No. 764,850. PATENTED JULY 12, 1904.

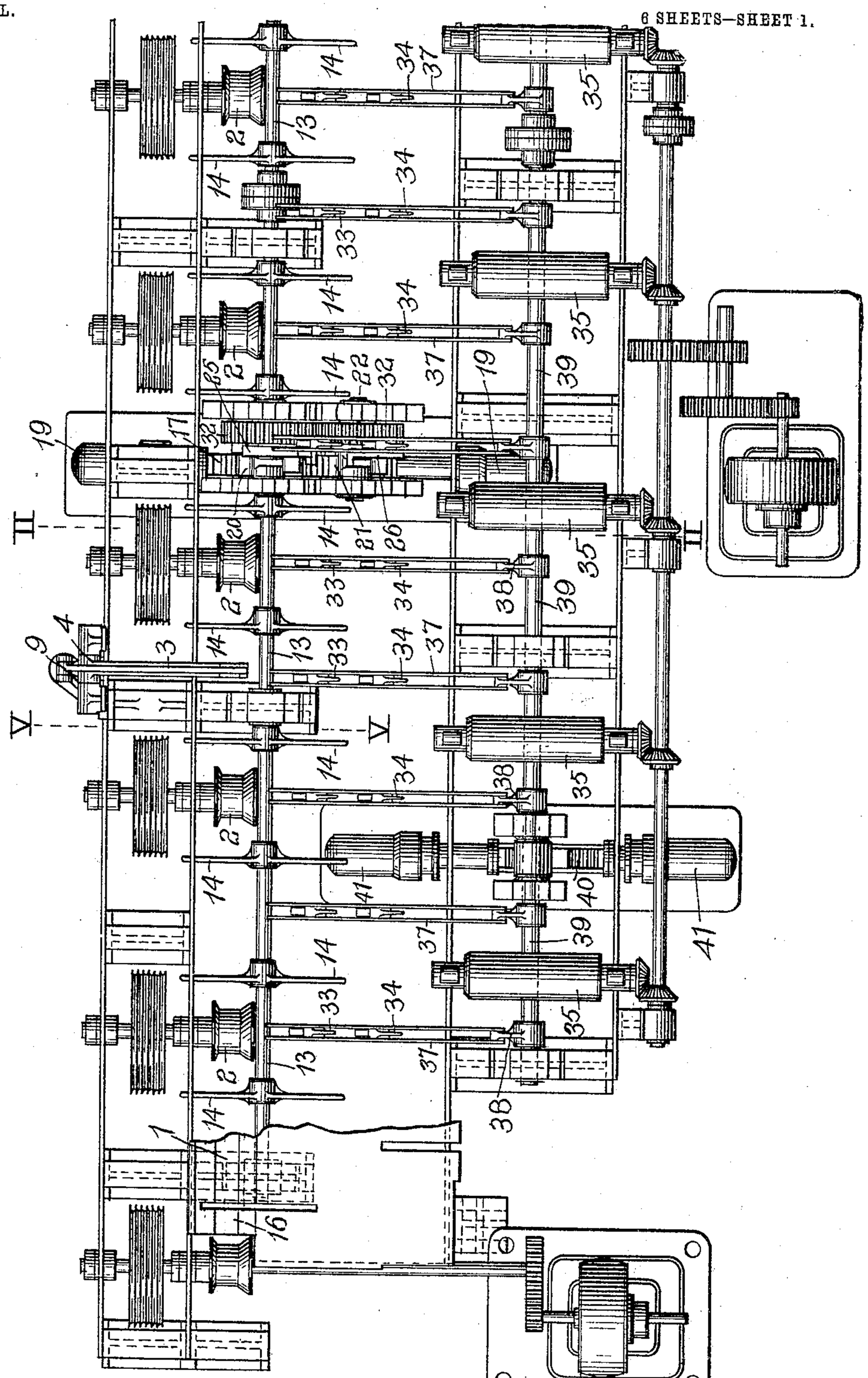
S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:
Herbert Bradley.
Fred Kirchner.

INVENTOR
Sigmund V. Huber
by Christy and Christy
Att'ys

No. 764,850. PATENTED JULY 12, 1904.

