N° 19,533 A.D. 1909

Date of Application, 25th Aug., 1909—Accepted, 25th Aug., 1910

COMPLETE SPECIFICATION.

Improvements in and connected with Automatic Delivery Machines.

I, MAX SIELAFF, of 23, Spener Strasse, Berlin, Germany, Manufacturer, hereby declare the nature of this invention and in what manner the same to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to automatic coin operated machines for delivering post-cards and other similar thin articles or packages of the type in which a number of holders are pivotally mounted around a rotating drum and are caused to fall one by one by intermittent rotation of said drum from one fixed stop on to another fixed stop, upon which the holder is supported in a position suitable for inspection by means of a projection which engages with the stop until released therefrom by the movement of the drum.

Hitherto in machines of this type the stop by means of which the holders were held in viewing position was so located that as the drum was caused to rotate to bring the next succeeding holder into viewing position a projection on the holder last viewed was drawn over the supporting surface of the stop towards the centre of the drum until the projection cleared the stop and the holder was thus released.

It is obviously desirable to provide a drum of a given diameter with as many holders as possible. As the number of holders is increased it is also obvious that the available angular movement for bringing each holder into a position of rest to be viewed is diminished.

With the arrangement above referred to in order to obtain a sufficient number of holders to render the machine of practical commercial value and taking also into consideration the amount of clearance required in practice to ensure the constant working of the machine in the desired manner it is found desirable to locate the stop so that the holders are arrested before they reach the horizontal position.

It is obvious that a holder held at an angle with and above the horizontal is not in the most convenient position for viewing. If however with the aforesaid arrangement the lower fixed stop be located so as to arrest the holders at an angle with and below the horizontal then the angle of movement of the drum necessary to free the holders is so much increased as to considerably reduce the number of holders on the drum.

It has been proposed to overcome the above disadvantages by using a movable stop, which arrangement, however, further complicates the mechanism.

The principal object of the present invention is to provide a machine of the first above mentioned type in which the lower fixed stop is so arranged that the maximum number of holders can be pivoted round the drum without incurring the disadvantages referred to.

The invention consists in arranging the lower fixed stop in such a position that the holder to be viewed falls upon it at the most convenient angle for viewing, and is released therefrom by means of the movement of the drum which causes the projection on the holder to move over the stop away from the centre of the drum.

A further object of the present invention is to utilise the movement imparted to the operating means by the purchaser to store up energy for moving the magazine in such a manner that the movement of the magazine is at all times

normal and independent of any violence employed by the purchaser, further so that the full amount of energy required to move the mag[illegible] cannot be stored up until the full stroke of the operating means has been completed.

The invention also embodies various other improvements and details which will be more clearly described hereinafter.

In the following description I shall refer to the goods to be delivered as post cards only and the machine herein illustrated is particularly adapted for pictorial post-cards.

In the drawings:

Figure 1 is a front view of the machine, the outer casing having been removed with the exception of the delivery mouth-piece.

Figure 2 is a side view looking in the direction of the arrow *x* in Figure 1.

Figure 3 is a side view looking in the direction of the arrow *y* in Figure 1.

Figure 4 is a sectional plan-view on the line 4—4 of Figure 1.

Figure 5 is a plan view of the ejecting arm or extractor.

Figure 6 is a side view of the same.

Figure 7 is an elevation of a holding case.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 is an end-elevation of the holder shown in Figure 7, and

Figure 10 is a section on the line *a—b* of Figure 4.

Referring to the drawings I will first generally describe the operation of the machine.

Post cards showing various views or pictures are arranged in a number of holding cases 10 loosely pivoted to a drum 11, each case containing a number of post-cards showing the same view or picture (see Figure 3). The drum 11 may be rotated stepwise by pushing a rod 12. The rotation of the drum takes place in the direction of arrow 13 in Figure 3. As the drum rotates, the holding cases 10 are in turn brought into the position of the case 10^a in Figure 3, where the intending purchaser may examine the cards contained in the case through an opening in the outer casing. For the sake of simplicity this outer casing is not shown in the drawings. When the intending purchaser sees through the opening in the casing a card which he wishes to purchase, he inserts a coin through a coin slot in the outer casing and this coin is guided to a coin pocket and thereby renders the delivery mechanism operative. When the coin is properly inserted in the coin slot, the intending purchaser pulls a draw bar 15 and thereby causes an extractor 16 (Figure 1) to be moved to the left, so that the post card is ejected through a mouth piece 17.

The magazine comprising the holding cases 10 is rotated step by step in the following manner:

The rod 12 carries a bracket 18 provided with a right-angled extension piece 18^a having a tail piece 35. A bell-crank lever 19, 21 is pivoted at 20 to the bracket extension 18^a. The arm 21 is heavier than the arm 19 and carries a pin 36 adapted to engage the tail 35 on the bracket extension 18^a. When the rod 12 is pressed to the right in Figure 2, the lever 19 is adapted to engage the end of a pawl 23 pivoted to the free end of a pivoted arm 24. The pawl 23 is held in the position shown by a stop 25 shown in dotted lines butting against the arm 24, so that the said pawl 23 cannot rotate in a counter-clockwise direction from the position illustrated. The arm 24 is pivoted at 26 to the side frame 27 of the machine. The arm 24 carries a pivoted pawl 28, which is adapted to engage in the teeth of a ratchet wheel 29. A spring 30 is connected at one end to a right-angled extension on the arm 24 and at the other end 31 to the side frame 27 of the machine.

When the rod 12 is pressed to the right in Figure 2, and the lever 19 brought to bear against the end of the pawl 23, the arm 24 is caused to rotate upwards in Figure 2 against the action of the spring 30. In this way the pawl 28 is drawn back over one tooth. On releasing the rod 12 the arm 24 is pulled

downwards by the spring 30 and thereby the pawl 28 moves the ratchet wheel 29 through one step in its motion. It will be seen that in this case the actuation of the ratchet wheel 29 is always effected by the energy stored up in the spring 30 and is independent of the violence with which the prospective purchaser presses the rod 12. For the purpose of preventing rotation of the ratchet wheel 29 through more than one tooth an arm 32 is fixed to the arm 24 and is adapted to engage in one of the teeth of the ratchet wheel 29. It is clear that since the arm 32 is rigidly fixed to the arm 24, that the ratchet wheel 29 can only be moved through the distance of one tooth. A pawl 33 is arranged to prevent backward rotation of the ratchet wheel 29.

