

No. 706,919.

Patented Aug. 12, 1902.

J. J. FORSTER & R. L. MURDOCK.

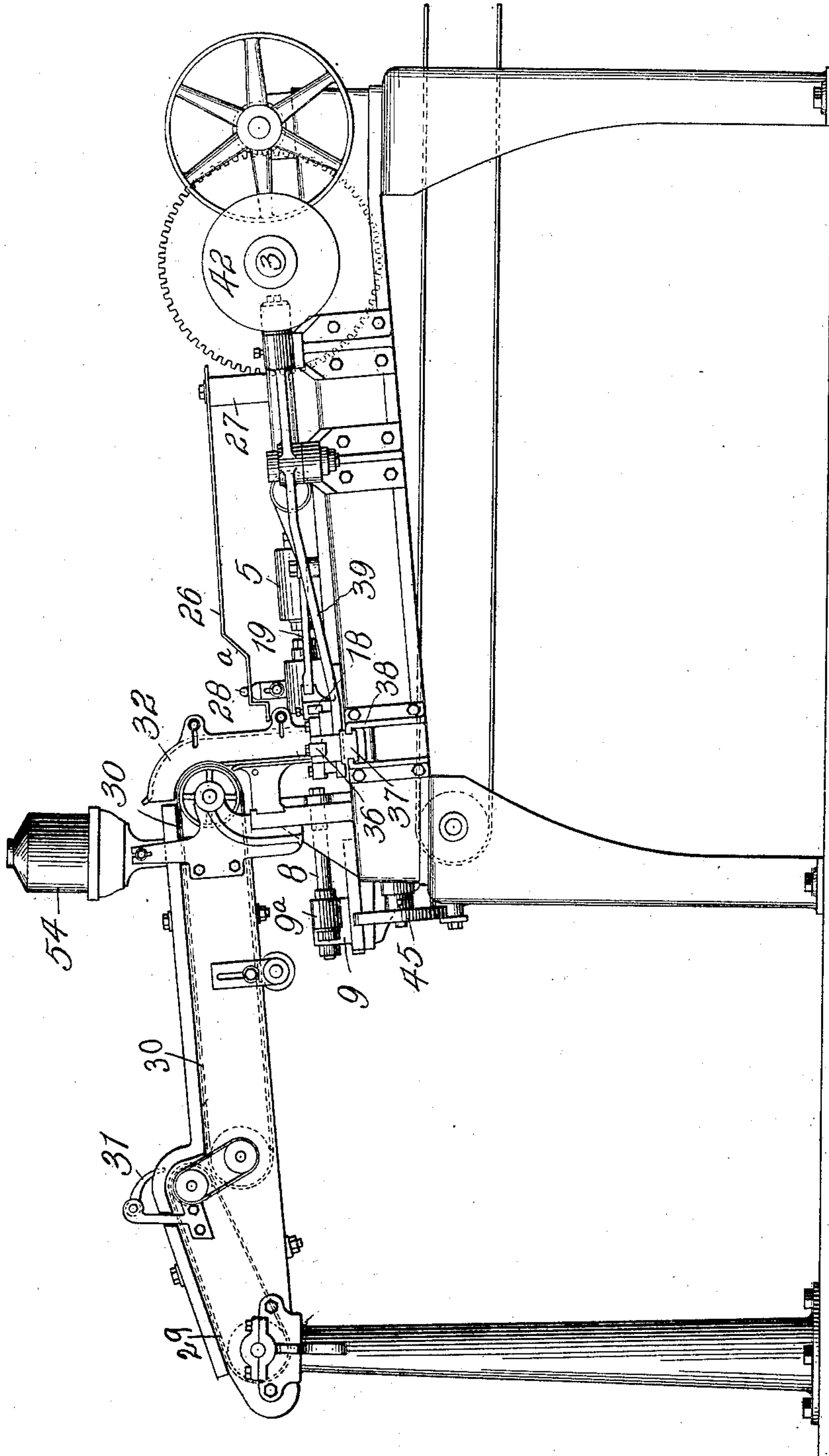
SOAP PRESS.

(Application filed June 21, 1901.)

(No Model.)

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FIG. 1.



