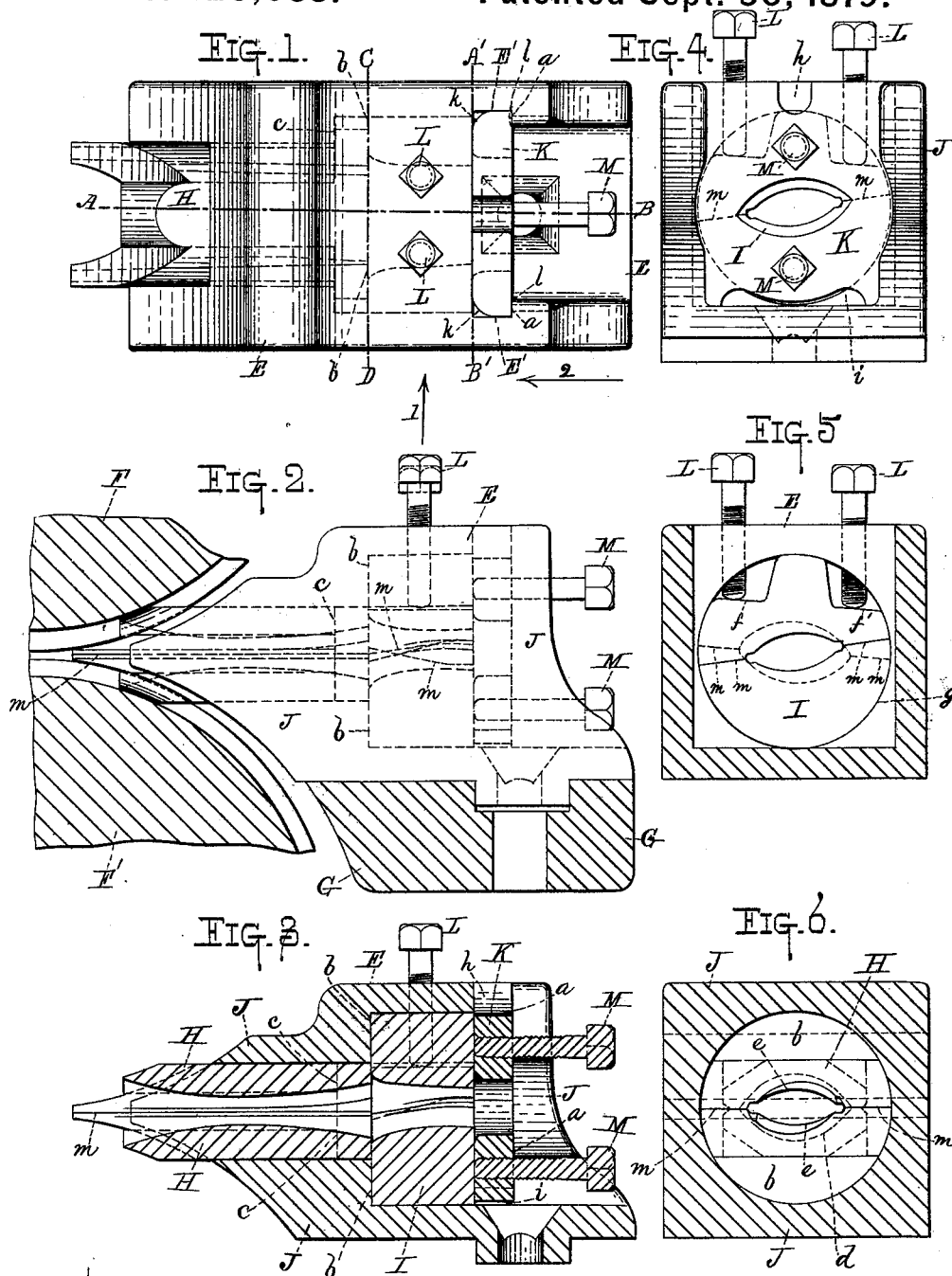


C. H. MORGAN.
Guide for Wire-Rod Rolling-Mills.

No. 220,033.

Patented Sept. 30, 1879.



Witnesses:

Thos. H. Dodge
Edwin E. Moore

Inventor:

Chas. H. Morgan

UNITED STATES PATENT OFFICE.

CHARLES H. MORGAN, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN GUIDES FOR WIRE-ROD-ROLLING MILLS.

Specification forming part of Letters Patent No. **220,033**, dated September 30, 1879; application filed March 10, 1879.

To all whom it may concern:

Be it known that I, CHARLES H. MORGAN, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Guides for Wire-Rod-Rolling Mills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of one of my said improved guides for rolling-mills. Fig. 2 represents a side view of the same, also showing, in section, a portion of a set of reducing-rolls and the guide-supporting bar, which is secured at each end to the housings of aforesaid rolls. Fig. 3 represents a central vertical longitudinal section through the guide, taken on line A B, Fig. 1, looking in the direction indicated by arrow 1 of the same figure. Fig. 4 represents an end view of said guide, looking in the direction indicated by arrow 2, Fig. 1; and Figs. 5 and 6 represent vertical transverse sections through the same, taken on lines A' B' and C D, respectively, looking in the direction indicated by arrow 2, Fig. 1.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, E represents one of my aforesaid improved guides, the same being shown in Fig. 2 in combination with portions of sections F F' of a set of reducing-rolls, and is also represented as being supported upon a slotted bar, G, which, in practice, is supported upon the housings in which said rolls F F' are arranged to turn.

