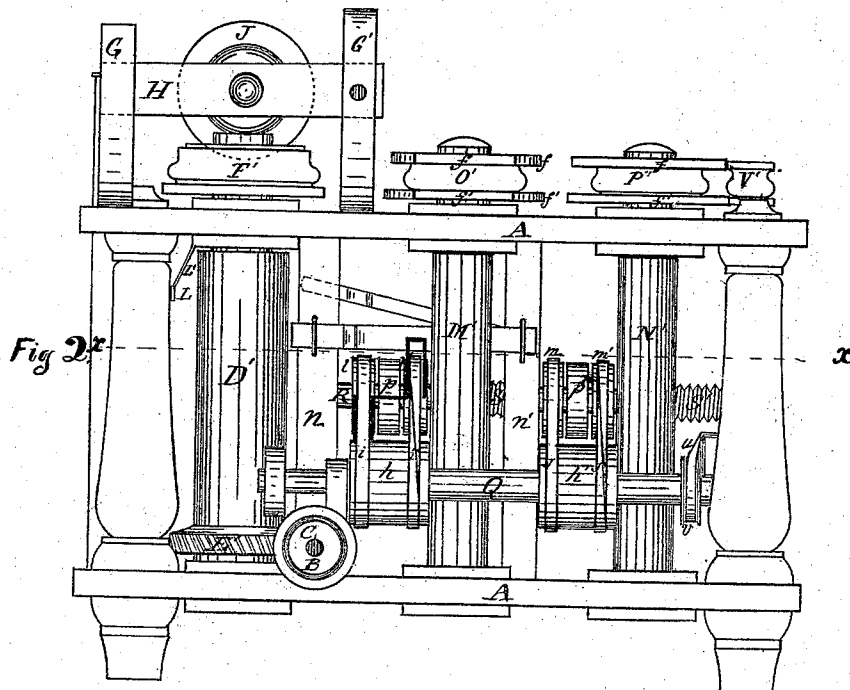
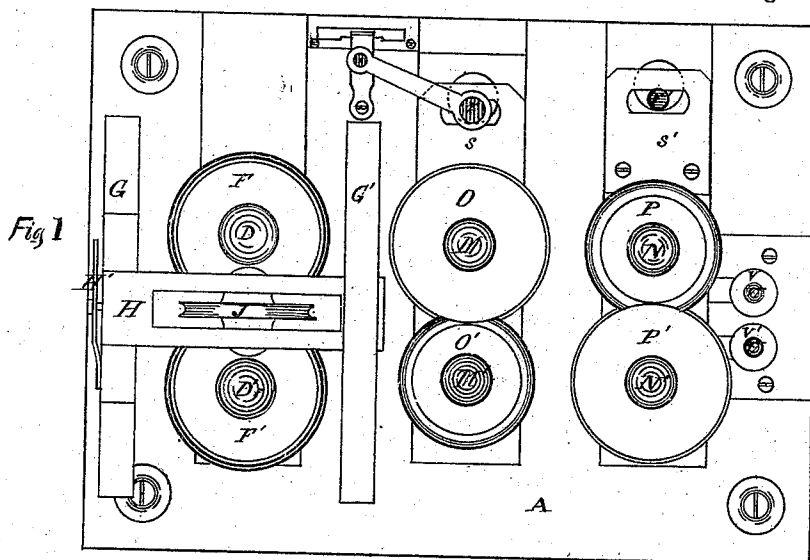


J. R. MOORE & J. G. MILLS.

Improvement in Machines for Patching Railway-Rails.

No. 130,587.

Patented Aug. 20, 1872.



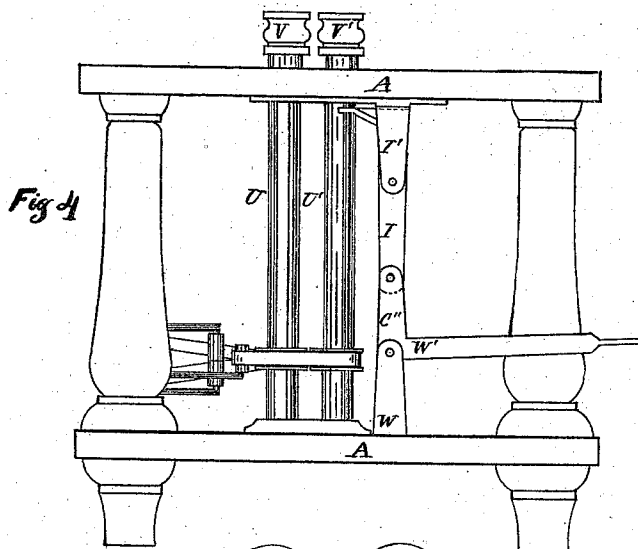
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UNITED STATES PATENT OFFICE.

JOHN R. MOORE AND JAMES G. MILLS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MACHINES FOR PATCHING RAILWAY RAILS.

