F. M. PETERS & H. H. HUNGERFORD.

SLIP INSERTING MECHANISM.

APPLICATION FILED MAR. 25, 1907.

989,797. **Patented Apr. 18, 1911.**

3 SHEETS—SHEET 1.

Fig. 1.

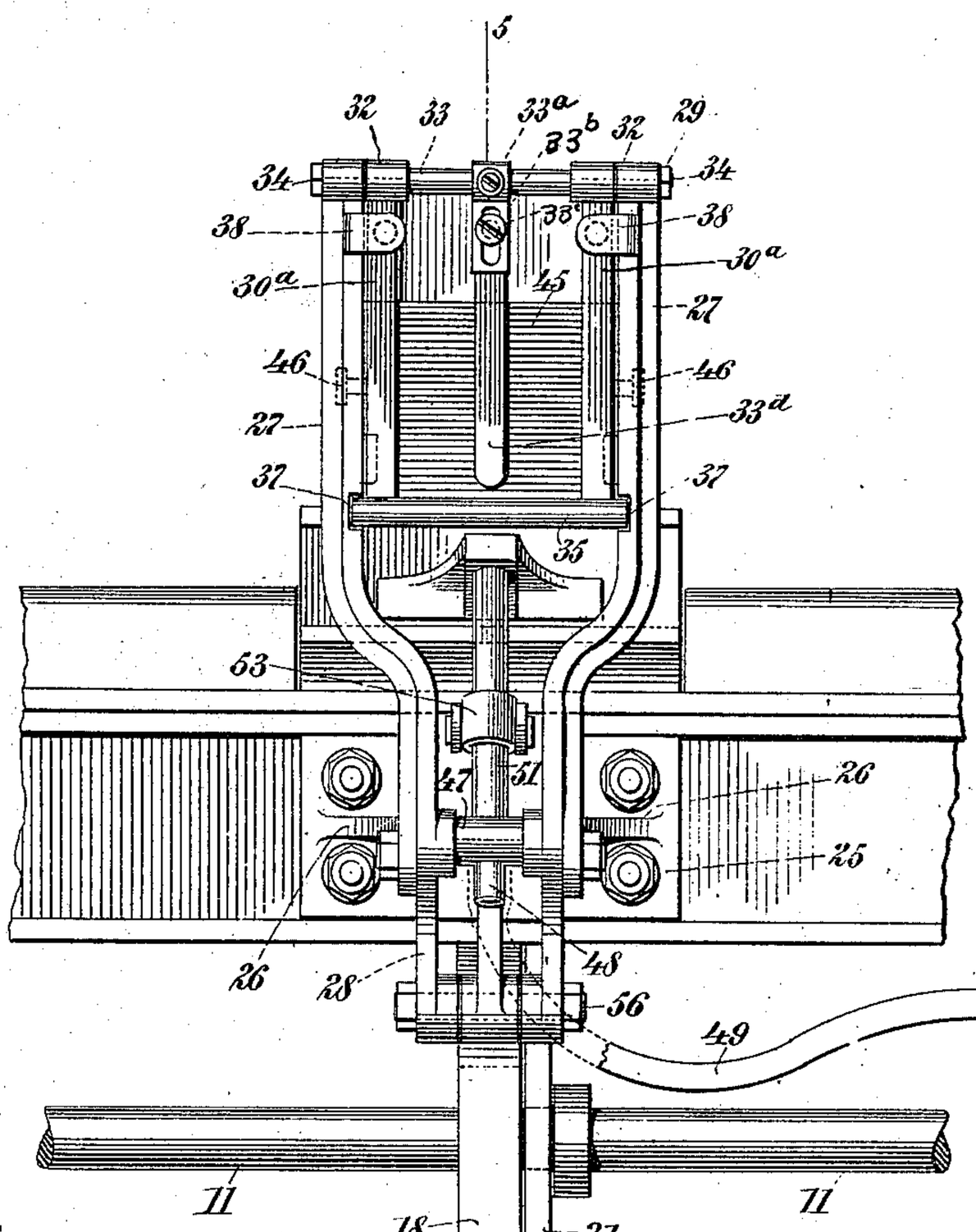
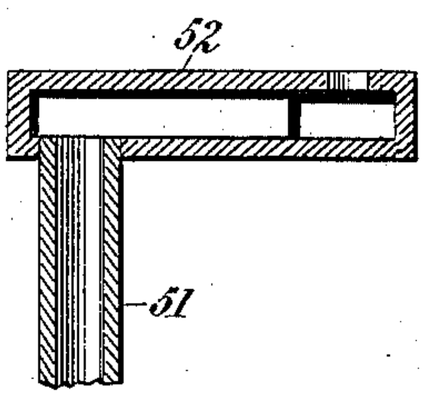


Fig. 4.



