

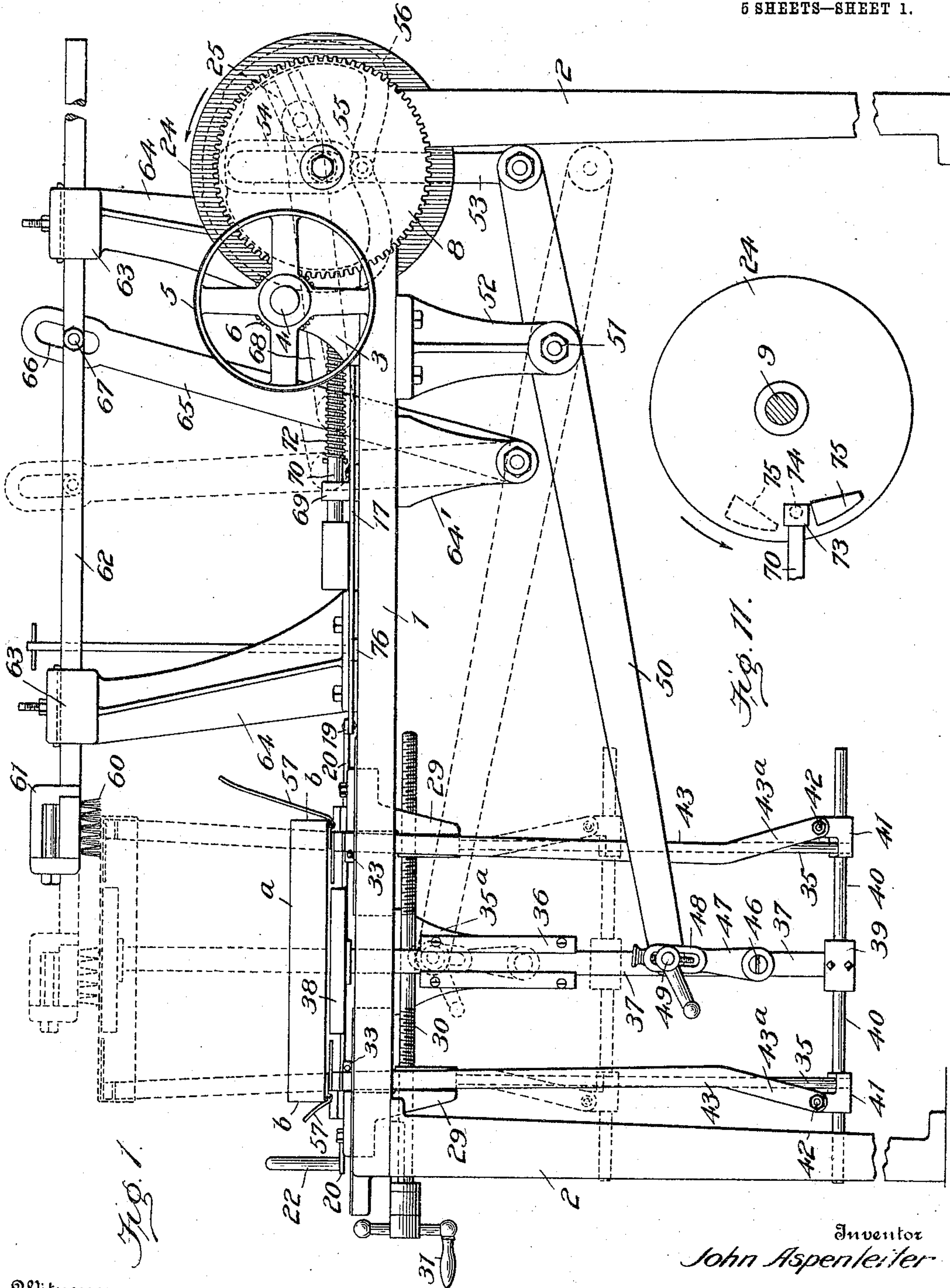
No. 782,638.

PATENTED FEB. 14, 1905.

J. ASPENLEITER.
MACHINE FOR APPLYING LABELS TO BOXES.

APPLICATION FILED OCT. 1, 1904.

