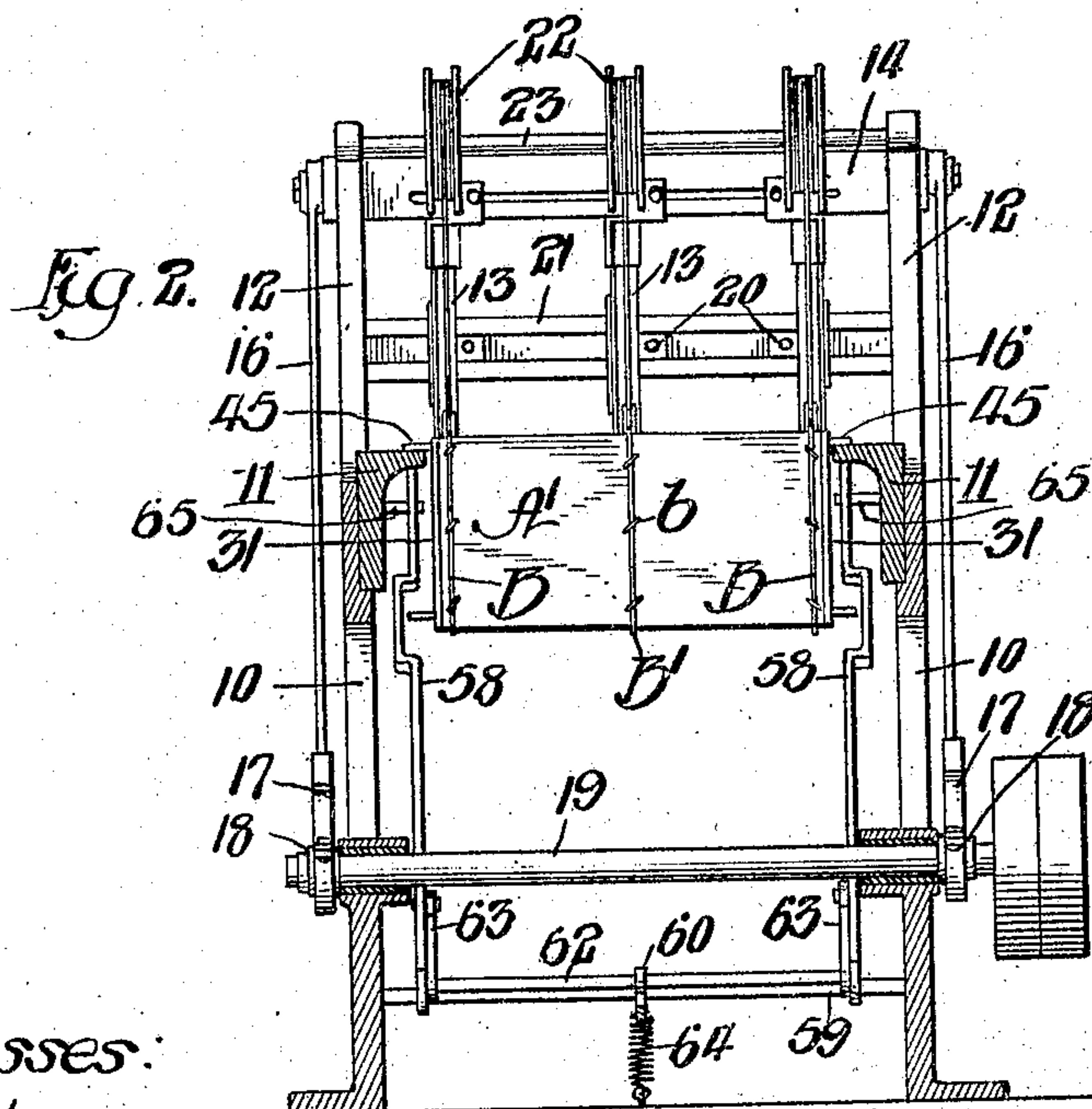
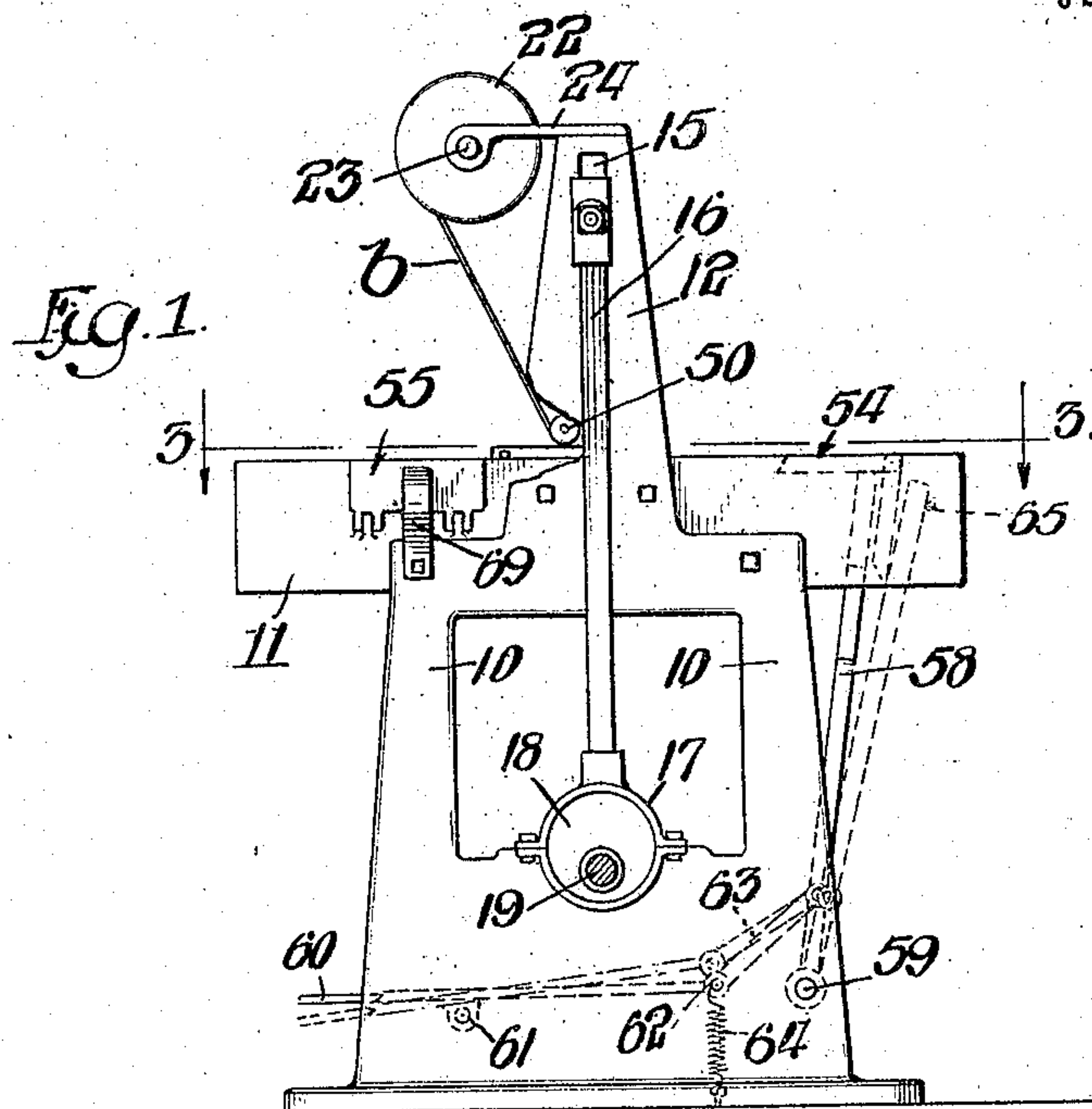


919,866.

