

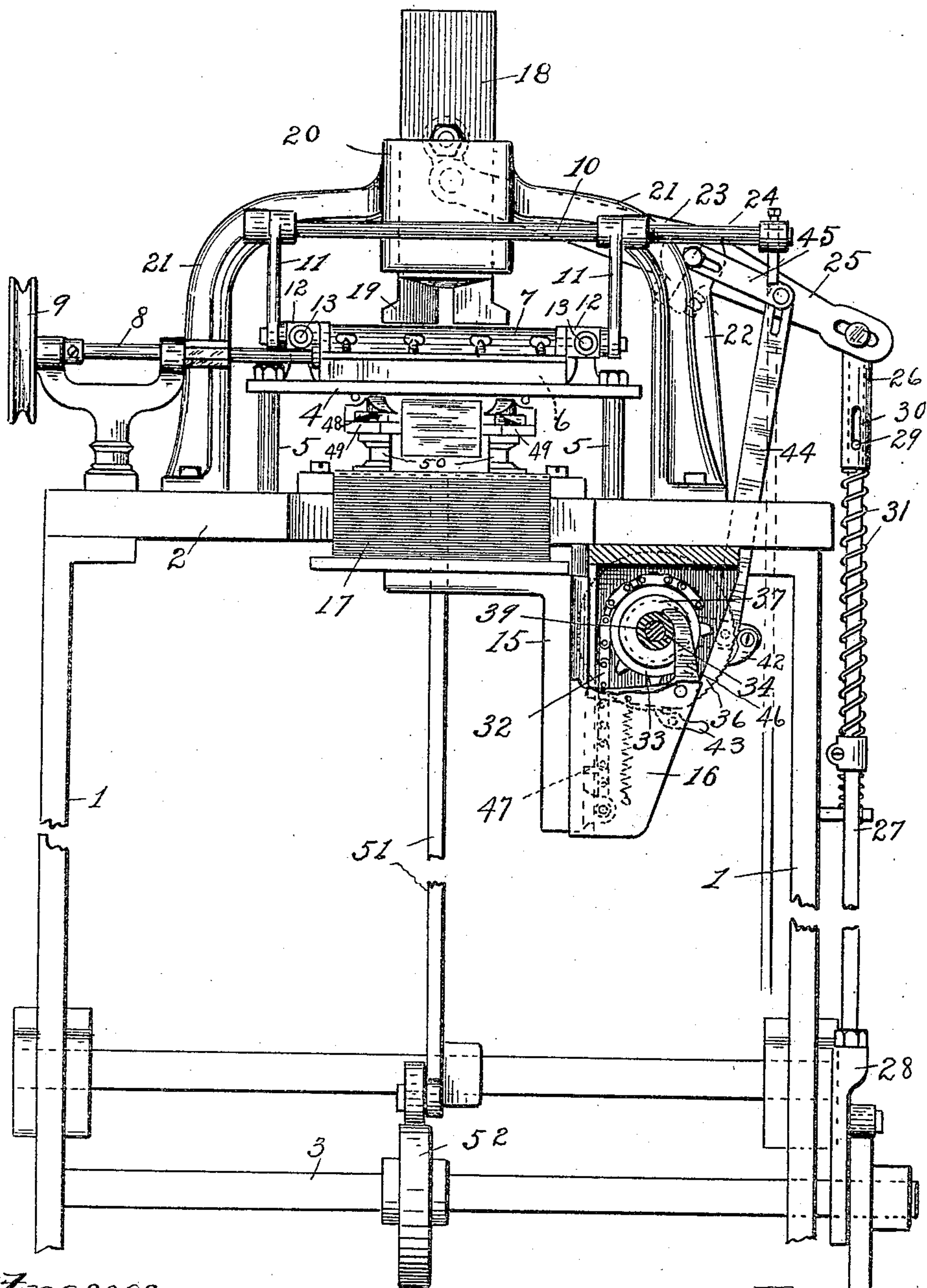
No. 800,768.

PATENTED OCT. 3, 1905.

