J. HOLMES.

Metal-Rolling Machine.

No. 160,433. Patented March 2, 1875.

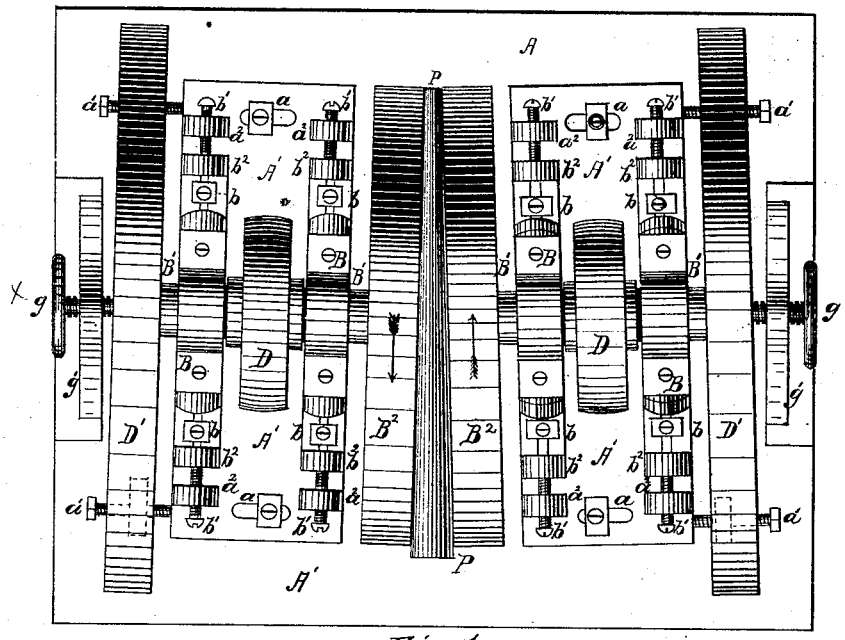

Fig. 1.

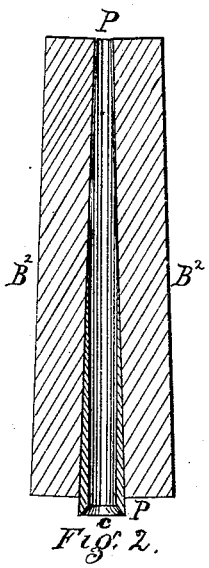

Fig. 2.

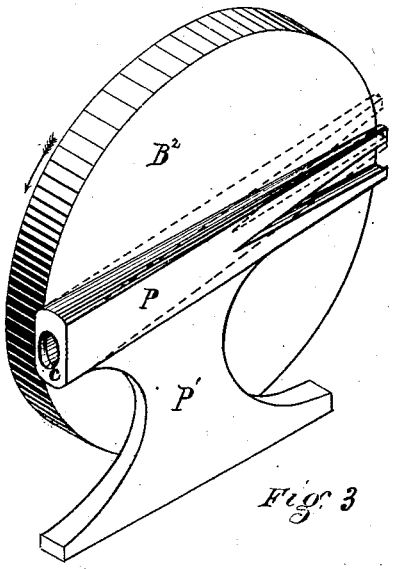

Fig. 3

Witnesses { Charles G. Page. Claudius L. Parker

Inventor Josiah Holmes, by George N. Christy his atty

UNITED STATES PATENT OFFICE.

JOSIAH HOLMES, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND HUSSEY, WELLS & CO., OF SAME PLACE.

IMPROVEMENT IN METAL-ROLLING MACHINES.

Specification forming part of Letters Patent No. **160,433**, dated March 2, 1875; application filed January 29, 1875.

To all whom it may concern:

Be it known that I, JOSIAH HOLMES, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Machines for Rolling Taper Rounds; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which like letters indicate like parts.

Figure 1 is a top or plan view of my machine. Fig. 2 is a sectional view through the disk-rolls and guide lengthwise of the latter, and Fig. 3 is a perspective view of the guide and one of the disk-rolls.

My improvement is particularly designed for use in tapering the ends of horse-rake teeth, and generally in the rolling of metal rods and bars to the form of a tapering round, and it is also applicable to the rolling and finishing of metal rounds.