3 SHEETS—SHEET 1.



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64 59

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Fig. 3.

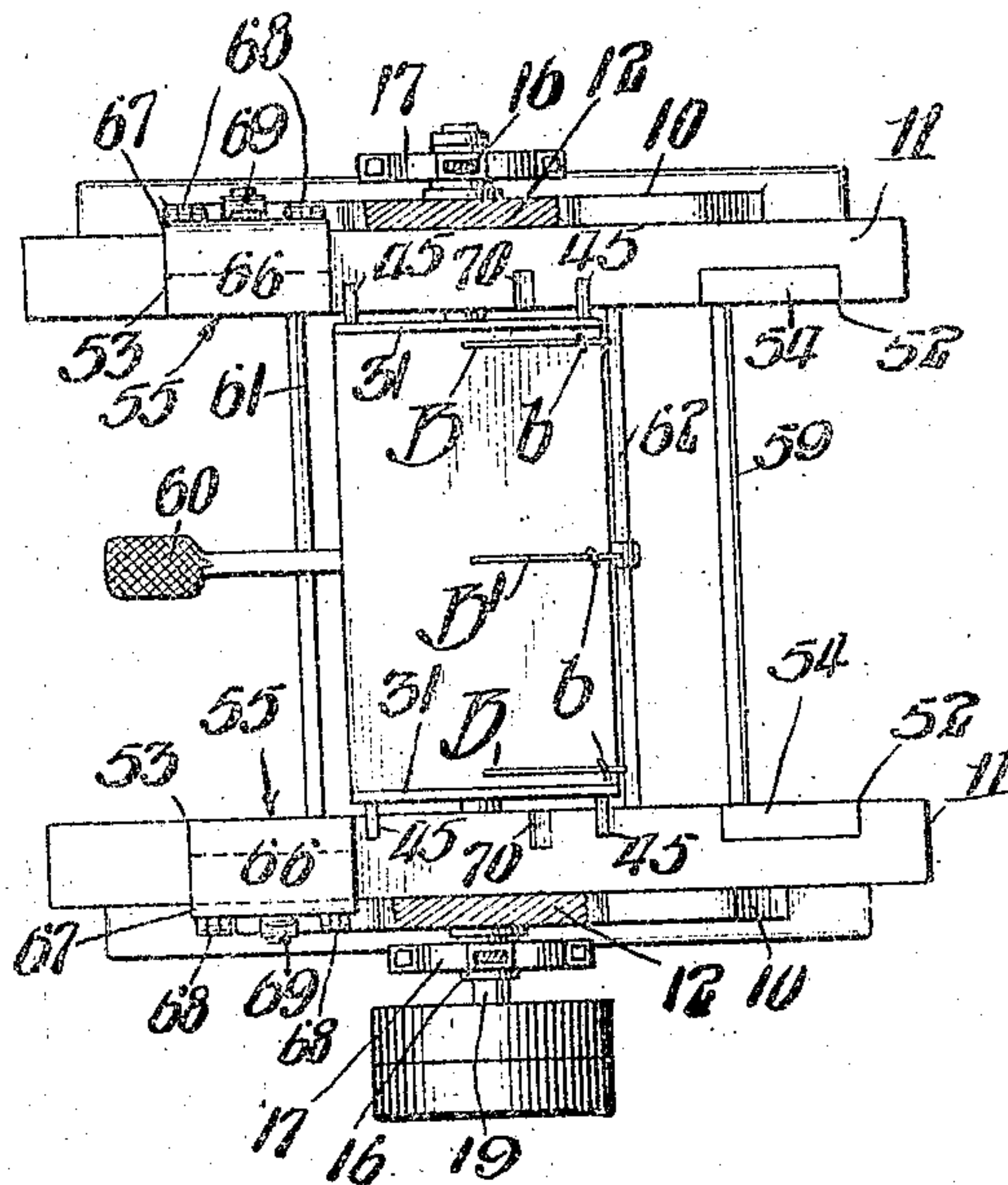


Fig. 4.