5 SHEETS—SHEET 1.



Witnesses

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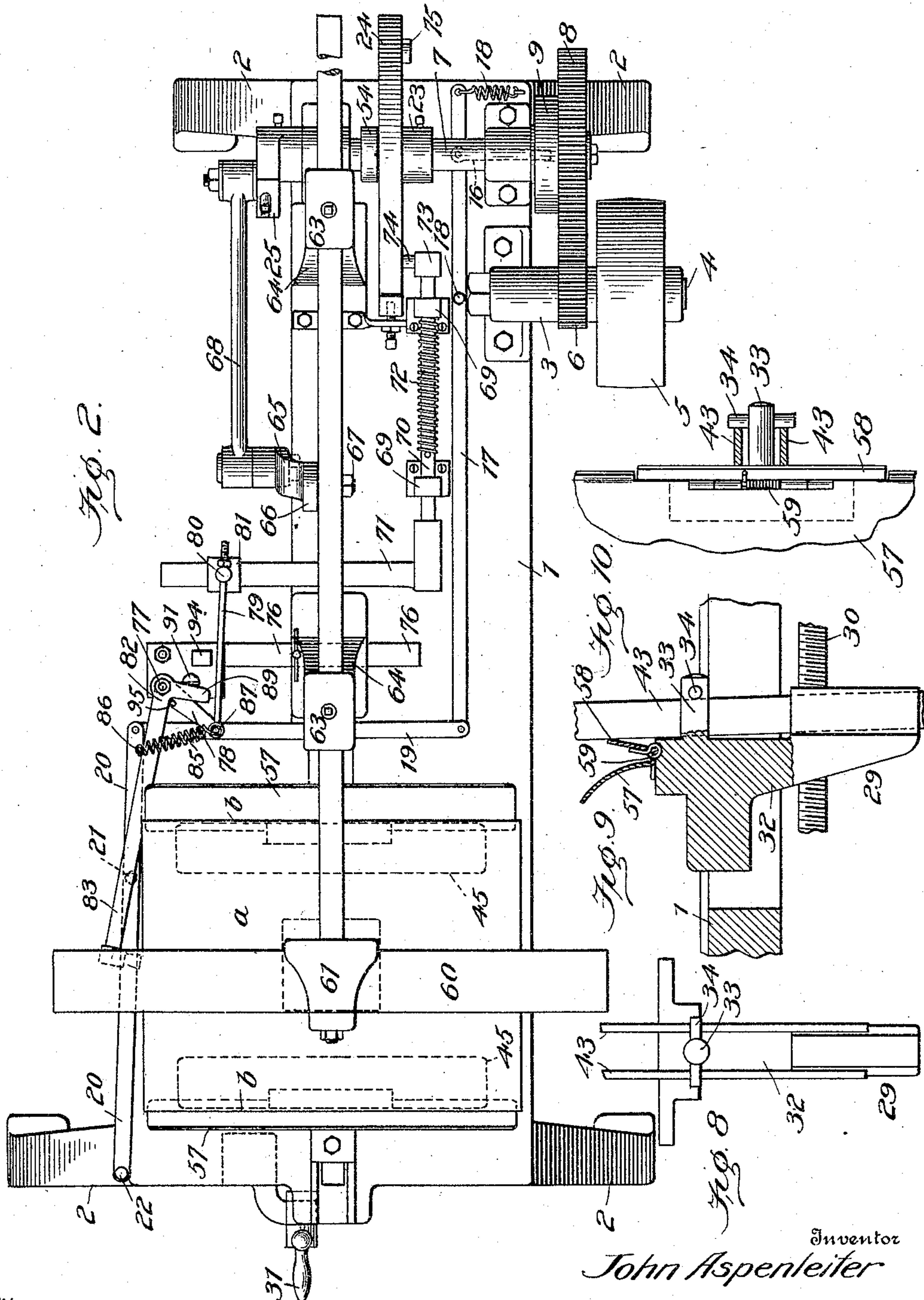
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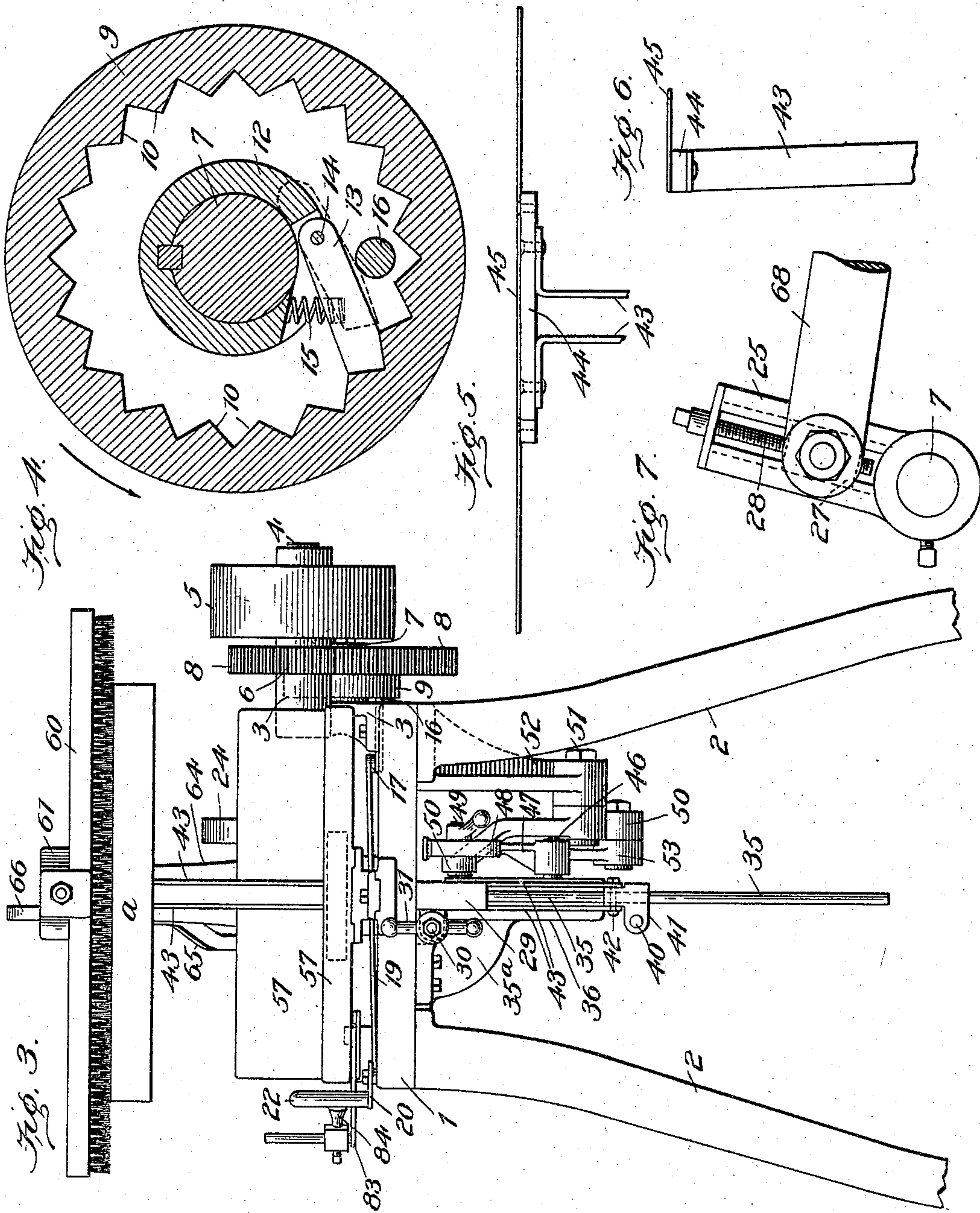
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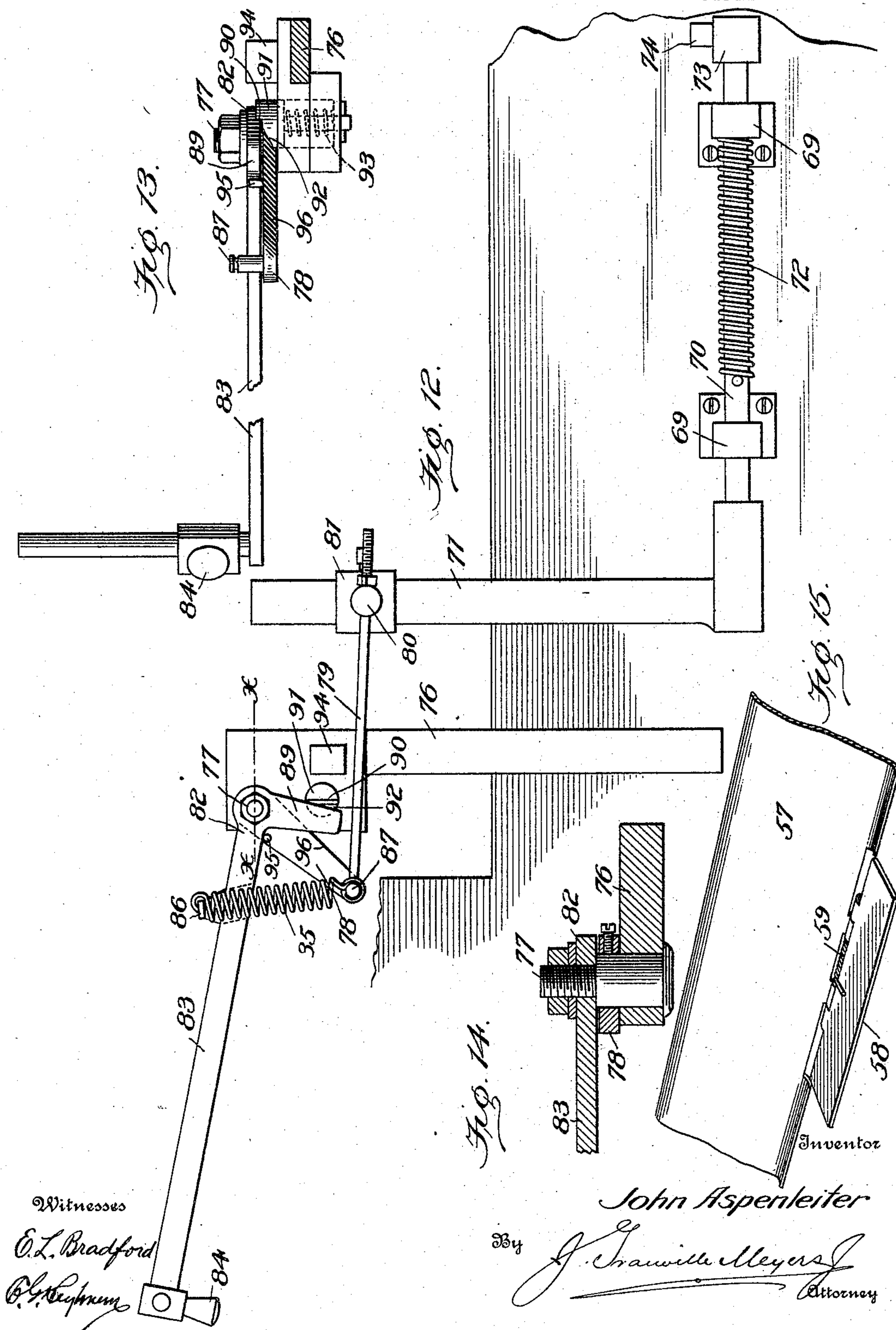
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5 SHEETS—SHEET 4.