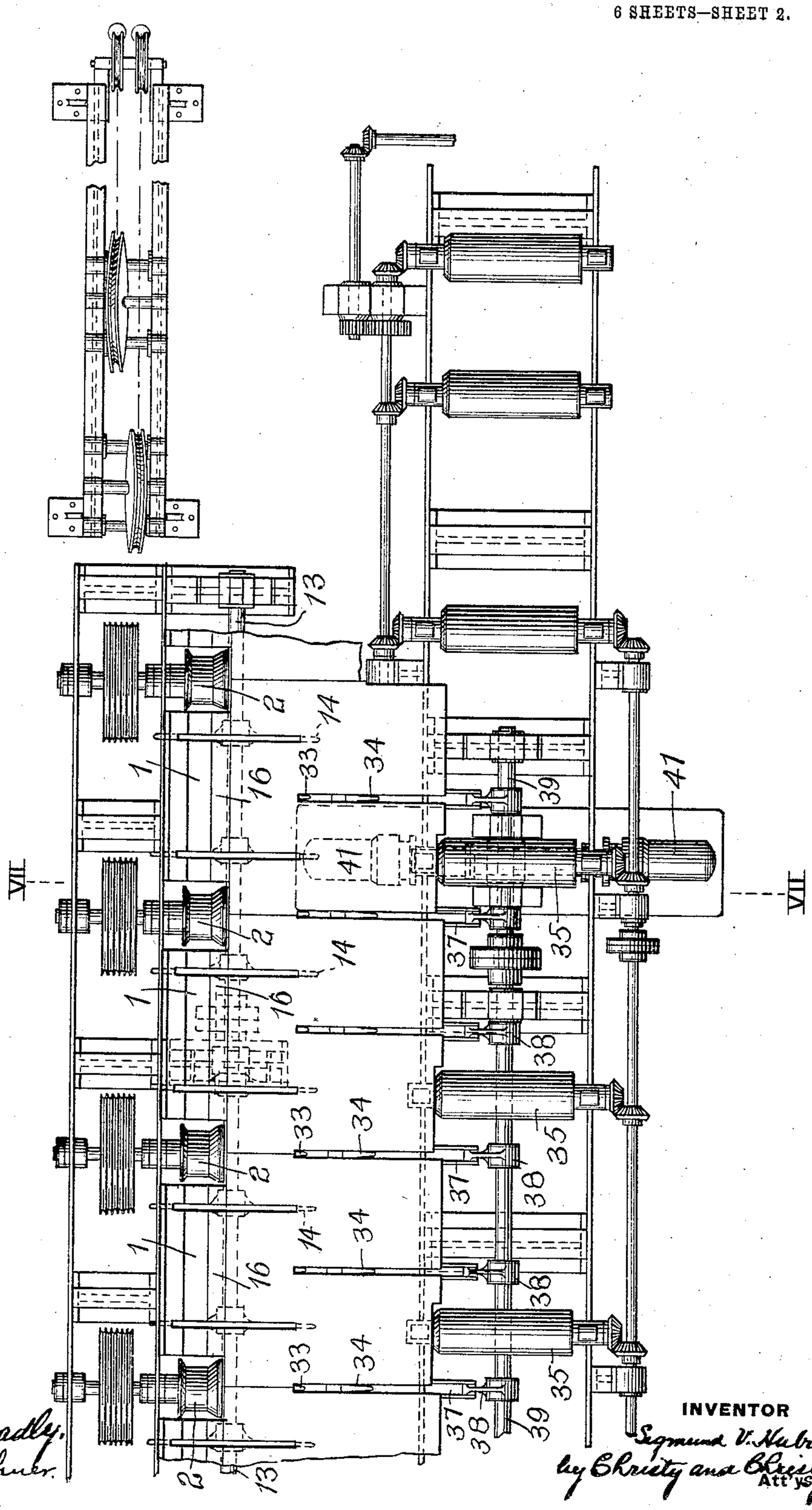
S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 2.

FIG. 1a



WITNESSES:

Herbert Bradley.

Fred Kirchner.

INVENTOR

Sigmund V. Huber

by Christy and Christy

Att'ys

No. 764,850. PATENTED JULY 12, 1904.

S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 3.

FIG. 2.

