

(No Model.)

3 Sheets—Sheet 1.

S. V. HUBER.
FEED TABLE FOR ROLLING MILLS.

No. 568,949.

Patented Oct. 6, 1896.

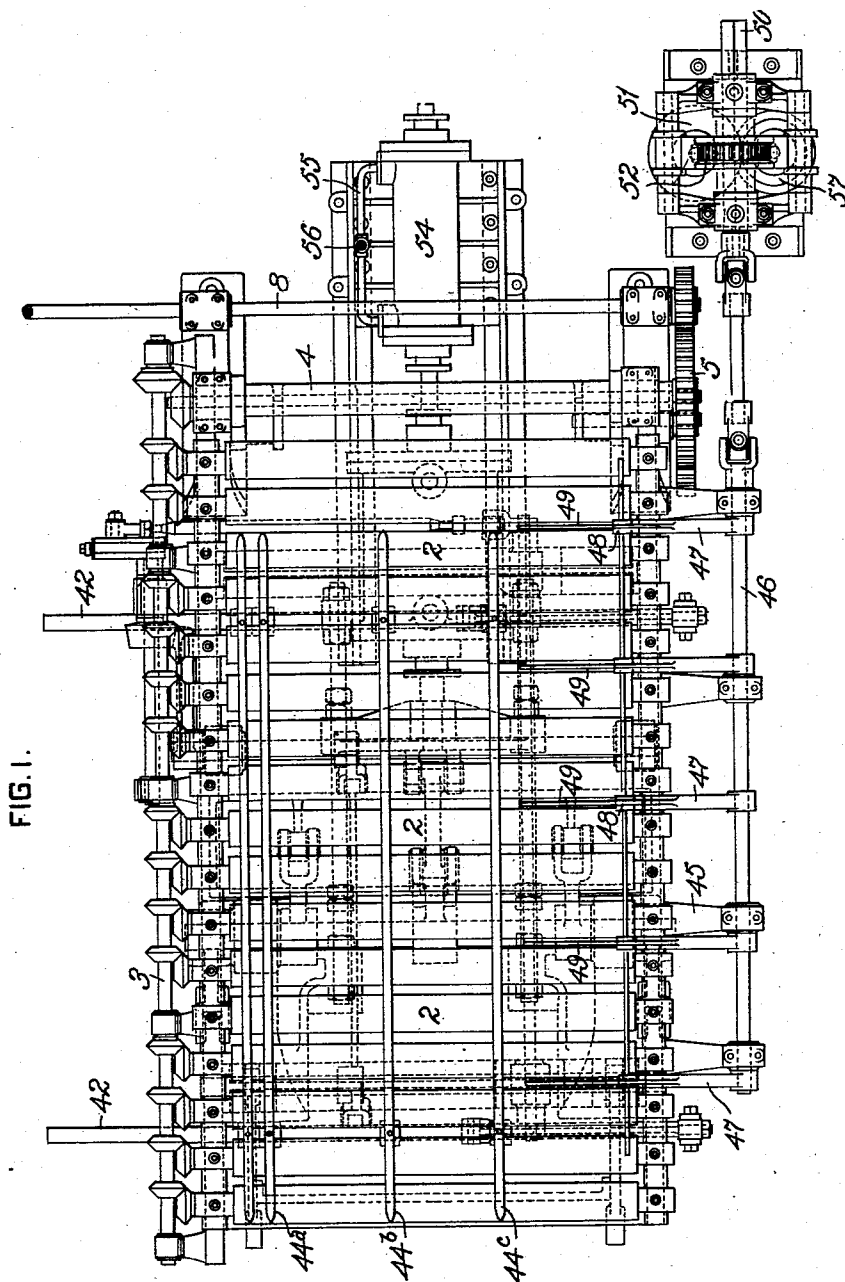


FIG. 1.

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(No Model.)