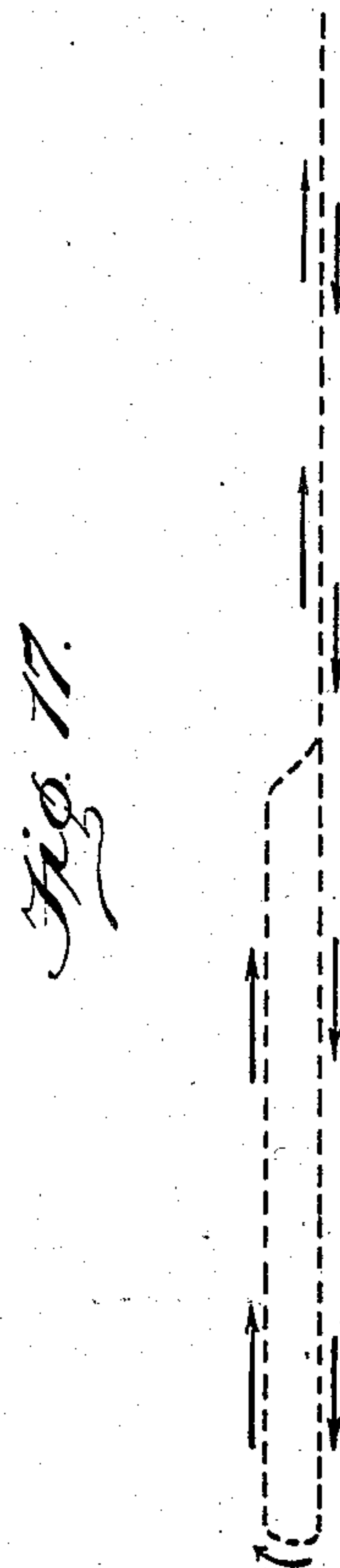
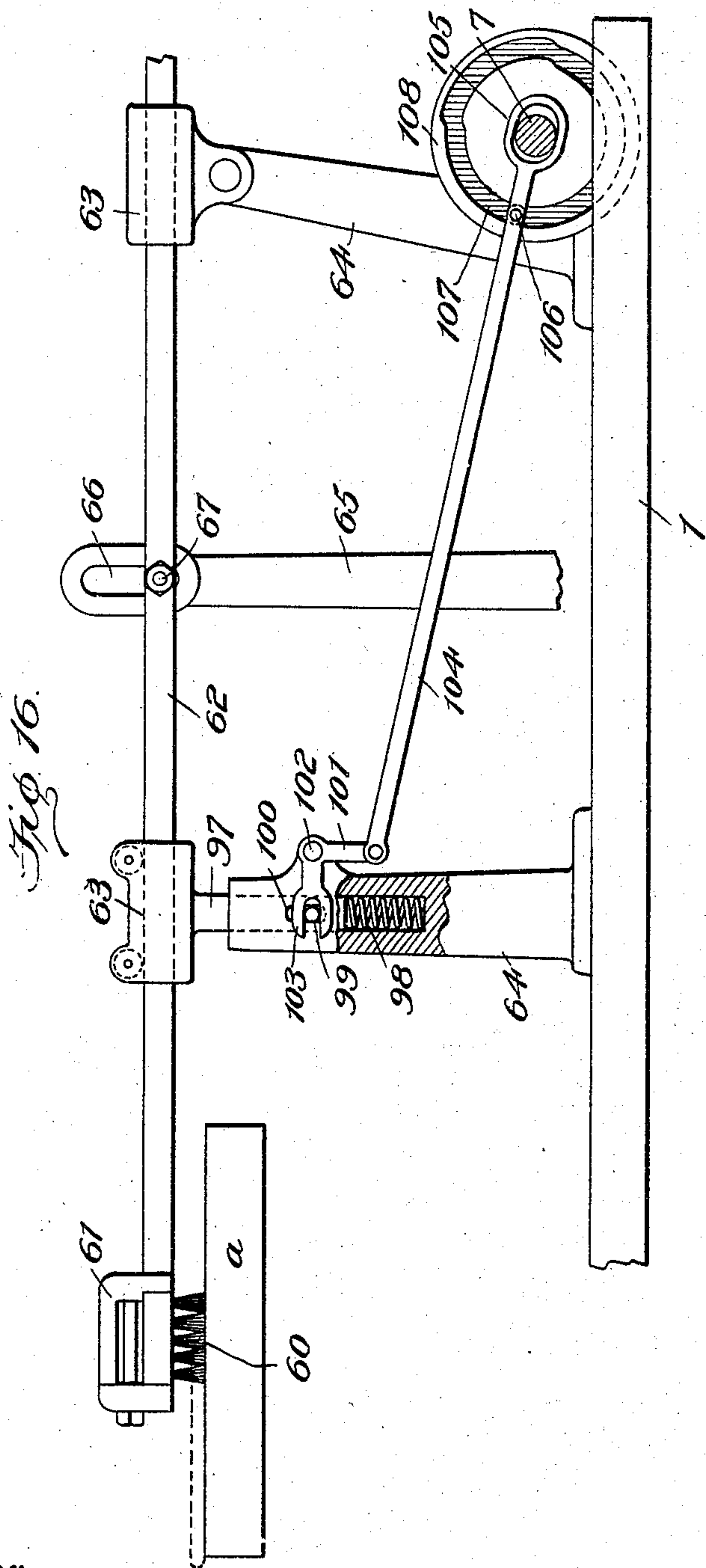
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR APPLYING LABELS TO BOXES.

