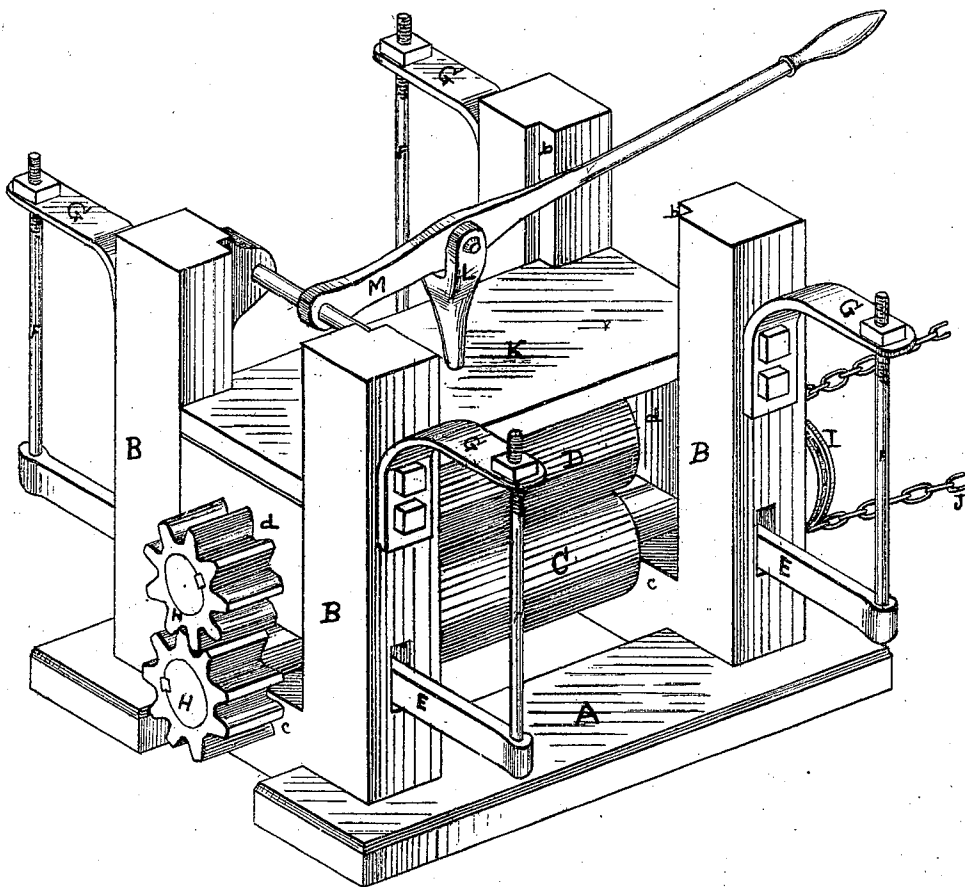


JOHN B. HASTINGS.

Improvement in "Shove-Unders" for Rolling-Mills.

No. 128,142.

Patented June 18, 1872.



ATTEST,

For P. Harris
Benjamin Garvey

INVENTOR,

John B. Hastings

UNITED STATES PATENT OFFICE.

JOHN B. HASTINGS, OF IRONTON, OHIO.

IMPROVEMENT IN "SHOVE-UNDERS" FOR ROLLING-MILLS.

Specification forming part of Letters Patent No. 128,142, dated June 18, 1872.

SPECIFICATION.

I, JOHN B. HASTINGS, of Ironton, in the county of Lawrence and State of Ohio, have invented a new and useful Machine called a "Shove-Under," of which the following is a specification:

Nature and Objects of the Invention.

This machine is employed in iron-rolling mills in passing plates or sheets of metal, after they have passed through one pair of rolls, back under the rolls, so that they may be passed through the next pair of rolls, an operation heretofore performed by hand in an irregular manner and at great cost, but which this machine performs in a regular manner and at small cost.

The first part of the invention consists in combining two rollers together in such a manner that the space between them shall be large enough to admit of the easy introduction of the end of a plate or sheet of metal between the rollers, and that said space may, at pleasure, be lessened, so as to cause the rollers to press the plate or sheet of metal firmly between them; and the second part consists in gearing the rollers together in such a manner that they remain geared whether in contact or separated, and that both rollers have a positive motion, and aid in feeding forward the plate or sheet of metal. The object of the invention is to pass plates or sheets of metal in iron-rolling mills, during the process of rolling, from the delivery side of the rolls to the receiving side by machinery instead of by hand.

Description of the Accompanying Drawing.

