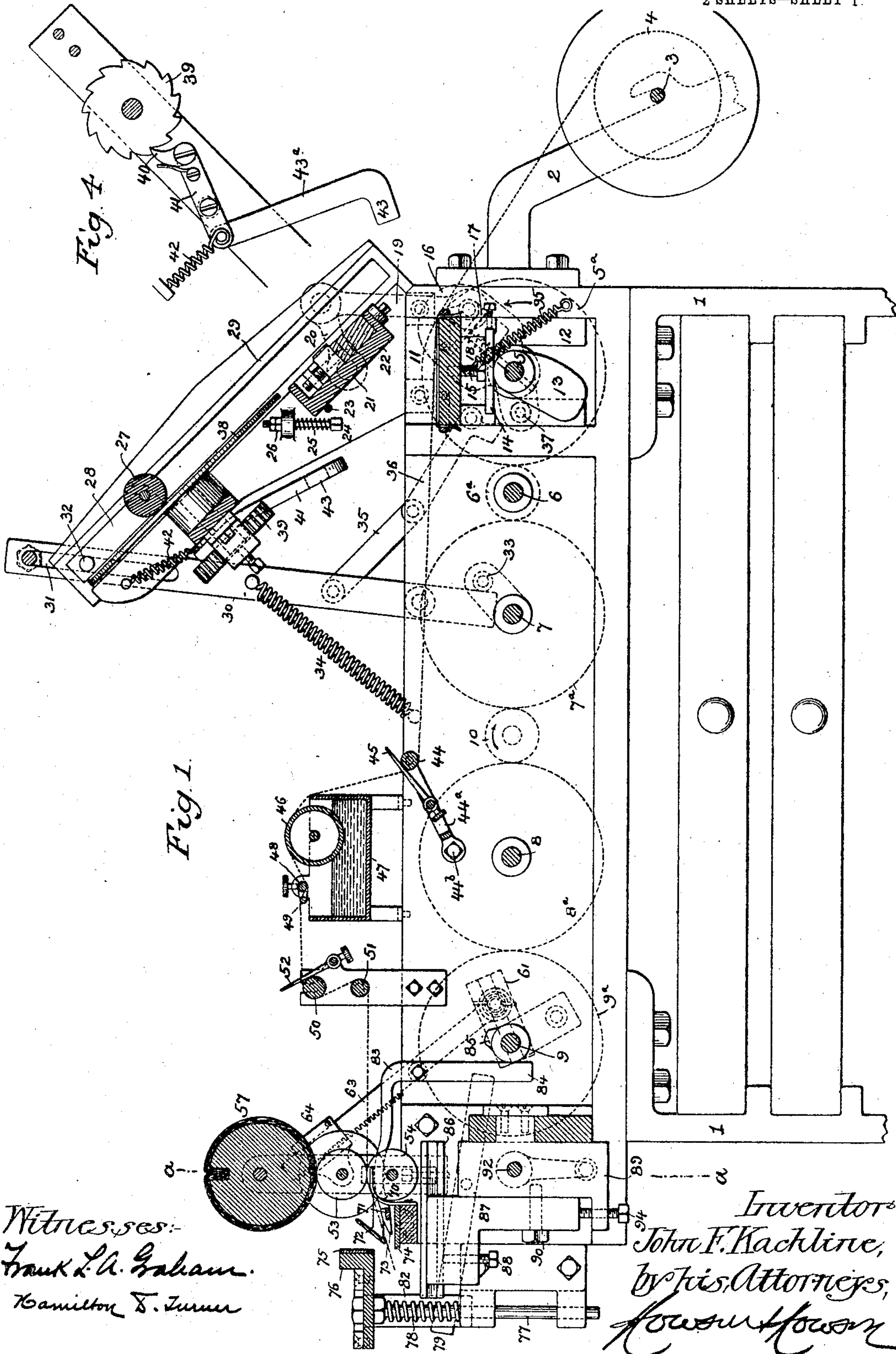


No. 795,621.

PATENTED JULY 25, 1905.

