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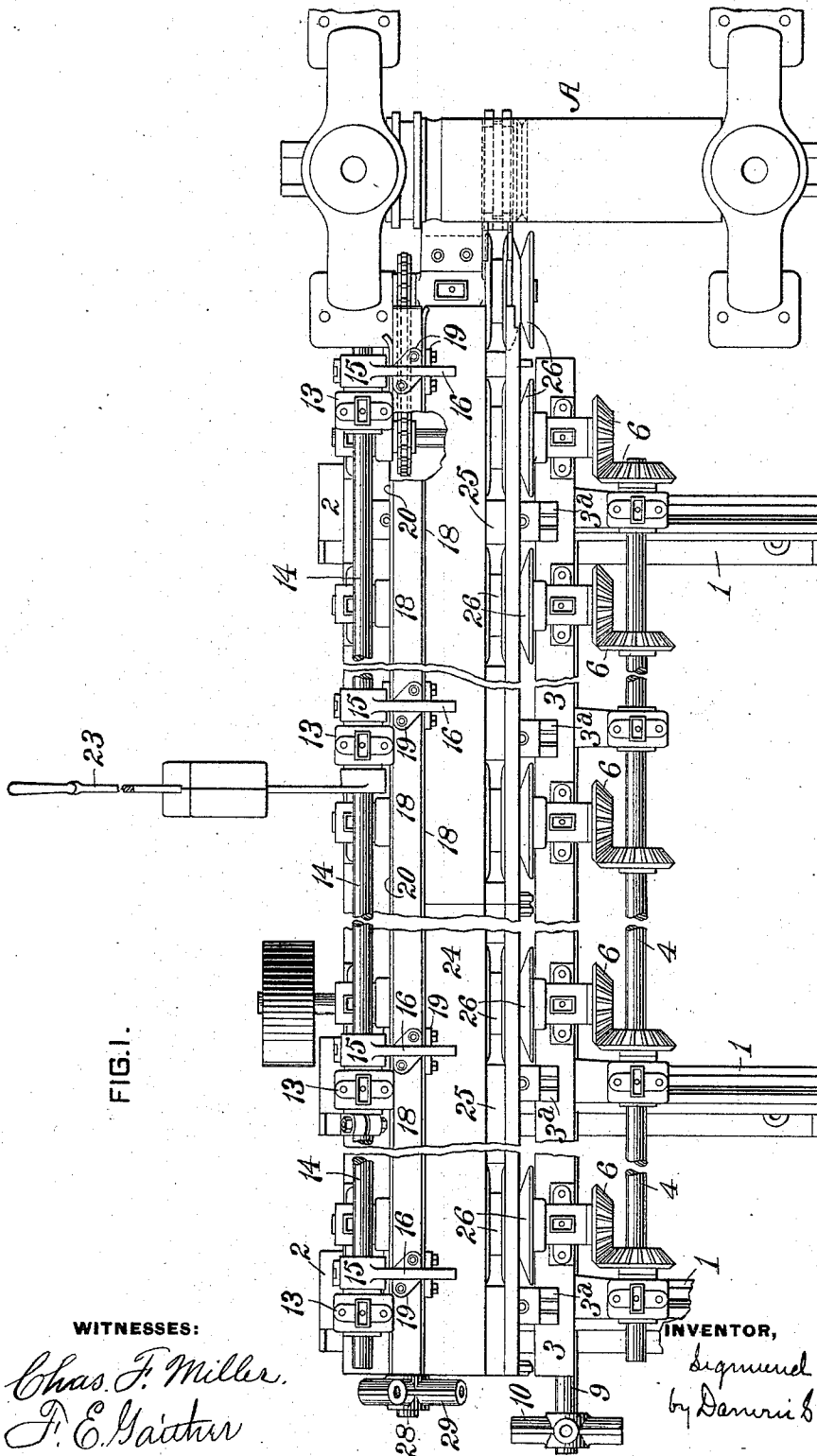
6 Sheets—Sheet 1.

S. V. HUBER.

FEED TABLE FOR ROLLING MILLS.

No. 573,185.

Patented Dec. 15, 1896.



