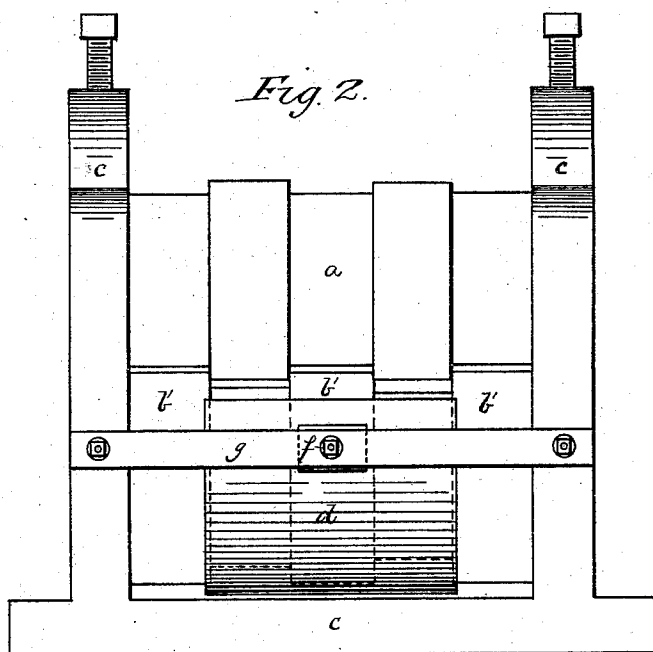
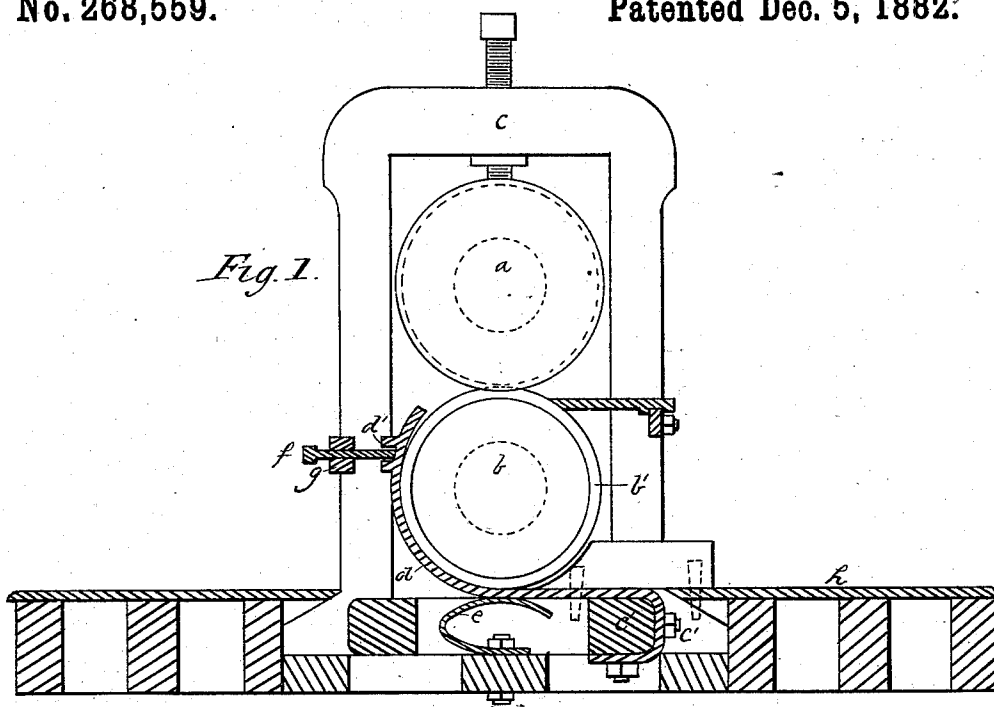


(No Model.)

W. SMALL.
GUIDE FOR ROLLING MILLS.

No. 268,559.

Patented Dec. 5, 1882.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM SMALL, OF MCKEESPORT, PENNSYLVANIA.

GUIDE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 268,559, dated December 5, 1882.

Application filed April 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SMALL, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Guides for Rolling-Mills; and I do hereby declare the following to be a full, clear, and exact description thereof.

In rolling iron in a bar, guide, or other grooved mill in which there are several passes it is customary to push the end of the bar which leaves the pass last under the lower roll, and then for the workman to take hold of it with his tongs and turn it up and enter it into the same or into the next pass of the rolls. The draft of the rolls upon the bar then draws the rest of it through under the lower roll, and this operation is repeated at every pass. It is objectionable, for the reason that when the bar is so entered it is liable to run over the collar of the roll and frequently be cut for several feet thereby. It is also objectionable because it requires two men to push the bar under the roll a sufficient distance to permit the end to be turned up and entered into the next pass. To avoid these objections, fixed curved guides have been used in connection with the lower roll, together with flat springs, to assist the operator in inserting the bar into the groove and to retain it therein, so as to be carried forward by the roll; but such devices cannot be moved to withdraw any metal which may stick in the rolls, nor will they compensate for wear of the roll and its journals.