My improved guide E is made so that it may be adjusted laterally upon its supporting-bar G, and also so that the heated bar of steel or other metal from which the rods are formed may be turned or rotated more or less, as desired, as it passes through said guide in the operation of reducing said bar to the size of the wire-rod, as will be hereinafter more fully described.

It will be understood that in the operation of reducing a bar to a rod said bar is usually rolled alternately from a square shape into an oval or elliptical form as it passes forward be-

tween each succeeding set of reducing-rolls, the object of the guide being to turn or partially rotate the bar, so that it will be in the right position to properly enter the next succeeding set of reducing-rolls.

The stripping guide-block H and the adjustable guide-block I are arranged in the hollow part or shell J of the device, both being loosely fitted in said part, and held in position from being pushed forward by a retaining-plate, K, which bears against shoulders *a a* of the shell part J, and from sliding in the opposite direction, the part I by bearing against the shoulder *b*, and the part H by the inner end being made larger, and the shoulder thus formed bearing against the shoulder *c* of part J.

As will be seen by dotted lines *d* and full line *e*, Fig. 6, the sides of the opening through guiding and turning block H start or commence upon the same horizontal plane, but as they extend forward gradually assume a spiral form through said block and block I, as is fully represented by full and dotted lines in the drawings, thereby turning the bar as it passes forward from one set of reducing-rolls to the next, for the purpose before explained.

Guiding and turning block I is made circular in form, being fitted to turn upon the circular side *g* formed in the part J, thus allowing of its adjustment so as to turn the bar more or less, as desired, by means of adjusting and holding screws or bolts L, which pass through the part J and bear upon shoulders *f f'* formed in said block I.

Plate K is held in position by means of set-screws or bolts M, which pass through the same and bear against block I.

In order that blocks H and I or the part J may not be broken or injured when a bar is retarded or caught in passing through said blocks, plate K is made of cast or brittle metal, and, preferably, not very thick, so that it will yield to a sudden strain or pressure resulting from the catching or stopping of the bar in process of being reduced or rolled. By this arrangement, in case of such accident, simply plate K has to be renewed, whereas, if such a provision were not made, a renewal of all the parts might be necessitated.

To render the breakage of plate K more sure, the upper and lower ends may be cut out, as

represented at *h* and *i*, and the corners may also be rounded, as represented at *k*, for the purpose of allowing it to be pushed forward out of slots *E'* without breaking off the corners *l* of part *J*; and its construction may be otherwise such as to further weaken it, if necessary.

Guiding and turning blocks *H* and *I* are each made in two parts, as represented by full and dotted lines *m* in the drawings, to enable them to be cast more perfectly, and also to enable the inner surfaces thereof to be evenly chilled during the casting operation, and also to admit of their separating when retaining-plate *K* breaks and allows them to pass out of the shell *J*, thereby releasing the bar being rolled in case of accident, as before explained.

In practice, by preference, said blocks are constructed of chilled iron, the part *J* of brass, and plate *K* of cast-iron.

As will be observed by Figs. 1, 2, and 3, the end of block *H* and part *J* are formed so as to fit closely against their respective reducing-rolls *F F'*, thereby effectually preventing the bar in its outward progress from passing out of its proper course, or of portions thereof adhering to and being wound about the rolls.

Another guide is combined with each set of reducing-rolls upon the opposite side from each guide *E*, which guides the bar in between the next set of rolls as it leaves said guide *E*; but as it is of ordinary construction no further description is here necessary.

Those skilled in the art to which my invention belongs will readily perceive the great practical advantages derived from arranging and constructing guides for rod-rolling mills as herein shown and described, since they are much shorter and more compact than those now in use, much less material is used, and therefore in these respects alone much expense

is saved. They are, furthermore, strong and durable, and not liable to be broken, injured, or to get out of repair; nor is the mill liable to be broken or the guides materially injured in case of the clogging or stopping of the end of the bar, as hereinbefore explained.

By having a space between the guides, so that the bar or unfinished rod may be clearly seen as it passes forward, the attendants are enabled to detect any defects which may occur in the same, and thereby in many cases prevent accidents by quickly stopping the mill, which would otherwise occur by the use of the ordinary guides.

Another advantage of my invention is that by having an adjustable guiding and turning block, *I*, constructed and operating as before described, the bar may be turned as much or as little as is desired by simply turning operating screws or bolts *L*, as before explained.

Having described my improvements in guides for rod-rolling mills, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the shell part *J* and stationary guides *H*, of the adjustable bar-turning guide *I*, made in two pieces, substantially as and for the purposes set forth.

2. The combination, with shell *J* and guides *H* and *I*, of safety or breaking plate *K*, substantially as and for the purposes set forth.

3. The combination, with shell *J* and the adjustable bar-turning guide *I*, provided with shoulders *f f'*, of adjustable and holding screws or bolts *L*, substantially as and for the purposes set forth.

CHAS. H. MORGAN.

Witnesses:

THOS. H. DODGE,
EDWIN E. MOORE.