WITNESSES:

Chas. F. Miller.
J. E. Gaither

INVENTOR,

Sigismund V. Huber
by Danvers S. Wolcott

Att'y.

(No Model.)

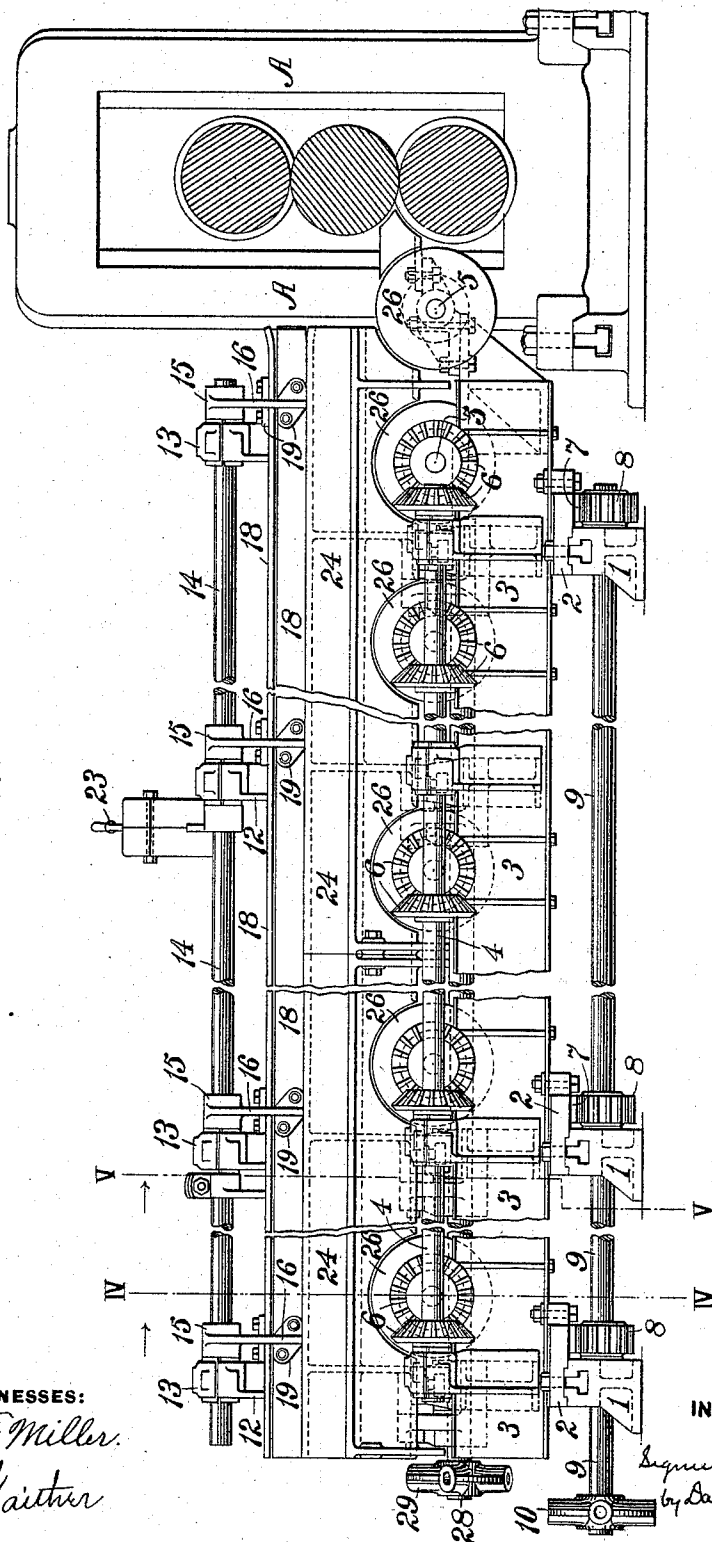
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FIG. 2.



