

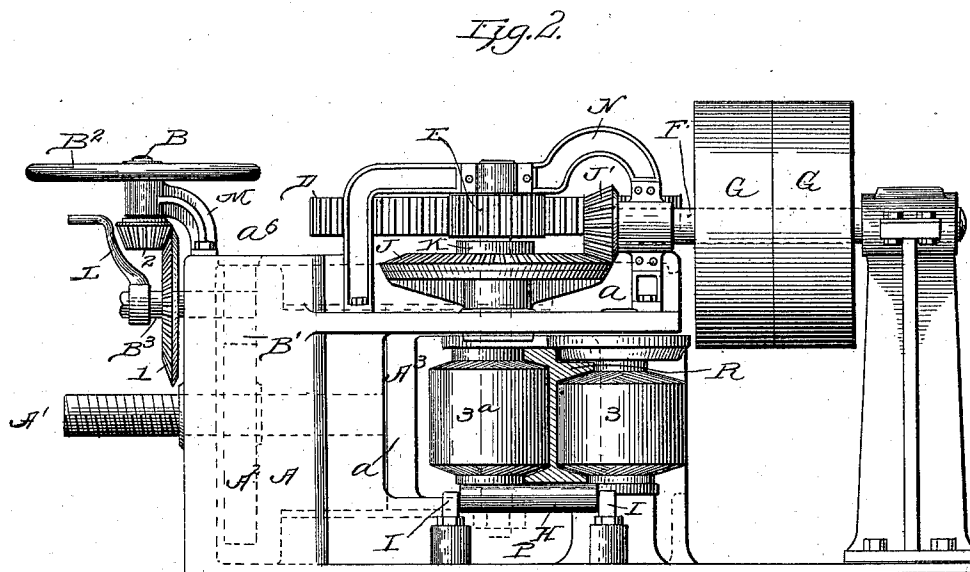
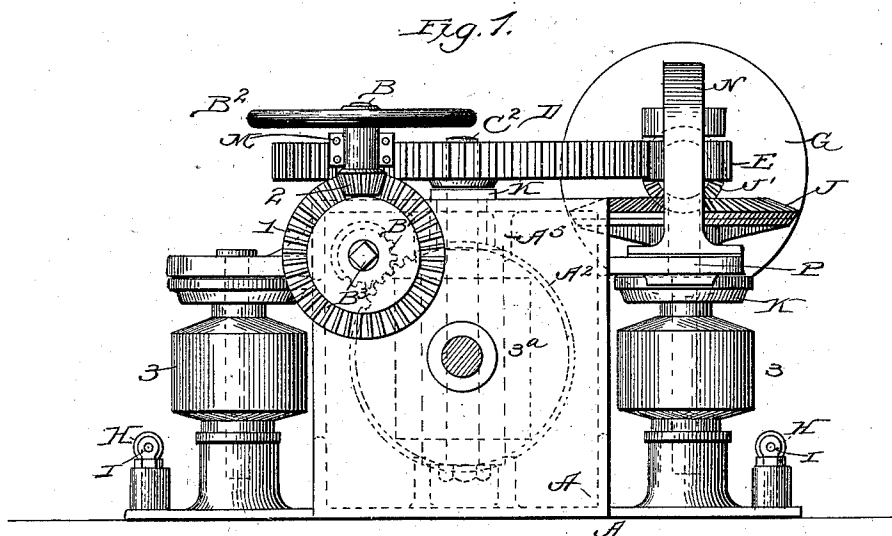
(No Model.)

2 Sheets—Sheet 1.

G. E. SMITH.
RAIL BENDING MACHINE.

No. 558,705.

Patented Apr. 21, 1896.



WITNESSES:

Harry S. Rohrer.
J. F. Beale

INVENTOR
George E. Smith.
BY
John J. Halsted & Son
his ATTORNEYS.

