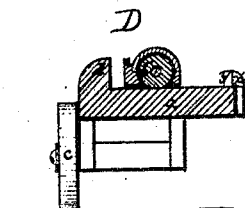
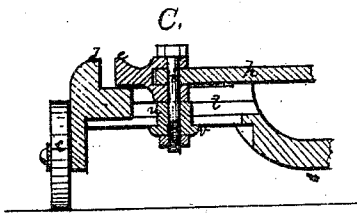
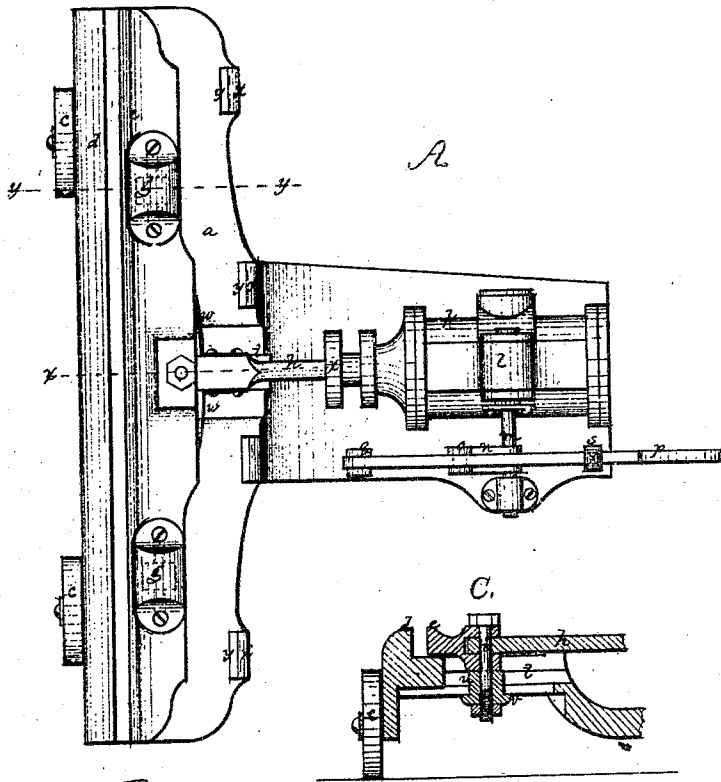
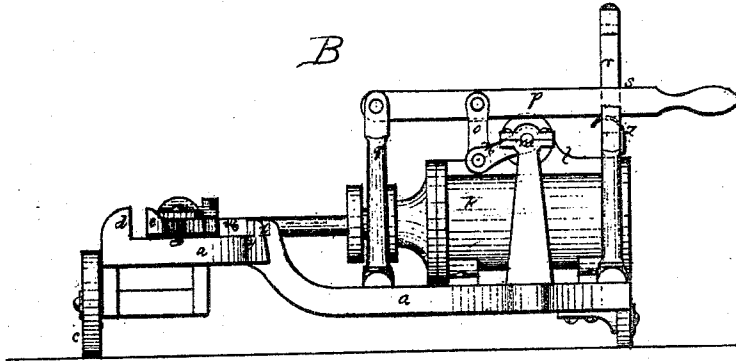


*E. R. Cheney,*

*Straightening Metal Bars.*

*No. 102,916.*

*Patented May 10, 1870.*



*E. R. Cheney*  
*by his attys*  
*Crosby, Halsted & Gould*

*Witnesses*  
*S. B. Kidder*  
*M. W. Frothingham*

# United States Patent Office.

ETHAN R. CHENEY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF  
AND NAYLOR & CO., OF SAME PLACE.

Letters Patent No. 102,916, dated May 10, 1870.

## IMPROVED MACHINE FOR STRAIGHTENING BARS OF METAL.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, ETHAN R. CHENEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Straightening Bar Metal, &c.; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to a method of straightening bar iron or shapes against a stationary straight upright anvil or wall by the action of a movable jaw or squeezer.

My invention consists in a straightening machine having the movable jaw directly connected to the end of a piston-rod of a steam cylinder, having a valve worked by a hand-lever, to enter steam behind the piston (to work up the jaw toward the stationary anvil) or in front of the piston to work the jaw back.

The drawings represent a mechanism embodying the invention.

A shows the machine in plan.

B is an end elevation of it.

C is a section on the line  $x x$ .

D is a section on the line  $y y$ .