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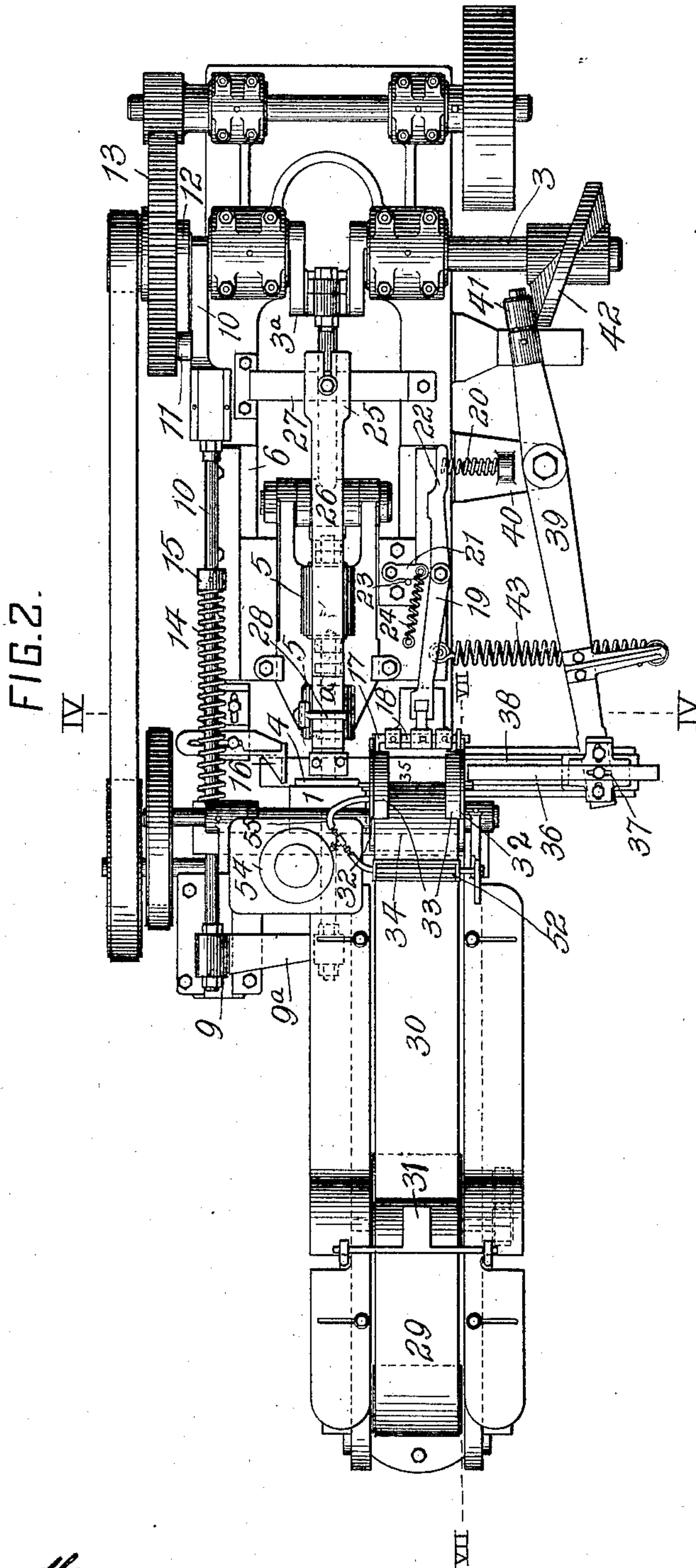
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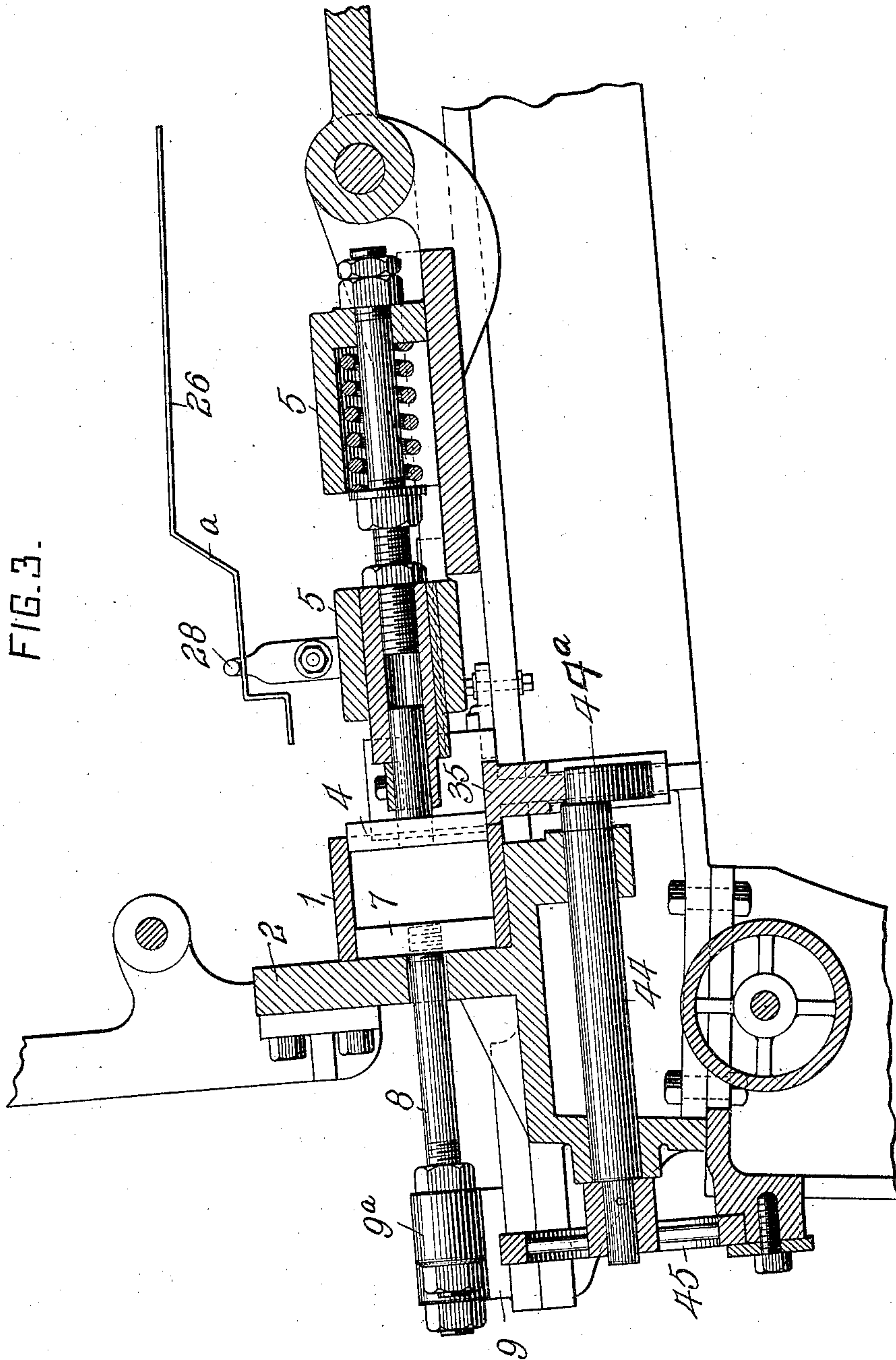