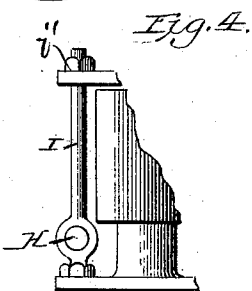
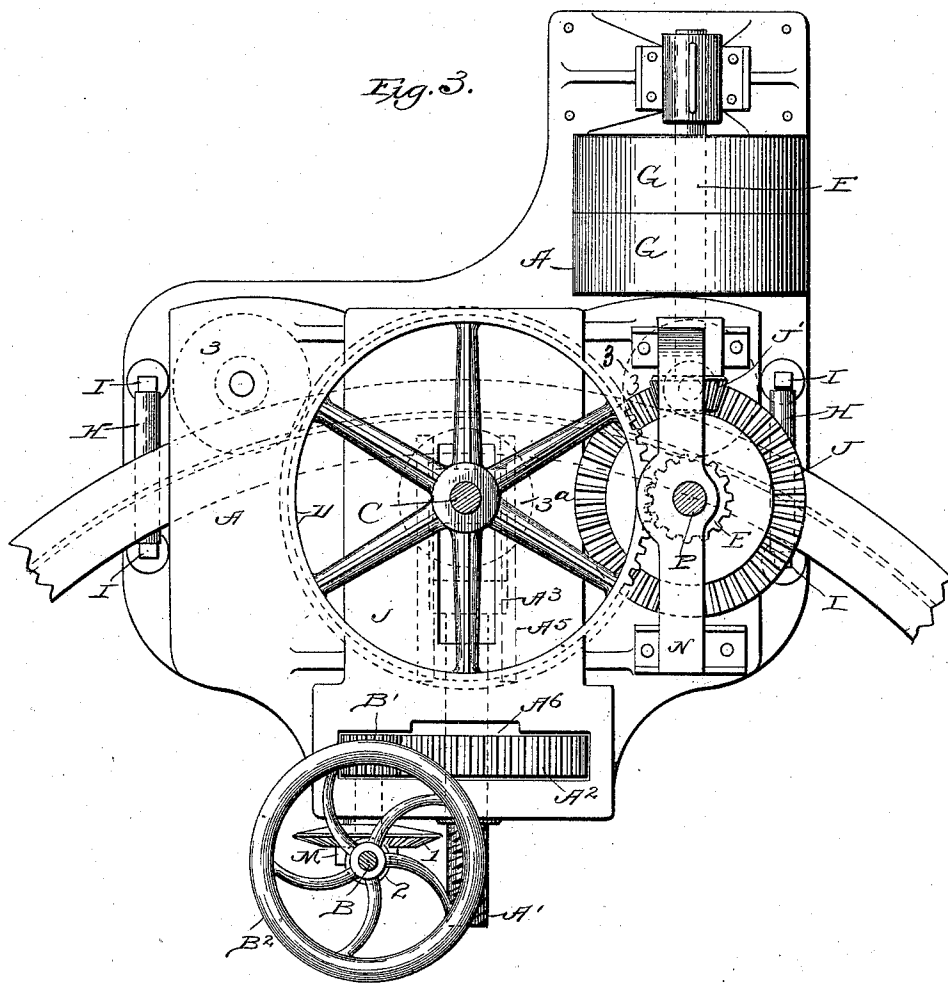
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UNITED STATES PATENT OFFICE.

GEORGE E. SMITH, OF SHERBROOKE, CANADA.

RAIL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 558,705, dated April 21, 1896.

Application filed December 7, 1895. Serial No. 571,397. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. SMITH, a subject of the Queen of Great Britain, and a resident of Sherbrooke, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Rail-Bending Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

My invention is a further improvement on my Patent No. 537,790, dated April 16, 1895. The machine therein described was intended more especially for bending rails for steam-railroad work. My present invention is intended to adapt that machine more particularly to the bending of rails used in street-railways; and to this end it may in a general way be said to consist in combining with many of the features shown in that patent certain other devices not shown or described therein, the structure also requiring a different position of some of the parts of that machine, including the placing of some of its vertical shafts horizontally and horizontal ones vertically, and having certain beveled driving-gears and adjustable yoke-straps carrying guide-rollers.

In the drawings, Figure 1 illustrates a front view, Fig. 2 an end view, and Fig. 3 a plan or top view, of my improved machine; Fig. 4, a detail.

In the present improvements A represents a frame for supporting the mechanism; A', the adjusting-screw, placed horizontally and serving to support the socket-piece A³, which carries the middle or feed roller 3^a; A², the gear on screw A'; A³, the socket-piece or cross-head; A⁵, guides for this cross-head; B³, a horizontal short shaft carrying a pinion B', and also a bevel-gear I and a crank-handle L.

B is a short vertical shaft carrying a bevel-pinion 2 and a large hand-wheel B².

C is a vertical shaft carrying the large gear D, which engages with a pinion E on another

vertical shaft P, one end of which has its bearings in the frame A.