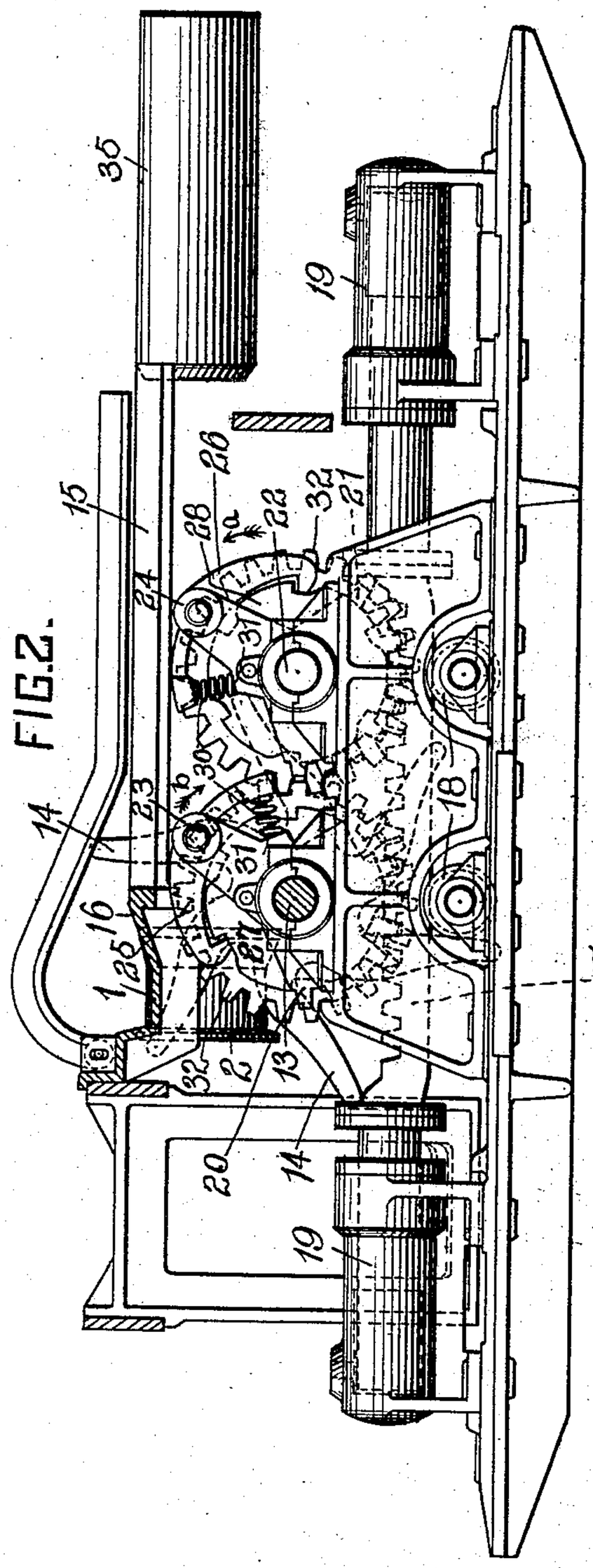


FIG. 4.