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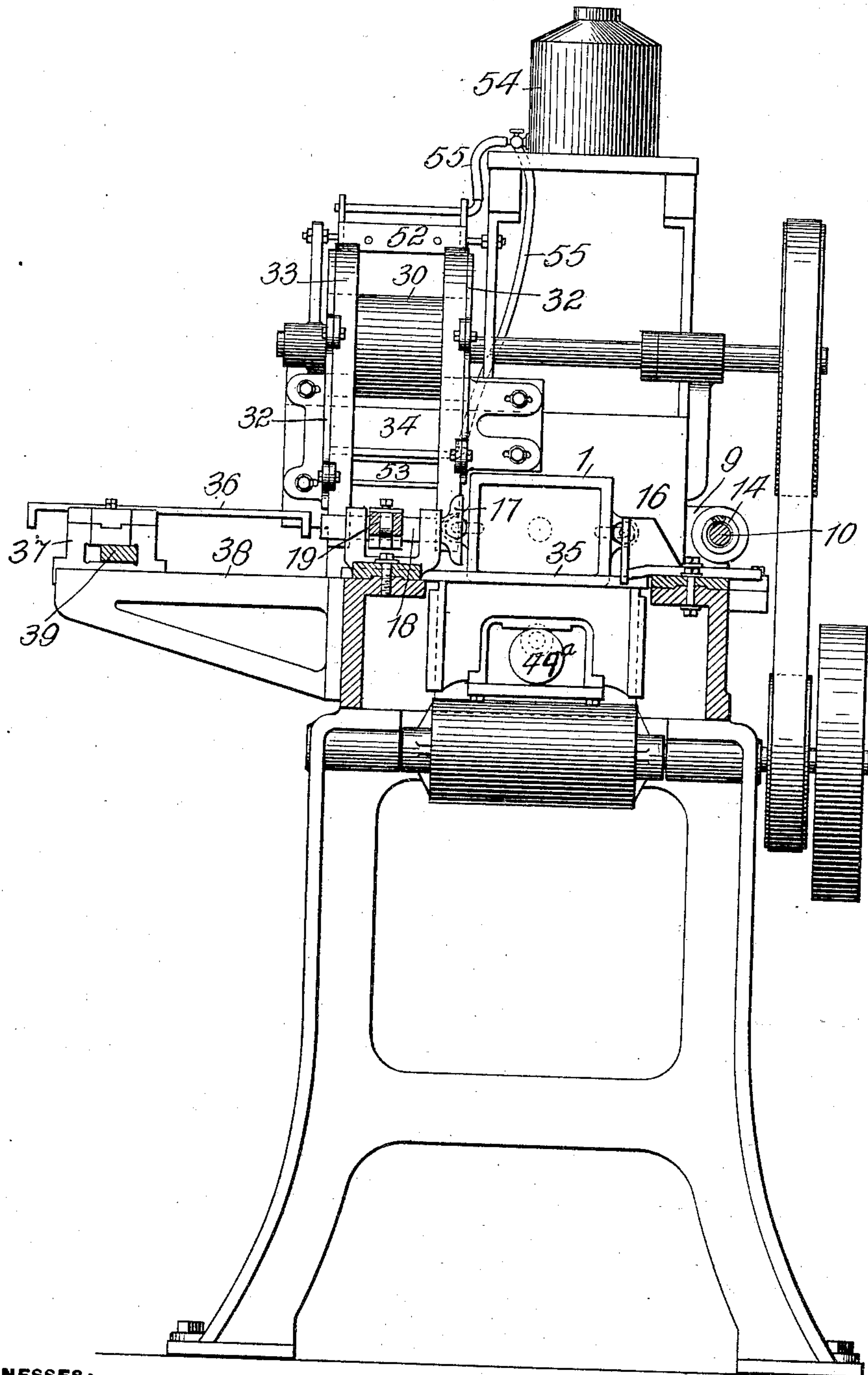
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FIG. 4.