H. E. SPROUT.  
ENVELOP MACHINE.  
APPLICATION FILED DEC. 1, 1902.

4 SHEETS—SHEET 1.

*Fig. 1*



*Witnesses*

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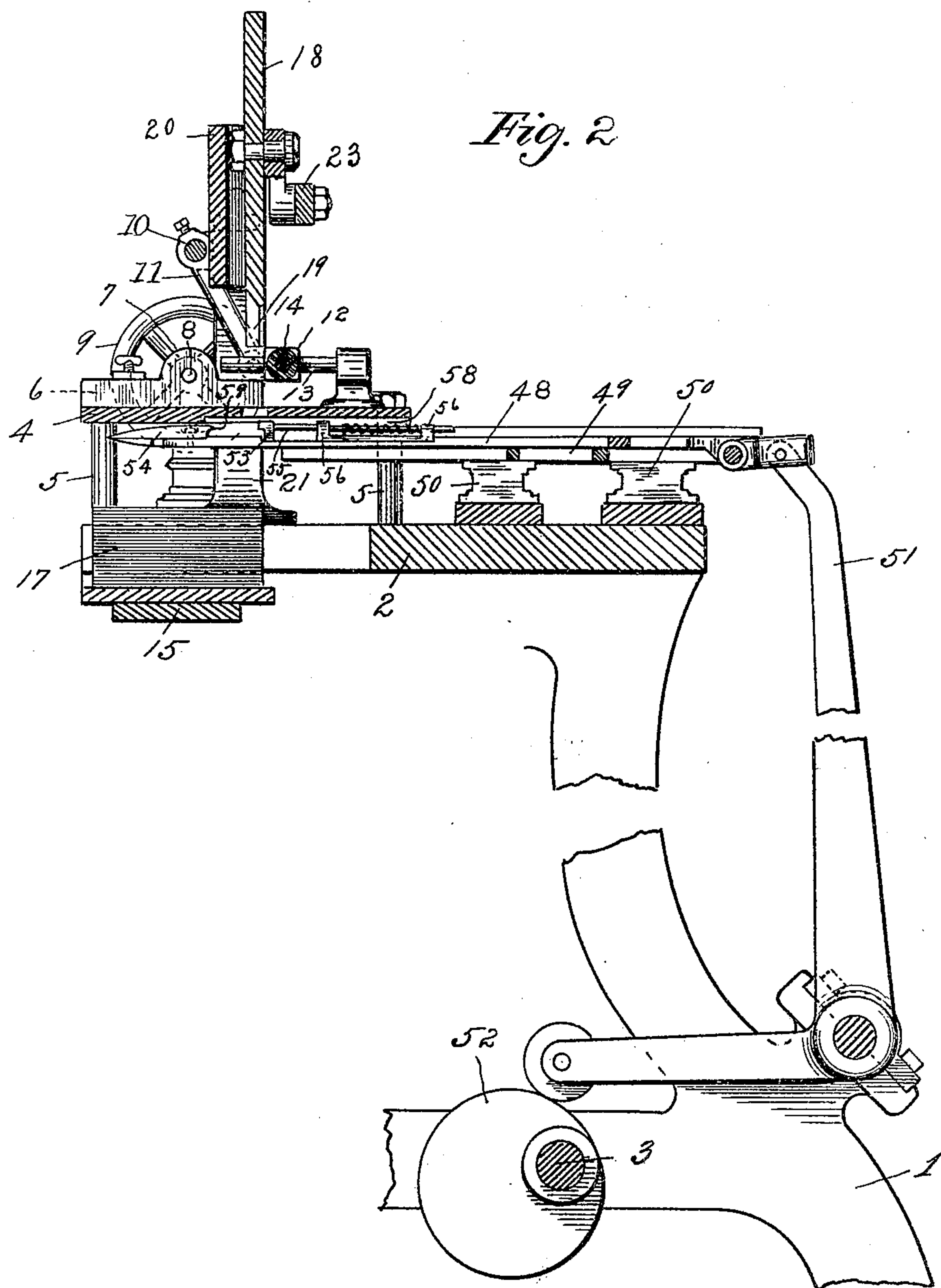
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4 SHEETS—SHEET 2.