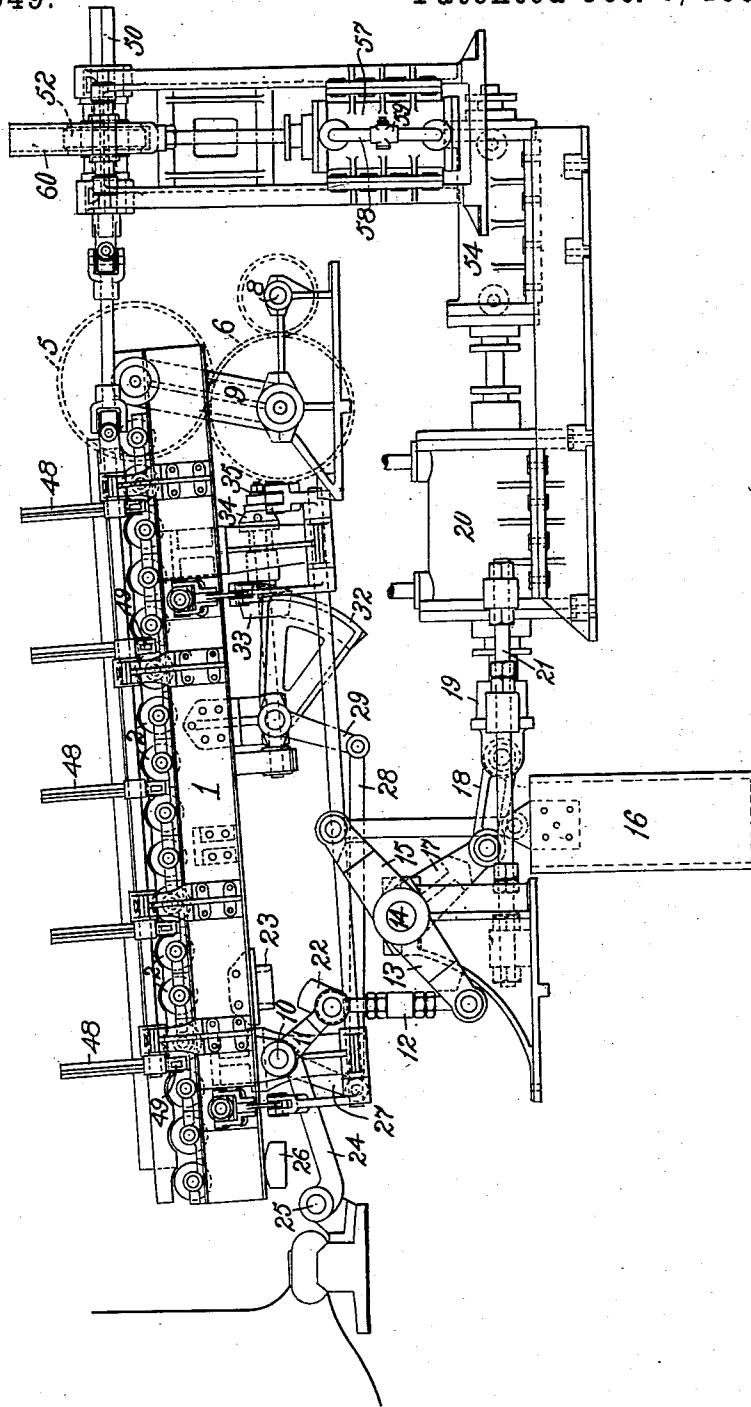
3 Sheets—Sheet 2.

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FIG. 2.