On the bracket extension 18ª there is also mounted a pawl 34 having a tail-piece 35ª normally bearing against the pin 36 carried by the arm 21 of the bell-crank lever. The pin 36 bears on the tail piece 35ª so as to raise the pawl 34 out of engagement with a fixed rack 37. When however the rod 12 is pressed to the right the lever 19, 21 first rotates through an angle in a counter-clockwise direction limited by the movement of the pin 36 between the tail pieces 35 and 35ª so that the pin 36 is raised from the tail piece 35ª, and the pawl 34 falls into engagement with the teeth of the rack 37. In this way all careless and thoughtless operation of the machine is avoided for the reason that the pawl 34 prevents the rod 12 moving backwards once its forward motion has been commenced. As soon as the pusher 12 has completed its stroke, the pawl 23, by reason of its swinging round the pivot 26 together with the arm 24, has been raised out of the path of the lever arm 19 and the spring 30 causes the pawl 28 to rotate the ratchet wheel 29 by one tooth. Meanwhile the lever 19 under the action of the heavy arm 21 rotates in a clockwise direction in Figure 2 and the pin 36 lowers the tail piece 35ª thus raising the pawl 34 clear of the rack 37, so that the rod 12 is free to be returned under the action of its spring 38.

The ratchet wheel 29 is mounted on a shaft 39 on which there are also mounted two circular plates 40, 41. The shaft 39 is supported in the fixed side-frames 27 and 42. The circular plate 40 is provided with a number of holes 43ª corresponding to the number of teeth in the ratchet 29, these holes 43ª being arranged concentrically with the axis of the ratchet wheel 29. The circular plate 41 is provided on its circumference with a number of notches or slots 43, these slots also corresponding in number to the number of teeth of the ratchet wheel 29. In the circular plates 40 and 41 there are supported the holding cases 10 for the cards. These cases are illustrated in detail in Figures 7—9.

The cases 10 are composed of plates of substantially rectangular shape and provided with pins 44 and 45 projecting sidewise at the corners of one edge of the plate. The plate is also provided with overlapping tongue pieces 46, which may be stamped out from the plate or otherwise formed, and these tongue-pieces are adapted to receive one edge of the post-cards. The edges of the post-cards parallel to that edge which is held between the tongues 46 are arranged on shelves 49, which are shown as parallel and provided with spring tongues 50, by which the post-cards are frictionally held apart. The cards are further supported and held apart on the righthand, as shown in Figure 7 by an intermediate support or comb 48. The cases 10 as described, are suspended between the plates 40 and 41 by inserting the pin 45 through one of the holes 43ª in the plate 40. The pin 44 is then led into one of the circumferential slots 43 in the plate 41. The fixed side plate 42 arranged next to the rotatable plate 41 is provided with an annular projection 52 which is arranged to project over the notches 43. At the point 53 the annular projection 52 is broken to enable the insertion of the pins 44 into the slots 43 at this point. The slots 43 are deep enough to allow the pins 44 to clear the inner edge of the annular projection 52. For the purpose of closing the opening 53 after a case has been inserted a movable member 54 is provided, carried by a pivoted lever 55. The movable member 54 is pressed by the spring 56

into the opening 53 so that normally the ring 52 is closed by the movable piece 54. When it is desired however to remove one of the cases 10 or to insert a holding case, the lever 55 is rotated against the action of a spring 57, whereby the movable part 54 is moved away from the opening 53 to enable such extraction or insertion. It will be understood that in the lower part of the drum 11 the pins 44 rest on the annular projection 52 on the side plate.

In order that all the cases may be inserted in a proper manner, that is to say with the open ends 58 of the shelves to the delivery side of the machine and the closed ends 59 towards the non delivery side, the pins 45 are made longer than the pins 44 and are in fact of such length that the pin 45 cannot enter the notches 43 owing to their length. This arrangement also ensures that the correct sides of the holding cases are uppermost. The rear side of the cases 10 may be provided with raised edges 60 to permit of the insertion of any suitable advertisement.

The action of displaying the cards before the purchaser in order that a selection may be made is as follows:—

When the rod 12 is pressed to the left in Figure 3 and to the right in Figure 2, the drum 11 is rotated in the direction of the arrow 13 in Figure 3. Normally one of the cases is held in an almost vertical position as shown in the case of the holder 10^b. This is effected by projecting side lugs 61, see Figures 3 and 7, on the free rotating end of the holder engaging with a stop 62 see Figures 1 and 3 carried by the fixed side frame plate 27. The holding case 10^a is held in a downwardly sloping and most convenient position for viewing, as illustrated, at about 45° by the lugs 61 resting on stops 63. The stops 62 and 63 are so located that when the drum 11 is rotated by one tooth on the ratchet wheel 29 the pivots 44, 45 of the case 10^b next to be viewed move substantially vertically downwards so that the lug 61 on the case 10^b is moved clear of the stop 62 and the case 10^b is now free to fall with a clockwise rotary movement about its pivots (see Figure 3) until the side lugs 61 of said case fall upon stops 63, where it is held at the most convenient angle for viewing, as shown at 45°. It will be observed that in this position of rest the angle between the plane of the holder and the radial line passing through the centre of the drum 11 and the centre of the pivot pins 44, 45 on the advance side of said radial line with respect to the direction of rotation is still considerably less than 180° and that upon further movement of the drum in the same direction the pivot pins 44, 45 of the holding case 10^a move substantially vertically downwards so that the lugs 61 of the case 10^a move rapidly away from the centre of the drum clear over that side of the stop 63 which is the more remote from the centre of the shaft 39. It will also be observed that as the pivot pins of the case 10^a revolve about the centre of the shaft 39 the case assumes a more radial position, and to ensure therefore the desired action the distance from the inner side of the lug 61 to the centre of the pivot pins must be greater than the nearest distance between the clearing face of the lug 63 and the circle passing through the centres of the pivot pins.