Witnesses

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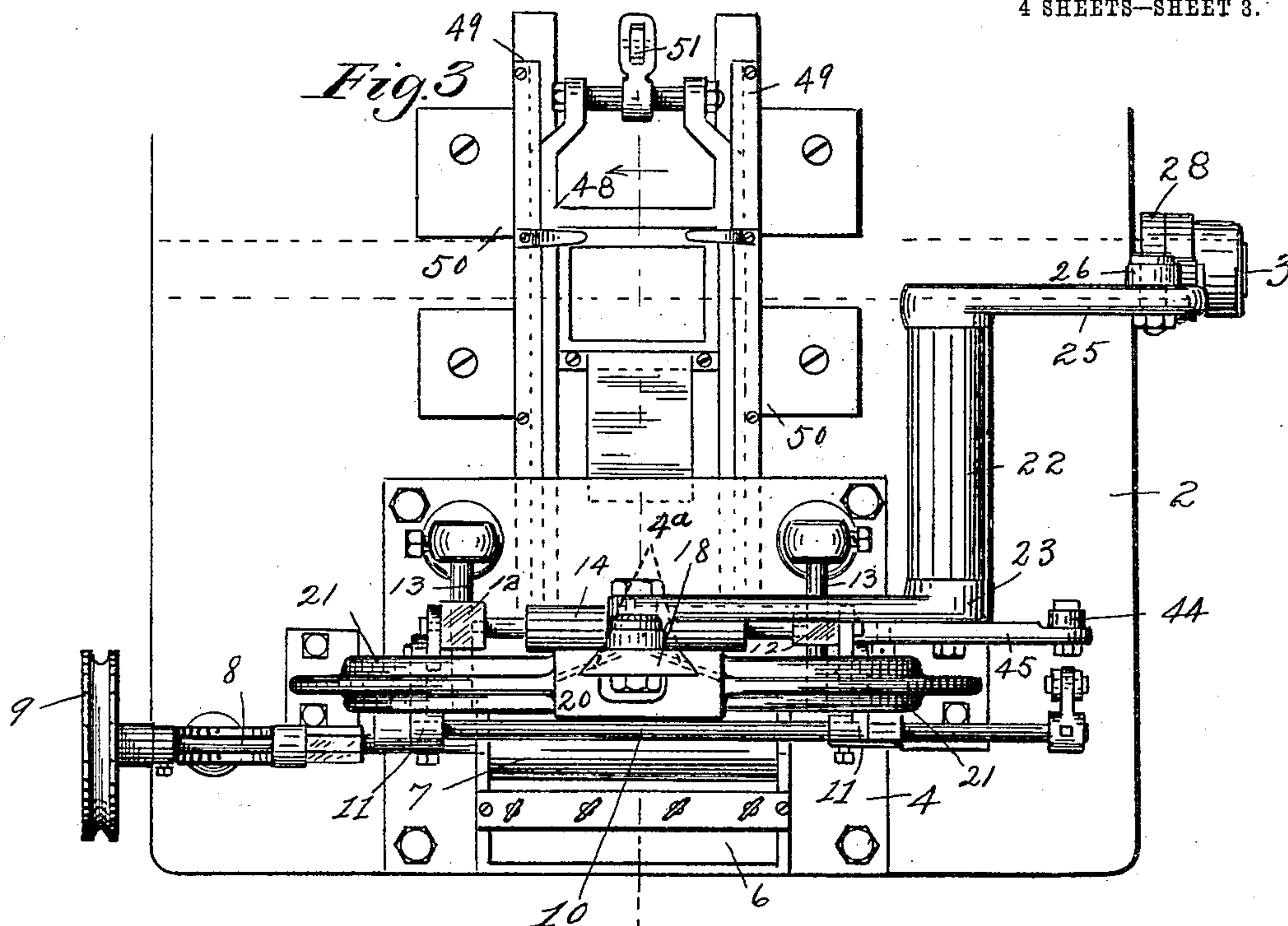
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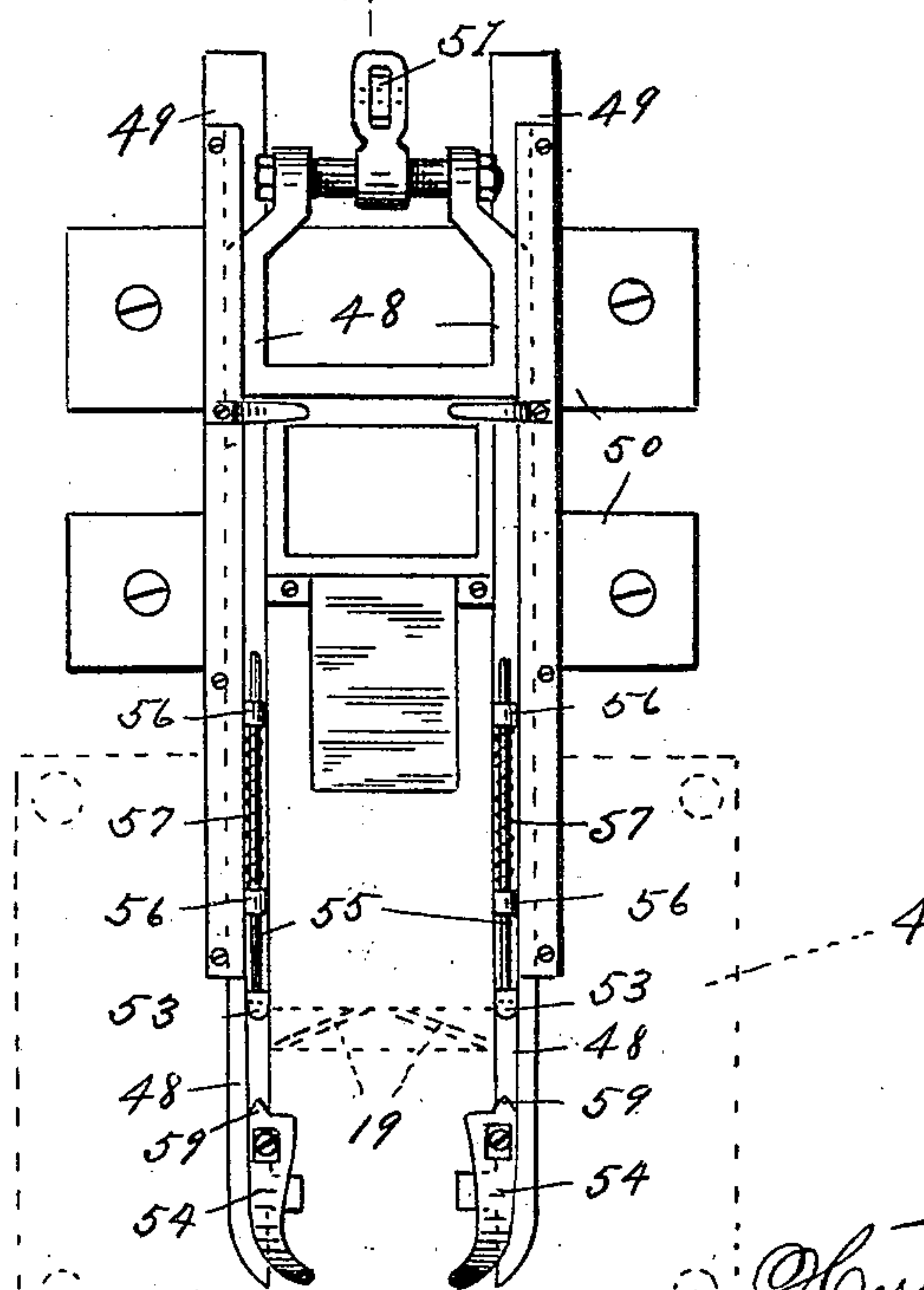
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4 SHEETS—SHEET 3.



