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THE AMERICAN STOVE PLATE DRESSING MACHINE.

This machine is designed to obviate a large amount of work upon stove castings, now performed by hand labor, with the cold chisel and file. A well made stove should have every joint nearly perfect, the doors so nicely adjusted that a strip of tissue paper inserted at any point cannot, when the door is shut, be withdrawn, and the edges of the holes smoothly ground over the entire surface. It has also become the practice lately to give a fine polish to the outside edges of the tops and bottoms. It is hardly necessary to point out that all this extra work, when done by chipping with a cold chisel and smoothing with a half round file, necessitates not only an expenditure of tools but of time, rendering the operation obviously an expensive one.

The present device is so constructed that the castings may be at once adjusted in proper position and at any angle against a grinding wheel, which, acting against either their inner or outer edges, speedily removes irregularities and produces a nicely finished surface.

The operation consists in placing the work, after the gate is broken away, upon the table and setting the latter at the proper angle. This last is done by loosening the two hand nuts, which engage with the semicircular braces, B B, as shown in our engraving. The stove top or other piece is then carried rapidly around with its interior edge in contact with the emery wheel, which renders the portions ground smooth and bright. For this work, solid emery wheels are exclusively used.

In order to polish the outside edges, an additional table, A, secured to the front of the main table, is used, and the stove top is laid bottom side up on a small form, made from inch board and having a hole for the pipe receiver. This form is placed on the table, and the work thereon brought in contact with the wheel, as already described. After the edges of the casting are roughed off, the solid wheel is removed, a covered one substituted, and the plate finely polished.

The vertical adjustment of the table, which allows of the work being brought against any desired point on the face of the wheel (so as to insure evenness of wear of the latter) is effected by turning the crank, C, which operates the cams, F, through the pinion, D, the whole being controlled and held in position by the dog, E. By using a shorter spindle and cup-shaped wheel, the machine may be advantageously employed for surface grinding.

Application for patent now pending. For further particulars address the Northampton Emery Wheel Co., Leeds, Mass.

The Swatara.

Owing to the haste necessary in despatching the Swatara, with the transit of Venus observing party on board, it was impossible to give her engines, which were the first of the compound type fitted in a United States man-of-war, the benefit of a trial trip.

It appears, however, that under steam and sail she made the passage from this port to Bahia in 35 days. The official report of the engineer has not yet arrived; but from other sources, the *Army and Navy Journal* learns that with fires under six boilers and with an average speed of six and a half knots, she consumed about fifteen tons of coal per twenty-four hours. The temperature in the engine rooms cannot, it is said, be kept under 180° or steam higher than forty-five pounds.

Nitrous Acid in Plants.

Schönbein first detected nitrous acid in the juices of different plants, by the common reagent for that acid, a solution of potassium iodide, starch, and sulphuric acid, which gives to the liquid containing nitrous acid a fine blue color. Subsequently, however, he was led to attribute this bluing to

the presence of active oxygen and no longer to nitrous acid. In order to determine whether or not Schönbein's second conclusion was a correct one, a series of experiments has been made at the laboratory of the Illinois Industrial University, a paper on which M. P. Genadius contributes to the *American Chemist*. The conclusion drawn from these tests is that very strong evidence is offered of the presence of nitrous acid in plants; for the formation of nitric acid would be preceded necessarily by that of nitrous, the latter being, as it were, a stepping stone to the former. So that the bluing, which the experiments obtained from the juices of the differ-

desired elevation within this limit. The operation is easily performed by one man, as indicated in Fig. 1 of the annexed engravings.

The upper ends of two upright posts are bound with iron stirrups and bolted firmly together. The lower ends are secured by bolts and angle irons to a foot piece. Between the two posts is a back, A, which extends for a suitable distance from the foot piece upward.

Working in metal boxes in the upper part of the posts is an iron shaft, B, one and a half inches thick, to which two chains, carrying a heavy hook, are attached. On this shaft, and close to the inner side of one of the posts is a ratchet wheel, C, Fig. 2, with which engages a pawl pivoted to the post. Outside of the latter, the end of the shaft is formed into a six-sided nut to receive the wrench lever by which the shaft is turned and the chains wound thereon. On the other end of the lever is formed a steel tamping bar, D, used for tamping the cross ties.