The machine consists in its important feature of a pair of disk-rolls geared to revolve in opposite directions face to face, with faces made plain, as distinguished from concave or convex, but with their axes a little out of line. A suitable guide is provided for keeping the article operated on in the desired line of bite.

The bed or foundation A carries the supporting-plates A′, adjustably bolted thereto by the use of bolts, nuts, and slots, as at a, and set as may be desired by set-screws a^1. The plumber-blocks B rest thereon, and are adjustably screwed thereto by like nuts, bolts, and slots b, and are set or adjusted by set-screws b^1, working through lugs a^2 on the plates A′ against lugs b^2 on the bases of the plumber-blocks. These plumber-blocks carry the axes or journals B^1 of the disk-rolls B^2, and on these axes are the band-wheels D and balance-wheels D′, for the usual purposes. The disk-rolls B^2 are each securely affixed to the inner end of its axle. They are made plane or flat-faced, and are mounted or adjusted so that when in operation their adjacent faces shall be out of parallel with, or shall be inclined to, each other to a degree or extent corresponding to the taper desired in the horse-rake tooth or other article to be tapered. The centers of the two disk rolls are directly opposite each other, or nearly so. The best line of bite in this machine is from a point at or a little above the centers of the disk-rolls to their peripheries. Between the rolls, and along such line of bite, I arrange a guide, P, supported by a plumber-block or post, P′, from below. For convenience in feeding, this guide extends through at the feeding end to the periphery of the rolls, where it has a feeding-aperture, c. From a point at or about opposite to the centers of the rolls to the opposite end the guide has open sides, and is made narrow above and below, so that the rolls may take a bite on the rod fed therein.

In practice, I prefer to make the distance between the centers of the disk-rolls equal to or slightly greater than the diameter of the article to be tapered, and then set the rolls at such angle as to give the desired length and slope of taper to the article operated on. These rolls are caused to revolve in opposite directions, as indicated by arrows.

The article to be tapered is fed in at the opening c, and, on reaching or passing a little beyond the centers of the rolls, is engaged on both sides by the disk-faces, is thereby rotated rapidly, and is drawn along and tapered. As soon as the desired length of taper is secured, one or both of the screws g, which play through posts g' against the ends of the axes, are slackened up, which allows the corresponding roll or rolls to give way slightly and loosen the bite on the rod, after which the tapered rod may be withdrawn, the roll or rolls screwed up again to position, and the operation repeated. The roll-axles have a slight longitudinal motion for this purpose, and such motion may be fixed in amount each way by the usual known appliances for such purpose. But instead of slackening up the screws g as soon as the tapering rod is formed, the operation may be allowed to go on, in which case the rod, tube, or bar will be fed longitudinally through between the rolls, and come out of the guide P rolled to a round of a diameter equal to the least distance between the rolls along the line of bite, and such use of my machine in rounding, straightening, and finishing is hereby included herein. But in such use the disk-rolls are in most cases set at a less inclination to each other than shown,

so that the reduction effected by rolling shall be such as may be required to produce the round of the diameter desired.

The forward feed of the rod is secured in this machine by arranging the guide P with its axial line a little above the centers of the disk-rolls B^2, as illustrated by dotted lines in Fig. 3; or the same result may be secured by other known means, such as giving one roll a speed slightly greater than that of the other.

While showing, and in general terms describing, a means of adjustment, I do not limit myself in this respect, since other known means of adjusting the disk-rolls, and also of loosening the bite of one or both, may be substituted. Such devices as are common and well known in connection with metal rolls and housings may be used with the disk-rolls described, and in such use they may be mounted in housing of any suitable construction.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A pair of plane-faced disk-rolls with their faces inclined to each other and their centers opposite, and arranged for the introduction of the rod or bar to be tapered on the side of the greatest opening, the feed being from such side toward the side of the least opening, whereby, on the completion of the taper, the rolls will have a bite or bearing along the entire length of the taper, substantially as set forth.

2. The plane-faced inclined disk-rolls B^2 B^2, arranged with a line of bite from at or near the center to the side of least opening, in combination with an open-sided tapering guide arranged along such line of bite, and with reference to a feed from the side of greatest opening, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOSIAH HOLMES.

Witnesses:

JAMES M. CHRISTY,

CHARLES G. PAGE.