The disengagement of the side lugs 61 of the case 10^a with the stops 63 takes place practically simultaneously with the disengagement of the side lugs 61 of the case 10^b with the stop 62. To facilitate this result the stop 63 may be adjustable and formed for example as shown on the shorter arm of a double-armed pivoted lever, the longer arm of which is provided with a suitable adjusting device. It will be seen therefore that each stroke of the rod 12 results in one of the cases being brought into the downwardly sloping position 10^a, which is the most favourable position for viewing, and that all the cases may be in turn brought into said viewing position.

In order to deliver the chosen card to the purchaser the following arrangements are provided:—

A draw-bar 15 extends through the front plate 66 of the machine and after inserting the necessary coin into a suitable slot, this draw-bar is freed for operation. An outward movement of the bar 15 results in the reciprocating

movement of an arm 79. To the arm 79 is pivoted a spring-controlled support 80 upon which is pivoted an extractor 16, by which the cards are moved from the right to the left in Figure 1, and through a delivery slot 97 to the outside of the machine. In order to adjust the extractor to the level of the next article to be delivered so as to ensure contact with the upper card only in succession the under side of the free end of the extractor 16 is curved upwards as shown at 82, and provided with a shoulder 88 adapted to engage with the adjacent edge of the cards. The extractor 16 is normally held by the controlling spring in the lowest position by means of a nose 86 engaging with a stop 87 on the support 80. The extractor 16 is preferably formed, as shown, of a plurality of loosely pivoted plates 84 so as to extend the surface of contact with the cards without risk of engaging more than one card at a time. The extractor 16 is preferably located so as to engage the cards between the shelves 49 and the comb 48.

The means for conveying a reciprocating motion from the draw-bar 15 to the arm 79 are as follows:—

The arm 79 forms part of a right angled piece 77 sliding on rods 78 and provided with a pin 76. One arm 75 of a double-armed lever pivoted at 74 is provided with a slot adapted to thread over the pin 76 while the other arm 73 is bent into the path of movement of the coin after it has fallen into a coin pocket 14, formed in a slide 64 supported on guides 65. The channel through which the coin falls into the pocket 14 is not shown.

The draw-bar 15 passes through an eye 67 arranged on the slide 64 and is provided with a collar 68 by which movement is imparted to the slide 64. Preferably a spring 69 is inserted as shown, between the collar 68 and the eye 67.

When the draw-bar 15 is pulled out against the influence of a spring 100, the slide 64 will also be moved in the same direction bringing the face of the coin into contact with the end of the lever arm 73 thus causing a movement of the sliding piece 77 towards the magazine of said holder.

In order that the coin may have time to fall into the collecting box through an opening 108 in the base of the casing, the movement of the coin is utilised to cause the first part only of the movement of the lever 73, 75. This initial movement is however sufficient to bring a rack 99 attached to the sliding piece 77 within the path of action of a weighted pawl 98 pivoted to a bracket secured to the casing. The aforesaid initial movement is also sufficient to bring the arm 73 behind the path of action of a pawl 103 pivoted at 104 to the slide 64. Normally the pawl is held clear of the arm 73 by a pin 105 on the pawl resting upon a fixed guide 106 which is so formed that when the limit of the said initial movement has been reached, as indicated at 107, the pin 105 clears the guide 106 allowing the pawl 103 to fall and engage with the arm 73. In order to break the connection between the pawl 103 and the arm 73 at the commencement of the return movement of the draw-bar 15 and the slide 64 a piece 109 conveniently pivoted to the guide 106 and provided with an inclined surface at its free end is so arranged and located within the path of movement of the pawl 103 that as the bar 15 is drawn out the piece 109 is raised but upon the return movement of the slide 64 the pin 105 engages with the inclined surface of the piece 109 whereby the pawl 103 is rapidly raised and held clear of the arm 73 until the pin 105 again rests upon the guide 106.

In order to ensure that the lever arm 73 may not be partially moved by the coin which might render fraudulent use of the machine possible I provide means for ensuring that the stroke of the draw-bar 15 when once commenced must be fully completed. To this end a rack 71 is arranged below the path of movement of the coin extending to the edge of the slot 108 and the teeth are so formed on the rack that the coin when once moved and the tension on the rod 15 is relaxed, falls between the teeth, which prevent any backward movement of the coin and thereby any backward movement of the slide 64. It will be observed that, owing to the fact that the lever 75, 73 is not spring con-

trolled, when the tension on the rod 15 is relaxed pressure upon the coin will be released and the coin will thus be free to fall.

To prevent coins falling out of the coin channel while the slide 64 is being moved the mouth of the channel is closed by a tail piece 110 on the slide 64.

The delivery slot 97 is formed in a sliding plate or shutter 96 which is moved by the sliding piece 77, 79, through a lever 94 pivoted at 95 to a bracket in the casing, the free end of said lever passing through a slot in the shutter. The pivoted pawl 98 is provided with a tail piece 101 upon which the bottom of the shutter 96 normally rests thus raising the pawl above the path of the rack 99. The lever 94 is provided with an inclined surface 93, 93ª. The arm 79 is provided with a pivoted arm 90 which is weighted so that it normally rests in the position shown in Figure 1, against a stop 92 on the arm 79. The inclined surface 93, 93ª is so formed that upon the aforesaid initial movement of the slide 64 and arm 79 in the direction of the arrow 81 the shutter 96 is raised sufficiently to permit the pawl 98 to drop into engagement with the rack 99 and upon completion of the movement the shutter is raised sufficiently to permit the card to pass through the delivery slot 97. The length of the inclined surface 93, 93ª is such that the arm 90 stands clear of said surface upon the completion of the stroke of the arm 79, the delivery mouth piece 17 being arranged sufficiently close to the magazine to permit of the shutter 96 being held by the rigidity of the card after mechanical extraction and as it still rests partly upon the shelf 49 and partly in the mouth piece 17. Upon withdrawal of the card by hand the shutter 96 is released thus tripping the pawl 98, releasing the rack 99 and permitting the spring 100 to return the draw bar 15 to normal position and thereby slide 64, which, by means of a snug 102 on the under side of said slide engaging with the arm 73, returns the sliding piece 77, 79 and extractor 16 to their initial position.

