(No Model.)

2 Sheets—Sheet 1.

S. V. HUBER.

CATCHER'S TABLE FOR ROLLING MILLS.

No. 581,935. Patented May 4, 1897.

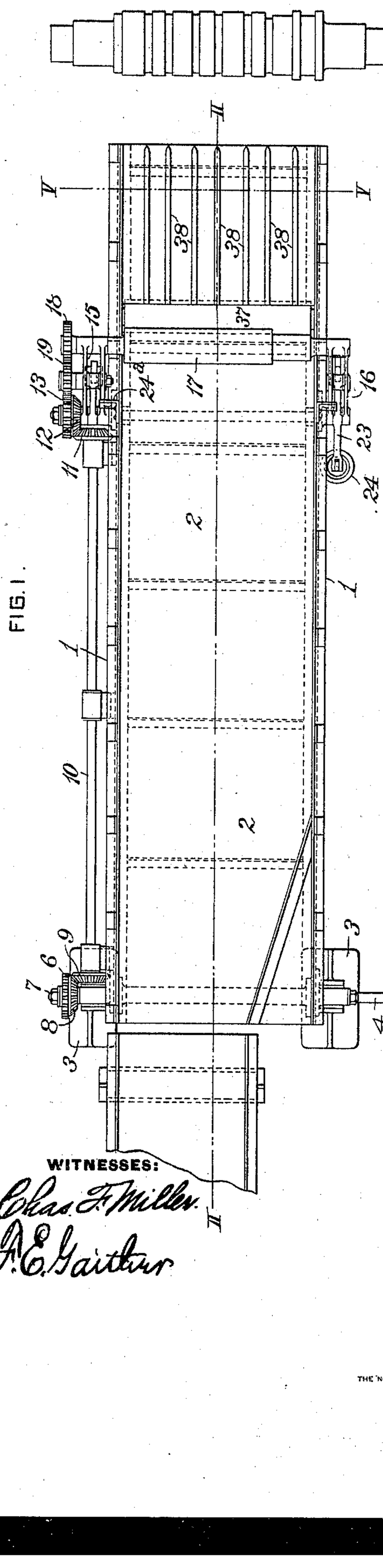

FIG. 1.

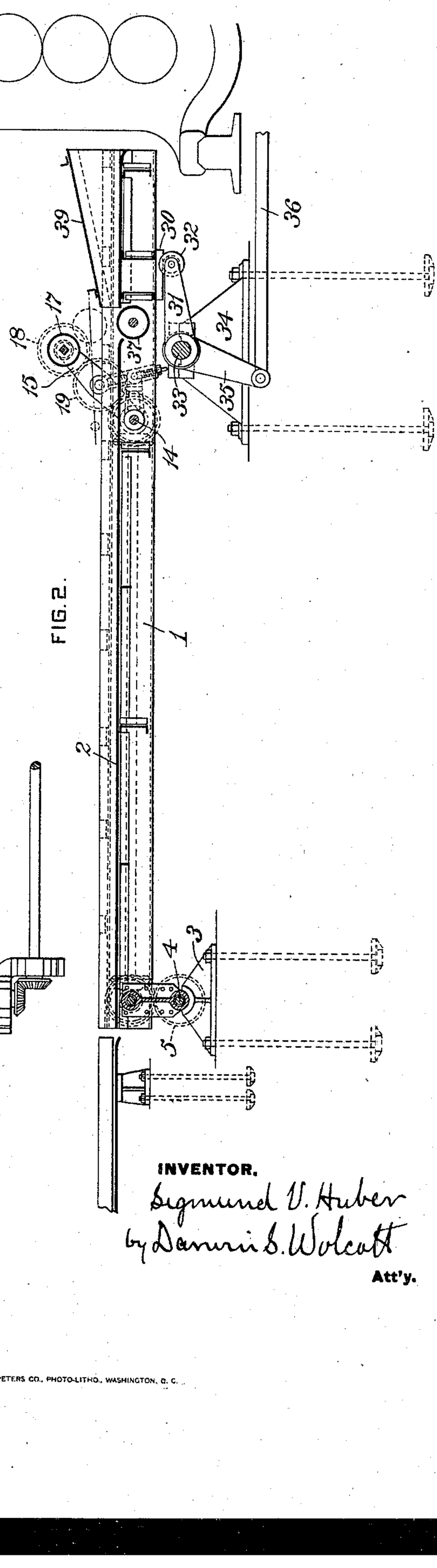

FIG. 2.

WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 4.

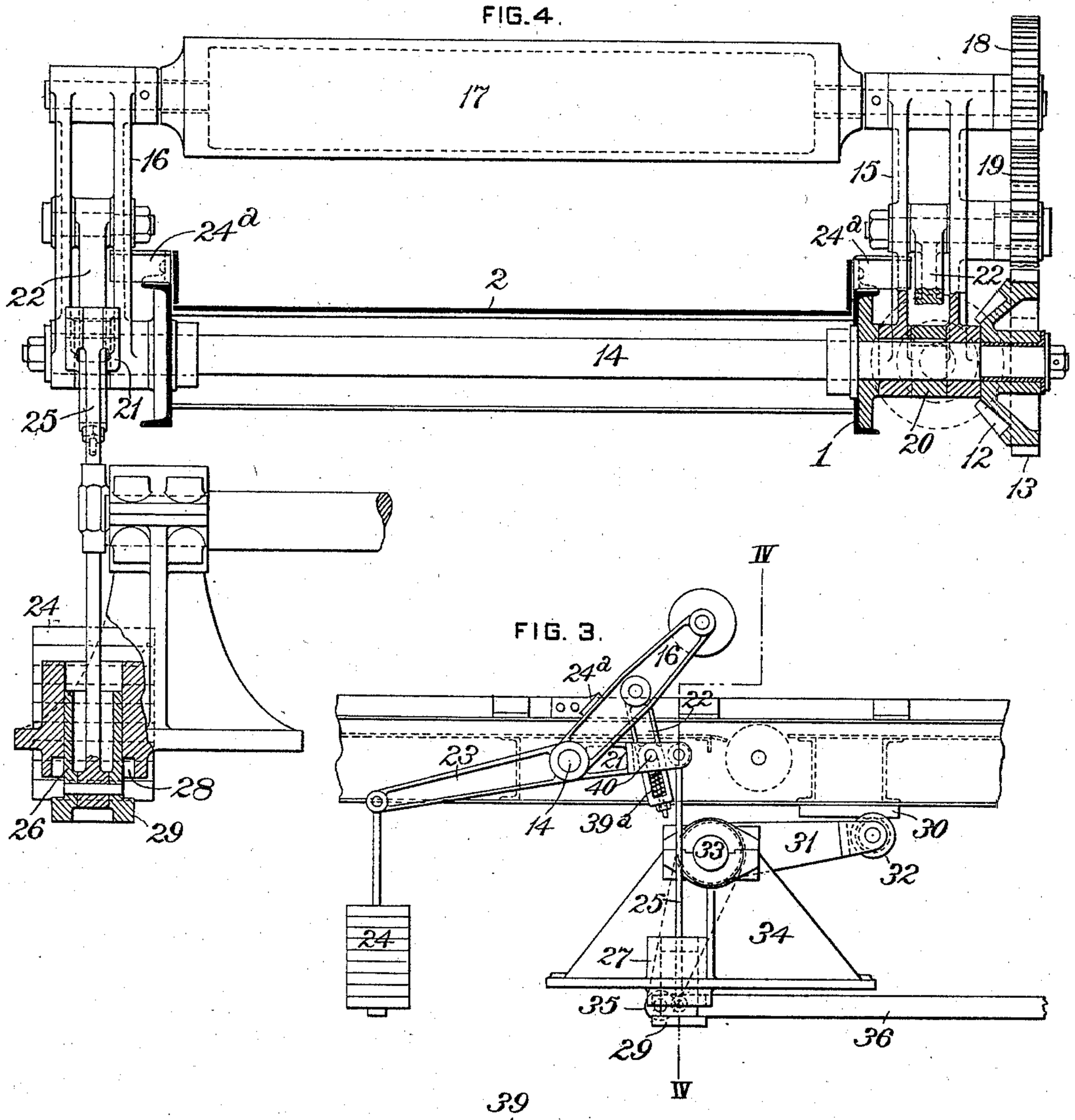
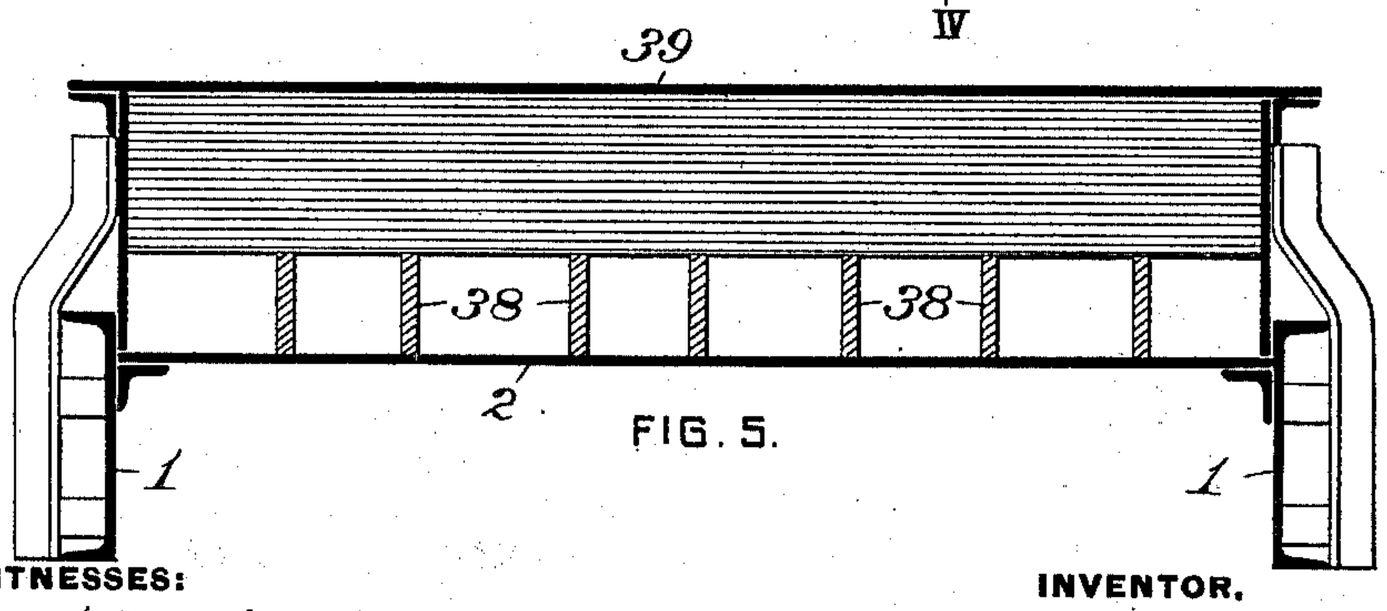


FIG. 3.

FIG. 5.



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UNITED STATES PATENT OFFICE.

SIGMUND V. HUBER, OF YOUNGSTOWN, OHIO.

CATCHER'S TABLE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 581,935, dated May 4, 1897.

Application filed February 1, 1897. Serial No. 621,480. (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 a certain new and useful Improvement in Catchers' Tables for Rolling-Mills, of which improvement the following is a specification.

The invention described herein relates to certain improvements in feeding mechanism for rolling-mills.