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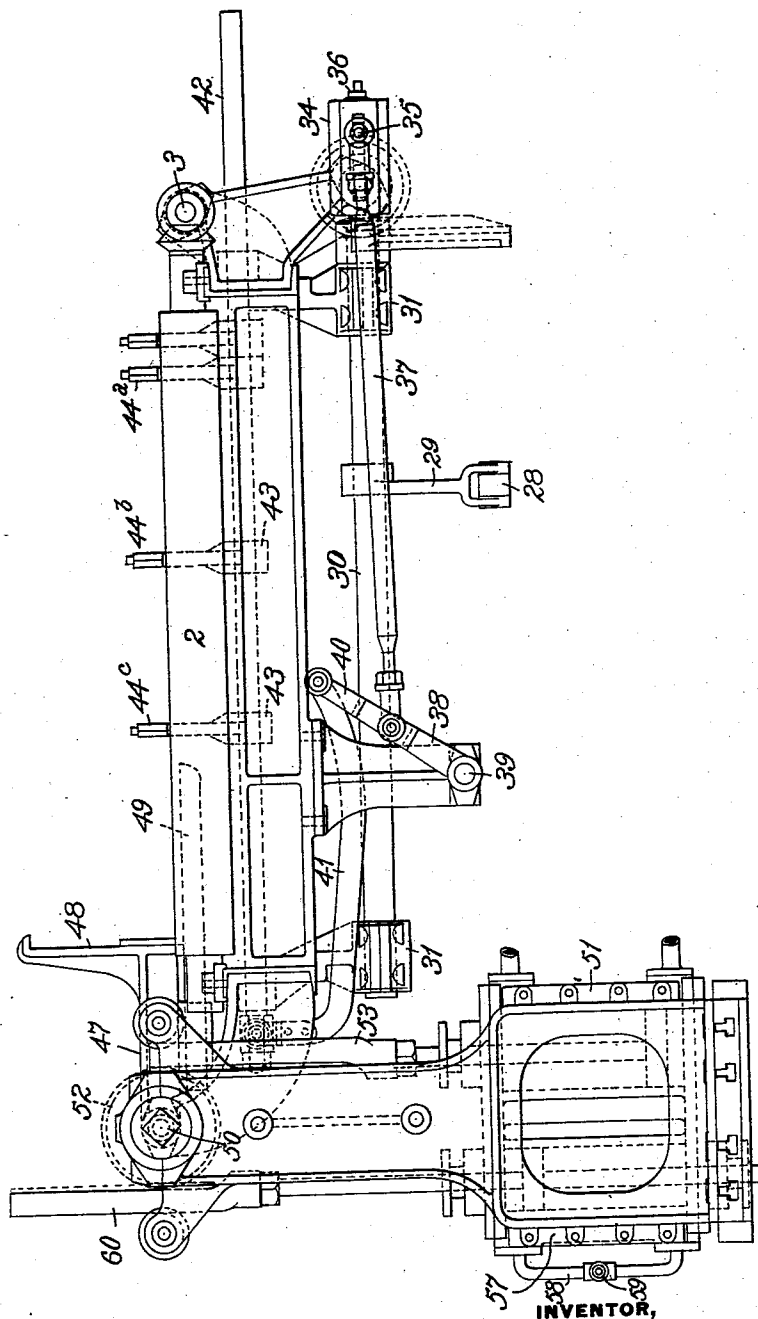
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FIG. 3.



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UNITED STATES PATENT OFFICE.

SIGMUND V. HUBER, OF YOUNGSTOWN, OHIO.

FEED-TABLE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 568,949, dated October 6, 1896.

Application filed August 5, 1896. Serial No. 601,691. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND V. HUBER, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, 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 articles may be fed toward and from the reducing-rolls, shifted to different horizontal positions, and also shifted laterally on the feed-table for the purpose of feeding or receiving the article to be reduced from different parts of the mill.

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

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of my improved feed-table. Fig. 2 is a side elevation of the same, and Fig. 3 is a rear end elevation.