SPECIFICATION forming part of Letters Patent No. 782,638, dated February 14, 1905.

Application filed October 1, 1904. Serial No. 226,794.

To all whom it may concern:

Be it known that I, JOHN ASPENLEITER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Machines for Applying Labels to Boxes, of which the following is a specification.

My present invention relates to certain new and useful improvements in box-covering machinery, and more especially to what are known as "top or bottom labeling machines."

In covering paper boxes according to one known method it is the practice to first apply a strip or web of covering-paper around the side and end walls of the box-shell, then turn one projecting edge of said strip or web over the edges of the open mouth of the shell and affix the same to the interior of the box-walls and fold the other projecting edge over the top or bottom of the shell and affix the same thereto. The box will thus be covered on its side and end walls; but the top or bottom of the box, as the case may be, remains uncovered. To cover this part of the box, it has been the usual custom to cut a strip or web of the proper size to completely cover the top or bottom of the box, apply gum or glue thereto, and then affix the same to the uncovered top or bottom of the box, this latter operation being carried out by hand. This hand operation of applying the top label is necessarily slow, somewhat tedious, and adds materially to the cost of the finished box, as will be apparent, because the operator must see to it that the top or bottom label is applied firmly, smoothly, and evenly, and this requires no little time, labor, and patience.

It is the purpose of the present invention to provide a simple and easily-operable machine for performing the work of applying the top or bottom covering strips or labels to the box-shells, such as has heretofore been done by hand.

Another purpose of the invention is to provide in a machine of the character described means for automatically ejecting the finished or completely-covered box from the machine.

Briefly and generally stated, the invention comprises, essentially, means for supporting and carrying the box that is to have the covering strip or label applied thereto, a wiping or applying device for smoothly applying the said strip or label to the box, said wiping or applying device being movable across the path of movement of the box-support and operating to engage the strip or label first at a point between the opposite edges thereof, then move toward one edge of the box to apply one-half or approximately one-half of the strip or label thereto, and then move in the opposite direction or toward the other edge to complete the application of the strip or label, and means for causing a relative movement between the said box-support and wiping or applying device at certain periods of the operation, whereby to insure a complete and smooth application of the entire strip or label and prevent back curling or lifting of the previously-applied edges thereof.

The invention resides, further, in the particular elements and in the combination and arrangement thereof, as will hereinafter appear in detail and which will then be definitely pointed out in the appended claims, forming a part of this specification.

In the annexed drawings, Figure 1 is a side elevation of one form of machine constructed according to this invention. Fig. 2 is a top plan view thereof. Fig. 3 is an end view looking at the front of the machine. Fig. 4 is a detail sectional view of the driving-clutch. Figs. 5 and 6 are detail views of the heads of the box-carrying arms. Fig. 7 is an enlarged detail view of the adjustable means for regulating the length of stroke of the wiping device. Figs. 8 and 9 are sectional views of the adjustable guide-blocks for the box-carrying arms. Fig. 10 is a detail plan view of a portion of the box-rest. Fig. 11 is a detail side elevation of the cam for actuating the box-ejector. Fig. 12 is an enlarged detail view of the ejector. Fig. 13 is a side elevation of the same, a part of the slide to which the ejector is attached being shown in section; and Fig. 14 is a section on the line *x x* of Fig. 12. Fig.

15 is a perspective view of a portion of the box holder or rest. Fig. 16 is a slightly-modified form of mechanism for causing the relative movement between the wiping device and the box, and Fig. 17 is a diagrammatic view showing the path of movement of the wiping device.

Referring to the drawings, the reference-numeral 1 designates a table supported upon legs 2. Journaled in the bearing 3 at the rear end of the table is a power-shaft 4, having secured thereto a drive-pulley 5 and a gear-wheel 6, as shown. Arranged adjacent to and parallel with the shaft 4 is a driven shaft 7, having loosely mounted on one end thereof a gear-wheel 8, provided with a flange or collar 9, having internal teeth 10, as more clearly shown in Fig. 4. Keyed to the shaft 7 is a sleeve 12, having a cut-away portion in which is pivoted a pawl 13, pivoted at 14 to the sleeve, (as shown,) the free end of said pawl being normally pressed outward toward and held into engagement with the teeth 10 by means of an expansible coil-spring 15. A longitudinally-movable pin 16 is arranged to be projected into the path of movement of the pawl 13, so that when said pin engages the pawl the latter will be lifted from engagement with the teeth 10 to permit the rim 9 and gear-wheel 8 to rotate without affecting the rotation of the shaft 7. When, however, the pin 16 is moved out of or away from the path of movement of the pawl 13, said pawl will be held into engagement with the teeth 10 by means of the spring 15, and thus any rotation of the shaft 4 will be imparted to the shaft 7 through the medium of the gears 6 and 8 and the pawl mechanism described. The longitudinally-movable pin 16 is moved into and out of the path of movement of the pawl 13 by means of a lever 17, pivoted at 18, as shown in dotted lines in Fig. 2. A spring 18 is secured at one end to the free end of the lever 17 and at its other end to the machine-table, as shown, the normal tendency of said spring being to draw the pin inward, so that it will lie in the path of movement or rotation of the pawl. To the opposite end of the lever 17 is pivoted a link 19, which latter is secured at its opposite end to a lever 20, pivoted at 21. The free end of the lever is provided with a handle 22, as shown, and it will be obvious that by moving the lever 20 to the left in Fig. 2 the lever 17 will be rocked so as to withdraw the pin from the path of the pawl 13. By this means the driven shaft and all the parts deriving motion therefrom may be stopped at the will of the operator. Any suitable means may be employed for locking the lever 20 in position to hold the pin into or out of the path of movement of the pawl 13.

Secured to the shaft 7, intermediate the ends thereof, is a sleeve 23, carrying a disk 24, having in one face thereof a cam-groove, (shown

in dotted lines in Fig. 1,) the purpose and configuration of said cam-groove to be presently described. Secured to the other end of the shaft 7 is a crank-arm 25, having a grooved way in which is slidably mounted a block 27, having a threaded aperture through which an adjusting-screw 28 passes, all as more clearly shown in Fig. 7 and the purpose of which will be presently explained.

The parts just described are employed to impart proper movements to the box supporting and carrying means and to the wiping or applying device and also to the ejector, and these parts, which constitute the salient features of the invention, will now be described, reference being had first to the box supporting and carrying means, which is more clearly shown in Fig. 1.