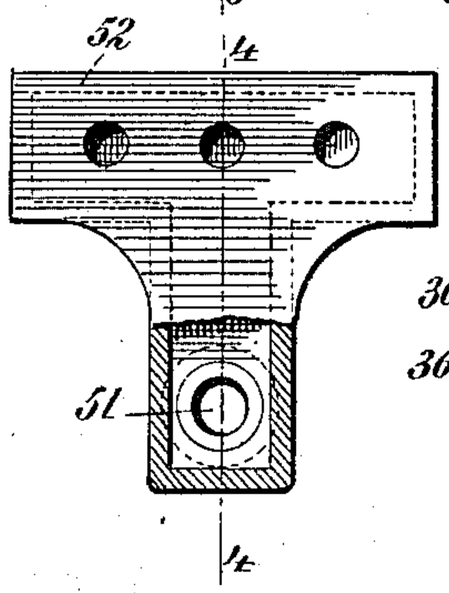
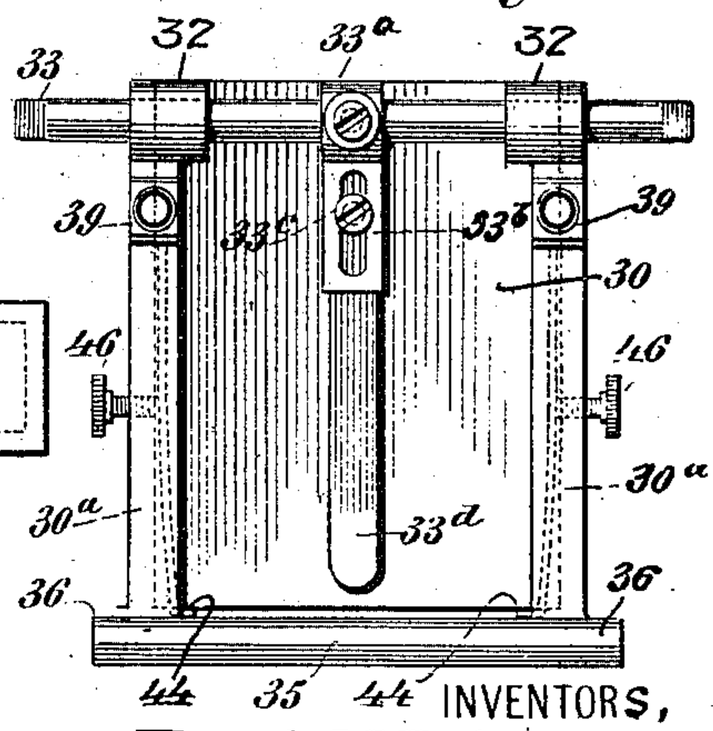


Fig. 3.

Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 5.