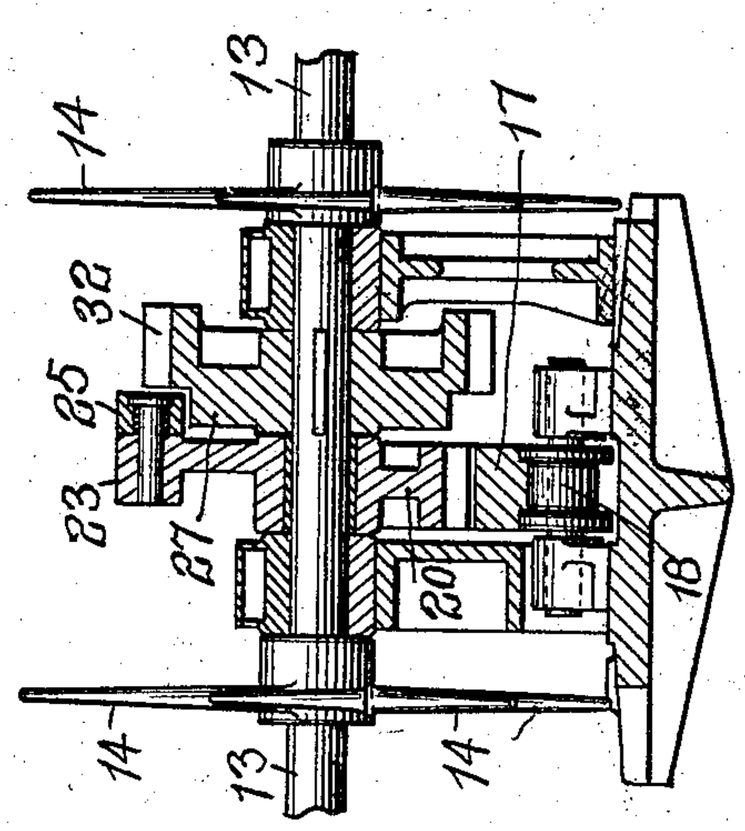
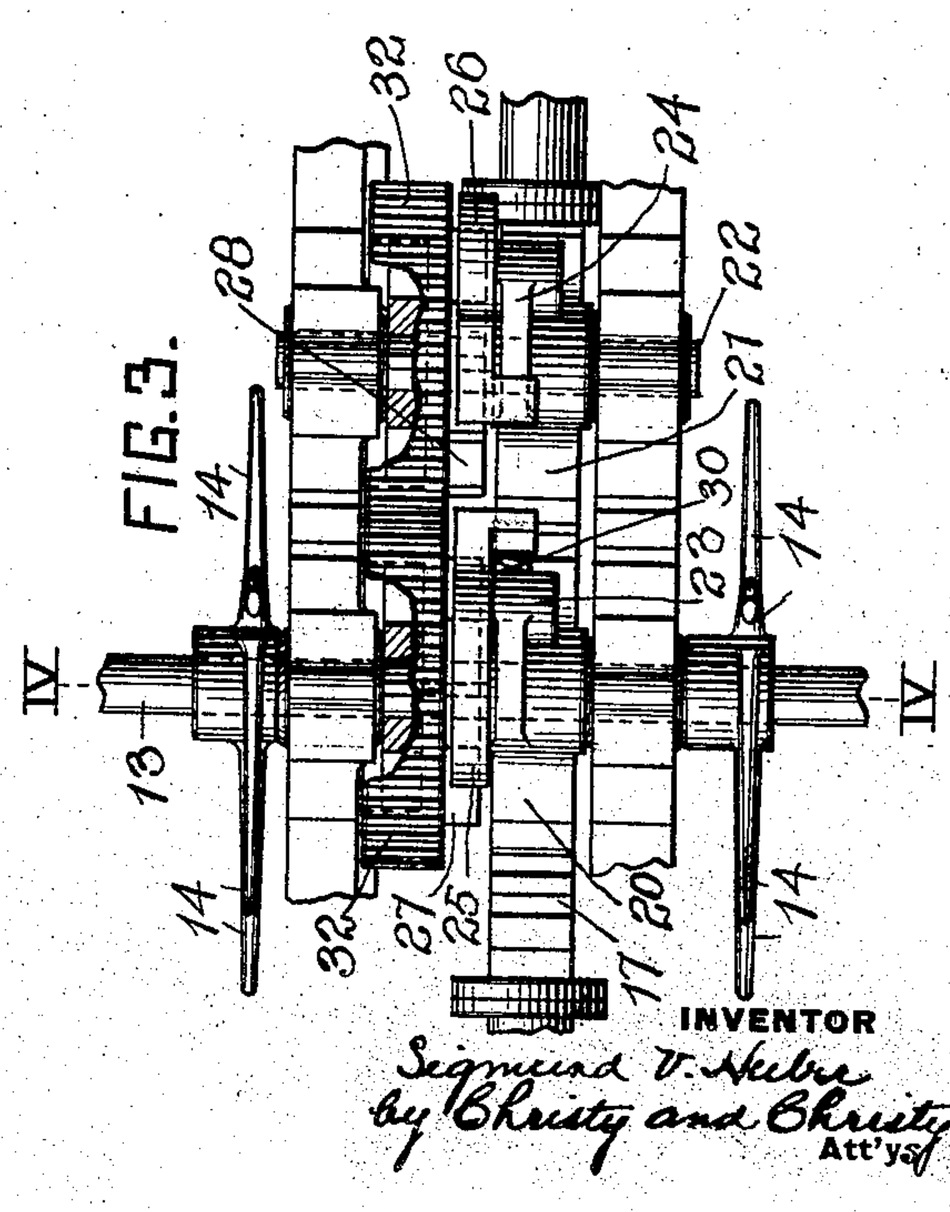