Adjustably slidable in suitable aligned ways in the table 1 are two similar blocks 29, having threaded openings through which pass a right and left hand adjusting-screw 30, said screw being provided at its outer end with a handle 31. It will be manifest that by turning the screw 30 in one direction or the other the blocks 29 may be adjusted toward and from each other, as desired. The blocks 29 are each provided with a projecting web portion 32 (more clearly shown in Fig. 8) and are also provided with an outwardly-extending stud 33, carrying a transverse pin 34, and depending from each block 29 is a vertical guide-rod 35, as more clearly shown in Figs. 1, 3, and 8. Secured to and depending from the bottom of the table 1 is a bracket 35^a, having formed therewith a guideway 36, (see Fig. 1,) in which is arranged to reciprocate vertically a plunger-rod 37, said plunger-rod having detachably secured to the upper end thereof a box-supporting form-block 38. Fixed to the lower end of the plunger-rod 37 is a head 39, carrying a cross-rod 40, and adjustably mounted on each end of the said cross-rod is a block 41, each of which is arranged to slide freely up and down on the guide-rods 35, suitable apertures being provided in the blocks 41 to permit free movement of said blocks on said rods. Pivoted at 42 to each block 41 is a pair of parallel box-carrying arms 43, said arms having their lower ends bent outward, as at 43^a, at a slight angle to the remaining portion of the bars and having their upper ends arranged on opposite sides of the web-like portion 32 of the blocks 29, said arms being confined closely to said blocks by means of the cross-pins 34. Secured to the upper end of each pair of arms 43 is a tie-block 44, and to each tie-block is fixed a plate 45, all as more clearly shown in Figs. 5 and 6, the two plates projecting toward each other and toward the form-block 38. Attached to the plunger-rod 37 is a pin 46, upon which is freely mounted a link 47, having at its free end a slotted portion 48, in which is adjustably mounted a pin 49, secured

to a pivoted operating-lever 50, said lever being pivoted at 51 to a bracket 52, depending from the under side of the table 1. To the opposite end of the lever 50 is a link 53, having a slotted portion 54, (shown in dotted lines in Fig. 1,) through which the driven shaft 7 passes and upon which said slotted portion of the lever is guided. The lever 53' carries a friction-roller 55, that is arranged to enter a cam-groove 56 in the disk 24, heretofore described. The configuration of this cam-groove is such as to impart an oscillatory movement to the lever 50 to first move the plunger-rod, with its box-form 38 and the box-carrying arms 43, upward to a certain height, where these parts will remain for a certain predetermined time, and then lower the parts a slight distance and immediately raise them again to the former uppermost position, and then finally bring the parts back to the normal position and as shown in full lines in Fig. 1, the purpose of such movements of these parts to be presently explained.

It will be seen by referring to Fig. 1 of the drawings that the two pairs of box supporting and carrying arms 43 are arranged closer together near their lower ends than at the points where they traverse the slide-blocks 29, this being due to the outwardly-bent portions 43^a, heretofore referred to. The purpose of this construction is to cause the upper ends of said arms to gradually move away from each other or spread as they ascend and thus firmly grip the interior side walls of the box and hold the latter secure during the operation of the wiping device, the central portion of the box being supported during the operation by means of the form-block 38. When the box-carrying arms are in their normal or lowermost position, as shown in full lines in Fig. 1, the outer edges thereof will be slightly removed inward from and below the side walls *b* of the inverted box *a*, supported above them; but as the arms are moved upward through the mechanism described the upper ends thereof will gradually spread apart until they firmly grip and hold the box against movement. During the descent of the arms they will likewise gradually approach each other, so that when they again reach the lowermost position the box will be freed. Of course it will be understood that the amount of outward pressure imparted to the interior of the box-walls may be regulated by simply adjusting the position of the slide-blocks 29. Likewise the box-carrying arms are adjusted toward and from each other to accommodate boxes of different sizes. I consider this spreading and retracting movement of the arms as one of the important features of the invention, as it has many advantages in a machine of this character.

Secured to the top of each slide-block 29 is a transversely-arranged box-holding rest, each consisting of a sheet-metal strip 57, which is

flared outwardly, as shown, and one of which strips is somewhat wider than the other. Each strip has an intermediate hinged section 58, as more clearly shown in Figs. 9 and 10, said hinged sections being normally held downward in a substantially horizontal position by means of coiled springs 59. (See Fig. 10.) The hinged sections described are located in the path of movement of the plates 45 of the box-carrying arms, so that when said arms are moved upward the hinged sections will be raised vertically into the box, as shown in Fig. 9, to insure the proper and accurate guiding of said arms within the box. The two supporting-rests are important, since they act to accurately center the box over the arms 43 and block 38. As one of the strips 57 extends upward for some distance, as shown, the operator need only rest one edge of the box against said strip and then let the same drop horizontally, when it will be accurately centered.

The wiping or applying device as shown in the present instance consists of a brush 60, removably mounted in a clamping-head 61, said head being carried by a horizontally-reciprocating bar 62, which is mounted to slide back and forth in suitable bearings 63, mounted upon brackets 64, projecting upward from the machine-table. The wiping device is reciprocated back and forth across the path of movement of the box supporting and carrying means heretofore described by the following mechanism: Pivoted to a bracket 64', depending from the under side of the table 1, is an arm 65, having an elongated slot 66 in its upper end, said slot having a connection with the bar 62 by means of a pin 67. A link 68 connects the arm 65 with the crank-arm 25 on the shaft 7, heretofore described, all of which is more clearly shown in Fig. 7. It will be seen that by adjusting the point of connection of the arm 68 with the crank-arm 25 the length of stroke of the wiping device may be varied. While I have shown the wiping device as consisting of a brush, I do not wish to be understood as limiting myself to this particular form of device, for it will be obvious that I may employ in lieu thereof a strip of felt or any other desired means for accomplishing the end in view. The wiping device will of course be sufficiently long to extend entirely across the box, so as to engage the covering label or strip throughout its length or width, as the case may be.

The construction and operation of the parts described—namely, the box supporting and carrying means and the wiping device—are such that as the said box supporting and carrying means is moving upward with a box thereon the wiping device is moving forward at right angles thereto, so that when the former has reached the limit of its upward stroke, as shown in dotted lines in Fig. 1, the latter will be brought to a position approximately cen-

tral of the box and then continuing its forward movement in engagement with the box to apply one-half of the label thereto. The box-supporting means will now descend a very slight distance, just sufficient to bring the box out of engagement with the wiping device, so that as the device begins its return movement it will not engage the edge of the covering-paper that was applied during the forward movement. The box supporting and carrying means will, however, immediately resume its highest position, so that on the return movement of the wiping device the latter will again engage the box centrally and sweep over the part of the top not previously acted upon. The wiping device, it will be understood, has a regular back-and-forth reciprocating movement imparted thereto; but the peculiar configuration of the cam-groove 56 imparts the proper up-and-down movements of the box supporting and carrying means to effect the operations just described, and it is these movements of the parts that constitute one of the salient features of the present invention, since by the arrangement shown and described there is no danger of either edge of the covering strip or label being engaged by the wiping device and curled or folded back over the face of the strip or label. This is due to the fact that the wiping device always works from the center of the box outward toward each edge.

After the label has been smoothly applied to the top of the box in the manner just described the box supporting and carrying means descends to normal position, which takes said means entirely out of the box, leaving the latter freely supported upon the rests or guards 57, as more clearly shown in Fig. 1, and at this moment the box-ejector is brought into operation and acts to eject the finished box from the machine.

The ejector will now be described, particular reference being had to Figs. 2, 11, 12, 13, and 14.