The device is placed close to the rail, under which the hook engages (dotted line, Fig. 1). The lever is then worked until the rail is elevated to the desired height, where it is held by the pawl in connection with the ratchet wheel. The chains have short links and are of $\frac{1}{2}$ inch iron. The weight of the entire machine is from 45 to 50 pounds, and by its aid from 8,000 to 10,000 pounds, it is stated, can be readily lifted by one man. It is adaptable to a variety of uses, is easily adjusted and replaced, and can be made without

difficulty at small expense by any railroad shop.

Patented July 8, 1873. For further particulars regarding sale of rights, etc., address the patentee, Mr. Geo. J. Kinzel, Knoxville, Tenn.

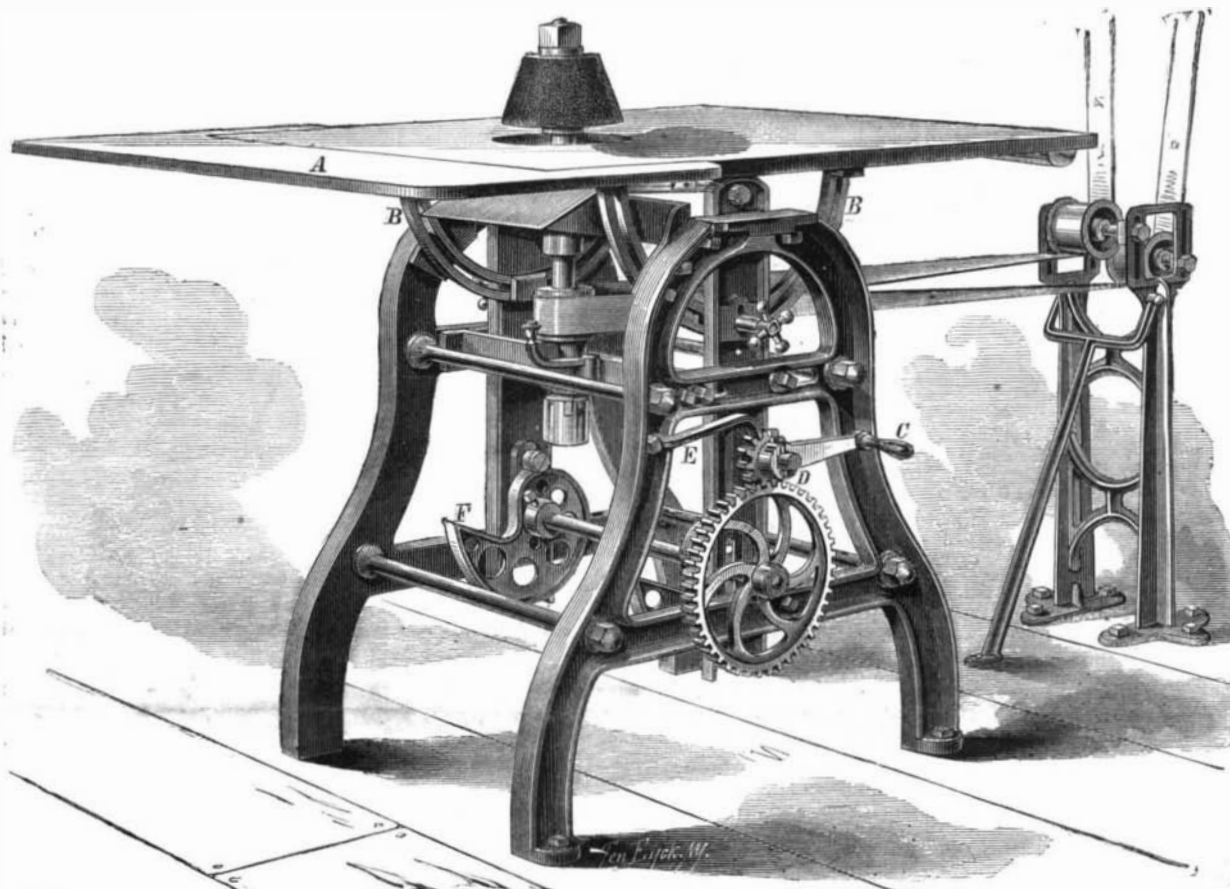
New Electromagnetic Station Indicator.