*Fig. 4*



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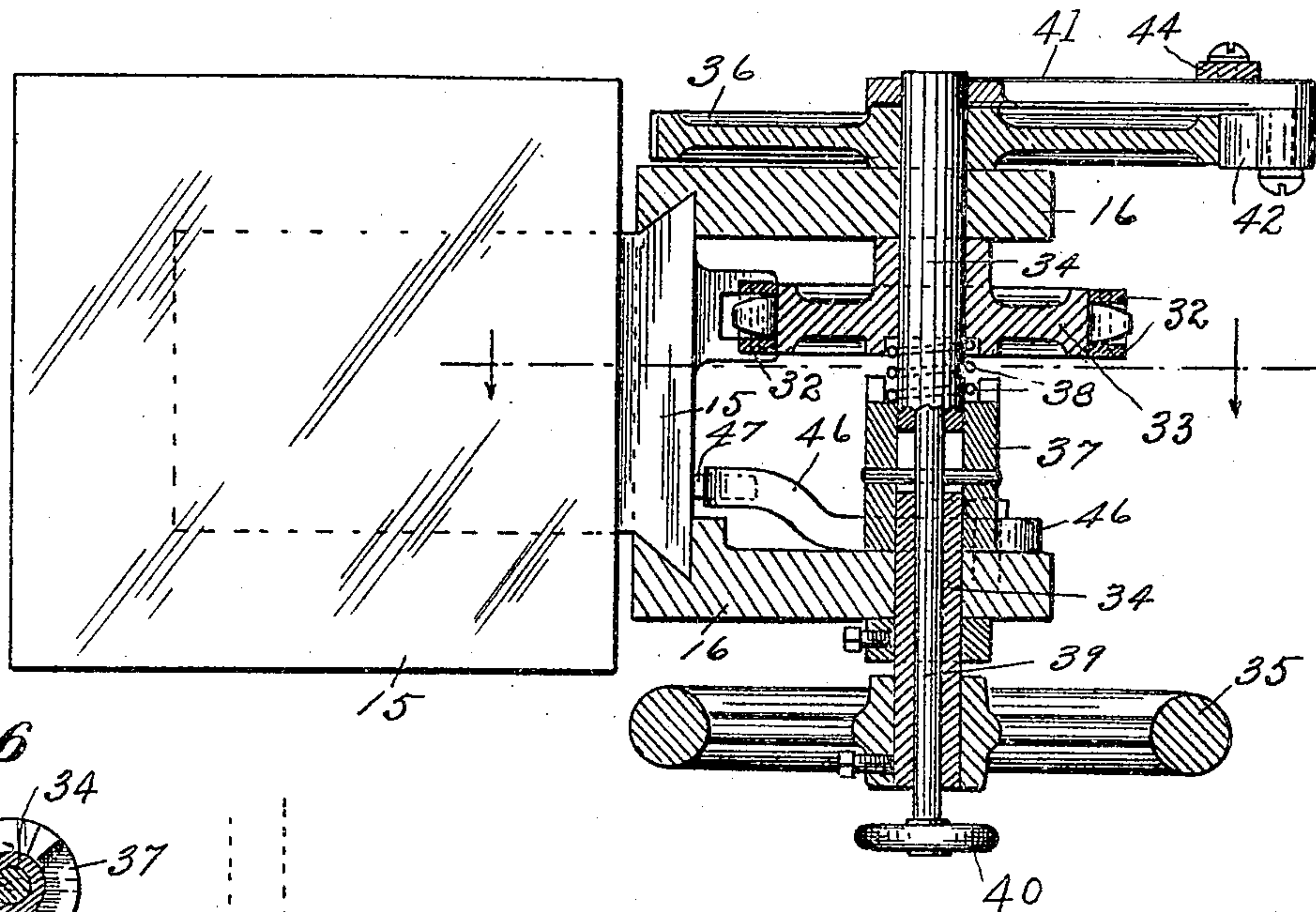
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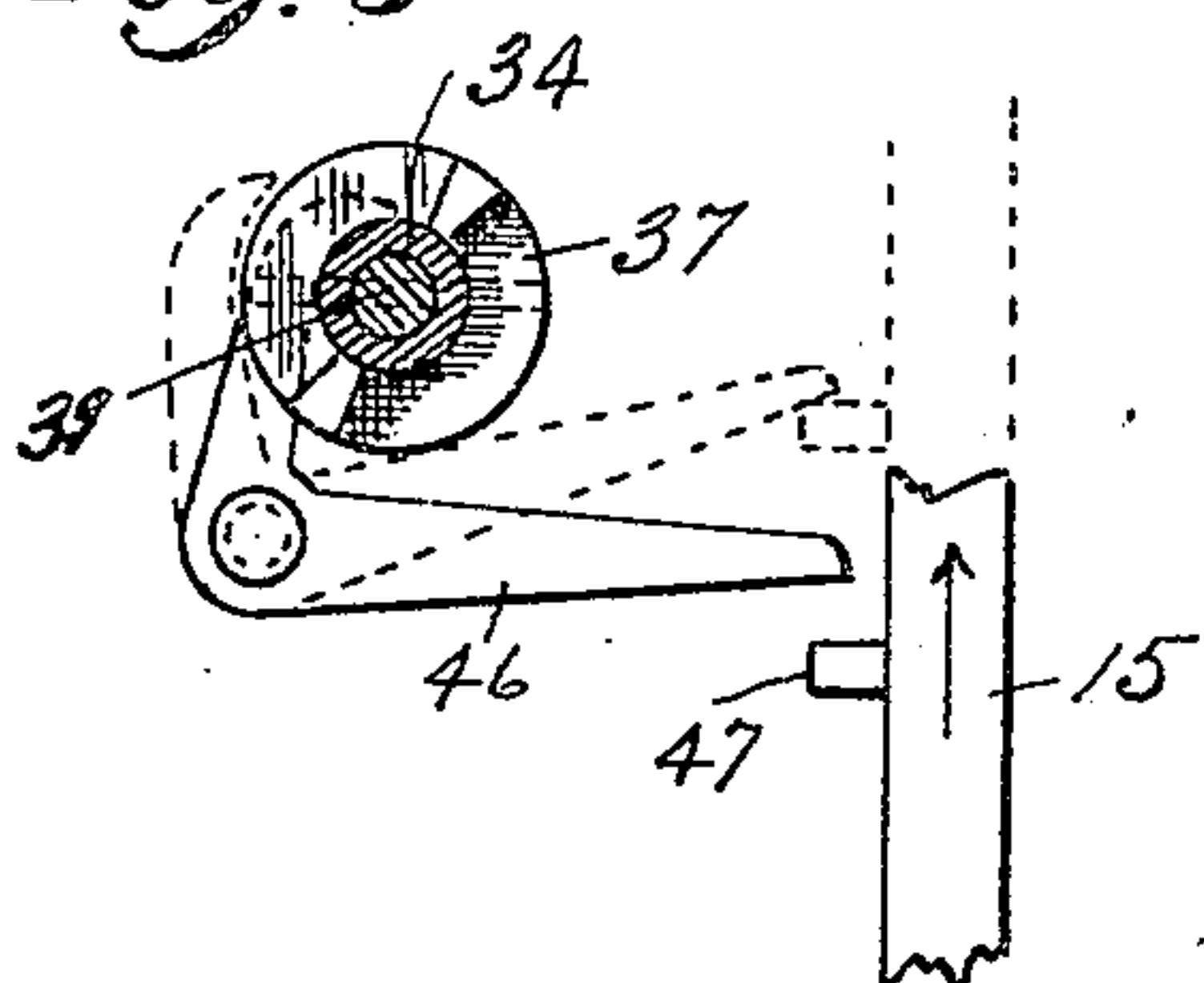
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4 SHEETS—SHEET 4.