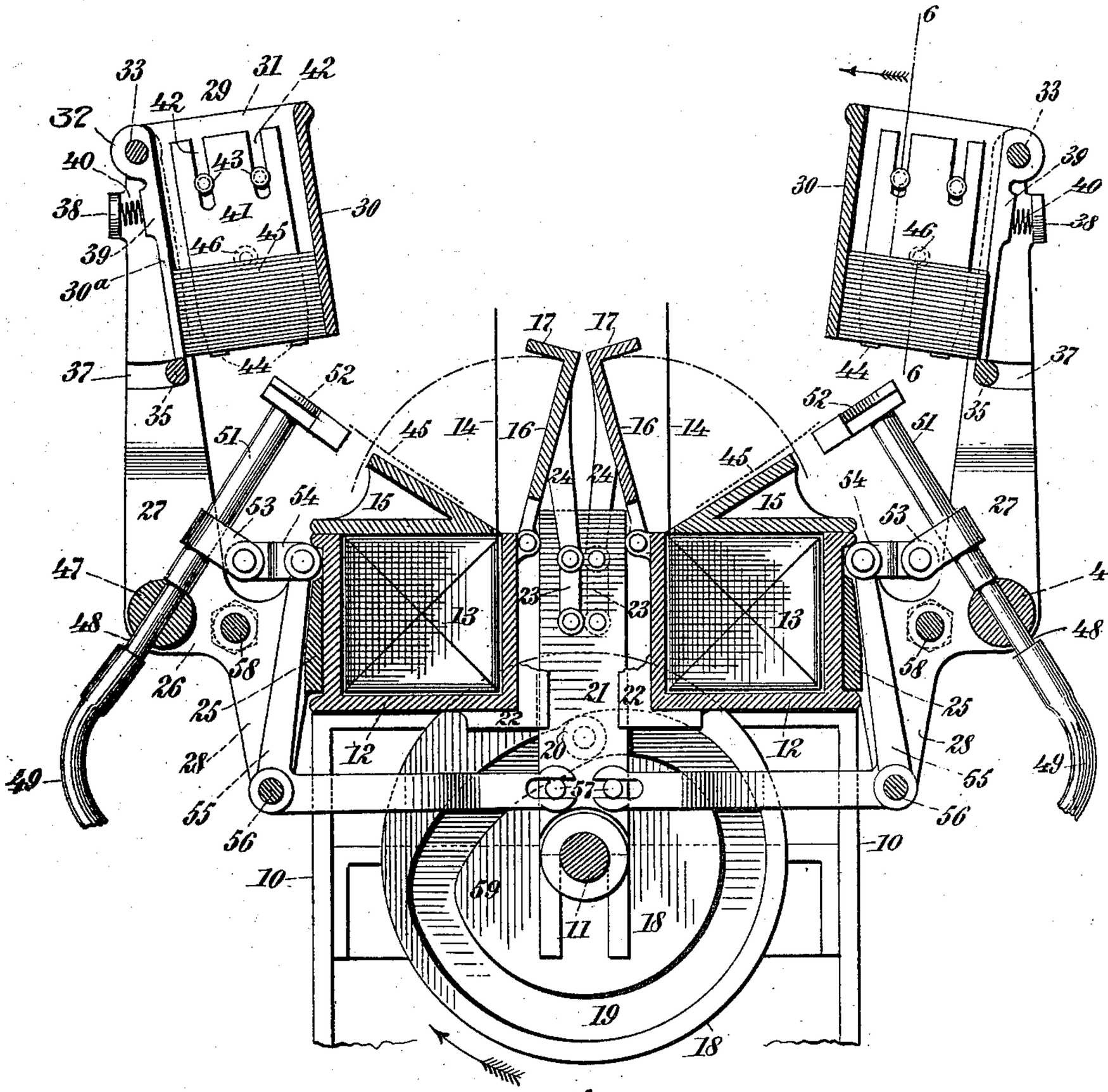
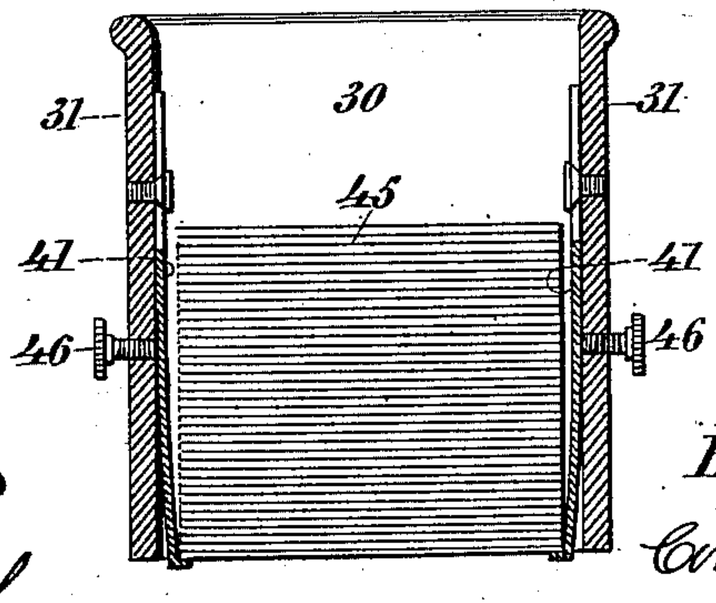


Fig. 6.