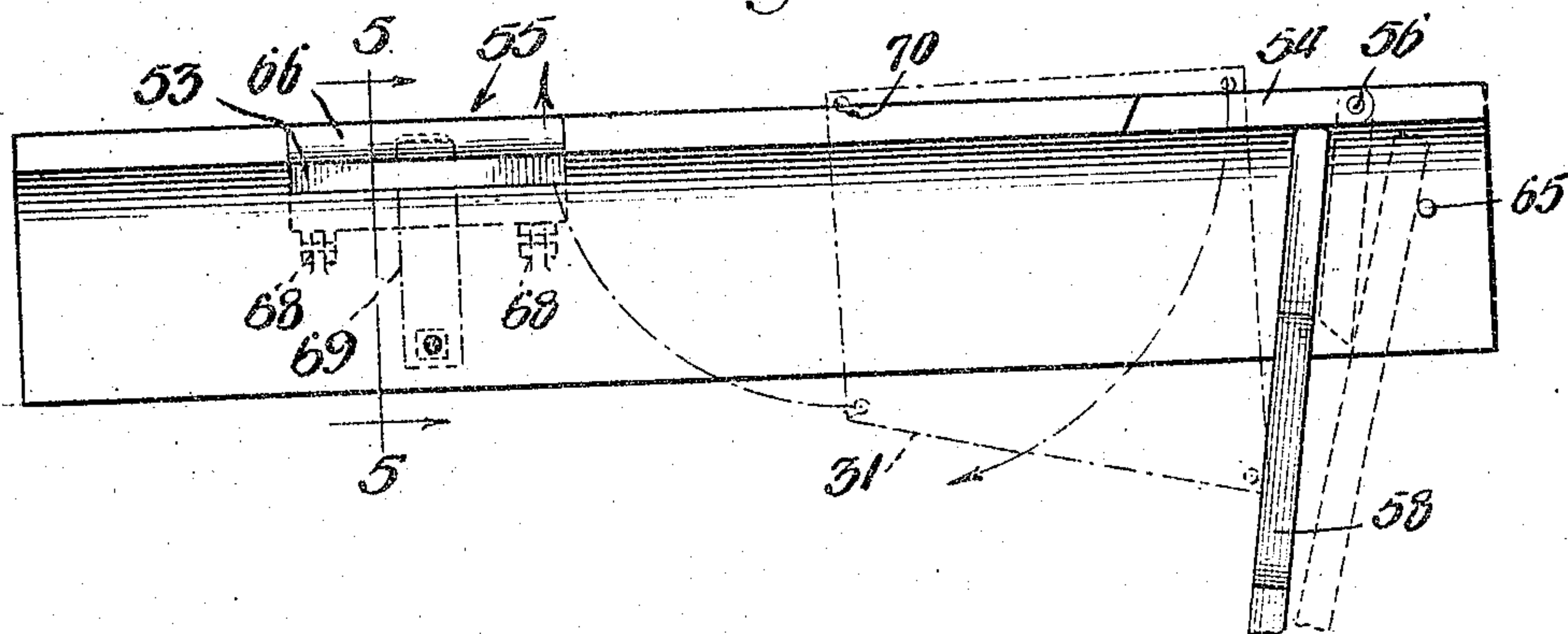
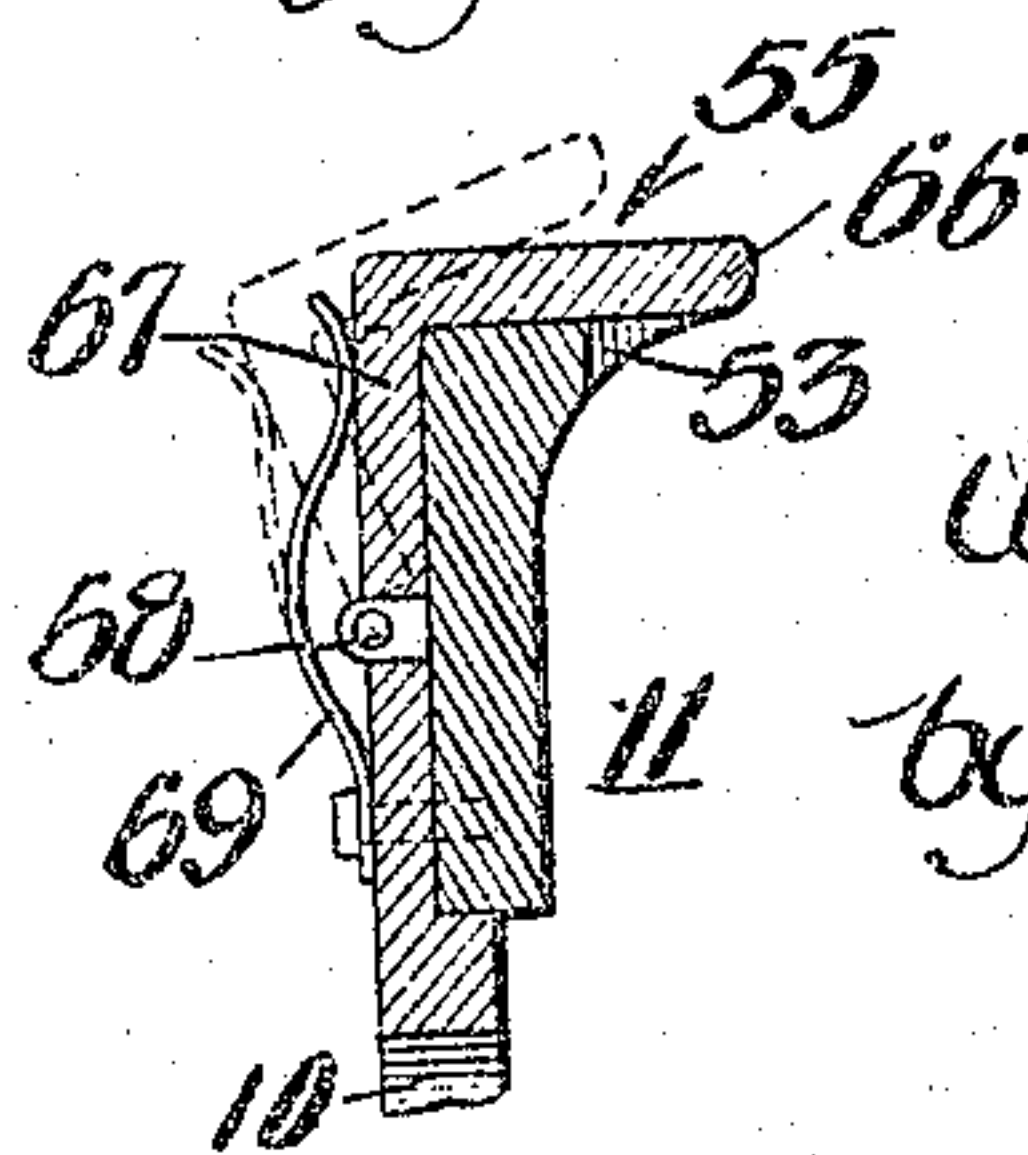


Fig. 5.