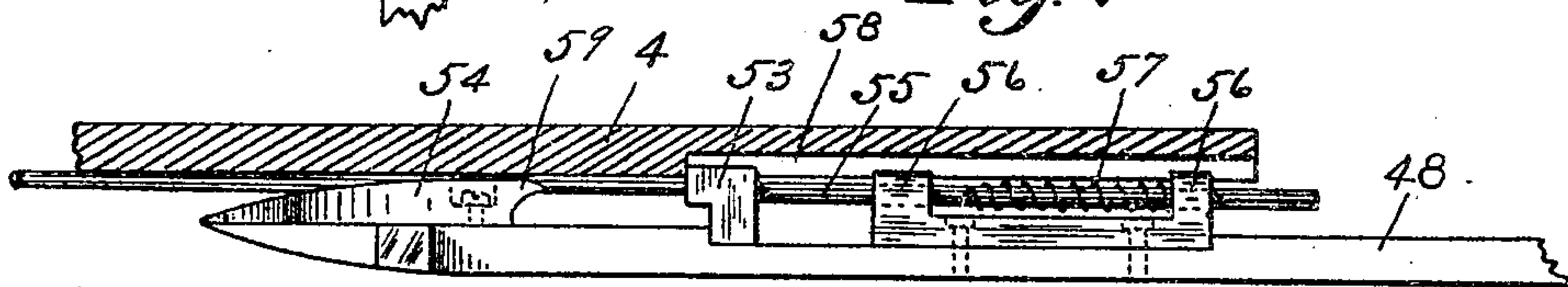
*Fig. 5*



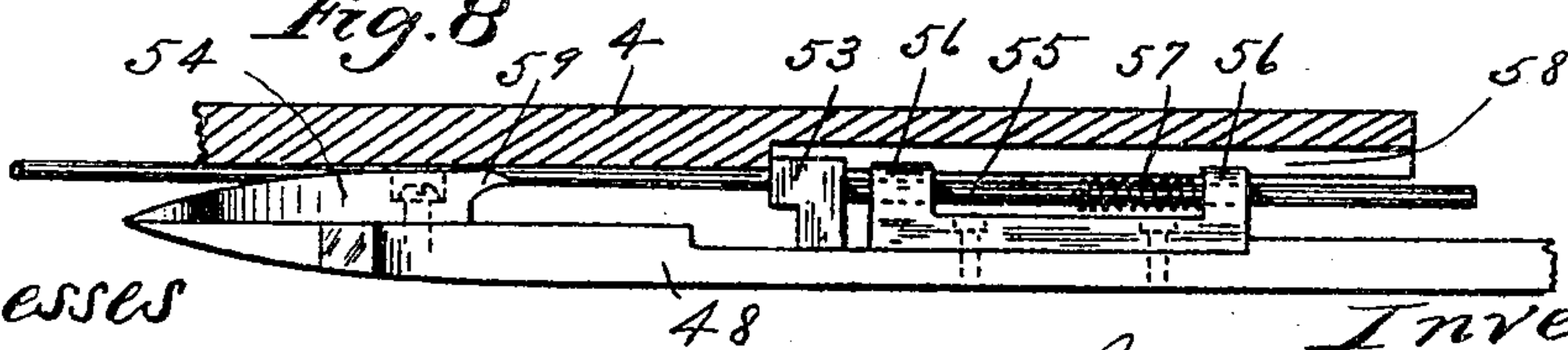
*Fig. 6*



*Fig. 7*



*Fig. 8*



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# UNITED STATES PATENT OFFICE.

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## ENVELOP-MACHINE.

No. 800,768.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed December 1, 1902. Serial No. 133,368.

*To all whom it may concern:*

Be it known that I, HERBERT E. SPROUT, a citizen of the United States, residing at Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and useful Envelop-Machine, of which the following is a specification.