Specification forming part of Letters Patent No. 130,587, dated August 20, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that we, JOHN R. MOORE and JAMES G. MILLS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Patching Railway Rails; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which our invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1, Sheet 1, is a top view of our said improved machine. Fig. 2, Sheet 1, is a side elevation of the same. Fig. 3, Sheet 2, is a cross-section of plan, taken on line *xx*, drawn across Fig. 2. Fig. 4, Sheet 2, is a partial end elevation, showing the manner of adjusting the guiding-rollers; and Fig. 5, Sheet 2, is a vertical central section of the forming-rings employed, showing the connection thereof at their periphery.

Similar letters of reference indicate like parts in the several figures of the drawing.

Our invention relates to that class of railway patching-machines, which are provided with rollers for the purpose of drawing the rail through the machine, and forming and repairing the rail; and it consists in the combination of certain rollers, and mechanism for compressing the same against the rail; said rollers and mechanism operating in connection with the said welding-ring and its moving mechanism, for the purpose of forming and repairing the rail; also, in the combination of guiding and drawing rollers, and mechanism for operating the same, the latter rollers and their operating mechanism operating in connection with the rollers and mechanism above mentioned, in the process of forming and repairing rail, the particular function of the last-mentioned rollers and mechanism being to guide and draw the rail through the machine, all of which will be hereinafter more particularly described; the object of our invention being to facilitate the operation of forming and repairing railway rails, and to make it more effectual.

In the drawing, A represents the frame, which is substantially made of metal, and of

suitable form to receive the operating parts of the machine. B is the main or driving-shaft, which is secured in boxes *a a*, affixed to the bed of the frame. This shaft is arranged transversely across the machine, and is provided upon its outer end with suitable loose and tight pulleys C C, around which is passed a belt (not shown) communicating with any machinery having the requisite power, by which a rotary movement is imparted to said shaft. D and D' are vertical shafts, which are secured in suitable boxes affixed to the bed and cap or platform of the frame. Firmly affixed to the lower extremity of these shafts are gear-wheels E E', which, respectively, engage a right-and-left-hand thread, formed upon the main or driving-shaft B, whereby, as said shaft is rotated a rotary movement is imparted to the said shafts D and D'. Mounted upon the upper end of said shafts D and D' are rollers F F', the periphery of each of which is formed or shaped, approximating the sides of the ordinary railway rail, as shown at *d*, Fig. 5. Firmly secured to the upper surface of the cap or platform of the machine are vertical uprights G and G', within and to which is pivoted a horizontal lever, H, so arranged as to admit of a slight tilting movement. The said lever is provided centrally with a longitudinal mortise, within which is secured the vertical welding-ring or wheel J, so arranged as to revolve vertically between the upper portion of the rollers F and F', as shown by dotted lines, Fig. 2, and is provided at its periphery with a groove or channel, shaped approximating the upper or bearing surface of the rail. The ring J is rotated only by reason of its contact or friction against the top of the rail, while the latter passes through the machine. Pivoted to the outer side of upright G and to the end of the lever H, is a horizontal lever, H', to the outer end of which is firmly secured a rod or chain, *e*, which extends downward and is attached to a treadle, K, pivoted to an upright, K', which is firmly affixed to the bed of the machine; thus, as the outer end of the said treadle is forced downward, a downward movement is imparted to lever H, thereby imparting to ring J the requisite pressure upon the upper surface of the rail. Pivoted to one of the uprights or posts of the frame is a lever, L, to which is firmly secured a vertical arm, L', which extends

upward and is secured at its upper end within a slot or mortise cut vertically in the box supporting the upper end of shaft D, the said box being so attached to the cap or platform of the machine as to admit of a slight longitudinal movement, so that, as the said lever is forced downward, the upper end of shaft D is forced inward toward the center of the machine, thereby compressing the rail between the periphery of rollers F and F', whereby the requisite shape and form are given to the sides of the rail. MM' and NN' are vertical shafts, which are secured in suitable boxes affixed to the bed and cap or platform of the machine, and firmly secured to the upper end of said shafts are rollers O O' and P P', the periphery of each being shaped approximating the sides of the rail. The upper and lower portions of the rollers O and P' are provided with flanges *f f'*, projecting outward from their periphery, and at a sufficient distance, one above the other, to give the requisite height to the rail, and over and past the form upon the adjacent roller. Q is a horizontal shaft, which is arranged longitudinally with and secured in suitable boxes affixed to the bed of the machine. Mounted upon this shaft are drum-wheels *h* and *h'*, around which are secured belts *i i'* and *j j'*, which extend transversely across to and around suitable loose pulleys *l l'* and *m m'* mounted upon a like shaft, R, secured in boxes affixed to the uprights *n n'* of the frame. Mounted upon the said shaft R, and firmly secured thereto between the pulleys *l l'* and *m m'*, are pulleys *p p'*, so arranged as to alternately receive said belts as the same are shifted, thereby imparting to said shaft a reverse rotating motion, the said belts *i i'* and *j j'* being crossed, which produces the said motion. The shaft R is slightly enlarged, and is provided with a right-and-left-hand screw-thread, as shown at S S', Fig. 3, which thread engages suitable gear upon vertical shafts T T', which are secured in boxes affixed to the bed and cap or platform of the machine, and are provided, at the upper extremity of each with an eccentric or crank pin, *r r'*, which revolve within a transverse slot or mortise formed in metal plates *s s*, which are firmly affixed to the boxes supporting the upper ends of shafts M and N. Thus, as the said crank-pins are turned toward the said shafts the same are moved inward toward the center of the machine, (the boxes being so arranged as to admit of the same,) by which means the rail, as it is forced through and between the rollers F F', is brought in contact with and compressed between the rollers O O' and P P', thereby imparting to said rollers a rotary movement by the forward or backward movement of the rail. U and U' are vertical shafts, secured in boxes affixed to the bed and cap or platform of the machine, mounted upon the upper ends of which said shafts are guiding-rollers V V', the periphery of each being shaped approximating the sides of the rail. Firmly affixed upon the said shafts, near the lower end, are pulleys *t t'*,