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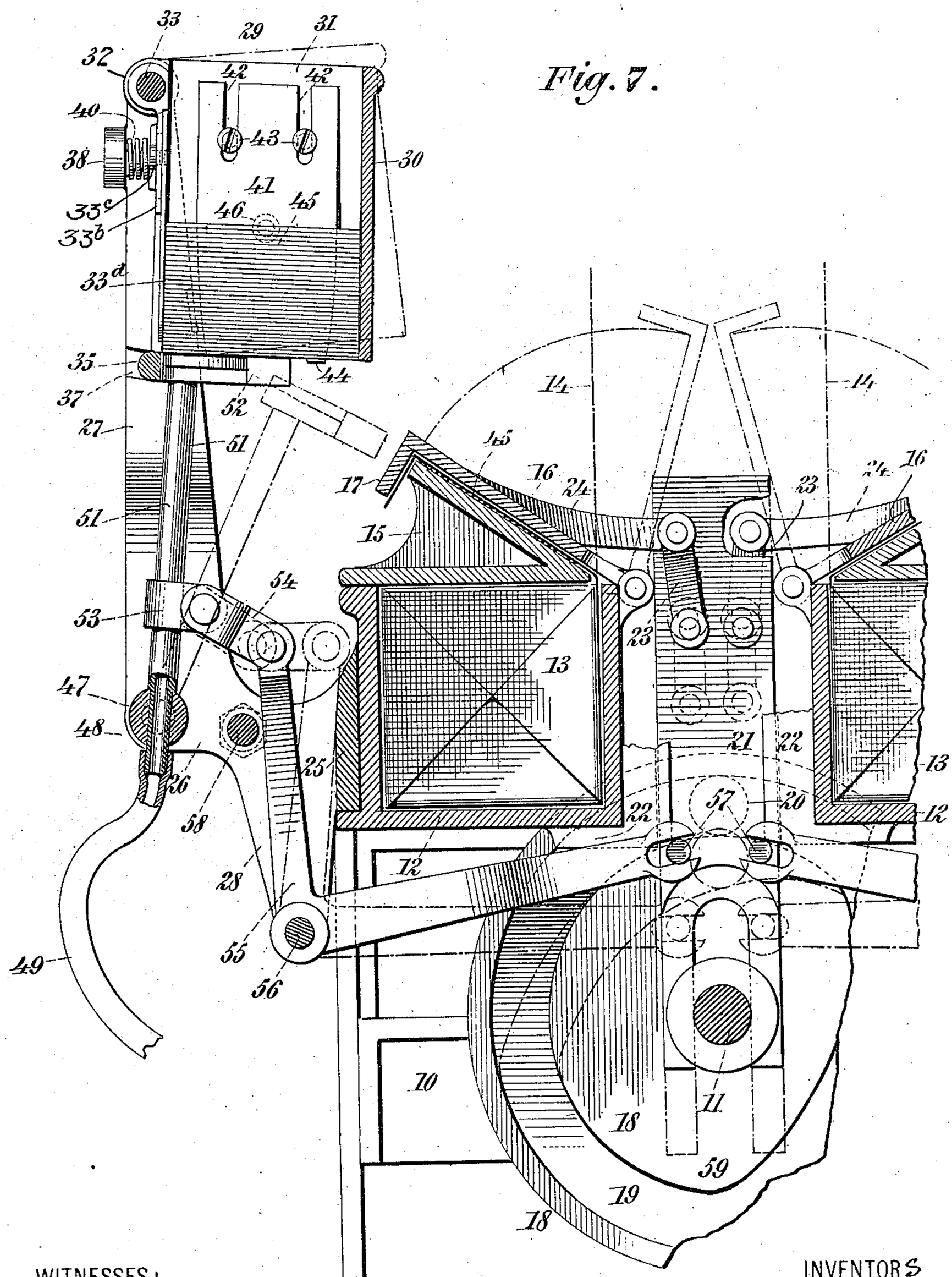
3 SHEETS—SHEET 3.

Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK M. PETERS AND HENRY H. HUNGERFORD, OF CHICAGO, ILLINOIS; SAID HUNGERFORD ASSIGNOR TO SAID PETERS.

SLIP-INSERTING MECHANISM.

989,797.

Specification of Letters Patent. **Patented Apr. 18, 1911.**

Application filed March 25, 1907. Serial No. 364,462.