My invention relates to the class of machines for automatically gumming, folding, and sticking envelops; and the object of my invention is to increase the capacity and improve the efficiency of such machines and also to simplify the construction of certain parts. One form of machine in which these objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in front elevation of a portion of an old form of envelop-machine embodying my improvement. Fig. 2 is a detail view, in side elevation, of a portion of said machine embodying my invention in section. Fig. 3 is a top view of that portion of the machine shown in Fig. 1. Fig. 4 is a detail top or plan view of the envelop-carrier. Fig. 5 is a detail view in section, on enlarged scale, showing the elevator feed mechanism. Fig. 6 is a detail view showing the trip. Fig. 7 is a detail view, on enlarged scale, in section, showing a portion of the carrier and illustrating the movable holder in position first engaging its stop. Fig. 8 is a like view, but with said holder in position to receive an envelop.

In the accompanying drawings my invention is shown as adapted and applied to an old form of envelop-machine, and only so much of such machine as is necessary for a proper understanding of my invention has been shown in said drawings, the application of my improvement being such as to be readily understood from the showing herein. In such drawings the numeral 1 indicates the legs or standards of the machine, 2 the table supported thereon, and 3 the cam-shaft. The latter may be driven from any suitable source of power, as by means of a belt passing over a pulley (not shown) secured to said cam-shaft.

The numeral 4 indicates a stop-plate supported on posts 5, rising from the table 2 and on which is mounted a gum or mucilage box 6. Slots 4<sup>a</sup>, angularly disposed with reference to each other, are formed in the plate 4. (See dotted lines in Fig. 3.) A gum-roll 7 is mounted in this box to receive gum or mu-

cilage therefrom and is rotated, as by means of a shaft 8 and pulley 9, driven from any suitable source of power. A supporting-shaft 10 is also mounted above the table 2, and this shaft bears arms 11, connected, as by means of links, to distributing-roll bearings 12, mounted on guide-rods 13, supported on the plate 4. A distributing-roll 14 is mounted in the bearings 12, and this roll has a reciprocating movement toward and from the gum-roll 7, with which it makes contact at one limit of its play.

An elevator 15 is mounted in a bracket 16, located underneath the table 2 and in position to support a pile of envelop-blanks 17 to be operated upon by the mechanism for gumming, folding, and the like.

All of the parts above described are of well-known construction, and a further description, except in connection with the parts hereinafter described, is deemed unnecessary herein for a proper understanding of the invention by those skilled in the art.

The numeral 18 denotes a picker-slide that is mounted in ways in an enlargement or boss 20, located on the arch 21, secured to the upper side of the table 2. Pickers 19 are secured to the lower end of the picker-slide 18 and are arranged at such angle with reference to each other as to correspond with the angle of the two edges of an envelop-blank to be gummed by the picker. These pickers are located in position to pass through the slots 4<sup>a</sup> in the stop-plate 4.

A picker-slide lever is mounted on a standard 22, located on the table 2, and this picker-slide lever consists of a picker-slide arm 23, secured to one end of a rock-shaft 24, that is connected with a connecting-rod arm 25. A link pivotally connects the end of the picker-slide arm 23 and the picker-slide 18. A connecting-rod is employed to operate the picker-slide 18 through the medium of the picker-slide lever just described, and this connecting-rod consists of a socket-piece 26, pivotally secured to the arm 25 and connected with the rod proper, 27, and the roll-supporting plate 28. The upper end of the rod 27 bears a pin 29, the ends of which rest in slots 30, located on diametrically opposite sides of the socket-piece 26. This end of the rod has a play in the socket-piece within certain limits defined by the pin and slot within the socket-piece. A



spring 31 is mounted on the rod with one end thrusting against the socket-piece 26 and the opposite end against a shoulder on the rod, this spring holding the rod with the pin 29 normally in the lower end of the slot 30. The roll-supporting plate 28 is forked at its lower end, the branches being located on opposite sides of cam-shaft 3. This plate supports a roller coöperating with a cam secured to the cam-shaft 3 and by means of which the picker-slide 18, through the medium of the connection just described, is reciprocated.

The elevator 15 is moved upward by means of a sprocket-chain 32, one end of which is secured to the elevator 15 and the opposite end to the sprocket-wheel 33. This sprocket-wheel is loosely mounted on the elevator-shaft 34, to which is secured a hand-wheel 35 and a ratchet 36. The sprocket-wheel 33 bears on its side face teeth, which are adapted to mesh with teeth on the side of a clutch part 37. This clutch part is splined to the shaft 34 and is held normally from engagement with the teeth on the sprocket-wheel, as by means of a spring 38. A push-rod 39 is mounted in an opening in the shaft 34, one end of the rod having a push-button 40 and the opposite end having a connection with the clutch part 37. A pawl-carrier 41 is suitably mounted with relation to the ratchet 36, in the form shown this carrier being pivotally mounted on the end of the shaft 34. A feed-pawl 42 is pivoted to the carrier in position to engage the teeth of the ratchet 36 for feeding the same, and a retaining-pawl 43 is suitably mounted to engage the teeth of the ratchet and prevent backward movement thereof. A ratchet-operating rod 44 is secured to the carrier and extends upward to the point where it engages with an extension 45 from the picker-slide arm 23. A trip 46 is pivoted in such operative relation to the clutch part 37 as to be interposed behind it and hold it in engagement with the teeth on the sprocket-wheel. This trip has an arm arranged in the path of movement of a trip-pin 47, secured to a part of the elevator 15, so that when the elevator has reached a predetermined position in its upward movement it engages one arm of the trip 46 and pushes the other arm of the said trip out from behind the clutch part 37, allowing the latter to be thrust from engagement, by means of its spring, with the teeth on the sprocket-wheel. The sprocket-wheel is then free to rotate on the shaft, and the elevator falls by the action of gravity. When the clutch part 37 is pushed into engagement with the teeth on the face of the sprocket, as by means of push-rod 39, the trip 46 again falls into position with one arm behind the clutch part to hold the latter in engagement with the side teeth on the sprocket-wheel.