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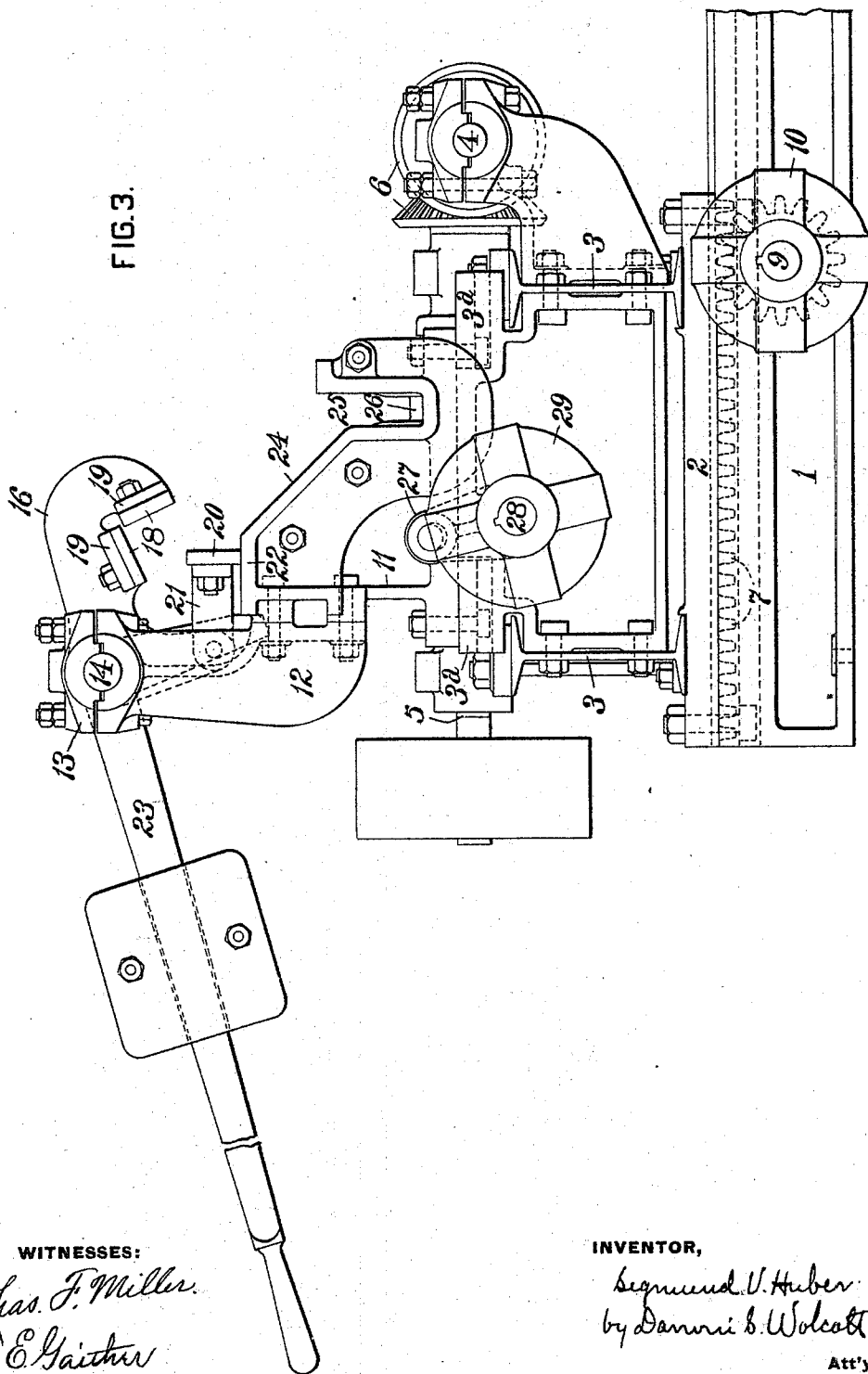
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FIG. 3.



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6 Sheets—Sheet 4.

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FIG. 6.