The table consists of a rectangular frame, its sides being formed by suitable I-beams, on which are secured the bearings for the rollers 2. The journals at one end of the rollers are provided with suitable beveled pinions adapted to intermesh with correspondingly-shaped pinions on the counter-shaft 3, which in turn is driven by one of the feed-rollers 4, preferably that one at the rear end of the table, as shown in Figs. 1 and 2. The opposite end of this roller 4 has secured thereto a pinion 5, adapted to intermesh with a pinion 6, which in turn is driven by a pinion on the power-shaft 8. The rear end of the table is pivotally supported with the freedom of longitudinal movement by means of links 9, which are pivotally connected at their upper ends to the frame of the table and have their lower ends mounted on the shaft of the pinion 6.

A shaft 10 is mounted in suitable bearings secured to the under side of the table adjacent to its front end, and on this shaft is secured an arm 11, whose outer end is pivotally connected by a link 12 to an arm 13 on the shaft 14. An arm 15 extends on the opposite side of the shaft in line with arm 13, and to this arm is secured a counterweight 16. On shaft 14 is also secured an arm 17, whose outer end

is connected by a link 18 to the cross-head 19 of the piston of the cylinder 20, which is preferably tied to the bearings of the shaft 14 by rods 21, which also serve as guides for the cross-head of the piston. By the admission of the fluid-pressure into the cylinder 20 the arm 11 on shaft 10 will be raised through the medium of arm 17, shaft 14, and arm 13. On the arm 11 is secured a block 22, adapted as the arm moves upward to enter a socket 23 on the under side of the table, and by the continued movement of the arm 11 lift the table a sufficient height to feed the article to be reduced between the upper and middle rolls of the mill. As shown in Fig. 2, the front end of the table is connected by a link 24 to the housings of the rolls. This link is loosely mounted on the shaft 10 and also on a pivotal pin 25 on the roll-housings. It follows from this construction that as the table is raised it will be drawn by the link 24 in toward the rolls, thereby diminishing the space between the inner end of the table and the rolls. The front end of the table is normally supported in its lowered position by a transverse bar 26, as shown in Fig. 2.

On the shaft 10 is secured an arm 27, whose free end is connected by rod 28 to an arm 29 on the shaft 30, which is mounted in suitable bearings 31, secured to the under side of the table, as shown in Fig. 3. On this shaft is also secured a toothed segment 32, adapted to intermesh with the pinion 33. On the shaft of the pinion 33 is keyed a block 34, which is provided with a radial slot for the reception of a block carrying a pin 35, said block being adjustable in the slot toward and from the center of rotation of the block 34 by a screw 36. The pin 35 is connected by a rod 37 to an arm 38 on shaft 39, and on this shaft are also keyed two or more arms 40, which are also connected by bars 41 to the ends of rods 42, which are arranged in suitable bearings transversely of the table, as shown in Figs. 1 and 3. On these transverse bars 42 are adjustably secured a series of posts 43, whose upper ends project up between the rollers of the feed-table, and on the upper ends of these posts are secured the guide-bars 44.

It will be observed by reference to Fig. 2 that the arm 11, and consequently the shaft 10, will move through a considerable arc before the lifting-block 22 will strike against the socket 23. During this "preliminary"

movement, as it might be termed, of the arm 11 the arm 27 is shifted, and through it, by means of the mechanism just described, the transverse bars and guides are also shifted transversely of the table, so that the article 5 lying between the guides will be shifted from the position where it was placed by its movement onto the table. It will be observed that the guide-bars 44 are shifted transversely of 10 the table while the latter is in its lower position, so that the work thrown upon the cylinder, *i. e.*, that of lifting the table and also of laterally shifting any article upon the table, is effected in sequence.

