E. WASSELL.

Rolling Mill.

No. 47,475. Patented April 25, 1865.

FIG. 2

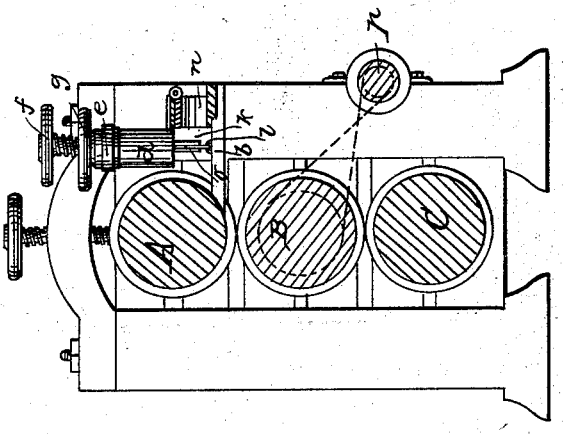


FIG. 4.

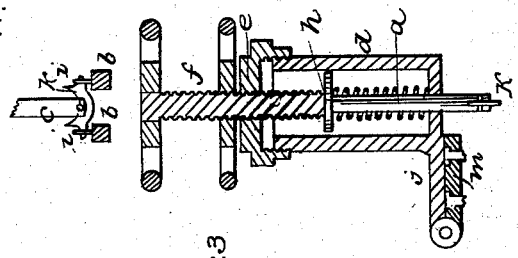
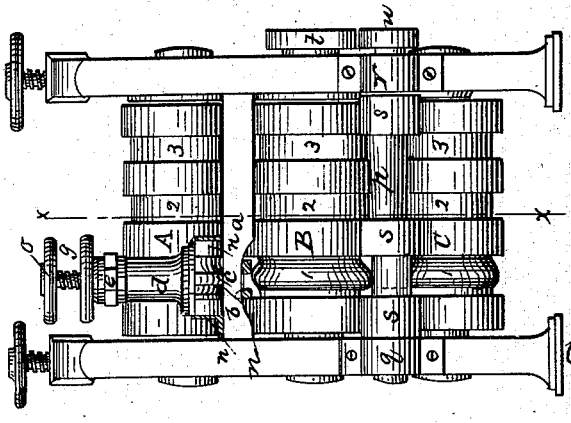


FIG. 3

FIG. 1



WITNESSES

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EDWIN WASSELL, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN ROLLING-MILLS.

Specification forming part of Letters Patent No. **47,475**, dated April 25, 1865.

To all whom it may concern:

Be it known that I, EDWIN WASSELL, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolling-Mills; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a set of rolls for rolling railroad iron, with my improvements attached. Fig. 2 is a transverse sectional elevation through *x x*, Fig. 1. Fig. 3 is a sectional elevation of my improved guide-holder. Fig. 4 shows the end of the spring-rod of the guide-holder, showing the mode of attaching the guide-bars thereto.

In each of the figures like letters of reference denote similar parts.

My invention consists, first, in an improved mode of supporting the guide-bars used in a pair or set of rolls to prevent the iron bar from winding around the larger rolls; and, second, in a guide roller for guiding and feeding the iron between the rolls into the proper groove.

To enable others skilled in the art to construct and use my invention, I will proceed to describe the construction and operation of my improvement.

In the drawings, Fig. 1 represents a set of "three high" rolls, as used for rolling railroad-iron, two of the gooves, numbered 2 and 3, being such as are used in the roughing-rolls for the preparatory shaping and reducing of the iron, and the groove No. 1 being such as is used in the finishing-rolls. The drawings represent the rolls as partly constructed like finishing-rolls and partly like the roughing-rolls, although in practice different sets of rolls are used for these different operations. In the finishing-rolls one roll is grooved and the other flanged to correspond, the flange of one entering the groove of the other, the iron being rolled between the flange and the bottom of the groove. This renders it necessary that the gooved rolls should be of larger diameter than the flanged roll, and the consequence is a tendency in the iron which is being shaped by the rolls to remain in the groove and wind around the rolls. To remedy this guide-bars are used, being bars of iron supported in some convenient manner by the housing and fixed horizontally at right angles to the axis of the rolls, the upper surface of the guide-bars being on a level with the operative surface of the grooves formed by the rolls through which the iron is passed.

My improvement consists of a device for supporting these guide-bars so situate as to be entirely out of the path of the bar, passing out from between the rolls and so arranged as to be capable of easy adjustment, and to admit of the removal of the guide-bars whenever it is necessary.