It has heretofore been customary in order to avoid a multiplicity of feed-rollers in the table to arrange a positively-driven feed-roller in the plane of the bite between the upper and middle rolls of the reducing-mill, so that when the table carrying the piece to be fed between said rolls is raised to feed position the article will be pressed against such feed-roller, and by its action, in connection with that of one or more rollers on the table, the article will be forced in between the reducing-rolls. It has been customary to support this auxiliary feed-roller by suitable brackets projecting from the housing of the rolls; but such an arrangement has been found objectionable for the reason that if the article is forced by the action of the middle and lower rolls such a distance onto the table that the rear end of the article is not adjacent to the front end of the feed-table the article will not be caught by the auxiliary feed-roller when the table is raised, thereby necessitating the feeding of the article by hand and delaying the operation of the mill. If the auxiliary feed-roller should be arranged a greater distance from the reducing-rolls, so as to avoid the objection described, other and more serious difficulties are encountered—as, for example, if the auxiliary roller be so located as to properly feed a piece of normal thickness between the middle and upper rolls it will commence to operate and feed a piece of greater thickness into the rolls before the table has reached a position for the proper guidance of the article between the rolls. If, on the other hand, the auxiliary roller be raised somewhat to overcome the foregoing difficulty, then when rolling an article of a thickness greater than that normally rolled the action of the reducing-rolls will tend to bend or flex the article around the front end of the table, thereby, if the article is comparatively rigid, injuring either the feed-table or the auxiliary feed-roller.

The object of the present invention is to provide an auxiliary feed-roller whose position shall be dependent upon and controlled by the movements and positions of the feed-table. 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 feed-table having my improvements applied thereto, the deflecting-hood being removed. Fig. 2 is a sectional elevation of the same, the plane of section being indicated by the line II II, Fig. 1. Fig. 3 is a detail view illustrating, on an enlarged scale, the mechanism for operating the feed-table and the auxiliary roller. Fig. 4 is a sectional elevation on an enlarged scale, the plane of section being indicated by the line IV IV, Fig. 3; and Fig. 5 is a transverse section of the feed-table in a plane indicated by the line V V, Fig. 1.

In the practice of my invention the feed-table is formed by the channel-bars 1, forming the sides of the frame, and transverse channel-bars on which are secured the supporting-aprons 2. At its rear end the table is pivotally supported on blocks 3, which are provided with bearings for the shaft 4, extending across the table and having a pinion 5 keyed to its end. This pinion meshes with a toothed wheel 6, loosely mounted on a shaft 7, supported on the side bars 1 of the table. The toothed wheel 6 has a beveled gear-wheel 8, formed on or secured to one side thereof and adapted to intermesh with a bevel-pinion 9 on one end of the shaft 10. On the opposite end of this shaft is keyed a bevel-pinion 11, arranged to intermesh with a correspondingly-shaped pinion 12, formed on or secured to the gear-wheel 13, which is loosely mounted upon a shaft 14, extending across the feed-table and adapted to serve as pivotal supports for the arms 15 and 16. The upper ends of the arms 15 and 16 are provided with bearings for the journals of the feed-roller 17,

the journal at one end of the roller being extended sufficiently far beyond its bearing to permit of the gear-wheel 18 being keyed thereon. This gear-wheel and the roller are positively driven by the gear-wheel 13 through the medium of a toothed idler 19, mounted upon a pin secured to the arm 15, as clearly shown in Fig. 4. On the shaft 14, and preferably between the sections of the arms 15 and 16, are keyed arms 20 and 21, which are connected to the arms 15 and 16 by links 22, so that when said arms are pulled down or held from movement when the table is raised the arms 15 and 16 will be moved toward the table, or vice versa. One of the arms, as 21, has an oppositely-projecting extension 23, and a weight 24 is connected to the outer end of such extension for the purpose of maintaining the roller 17 in its raised position. The upward movement of the roller 17 when actuated by the weight 24 is limited by the stop 24^a. The end of the arm 21 is connected by a rod 25 to a piston 26, moving in the guide-cylinder 27, which is provided at its lower end with an annular enlargement or recess 28 for the reception of the head 29 on the piston. As this head or enlargement enters the annular recess 28, sufficient air will be confined to form an air-cushion and relieve the operating mechanism of the roller 17 from shocks or jars incident to too rapid shifting of the table.

