No. 614,326. Patented Nov. 15, 1898.

S. V. HUBER.

FEED TABLE FOR ROLLING MILLS.

(Application filed June 12, 1897. Renewed Sept. 24, 1898.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

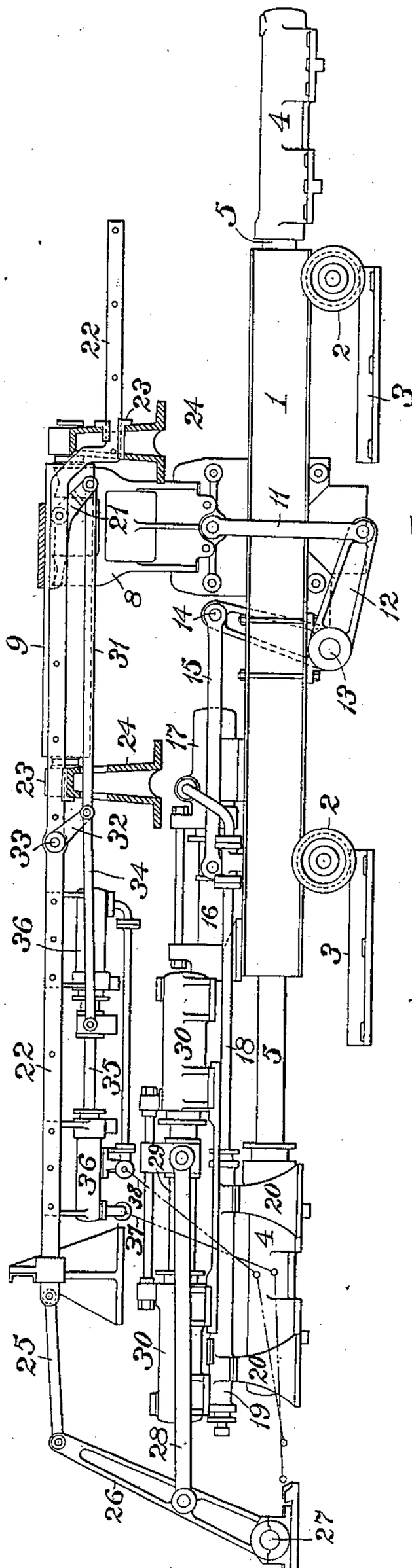
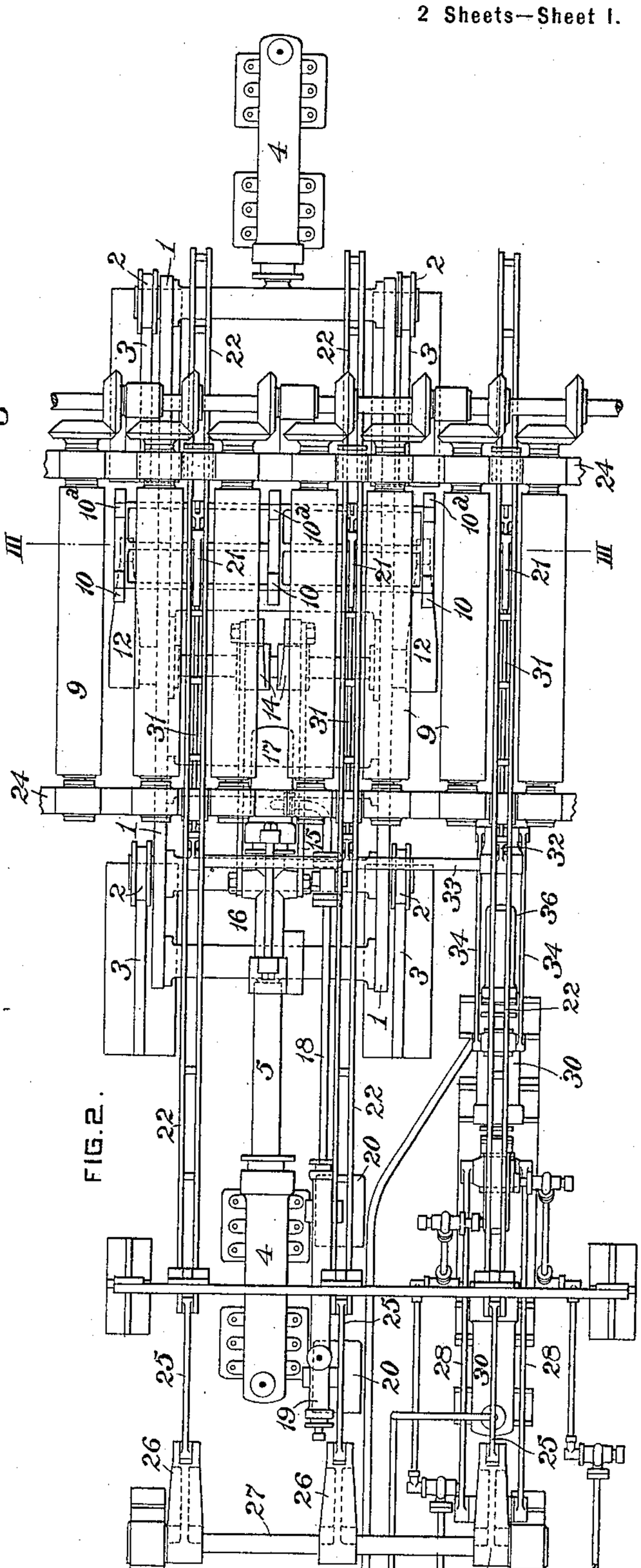