A cross-bar, *a*, is placed horizontally in front of the rolls at such a height as that the guide-bars *b b* may rest against the under side of the cross-bar *a*, while the under side of the cross-bars is in the horizontal tangential line of the deepest part of the groove of the upper roll, A, as shown in Fig. 2. These guide-bars are not attached to the cross-bar *a*, but are suspended either directly to the spring-rod *c* of the guide-holder, as shown in Fig. 4, or to a transverse horizontal bar secured to the end of the spring-rod *c* when a number of guide-bars are used to one roll.

The guide-holder *d* (section of which is seen in Fig. 3) consists of a short hollow metallic cylinder, *d*, having a screw-cap, *e*, at top, through which is passed the pressure-screw *f*, the cap *e*, having a female screw in which the screw *f* works. A nut, *g*, or check-wheel works on the shaft of the screw *f* above the cap *e*, and when screwed down on the cap serves to secure the screw *f* at any height at which it may be set. The end of the screw *f* inside the cavity of the cylinder *d* presses on the button *h* of the spring-rod *c*, and a strong spiral spring, *i*, is placed around the rod *c*, pressing against the bottom of the cylinder and the under side of the button *h*. The lower extremity of the spring-rod *c* passes through a round hole in the bottom of the cylinder *d*, and is furnished with a swivel, *k*, pivoted to the end of the rod, to the two points of which, extending horizontally from the rod *c*, the guide-bars *b b* are hooked by a loop or staple, *l*, in each bar. If several guide-bars are used, as is the case where more than one of the grooves in the roll A requires to be furnished with guide-bars, a horizontal bar is similarly attached the swivel at the end of the rod *c* and the guide-bars *b b* are hooked onto it.

The cylinder *d* has a flange, *j*, projecting from it, which is hinged at *x* to a plate, *m*, and

the plate *m* is bolted to a bracket, *n*, placed on the rail or cross-bar *a*. The object of having the hinged plate *m*, instead of bolting the cylinder by its flange directly to the bracket *n*, is so that, in case of any accident by which the guide-bars *b b* should be displaced or not used and the iron-bar should wind round the upper roll, and thus strike the f rward edge of the cylinder, the cylinder would rise on its hinge and make way for the iron instead of being broken, as it would probably be if rigidly attached. It also permits the cylinder to be turned back out of the way whenever it is desirable so to do.

The operation of this guide-holder is as follows: The spring-rod *e* being depressed by the screw *f*, the ends of the swivel *k* are inserted into the loops *l* of the guide bars *b b*, which, being set in proper position, are held up to their place by the force of the spring *i* pressing against the button *h* when the screw *f* is raised. The screw is then adjusted so as to t uch the top of the button *h* without depressing it, so as to loosen the guide-bars. The check-wheel *g* is then screwed down upon the cap *e*.

The other feature of my improvement consists in the use of a conical flanged guide-roller *p*, which is placed horizontally in front of the lower pair of rolls B and C and turns in bearings *q r* in the housing. This guide-roller is intended to be used with roughing-rolls and serves to feed the bar of iron which is being operated upon forward toward the rolls, and to guide it into the groove through which it is to pass. This guide-roller *p* is made slightly tapering, so as to facilitate the sliding of the iron bar from one groove to the other, and the flanges *s* being situated exactly opposite to the flange in the rolls B and C, the bar of iron will slide down the face of the tapering revolving feed-roller *p* until it comes to the flange which guides it straight to the groove in the rolls B and C, through which it must pass.

The guide-roller *p* is caused to revolve in the same direction as the lower roll, C, by means of a belt (shown by a red line in Fig. 2) which passes over the pulleys *t* and *u* on the journals of the roll B and roller *p*. The bar of iron, being passed through the upper pair of rolls A and B, emerges over the feed-roller *p*, the end of the iron which is to be passed back through the rolls B and C drops onto the roller *p*, and as the ro'ler *p* is feeding the iron back toward the rolls B and C it slides down its inclined surface until it comes against the flange in front of the groove next to one side of that through which it had previously passed in the upper rolls.

Having thus described my improvement in machinery for rolling iron, what I claim as my invention is—

1. The use of a flange guide-roller placed in front of a pair of rolls when such roller is tapered between the flanges, for the purpose of causing the iron bar to slide sidewise when it drops out from one pass between the rolls to the proper position in front of the next adjoining pass, substantially as described.

2. The use of a guide-holder consisting of the combination of a cylinder or box, *d*, rod *e*, spring *i*, and pressure-screw *f*, constructed substantially as and for the purpose hereinbefore set forth.

In testimony whereof I, the said EDWIN WASSELL, have hereunto set my hand.

EDWIN WASSELL.

Witnesses:
W. BAKEWELL,
A. S. NICHOLSON.