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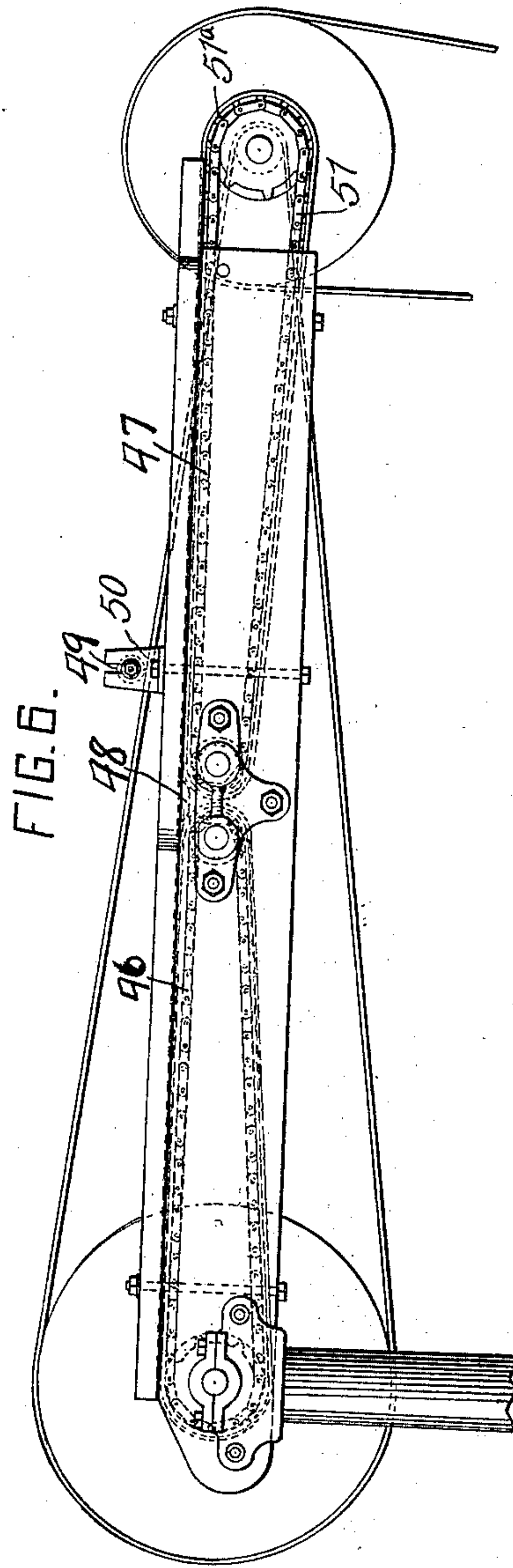
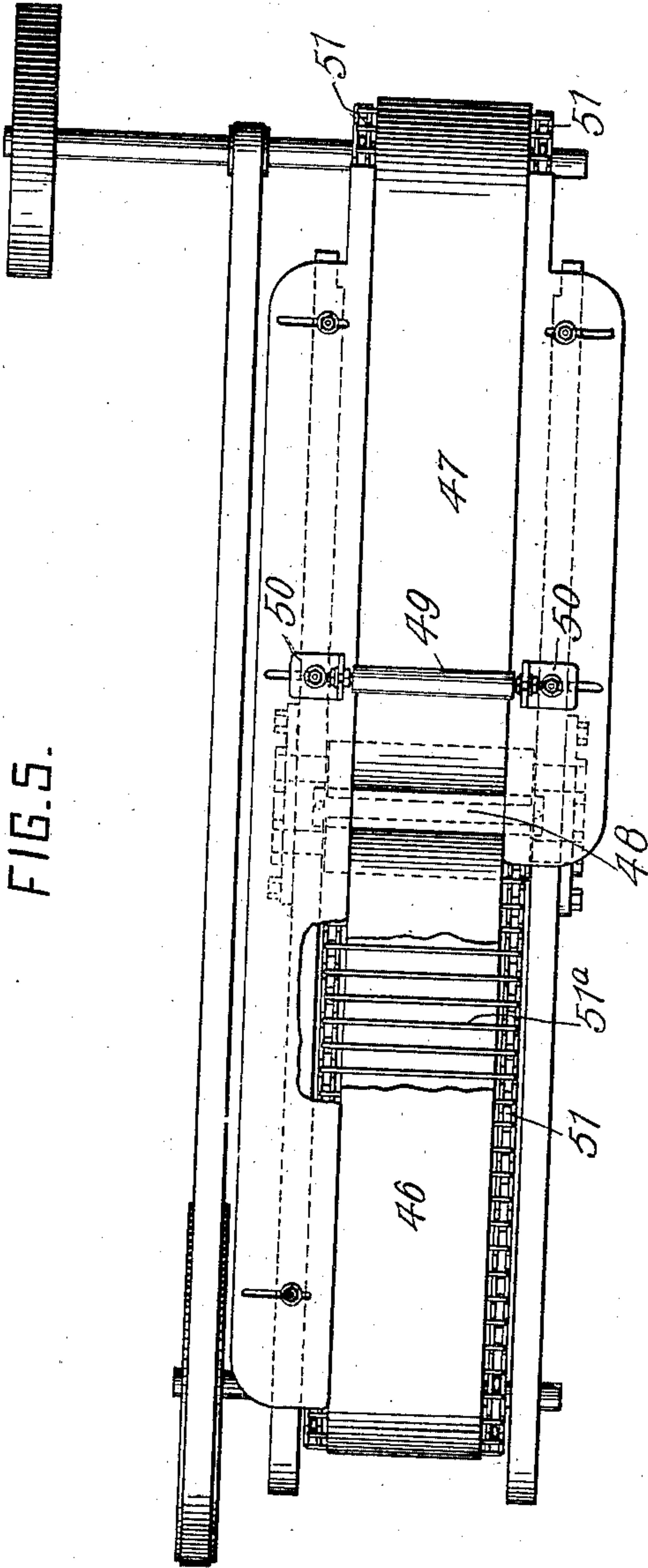
J. J. FORSTER & R. L. MURDOCK.
SOAP PRESS.

