(No Model.)

W. M. REED.

SCALE SCRAPING DEVICE.

No. 589,370. Patented Aug. 31, 1897.

Fig. 1

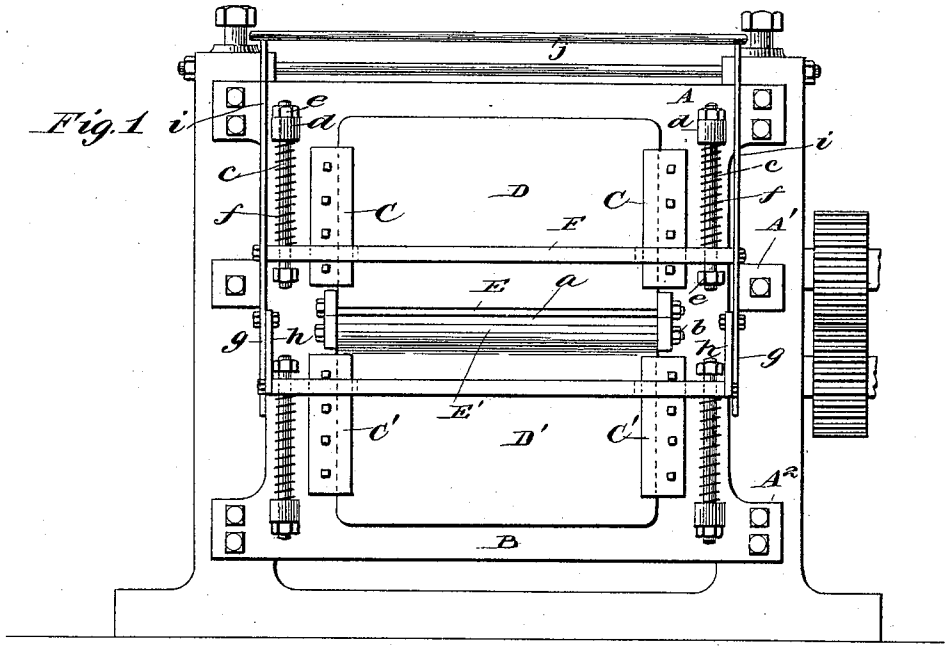


Fig. 2.

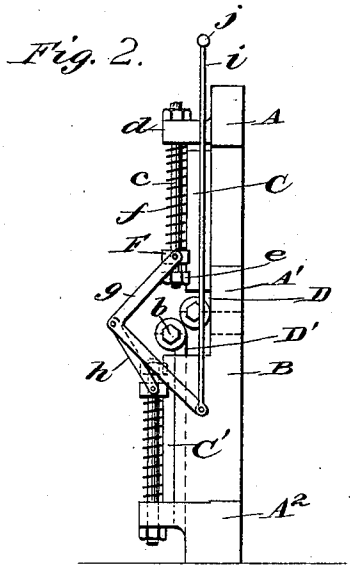


Fig. 3

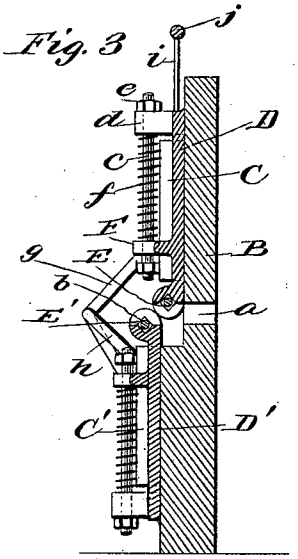
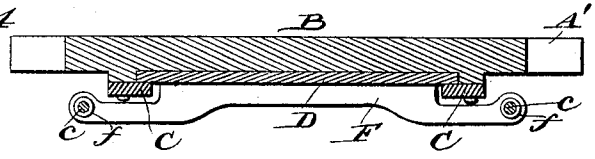


Fig. 4



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UNITED STATES PATENT OFFICE.

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SCALE-SCRAPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 589,370, dated August 31, 1897.

Application filed February 11, 1897. Serial No. 622,911. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. REED, a citizen of the United States, residing at Bellaire, in the county of Belmont and State of Ohio, have invented certain new and useful Improvements in Scale-Scraping Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved device for use with ordinary rolls by which scale may be scraped from the slabs or plates during the process of rolling.