J is a bevel-gear on the shaft P and is driven by the bevel-pinion J' on the power-shaft F, which carries the tight and loose pulleys G G.

The friction rail-bending rollers are shown at 3 3^a 3, each of them being on a vertical axis and the middle one, 3^a, being located at one side of and not, as in my patent, above the others.

K is a sliding box on the vertical shaft C, to hold properly the upper end of this shaft, and it is adapted to be slid back and forth with the wheel D and cross-head when taking a rail in or out.

M is a bracket-box carrying the shaft B; N, a bridge-tree carrying the boxes for supporting the horizontal shaft F and the vertical shaft P. *a a* are openings in the casting to admit the gear. This bridge-tree has vertical legs, which are firmly secured to the main frame, as shown, and has in one of these legs an opening for the box or bearing of the shaft F and in its top and about centrally another opening for the box or bearing of the vertical shaft P.

H H are horizontal guide or friction rollers to facilitate the passage of the rail through the machine, and they are supported in yoke-straps or eyebolts I, which are vertically adjustable, as shown, by nuts *i'*, which secure them to the frame. By these means these rollers may be raised or lowered as need be to adapt them to the varying height of different-sized rails. These yokes may if desired have their eyes near their lower ends and be supported in the frame at top and bottom by means of nuts, as shown in Fig. 4.

The base or bottom bed in the present machine corresponds, substantially, to one of the sides of my patented machine, or, in other words, it is somewhat as if that machine were turned over to one side or given a quarter-turn and had my improvements therein.

It will be seen that the axis of each of the bending-rollers 3 3^a 3, being vertical instead of horizontal, these rollers can take the rail with its right side or tread uppermost when under treatment, and that when fed through the machine and bent the rail still remains

for all its length in a horizontal plane, and so that its end may be readily within the workman's reach and handled, and the rail is thus prevented from being curved upward out of reach and convenient handling.

The contours of the ends of the rolls, as also the height of roll 3^a relatively to that of rolls 3 3, are adapted, as will be seen in Fig. 2, to the base or bottom flange and also to the top part or tread of the rail, while the periphery of the rolls is adapted for the web or vertical portion of the rails.

A rail is shown at R in Fig. 2 in cross-section in the position it occupies in the machine, its web being vertical.

The handle L is for throwing the screw in or out more rapidly than by the hand-wheel and bevel-gears 2 1. When, however, the pressure of the screw begins to bear upon a rail, the hand-wheel needs then to be used to give the requisite power.

From the above it will be seen that there are two outside bevel driving-gears J' J, one small and the other large, receiving motion from the pulley-shaft, and other two outside bevel-gears 1 2, one small and the other large, the smaller one, 2, by the agency of the large hand-wheel B² and short-shaft B imparting motion to the larger bevel-gear 1 and to the pinion B' on its shaft, which then actuates the large gear A² to move as may be desired the horizontal screw A', and thus change as may be needed the position of the middle bending-roller 3^a.

Relatively to the devices shown in my patent I find a great gain of power by these compound gears. In that patent no bevel-gears are used for any purpose.

In the present machine I have shown fast

and loose pulleys G G in place of a clutch-pulley and clutch, and placed the driving-shaft F and the roller-shaft at right angles to each other instead of parallel.

I make no broad claim to two non-adjustable rolls and an intermediate adjustable roll, as such are shown in my above-named patent; but

I claim—

1. In a power-machine for bending rails, the combination with rolls 3 3, and with an intermediate and adjustable power-driven bending and feeding roll, of a bracket M, supporting a short shaft B, its hand-wheel and a bevel-gear 2, a short shaft carrying a bevel-gear 1 and pinion B', the screw A' and its gear A², and the cross-head carrying said power-driven bending-roll, all substantially as and for the purpose set forth.

2. In a power-machine adapted for bending rails and in which the adjustable middle rail only is positively driven to feed the rail, the combination with the screw carrying the adjusting-gear A² and the cross-head which supports such middle roll, of the short shaft carrying a pinion B', the bevel-gear 1, and a handle L, and the short shaft B, carrying a hand-wheel B², and a pinion 2, the combination serving to allow the cross-head and its middle roll to be rapidly adjusted by the handle in commencing the adjustment, and to be finally adjusted by the hand-wheel when the pressure of the middle roll given by the screw begins to bear upon the rail.

GEORGE E. SMITH.

Witnesses:

GEO. O'ROURKE,
L. J. BRODERICK.