(Application filed June 21, 1901.)

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(No Model.)

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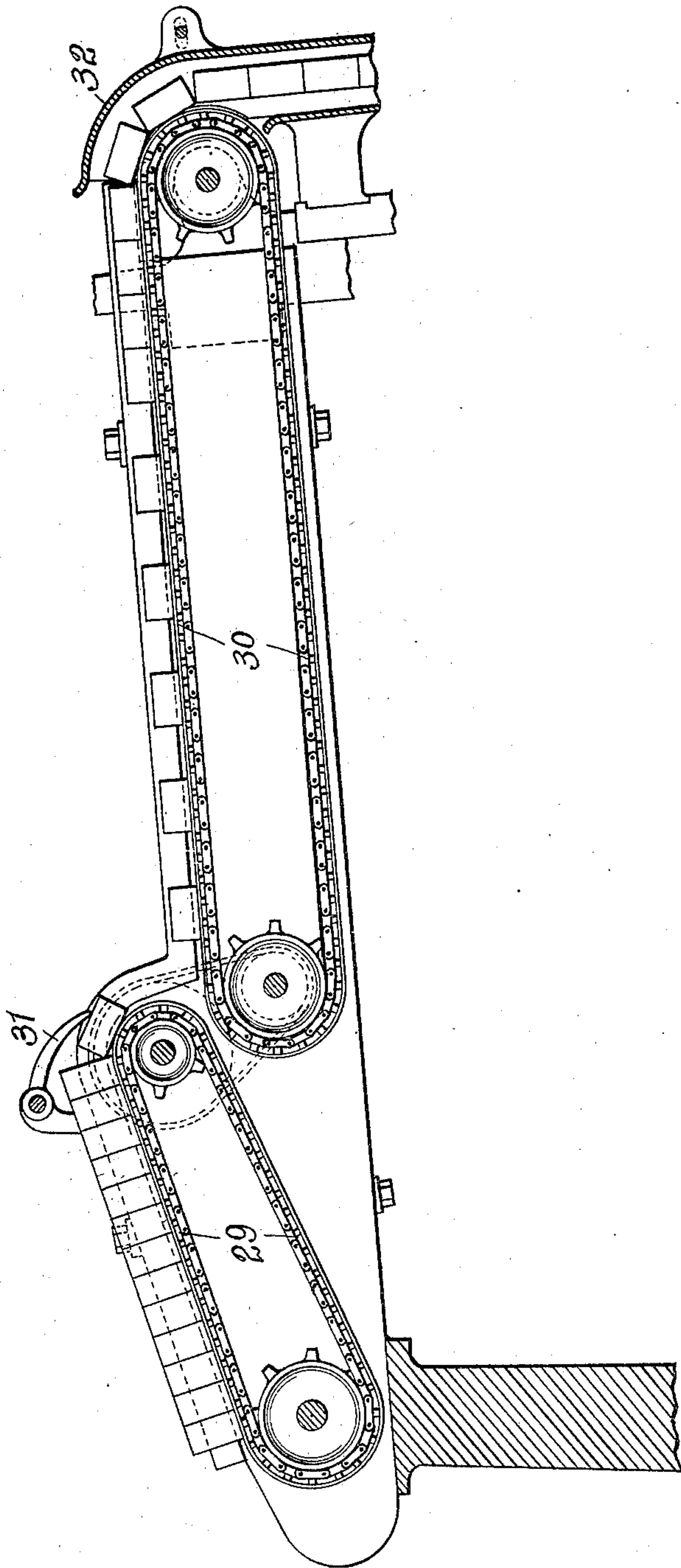
J. J. FORSTER & R. L. MURDOCK.
SOAP PRESS.