The object of my invention is to provide an adjustable and compensating guide which can be moved for the withdrawal of metal which may stick in the rolls and adjusted to compensate for wear of the rolls and its journals.

To enable others skilled in the art to make and use it, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a vertical cross-section of the rolls. Fig. 2 is a rear elevation.

Like letters of reference indicate like parts in each.

I have illustrated my invention as applied to a two-high mill. The rolls are marked *a* and *b*, and are mounted in a housing, *c*, of ordinary construction.

Below the lower roll, and fastened to a timber or to the lower part of the housing on the

discharge side of the mill, as at *c'*, I place a curved guide, *d*, which extends under the lower roll and up the feed side, preferably to or above a level with its axis. This guide is set up close to the roll, so as to be against its collars *b'*. It may be supported in this position by supports of any desired form; but I prefer to hold it up against the collars in the following manner: I place below it a spring, *e*, which holds the lower part up against the collars with an elastic pressure, such as will permit the guide to be depressed, when, owing to the wear of the necks of the rolls or their bearings or brasses, they sink in the housings.

At the rear end of the guide *d*, I hold it up against the collars by means of an adjustable set-screw, *f*, which passes through the bar *g* extending across the housings parallel with the rolls. This set-screw *f* bears up against the guide *d* in the slot or recess *d'* formed in the bar on the back of the guide or in the thickened portion thereof. This slot is wider and longer than the end of the set-screw, so as to permit of a slight vertical or lateral movement of the guide in its adjustment, the purpose of which is to compensate for the sinking of the roll in its bearings produced by wear. The set-screw enables me to slack up the guide if necessary for the removal of a piece of iron which may stick in the groove or roll. Any other adjustable device of suitable form—such as a cam—may be used instead of the set-screw.

The floor-plates of the mill are shown at *h*, and they are preferably on a level with the lower end of the guide *d*.

The operation of my improvement is as follows: The bar, being entered on the feed side of the mill, passes through the first groove and runs out onto the floor *h*. As soon as the last end has passed out of the rolls it is grasped by a hook or other suitable tool and drawn over onto the next pass, and then the bar is pushed toward the rolls, causing the end last to leave the rolls to run up onto the guide *d* into the second groove of the lower roll. The guide extending across the groove and bearing against the collars confines the bar to the groove, and as the bar is of sufficient thickness to fill the groove closely the friction of the roll causes it to be drawn around until it is brought into the second pass between the two rolls. In this way I secure the draft of the roll upon the bar

to draw it into the pass the instant it has entered into the groove, instead of having to force it through under the rolls and turn it back into the pass, as has been the case heretofore.

5 The fins which are formed upon the bar are always on the top side, and the purpose of passing the bar back to the feed side of the roll and entering the end which last passes out of the roll is to turn the fin down, so that it
10 will be rolled in on the following pass.

The advantages of my improvement are briefly as follows: The guide is adjustable to compensate for wear of the rolls, and thus saves labor and time in refitting, and can be
15 drawn back to remove any metal which may jam in the rolls, thus obviating wear and tear on the rolls, loss of time, and danger to workman.

In case the iron or other material to be rolled
20 is of light gage and does not reach above the collars of the roll, the guide *d* may be made with ribs which project into the grooves of the roll between the collars, so as to bear against the piece and hold it up to the roll with sufficient friction to cause the roll to draw it around.

I have been describing my improvement as applied to rolls having grooves. It may, however, be used in connection with plain-faced finishing-rolls for making skelp to be used in
30 the manufacture of wrought-iron pipe. In such case the roll may be provided with low collars, which are placed far enough apart to permit the passage of the skelp, and the guide *d* may bear up against the collar; or the guide
35 may be made with low flanges upon its edges which shall bear against the face of the roll; or detached side pieces may be placed at the edges of the guide *d*, and bearing against the face of the roll, so as to confine the piece passing into the rolls to that portion under which the guide is placed. In the latter case the
40 guide would stand between the side boards and near enough to the roll to cause the piece

to be pressed against the roll with sufficient friction to be drawn around thereby.

Much labor and time are saved by the use of my improvement in connection with finishing-rolls for skelp and similar iron, for the reason that the pieces are very long and heavy and require much labor to push them back under the rolls to the feed side.

I am aware that a fixed curved guide has been arranged on the feed side of the lower roll of a rolling-mill, and that fixed flat springs have been arranged with relation to the grooves of
55 said roll, to assist the operator in introducing the bar into the groove, and for retaining the bar in the groove so that it may be drawn forward by the lower roll, and do not herein claim such devices, because they contain no
60 provision for adjustment to compensate for wear of rolls, &c., or for removal of metal which may jam in the rolls.

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

1. In a rolling-mill, the combination of a curved guide, arranged below and on the feed side of said roll so as to coact therewith, and a device for adjusting the guide to and from the roll, substantially as described.

2. In a rolling-mill, the combination, with the lower roll of a curved guide, arranged below and on the feed side thereof, and a spring arranged to force the curved guide up to the roll, substantially as and for the purpose specified.

3. The combination, in a rolling-mill, of the adjustable curved guide with a spring for holding it up against the lower roll, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 1st day of April, A. D. 1882.

WILLIAM SMALL.

Witnesses:

T. B. KERR,
W. B. CORWIN.