The object of the invention is to provide a simple, durable, cheap, and highly-efficient device for this purpose.

Broadly considered, the invention comprises a spring-pressed scraping-bar coöperating with the ordinary rolls, with means for retracting the same from the slab or plate when desired, and by which the scale will be scraped from the slab or plate during the process of rolling.

More specifically considered, the invention comprises two such spring-pressed bars, with means to simultaneously retract the same when desired, and by which the scale will be scraped both from the top and bottom faces of the plate during the process of rolling.

In order that my invention may be better understood, attention is directed to the accompanying drawings, wherein—

Figure 1 is a front elevation of my improved device, showing the same attached to an ordinary form of rolling-mill; Fig. 2, a side elevation with the scraping device removed; Fig. 3, a vertical section of the same, and Fig. 4 a horizontal section.

In all of the above views corresponding parts are designated by the same letters of reference.

A A′ A^2 represent bed-plates or supporting-beams of the scraping device, which are bolted or otherwise secured to the side frames of the rolling-mill, as shown.

If desired, the lower bed-plate A^2 may be omitted.

B is a vertical plate secured to the frames A A′ A^2 adjacent to the rolls. Said plate B is provided with an opening *a* therein in line with the opening between the rolls and of sufficient size to accommodate the plate or slab in the process of rolling. This opening is preferably located immediately beneath the cross-frame A′, so that the thrust of the work will be taken up by that cross-frame.

Secured to the plate B above the opening are two guides C C. Other guides C′ C′ are secured to the plate B beneath the opening *a*, as shown. Mounted so as to reciprocate in the guides C is a slide-plate D, and a similar slide-plate D′ is mounted to reciprocate in the guides C′. These slide-plates D D′ carry at their inner ends scraping-bars E E′, secured in position by means of bolts *b*, so as to be removable. These scraping-bars are provided with scraping edges and are of the proper size and shape to engage with the top and bottom faces of the slab or plate in the process of rolling. In order that said scraping-bars A A′ may be made as large and as heavy as possible, they may be arranged to overlap slightly, as shown, so as to bring the scraping edges in close proximity.

In order to keep the scraping-bars E E′ in proper engagement with the work, I make them spring-pressed, as before stated, and independent of one another, and in the figures I illustrate a convenient arrangement of parts for applying the spring-pressure to said bars.

Secured to the slide-plate D near its lower end is a cross-head F, and extending up through holes at both ends of said cross-head are two guide-rods *c*, the upper ends of which pass through heavy lugs *d*, cast or secured to the upper bed-plate A. Each of the guide-rods *c* is provided with adjusting-bolts *e* at both ends for adjusting and limiting the throw of the scraping-bars, as will be understood.

Surrounding each guide-rod *c*, between the lug *d* and cross-head F, is a heavy spiral spring *f*, which by its tension forces downward on the cross-head and thereby maintains the scraping-bar in the desired contact with the slab or plate. A similar arrangement of pressure device is applied to the lower scraping-bar E′, as will be seen, and need not be described in detail.

In order to separate the scraping-bars E E′ when two of such bars are used, I provide mechanism for simultaneously operating

them, which may be conveniently arranged as shown.

An angle-lever *g* is pivoted at one of its arms to each side of the upper cross-head F and at its angle is pivoted to a link *h*, which extends down to the corresponding side of the lower cross-head. When the scraping-bars E are moved to their innermost limits the links *h* and the upper legs of the angle-iron *g* constitute a toggle-joint, as will be understood, which toggle-joint may be operated by means of connecting-rods *i*, secured at their lower ends to the other legs of the angle-irons and connected together by a handle *j*, in convenient reach of the operator. By elevating said handle the links *h* and upper legs of the angle-levers will be approached in line with each other, so as to separate the scraping-bars *e* against the tension-springs, as will be understood, and by using the especial form of mechanism illustrated the power applied to the scraping-bars will be sufficient to move them against the tension of springs of very considerable strength.

In operation the handle J is elevated so as to separate the scraping-bars and thereby allow the slab or plate to enter between the same, after which said handle is released and the springs will force the scraping-bars tightly into engagement with the slab or plate, so that the latter will in this way during the process of rolling be subjected to the scraping action of the bars, and scale will thereby be removed from the same.