To all whom it may concern:

Be it known that we, FRANK M. PETERS and HENRY H. HUNGERFORD, citizens of the United States, residing at Chicago, Cook county, in the State of Illinois, have invented certain new and useful Improvements in Slip-Inserting Mechanisms, of which the following is a full, clear, and exact specification.

Our invention relates to improvements in means for automatically feeding slips, cards, or analogous articles, and the same has for its object more particularly to provide a simple, efficient and reliable mechanism for withdrawing slips or cards from a suitable holder or magazine, and then depositing or inserting the same automatically into a package. In order to illustrate better our said invention we have shown the same applied to a machine for closing cartons, of the type set forth in United States Letters Patent No. 860764, dated July 23rd, 1907. In connection with this machine our invention is employed for inserting slips or cards, bearing notices or other matter, into the cartons as they pass through the machine, and before the covers of said cartons are folded or closed.

Further said invention has for its object to provide means whereby the slips or cards may be automatically taken from a stack or pile and transferred to the carton, and then deposited upon the contents thereof, and directly below its cover or flap.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings forming part of this specification wherein like numerals of reference indicate like parts, Figure 1 is a side view showing a portion of a machine for folding and tucking cartons with a slip inserting attachment constructed according to and embodying our said invention applied thereto; Fig. 2 is an enlarged detail face view of the hinged side member of the slip holder or magazine; Fig. 3 is an enlarged detail face view partly broken away of the suction plate; Fig. 4 is a section of the same taken on the line 4—4 of Fig. 3; Fig. 5 is a transverse section taken on the line 5—5 of Fig. 1, showing the mechanism in duplicate; Fig. 6 is an enlarged detail section of one of the slip holders or magazines, the same being taken on the line 6—6 of Fig. 5, Fig. 7 is a detail sectional view showing on an enlarged scale a portion of the machine as seen at Fig. 5.

In said drawings 10 designates the main frame of a carton folding and tucking machine, and 11 a longitudinal driving shaft mounted therein below the top or bed of the machine. Upon the top or bed of said machine along its opposite longitudinal edges are provided guides or chutes 12, 12 adapted to receive the cartons 13, 13 with their upstanding cover portions 14, 14. Above said guides or chutes 12, 12 is arranged the mechanism for forming a tucking flap along one edge of the upstanding cover portion and then pressing down said upstanding cover portion and inserting the tucking flap into the carton. Said mechanism briefly described, consists of rigid wedge-shaped section 15 secured along its outer edge to the outer edge of the guide or chute 12, and its inner portion extending across the top of said guide or chute and having its inner edge arranged adjacent to the inner wall of the guide or chute 12 in such a manner as to permit of the upstanding cover portion 14 passing therebetween prior to its being folded down. Coöperating with said rigid section 15 is a pivoted section 16 which is pivotally secured along its inner edge to the upper edge of the inner wall of the guide or chute 12, and is provided along its outer edge with a longitudinal, depending portion 17 which serves to fold the outer edge of the upstanding cover portion 14 over the outer upper edge of the rigid wedge-shaped section 15 to form the tucking flap.

Upon the driving shaft 11 is fixed a cam 18 having a groove 19 in its face, into which extends a roller 20 carried upon a vertically movable plate 21 having its lower end forked and straddling the shaft 11, and its upper portion guided in guides 22, 22 on the frame 10. Upon the opposite sides of the plate 21, adjacent to its upper end are pivotally secured the lower ends of links 23, 23 which are similarly secured at their upper ends to the inner ends of inclined arms 24, 24

rigidly secured at their forward ends to the upper surfaces of the pivoted sections 16 16. With each revolution of the driving shaft 11 and the cam 18, the plate 21 will be caused to ascend and in so doing press the hinged or pivoted sections 16, 16 with the upstanding cover portions 14, 14 down upon the rigid sections 15, 15 and form the tucking flaps. Thereupon the cartons 13, 13 are advanced in the machine to the next mechanism by means of which the covers 14, 14 are folded, and the tucking flaps along the edge of each inserted into the carton.

The mechanism thus far described and the method of its operation, is, as hereinabove stated, the subject matter of another application, and forms no part of our present invention about to be described, but the same is here briefly stated in order that our present invention may be more readily understood.