FIG. 2.



WITNESSES:

Chas. F. Miller.

F. E. Gaither

INVENTOR.

Sigmund V. Huber

by Dennis B. Wolcott

Att'y.

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(No Model.) 2 Sheets—Sheet 2.

FIG. 3.

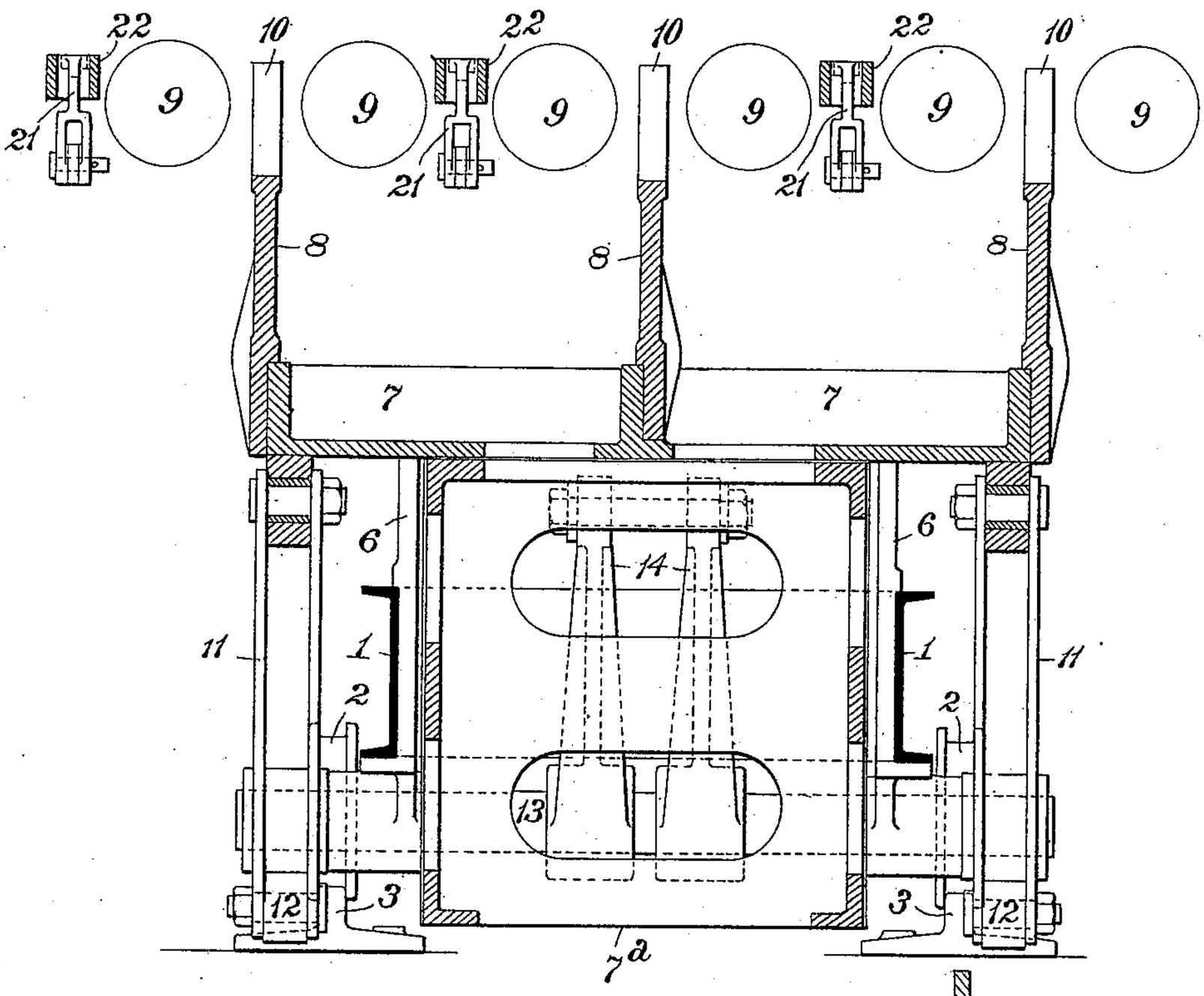


FIG. 4.

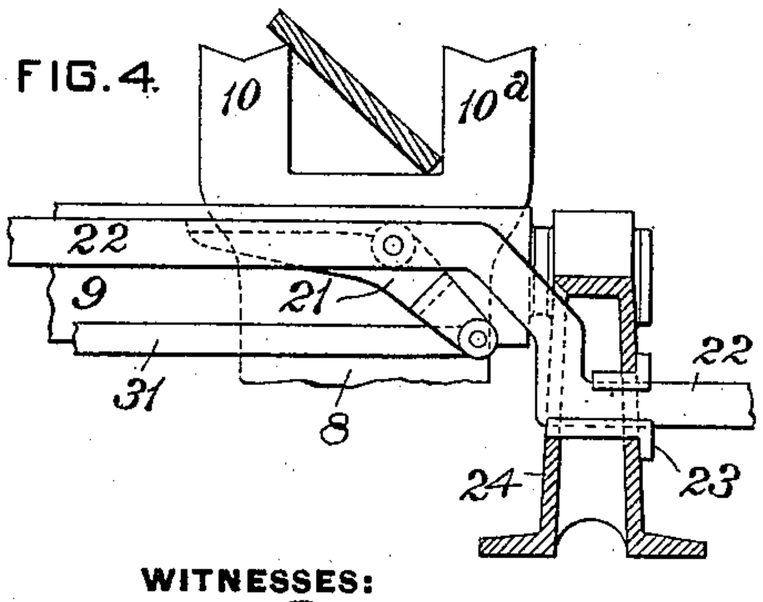
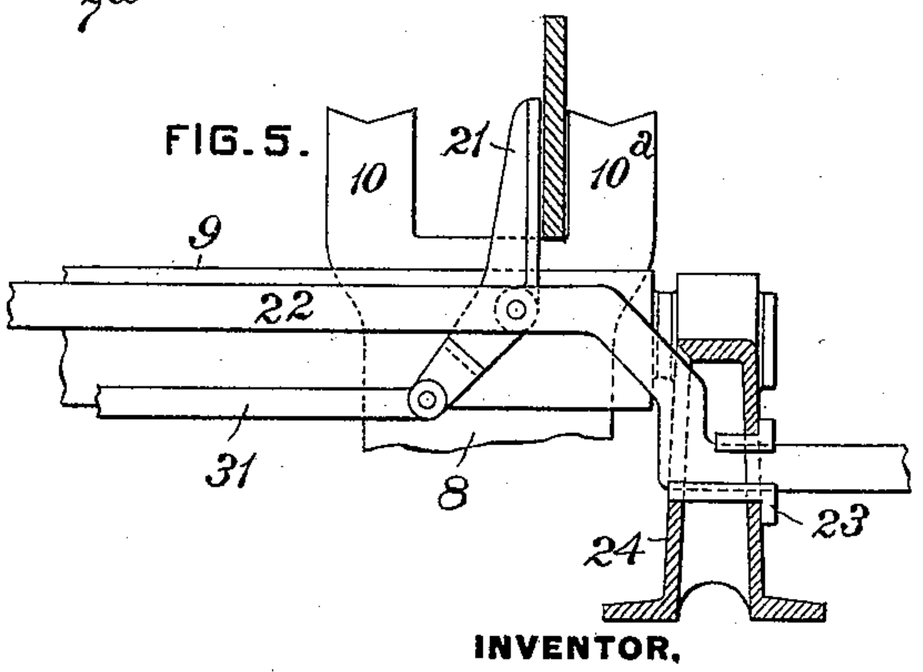


