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Rail-Road News.

Profits of Railroads.

From a list in the Boston Advertiser of thirteen Railroads and their branches, in Massachusetts, with 238 miles of double track, 375½ of single, costing in the whole \$38,812,689, it appears that more than half the companies paid dividends in 1850, from the net profits of the year, 8 per cent.; and the whole exceed 7 per cent.; each having retained a greater or less reserve; while, in England, the past year, no company paid more than 5 per cent, with the exception of four, which paid respectively £7, 14s per cent, 6 per cent, 5½ per cent. and 5¼ per cent. Six other companies paid 3 per cent.; several from 1 to 3; and a number nothing. The Great Western with a capital of nearly £14,000,000, 264 miles long, paid 4 per cent.; the London and South-Western, capital £8,380,000, 4 per cent.; the South-Eastern and Greenwich, capital £9,460,000, 3½ per cent.; the Midland and Bristol, 496 miles, capital £15,450,000, 2½ per cent.; the Lancashire and Yorkshire, 260 miles, capital £11,488,000, 2 per cent.

Tunnel through the Green Mountains.

The friends of the Troy and Greenfield Railroad appear not to be discouraged by the failure of their attempt to get the State credit for tunnelling Hoosac Mountain, but are proceeding as rapidly as their means will permit with the execution of the work. They intend to commence the work of tunnelling on the east end of the mountain, so as to demonstrate to the next Legislature if possible, the feasibility of the project. A writer in the North Adams Transcript, speaking of the road, says:—

"The work is rapidly progressing from Troy to Hoosac; and the heaviest of the grading is nearly finished from Adams to Pownal. If all the stockholders meet their assessments promptly, so that there be no delay on that account, the cars will run from Adams to Troy by the 1st of January, 1852."

Coal Fields of Pennsylvania.

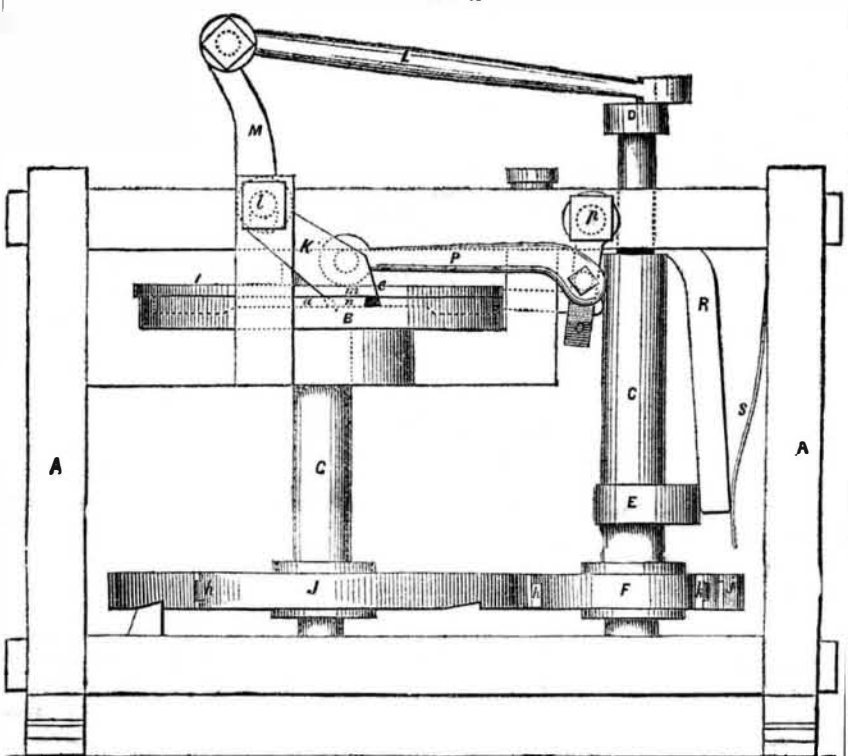
Mr. McGinnes, an able mining engineer, of Pottsville, Pa., has asserted and advanced the theory long ago, that under the red ash coal seams, the large white ash coal seams would be found at workable depths. This theory has been demonstrated lately by boring. The Schuylkill coal basin is now held to be three times more valuable than it was a short time ago.