Mounted to reciprocate longitudinally in suitable bearings 69 on the table 1 is a rod 70, having an angular extension 71 at one end, the said rod being normally held projected toward the front of the machine by means of a coiled spring 72, as shown. On the rear end of the rod 70 is a block 73, carrying a friction-roller 74, that is arranged to be engaged by a cam-lug 75, fixed to the face of the disk 24, the arrangement being such that at suitable intervals the cam-lug 75 will engage the friction-roller 74 and pull the rod 70 backward against the force of the spring 72 and then release the same to permit it to be projected forward for a purpose presently to be made apparent.

Adjustably mounted on the face of the table 1, forward of the angular extension 71, is a slide 76, carrying a loose pin 77, to which is keyed an arm 78, having an adjustable con-

nection with the said extension 71 by means of a rod 79. The said rod 79 passes through an aperture in a pin 80, carried by a sleeve 81, the latter being slidably adjustable on the extension 71. A bell-crank lever 82 is loosely mounted on the pin 77 and lies above the arm 78, the long arm 83 of said lever extending forward and carrying at its end a rubber tip or box-striking portion 84, the latter normally lying to one side of and on a central line between the box-rests 57. An expansible coiled spring 85 is attached at its opposite ends, respectively, to a lug 86 on the arm 83 of the bell-crank lever and to a pin 87, projecting upward from the lever 78. The short arm 89 of the bell-crank lever 82 is arranged to move into contact with a shoulder 90, formed on a yielding stop 91, said stop having an inclined face 92. The stop moves vertically in an aperture in the slide 76 and is normally held projected by means of a coil-spring 93. An abutment 94 for the short arm 89 of the bell-crank lever is carried by the slide 76 at a point adjacent to and in rear of the yielding stop 91. The arm 78 is provided with a pin 95, that cooperates with the long arm 83 of the bell-crank lever to limit the movement thereof. The said arm 78 is also provided at one edge with an inclined or beveled portion 96, that cooperates with the inclined face 92 on the yielding stop 91, the arrangement of the parts being such that as the arm 78 is drawn toward the yielding stop 91 the two inclined faces will meet, and further movement of said arm will force the said stop downward and release the short arm 89 of the bell-crank lever from the shoulder 90, which is then thrust forward under the force of the spring 85, the latter having been expanded through the movement of the arm 78.

The operation of the ejector is as follows: When the cam-lug 75 on the disk 24 engages with the friction-roller 74, carried by the rod 70, said rod is retracted, placing the spring 72 under compression. This retracting movement of the rod 70, through the extension 71 and rod 79, moves the arm 78 rearward, expanding the coil-spring 85. The bell-crank lever 82 is held against movement temporarily by means of the yielding stop 91, the short arm 89 of the said lever being in engagement with the shoulder 90 of said stop. About the time the arm 78 has sufficiently expanded the spring 85 the inclined edge 96 of said arm engages the inclined face 92 on the stop, depressing the same and freeing the short arm 89 of the said bell-crank lever. The arm 83 of the bell-crank lever is thus thrust forward under the force of the spring 85, so that the rubber tip or box-striking portion 85 strikes the box with a blow sufficient to eject the same from the machine. As soon as the cam-lug 75 frees the friction-roller 74 on the rod 70 the spring 72 forces the parts to their normal position, as shown in Figs. 2 and 12, the arm 83 of the

bell-crank lever being forced outward by means of the pin 95 on the arm 78. It will be understood, of course, that the position of the cam-lug 75 is such as to cause the ejector to be brought into operation each time the box supporting and carrying means returns to normal position after having carried the box into engagement with the wiping device.

The operation of the complete machine is as follows: Assuming the parts to be in the position shown in full lines in Fig. 1, a box *a*, having the paper covering pasted to its sides *b*, and the top label or sheet laid, but not pressed upon its top, is first placed open-end down between the box-holding rests 57, the latter having been previously adjusted accurately to the width of the boxes to be operated upon. The handle 22 is then shifted to move the pin 16 out of the path of movement of the pawl 13, which causes the machine to be set in operation. The box supporting and carrying means, comprising the arms 43 and the block 38, immediately begins to ascend within the box engaging and carrying the same upward, the arms gradually spreading to firmly grip the box in the manner heretofore described. At the same time the wiping device 60 begins to move forward in a line at right angles to and across the path of movement of the box, so that about the time the box has reached the limit of its upward stroke the wiping device will have reached a position about central of the box and will be in engagement therewith, as shown in dotted lines in Fig. 1. The box supporting and carrying means now remains stationary for a sufficient length of time to permit the wiping device to sweep forward, completing its stroke in the one direction and firmly and smoothly wiping the covering strip or label over one-half of the box. The said box-carrying means now descends for a short distance, just sufficient to take the wiping device 60 out of contact with the box, this movement being accomplished by a suitable break in the cam 56, and immediately ascends again to its former uppermost position, where it again remains stationary for a short period of time. During this slight downward-and-upward movement of the box the wiping device is beginning to return to initial or starting position, and by the time the box has ascended, as just described, the wiping device will again have reached a point central of the box, or at least will have passed over the outer edge of the label just applied, and during the remainder of its return movement will sweep over the other half or portion of the label and apply it firmly and smoothly to the box. The box-carrying means will now descend with the box, the arms 43 gradually loosening their grip, so that when said means reaches the limit of its downward movement the box will be left freely supported upon the rest-strips 57, the arms 43 and the block 38 having been entirely withdrawn from the box as shown.

At this moment the ejector is brought into operation and the finished box is ejected from the machine. A new box is placed in position, as before described, and the operation continued.

While I have herein shown and described the preferred construction and arrangement of parts, I do not wish to be limited specifically to such construction except as I may be restricted in the appended claims. It will be obvious that instead of the peculiar construction of the box supporting and carrying means herein shown I may employ a simple form-block, like the block 38, only of a size to more completely fill the box, in which case I would do away with the arms 43 and their connecting parts.

It will be understood, of course, that the various parts of the machine where required are made adjustable to take boxes of various sizes. For instance, the box supporting and carrying device is adjustable as to width, the adjustment being accomplished by means of the screw-rod 30. The upward movement of the box supporting and carrying means may be adjusted through the medium of the adjustable pin 49, moving in the slot 48 of link 47. The length of stroke of the wiping device may be adjusted through the movable connection between the link 68 and crank 25, and the ejector can be adjusted by shifting the position of the slide 76 on the table 1 and the sleeve 81 on the extension 71.