FIG. 3.



WITNESSES:
Herbert Bradley.
Fred Kirchner.

INVENTOR
Sigmund V. Huber
by Christy and Christy
Att'ys.

No. 764,850. PATENTED JULY 12, 1904.

S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 4.

FIG. 5.

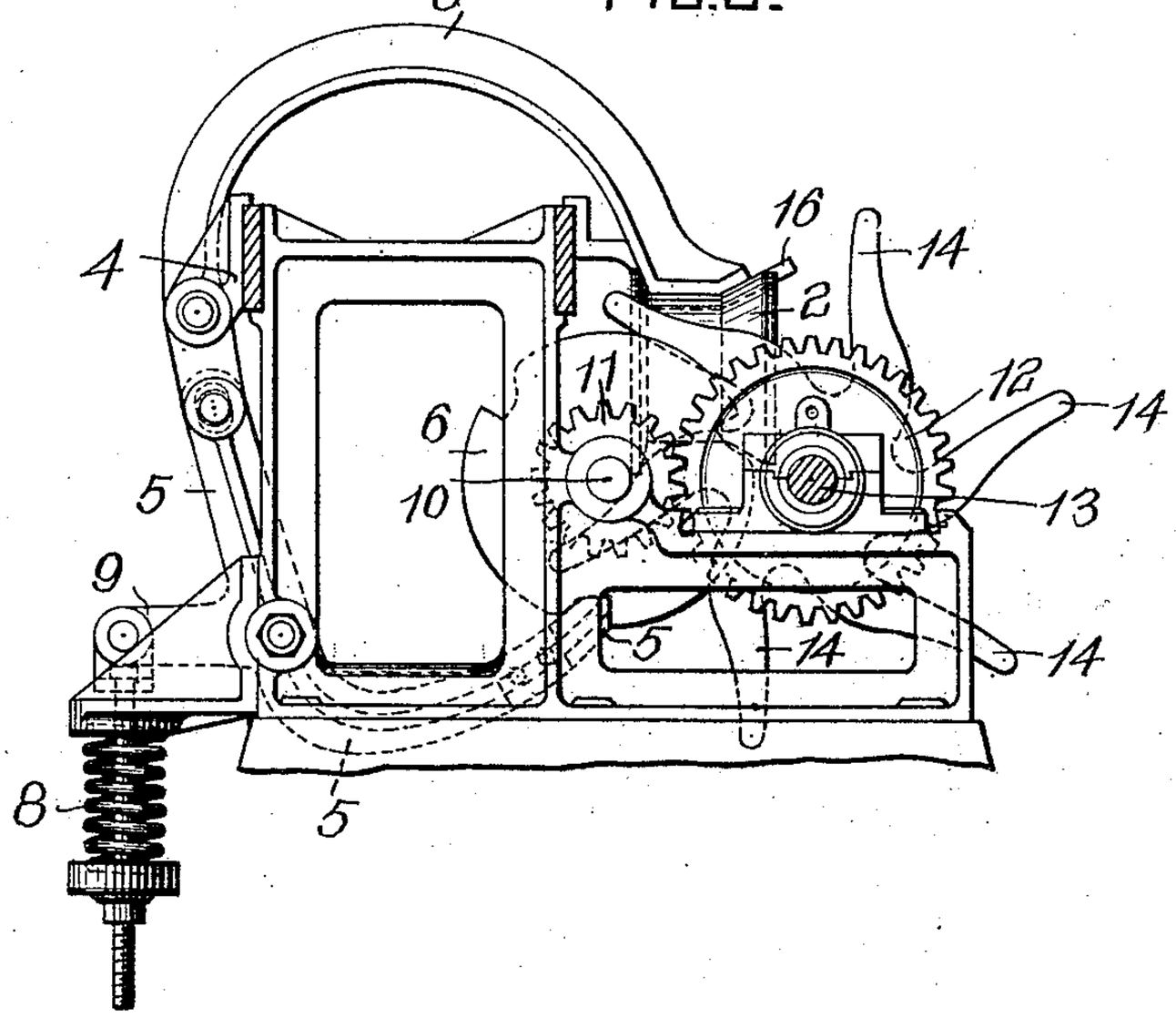
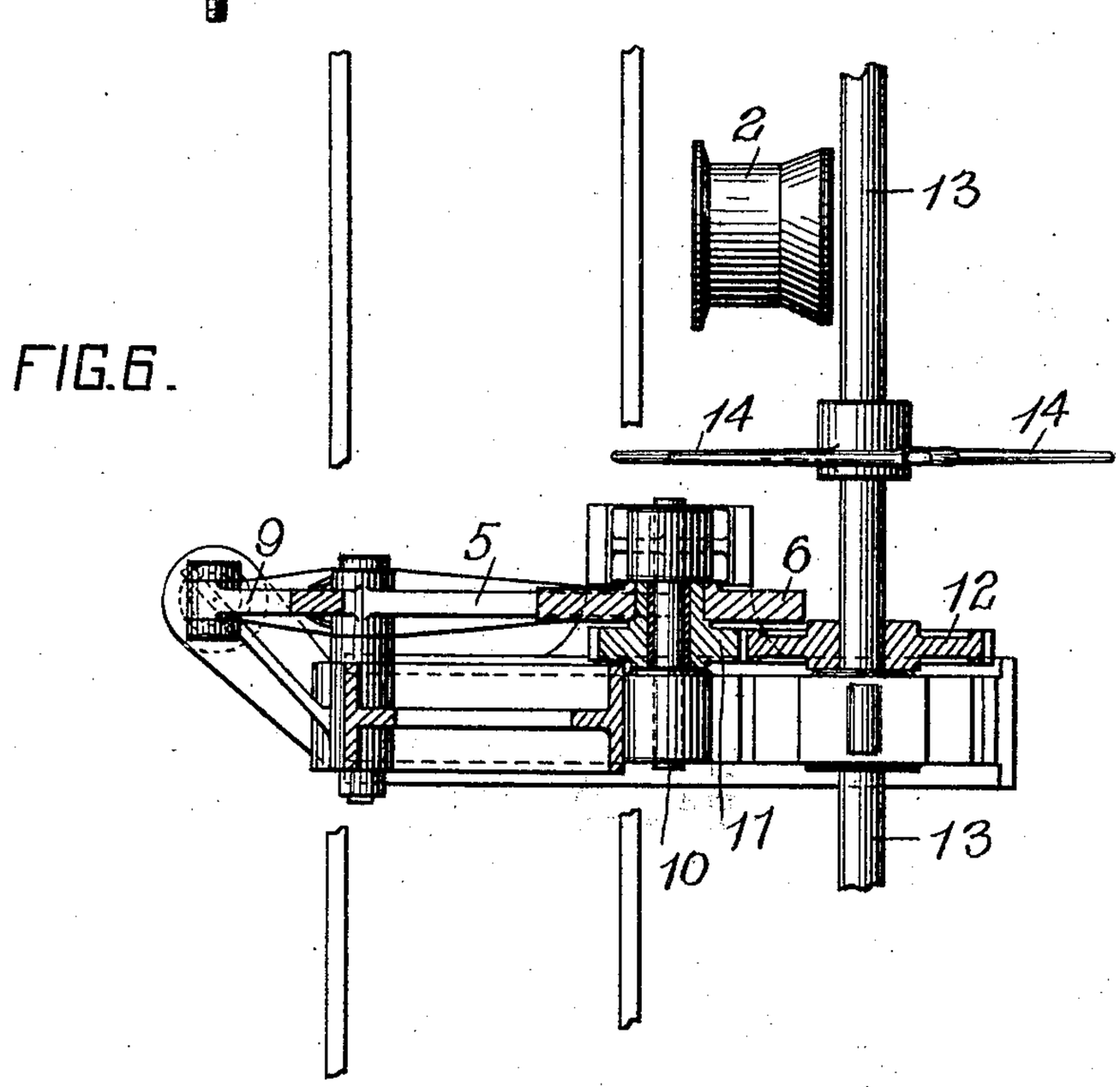


FIG. 6.



WITNESSES:
Herbert Bradley.
Fred Kirchner.

INVENTOR
Sigmund V. Huber
by Christy and Christy
Attys

No. 764,850. PATENTED JULY 12, 1904.