The mechanism for inserting the slips is shown in duplicate at Fig. 5, that is to say, one mechanism is shown for each folding and flap forming mechanism, and each consists of a plate 25 secured upon the outer wall of the guide or chute 12, having brackets 26, 26 integral therewith at its opposite ends, which brackets extend outwardly therefrom and are provided with upwardly projecting arms 27, 27 and depending arms or members 28, 28. Within the upper ends of the arms 27, 27 is pivotally supported at one of its edges a rectangular slip receptacle or magazine 29 having its inner wall 30 and side walls 31, 31 closed, and the outer edges of said side walls 31, 31 provided with vertical flanges 30^a, 30^a. At the upper outer corners of said side walls 31, 31 are lugs 32, 32 through which extends a shaft 33 having its ends supported in the arms 27, 27 and secured in position therein by nuts 34, 34, and the lower outer corners of said side walls 31, 31 are connected by a transverse member 35 having its projecting ends 36, 36 disposed in recesses 37, 37 provided in the opposing sides of the arms 27, 27. Upon said shaft 33, intermediate the lugs 32, 32 is fixed a collar 33^a having a slotted depending portion 33^b to which is secured by a screw 33^c one end of a depending spring finger 33^d, adapted to contact at its free end with the stack of slips within the receptacle or magazine 29. The arms 27, 27 are provided adjacent to their upper ends with oppositely extending lugs 38, 38 between the inner recessed surfaces of which and the recessed portions 39, 39 of the flanges 30^a, 30^a of the side walls 31, 31 are disposed coil springs 40, 40 in order to hold the projecting ends 36, 36 at the lower outer end of the receptacle or magazine 29 movably against the inner ends of the recesses 37, 37 in said arms 27, 27. Upon the inner side of the side walls 31, 31 are provided resilient sections 41, 41 having vertical recesses 42, 42 at their upper ends to receive the screws 43, 43 whereby said resilient sections 41, 41 may be adjustably secured within said receptacle or magazine 29. 44, 44 denote inwardly projecting lugs arranged along the lower edges of said resilient sections 41, 41 to support the slips 45 within the magazine, and 46, 46 denote adjusting screws provided in the side walls 31, 31 which extend through the same and have their inner ends contacting with the resilient sections 41, 41, whereby the lower ends of said sections may be adjusted relatively to each other so as to receive slips or cards of different lengths, and support the same within said magazine with their ends free from the walls thereof.

Intermediate the outer ends of the brackets 26, 26 is rotatably mounted a shaft 47 to which is secured a hollow stem or rod 51 having a reduced lower end, which extends through said shaft and forms a nipple 48 to which is connected one end of a flexible tube or hose 49 connected at its other end to a pump of simple construction, and at the the upper end the said hollow stem or rod 51 is provided a flat perforated suction plate 52. Adjacent to the lower end of said stem or rod 51 is a lug 53 to which is pivotally secured the forked end of a link 54, and 55 denotes a bell-crank lever which is pivotally supported at the junction of its two members upon a bolt 56 secured in the lower ends of the depending arms or members 28, 28 of the brackets 26 26. The end of the vertical member of said bell-crank lever 55 is pivotally secured to the other end of the link 54, and the end of the horizontal member of said bell-crank lever 55 which is forked, engages a stud 57 on the vertical plate 21 working intermediate the guides or chutes 12, 12.

58 denotes a brace or stay secured at its ends to the brackets 26, 26.

The operation is as follows: As soon as a carton 13 passing through the guide or chute 12 reaches the point where its upstanding cover portion 14 is to be folded and tucked, its progress is arrested for a brief period of time, *i. e.* until the hinged member 16 of the folding mechanism has performed its function and formed the tucking flap along the longitudinal edge of said upstanding cover portion 14. While the carton 13 is at rest within said guide or chute 12, and before said folding mechanism becomes operative the cam 18 in rotating causes the vertical plate 21 to descend, and during the forepart of its descent it depresses the end of the horizontal member of the bell-crank lever 55, and causes the end of its vertical member, together with the link 54, stem 51 and suction plate 52, which has been caused to withdraw a slip from the receptacle or magazine 29,

during the suction stroke of the pump, to be moved inward as shown in full lines at Fig. 5, and in dotted lines at Fig. 7, and as the said stem 51 and suction plate 52 approaches the limit of its inward movement the suction is interrupted by the compression stroke of the pump, and the slip 45 released and guided upon the inclined surface of the rigid portion 15 into the carton 13, and rests against the inner edge of its cover at the junction of said cover and body portion.