A False Island.

An island has been placed on the charts in lat. 33° 19' N., lon. 42° 39' W., which, Capt. W. G. Currier says, is not to be found. He has sailed over the island on the nautical charts twice. No island was ever seen there.

ISON'S IMPROVEMENTS IN MACHINERY FOR MAKING SPIKES AND NAILS.

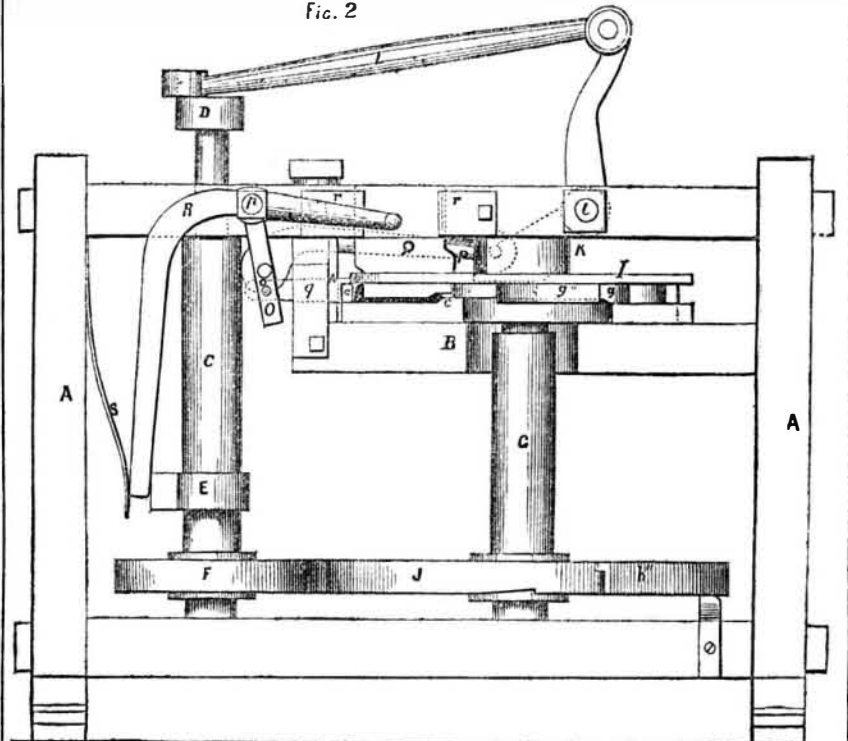
Fig. 1.



The improvements in machinery which the accompanying engravings illustrate, is the invention of Mr. Mark M. Ison, of Etowah, Cass Co., Ga., who has taken measures to secure a patent for the same. Owing to the number of cuts required to illustrate this machine, two of the figures, with the description, are contained on the Fourth Page.

Fig. 1 is an elevation of that side of the machine where the iron is cut off and pointed. Fig. 2 is an elevation of the opposite side when the heading is performed and the spike or nail delivered from the machine. Fig. 3 is a plan view, and fig. 4 is a plan of the table and carrier. The same letters refer to like parts.

Fig. 2.



angles to the face of the table and the motion of the carrier. By a suitable movement, this die is then brought down upon it to hold it while a heading tool moving nearly in a line with the spike is made to act upon and form

The invention consists in a curved horizontal table having a hollow space within it, in which works a revolving cam or carrier, hung on a shaft concentric to the table. The iron plate from which the spikes or nails are to be made is fed along the upper surface of the table, is cut off in strips of suitable size across the edge of an opening in the top of the table, by a vibratory shear arm working above, and the pointing is performed between the said shear arm and the table. The cam mentioned, which revolves and becomes stationary at regular intervals, is then made to carry the spike round within the hollow space in the table, and allow it to stop under a holding die, which moves up and down in a line at right

the head of the spike or nail. A A is the framing; B is the stationary table consisting of a plate of metal of the form of a segment of a circle, a little larger than a semi-circle; it has a projecting rim standing up from its face