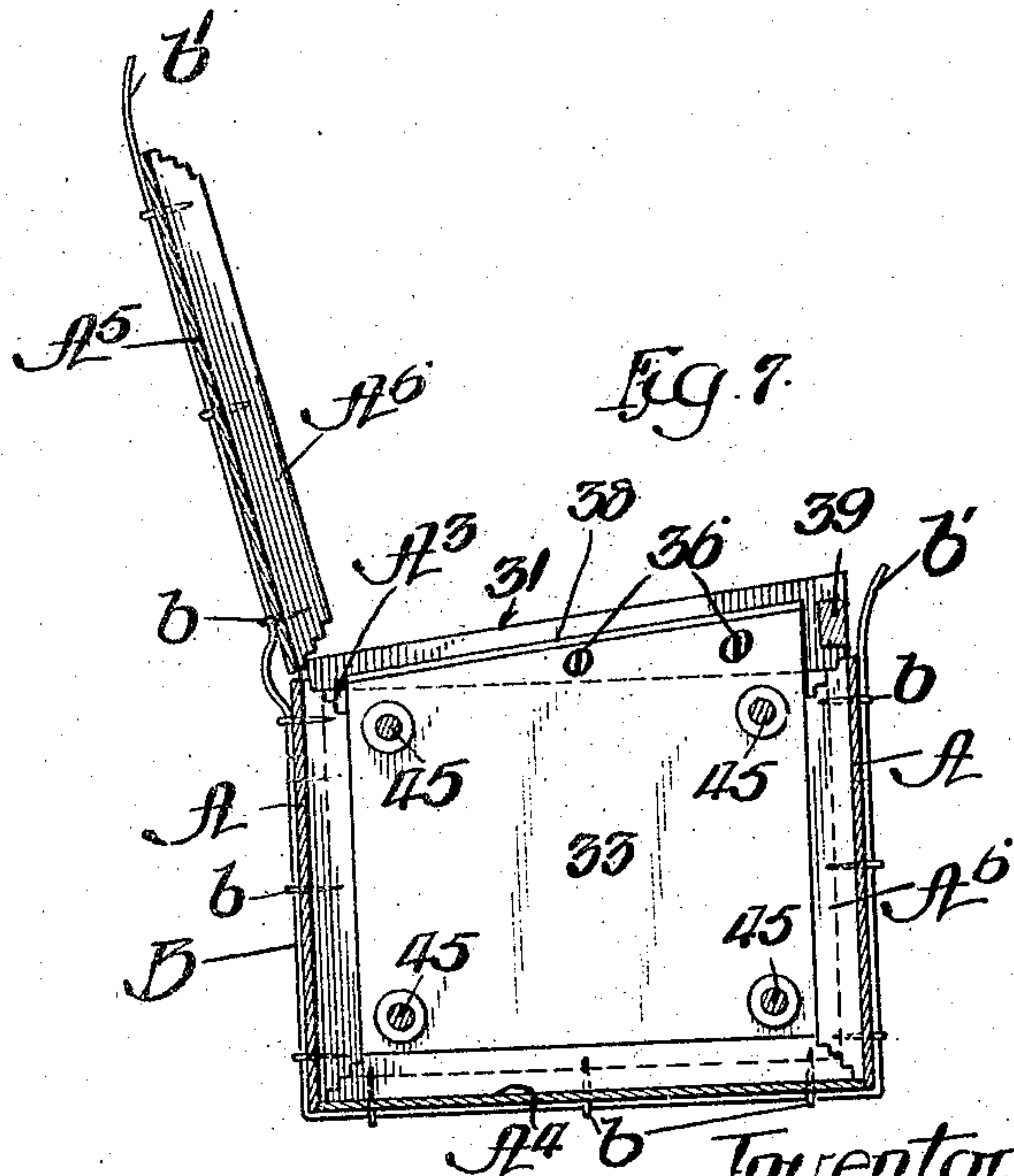
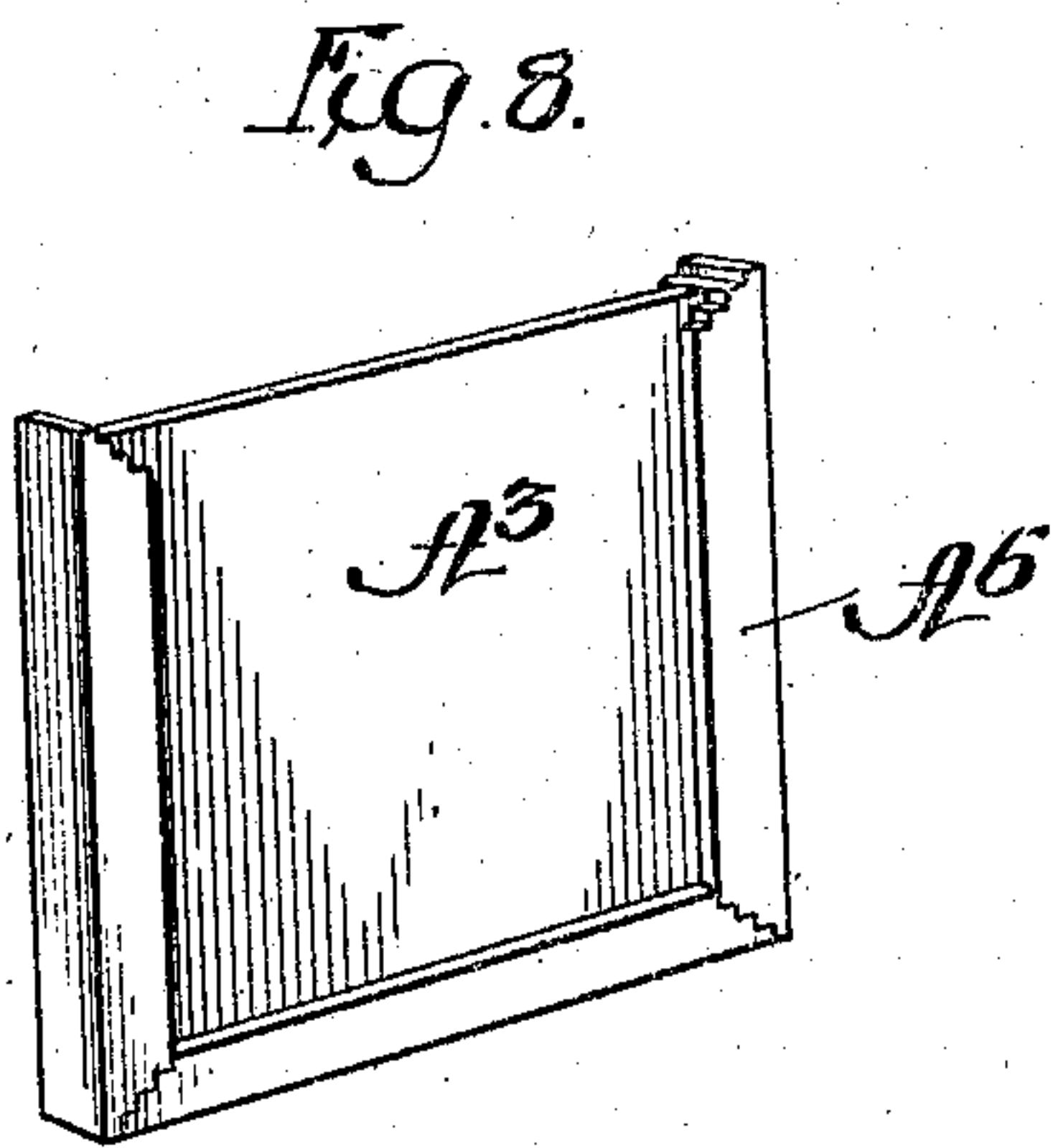
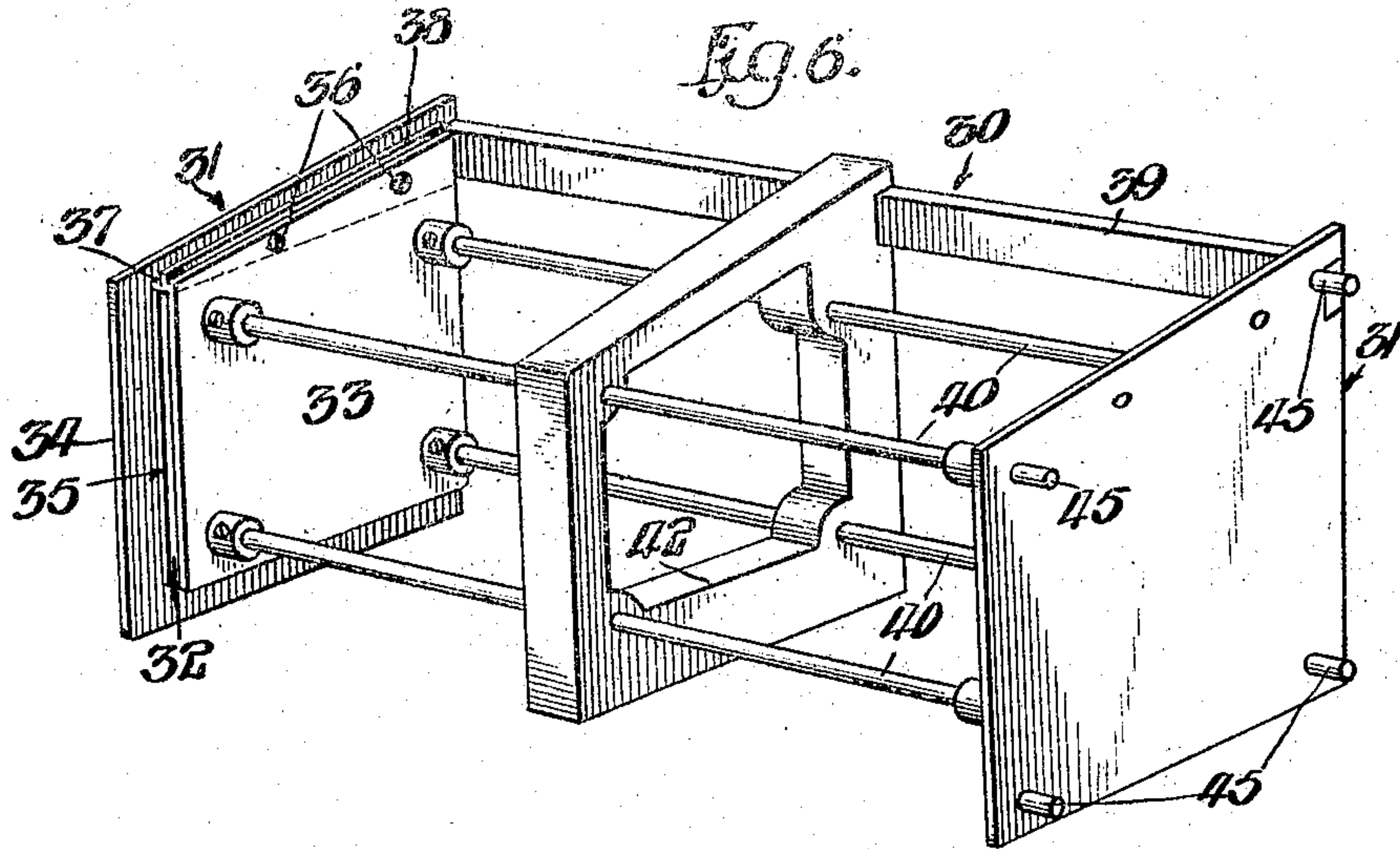
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W. H. HOLLAND.
MACHINE FOR MAKING BOXES.
APPLICATION FILED JUNE 17, 1907.