$\alpha$  denotes a table or bed, making part of a framework, which may be mounted upon wheels  $c$ , so as to constitute a carriage to be wheeled from place to place in a mill, as circumstances may require.

At the front edge of the table  $\alpha$  a long wall or anvil,  $d$ , extends up, as seen at B, this constituting the stationary straight edge or surface against which, by the action of a long movable straight-edge or jaw,  $e$ , the bar is straightened, the bar being placed on the table  $\alpha$ , between the face of the jaw  $e$  and the anvil  $d$ .

The jaw  $e$  may rest directly upon and slide over the table  $\alpha$ , but, for ease of movement, is preferably mounted upon wheels or friction-rolls  $g$ .

Midway between its opposite ends the jaw is jointed to the end of a piston-rod,  $h$ , or to a link connecting therewith, as seen at  $i$ , this piston-rod extending from a piston in a steam cylinder,  $k$ , having a steam chest,  $l$ , and suitable induction and education valve-openings and a cylindrical valve, the valve being upon the inner end of a valve-stem,  $m$ , this valve-stem having fixed upon it a rocker-arm,  $n$ , connected by a link,  $o$ , to a hand-lever,  $p$ , fulcrumed, at one end, upon a post,  $q$ , and working, at its other end, through a suitable guide-slot,  $r$ , in a post,  $s$ .

Through the bed  $\alpha$  a slot,  $t$ , is cut, and through this slot a pin extends from the jaw  $e$ , (which pin may be the joint-pin by which the jaw is jointed to

the piston-rod, as seen at C,) and on this pin is a collar or washer-tube,  $u$ , having a flange,  $v$ , which, extending beyond the sides of the slot  $t$ , serves to hold the movable jaw down to the table, a nut on the lower or screw-threaded end of the pin holding the washer in place, while the pin and washer guide the jaw in its movements, or prevent lateral movement of the bar, which would tend to bend the piston-rod.

The bar swivels loosely upon its joint-pin, but is held normally parallel to the anvil  $d$  by two slight springs,  $w$ .

At the rear edge of the table are suitable stops,  $x$ , projecting up from the table, these stops being preferably provided with springs or cushions  $y$ , the jaw  $e$ , in its rear movement, bringing up against these cushions.

The operation of the machine is as follows:

The bar of iron, or other metal to be straightened, is placed upon the table  $\alpha$ , against the wall.

The lever  $p$  is then raised to the top of the guide-slot  $r$ , thereby opening wide the valve behind the piston, letting in full pressure of steam, which throws the piston forward, and with it the movable jaw, bringing the adjacent faces of the jaw  $e$  and anvil  $d$  into juxtaposition, separated only by the thickness of the bar, from which, by the squeezing between the two straight faces, all the bends are instantly removed, the movable jaw swiveling in accordance with the crooks or bends in the bar as the jaw first strikes it, while it will be obvious that the two faces must be brought into parallelism if the bar be of uniform thickness, and if the pressure of the steam be sufficient to remove the bends.

The bar having thus been straightened, the operator lets the lever  $p$  down slowly, thus very gradually opening the exhaust in rear of the piston, and letting steam in at the front of the piston, allowing the steam to so gradually enter as to throw the piston slowly back, and let back the movable jaw easily.

Compressed air, or other expansive fluid, may, of course, be employed as the motive power, instead of steam.

To insure the slowing of the bar in its rear movement, the slot is preferably provided with a spring,  $x$ , the stress of which is sufficient to support the lever  $p$ .

After the lever is raised sufficiently to permit the piston to take steam behind to carry the jaw forward, it is dropped upon the spring, at which point it will not carry the piston far enough to take steam for its back action; but by pressing the lever down upon the spring the piston will then take steam gradually to let the jaw back.

By this means the bar is prevented from being thrown back accidentally or violently.

I claim a bar-straightening machine, having a stationary anvil, *d*, a movable jaw, *e*, (connected to and operated by the piston of a steam cylinder,) and a lever, *p*, for operating the valve of the cylinder, the jaw *e* being mounted upon rolls, and being guided by the slot *r* and slot-pin, and having its rear movement

arrested by stops *x*, cushioned by springs *y*, all the parts being combined and arranged substantially as shown and described.

ETHAN R. CHENEY.

Witnesses:

CHAS. F. CHENEY,  
JENNIE A. CHENEY.