Further I have provided in my machine a locking device for the card magazine, as it will be understood that it is advisable to prevent any operation of the drum 11 by the push-rod 12 during the time, in which a card is being ejected by the pusher 16. For this purpose I provide a pivoted lever 112, which has a projection at its free end adapted to engage during the card delivery over that tooth of the ratchet wheel 29 which succeeds the tooth engaged by the pawl 28 during rotation of the wheel. The lever 112 tends to fall into engagement with the teeth of the wheel 29 and is normally held out of engagement by an arm 111 on the slide 64. Thus after the bar 15 has been drawn out, the lever 112 will fall into engagement with the ratchet wheel 29, and should the bar 12 be pushed in and consequently the pawl 28 be moved to the right in Figure 2, the pawl 28, on the bar 12 being released, will ride over the projection on the lever 112 and thereby be prevented from gripping the next tooth of the ratchet wheel 29. As soon however as the card delivery action is finished, the lever 112 is removed from the ratchet wheel 29 by the arm 111, so that the drum 11 may be further rotated as desired.

In the devices described the card holding cases 10 can only be inserted when the notches are opposite the opening 53, Figure 3, if then a card case has been removed for the purpose of refilling it, it is of considerable importance that no further operation of the machine be possible so that the part of the drum from which the case has been removed may always remain opposite the opening 53 until another case has been inserted. For this purpose there is provided a lever 113 pivoted at 114 to a bracket on the side wall 27. The lower end of the lever 113 is curved and projects into the path of the cases 10 as they fall from the position 10ᵇ to the position 10ª in Figure 3. When a case is in the position 10ª, the arm 113 is held to the right in Figure 1 against the action of a spring 115. The upper end 116 of the lever 113 is provided with an elongated slot which engages with one end of a pivoted lever 113ª which carries at its other end a projection adapted to engage with the teeth on the ratchet wheel 29. Normally the projection on the lever 113ª is held by the holding cases 10 when in position 10ª out of engagement with the teeth of

the ratchet wheel 29. When however no case 10 is in the position 10^a, the upper end 116 of the lever 113 is pressed by the spring 115 to the right in Figure 1 and thereby the lever 113^a is rotated about its center of rotation 118 and the projection on the said lever is brought into engagement with a tooth on the ratchet wheel 29.

The delivery mouth piece 17 illustrated in Figure 1 is fixed to the external frame or casing of the machine. The mouth piece 17 is formed so as to offer a tortuous path for the card during ejection. The outlet 119^a is upwardly directed and a depending nose 119 is formed within the passage and after passing the nose 119 the passage has an upward tendency. The lower wall of this upwardly tending passage is composed of a door 120 hinged at its upper end 121. The door 120 normally rests against the upper end of a downwardly directed passage 122. It will be seen that any fraudulent attempt to extract post cards by the insertion of a bent wire would always meet with failure. Thus owing to the fact of the passage in the mouth piece 17 having an upwardly concave shape the inner end of any wire inserted through the opening 119^a would be directed upwards or downwards away from the post-cards in the case 10^a. When the post cards are pushed to the left in Figure 1 by the extractor 16 the cards rest on the upper corner 123 and pass under the hinge door 120. The distance between the end of the case 10^a and the edge 123 is so small as to give the post card 83 the necessary rigidity for holding the plate 96 in the elevated position until the said post card is free of the slot 97.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In an automatic coin-operated machine for delivering post-cards and other similar thin articles or packages of the type referred to, arranging the lower fixed stop in such a position that the holders are released therefrom by the movement of the drum which causes a projection on the holder to move over the stop away from the centre of the said drum.

2. In an automatic coin-operated delivery machine of the kind referred to, a device actuated by the operator for storing up energy and independent means actuated by said energy for rotating the magazine through one step, substantially as described and for the purpose specified.

3. In an automatic coin-operated delivery machine according to Claim 2, means for preventing backward movement of the device actuated by the operator for storing up energy until the full stroke has been completed, substantially as described and for the purpose specified.

4. In an automatic coin-operated delivery machine of the kind referred to, a holder adapted to separate the articles at the outer end only of the holder, substantially as described.

5. In an automatic coin-operated delivery machine, of the kind referred to, a holder for the articles to be delivered, with or without an intermediate support, and with or without means for holding an advertisement constructed substantially as described with reference to the accompanying drawings.

6. In an automatic coin-operated delivery machine of the kind referred to the provision of an extractor which automatically adjusts itself to the level of the article to be delivered and is provided with means for engaging the article when the adjustment has been made, substantially as described.

7. In an automatic coin-operated delivery machine of the kind referred to, the arrangement of the extractor upon an arm which is adapted to yield so as to permit the elevation of the extractor with respect to the article to be delivered, substantially as described.

8. In an automatic coin-operated delivery machine of the kind referred to, an extractor constructed and operating substantially as described with reference to the accompanying drawings.

9. In an automatic coin-operated delivery machine of the kind referred to, means for locking, preferably automatically, the magazine, when a holder has been removed, substantially as described.

10. In an automatic coin-operated delivery machine of the kind referred to, means for automatically locking the magazine during the extraction of an article, substantially as described.

11. In an automatic coin-operated delivery machine of the kind referred to, means for supporting the holders around the axis of the magazine, substantially as described and for the purpose specified.

12. In an automatic coin-operated delivery machine of the kind referred to, a delivery mouth piece constructed substantially as described with reference to Figure 1 of the accompanying drawings.

13. An automatic coin-operated delivery machine for post-cards and other thin articles constructed and operating substantially as described with reference to the accompanying drawings.

Dated this 25th day of August, 1909.

MARKS & CLERK,
57 & 58, Lincoln's Inn Fields, London, W.C.,
13, Temple Street, Birmingham, and
25, Market Street, Manchester,
Agents.

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SIELAFF'S Complete Specification.

(2 SHEETS)
SHEET 1.

[This Drawing is a reproduction of the Original on a reduced scale.]

