2 Sheets—Sheet 1

W. R. JONES.
Hot Bed for Rails.

No. 197,376. **Patented Nov. 20, 1877.**

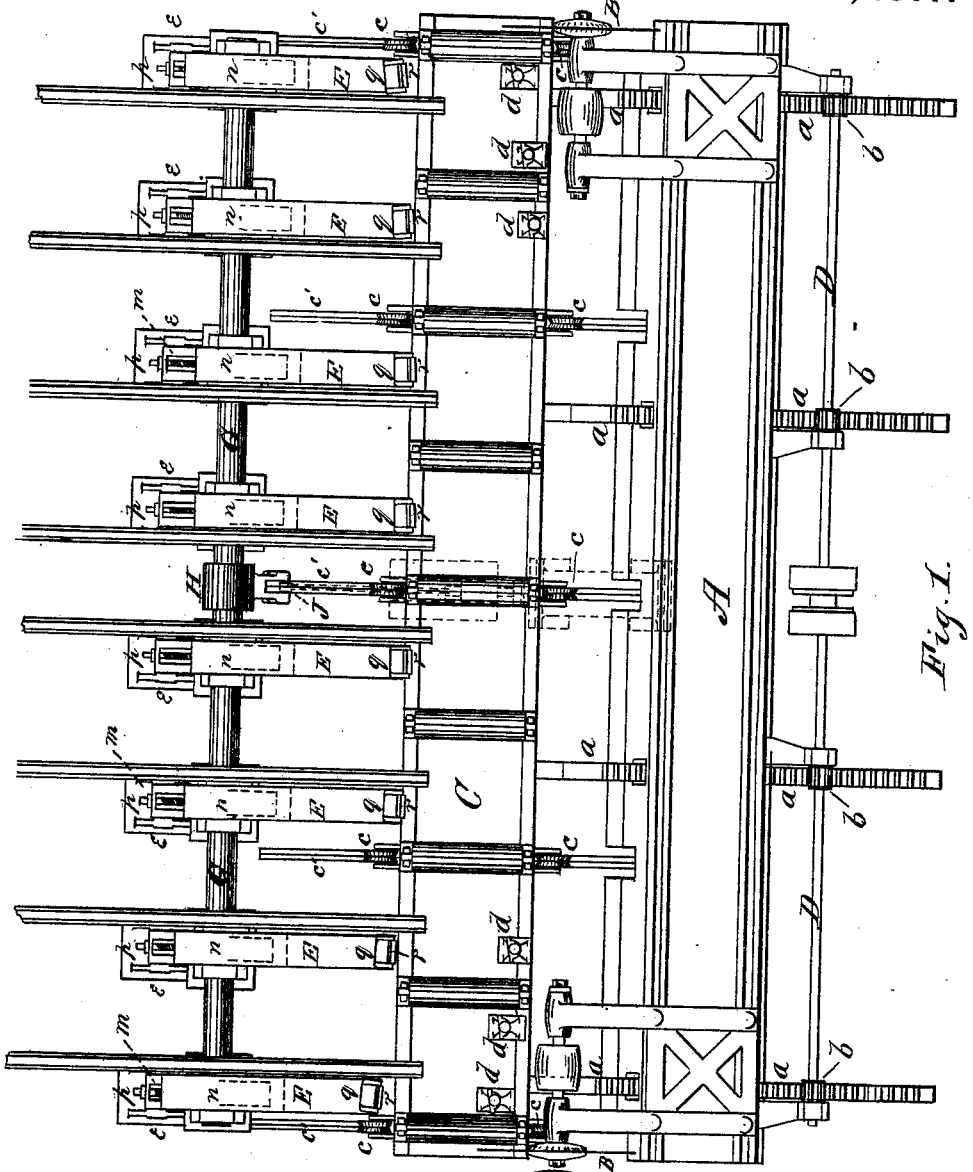
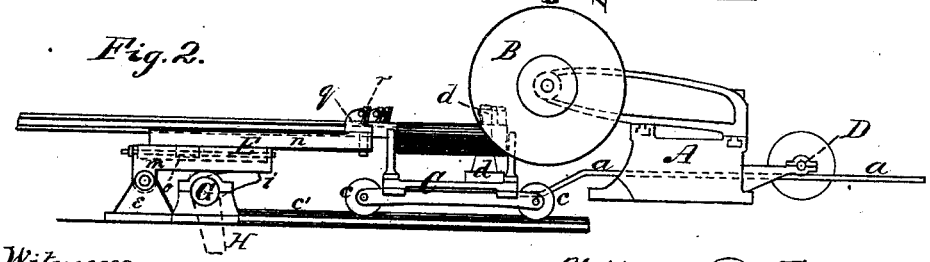


Fig. 1.

Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

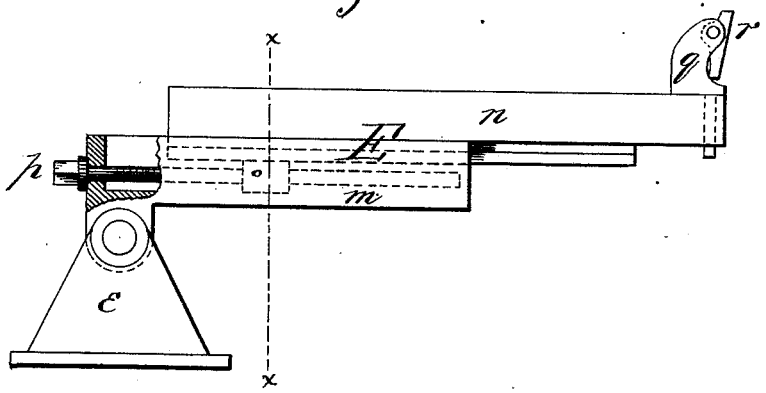
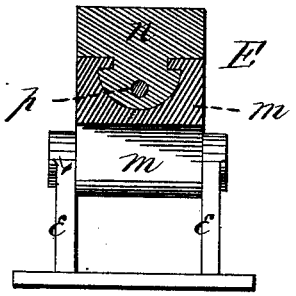


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM R. JONES, OF BRADDOCKS, PENNSYLVANIA.

IMPROVEMENT IN HOT-BEDS FOR RAILS.

Specification forming part of Letters Patent No. **197,376**, dated November 20, 1877; application filed March 29, 1877.

To all whom it may concern:

Be it known that I, WILLIAM R. JONES, of Braddocks, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Hot-Beds for Rails; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a plan view of my invention. Fig. 2 is an end elevation of same. Fig. 3 is a detail, showing the construction of the adjustable swinging arms.

This invention relates to improvements in devices for treating, during manufacture, rails for the purpose of effecting their cooling to a straight line; and consists in combining with the usual rail-carriage, (which travels to and from the saws,) provided with projections to impinge upon the rail when necessary, and force it to partake of the motion of the carriage, a curved line of stops; and further consists in the combination of parts, substantially as hereinafter more fully described and claimed.

This invention is designed for use particularly in the rail-mills in the West, in which, in order to economize space, the hot-bed proper is placed directly in front of the saws, with the straightening and curving plates lying horizontally between the rail-carriage and hot-bed rails, so that, when sawed, the rail is tilted or rolled off the carriage, first to the straightening-plate, then to the cambering-plate, and, finally, dragged off to the hot-bed rails to cool.

As in my former improvements, (application for the patenting of which was filed December 22, 1876,) I wish to effect the vertical curving and lateral straightening at one and the same operation—namely, by a horizontal push of the rail against a set of stops, which, by reason of the fact that the rail lies on its side, thus inclining its base from the perpendicular, results also in a slight downward push of the rail upon the body or object upon which it rests. This requires a motion, of course; and here I exhibit the essential groundwork of my invention—that is, to utilize for this purpose a motion which already exists, viz., the retrogression of the carriage from the saws, and by so doing effect the desired operations with as little special machinery as possible.

To this and other ends, then, my invention is as follows: The foundation or bed A of the longitudinally-adjustable saws, with their shafts, pulleys, belts, &c., remains unchanged. The carriage C is also as usual, consisting of a bed-plate and transverse rolls, and, as usual, travels to and from the saws on the wheels *c*, which run on rails *c'*, the whole being reciprocated by means of the racks *a*, meshing with pinions *b*, fixed to a horizontal shaft, D, behind the saw-bed A. Shaft D is in two sections, connected by a friction-clutch, so that the carriage C may be moved as wanted. These are all as usual, and I do not alter them.