nearly all along the circular part of its face, and upon this rim a plate, I, is secured, leaving a space between it, and the lower part of the table. At a distance from the inside of the rim, equal to the intended length of the spike before heading; there is a slightly raised boss, c, presenting the form of a segment of the frustum of a cone, the inclination of its periphery being the reverse of the inclination or bevel required for the point of the spike, is intended to form one side of the said point. Through the plate, I, there are two openings, one, b, of considerable size, shown in fig. 3, and another, d, which is merely a slot through which the holding die passes. The edge, e, of the opening, b, must be steeled, as it is intended to form one cutting edge of the shears which cut off the spike. C is the main shaft which is hung in suitable bearings in a vertical position; it carries at its upper end a crank, D, whose wrist, f, has a very short throw, for operating the vibrating shear arm; it also carries a cam, E, for operating the holding down die, and a friction wheel, F. G is a shaft hung in bearings parallel to C, it passes through the centre of the table, B, carrying the three armed cam or carrier, H, the three arms, g g' g'', of which fit in the space between the bottom of the table, B, and the upper plate, I; the front faces of the arms are nearly radial. The shaft, G, also carries a friction wheel, J, whose periphery is provided at three equi-distant points with small projections or teeth, h h' h'', at the back of each of which the periphery is slightly recessed. One part of the periphery of the wheel, F, corresponding in length with each space on the wheel, J, between two of its teeth, is more prominent than the other part which is recessed from i to j, in fig. 3, but has a small tooth, k, projecting near to j; the prominent part of the periphery of the wheel, F, when in contact with the periphery of the wheel, J, will, by the revolution of the main shaft, C, cause it (the wheel) to move on its axis, by reason of the friction of contact, but the less prominent or recessed part passes without moving it; the starting of the wheel, J, being accomplished by the tooth, k, coming in contact with h h' or h''. K is the vibrating shear arm attached to a deep socket working on a centre pin, l, secured in the frame; its edge, m, or the whole arm is steel, forming, with the edge, e, a pair of shears; the under face of the arm is provided with a bevelled projection, n, at one end, which comes immediately over the periphery of the conical surface, c, and when the shear arm is brought down, presses or forms the point of the spike after cutting it off. The shear arm receives the necessary motion by means of a pitman, L, connected to the wrist, f, of the crank, D, and to an arm or lever, M, on its own socket. N is the header, which is attached by a pin, o, to a lever frame, O, hung on a stationary pin or centre, p, secured in the frame; it works through a guide, q, in the frame, and receives the necessary motion at the proper time through a rod, P, connecting the lever frame, O, with the vibrating shear arm, K. Q is the holding down die, which is of suitable form on its under side to hold the spike secure upon the table while the header is made to act upon it; it slides in guides, r, and is brought down upon the spike at a suitable time, and held down by means of a bent lever, R, having its fulcrum on the pin, p; one end of this lever is inserted in a suitable recess in the die, and the other end bears upon the cam, E, being held against it by a spring, S.

The operation of the machine is as follows:—Rotary motion is given to the shaft, C, by any convenient means, in the direction of the

[Continued on the Fourth Page.]

New Inventions.

Great Improvement in the Piano Forte—Piano, Flute, and Viol all Combined.

Mr. R. M. Ferris, of this city, has taken measures to secure a patent for an improvement in the pianoforte, termed the "Flute and viol d'amour" which will astonish the community one of these days. The arrangement is very ingenious, and the sweet music discoursed falls upon the ear like the songs of the Fairies. The combination of the parts is such that either the organ or piano can be played separately or combined by the same set of keys, or by one hand. The invention does not consist in combining the flute notes with the piano, but the manner of doing so. There are two sets of keys, which can be played by the one hand or separately. The improvements are of no common character, and cannot fail to create a sensation in the musical world.

Improved Railroad Brake.