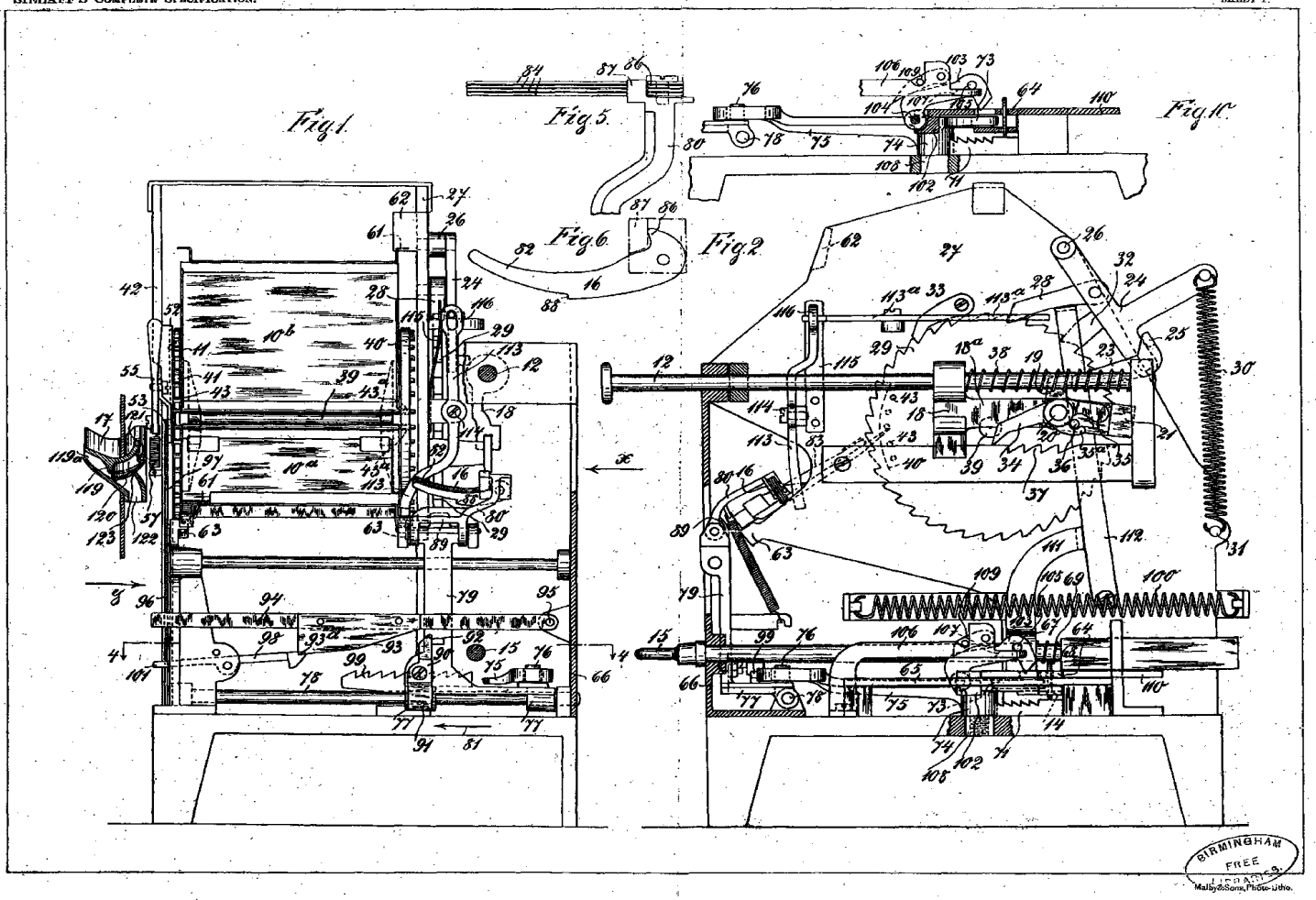
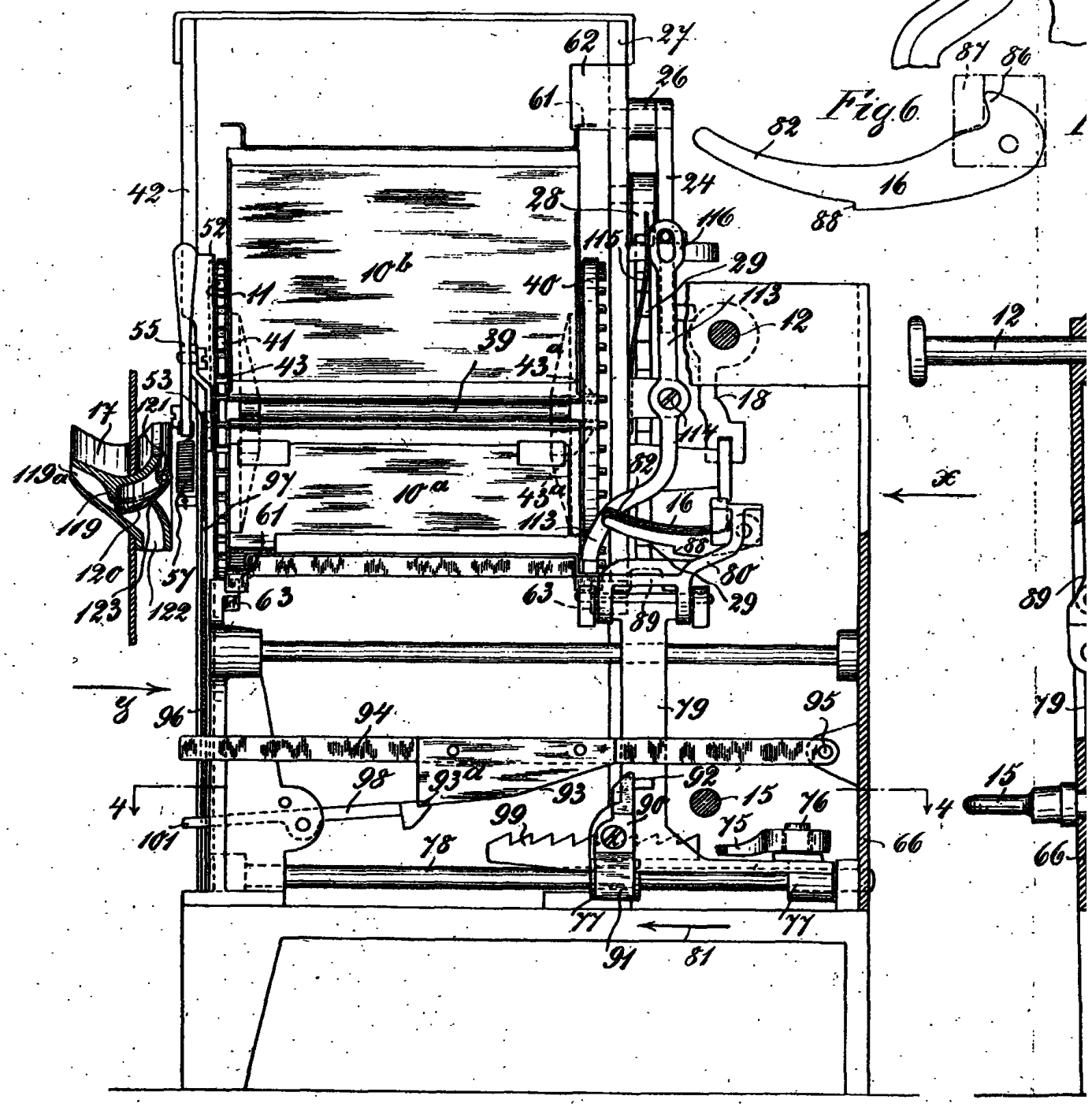