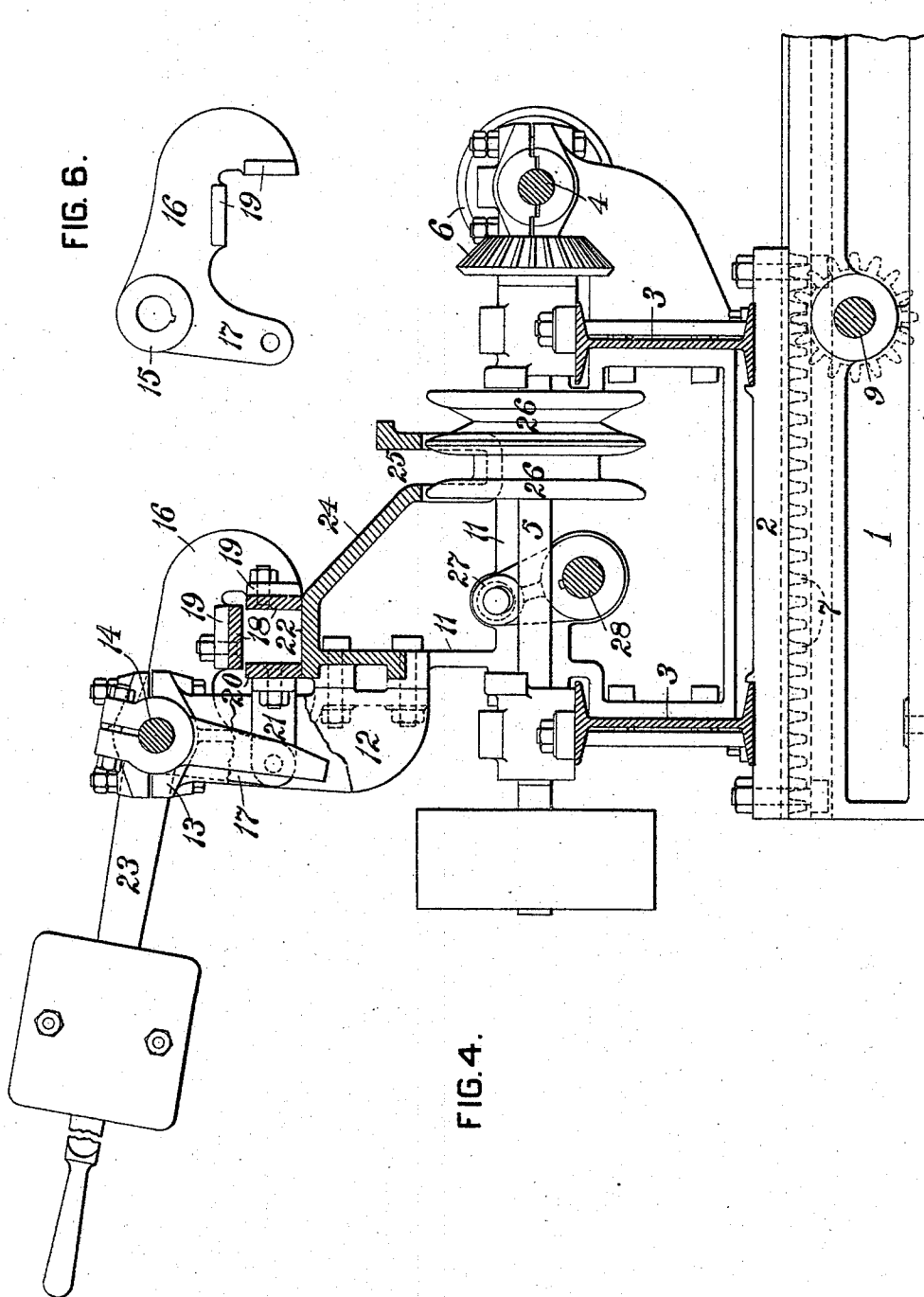
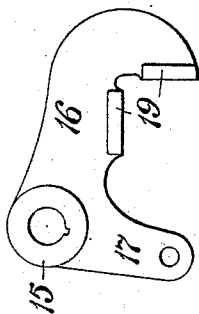


FIG. 4.