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FIG. 7.



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UNITED STATES PATENT OFFICE.

JOHN J. FORSTER AND ROBERT L. MURDOCK, OF AVALON, PENNSYLVANIA.

SOAP-PRESS.

SPECIFICATION forming part of Letters Patent No. 706,919, dated August 12, 1902.

Application filed June 21, 1901. Serial No. 65,461. (No model.)

To all whom it may concern:

Be it known that we, JOHN J. FORSTER and ROBERT L. MURDOCK, citizens of the United States, residing at Avalon, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Soap-Presses, of which improvements the following is a specification.

The invention described herein relates to certain improvements in soap-presses, and has for its object a construction of feed mechanism whereby the cakes may be presented in proper position and at proper intervals to the feed-chute; and it is a further object of the invention to provide for the gripping of the soap as the plungers separate, so as to prevent the adherence of the cakes to either of the die-faces, and to so arrange the several mechanisms that the several parts will operate in due successive order without any delay or pause in the operation of compressing and delivering the cakes.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of our improved press. Fig. 2 is a top plan view of the same. Fig. 3 is a sectional elevation of the front part of the machine on a plane passing through the axis of the pressing-plunger. Fig. 4 is a transverse section on a plane indicated by the line IV IV, Fig. 2. Figs. 5 and 6 are plan and side elevations of a modification in the feed mechanism; and Fig. 7 is a sectional elevation on a plane indicated by the line VII VII, Fig. 2.

In the practice of our invention the die-box or mold 1 is secured to the rear face of a wall or abutment 2, formed on or secured to the frame of the machine, near the front part of said frame. The main die 4 is secured to the front end of the plunger 5, which is adapted to move in suitable guideways 6, formed on the frame of the machine. At its rear end this plunger is connected to a crank 3^a, formed on the power-shaft 3 of the machine. By the rotation of this shaft the main die is caused to move forward into the die-box and compress a cake of soap against an auxiliary die 7, arranged within the mold-box. This die 7 is secured to a stem 8, projecting forwardly and attached at its outer end to an arm 9^a,

formed on or secured to a slide 9, mounted in suitable ways on the frame of the machine. This slide is connected to one end of a rod 10, carrying a pin 11, which is forced against the surface of a cam 12 on the gear-wheel 13 by a spring 14. The spring 14 is arranged around the rod 10 and bears at one end against an abutment on the frame of the machine and at its opposite end against a collar 15 on the rod 10. The operating mechanisms for the main and auxiliary dies are so constructed and adjusted that when the main die begins its forward movement to force a cake of soap into the box and compress it against the auxiliary die the latter will be held slightly within the mold-box, so that as the main die continues its movement to force the cake into the box the auxiliary die will prevent the cake from turning over on its side. As the main die continues its forward movement the auxiliary die will be drawn into the box until it rests against the wall or abutment to which the box is secured. By causing the two dies to move together in the manner stated the cake will always enter the box in proper position. As soon as the main die has completed its forward or compressing stroke and begins its return movement out of the box the auxiliary die will be caused to move therewith by the expansion of the spring on its operating-rod, so that such auxiliary die will follow the main die out of the box, pushing the cake of soap ahead of it and holding or clamping the cake of soap between the main and auxiliary dies. This simultaneous rearward movement of the two dies continues until the cake of soap is pushed entirely out of the box, at which time one end will be directly opposite and almost in contact with a holding-plate 16, adjustably mounted upon the frame of the machine. As soon as the cake of soap reaches this position a plate 17, secured to a slide 18, mounted in suitable bearings on the frame of the machine, is pushed forward, as will be hereinafter described, so as to grip the cake between the plates 17 and 16. At this time the auxiliary die is caused to move toward the front of the machine and a short distance into the box, while the main die continues its rearward movement, so that the two dies move away from opposite sides of the cake while the latter is held in position between the plates