Fig. 1.



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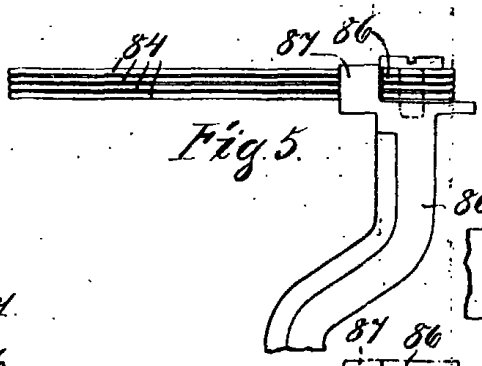

Fig. 6.

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SHEET 1.

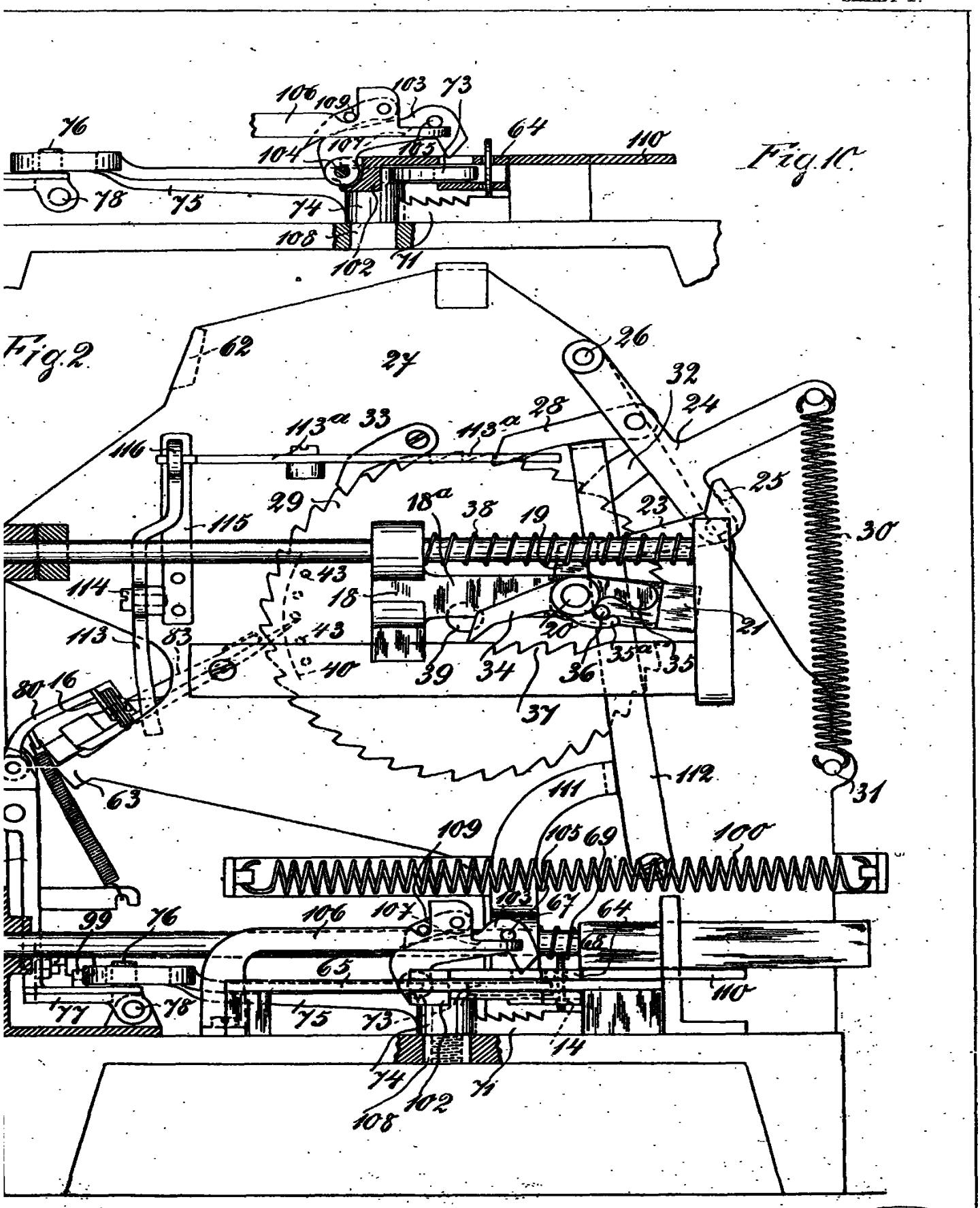

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Fig. 3.