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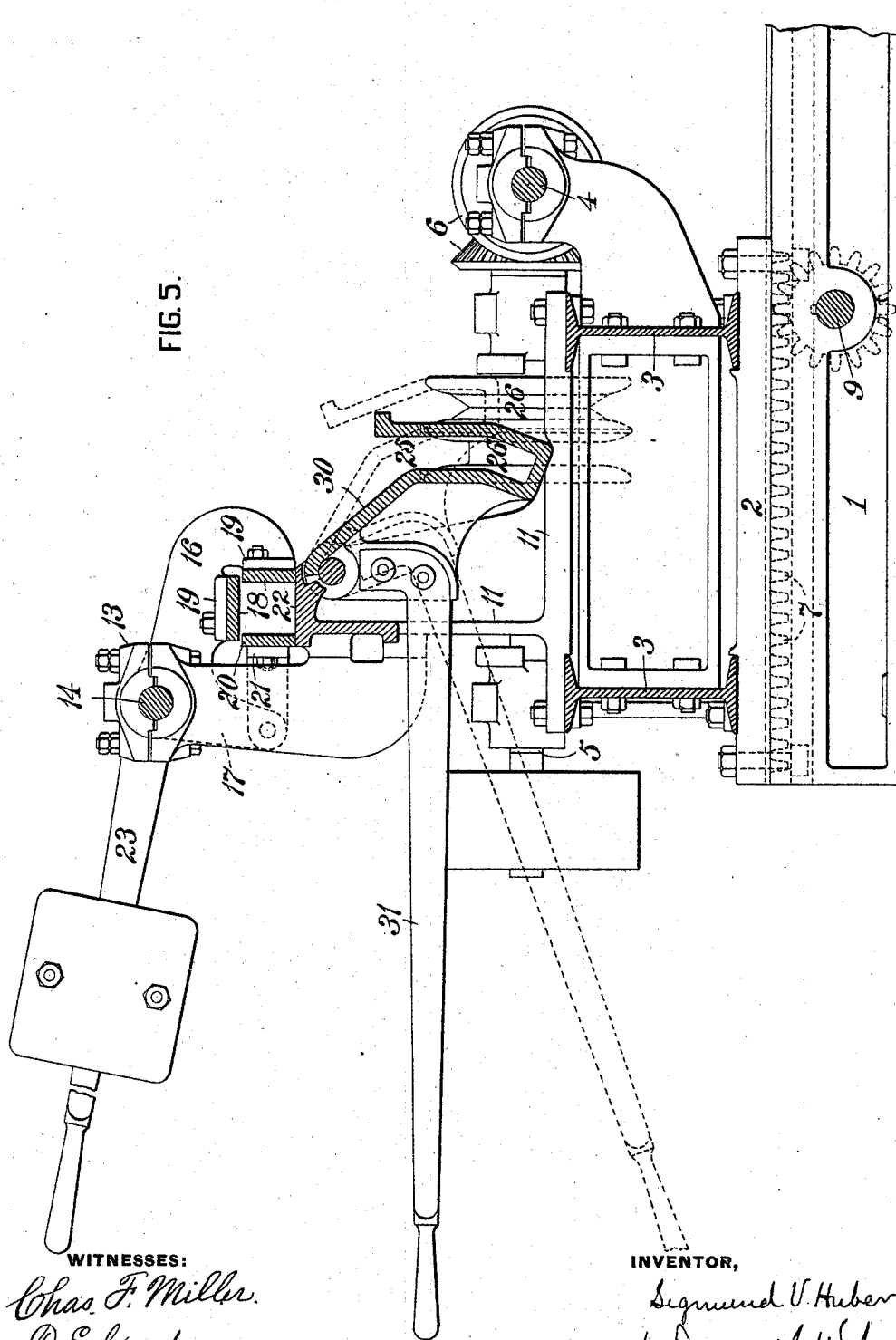
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FIG. 5.



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FIG. 7.

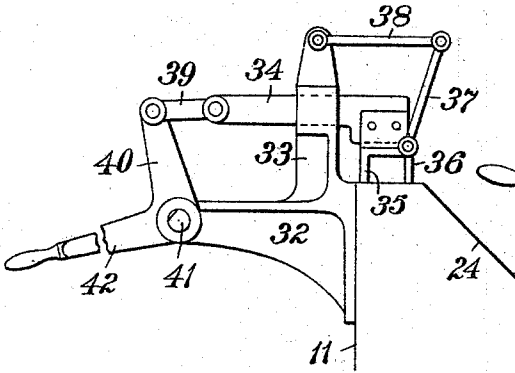


FIG. 8.