J. F. KACHLINE.  
BOX LABELING MACHINE.  
APPLICATION FILED FEB. 16, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

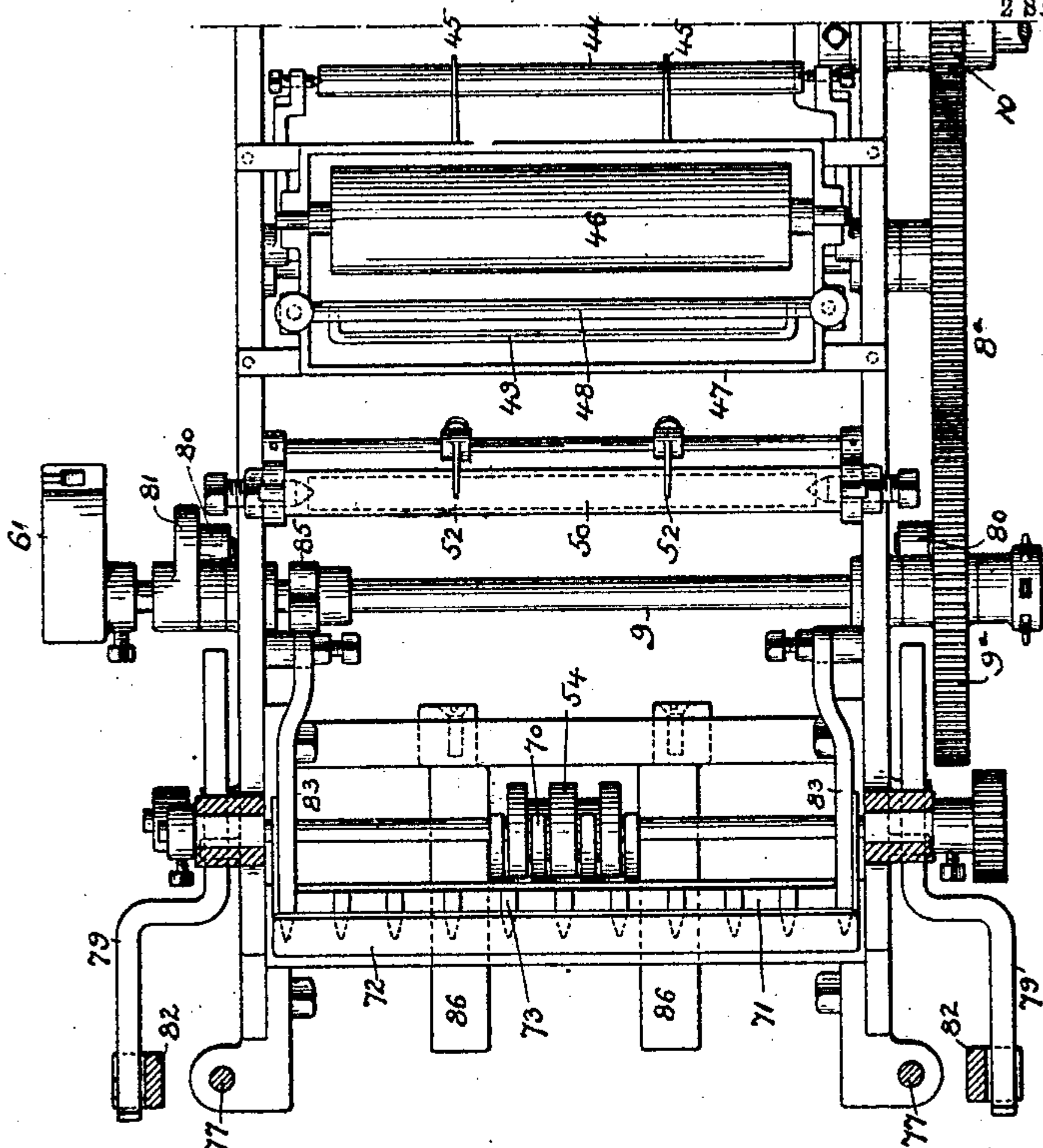


Fig. 2.