In Fig. 16 I show a slightly-modified arrangement of mechanism for causing the relative vertical movement between the wiping device and the box support or carrier which may be employed in lieu of the mechanism heretofore described. In other words, instead of moving the box supporting and carrying means slightly downward and then upward again to free the wiping device therefrom during its travel I may cause the wiping device itself to be moved away from the box supporting and carrying means, in which case the said means would remain stationary when brought to its upmost position until after the label has been completely applied. In said Fig. 16 the reference-numeral 1 designates the table; 7, the driven shaft; *a*, the box; 60, the wiping device; 62, the reciprocating rod carrying such device, and 64 the brackets extending upward from the table and having the guides for the rod 62. Instead of making the guide 63 stationary with the bracket 64, as heretofore described, I mount this guide so that it will have imparted thereto a slight upward-and-downward movement at the proper moment in order to cause the wiping device to engage the box only after it has passed the edges thereof during its forward-and-rearward stroke. The guide 63 is provided with a shank 97, mounted to reciprocate in a bore in the bracket 64, a spring 98 being placed in said bore and normally

tending to force the shank, with the bearing 63, upward. A pin 99 is secured to the shank and projects through an elongated slot 100 in the side of the bracket 64, said slot intersecting the bore. A bell-crank lever 101 is pivoted at 102 to the bracket 64 and has one end forked, as at 103, the said forked end embracing the pin 99. To the other end of the bell-crank lever 101 is pivoted a link 104, having at its opposite end a strap 105, that surrounds the shaft 7. To this link 104 is secured an antifriction-roller 106, that moves in a cam-groove 107, formed in the face of a disk 108, said disk being fixed to the shaft 7. The cam-groove 107 is of such configuration that it will cause proper movements of the link 104 and bell-crank lever 101 to properly raise and lower the bracket 63, and with it the reciprocating rod 62, and thus give the proper elevations to the wiping device 60 to effect the desired end.

In Fig. 17 I show a diagrammatic view showing the path of movement of the wiping device, and by referring to this figure it will be seen that said device first moves forward in a straight line, initially engaging the box at a central point, as shown in Fig. 16, to apply during its continued forward movement the top label to the left-hand half of the box. On the return movement the wiping device is elevated, the box remaining stationary, and said device is held elevated by reason of the position of the bearing 63 until said device reaches a point about midway of the sides of the box, and it is then lowered into contact therewith and held in such contact during the completion of its return movement and until the right-hand portion of the label is firmly applied.

What I claim is—

1. In a machine of the character described, means for supporting and carrying a box, means for moving said supporting means in a right line, and a wiping device movable entirely across the path of movement of said supporting means.

2. In a machine of the character described, vertically-movable means for supporting and carrying a box, and a wiping device movable back and forth into engagement with and entirely across the face of the box-supporting means.

3. In a machine of the character described, means for supporting a box, and a flexible wiping device movable back and forth into engagement with and entirely across the face of the box-supporting means.

4. In a machine of the character described, a box-support, a wiping device, means for causing said device to engage the support at a substantially central point, and means for moving the device from such point toward the outer edge thereof.

5. In a machine of the character described, a reciprocating box-support, a wiping device movable back and forth across the path of

movement of said support and means for bringing said support into engagement with the wiping device during such movements.

6. In a machine of the character described, a table, a box-rest comprising a pair of outwardly and oppositely flaring strips, a hinged flap carried by each strip, a reciprocatory box-support arranged to move between said strips and engage and lift the flaps during movement, and a wiping device coöperating with said box-support.

7. In a machine for applying top labels to boxes, means for supporting the box with the label thereon, a wiping device for applying the label, and means for causing the wiping device to engage the label first between the opposite edges thereof and then move outward in opposite directions wiping toward and across said edges.

8. In a machine of the character described, a box-support, a wiping device movable across the face thereof, and means for imparting a relative movement between these elements whereby to bring them into engagement after the wiping device has passed an edge of the box-support.

9. In a machine of the character described, a vertically-reciprocatory box-support, a wiping device movable in a line at right angles to and across the path of movement of said support, and means for bringing these elements into engagement after the wiping device has passed an edge of the box-support.

10. In a machine of the character described, a vertically-reciprocatory box-support, a horizontally-reciprocatory wiping device movable across the path of movement of said support, and means for bringing these elements into engagement during a portion of the forward movement of the wiping device.

11. In a machine of the character described, a vertically-reciprocatory box-support, a horizontally-reciprocating wiping device movable across the path of movement of said support, and means for bringing these elements into engagement during a portion of the forward and backward movements of the wiping device.

12. In a machine of the character described, the combination of a wiping device, an expandible box-support movable toward and from the path of movement of said device, and means for causing said support to expand and grip the box during its movement toward the wiping device.

13. In a machine of the character described, the combination of a wiping device, an expandible and contractible box-support movable toward and from the path of movement of said wiping device, and means for causing said support to expand and grip the box during its movement toward the wiping device and contract to release the box during its movement away from said device.

14. In a machine of the character described,

a box supporting and carrying device, comprising independent arms for entering a box, means for moving said device in a right line, and means for spreading said arms to cause
5 them to grip the box.

15. In a machine of the character described, a box supporting and carrying device comprising pivoted arms, means for moving said device in a right line, and means for spreading
10 the arms during movement.

16. In a machine of the character described, a box supporting and carrying device comprising a reciprocating element, arms pivoted to said element, and means for spreading said
15 arms during their movement in one direction.

17. In a machine of the character described, a box supporting and carrying device, comprising a reciprocating element, arms pivoted to said element, and means for spreading said
20 arms during their movement in one direction and for contracting them during movement in the opposite direction.

18. In a machine of the character described, a box supporting and carrying device comprising pivoted arms, means for adjusting said
25 arms toward and from each other, means for moving the device in a right line, and means for spreading the arms during movement.

19. In a machine of the character described, a box supporting and carrying device, comprising a reciprocating element, arms pivoted to said element, means for adjusting said arms
30 toward and from each other, and means for spreading the arms during their movement in one direction.

20. In a machine of the character described, a box supporting and carrying device, comprising a vertically-reciprocatory element, a cross-rod carried by said element, arms adjustably
40 mounted on said cross-rod, means for reciprocating said element, and means for spreading the arms during their movement in one direction.

21. In a machine of the character described, a vertically-reciprocatory box supporting and carrying device, means for supporting a box inverted above said device, means for reciprocating said device to cause it to enter and elevate the box, and a wiping device arranged to sweep over the top of the box after it has been elevated.
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22. In a machine of the character described, a vertically-reciprocatory box-support, means for holding a box inverted and against lateral movement above and in the path of the support, means for reciprocating the support to raise and lower the box, and a wiping device arranged to sweep over the top of the box after it has been elevated.
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23. In a machine of the character described, a vertically-reciprocatory box-support, means for holding a box in an inverted position above and in the path of movement of said support, means for reciprocating the support to engage
65 and raise and lower the box, a wiping device