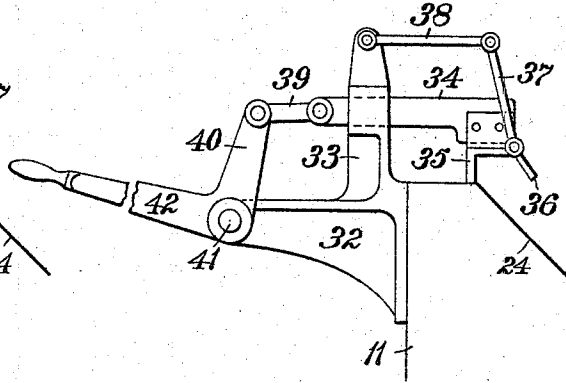


FIG. 9.

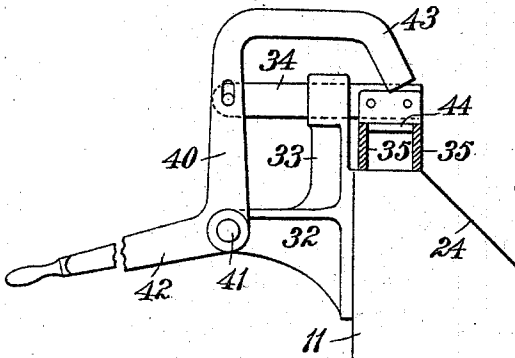


FIG. 10.

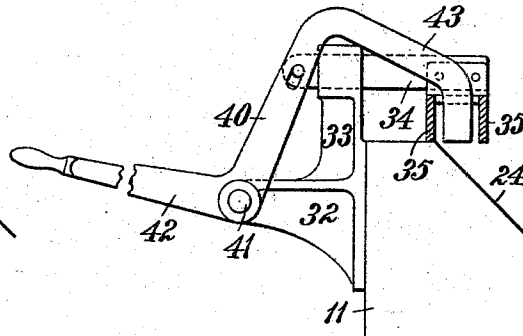
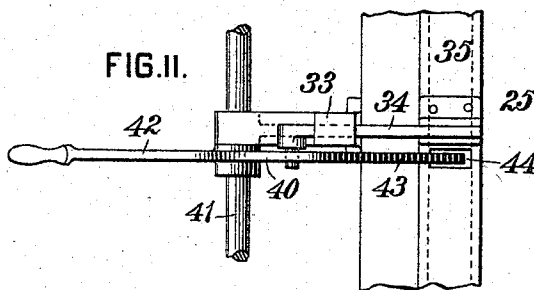


FIG. 11.



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UNITED STATES PATENT OFFICE.

SIGMUND V. HUBER, OF PITTSBURG, PENNSYLVANIA.

FEED-TABLE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 573,185, dated December 15, 1896.

Application filed February 29, 1896. Serial No. 581,244. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND V. HUBER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Feed-Tables for Rolling-Mills, of which improvements the following is a specification.

The invention described herein relates to certain improvements in feed-tables for rolling-mills, and has for its object a construction whereby the article being rolled may be prevented from bending or twisting as it comes from the rolls, may be rotated axially, and returned to the rolls for an edging-pass.

In general terms the invention consists in the construction and combination, substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of a mill having my improved feed-table. Fig. 2 is a side and Fig. 3 an end elevation of the table. Fig. 4 is a sectional elevation, the plane of section being indicated by the line IV IV, Fig. 1. Fig. 5 is a similar view showing a modification of the construction of the guiding-apron. Fig. 6 is a detail view of the guide-box. Figs. 7 and 8 are detail sections illustrating certain modifications in the receiving trough or box, showing the same in closed and open positions. Figs. 9 and 10 are similar views of a further modification of the receiving box or trough, and Fig. 11 is a plan view of the construction shown in Figs. 9 and 10.