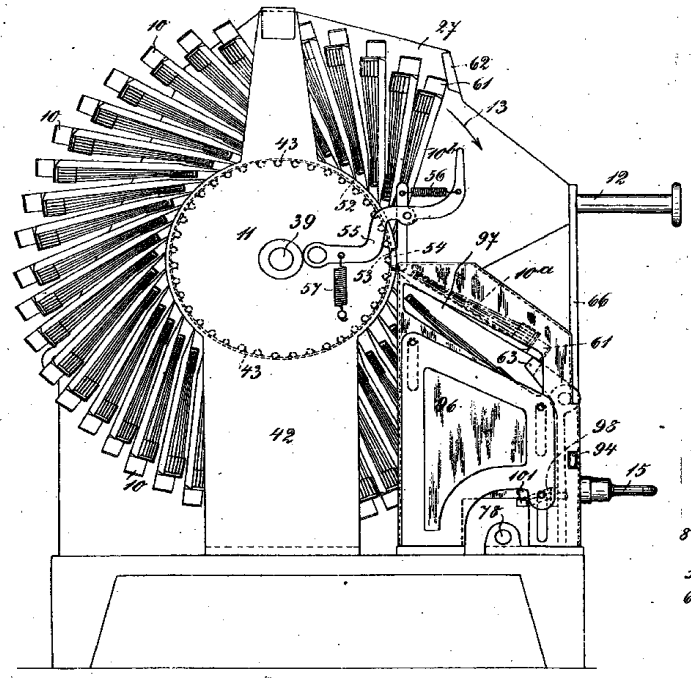
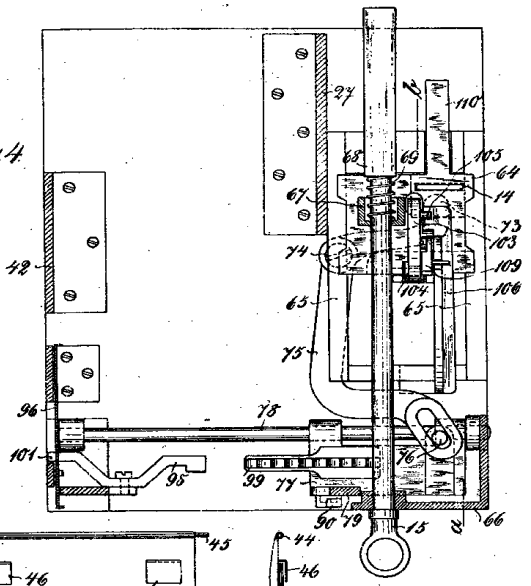


Fig. 4.



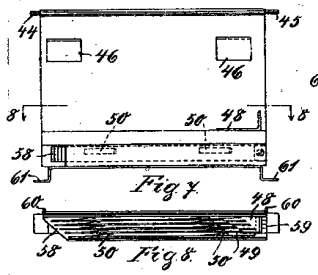


Fig. 7.

Fig. 8.

Fig. 9.

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Fig. 3.