The slab or plate may be fed between the scraping-bars by any suitable mechanism—such, for example, as by a pair of powerful feed-rollers arranged in any usual way, the slab being carried on a set of table-rolls, so as to be guided horizontally from such feed-rollers to the scraping-bars.

Although I prefer to make use of two scraping-bars working in the top and bottom faces of the slab or plate, it is possible to use only a single scraping-bar, appropriate mechanism being combined therewith for elastically compressing the same into contact with the slab or plate and moving the same out of contact with the slab or plate when desired.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. The combination with a rolling-mill, of a spring-pressed scraping-bar for engaging with the slab or plate in the process of rolling, whereby scale will be removed therefrom, and means for withdrawing said scraping-bar from the slab or plate, comprising two bell-crank levers, connections between the upper ends thereof and said scraping-bar, a link connecting the angle of each lever, and a handle connected to the free legs of said bell-crank levers, substantially as set forth.

2. The combination with a rolling-mill, of two oppositely-depressed independently-operating spring-pressed scraping-bars for engaging with the slab or plate in the process of rolling, whereby scale will be removed from the same, and means for retracting said scraping-bars, substantially as set forth.

3. The combination with a rolling-mill, of two oppositely-depressed independently-operating spring-pressed scraping-bars for engaging with the slab or plate in the process of rolling, whereby scale will be removed from the same, and means for simultaneously retracting said scraping-bars, substantially as set forth.

4. In a scraping device for use in rolling-mills, the combination of a bed plate or plates, a vertical plate secured to the same and having an opening therein for the reception of the slab or plate in the process of rolling, two independently-operating spring-pressed scraping-bars carried by said plate, for engaging the slab or billet, and means for retracting said scraping-bars, substantially as set forth.

5. In a scraping device for use in rolling-mills, the combination of a bed plate or plates, a vertical plate secured to the same and having an opening therein through which is passed the bar or billet to be operated upon, guides carried by said vertical plate above and below said opening, a slide-plate mounted in said guides above said opening, a slide-plate mounted in said guides below said opening, a scraping-bar carried by the lower end of the upper slide-plate for engaging the upper surface of the bar or billet to be operated upon, a scraping-bar carried by the upper end of the lower slide-plate for engaging the under side of the bar or billet to be operated upon, and means for applying spring-pressure independently to each of said slide-plates, substantially as set forth.

6. In a scraping device for use in rolling-mills, the combination of a bed plate or plates, a vertical plate secured to the same and having an opening therein through which is passed the bar or billet which is to be operated upon, guides carried by said vertical plate above and below said opening, a slide-plate in said guides above said opening, a slide-plate in said guides below said opening, a scraping-bar removably secured to the lower end of the upper slide-plate for engaging the upper surface of the bar or billet to be operated upon, a scraping-bar removably secured to the upper end of the lower slide-plate for engaging the under surface of the bar or billet to be operated upon, and means for applying spring-pressure independently to each of said slide-plates, substantially as set forth.

7. In a scraping device for use in rolling-mills, the combination of a bed plate or plates, a vertical plate carried by the same and having an opening therein for the reception of the slab or plate in the process of rolling, guides carried by said vertical plate, two slide-plates working in said guides, two scraping-bars carried by said slide-plates adjacent to said opening, a cross-head carried by each slide-plate, a guide-bar at each end of each cross-head engaging a lug carried by the bed

plate or plates, a spiral spring surrounding each guide-bar, and means for simultaneously separating the scraping-bars, substantially as set forth.

8. In a scraping device for use in rolling-mills, the combination of a bed plate or plates, a vertical plate carried by the same and having an opening therein for the reception of the slab or plate in the process of rolling, guides carried by said vertical plate, two slide-plates working in said guides, two scraping-bars carried by said slide-plates adjacent to said opening, a cross-head carried by each slide-plate, a guide-bar at each end of each cross-head engaging a lug carried by the bed plate or plates, a spiral spring surrounding each guide-bar, and means for simultaneously separating the scraping-bar comprising two bell-crank levers pivoted at their upper ends to one of said cross-heads, a link connecting the ends of the other cross-head with the angle of said lever, and a handle connected to the free legs of said bell-crank levers, substantially as set forth.

This specification signed and witnessed this 6th day of January, 1897.

WILLIAM M. REED.

Witnesses:
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J. W. MORRELL.