Patented Apr. 27, 1909.
3 SHEETS—SHEET 3.

919,866.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HOLLAND, OF SOUTH BEND, INDIANA.

MACHINE FOR MAKING BOXES.

No. 919,866.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed June 17, 1907. Serial No. 379,451.

To all whom it may concern:

Be it known that I, WILLIAM H. HOLLAND, a citizen of the United States, and a resident of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Machines for Making Boxes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in machines for making boxes and the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

The improvements constituting my invention are shown as embodied in a machine for making metal bound boxes of that class wherein the side, top and bottom walls are bound together by metal wires or strips that extend around and are attached to said walls to constitute means for reinforcing said walls and which serve also as a hinge for the swinging wall or cover of the box. My improved machine is well adapted for making boxes of this character, but may also be adapted and designed for making other kinds of boxes.

Among the objects of my invention is to provide an exceedingly simple and highly efficient machine for making boxes, the parts of which are so constructed and arranged that the box parts may be rapidly assembled and fastened together in a continuous operation of a single machine.

A further object of the invention is to provide in a machine of this character a suitable work holder about which the box is formed, combined with means for supporting the holder and turning the same to present the several sides of the holder and the different parts of the box in position to receive the fastening devices by which the parts of the box are fastened together and by which the binding wires or strips are attached when the box is a metal bound box.

In the drawings:—Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a transverse vertical section thereof. Fig. 3 is a horizontal section, taken on line 3—3 of Fig. 1. Fig. 4 is an inner side view of one of the rails of the machine on which the work holder is supported. Fig. 5 is a

cross-section, taken on line 5—5 of Fig. 4. Fig. 6 is a perspective view of the work holder about which the box is formed. Fig. 7 is a transverse section of said holder showing a finished box thereon. Fig. 8 is a perspective view of one of the end wall blanks with a portion of the attaching cleats applied to the margins thereof.

As shown in the drawings, the frame comprises two upright side pieces or standards, 10, 10, and two horizontal parallel rails 11, 11 supported on said standards. Said rails are attached to the inner sides of the standards in any suitable manner and are formed with inwardly directed overhanging flanges upon which the holder is supported as will hereinafter more fully appear. The said standards extend above said rails to provide extensions 12, 12 which carry a suitable stapling mechanism by which are driven the staples which fasten the box members together and fasten the binding wires to the box walls. Said stapling mechanism comprises a plurality of stapling heads 13, 13 which are carried by a cross-bar 14, 14 extending between and having vertical sliding engagement with the extension 12, the said cross-bar extending at its ends through vertical slots 15 in the standard extensions as shown most clearly in Fig. 1. The said cross-bar is reciprocated vertically to present the stapling heads to and retract them from the work through the medium of links 16, 16 loosely connected at their upper ends with the ends of said riveting head cross-bar, outside of the standard extensions, and connected at their lower ends with eccentric straps 17, 17 surrounding eccentrics 18, 18 fixed to a power shaft 19 extending between and having rotative bearing in the standards. The stapling heads are adjustable toward and from each other through the medium of suitable adjusting blocks 20, 20 adjustably mounted on a transverse bar 21 extending between the standard extensions above said rails 11 in a well-known manner, and the heads have vertically sliding engagement with said blocks.

22, 22 designate reels which carry the coils of binding wires or strips that are applied to the side, top and bottom walls of the box. Said reels are mounted on a shaft 23, 23 extending between and mounted at its ends in rearwardly directed arms 24, 24 fixed to the upper ends of the standard extensions. The

stapling mechanism *per se* constitutes no part of the present invention and any suitable form of mechanism may be employed.

30 designates, as a whole, a work holder upon which the box members are assembled and which supports said members while they are fastened together and while the binding wire is fastened to the top, bottom and side walls. The said holder, as herein shown, is made like the holder illustrated in my co-
 10 pending application for United States Letters Patent, filed on the 17th day of June 1907, Serial Number 379,452.

Before referring further to the construction of the work holder attention is called to the general construction of the box, shown more clearly in Figs. 7 and 8. The said box comprises side walls A A¹, end walls A², a bottom wall A³ and a swinging or top wall A⁴ hinged to the side wall A¹ by said binding wires or strips. Said top, bottom and side walls are bound together by said binding wires or strips, designated by B B¹, which are attached to the side, top and bottom walls by staples b. Certain of the staples constitute also the means for fastening together the box walls. The said side, top and bottom walls are attached to the end walls through the medium of cleats A⁵ which are provided with longitudinal grooves that fit over the margins of the end walls. The cleats are first applied to the side and bottom margins of said end wall blanks and said blanks are thereafter inserted into the holder, after which the side and bottom walls are attached to said end wall blanks and the binding wires fastened in place in the manner described in my aforesaid application. The cleats of the top wall A⁴ are attached to the top wall in a like manner but are not attached to the end walls, said cleats being so arranged that the grooves thereof fit over the upper margins of said end walls when the top wall is in its closed position. Said cleats are formed at their ends with mitered joints to provide an interlocking connection which stiffen and give firmness to the box. The terminals of the binding wires or strips are extended beyond the box walls to form tying ends b¹ of a length to be twisted together when the top wall of the box is closed, thereby, not only holding the top wall in its closed position but also effecting a connection between the ends of the binding wires or strips to constitute a continuous metal binding that extends entirely around the box to reinforce the same.