Figure I is a perspective view of the machine.

A is the bed-plate upon which the machine stands. B B are housings or standards, having rabbets *b b* at their inner corners. They should be substantially made. C is the lower roller, which works in stationary journals *c c*. D is the upper roller, which works in journals *d d*, which are movable up and down. The journals *c c* and *d d* have flanges fitting into the rabbets *b b*, whereby they are kept in place between the housings B B. E E are bearers, on which the journals *d d* rest. F F are tension-rods, by which the bearers E E are suspended from springs G G, which thus support the roller D and keep it up from the roller C, leaving space enough between the rollers to

allow a plate or sheet of metal to pass in easily between them. H H are pinions on the ends of the axles of the rollers, by which motion is communicated from the lower roller to the upper one. The leaves of the pinions are sufficiently long to admit of the slight vertical motion of the upper roller without getting the pinions out of gear. I is a pulley on the end of the axle of the lower roller C, by which motion is conveyed from the belt J, which passes round a drum on the driving-shaft of the mill, and by which the rollers are kept in motion. K is a pressure-plate, which rests on the journals *d d*. L is a prop, pivoted to a lever, M, by which the pressure given to the lever M by hand is communicated to the pressure-plate K and journals *d d*, and the roller D is pressed down on the roller C with a force proportional to that applied to the lever M.

This machine is used in nail-plate-rolling mills. In such mills there are three pairs of rolls. The first pair of rolls is called the roughing-rolls, the second pair is called the bull-heads, and the third pair is called the finishing-rolls; and all three are required to make a finished nail-plate. The iron goes through the roughing-rolls first, and is put through four times, so as to lengthen out and thin down the mass of iron considerably. While the iron is being passed and repassed through the roughing-rolls it is easily handled with tongs, and can be shoved under the rolls from the back to the front by hand. When the iron leaves the roughing-rolls it is passed by hand to the bull-head rolls, and shoved under the last-named rolls to the front. It is then passed once through the bull-head rolls, which are plain on the face, and which thin out and elongate the plate so much that it can no longer be handled easily with tongs. As the plate leaves the bull-head rolls it is slid down an incline, the attendant seizing it with tongs, and the end of it is placed between the rollers of the shove-under, which is placed at the back of the finishing-rolls, and a little to one side of them. The lever of the shove-under is then pressed down by an attendant, so that the rollers press upon the plate and draw it forward. The end of the plate is thus shoved under the finishing-rolls from the back to the front, where the roller attending on the rolls seizes it with tongs and bends it up and puts it

between the rolls. The rolls then pass the plate to the back and still further thin it and elongate it. As soon as the end of the plate leaves the rolls it is seized with tongs and put between the rollers of the shove-under, by which it is again drawn forward and shoved to the front of the rolls, where the roller again bends it up and passes it a second time through the finishing-rolls; and this completes the operation.

Before the invention of this machine two catchers were required at the finishing-rolls, and one at each of the other pairs of rolls, to catch the iron at back of the rolls. Now one catcher is enough at the finishing-rolls, the man at the bull-head rolls being able, as heretofore, to assist in carrying away the finished plate; and the boy who attends the lever of the finishing-rolls can also attend the lever of the shove-under, so that one man's labor is saved, and the work is done more regularly than it used to be by hand.

The roller D being kept apart from the roller C by the springs G G, the end of a plate of metal is easily passed in between the rollers. When the end of a plate of metal is passed in between the rollers by hand a boy attending on the machine presses down the lever M, so that the upper roller D is pressed down on the plate of metal, which is thus firmly pressed between the rollers C and D. The rollers, be-

ing geared together by the pinions H H, and the roller D being geared to the driving-shaft, have each a positive motion, and both shove the plate of metal in the direction of their motion—to wit, under the rolls from the delivery to the receiving side. The counter-balance, consisting of the springs G G, tension-rods F F, and bearers E E, can be substituted by springs placed between the journals of the upper and those of the lower roller. This is the arrangement I now use in the machine now at work in the Belfont rolling-mill in this place. It may also be substituted by springs, from which the journals *d d* may be suspended between the housings B B, or the journals *d d* may be suspended by chains passing over pulleys, and having counter-balance weights attached to them.

Claim.

I claim as my invention—

The portable machine or “shove-under” herein described, consisting of the rolls C D, bearers E, tension-rods F F, springs G, movable pressure-plate K, and lever M, operating as and for the purpose set forth.

JOHN B. HASTINGS.

Witnesses:

JOS. P. SHAW,
BENJAMIN GARVEY.