around which is passed a belt, *u*, extending forward to and around a like pulley, *v*, on shaft Q, by which means a rotary motion is imparted to the said rollers by the rotation of the said shaft. Firmly attached to the bed of the machine is a vertical upright, W, to the upper end of which is pivoted a lever, W', which is provided with a vertical arm, C'', and to which said arm is also pivoted a vertical lever, I, which is also pivoted to a depending arm, I', firmly secured to the lower surface of the cap or platform of the machine. The said lever I is provided at its upper end with a horizontal projection, which engages or comes in contact with shaft U'; thus, as the said lever W is forced downward, the rollers V V' are firmly compressed against the sides of the rail; the said shaft U' being so arranged within its boxes as to admit of a slight movement of the same inward toward the center of the machine.

In operating our said machine, the rail to be repaired is supplied with the necessary patch at the desired point and heated to a welding heat, and is then passed into the opening of and between the two carrying-rollers F and F', and by the rotation of which is carried under the friction or welding-ring J, until the patch and heated part of said rail is reached, when pressure is applied to the treadle K, and as said treadle is forced downward a downward movement is imparted to the lever H, causing the welding-ring J to press downward upon the upper surface of said rail; and simultaneously with the pressure applied to the treadle K the necessary pressure is also applied to the lever L, forcing the same downward and the upper end of the shaft D inward toward the center of the machine, compressing the periphery of the rollers F F' against the sides of said rail, thereby, by the forward and backward movement of said rail under said ring and between said rollers, throwing the surplus metal of the patch in the front or rear thereof, as the rail is moved, to supply any waste in the rail proper, caused by the heating of said rail to a welding heat, and welding and forming said patch firmly and securely to and upon said rail, and of the shape and dimensions of the rail as originally made without lengthening said rail and without withdrawing the rail from under said welding-ring and between said rollers until after the same is perfectly formed and finished. The rail as it is forced through and between the rollers F F' is brought in contact with and compressed between the rollers O O' and P P', which are also friction-rollers, imparting thereto a rotary movement, carrying said rail through the same into and between the guiding-rollers V V', which also compress said rail as described, and from thence out of the machine. The rollers F F', O O', and P P' are adjustable laterally, or so as to be compressed against the sides of the rails, and yield to irregularities thereon.

In welding a patch to the middle of a rail, the center of the patch may be brought di-

rectly below the welding-ring and the latter then pressed upon it, so that, as the rail moves through the machine, one-half of the patch will be welded to it; the other half may be similarly welded or welded as if the patch was upon the end of the rail. In the T-shaped rails in common use there is a greater extent of surface upon the side than upon the top and bottom of the rails; hence by gearing the rollers which are brought in contact with the sides of the rails for the purpose of drawing the latter through the machine, we gain a greater frictional force than we would by gearing the rolls which are brought in contact with the top and bottom of the rail for the same purpose, and this frictional force is applied where it can do no injury to the patch. In machines for this purpose it is difficult to make the welding-rings match so perfectly at their peripheries, upon the rail, as to prevent a portion of the metal from being pressed between the rings at the point mentioned, and forming a ridge upon the rail. The rear rollers O O P P are so constructed and arranged as to cover the ridge thus formed and press it down even

with the surface of the rail as the latter passes through the machine.

Having thus described the nature and object of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The vertical welding-ring J, constructed and arranged to rotate in the manner described, in combination with the horizontal rollers F F' O O' P P' and mechanism to compress the same upon and against the rail, substantially as specified.

2. The combination of the vertical welding J, constructed and arranged to rotate in the manner described, horizontal rollers F F' O O' P P' guiding and drawing rollers V V', and mechanism to compress and operate the same, substantially as and for the purpose described.

The foregoing specification of our invention signed by us this 8th day of July, A. D. 1872.

JOHN R. MOORE.
JAMES G. MILLS.

Witnesses:

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WILLIAM EDGAR.