The box holder comprises two end members 31, 31 which are so constructed and arranged as to receive and support the end wall blanks and the bottom and side cleats which are applied thereto before being fitted to said members of the holder, and also to guide the top, bottom and side wall blanks and hold

them while being fastened in place. The means for supporting the end wall blanks in the holder comprise end wall blank receiving grooves 32 which are open at their sides and bottoms and closed at their tops. Said grooves are formed, as herein shown, between inner and outer plates 33, 34, respectively, the grooves being formed between said inner plates and raised portions 35 on the inner faces of the outer plates, the raised portions being of the same general dimensions and shape as said inner plates 33. The said plates of each end member are fastened together by screws 36 extending through the said plates near their upper margins. The inner plates are provided at their upper marginal parts with flanges 37 which serve to space said plates to provide the end wall blank receiving grooves and said screws extend through said flanges to afford a wide bearing for said screws. The said flanges 37 close the top of said end wall blank receiving grooves. Said grooves are of less dimensions than the end wall blanks so that the bottom and side margins of said end walls extend beyond the grooves to receive the grooved cleats as shown in Fig. 7. The end faces or margins of said inner plates 33 and of the raised portions 35 of the outer plates constitute shoulders against which the inner faces of said cleats are supported when the staples are driven through the same. The outer plates 34 extend beyond the inner plates in the planes of the outer plates and beyond the cleats which are fitted to said end wall blanks and constitute guide flanges which engage the end margins of the side, top and bottom wall blanks when the latter are applied to said cleats to be fastened thereto, thus holding said side, top and bottom wall blanks from endwise movement at this time. The end wall blanks are inserted into the receiving grooves in the end members of the holder with the side and bottom cleats applied thereto, as shown in Fig. 8, and the side walls are attached to said cleats and to the end walls by staples driven therethrough in the manner hereinafter described. The staples which fasten the top wall to the cleats thereof are, however, not designed to penetrate the upper margin of the end walls but means are provided for deflecting the points of the staples out of the planes of the grooves of the top wall cleats to permit said grooved cleats to fit freely over the upper margins of the end walls of the finished box. For this purpose, ribs 38 are formed on the flanges 37 of the inner plates of the end members in line with and above the said end wall blank receiving grooves, over which ribs the grooved top wall cleats are fitted before the top wall blank is attached thereto. The said ribs are disposed obliquely to the side and bottom shoulders against which the side and bottom cleats are supported as aforesaid, to

raise the top wall cleats a distance required above the top margins of the end walls, so that the top wall blank when being fastened to its cleats assumes a partially open position. This arrangement is necessary when the outer plates of the end members of the holders are connected together by the bar 39 herein shown, inasmuch as said bar is and must be outside of the box. With the top wall slightly open, space is provided between the upper margin of the front wall of the box and the free margin of the top wall to receive said connecting bar. Said end members of the holder are further connected by tie-rods 40 extending between and rigidly attached to the inner plates of the end members. If the tie-rods 40 and the screws 36 be relied upon as a sufficiently rigid connection of the end members, the deflecting ribs may be differently disposed inasmuch as the connecting means between the end members will be contained entirely within the box when the latter is finished. By reason of the fact that the top wall of the box is not to be attached to the end walls, the arrangement shown, or an equivalent arrangement is desirable regardless of the manner of connecting the end members of the holder.

When an intermediate binding wire or strip B¹ is to be applied to the side, bottom and top walls of the box, the holder is provided with an anvil frame, indicated as a whole by 42, the outer top, bottom and side faces of which constitute anvils against which the rivets that fix the intermediate binding wire or strip to the box walls are clenched or upset. The said anvil faces of the intermediate frame are in line with the outer faces of the corresponding cleats of the end walls and the upper anvil face is obliquely inclined to correspond with the inclination of the ribs which support the top wall cleats.

The holder is provided at its ends with supporting lugs or pins 45 which extend endwise outwardly from the outer plates of the end members thereof. Said supporting pins or lugs extend over and rest on the horizontal inwardly extending flanges of the side rails 11 of the machine, whereby the holder may be supported at any given time on one pair of said pins or lugs at each end of the holder. The pins or lugs are located at equal distances from the side and end margins of the outer plates of the end members. That is to say, a line passing through the two pins at one side or end of the outer plate of each end member is parallel with the margin of said outer plate and parallel with the shoulders against which the cleats are supported, thereby maintaining the cleats supported on said shoulders horizontal and at right angles to the movement of the staple driving heads when the holder is presented to the staple driving

mechanism. The holder is adapted to be turned or rotated so as to successively present its four sides with the box wall blanks supported thereon to the staple driving mechanism, and when in position to so present one side thereof to the staple driving mechanism it is supported at each end on the rails by two pairs of said pins or lugs, as stated, with the upwardly facing side of the holder horizontal. In order to accomplish this result, the supporting rails 11 of the machine are provided in front and in rear of the staple driving mechanism with openings through which the holder supporting pins 45 pass at the time the holder is turned and said openings are normally closed by suitable bridge pieces arranged to swing toward and away from the openings to permit said supporting studs or pins to pass through said openings, while constituting parts of the supporting surfaces of the rails when in their closed positions. When the holder is to be turned it is advanced to bring the two front supporting lugs at the opposite sides of the holder in line with the two front openings in the rail, and the bridge pieces, which normally close said openings, are swung away from said openings to permit said two front lugs to pass therethrough, the holder at this time swinging downwardly about the rear pair of oppositely disposed lugs.

The turning movement of the holder to bring another side thereof upwardly to present the latter side to the stapling mechanism swings another pair of oppositely disposed lugs upwardly into the plane of the supporting face of said rails, and said latter studs during said swinging movement are carried upwardly through the normally bridged rear openings of the rail to serve as the rear studs for supporting the holder in its new position. The said front and rear openings in said supporting rails 11 are designated as 52 and 53, respectively, and they are normally closed by front and rear bridge pieces 54, 55, respectively. Said front bridge pieces consist of plain bars which are hinged at their forward ends to hinge pins 56 to swing downwardly away from said front openings. Said bridge bars are beveled at their rear ends to fit correspondingly beveled surfaces of the rails, as shown in Fig. 5, to provide a smooth joint between the parts. The said bridge pieces 54 take a portion of the load of the forward side of the holder just before the holder is turned, and in order to hold them in their normal bridging positions they are locked in place by means permitting ready release thereof so as to permit the front pair of lugs to swing downwardly therethrough. The locking means herein shown for this purpose comprises vertically swinging lock bars 58, 58 that are pivoted at their lower

ends to a pivot rod 59 extending between the side members or standards of the frame and in their normal position are located with their upper ends beneath the bridge pieces to prevent the latter from swinging downwardly. The said swinging lock bars 58 are swung rearwardly to release the same from the bridge pieces by means of a foot lever 60 pivoted between its ends to a shaft 61 extending between said standards 10. Fixed to the rear end of said foot lever is a transverse shaft 62 which loosely carries at its outer ends links 63 that are pivotally connected at their upper ends with said lock bars 58, as shown in Fig. 1. A spring 64 normally holds the rear end of the foot lever in its lower position with the front end of the foot lever elevated, and said spring also acts through said links to hold the lock bars in their locking positions, as shown in full lines in Fig. 1. Depression of the forward end of the foot lever raises the rear end thereof and acts through the links to swing the lock bars to their unlocking positions to permit the bridge pieces to swing downwardly, as indicated in dotted lines in Fig. 1. Stop pins 65 engage the upper ends of the lock bars to limit their rearward swinging movement.