To give effect to this motion of the carriage, I provide it with a number of pivoted head-blocks or projections, *d*, attached to the bed of the carriage, and rising above the level of the rolls thereof, and so located relatively to a rail in transit that they project between it and the saws. Now, in moving the carriage away from the saws, in case the rail meets with any obstruction, it slides back against the head-blocks or projections, and is by them supported.

As the head-blocks or projections *d* are intended to impinge upon the rail at, or nearly at, its extreme ends, and as rails are made of various lengths, I provide for such contingency by placing two or more head-blocks or projections toward each end of the carriage, so that if one pair be too far apart for the rail it shall be met by the next pair, and so on.

As stated, the hot-bed lies directly abreast of the rail-carriage, with its surface rails at right angles thereto. Swinging vertically on standards *e*, situated between the respective rails of the hot-bed, and in planes parallel with the rails, is a series of arms, E, which are, at pleasure, caused to rise or fall in unison by means of the cams *i* on the shaft G, which (as in my former application) is given motion by a crank, H, and piston-rod J, or other power.

The object of this rising and falling of the

arms and their line of stops is to let them operate upon the rail and then sink out of the way, that no obstacle may exist to the dragging of the rail away over the hot-bed.

These arms are shown in detail in Fig. 3, and are constructed as follows: Each arm consists of two portions—a fixed pivoted part, *m*, and an adjustable part, *n*, secured thereto by means of tongues and grooves or other sliding mechanism. It is adjustable longitudinally on part *m* by the threaded lug *o* on its bottom, and a set-screw, *p*, passing loosely through the head of part *m*. By this means the combined length of the two parts—*i. e.*, of the whole arm E—may be easily adjusted to form the ends of all the arms into any desired curvature. This may be done at any time, even during operations. On the arms, at the ends next the carriage C, I place loosely-swiveled stops *q*, which, in turn, are provided with the self-adjusting pivoted face-plates *r*, described in my former application. This furnishes a stop which is in all respects self-conforming to all inclinations and curvatures of rail-flange, so that there is no possibility of the rail being "buckled" or bent sharp.

Such capacity of variation is necessary to the proper effect, because the curvature to be given depends upon the amount of metal in the rail-head relatively to that of the flange or base, as such relation determines the degree of contraction in cooling suffered by the head and base; and as the head and base vary also in relative width, it is obvious that when laid on their side all rails will not lie so that their bases present the same angle to the plane on which they rest.

As it is designed that the operation of curving the rail shall also effect its lateral straightening by the slight downward push exerted, the rolls must be kept accurately aligned, for which purpose their bearings must be occasionally looked to.

The rolls, being in accurate alignment, present a number of points in a plane which are practically equivalent to a continuous plate, and a downward pressure of the rail sidewise upon these will effect the lateral straightening in a manner practically as effectual as a flat plate.

The operation is as follows, all the movements being in the control of a single operator: After ascertaining the curvature required, the arms E are adjusted with their swiveled stops and face-plates corresponding to such curvature. The rail is then delivered to the carriage, and the latter propelled toward the saws, as usual. While the saws are acting the arms E are caused to rise above the level of the rails and rolls. After the saws have done their work the carriage C is propelled back from them, and in so doing the rail upon it is forced against the face-plates by the head blocks or projections *d*. This effects at once the curving and straightening of the rail. Then the arms E are dropped and the rail dragged off to cool.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination of rail-carriage C, having head-blocks or projections, as shown, with a curved line of stops, substantially as described, whereby, when the carriage recedes from the saws, it carries the rail against the stops, and thus imparts the proper curvature.

2. The combination of the rail-carriage frame, two or more head-blocks or projections, *d*, the carriage-rolls, and a curved line of stops, substantially as described, whereby the retrogression of the carriage from the saws effects the desired treatment of the rail.

3. In combination with the rail-carriage, provided with two or more head-blocks or projections, *d*, a curved line of stops capable of being adjusted to any desired curvature, substantially as set forth.

4. The combination of the carriage-frame and two or more head-blocks or projections projecting above the level of the top of the carriage-rolls, substantially as and for the purpose specified.

5. The combination of the support *e*, swinging part *m*, movable part *n*, threaded lug *o*, and screw *p* with a suitable stop for the rail, substantially as set forth.

6. The combination of arm E, or part *n* thereof, with the swiveled bifurcated stop *q*, carrying the pivoted face-plate *r*, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of March, 1877.

WILLIAM R. JONES.

Witnesses:
THOS. J. MCTIGHE,
E. V. MCCANDLESS.