office on the 29th day of September, 1851, at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have why said petition ought not to be granted.

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 any other 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 for coloring 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, perspiration, muscular action, and other bodily functions.

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 preparatory 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.