The table is provided on its under side and near its front end with bearing-blocks 30, against which the outer ends of the arms 31 will bear, preferably through the medium of a friction-roller 32. The arms 31 are keyed on a shaft 33, mounted in suitable bearings on the blocks 34, and are operated by any suitable mechanism through the medium of the arm 35, also keyed to the shaft 33. It is preferred to operate the shaft 33 to raise and lower the table by the mechanism employed for operating the roller's table on the opposite of the reducing-rolls, such mechanism being connected by a rod 36 to the arm 35.

The feed-roller 37, which may be positively driven, if desired, is mounted in suitable bearings on the table in such position as to be in or approximately in the vertical plane of the feed-roller 17 when the table and the roller 17 are brought into such relation to each other by the raising of the table as to be operative to shift the article. In front of the roller 37 the table is provided with a series of guide-strips 38, arranged in line with the spaces between the passes in the reducing-rolls.

It frequently happens in rolling comparatively thin articles that the front end thereof will, after passing through the reducing-rolls, curl up, and if such upward curling is considerable the upturned end might pass over the feed-roller 17 instead of under it. In order to prevent such misdirection of the article, an inclined hood or shield 39 is arranged over the feed-table in front of the roller 17. This shield will direct the forward end of the article under the roller 17.

In operating my improved feed mechanism after the article has passed onto the table from the reducing-rolls the shaft 33 is rotated to lift the forward end of the table into such position as to guide the article when shifted, as hereinafter described, between the middle and upper reducing-rolls. During the preliminary upward movement of the table the roller 17 will be held at its normal distance from the table by the weight 24; but as soon as the head or enlargement on the end of the piston 26 enters the recess 28 in the cylinder the upward movement of the arms 20 and 21 will be checked, and as the table continues its upward movement the arms 15 and 16 will also be held from further movement by reason of their connection with the arms 20 and 21. The several connections from the stop-cylinder 27 to the roller 17 are so proportioned and arranged that by the time the table has reached its feed position, as above described, the roller 17 will be caused to bear against the article, and as the roller 17 is constantly driven the article will be fed into the bite of the middle and upper reducing-rolls.

As the thickness of the article to be rolled will vary considerably, provision is made for the automatic adjustment of the roller 17. This automatic adjustment is effected by the interposition of a spring 39^a under the pins 40, which pass through the arms 20 and 21 and slots in the ends of the links 22. With such capability of adjustment it is possible to arrange the roller 17 so as to properly bear upon the thinnest piece to be rolled when the table is raised to feed position, and it will automatically accommodate itself to pieces of greater thickness.

I claim herein as my invention—

1. The combination of a feed-table for rolling-mills, means for raising and lowering the table, and a positively-driven feed-roller arranged above the table and arranged to effect a longitudinal movement of an article when the table is shifted to feed position, substantially as set forth.

2. The combination of a feed-table for rolling-mills, means for raising and lowering the table, a positively-driven feed-roller, and means controlled by the movements of the table for moving the roller toward and from the table, substantially as set forth.

3. The combination of a feed-table for rolling-mills, means for raising and lowering the table, a positively-driven feed-roller, bearings for said roller movably mounted on the table, and a stop or anchor connected to said bearings, whereby the roller is limited in its movement during the upward movement of the table, substantially as set forth.

4. The combination of a feed-table for rolling-mills, means for raising and lowering the

table, a positively-driven feed-roller, bearings for said roller movably mounted on the table, and a stop or anchor yieldingly connected to said bearings, whereby the roller is limited in its movement during the upward movement of the table, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SIGMUND V. HUBER.

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