FIG. 5.



WITNESSES:

Chas. F. Miller.

F. E. Gaither.

INVENTOR,

Sigmund V. Huber

by Darwin S. Wolcott

Att'y.

UNITED STATES PATENT OFFICE.

SIGMUND V. HUBER, OF YOUNGSTOWN, OHIO.

FEED-TABLE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 614,326, dated November 15, 1898.

Application filed June 12, 1897. Renewed September 24, 1898. Serial No. 691,831. (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 mechanism for shifting and axially rotating ingots, slabs, &c., during the process of rolling, and has for its object a construction and arrangement of mechanical devices whereby an ingot, slab, &c., may be moved laterally on the feed-table of a rolling-mill and whereby the slabs may be turned and held on their edges while being fed into the rolls.

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

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my improved manipulating mechanism. Fig. 2 is a top plan view of the same, showing its position in relation to the feed-table. Fig. 3 is a sectional elevation, the plane of section being indicated by the line III III, Fig. 2. Figs. 4 and 5 are detail views of the mechanism for axially rotating and shifting a slab, the several parts employed in such operation being shown in the positions which they will occupy at the beginning and end of the operation.

In the practice of my invention I employ a truck consisting of a frame formed of I-beams 1, supported on wheels 2, which are adapted to move along rails 3, so arranged that the truck will move transversely of the feed-table. The truck is moved by means of fluid-pressure cylinders 4, preferably of the single-acting type, and arranged at opposite ends of the truck and having their plungers 5 connected to the truck, as clearly shown in Figs. 1 and 2. As shown in Fig. 3, the truck is provided with suitable guides 6 for the truck portion 7^a of the frame 7, to which are secured the posts or standards 8, projecting up between the rollers 9 of the feed-table. The upper ends of the posts or standards 8 are preferably provided with prongs or fingers 10 10^a, which are preferably formed with spurs, so as take a firm engagement on the ingot or slab to be shifted. As shown in Figs. 1 and 3, the frame 7, carrying the posts or standards, is connected by links 11 to the arms 12, which are secured on a shaft 13. This shaft has also secured thereto an arm 14, connected by a link 15 to the piston-rod 16 of the fluid-pressure cylinder 17, which is mounted upon suitable supports upon the truck. This cylinder is connected to an expansion-coupling, consisting of the pipe 18, which projects or extends into the tube 19, mounted on standards 20, secured upon a suitable foundation. One end of the pipe 18 is secured upon the truck and is connected to the cylinder 17, while the opposite end thereof extends into the tube 19, which in turn is connected to a suitable source of fluid-supply. It will be readily understood by those skilled in the art that an ingot or slab resting upon the feed-rollers 9 of the table can be shifted along the feed-rollers by raising the posts or standards 8 and then shifting the truck back and forth, as required. An axial rotation of the ingot or slab can be effected by shifting the truck until one of its prongs or fingers 10 or 10^a is under one edge of the billet or slab and then forcing the post or standard 8 upward.