R. M. Wade, of Wadesville, Va., the patentee of the spark catcher, illustrated in our columns last week, has taken measures to secure a patent for an improved brake which is worthy the attention of railroad men. He applies the necessary power to separate the brake by means of chains attached to levers, in communication with the brakes, and to the periphery of a drum which is hung loosely upon one of the driving axles, but is governable by a clutch under the control of the engineer or brakesman, and can be made to revolve with the axle and wind up the chains upon the periphery and thus actuate the levers.

Libbey's Leather Car for raising Hides from Vats.

Mr. Orrin Libbey, of Cooperstown, Otsego Co., N. Y., has invented a car for raising hides from vats, which is a great improvement in the mode of doing this work, enabling one man to do with great ease that which requires a number to perform by the slow process of hide after hide. A truck runs along rails at the side of the vats, and on this truck is a windlass with which the hides are lifted up and laid on the truck, and then they can be deposited in the same way.

Mr. Libbey has applied for a patent.

Improvement in Shuttles

Mr. L. Litchfield of Southbridge, Mass., has taken measures to secure a patent for a valuable improvement in shuttles for power looms. The improvement consists in making the spring and spindle in one piece, and so constructing them that one shuttle will answer for bobbins with different sized heads, thus making the shuttle more suitable for woolen factories especially. There is no fear also of the spring catching the thread, as in the old shuttles, when the springs are fixed with a screw on the bottom of the shuttle. The screw often gets loose, but there is no such thing as a screw in the improved shuttle.

Improved Machine for Punching Leather Hose, Harness, &c.

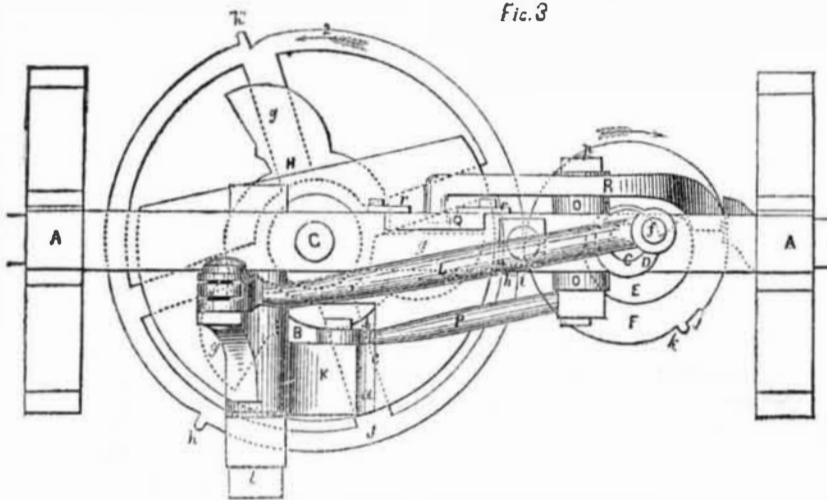
Mr. Henry Wilson, of Orwell, Bradford Co., Pa., has taken measures to secure a patent for a very excellent improvement in the apparatus used by saddlers for punching hose for fire engines, &c. A lever is made to operate the punch and withdraw it, so as to pierce the hose in the holding jaws, which are opened and closed by a cam actuated by a band passing over the periphery of a pulley connected to a pair of treadles, which are operated by the feet of a person sitting on the bench of the machine. The stitching can be performed in the same jaws, the punching preceding with the feet, while the hands follow after to close up by stitching. The leather for harness or hose is moved regularly forward by the machine, the exact length of a stitch every stroke. It can punch band iron for trunks, as well as hose and harness.

A very extensive quarry of soapstone has been discovered on the farm of Mr. Enoch Gibson, of Canterbury, N. H. Mr. Gibson disposed of his right in the soapstone for \$8,000.

Ison's Improvements in Machinery for Making Spikes and Nails.