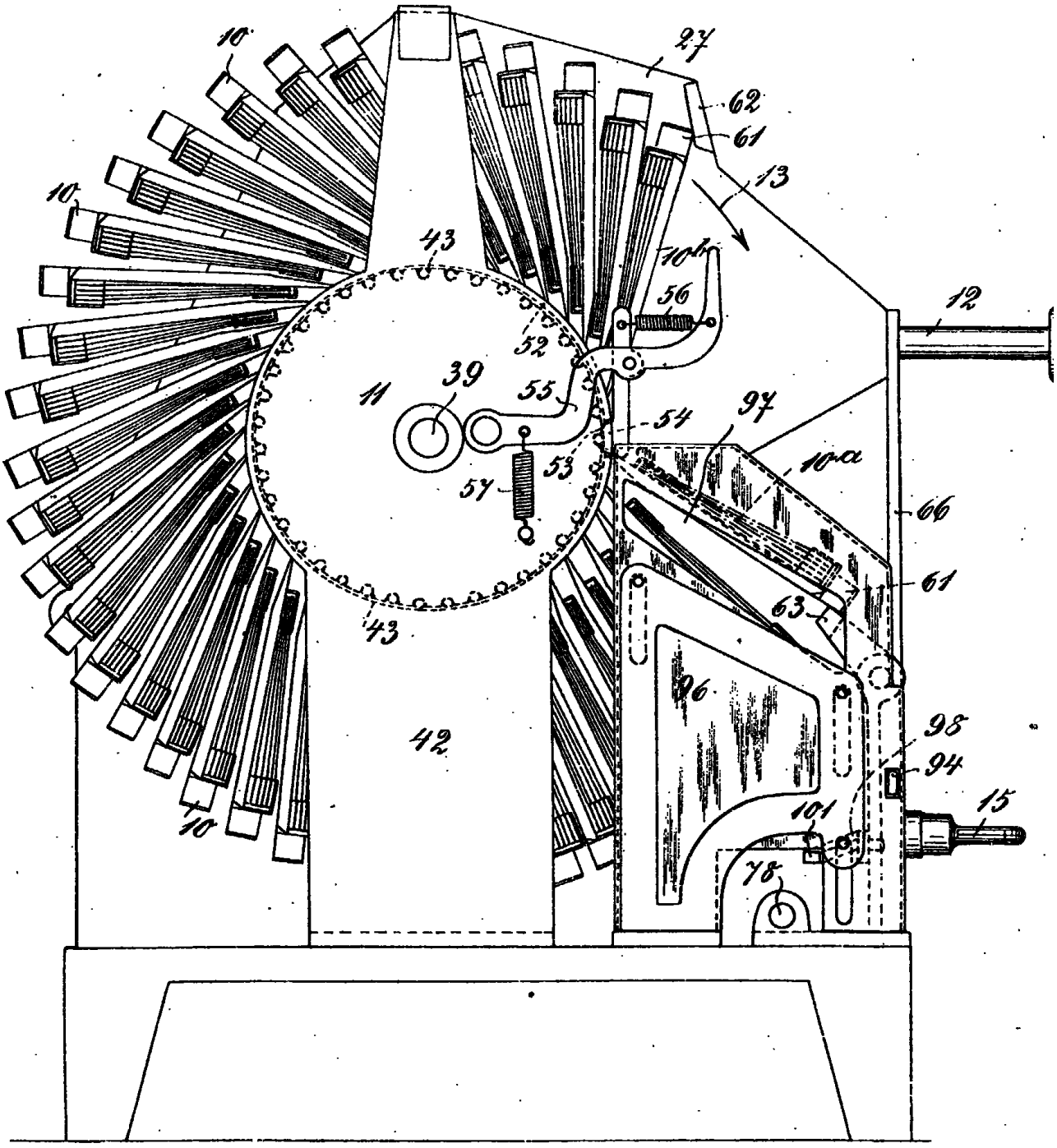
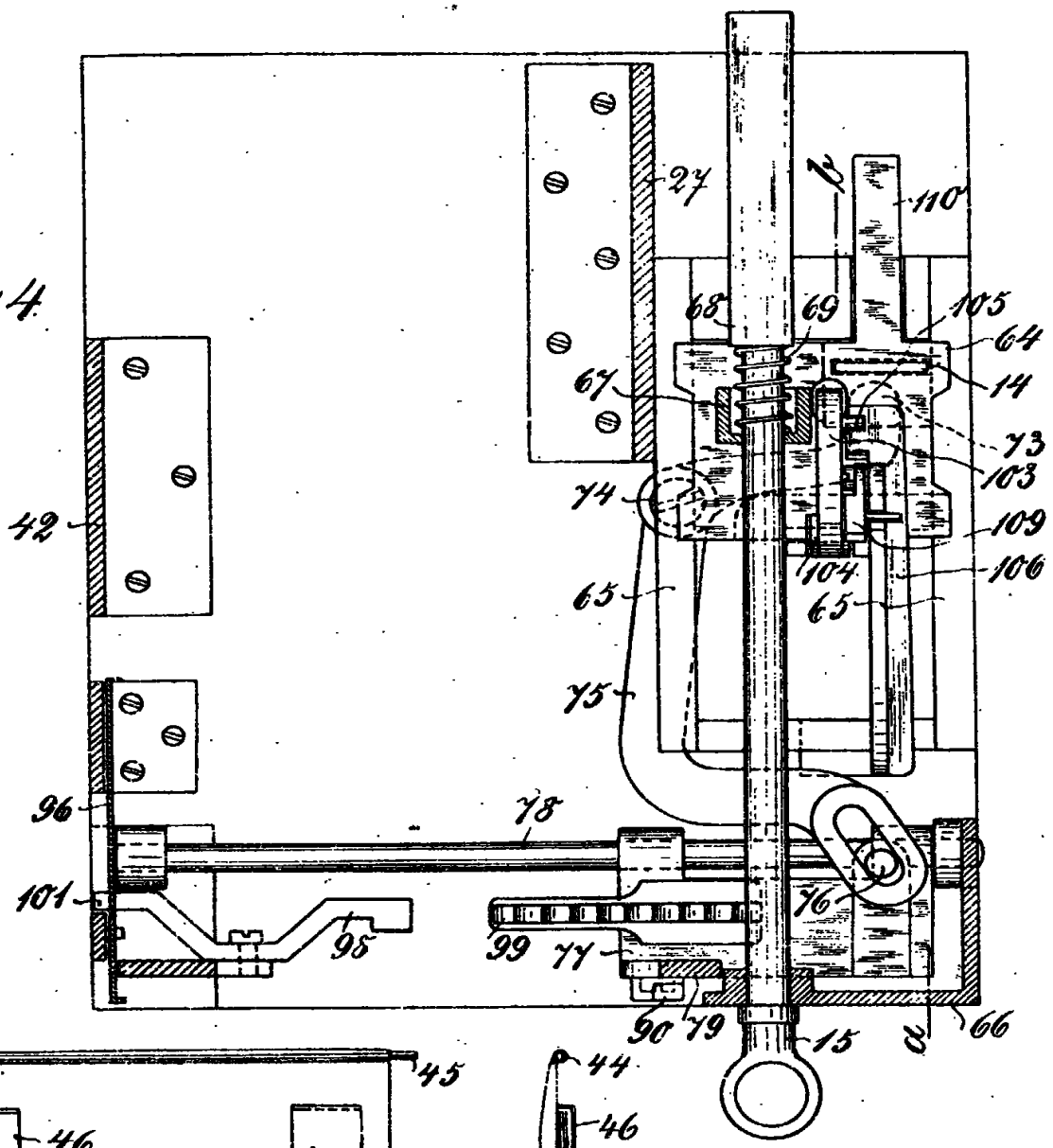


Fig. 4.



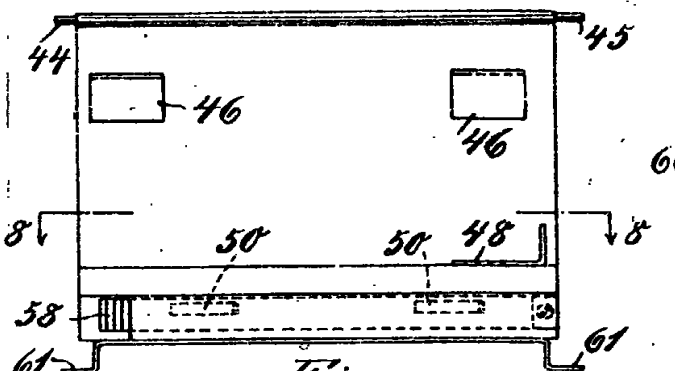


Fig. 7.

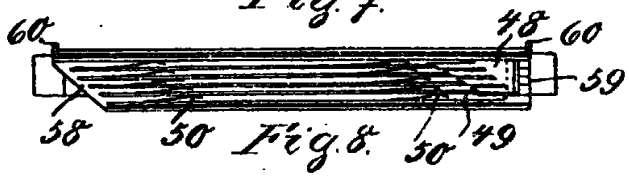


Fig. 8.

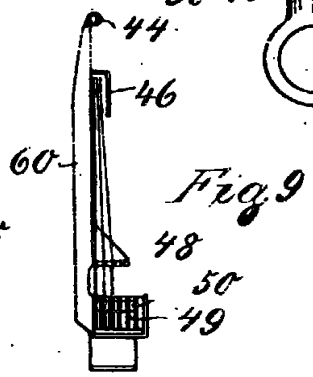


Fig. 9.

Malby&Sons, Photo-Litho.