While an axial rotation of the billet or slab can be effected in the manner described, it is evident that the prongs or fingers 10 or 10^a will not turn the slab onto its edge nor hold the slab in such position while it is being fed into the rolls. In order to produce and maintain this edging position of a slab, a series of arms are so mounted with relation to the standards or posts 8 as to be capable by an up-and-down movement of completing the axial movement of the slab onto its edge and by a horizontal movement, if necessary, shifting the slab laterally against the sides of the prongs or fingers. A convenient means for thus turning and holding a slab in an edging position consists of a series of bent arms 21, pivotally mounted on bars 22, which in turn are adapted to move back and forth in guides 23, preferably formed in the side bars 24 of the feed-table. These bars 22 are connected at one end by links 25 to arms 26, which have their lower ends secured to a shaft 27, as clearly shown in Figs. 1 and 2. One of

these arms 26 is connected at a point intermediate of its ends by links 28 to a plunger 29 of the fluid-pressure cylinders 30. By the admission of fluid-pressure into these cylinders the slide-bars 22 may be shifted back and forth, as required. As clearly shown in Figs. 1, 4, and 5, the arms 21 are so pivoted upon the slide-bars 22 that one end thereof may be turned up to a vertical position, projecting above the feed-roller 9 of the table. The opposite ends of these arms are connected by rods 31 to the lower ends of arms 32, having their opposite ends secured on a shaft 33, which is mounted in suitable bearings in the slide-bars 22. One of these arms 32 is connected by a link 34 to the plunger 35 of the fluid-pressure cylinders 36, which are secured to the slide-bars 22, as clearly shown in Figs. 1 and 2. These cylinders are connected by pipes 37 and 38, having flexible joints, to a suitable source of fluid under pressure, as clearly shown in Fig. 2 and indicated by dotted lines in Fig. 1. In operating this rotating device the posts or standards 8 are so shifted by the truck that when raised one edge of the slab will drop in between the fingers 10 10^a, as shown in Fig. 4. Fluid-pressure is then admitted to cylinders 30, so as to shift the slide-bars 22 to bring the turning arms into proper position. Fluid-pressure is then admitted into the cylinders 36, thereby moving the free end of the arms 21 up, so as to turn the slab onto its edge and clamp it against one of the fingers, as 10^a, as clearly shown in Fig. 5. Then by the admission of fluid-pressure into the truck-cylinders 4 and also into the cylinders 30 the slab may be shifted along the feed-table, so as to bring it into line with the proper feed-pass of the rolls. As shown in Figs. 4 and 5, an initial axial rotation is effected by the prongs or fingers 10. Such initial operation is not, however, necessary, as the posts or standards can be raised to one side of the slab, which can then be turned on edge against the outside wall of the post or standard. If desired, an ingot, slab, &c., may be shifted laterally on the table by means of the arms 21. In effecting such an operation the bars 22 are first moved to such position that the arms 21 will when turned to vertical position project up on the proper side of the ingot. The arms 21 are then turned to vertical position, and the bars 22 are shifted by their cylinders 30.

While the mechanism described and shown is considered to be a most effective embodiment of my invention, I do not limit myself to such particular construction, as many changes in the relative arrangement and construction of the parts directly operative on the ingot or slab or other article and also of the mechanism for operating such parts will readily suggest themselves to those skilled in the art.

I claim herein as my invention—

1. In a rolling-mill the combination of the feed-table, vertically and laterally movable posts or standards and arms movable up and down and horizontally, the posts or standards and arms constructed and arranged so as to turn and hold the billet in its turned position, substantially as set forth.

2. In a rolling-mill the combination of the feed-table, a truck movable transversely of the table, vertical movable posts or arms mounted on the truck, bars movable transversely of the table and arms movably mounted on said bars, substantially as set forth.

3. In a rolling-mill, the combination of a feed-table, bars movable transversely of the table, arms movably mounted on said bars and mechanism movable with the bars for shifting the arms, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SIGMUND V. HUBER.

Witnesses:
DARWIN S. WOLCOTT,
F. E. GAITHER.