As shown in Fig. 1, a series of brackets 45 are secured to one side of the table, said brackets being provided at their outer ends with suitable bearings for the shaft 46. On this shaft 46 are secured a series of tilting frames 20 47, provided with arms 48 and 49, arranged at right angles to each other, as shown in Figs. 1 and 3. When in normal position, the arm 49 will lie below, but approximately parallel with, the rollers of the table, and the arms 48 25 will project up at right angles at one side of the table, as shown. The shaft 46 is connected by a double universal joint with the shaft 50, which is mounted in suitable bearings at the upper end of standards formed on 30 or secured to the bed-plate carrying the operating-cylinder 51. On the shaft 50 is keyed the pinion 52, adapted to intermesh with the toothed rack 53, secured to the rod of the piston of the cylinder 51. As this is moved up, 35 the shaft 50, and with it the shaft 46, will be rotated through an arc of one hundred and eighty degrees, carrying with it the tilting frames 47, so that any piece lying upon the feed-rollers above the arm 49 when in normal 40 position, as shown in Fig. 3, will be lifted from the feed-rollers and dropped by the tilting frames entirely outside of the feed-table and to the left thereof, as shown in Fig. 3.

In order to prevent any shock or injury to 45 the operating mechanism when an expanding fluid, as steam, is used in the operating-cylinders, cushioning cylinders are connected to the operating mechanism. In applying the cushioned cylinder to the cylinder 20, employed in lifting the table, the piston-rod is 50 extended back, so as to connect with the piston in a cylinder 54, arranged on the same bed-plate with the operating-cylinder 20. As shown in Fig. 1, the opposite ends of the cylinder 54 are connected by a pipe 55, in which 55 is located a valve 56, which will regulate the flow of fluid from one end of the cylinder to the opposite end as said fluid is displaced by the piston in the cylinder. The cushioning 60 for the cylinder 51 for operating the tilting frames is effected by a cylinder 57, arranged parallel with cylinder 51, as shown in Fig. 3, and having its ends connected by a pipe 58, in which is located a valve 59. The piston of 65 the cylinder 57 is connected by its rod to a rack-bar 60, which intermeshes with the pinion 52.

In operating my improved table the article to be reduced is received onto the table when in its lower position between the guides 44^a 70 and 44^b. After the article has passed entirely onto the table between these guides fluid-pressure is admitted in the cylinder 20, thereby first shifting the guides 44 transversely of the table, and then lifting the front end of 75 the table vertically and causing the table to move bodily toward the rolls, so that the article lying between the guides 44^a and 44^b will be fed between the upper and middle rolls of the mill and into a groove in a different vertical 80 plane from that in which it is passing when being fed onto the table. After the article has passed off the table the latter is again lowered, the guides shifted back to normal position, so that the next pass the 85 article will enter between the guides 44^b and 44^a, when the foregoing operation is again repeated. At the last pass the article is fed over the arms 49 of the tilting mechanism, whereby the finished article is lifted from the 90 table and deposited outside thereof in the manner described.

I claim herein as my invention—

1. The combination of a frame having positively-driven rollers mounted thereon and 95 pivotally supported so as to move vertically through an arc of a circle, laterally-movable guides arranged above the feed-rollers, and means for raising the table and shifting the guides laterally, substantially as set forth. 100

2. The combination of a frame having positively-driven rollers mounted thereon and pivotally supported so as to move vertically through an arc of a circle, laterally-movable guides arranged above the feed-rollers, means 105 for raising the table and shifting the guides laterally, and a tilting frame for removing the articles rolled from the feed-table, substantially as set forth.

3. The combination of a frame having positively-driven rollers mounted thereon, links 110 connecting the table with stationary supports, a shaft provided with arms mounted on the table, one of said arms being provided with a lifting-block, longitudinally-arranged 115 guides above the feed-rollers, connections from said guides to the other arm on said shaft and means for rotating the shaft, substantially as set forth.

4. The combination of a feed-table having 120 positively-driven feed-rollers, laterally-movable guides arranged above the feed-rollers, means for shifting said guides, tilting frames having one of its arms normally below the feed-rollers, and means for rotating the tilt- 125 ing frame, substantially as set forth.

In testimony whereof I have hereunto set my hand.

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Witnesses:

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