The front bridge pieces 55 swing laterally and outwardly from the front openings 53 to permit the holder supporting studs to pass upwardly through said openings. Said front bridge pieces are made of general L-shape in cross-section, comprising upper horizontal parts 66 which extend over the upper sides of said rails and the openings 53, and vertical portions 67 which are located outside of and parallel with the outer faces of said rails and are hinged to said rails to swing laterally outwardly by suitable hinges 68. Leaf springs 69 fixed to said rails and bearing at their ends against the vertical members of the bridge pieces hold said bridge pieces in their normally closed positions. In Fig. 5 is illustrated in full lines the normally closed positions of said bridge pieces 55. The dotted lines in said figure illustrate the open positions of said bridge pieces, in which latter positions the supporting lugs of the holder are free to pass through said rear openings 53 in the holder supporting rails.

The operation of the machine is as follows: The end wall blanks to which the side and bottom cleats are first applied are inserted into the end wall blank receiving grooves of the holder. Thereafter one of the wall blanks to constitute the side, top or bottom is applied to its corresponding cleats A⁹ between the extensions of the outer plates of the end members, the said wall blanks being guided into place and held from endwise movement by said extensions of said plates. The holder is thereafter

advanced to a suitable position beneath the stapling mechanism. It may be here observed that the binding wires or strips 7 are trained from the reels 22 about guiding pulleys 50 supported in any suitable manner on the stapling head and arranged to guide the said wires over the top face of the wall to be applied in close proximity thereto. Any suitable means may be applied for initially holding the ends of the wires or strips in position for the staples to be driven astride the same into and through the box wall blanks beneath the wire after which said wires are held down over the box wall blank by their fast ends and the guiding shifts 50. After the first row of staples have been driven in the manner described, the holder is moved forwardly a distance to bring the box in the next position and another row of staples are driven. This operation is repeated until the required number of rows of staples have been driven into the box wall blank. The work holder is thereafter advanced to bring the front supporting studs 45 over the forward bridge pieces 54, as indicated in dotted lines in Fig. 4. Thereafter the lock bars 58 are swung rearwardly through the action of the foot lever 60 to permit the forward bridge pieces to swing downwardly and permit the forwardmost holder supporting studs to swing downwardly through said openings. At this time the holder swings on the rear pair of studs which remain on the supporting surfaces of the rails. As the forward end of the holder thus swings downwardly, the rear end of the holder swings upwardly to bring another pair of studs on the supporting rails, said latter pair of studs passing through the rear openings of the supporting rails and swinging the bridge pieces 55 upwardly as they do so. After said latter pair of studs have been raised above the supporting rails 11, the bridge pieces 55 are swung into their closing positions by the springs 69. There is now presented another side of the holder to the stapling mechanism. Another wall blank is applied to the end wall cleats and the holder is intermittently advanced beneath the stapling mechanism in the same manner as before. The turning of the work holder in the manner stated serves to draw from the reels 22 the binding strips or wires which are held by the guide pulleys 50 in proper position over the next wall blank applied on the side of the holder newly presented to the stapling mechanism, so that the staples applied to fasten the last wall blank placed on the holder also fastens the binding wires or strips to said wall blank as before. These operations are repeated until all the side, bottom and top wall blanks and the binding strips or wires are fastened in place. The work holder is advanced,

after each wall blank has been thus applied as stated, beyond its last stapling position to bring the forwardmost holder supporting lugs over the forwardmost bridge pieces 5 54 and the rails are provided on their upper faces with notches 70, 70 (Fig. 3) which are engaged by the rearmost pair of holder supporting lugs when the holder is in its turning position so as to prevent the holder 10 from slipping on the rails which would result in bringing the swinging holder studs out of register with the openings in the rails through which they pass. The openings in the holder supporting rails and the bridge 15 pieces therefore are made of such length as to provide for holders of varying dimensions and proportions, it being evident that the distances between the depressions 70 and the inner and outer ends of the bridge 20 pieces, respectively, define the limits of the shortest and longest lengths respectively of any side of a holder that may be used with a given pair of supporting rails.

After the first box has been formed about 25 the holder the holder may be advanced on the supporting rails toward the forward ends thereof and allowed to remain thereon until a second holder bearing end wall blanks and cleats is placed on the rear ends 30 of said rails, thus affording means for holding the binding wires or strips properly in place with respect to the first side wall blank of the box that is to be formed on said second holder when the latter holder is advanced to the first stapling position beneath 35 the stapling mechanism. After the first side wall blank of the second or succeeding box has been fixed in place the binding wires are cut between the two holders after which the 40 first holder and the box thereon may be removed from the rails. The extensions of said binding wires or strips beyond the box walls constitute the tying ends b^1 of said wires or strips. In this manner, after one 45 box has been made, no special provisions need be provided for holding the free ends of the binding wires or strips. In order to remove the finished box from the holder the swinging top wall is swung back past the 50 plane of the side wall to which it is hinged, after which it is free to be stripped off the holder.

It will be observed that the work holder moves always in the same direction through 55 the machine during the stapling operation, and that said holder is turned or rotated in the same direction toward which it moves or slides. This arrangement of the parts serves to maintain a tension on the binding wires at all times and prevents slacking of the 60 wires when the holder is turned or rotated.

It will be understood that the machine described illustrates one embodiment of my invention and that the details of the machine 65 and the manner of operating the sev-

eral parts thereof are susceptible to variations within the spirit of my invention. For instance, if the binding wires or strips be omitted the mechanism for applying the fastening devices, as the staples herein shown, 70 may be varied to apply fastening devices of other kinds. Moreover, the holder arranged on the support to be turned or rotated so as to successively present the wall blanks of the box upwardly may be adapted 75 to a machine in which the fastening devices are applied to the box walls or parts by a hand operation.

I claim as my invention:—

1. A machine for making metal bound 80 boxes having side and two end walls, comprising a frame or support, a rotative work holder of angular cross-section mounted on said support, constructed to receive the box ends and provided with means for support- 85 ing the box sides, stapling mechanism for driving staples through the box sides into the box ends, said holder being arranged to be turned or rotated to present its several sides to the stapling mechanism, and the 90 holder and stapling mechanism being relatively movable longitudinally of the frame and means for guiding binding wires between the box sides and stapling mechanism in position to be fastened to the box sides by 95 said staples.

2. A machine for making metal bound boxes having side and two end walls, comprising a frame or support, a rotative work 100 holder of angular cross-section mounted on said support, constructed to receive the box ends and provided with means for supporting the box sides, stapling mechanism for driving staples through the box sides into the box ends, said holder being arranged to 105 be turned or rotated to present its several sides to the stapling mechanism, and means for guiding binding wires between the box sides and stapling mechanism in position to be fastened to the box sides by said staples. 110 the work holder being arranged, by its movement, to maintain tension on the binding wires in all positions of said holder.