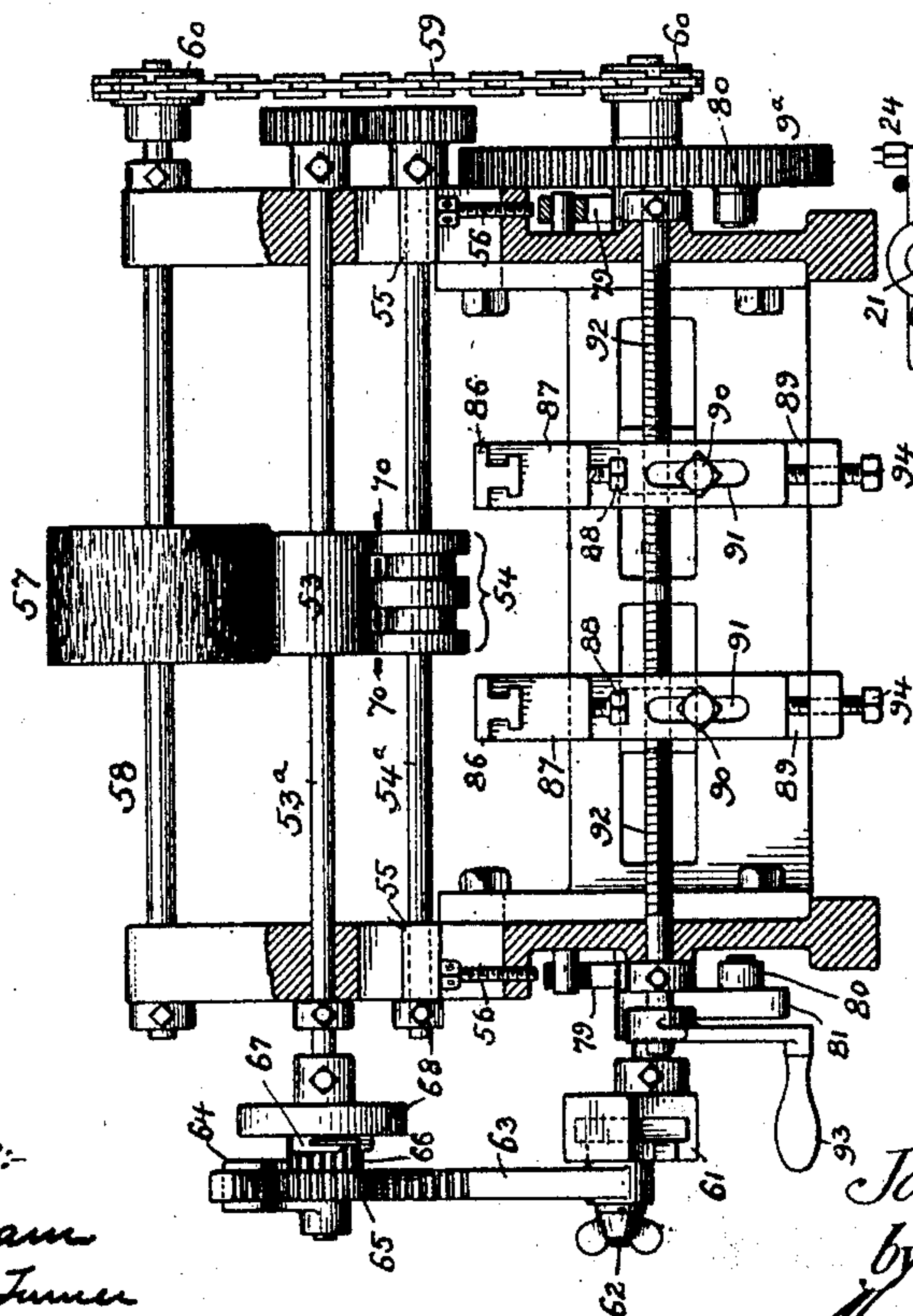
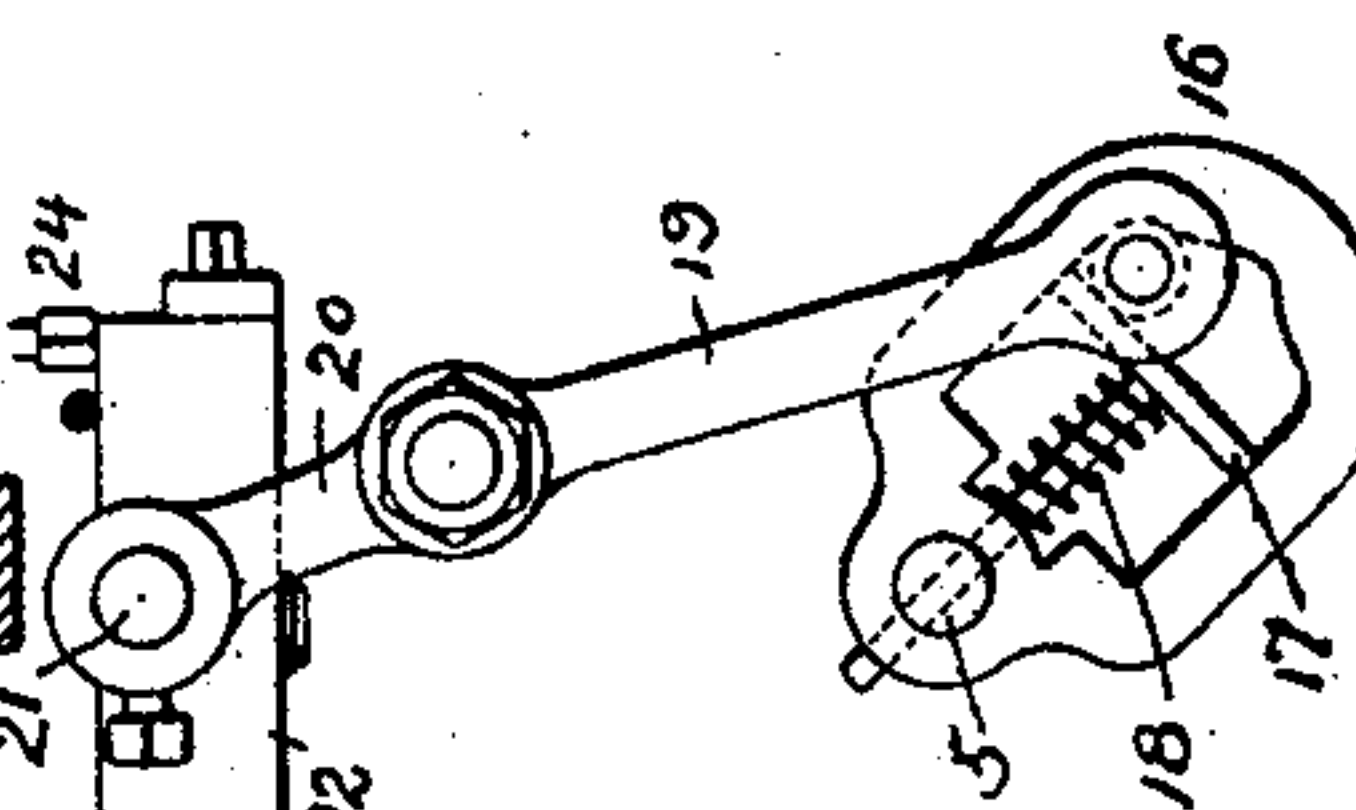