As the point or nose 59 of the cam 18 comes into engagement with the roller 20 on the plate 21 it causes the latter to rise, and in so doing raise the inner end of the horizontal member of the bell-crank lever 55, and throw the end of the vertical member of said bell-crank, together with the link 54, stem 51 and suction plate 52 outward, as shown in full lines at Fig. 7, and bring the suction plate 52 into position below the slip receptacle or magazine 29; cause the outer edge of the suction plate to contact with the transverse member 35; carry the receptacle or magazine 29 outward as shown in full lines, and force the upper surface of said suction plate 52 into engagement with the lowermost of the slips 45 therein; withdraw the said slip and hold the same in position thereon ready to be inserted into the carton with the next inward movement of the stem 51 and suction plate 52. Simultaneously with the outward movement of the stem 51 and suction plate 52, the hinged member 16 will be caused to descend and engage the upstanding cover portion 14 thereof and form the tucking flap along its longitudinal edge. Hereupon said hinged plate again rises, and as it rises the carton 13 begins its advance toward the succeeding mechanism where the cover 14 is pressed down and its flap tucked into the carton thereby inclosing the inserted slip within the carton. With the next revolution of the driving shaft 11 the operation above described will be repeated, and so on.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. An apparatus for inserting slips and analogous articles, comprising supports, a slip receptacle pivotally mounted thereon and adapted to move in a circular path, a shaft mounted in said supports adapted for connection with an exhausting device, a hollow rod secured to and communicating with said shaft, a suction plate secured to the end of said hollow rod adapted for engagement with said pivoted slip receptacle and the slips therein, a bell crank lever mounted in said supports having one end connected to said hollow rod, and its other end in engagement with operating means whereby to cause said hollow rod and suction plate to move said slip receptacle and withdraw a slip from said slip receptacle during the movement of said receptacle and suction plate, and deposit the same, substantially as specified.

2. An apparatus for inserting slips and analogous articles, comprising a pair of vertical supports, a slip receptacle supported at one end in said vertical supports and adapted to move in a circular path, spring means for projecting said slip receptacle, a shaft mounted in said vertical supports below said slip receptacle, an arm on said shaft, a suction plate carried by the upper end of said arm adapted to engage said slip receptacle and contact with the lowermost slip therein, and means for actuating said arm and causing said suction plate thereon to move said receptacle outward and engage a slip in its movement in one direction, and withdraw said slip and deposit the same during the movement of said receptacle and plate in the reverse direction, substantially as specified.

3. An apparatus for inserting slips and analogous articles, comprising a pair of vertical supports, a slip receptacle pivotally supported at one of its upper edges in said vertical supports, and its lower end adapted to move in a circular path, springs interposed between said vertical supports and said slip receptacle for projecting said receptacle, a projection at the base of said slip receptacle, a shaft mounted in said vertical supports below said slip receptacle, an arm on said shaft, a suction plate carried by said arm adapted for connection with an exhausting device, said suction plate being adapted to move in a circular path opposite to that of said slip receptacle and engage the projection at the base thereof and contact with the lowermost slip within said slip receptacle, and mechanism for actuating said arm and causing said suction plate to move said slip receptacle outward and engage said slip during its outward movement, and withdraw said slip and deposit the same during the inward movement of said receptacle and suction plate, substantially as specified.

4. An apparatus for inserting slips and analogous articles, comprising a pair of vertical supports having recesses therein, lugs on said vertical supports, a slip receptacle pivotally supported at its upper end in said vertical supports, springs interposed between said lugs and said slip receptacle, a projection at the base of said slip receptacle having its ends located in the recesses in said vertical supports, a shaft mounted in said vertical supports below said slip receptacle, an arm on said shaft, a suction plate carried by said arm adapted to engage the projection at the base of said receptacle

and contact with the lowermost slip therein, and mechanism for actuating said arm and causing said suction plate to move said slip receptacle outward and engage said slip during its outward movement, and withdraw said slip and deposit the same during its inward movement, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 16th day of March, nineteen hundred and seven.

FRANK M. PETERS.
HENRY H. HUNGERFORD.

Witnesses:
CONRAD A. DIETERICH,
A. L. PAYNTER.