(Continued from the First Page.)

arrow, 1, (see fig. 3), and the iron being previously heated, is brought either directly from the rolls or otherwise, in the direction of the lines shown in figs. 1 and 2, on to the upper plate, I, of the table, and its end is presented a sufficient distance over the edge, e, to have a strip cut off of suitable width to form the spike, when the vibrating shear arm, K, will be brought down, and will cut off the overhanging end of the iron between its edge, m, and the edge, e, of the opening, b, afterwards forcing it down into the opening and



friction of the two wheels being diminished, while the next spike is cut off and pointed by another descent of the shear arm, the iron from which the spikes are made being moved forward previous to every descent of the shear arm. By the motion just described as being given to the wheel, J, and shaft, G, the carrier, H, receives a corresponding motion, and carries the spike first cut off between the plate, I, and the lower part of the table, B, to a position under the heading die, where, on becoming stationary, it allows it to remain. During the time that it is stationary, the cam, E, operating on the lever, R, brings down the holding die, and the header, being brought forward by the next downward stroke of the shear arm, the head is upset or turned round the corner of the holding die, Q. As soon as the head is formed, the holding die is raised by its lever, R, being forced by the spring, S, against the less prominent part of the cam, E, and the header is drawn back by the upward motion of the shear arm, and by this time the wheel, J, and shaft, G, begin their motion again, and the arm of the carrier, which brought the spike to the header, pushes it out from the machine, the next arm behind it bringing the spike last cut off and pointed to

Currents of the Ocean—Pendulum Experiments.

When anything obscure and difficult of explanation is brought before the public, especially if it is beyond the experience and grasp of common minds, it is wonderful to see what a rush there is for distinction,—men who were never accounted very philosophical, at once stand out in bold relief as the "noblest Romans of them all." The pendulum experiment to demonstrate the rotary motion of our planet, has made more philosophers than any discovery, we believe, of modern times. We have a pile of communications on the subject, of no common dimensions, every one of them proving the truth of Seba Smith's New Elements of Geometry, viz., that a line has both length, depth, and breadth (one argument for the Professor, we hope). Owing to the propensity of some men to speculate and theorize, independent of facts, it is very likely that fifty or perhaps a hundred new theories will spring up out of Foucault's experiment.

We see that Mr. Wilkins, in the N. Y. Tribune, endeavors to demonstrate that the currents of the ocean can be easily accounted for by this experiment; rather, he asserts that there are no ocean currents at all—that the currents of the ocean are merely imaginary. He proves this by making a vessel of water revolve on a table, the vessel moves "but the water does not." If this was proof positive,

down on the lower part of the table, B, where it will form the point; the shaft, G, and carrier, H, being stationary while the iron is being cut off pointed. The shear arm will, after the cutting off and pointing, commence its upward motion to release the spike, and as soon as this upward motion commences, the tooth, k, on the wheel, F, comes in contact with one of the teeth, h, h', or h'', on the large wheel, and sets the shaft, G, in motion, giving it one-third of a revolution in the direction of the arrow, 2, (fig. 3), after which the point, i, on the wheel, F, passes the next tooth on the wheel, J, and it (the wheel J) and the shaft, G, become again stationary by reason of the

Fig. 3

a suitable position to be held by the holding die, Q, and headed. This operation is repeated as long as the machine remains in motion, two spikes being always operated upon at once, one being cut off and pointed, while the one cut off and pointed before it, is being headed. In figure 1 a spike is shown just cut off, and under the shear arm being pointed; in fig. 2 one is shown being headed.

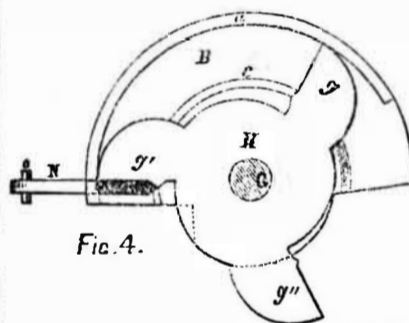


Fig. 4.

From the foregoing description, and the excellent manner in which it is illustrated, its construction and operation will be fully understood. Other information may be obtained of Mr. Ison by letter addressed him at his residence mentioned on the first page.

then a vessel standing still in the midst of the Atlantic could not detect any current, "there being no current." The Gulf Stream, however, proves the contrary theory, for it often washes, up the products of the New World on the coasts of the cold, a thing which it otherwise never could; and besides this theory entirely leaves out the result of centrifugal force

Roofing the Britannia Tubular Bridge.