3. A machine for making metal bound boxes, comprising a horizontal support, a 115 work holder of angular cross-section mounted on said support, provided with two end members constructed to receive box ends, and provided with means for supporting the box sides, said work holder sliding horizon- 120 tally on the support in one direction only and arranged to be turned or rotated in the direction toward which it slides to present its several sides upwardly, stapling mechanism above said work holder for driving staples through the box sides into the box ends, 125 and means for guiding binding wires between the box sides and stapling mechanism in position to be fastened to said box sides by said staples. 130

4. In a machine for making metal bound boxes, the combination with a frame or support, a stapling mechanism, and binding wire supporting and guiding devices, of a work holder arranged to receive and support the four sides and two end walls of a box in assembled relation, said holder being capable of being turned or rotated to present its four sides to the stapling mechanism, and the wire guiding devices serving to guide the binding wire to the box in position to be applied to the box sides by the staples driven thereinto by the stapling mechanism.

5. In a machine for making metal bound boxes, the combination with a frame or support, a stapling mechanism and binding wire supporting and guiding devices, of a work holder arranged to receive and support the four sides and two end walls of a box in assembled relation, said holder being capable of being turned or rotated to present its four sides to the stapling mechanism, and so arranged to maintain by its movement the binding wires under tension in all positions of the holder and the wire guiding devices serving to guide the binding wire between the work and the stapling mechanism.

6. A machine for making metal bound boxes having two end and four side walls, comprising a frame or support, a work holder of angular cross-section mounted on said support and constructed to support the two box ends and the four box sides in assembled relation, a stapling mechanism for driving staples through the box sides into the box ends, said holder being arranged to be turned or rotated to present its several sides to the stapling mechanism, and means for guiding binding wires between the stapling mechanism and box sides in position to be fastened to the box sides by said staples.

7. A machine for making metal bound boxes having two end and four side walls, comprising a frame or support, a work holder of angular cross-section mounted on said support and constructed to support the two box ends and the four box sides in assembled relation, a stapling mechanism for driving staples through the box sides into the box ends, said work holder being arranged to be turned or rotated to present its several sides to the stapling mechanism, and means for guiding binding wires between the stapling mechanism and box sides in position to be fastened to the box sides by said staples, the work holder being arranged, by its movement, to maintain the binding wires under tension in all positions of said holder.

8. In a machine for making metal bound boxes, the combination with a frame or support, a stapling mechanism and binding wire supporting and guiding devices, of a work holder mounted on said support, adapted for movement from front to rear of the ma-

chine beneath the stapling mechanism, and means whereby said holder may be turned about axes located near its corners to successively present its several sides to the stapling mechanism and the wire guiding devices serving to guide the binding wires between the work and the stapling mechanism.

9. In a machine for making wire bound boxes, the combination with parallel supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and supporting box wall blanks, lugs extending from said ends of the holder and arranged at each end to act in pairs to support the holder from said rails, and means whereby said holder may be turned or rotated to present its several sides to the stapling mechanism.

10. In a machine for making wire bound boxes, the combination with parallel supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and holding box wall blanks and lugs extending from said holder and adapted to be supported on said rails, said holder being adapted to be rotated or turned to present its several sides to the stapling mechanism and the supporting rails being provided with openings through which the supporting lugs pass when the holder is so turned.

11. In a machine for making wire bound boxes, the combination with parallel supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and holding box wall blanks and lugs extending from said holder and adapted to be supported on said rails, said holder being adapted to be rotated or turned to present its several sides to the stapling mechanism and the supporting rails being provided with openings through which the supporting lugs pass when the holder is so turned, and bridge pieces normally closing said openings and adapted to be moved away therefrom to permit the lugs to pass through the openings.

12. In a machine for making wire bound boxes, the combination with supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and holding box wall blanks, lugs extending from said holder and adapted to be supported on said rails, said holder being designed to be rotated or turned to present its several sides to the stapling mechanism, the rails being provided in front and in rear of the stapling mechanism with openings through which the supporting lugs pass when the holder is so turned, bridge pieces normally closing said openings the forward bridge pieces being arranged to swing

downwardly away from their openings and the rear bridge pieces being arranged to swing upwardly away from their openings.

13. In a machine for making wire bound boxes, the combination with supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and holding box wall blanks, lugs extending from said holder and adapted to be supported on said rails, said holder being designed to be rotated or turned to present its several sides to the stapling mechanism, the rails being provided in front and in rear of the stapling mechanism with openings through which the supporting lugs pass when the holders are so turned, bridge pieces normally closing said openings, the forward bridge pieces being arranged to swing downwardly away from their openings, and the rear bridge pieces being arranged to swing upwardly away from their openings, and means for positively locking the forward bridge pieces in their closed positions constructed to release said bridge pieces to permit them to swing downwardly.

14. In a machine for making wire bound boxes, the combination with supporting rails, a stapling mechanism and wire holding and guiding devices, of a work holder provided with means for receiving and holding box wall blanks, lugs extending from said holder and adapted to be supported on said rails, said holder being designed to be rotated or turned to present its several sides to the stapling mechanism, the rails being provided in front and in rear of the stapling mechanism with openings through which the supporting lugs pass when the holder is so turned, bridge pieces normally closing said openings, the forward bridge pieces being arranged to swing downwardly away from their openings, and the rear bridge pieces being arranged to swing upwardly away from their openings, means for positively locking the forward bridge pieces in their closed positions constructed to release said bridge pieces to permit them to swing downwardly, and spring devices for normally holding the rear bridge pieces in their closed positions.

15. In a machine for making metal bound boxes, the combination with a suitable frame or support, a stapling mechanism and bending wire supporting and guiding devices, of a rotatable work holder about which the box is formed provided with means for supporting thereon the four side and two end wall blanks of a box, said wire guiding devices being so arranged with respect to the stapling mechanism that said wires are attached to the walls of the box by the same staples which attach the side walls to the end walls of the box.

16. In a machine for making boxes, the

combination with a frame or support and fastener inserting mechanism, of a work holder mounted on said support and means for receiving and supporting the four side and two end box wall blanks on said holder while being assembled and fastened together, said holder being capable of being turned or rotated to present the four side box wall blanks in position to receive fastening devices.

17. In a machine for making boxes, the combination with a frame or support and fastener inserting mechanism, of a horizontal work holder mounted on said support and means for receiving and supporting the four side and two end box wall blanks on said holder while being assembled and fastened together, said holder being capable of being turned or rotated to present the four side box wall blanks upwardly.

18. In a machine for making boxes, the combination with parallel supporting rails and fastener inserting mechanism, of a work holder provided with means for receiving and supporting thereon box wall blanks, a plurality of lugs extending from the ends of the holder by which the holder is supported from said rails, and means whereby the holder may be turned or rotated to present the several wall blanks thereon in position to receive wall fastening devices.

19. In a machine for making boxes, the combination with parallel supporting rails and fastener inserting mechanism, of a work holder provided with means for receiving and supporting thereon box wall blanks and with lugs by which the holder is supported from the rails, said holder being adapted to be rotated or turned to successively present its several sides upwardly, and the rails being provided with normally bridged openings through which the supporting lugs pass when the holder is so turned.

20. A machine for making boxes comprising parallel supporting rails, binding wire supporting and guiding devices, a stapling mechanism and a portable rotative work holder slidable on said rails beneath said stapling mechanism, said rails being free or unobstructed at the end of the machine, whereby the work holder may be slid off the rails and removed from the machine, and the wire guiding devices serving to guide the binding wires between the work holder and stapling mechanism.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 12th day of June A. D. 1907.

WILLIAM H. HOLLAND.

Witnesses:

RALPH H. KUSS,
J. E. McENDARFER.