In the practice of my invention a bed-plate 1 is arranged on a suitable foundation at right angles to the axes of the rolls of the three-high mill A. On this bed-plate is mounted a movable frame consisting of the plate 2 and the I-beams 3, and transverse bars 3^a, on which are secured suitable bearings for the longitudinal driving-shaft 4 and the transverse shafts 5, which are driven through suitable gearing 6 by the shaft 4. The plate 2 is provided on its under side with a series of two or more toothed bars or racks 7, with which a corresponding number of pinions 8 engage, said pinions being keyed on a shaft 9. This shaft is provided at one end with a series of radial arms 10, provided with sock-

ets for the reception of capstan-bars, whereby the shaft may be rotated and the frame adjusted transversely in front of the rolls. A series of angular frames 11 are movably secured upon the transverse bars 3^a by means of bolts passing through slots in the bars 3^a, as shown in Fig. 3. On the vertical portions of the frame 11 are secured the standards 12, having suitable bearings 13 at their upper ends for the shaft 14. A series of hubs 15, each provided with an angular arm 16 and a straight arm 17, are secured to the shaft 14 at suitable intervals. To the angular arms are secured metal strips 18 by means of bolts or rivets passing through lugs 19 on the portions of the arms at or approximately at right angles to each other, so that the strips will form two adjacent sides of a guide-box. The third side is formed by a metal strip 20, which is secured to blocks 21, pivotally connected to the straight arms 17 of the hubs 15. The pivotal connection of the blocks with the arms 17 permits the metal strip 20 to rest at all times upon the plate 22, forming the bottom of the guide-box, and supported by the vertical portion of the frame 11, as shown in Figs. 3 and 4.

A lever 23, preferably counterbalanced, is secured to the shaft 14 for the purpose of rotating the same, whereby the angular arm 16 is lifted, opening the guide-box or trough, and the strip 20, forming the back wall of the box, is moved along the bottom plate 22 to push the article previously fed into the box off the bottom plate onto the inclined apron 24, which may be formed integral with the bottom plate, as shown in Figs. 3 and 4. The apron is preferably provided along its lower edge with an open-topped receiving-trough 25, into which the article will drop from the apron. The walls of the receiving-trough are notched at intervals, as shown in Fig. 2, to allow the grooved rollers 26 on the countershafts 5 to project up into the receiving-trough, as shown in Figs. 3 and 4. The countershafts are driven by the shaft 4, so that the rollers will feed the article back into the reducing-mill A.

The passes in the upper and middle rolls of the mill are flats or flat ovals, and the article being rolled is fed by said rolls into the guide-box, by which it is prevented from bend-

ing or twisting. As soon as the article has passed from between the upper and middle rolls the lever 23 is depressed, thereby raising the top and one side of the guide-box and causing the other side to move over the bottom plate, as shown by dotted lines in Fig. 3. The movement of one side over the bottom plate forces the article laterally onto the inclined apron, down which it will slide and drop on its edge into the receiving-groove. This groove is made of such a width, compared to the thickness of the article, that the latter will be held by the side walls in such position as to properly enter the edging-passes formed in the middle and lower rolls of the mill.

In rolling flats the edging-pass should be rectangular; but when rolling flat ovals the edging-pass is usually diamond shape. Hence a feed-roller having a groove suitably shaped, as shown in Figs. 3 and 4, to feed a flat article to the edging-pass, would permit a flat oval to rest at an angle therein, two sets of feed-rollers are preferably employed.

To provide for the adjustment of the guide-box and apron to direct the article into one or the other of these feed-rollers, the angular frames 11, to which the box and apron are secured, are movably mounted on the transverse bars 3^a, as hereinbefore described, and the frames 11 have a slotted connection with arms 27 on a shaft 28, mounted longitudinally of the main frame in suitable bearings thereon. The shaft 28 is also provided with arms 29, having sockets for the reception of capstan-bars for rotating the shaft and thereby properly adjust the box and apron. After the box and apron have been adjusted in accordance with the article to be rolled, *i. e.*, either flats or flat ovals, the whole table is adjusted by rotating the shaft 9 to bring the guide into line with the desired pass in the upper and middle rolls and the feed-rollers into line with the proper edging-pass in the middle and lower rolls.