Mr. Charles W. White, of New York city, has patented, August 18, 1874, through the Scientific American Patent Agency, a quite ingenious station indicator, by means of which the names of places printed on an endless band are caused to appear and change by the action of mechanism, controlled by electromagnets. The rollers over which the band passes are geared to each other, and are rotated by a spur wheel, which is itself turned by a ratchet in which a pawl engages. The latter connects with levers vibrated by the movements of the magnet armatures, so as to cause the pawl to turn the ratchet, and so cause the band to move around the rollers. There are two sets of this gearing, in order that the band may be turned in either direction. In addition to this, there is a check pawl, which is lifted when the carrying pawl is operated. This locks a ratchet, so that the band is firmly held at any point until again set in motion by the mechanism. The indicators are placed in any convenient position in the cars, and from each set of magnets an independent circuit is led to the point whence the machine is to be controlled, where a suitable closer is placed in each circuit. Upon one circuit being closed, the indicating ribbon is unwound from the top roll, and wound on the lower one; the other circuit established, the reverse takes place.

The mode of locking the mechanism and the ratchet arrangement for turning the rolls are novel, and embrace efficient improvements in the electromagnetic principle for operating station indicators.

Pacific Ocean Telegraph Survey.

The survey ordered by the United States government, to ascertain the practicability of laying a telegraph cable through the Pacific Ocean, between this country, China, and Japan, has just been successfully completed by Commander G. E. Belknap, of U. S. S. Tuscarora. The greatest depth of water measured was 4,037 fathoms or $4\frac{1}{2}$ miles. Nothing to interfere with the working of a cable was discovered.

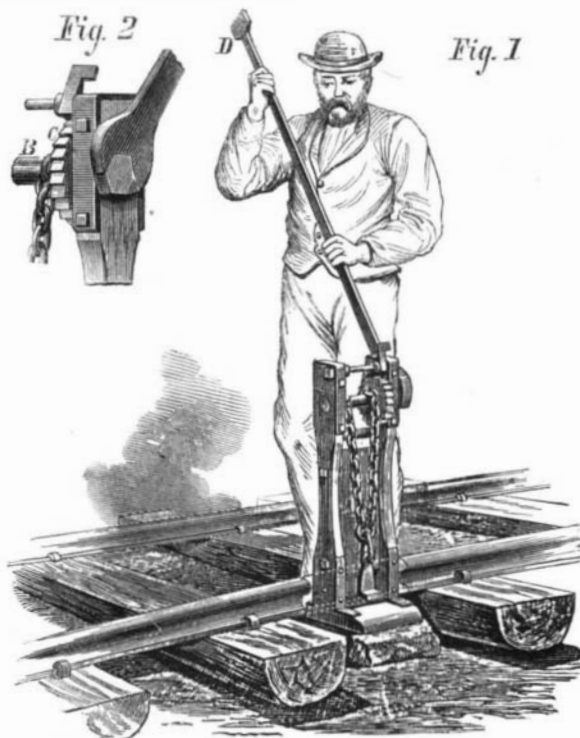


THE AMERICAN STOVE PLATE DRESSING MACHINE.

ent plants, is probably caused in large measure by the nitrous acid present in those juices, with which, as soon as the oxygen of the air comes in contact and the chemical changes (fermentation and decomposition) begin, this acid is either destroyed or changes into nitric.

KINZEL'S RAILWAY TRACK LIFTER.

This is a simple device for lifting railway tracks which, it



is claimed, will accomplish its work in half the time required with the screw jack or other apparatus, while necessitating scarcely half the power. The track can be raised to any height up to 18 inches, and is held by the machine at any