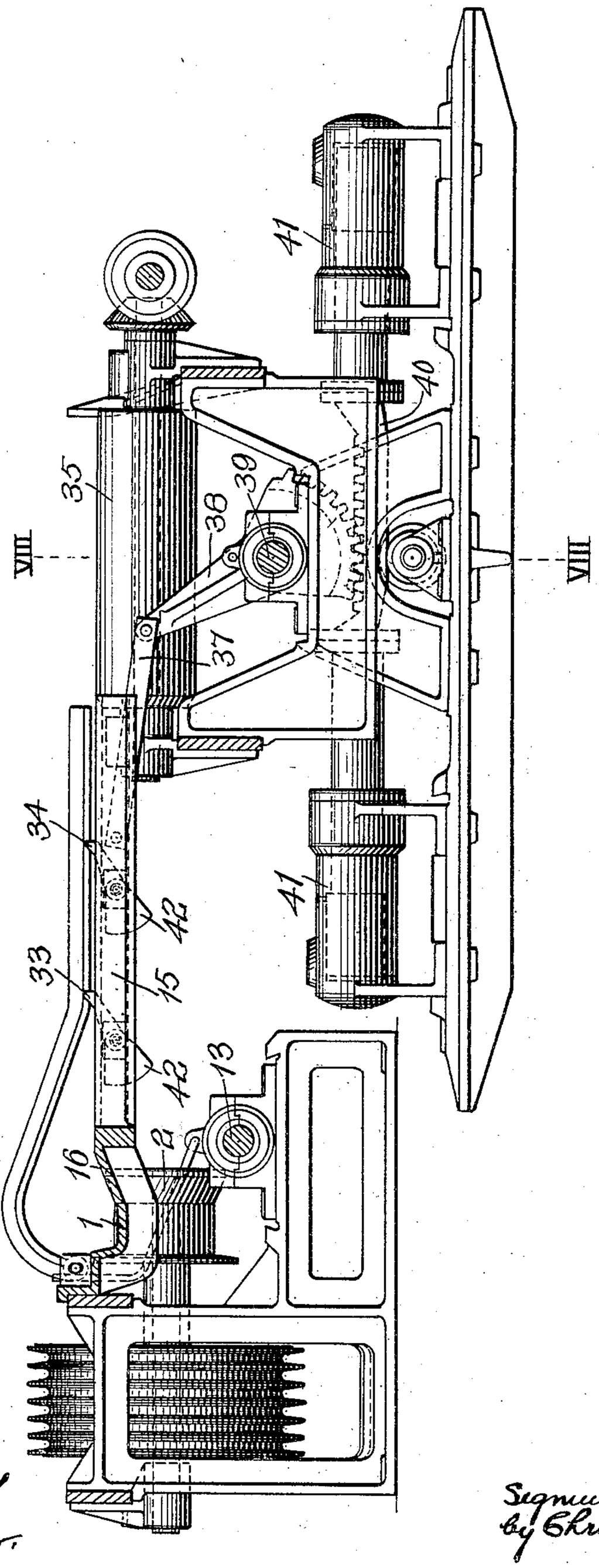
S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 5.

FIG. 7



WITNESSES:
Herbert Bradley
Fred Kirchner.

INVENTOR
Sigmund V. Huber
by Christy and Christy
Att'ys

No. 764,850. PATENTED JULY 12, 1904.

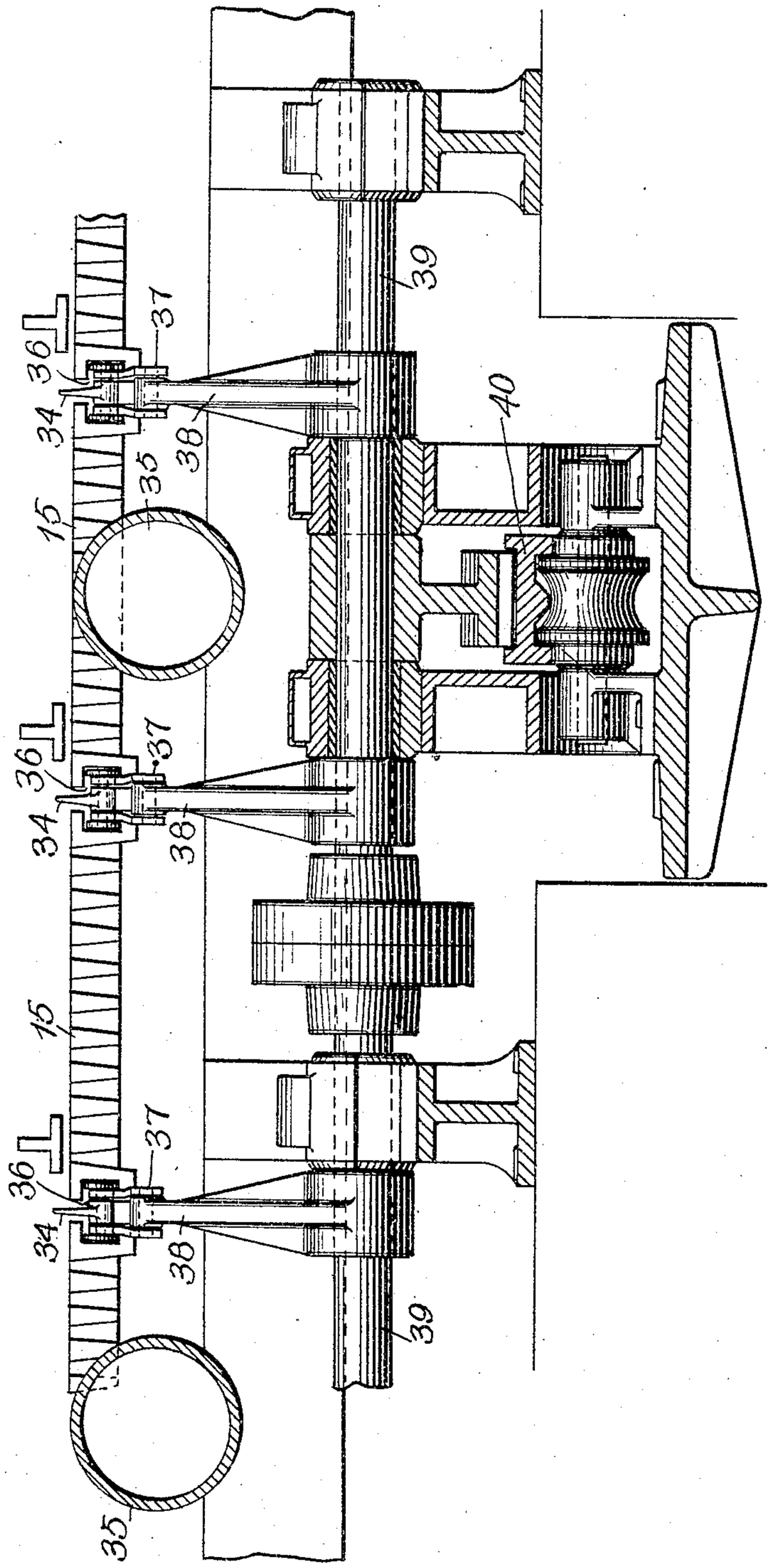
S. V. HUBER.