16 and 17. This mechanism will prevent the adherence of the cake to either of the dies.

The slide 18 is operated by a lever 19, pivotally mounted on the frame of the machine 5 and normally pressed by a spring 20 to hold the slide and plate 17 in retracted position. To force the slide and plate 17 toward the plate 16, an arm 21 is pivotally mounted on the plunger so as to reciprocate therewith 10 and also have an independent pivotal movement. As the plunger moves forward the arm 21 is turned on its pivot by an abutment 22 on the lever 19, and as soon as the finger is carried past the abutment it is drawn 15 against the stop 23 by a spring 24. As the plunger moves to the rear the end of the finger will strike against the abutment 22, and thereby shift the free end of the lever outwardly against the tension of the spring 20, 20 the arm 21 being held as against movement on the return stroke of the plunger by the pin 23. As soon as the finger passes beyond the abutment 22 the free end of the lever 19 will be forced forwardly by its spring 20, 25 thereby retracting the plate 17 with a snap or jerk, which will ordinarily prevent any adherence of the cake to either of the plates 16 or 17. In order to render certain the detachment of the cake from either of these 30 plates, a striker 25 is provided, consisting of a spring-arm 26, adjustably secured to a cross-arm 27, bolted to the frame of the machine and extending forward, so that the striking portion thereof will be directly above the position of the cake at the time when the dies 35 begin to separate. The striker is provided with an inclined portion *a*, against which a bar 28, carried by the plunger, will strike as the latter moves to the rear, and thereby force 40 the striker downward against the cake and insure its release from the gripping-plates.

In order to feed the cakes to the press in proper position and with spacing, the unpressed cakes as they come from the drying-rack 45 are placed upon a traveling belt 29. On the drying-racks the cakes rest upon one of their longer edges and nearly in contact with each other, and the operator gathers together a dozen or more between his hands and places 50 them in the same position upon the belt 29. In order to feed the cakes properly to the machine, they should be presented edgewise to the vertical guides hereinafter described. Heretofore the cakes after being placed on 55 the feed-table have been spread apart and turned down by the operator; but this operation involves considerable time and labor. In order to effect these operations, the rear end of the traveling belt 29 is arranged above 60 the front end of a belt 30, as clearly shown in Figs. 1 and 2, so that as the cakes are carried forward by the belt 29 and around the front guide-pulley of said belt their upper edges will come in contact with a suitably-arranged 65 finger 31, thereby delaying the forward movement of the upper edges, while

the lower edges are carried forward by the belt 29, so that the cake will drop upon its side on the belt 30. As the cakes occupy more space when lying on their sides than 70 when arranged on their edges, the cakes when turned and dropped onto the belt 30 must be moved onward out of the way of the succeeding cakes. To this end the belt 30 is caused to move at a higher speed than the belt 29, 75 proportional to the desired distance between adjacent cakes. The cakes, resting upon their sides, are carried along by the belt 30 into a guide-chute. This chute is kept full, as shown in Fig. 7, by the operation of the 80 belt 30, and the cakes as they approach the chute are retarded in their onward movement by the preceding cakes, the belt 30 sliding along under the cakes. This guide-chute consists of side plates 32, adjustably mounted 85 upon the frame of the machine, retaining-flanges 33, adjustably mounted on the side plates, and a back plate 34. As the cake is fed into this chute, whose upper end is curved, as clearly shown in Figs. 1 and 2, it will drop 90 down between the retaining-flanges and the back plate onto a table 35, which extends in front of the die-box, and has its upper surface on a level with the lower inner wall of the die-box to support the cakes in vertical 95 alinement with the die-box. In order to shift the cake from the chute into position in front of the die-box, a pusher 36 is adjustably secured to a sliding block 37, mounted in guides 38, attached to the frame of the machine in 100 line with the table 35. This slide is connected to one end of a lever 39, pivotally mounted upon a bracket 40, secured to the frame of the machine, while its rear end is provided with a friction-roller 41, bearing 105 against a cam 42 on the power-shaft. The inward movement of the slide is effected by means of a spring 43, connected to the lever and to the frame of the machine, and the outward movement is effected by the cam 42. In 110 order to permit of the use of varying sizes of mold-boxes, the table 35 is mounted in guides on the frame of the machine and is adapted to be raised and lowered by any suitable means, as a cam 44^a on the shaft 44, which 115 is adapted to be rotated by the hand-wheel 45.