Fig. 5.





# UNITED STATES PATENT OFFICE.

JOHN F. KACHLINE, OF READING, PENNSYLVANIA.

## BOX-LABELING MACHINE.

No. 795,621.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed February 16, 1904. Serial No. 193,808.

*To all whom it may concern:*

Be it known that I, JOHN F. KACHLINE, a citizen of the United States, residing in Reading, Pennsylvania, have invented certain Improvements in Box-Labeling Machines, of which the following is a specification.

The object of my invention is to provide a machine for printing, pasting, cutting off, and applying labels to boxes of paper or other material, an object which I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a machine constructed in accordance with my invention. Fig. 2 is a view partly in elevation and partly in transverse section on the line *a*, Fig. 1. Fig. 3 is a plan view of part of the machine. Fig. 4 is a view of one of the elements of the machine not sufficiently illustrated in the other figures; and Fig. 5 is a side view of part of the machine, showing some of the parts in a different position from that shown in Fig. 1.

The purpose of my invention is to print matter of any desired character and in either one or more colors by independent and properly-spaced impressions upon one face of a strip or sheet of paper drawn from a roll or other suitably-mounted source of supply, to then apply paste to the unprinted side of said strip, to feed the strip forward by a succession of intermittent movements, to cut off from the forward end of the strip printed pieces each of the proper size to form a label, and to apply these labels to the end or side of a box held and supported in proper position to receive them.