A carrier is mounted to have a reciprocating movement underneath the plate 4 and to be projected into position to receive an en-

velop-blank after it has been raised by the action of the pickers 19 after the blank has been released from the hold of the pickers. This carrier presents the blank to the folding mechanism, by which it is folded and from which it is delivered into a proper receptacle.

The numeral 48 denotes the side parts of the carrier, that are mounted upon ways 49, located on standards 50 on the table 2 of the machine. These ways are suitably formed to retain the side pieces and allow a lengthwise movement of the carrier. The side parts are suitably united by cross-pieces, and the movement of the carrier is obtained, as by a lever 51, connected at one end of the carrier and operated, as by means of the cam 52, on the cam-shaft. This form of the carrier is a well-known construction, and a further description is therefore deemed unnecessary.

In operating the machine at high speed it has been found that the fast rate of movement of the carrier in delivering an envelop-blank from the pickers to the folding mechanism causes the blank to be raised at the forward edge. The term "forward" is used with respect to the movement of the carrier toward the folding mechanism. This raising of the blank is caused by the draft of air created by the rapid movement of the carrier. In order to overcome this defect and hold the blank at the front edge, I have provided a movable holder 53, which engages this edge of the blank and holds it in place. This holder coöperates with the stationary holders 54, located one on each of the side parts 48 and at the forward end thereof. Each of the movable holders 53 has a shank 55, movable longitudinally in the guides 56. There are preferably two of these guides to each movable holder, and said guides are formed in a U-shaped piece located in a recess in the side part of the carrier and in which recess the lower edge of the movable holder 53 is also located, as plainly shown in Figs. 7 and 8 of the drawings. The springs 57 retain the holders normally in contact with the end wall of the recesses in the side parts. Recesses 58 are formed in the stop-plate 4, and the upper edge of each of the movable holders 53 is located in one of these recesses. As the carrier is moved forward each of the holders comes in contact with the end wall of a recess 58, by which it is held, while the carrier continues to move. When the carrier reaches the forward limit of its play, the movable holders have each been retracted to sufficient distance to allow the envelop-blank to fall into position on the ways. As the carrier moves to deliver the blank to the folder the movable holders 53 each resumes its normal position under the influence of its spring 57. The lip on each of the holders overlies the envelop-blank, and the movement of the holder forces the opposite edge of the blank underneath the lips 59 on the stationary holders 54. The



blank is thus held securely during the movement of the carrier to deliver the blank to the folding mechanism.

The parts of the mechanism being in relative position, (shown in Fig. 1,) the slide 18 has a reciprocating movement imparted to it from the cam-shaft 3 through the connection of the rod 27, arm 23, and connected parts. The distributing-roll 14 also has a reciprocating movement imparted to it through the medium of the arms 11, supporting-shaft 10, and the rod connected with the cam-shaft. This distributing-roll in its reciprocating movement wipes the lower end of the pickers when they are at the upper limit of their play, as shown in Fig. 1, the roll being so located and movable, however, as to allow the downward movement of the pickers in the slot 4<sup>a</sup> in the table 4 after the roll has passed underneath the pickers. The pickers come in contact with the upper blank of the pile 17, and the mucilage on the pickers causes the blank to adhere thereto. The pickers now move upward and the blank comes in contact with the under surface of the table 4. Simultaneous with the upward movement of the blank the carriers are moved forward underneath the blank, this forward movement of the carriers bringing the movable holders 53 in contact with the shoulders on the table 4, this causing the movable holders to be moved away from the stationary holders 54. The movement of the carrier is so timed that it is located underneath the blank at about the time the blank strikes the under side of the table. The blank thus falls onto the carrier in the space between the movable holders 53 and the stationary holders 54. As the carrier moves away from under the table the movable holders 53 are permitted to approach the stationary holders 54, and the blank is thus securely held underneath the shoulders on each of said holders. The carrier presents the blank to the folding mechanism, by which it is operated upon in a manner common to envelop-machines of this class. The elevator is intermittently fed up to keep the upper surface of the top blank constantly in the same relative position with respect to the plate 4, and it will be noted that this feed of the elevator is caused by the ratchet-operating rod 44, which is connected directly with the picker-slide arm 23. It will thus be seen that the feed of the elevator is controlled and determined directly by the movement of the picker-slide 18. If the envelop is fed up to such a point that the pickers 19 engage the pile before the picker-slide 18 has reached the lower limit of its play, determined when the pin 29 is in the lower end of the slot 30, the yielding connection between the socket-piece 26 and the rod 27 allows a certain movement or contraction of the rod to accommodate this condition of affairs. This contraction allows

the pickers to assume a slightly lower position in each successive movement to accommodate itself to the decreasing thickness of the pile, and before the pile has reached such a position that the pickers cannot reach it the ratchet will have fed the elevator up another tooth-space. As the elevator is fed upward and at about the time the last sheet in the pile of blanks has been removed the trip-pin 47 comes in contact with the trip 46, moving it out from behind the clutch part 37, which frees itself under the influence of this spring from engagement with the sprocket 33, and the latter being free the elevator is allowed to fall to its lowermost position.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Means for supporting a pile of blanks, a reciprocating slide mounted in slideways above said blanks and having pickers, a lever for operating the slide, a socket-piece pivotally secured to one end of said lever, a rod extending and secured within the socket-piece and having a limited movement therein, a spring interposed between the socket-piece and a shoulder on the rod, means for operating the rod, means for removing a blank from the pickers, and means for removing the blank from underneath the pickers.