In Figs. 5 and 6 we have illustrated a modification in the manner of feeding and spacing the cakes of soap to the machine. As shown therein, this construction consists of two 120 belts 46 and 47, passing around suitable guide-pulleys, one guide-pulley of each pair being positively driven. The driving mechanism is so arranged and adjusted as to speed that the belt 47 is driven at a higher rate of 125 speed than the belt 46. Between the adjacent ends of the belts is arranged a platform 48, so that the cakes will pass smoothly from one belt to the other. The cakes of soap are placed on their edges on the belt 43 and carried 130 forward thereby and forced over the bridge 48. As soon as each cake reaches the

belt 47 it will be carried forward away from the next adjacent cake the desired distance, which should preferably be a little greater than the width of the cakes, and under a striking-bar 49, which is adjustably mounted in suitable supports 50, so that the upper edge of the cake as it is carried forward by the belt 47 will strike against the bar and the cake be turned onto its side and then carried forward by this belt into the feed-chute. The carrying-belts whereby the cakes are fed along and spaced are preferably formed of sprocket-chains 51, connected by slats 51^a, secured at their ends to the links of the chain and covered by canvas or other suitable material, so as to form a continuous bed. By this construction any sagging of the belt is prevented.

Holders 52 and 53 for sponges are arranged the one just above the path of the cakes as they are carried to the chute and the other one in the back wall of the vertical portion of the chute. These holders are so adjusted that the sides of the cakes will come in contact with the sponges, which will apply to the surfaces of the cakes a suitable lubricant contained in the can 54, connected by pipes 55 to the sponge-holders.

We claim herein as our invention—

1. In a soap-press, the combination of a mold-box, main and auxiliary plungers, a stationary holding-abutment, mechanism for causing said plungers to move together out of the mold-box and to carry the compressed cake into line with the abutment, mechanism for separating the plungers when the cake is in line with the abutment, a gripping-jaw, positively operating means for shifting the jaw to clamp the cake between it and the abutment, and means for imparting a sudden return movement to the jaw, substantially as set forth.

2. In a soap-press, the combination of a mold-box, main and auxiliary plungers, a stationary abutment, means for causing the plungers to bring a compressed cake into alignment with the abutment, a gripping-jaw arranged opposite the abutment, a lever connected to the jaw, an arm pivotally mounted on the main plunger and adapted to engage the lever and a stop for preventing the movement of the arm during the rearward movement of the main plunger, and a spring for effecting the return movement of the gripping-jaw, substantially as set forth.

3. In a soap-press, the combination of a mold-box detachably secured to the frame of the machine, a supporting-table arranged in the rear of the soap-box, means for shifting the table, an adjustable chute for directing cakes of soap onto the table, and an adjust-

able pusher for shifting the cakes along the table, substantially as set forth.

4. The combination of a soap-press, and a feed mechanism adapted to turn and space the cakes of soap while feeding them to the press, substantially as set forth.

5. The combination of a soap-press, two feed-belts driven at different speeds, and a turning-arm arranged in the path of movement of the upper edges of the cakes as carried along by one of the belts, substantially as set forth.

6. The combination of a soap-press, two belts arranged in or approximately in line with each other, one belt being driven at a higher speed than the other, a bridge connecting the belts, and a turning-arm arranged over the belt having the higher speed and in the path of movement of the upper portions of the cakes as carried forward by the belt, substantially as set forth.

7. The combination in a soap-press, of a mold-box, main and auxiliary plungers, means for moving said plungers simultaneously out of the box, and means for effecting a step-by-step movement of the auxiliary plunger to pressing position, substantially as set forth.

8. In a machine of the character described, the combination with the dies and means for operating them, of a charging-table and a charger for pushing bars placed thereon into the dies, conveying mechanism adapted to receive the bars to be pressed in a row standing upright side by side, and to move said bars toward the charging-table, and an intermediate feeding device for receiving the bars from the conveyer and transferring said bars to the charging-table, said conveying mechanism being arranged to turn each cake on its side as it is delivered to the intermediate feeding device.

9. The combination with the dies, the charging-table and the charger moving over the same, of a main driven conveyer-belt adapted to receive a row of bars standing on edge, an intermediate feeding device leading from the end of the main conveyer to the charging-table, said intermediate feeding device including a supplementary driven conveyer-belt passing below the end of the main conveyer for receiving the bars as they fall one by one over the end of the main conveyer, said bars being turned in falling.

In testimony whereof we have hereunto set our hands.

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