In the drawings, 1 represents the fixed frame of the machine, having at one end suitable depending hangers 2 for the shaft 3 of a paper roll 4 from which is drawn the strip to be printed, pasted, and cut in order to form the desired labels. To suitable bearings in the fixed frame of the machine are adapted five transverse shafts 5, 6, 7, 8, and 9, each of these shafts having a spur-wheel or pinion 5<sup>a</sup>, 6<sup>a</sup>, 7<sup>a</sup>, 8<sup>a</sup>, or 9<sup>a</sup>, represented by dotted circles in Fig. 1, the spur-wheels 7<sup>a</sup> and 8<sup>a</sup> meshing with a pinion 10 on a suitable driving-shaft, to which power may be applied in any convenient way, so that all of the shafts 5, 6, 7, 8, and 9 can be simultaneously rotated.

The shafts 6 and 8 simply serve as power-transmitting shafts, but the shafts 5, 7, and 9 carry cams, crank-pins, or other suitable de-

vices for imparting movement to the various elements of the machine. The paper from the roll 4 passes first over a platen 11, which is secured to or forms part of a slide 12, vertically guided in bearings on the fixed frame of the machine, so as to have a rising and falling motion thereon, the rising motion being imparted to the platen by means of a cam 13 on the shaft 5, which cam acts upon a plate 14, which can be adjusted vertically in respect to the platen 11 by means of interposed adjusting-screws 15, whereby the position assumed by the platen 11 when at the limit of its upward movement can be readily regulated. Springs 95, one at each end of the platen, serve to draw the latter downward. On the shaft 5 is another cam 16, recessed for the reception of a plate 17, whose stem is free to slide through an opening in the shaft, said plate being acted upon by a coiled spring 18, having a tendency to constantly project it.

Between the plate 17 and the outer or yoked end of the cam 16 projects an antifriction-roller mounted upon a link 19, which is pivoted at its upper end to an arm 20 on one of the trunnions 21 of a printing-form 22, which occupies the position shown in Fig. 1 until the type-form has been properly inked, and is then caused to turn, as shown in Fig. 5, so as to carry said inked type-form into an inverted horizontal position directly above the platen 11, which then rises, so as to press the strip of paper against the inked form, and thereby print upon the strip the matter intended to form the subsequent label. In order to provide for a quick reversal of the printing-form, the action of the cam 16 on the link 19 involves a certain amount of lost motion, or rather a differential motion, slow at the beginning and quicker at the finish, for as the cam 16 rotates in the direction of the arrow, Fig. 1, the roller on the link 19 will first depress the plate 17 until it has passed beyond the center of the same, whereupon the antifriction-roller will be quickly moved to the opposite end of the plate, so as to insure the full inversion of the printing-form before the rise of the platen 11.

The printing-form is arrested when it reaches the inclined position shown in Fig. 1 by contact of its back with a pin or bar 23 on the frame of the machine, and a bolt 24, acted on by a spring 25 and provided with adjusting-nuts 26, is struck and compressed by the printing-form when the latter has been in-



verted. When the form is in the inverted position, the arm 20 and link 19 are in line with each other, as shown in Fig. 5, so as to lock the form during the printing operation. Hence the cam 16 cannot act effectively to restore the form to the position shown in Fig. 1; but the recoil of the bolt 24 serves to move the arm and link out of line and into such relation with each other that the cam can act to continue the movement.

The inking of the printing-form is effected by a roller 27, which is mounted at each end in a slide 28, suitably guided in an inclined slotted portion 29 of the fixed frame, motion being imparted to each slide by means of a lever 30, slotted, as at 31, for the reception of a pin 32 on the slide, vibrating motion being imparted to the lever by means of a crank-pin 33 on the shaft 7 and by means of a coiled spring 34, a pair of toggle-arms 35 and 36, one of which is acted upon by a crank-pin 37 on the shaft 5, serving to insure the upward movement of the arm 30 to its full extent, and thus supplement the action of the spring 34 in case the latter should be incapable of imparting the full movement to the lever.

During the upper portion of its travel the inking-roller 27 is in contact with an inking-plate 38, which has a central spindle mounted in a suitable bearing on the fixed frame of the machine and provided with a ratchet-wheel 39, which is engaged by a pawl 40 on a lever 41, the latter being also hung to the fixed frame and being moved in one direction by a coiled spring 42 and in the opposite direction by contact of the lever 30 with a lug 43 on a link 43<sup>a</sup>, which is pivoted to the lever 41, so that the partial turning movement of the inking-plate 38 is effected when the inking-roller is free from contact therewith.