A singular and novel process, says the London Times, is at present being carried on with respect to the Britannia Tubular Bridge. In consequence of the upper surface of the tubes receiving and being acted upon by the wet, it has been deemed advisable to roof the top of the tubes; and for this purpose a complete ridge has been placed over both the tubes, having a walk down the centre, and the frame work has been completely covered over with cloth impervious to the rain. Upwards of 7,000 yards of this prepared cloth are required to accomplish the undertaking, which has been taken by contract. The large hotel, which it has been determined to erect closely adjacent to the bridge, will contain 500 beds, and will be connected with the tubes by a covered walk and surrounded with appropriate gardens, pleasure grounds, &c. The works for the erection of this monster hotel are in full operation; large bodies of laborers are employed in leveling the ground and forming the foundations, and no time will be lost in the completion of

this adjunct to the Chester and Holyhead and Carnarvon lines.

New Rate of Postage—Important Information for the Subscribers of the Scientific American.

On the 1st of July, next Tuesday, be it remembered by all, the new rates of postage as passed by the last act of Congress come into force. The great reduction of the postage on newspapers we believe will tend to increase the circulation of them all over the country, and we expect with other publishers and the public to be benefitted by the reform. The Scientific American, under the new law, as will be perceived by the legal rates of postage which will be henceforth charged upon it to regular subscribers, will cost our mail patrons much less per annum than it has heretofore, and we cannot but hope that thousands of new ones may be added to our already 16,000 pre-paying patrons.

The following rates of postage we have copied from the official tables, it being the rate charged on the "Scientific American" for each quarter (3 months) payable in advance at the office where received.

To subscribers in N. Y. City and County, Free
Within 50 miles of New York, . . . 5 cts.
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Within 4,000 miles, and over 2,000, . . . 25 cts.
Over 4,000 miles, 30 cts.

NOTE—The last rate includes California and Oregon.

Patent Case—Carpet Loom.

A trial came off last week in the U. S. Circuit Court, Boston, being the case of E. B. Bigelow, the famous inventor, and Mr. Barber, for the infringement of two patents. The question was a complicated one, and was the first trial of the two patents, which covered a variety of improvements by means of which the Jacquard power loom was made applicable to the weaving of carpets. The plaintiff alleged that the defendant infringed on each of these patents by using his improvement of the Jacquard machine, and also his method of making a regular and measured figure.—This was denied by the defendant, who also set up the defence, that each patent was invalid for want of novelty. The jury found both patents to be valid, and that each was infringed by the defendant. In answer to a question by the court, the jury said they did not regard a particular kind of let off, described and claimed in the plaintiff's first patent, as original with him.

The nominal damages were \$10 for the first and \$5 for the second count.

In the two patents in question, there are twelve distinct claims. MACHINIST.

Lowell, 20th June.

Improved Oil Cup.

Mr. Aaron Richardson, of Bellows Falls, Vermont, has taken measures to secure a patent for an improvement in oil cups for lubricating the journals and other parts of machinery, which consists in providing the inside of the cup with a valve fitting in a seat around the mouth, and held by a spring so as to close it and exclude dirt, but yield to the slightest pressure of the spout of a feeder, to fill up the cup, and then forming—when the pressure is removed—a self acting stopple.

A petrified snake was recently dug up at Powers Summit, on the Ohio and Pennsylvania Railroad. It was found imbedded in the limestone rock, some sixty feet below the earth's surface. Its size is enormous, sixteen feet in length, and in the middle at least four inches in diameter. Although its substance is completely assimilated to the rock in which it was imbedded, it looks surprisingly natural—indeed almost as perfect in "form and feature" as when alive.

The Carew Paper Manufacturing Company, at South Hadley Falls, are boring an artesian well to supply their mill with clear water. At the depth of 26 feet they have a stream above the capacity of an ordinary pump to dispose of. It is intended to go down 100 feet. Thus far the boring is through solid rock.