arranged to sweep over the top of the box when in its elevated position, and an ejector operating in timed relation with the movements of the box-support to eject the box from the machine after the action of the wiping device.
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24. In a machine of the character described, a vertically-reciprocatory box-support, means for holding a box in an inverted position above and in the path of movement of said support, means for reciprocating the support to cause it to enter and raise and lower the box, a horizontally-reciprocatory bar, a brush removably clamped to one end of the bar, and means for moving the bar back and forth to cause the
75 brush to travel across the path of movement of the box-support.
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25. In a machine of the character described, a table, slide-blocks adjustably mounted on the table, means for adjusting said blocks toward and from each other, a pair of vertically-movable arms embracing a part on each block, a box-supporting head attached to the upper end of each pair of arms, means for raising and lowering the arms, and a wiping device movable back and forth across the path of movement of the arms.
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26. In a machine of the character described, a table, slide-blocks adjustably mounted on the table, box supporting and carrying members guided by said blocks, means for raising and lowering said members, and a wiping device movable back and forth across the path of movement of the members.
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27. In a machine of the character described, a table, slide-blocks adjustably mounted on the table, means for adjusting said blocks toward and from each other, box supporting and carrying arms guided by said blocks, means for raising and lowering said arms, and a wiping device movable back and forth across the path of movement of the arms.
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28. In a machine of the character described, a table, slide-blocks adjustably mounted on the table, a box-rest carried by each block, a box supporting and carrying device movable back and forth between said blocks, and a wiping device movable across the path of movement of said device.
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29. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, a box-rest carried by each block, said rests comprising outwardly-flaring strips, a vertically-reciprocatory box-carrying device movable between said box-rests, and a wiping device movable back and forth across the path of movement of said device.
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30. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, a box-rest carried by each block, means for adjusting said blocks and the rests toward and from each other, a reciprocatory box-support movable between said rests, and a wiping device movable across the path of movement of said support.
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31. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, an outwardly-flaring strip carried by each block, means for adjusting said blocks and the strips toward and from each other, a reciprocatory box-support movable between said strips, and a wiping device movable across the path of movement of said support.

32. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, an outwardly-flaring strip carried by each block, a hinged flap carried by each strip, a reciprocatory box-support arranged to move between said strips and engage and lift the flaps during movement, and a wiping device cooperating with said box-support.

33. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, an outwardly-flaring strip carried by each block, a spring-pressed flap hinged to each strip, a reciprocatory box-support arranged to move between said strips and engage and lift the flaps during movement, and a wiping device cooperating with said box-support.

34. In a machine of the character described, a table, slide-blocks adjustably mounted thereon, an outwardly-flaring strip carried by each block, a flap hinged to each strip, vertically-movable box-supporting arms arranged to engage and lift said flaps during movement, and a wiping device movable across the path of movement of the box-supporting arms.

35. In a machine of the character described, a table, a vertically-reciprocatory plunger movable in guides below the table, and having its upper end normally extended above the plane of the table, a form-block carried by the said upper end of the plunger, means for reciprocating the plunger to raise and lower the form-block, and a wiping device movable across the path of movement of the form-block.

36. In a machine of the character described, a table, a vertically-reciprocatory plunger movable in guides below the table and having its upper end normally extended above the plane of the table, a form-block carried by the plunger, a pivoted lever having a connection with the plunger, a rotary cam having an operative connection with the lever to rock the same and impart a reciprocatory movement to the plunger, and a wiping device movable across the path of movement of the form-block.

37. In a machine of the character described, a table, a vertically-reciprocatory plunger movable in guides below the table and having its upper end projecting above the plane of the table, a form-block carried by the plunger, a pivoted lever having a link connection with the plunger, a rotary disk having a cam-groove in one face thereof, a link pivotally connected to the other end of said lever and having a friction-roller engaging the cam-groove in the disk, and a wiping device movable across the path of movement of the form-block.

38. In a machine of the character described, a table, a vertically-reciprocatory form-block movable toward and from the table, a reciprocating bar movable across the path of movement of the form-block, a wiping device carried by the bar, a rock-lever having a connection with the bar, a rotary shaft, and a link connection between the said shaft and rock-lever.

39. In a machine of the character described, a vertically-reciprocatory form-block, a horizontally-reciprocating bar carrying a wiping device movable back and forth across the path of movement of the form-block, a rock-lever having a connection with said bar, a rotary shaft having a crank-arm, and a link connection between said crank-arm and rock-lever.

40. In a machine of the character described, a vertically-reciprocatory form-block, a horizontally-reciprocating bar carrying a wiping device movable back and forth across the path of movement of the form-block, a rock-lever having a pin-and-slot connection with said bar, a rotary shaft having a crank-arm, and a link connected at one end to the rock-lever and having an adjustable connection at its other end with the crank-arm.

41. In a machine of the character described, a table, a vertically-reciprocatory plunger movable in a way below the table, a cross-rod secured to the lower end of said plunger, blocks slidably mounted on said cross-rod, box-carrying arms pivoted to the blocks, means for reciprocating the said plunger, and a wiping device movable back and forth across the path of movement of the plunger.

42. In a machine of the character described, a table, slides adjustably mounted on the table and each carrying a depending guide-rod, a vertically-reciprocatory plunger movable in a way below the table, a cross-rod carried by the lower end of the plunger, blocks slidably mounted on said cross-rod and each provided with an opening through which one of the said guide-rods passes, box-carrying arms pivoted to the blocks and guided in the slides, means for reciprocating the plunger, and a wiping device movable across the path of movement thereof.

43. In a machine of the character described, a vertically-reciprocatory box-support, a horizontally-movable wiping device arranged to travel back and forth across the path of movement of said support, means for moving the support into contact with the wiping device during a part of its forward movement and means for again bringing the elements into contact during a part of the return movement of the wiping device.

44. In a machine of the character described, a vertically-reciprocatory box-support, a horizontally-movable wiping device arranged to travel back and forth across the path of movement of said support, and means for lowering the support to take it out of contact with

the wiping device during a part of its forward movement and for raising it to bring the parts into engagement during the remainder of such forward movement, said means
5 also operating to take the elements out of engagement during a part of the return movement of the wiping device and for bringing them into engagement during the completion of the return movement.

10 45. In a machine of the character described, a vertically-reciprocatory box-support, a wiping device comprising a brush movable forward and backward across the path of movement of said device, and means for causing
15 the said wiping device to sweep over the face of the support during the latter part of its forward and backward movements.

46. In a machine of the character described, a table, means for supporting a box inverted
20 and elevated above the plane of the table, a wiping device, a box-carrying device normally lying below the plane of the said box-support, means for operating the carrying device to cause it to enter and carry the box
25 into engagement with the wiping device, and then return the box to the support, and an ejector operating in timed relation with the movements of the carrying device for ejecting the box from the machine immediately it
30 has been returned to the said support.

47. In a machine of the class described, means for applying a label to a box, and an ejector operating in timed relation with said
35 applying means for ejecting the box from the machine after said means have acted.

48. In a machine of the character described,

means for applying a top label to a box, and an ejector operating in timed relation with said applying means for ejecting the box from the machine after said means have acted, said
40 ejector comprising a bell-crank lever having a box-striking tip and means connected to the operative parts of the applying means for actuating the bell-crank lever.

49. In a machine of the character described, 45 means for applying a top label to a box, and an ejector operating in timed relation with said applying means for ejecting the box from the machine after said means have acted, said
ejector comprising a pivoted arm having a
50 box-striking tip at one end thereof, and means connected to an operative part of the applying means for actuating said arm.

50. In a machine of the character described, means for applying a top label to a box, and
55 an ejector operating in timed relation with said applying means for ejecting the box from the machine after the said means have acted, said ejector comprising a spring-actuated arm, means for placing the actuating-spring under
60 tension, means for holding the arm against movement while the spring is being placed under tension, and means for releasing the said holding means to permit the spring to
actuate the arm. - 65

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN ASPENLEITER.

Witnesses:

H. M. WRIGLEY,
B. T. ARCHER.