2. Means for supporting a pile of blanks, a reciprocating slide mounted in slideways above the blanks and having pickers, a lever for operating the slide, a socket-piece pivotally connected with the end of the lever and having a slot, a rod extending within the socket-piece and having a pin engaging said slot, a spring interposed between the socket-piece and a shoulder on the rod, means for operating the rod, means for removing a blank from the pickers, and means for removing the blank from underneath the pickers.

3. Means for supporting a pile of blanks, a reciprocating slide borne in slideways above said blanks and supporting pickers, a lever for supporting the slide, a socket-piece pivotally secured to said lever and having a slot, a rod extending and terminating within said socket-piece, a pin on the rod engaging said slot, a spring interposed between the socket-piece and a shoulder on the rod, means for operating the rod, means for removing a blank from the pickers, and means for removing the blank from underneath the pickers.

4. Means for supporting a pile of blanks, a slide supporting pickers and arranged to have a reciprocating movement in slideways above said blanks, a lever for operating the slide, a socket-piece pivotally connected with the lever, a rod extending within the socket-piece and having a limited movement with respect thereto, means for preventing relative turning movement of the rod and socket-piece, a spring interposed between the socket-piece and a shoulder on the rod, means for operat-



ing the rod, means for removing a blank from the pickers, and means for removing the blank from underneath the pickers.

5. Means for supporting a pile of blanks, a slide supporting pickers and arranged to have a reciprocating movement in slideways above said blanks, a lever for operating the slide, a socket-piece pivotally connected to said lever, a rod extending within the socket-piece, engaging means between the rod and socket-piece for limiting the relative lengthwise movement and for preventing relative turning movement of said parts, a spring interposed between the socket-piece and a shoulder on the rod, means for operating the rod, means for removing a blank from the pickers, and means for removing the blank from underneath the pickers.

6. In combination, means for delivering blanks to a carrier, the carrier, a guide supported on the carrier, a holder mounted in said guide and movable lengthwise of the carrier, and means for operating said holder.

7. In combination, means for delivering blanks to a carrier, the carrier, holders supported on the carrier and slidable with respect thereto, and means for moving the holders.

8. In combination, means for delivering blanks to a carrier, the carrier, holders supported on the carrier and slidable with respect thereto and having lips adapted to overlie the envelop, and means for moving the holders.

9. In combination, means for delivering blanks to a carrier, the carrier, holders fixedly supported on the carrier, holders supported on the carrier and slidable with respect thereto, and means for moving the movable holders.

10. In combination, means for delivering blanks to a carrier, the carrier, holders supported on the carrier and slidable with respect thereto, a stop interposed in the path of movement of the holders with the carrier, and means for moving the carrier.

11. Means for delivering blanks to a carrier and including a stop-plate having recesses on its under surface adapted to receive holders, the carrier, holders supported on the carrier and movable with respect thereto and arranged to be moved against the wall of the recess in the stop-plate, and means for moving the carrier.

12. Means for delivering blanks to a carrier and including a stop-plate having recesses on its under surface adapted to receive holders, the carrier, holders fixedly supported on the carrier, holders movably supported on the carrier and arranged to be moved against the walls of the recesses in the stop-plate, and means for moving the carrier.

13. In combination, means for delivering blanks to a carrier, the carrier, holders sup-

ported on the carrier and having a sliding movement in the direction of the movement of the carrier, and means for moving said holders.

14. In combination, means for delivering blanks to a carrier, the carrier, holders supported on the carrier and having a movement in the same direction as the carrier and having lips adapted to overlie the envelop, and means for moving the holders.

15. In combination, means for delivering blanks to a carrier, the carrier, holders fixedly supported on the carrier, movable holders supported on the carrier and having a movement toward and from the fixed holders, and means for moving the movable holders.

16. Means for delivering blanks to a carrier, the carrier having a recess, a guide supported in said recess, a holder movable in said guide and with a part projecting into said recess, and means for moving the holder.

17. Means for delivering blanks to a carrier, the carrier having a recess, a guide supported in said recess, a holder movable in the guide and with a part projecting into said recess, means for moving the carrier, and a stop interposed in the path of movement of the holder.

18. Means for delivering blanks to a carrier, the carrier having a recessed part, a U-shaped guide located in said recess, a holder having a shank located in the guide and with a projecting part located in said recess, and means for moving the holders.

19. In combination, means for delivering blanks to a carrier, the carrier, means for moving the carrier, guides located on the carrier, a holder having a sliding movement in said guides, means for operating the holder.

20. In combination, means for delivering blanks to a carrier, the carrier, guides supported on the carrier, fixed holders located on the carrier, holders mounted in said guides and having a movement to and from the fixed holders, and means operating the movable holders.

21. A machine adapted to receive a blank and transfer it to the folder, comprising a frame proper, two devices upon said frame for engaging, respectively, corners of the wrapper; two other devices opposite to those just mentioned, and movable to and from them, and also adapted to engage, respectively, corners of the wrapper; springs controlling said movable devices, respectively; and means whereby said movable devices are moved away from the other wrapper-holding devices against the resistance of their respective springs, to admit a wrapper between them.

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