FEED MECHANISM FOR ROLLING MILLS.

APPLICATION FILED JUNE 19, 1903.

NO MODEL. 6 SHEETS—SHEET 6.

FIG.8.



WITNESSES:
Herbert Bradley.
Fred Kirchner.

INVENTOR
Sigmund V. Huber
by Christy and Christy
Att'ys

No. 764,850. Patented July 12, 1904.

UNITED STATES PATENT OFFICE.

SIGMUND V. HUBER, OF PITTSBURG, PENNSYLVANIA.

FEED MECHANISM FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 764,850, dated July 12, 1904.

Application filed June 19, 1903. Serial No. 162,265. (No model.)

To all whom it may concern:

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

The invention described herein relates to certain improvements in feed mechanism for rolling-mills, and has for its object a construction and combination of elements whereby a bar or strip of metal can be transferred step by step from a receiving-table to a cooling bed or table.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figures 1 and 1ª illustrate my improved feed-table in plan. Fig. 2 is a sectional elevation on a plane indicated by the line II II, Fig. 1. Fig. 3 is a plan view of the operating mechanism shown in Fig. 2. Fig. 4 is a sectional view on a plane indicated by the line IV IV, Fig. 3. Fig. 5 is a sectional elevation on a plane indicated by the line V V, Fig. 1. Fig. 6 is a plan view, partly in section, of the mechanism for operating the holder or clamp shown in Fig. 5. Fig. 7 is a sectional elevation on a plane indicated by the line VII VII, Fig. 1ª, and Fig. 8 is a sectional elevation on a plane indicated by the line VIII VIII, Fig. 7.

In the practice of my invention the strip or bar as it comes from the reducing-rolls passes into a trough 1, having openings at intervals to permit of a projection of the upper portions of positively-driven feed-rolls 2 slightly above the bottom of the trough. By the action of these rollers the strip or bar is carried along until its rear end or end last passing out of the rolls is at a distance therefrom, when the onward movement of the bar or strip is checked without stoppage of the feed-rollers 2 by means of a clamp. This clamp, which is arranged at or near the front end of the table, so as to catch the bar or strip at or near its rear end, consists of a curved arm 3, pivotally mounted in a bracket 4, secured to the side of the frame of the feed-table in such position that its free end will pass down into the trough and bear against a strip or bar lying therein. Any suitable means may be employed for shifting the clamping-arm to and from operative position—such, for example, as that shown, consisting of a bent lever 5, pivotally mounted on the frame and having one end loosely connected to the arm, as shown in Fig. 5, while the opposite end bears against the periphery of a notched disk or wheel 6. While not in all cases necessary, it is preferred in order to insure a tight grip of the clamping-bar on the strip to employ a spring 8, connected to an arm 9, extending from the lever 5 and arranged to normally hold the free end of the clamping-bar with considerable pressure against the strip. As clearly shown in Fig. 5, the periphery of the disk 6 is notched, so that when one of the notches comes into alinement with the free end of the lever 5 such end will be forced into the notch by the spring 8, and a corresponding downward movement of the free end of the clamping-bar onto the strip will be effected. As the disk continues to rotate the notch will move away from the free end of the lever 5, shifting the latter, so as to raise the clamping-lever from engagement with the strip and permitting the latter to be shifted laterally out of the trough by mechanism hereinafter described.