In lieu of shifting the frames 11 and the guide-box and apron carried by said frames when changing from flats to flat ovals, as hereinbefore described and as shown in Fig. 4, a hinged or pivotally-mounted apron 30 may be employed, as shown in Fig. 5. The apron 30, which is provided with a receiving-groove along its lower edge, is preferably hinged to one edge of the bottom plate 22 of the guide box or trough, and to said apron is secured one end of an operating-handle 31, whereby the receiving-groove may be shifted in line with one or the other of the feed-rollers 26; and, further, this construction permits of the use of both series of feed-rollers 26 without any adjustment of the guide-box, the article being directed by properly shifting the apron 30 first into one series and then into the other series.

Figs. 7 and 8 illustrate certain modifications in the construction and operation of the guide-box. Brackets 32 are secured to the vertical portion of the frames 11 in place of

the standards 12, and said brackets are provided with slotted posts or uprights 33. The slots in the posts serve as guides for the slides 34, to which an angle plate or strip 35 is secured, the sides of said strip forming the top and back of the guide-box, the back having one edge resting upon or supported in proximity to the bottom plate 22. The front of the box is formed by a plate or strip 36, hinged to one edge of the top of the box, and to this plate or strip is rigidly secured one end of one or more arms 37, whereby the strip may be turned to permit of the discharge of the article being rolled from the box. The upper ends of the arms 37 are connected by links 38 to the posts or uprights, so that as the box is moved along the bottom plate the strip 36 will be shifted. The slides 34 are connected by links 39 to an arm 40, keyed to the shaft 41, which is mounted in suitable bearings on the brackets 32. The shaft is rotated to shift the slides by a lever 42, secured thereon. In Fig. 7 the box is shown in position to receive an article from the rolls, while in Fig. 8 it is shown shifted to slide the article onto the apron.

Figs. 9, 10, and 11 show a construction of guide-box having the sides and top fastened to the slides 34, so as to be stationary relative to each other. The slides and box are shifted as described in connection with Figs. 7 and 8. In order to insure the discharge of the article from the guide-box and its delivery onto the apron, the arms 40 are provided with extensions 43, which are made of such shape and length that when the arms are shifted to move the guide-box over the apron the ends of the extension will pass through slots 44 in the top of the box and push the article out onto the apron, as shown in Fig. 10.

It is characteristic of my improvement that provision is made for receiving the article from the rolls at one level and preventing any twisting or distortion thereof, transferring it to a different level and automatically turning the article axially and then delivering it to the rolls in its turned position.

I claim herein as my invention—

1. In a feed-table for rolling-mills, the combination of a plate for receiving an article from the rolls, two or more series of positively-driven rollers for feeding the article to the rolls, an adjustable apron for directing the article from the plate to either series of feed-rollers and means for pushing the article laterally from the plate to the apron, substantially as set forth.

2. In a feed-table for rolling-mills, the combination of a box consisting of a stationary bottom and one or more laterally-movable sides for receiving an article from the rolls, positively-driven rollers for feeding the article to the rolls, and an apron for receiving the article from the box and directing it to the feed-rollers, substantially as set forth.

3. In a feed-table for rolling-mills, the combination of a box for receiving the article from the rolls, positively-driven rollers for feeding

the articles to the rolls, means adapted to transfer the article from the box to the rollers and permit the axial rotation of the article during such transfer, and means for effecting the lateral adjustment of the box and feed-rollers, substantially as set forth.

4. In a feed-table for rolling-mills, the combination of a box for receiving an article from the rolls, two or more series of positively-driven rollers for feeding the article to the rolls, an apron for directing the article from the box to the rollers, means for shifting the box, and means for adjusting the box and apron with reference to the feed-rollers, substantially as set forth.

5. In a feed-table for rolling-mills, the combination of a box for receiving an article from the rolls, means for shifting one side thereof toward and from the other side, means for moving three sides of the box transversely of the fourth side, positively-driven feed-rollers for feeding the article to the rolls, and an apron for directing the article from the box to the feed-rollers, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SIGMUND V. HUBER.

Witnesses:

DARWIN S. WOLCOTT,
M. S. MURPHY.