As the feed-rollers rotate continuously, it is obvious that unless the lateral shifting of the strip be effected simultaneous with the lifting or release movement of the clamping-lever the strip will be shifted along out of desired position by the feed-rollers. To avoid this undesirable longitudinal movement of the strip, a shaft 10, carrying the disk 6, is driven, through the medium of the train of gears 11 12, from the shaft 13, carrying the shifting-arms 14. The shaft 13 is so arranged with reference to the trough 2 and to a supporting-table 15, extending along the trough on one side thereof, that the arms 14 will pass through slots in the trough and push the strip lying therein up the inclined side 16 of the trough onto the table and away from or out of contact with the feed-rollers 2. As clearly shown in Figs. 1 and 1ª, the shaft 13 extends the full

length of the trough and is provided at suitable intervals with the shifting-arms 14, so that the strip or bar will be moved uniformly from the trough onto the table. As it is desirable, if not necessary, that the arms 14 should move always in the same direction, so that there may be no interruption of movement of strips or bars onto the trough, I have provided means whereby a continuous movement of rotation in the same direction can be imparted to the arms 14 by the reciprocation of a rack, the onward movement of the arms being effected both on the forward and back stroke or movement of the rack. A construction suitable for this purpose is clearly shown in Figs. 2, 3, and 4, and consists of a rack-bar 17, supported on friction-rollers 18 and adapted to be operated by one or two fluid-pressure cylinders 19, connected as shown in Fig. 2. This rack-bar engages two toothed segments 20 and 21, mounted loosely on the shafts 13 and 22, respectively. On the arms 23 and 24 of the segments are mounted pawls 25 and 26, oppositely arranged and adapted to engage oppositely-toothed disks 27 and 28 on the shafts. While these pawls may be held in engagement with the toothed disks in any suitable manner known in the art, it is preferred in order to secure certainty of engagement of the pawls with the toothed disks to employ springs 30, bearing against the tails of the pawls and supported by suitable abutments 31 on the arms 23 and 24. By this construction when the rack-bar moves in one direction, as to the right in Fig. 2, both segments, with their arms, will be rotated, but only the pawl 26 on the arm 24 will engage its disk and rotate the pinion 32, secured to or formed integral with the disk. During this movement the other pawl will simply slide over its disk to engage a new notch. By the rotation of the gear-wheel 32 in the direction of the arrow *a* the shaft 13 will be rotated in the direction of the arrow *b*, and thereby shifting the arms 14 in such direction as to move a strip or bar from the trough onto the table 15. On the return movement of the rack—*i. e.*, to the left in Fig. 2—the pawl 26 will slide on its disk to a new notch, but the pawl 25 will engage a tooth on its disk and rotate the shaft 13, carrying the fingers 14, in the direction of the arrow *b*. Hence it will be understood that a continuous movement in the same direction will be imparted by the shifting-arms by the reciprocation of the rack and on each stroke thereof—*i. e*, each back and forward movement.

The operating mechanisms for the shifting-arms 14 and the clamping arm or arms 3 are so arranged or adjusted that the clamping arm or arms will be raised from a strip just as an arm 14 moves up and bears against a strip or bar, so that there will be no material longitudinal movement of the strip or bar. By the movement of the shifting-arms the strip or bar is carried to such a position on the table 15 that it will be caught by a series of dogs 33 and shifted along the table to a point where it may be caught by another series of dogs 34 and be shifted by them from the table onto the feed-rollers 35. These dogs 33 and 34 are pivotally mounted upon slides 36, connected by links 37 to arms 38 on a shaft 39. This shaft is oscillated to reciprocate the slides 36 back and forth by means of one or more rack-bars 40 engaging toothed segments on the shaft 39, said segments being reciprocated by any suitable mechanism, such as the fluid-pressure cylinders 41. The dogs 33 and 34 are held by weighted extensions 42, so that their upper ends will project above the surface of the table 15; but such ends can be depressed on the return movement of the slides by the strips or bars lying upon the table.

I claim herein as my invention—

1. A feed-table for rolling-mills having in combination a series of continuously-rotating feed-rollers, a stop mechanism operative on the article intermediate of its ends; for preventing the onward movement thereof by the feed-rollers, arms for shifting an article laterally from the feed-rollers, and mechanism for simultaneously shifting the stop mechanism to release the article and the arms to shift the article when released, substantially as set forth.

2. A feed-table for rolling-mills having in combination a series of continuously-rotating feed-rollers, a stop mechanism operative on the article intermediate of its ends; for preventing the movement thereof by the feed-rollers, a shaft provided with arms for shifting an article from the feed-rollers, means for intermittently driving said shaft always in the same direction, and means for shifting the stop to release position simultaneous with an onward movement of the shifting-arms, substantially as set forth.

3. A feed-table for rolling-mills having in combination a trough and a series of continuously-operating rollers for shifting the article along the trough a pivotally-mounted arm for arresting the movement of the article along the trough and arranged to grip the article intermediate of its ends, and means for shifting said arm to grip the article, substantially as set forth.

4. A feed-table for rolling-mills having in combination a shaft provided with a series of arms for shifting an article laterally, a reciprocating motor, connections from the motor to the shaft whereby an onward movement in one direction is imparted to the shaft on each movement of the motor, and means for effecting a further lateral movement of the article, substantially as set forth.

5. A feed-table for rolling-mills having in combination a trough, a series of feed-rollers for shifting an article along the trough, a shaft provided with a series of arms for shifting an article laterally from the trough, a reciprocat-

ing motor, connections from the motor to the shaft whereby an onward movement in one direction is imparted to the shaft on each movement of the motor, a line of feed-rollers arranged parallel with the trough, and means for shifting an article onto said feed-rollers, substantially as set forth.

6. The combination of reducing-rolls, a table for receiving the article from the rolls, mechanism for preventing movement of the article after it has passed from between the rolls, means for shifting the article laterally, and means for simultaneously releasing the article and operating the shifting mechanism, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SIGMUND V. HUBER.

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