After the strip of paper has been printed in the manner described it passes forwardly to and around a guide or tension and adjusting roller 44, on which it is held in proper lateral position by means of guide-fingers 45, one at each edge of the strip, and from the roller 44 the strip passes to and over a pasting-drum 46, mounted in a paste trough or box 47 and serving to apply paste to the back or unprinted side of the strip as the latter is drawn forward over the drum. After being pasted the strip passes around tension-bars 48 and 49, the latter of which serves to remove any surplus paste from the back of the strip.

The roller 44 is carried at each end by a pivoted arm 44<sup>a</sup>, which can be retained in any desired position of adjustment by tightening a nut 44<sup>b</sup> on the pivot-pin of the arm.

From the tension-rollers 48 and 49 the strip passes to and around guide-rollers 50 and 51, the former provided with edge-guiding fingers 52, and from the roller 51 the strip passes to the feeding-rollers 53 and 54, whereby it is intermittently fed forward to an extent nec-

essary to produce a label of the desired size. The upper roller 53 is carried by a shaft 53<sup>a</sup>, which is adapted to bearings in the fixed frame of the machine; but the lower roller 54 is carried by a shaft 54<sup>a</sup>, which is adapted to bearings 55, acted upon by adjusting-screws 56, so that the pressure of the lower roller 54 against the upper roller 53 can be regulated and the position of the rollers accurately adjusted, so as to accord with the thickness of the strip of paper which is being acted upon. Any ink which may be applied to the surface of the upper roller 53 is removed by a roller 57, of felt or other textile material, said roller being carried by a shaft 58, which is adapted to bearings above those of the shaft 53<sup>a</sup>, said shaft 58 being rotated from the shaft 9 by means of a chain 59 and sprocket-wheels 60. (See Fig. 2.)

Intermittent forward movements of partial rotation are imparted to the feed-roller 53 by means of a slotted arm 61 on the shaft 9, said slotted arm carrying an adjustable bolt 62, to which is pivoted the lower end of a rack-bar 63, the upper end of the latter being suitably guided in a box 64, mounted on the shaft 53<sup>a</sup>.

The rack-bar engages with a spur-wheel 65, which is free to turn on the feed-roll shaft and is secured to or forms part of a ratchet-wheel 66, the latter engaging with a spring-pawl 67, carried by a disk 68, which is secured to the feed-roll shaft.

When there is movement of the rack-bar 63 in one direction, therefore, the ratchet-wheel 66 will engage the pawl 67 and will impart movement to the disk 68, and hence to the upper feed-roll; but on the reverse movement of the rack-bar the teeth of the ratchet-wheel will slip beneath the pawl and the feed-roll will have no movement of rotation imparted to it. The lower feed-roll 54 is grooved, as shown in Fig. 2, for the reception of stripping-fingers 70, which are mounted upon a suitable transverse bar on the machine and serve to clear the pasted under face of the paper strip from the periphery of the roll 54. From these stripping-fingers the paper passes between a pair of transverse bars 71 and 72, the lower bar 71 having a series of projecting fingers 73, and thence the paper strip passes beyond the edge of a cutting-blade 74 on the fixed frame of the machine, which cutting-blade coacts with a reciprocating blade 75 to cut from the forward end of the printed and pasted strip pieces of the proper size for the desired labels.

The movable cutting-blade 75 is carried by a bar 76, having guide-stems 77, adapted to bearings on the fixed frame, upward movement of the bar 76 being effected by the action of coiled springs 78, and downward movement of the bar being effected by means of levers 79, one at each end of the bar, each of these levers being acted upon by a crank-pin 80 on the shaft 9, one of these crank-pins be-



ing carried by an arm 81 on the shaft, and the other being mounted upon the inner face of the spur-wheel 9<sup>a</sup>, as shown in Fig. 2.

The levers 79 act upon the bent lower ends of arms 82, depending from each end of the bar 76, as shown in Figs. 1 and 3.

The bars 71 and 72 are carried at each end by an arm 83, hung to the fixed frame of the machine, one of these arms having a downwardly-extending portion 84, which is acted upon by a cam 85 on the shaft 9, so as to lift the bars 71 and 72 at certain predetermined intervals—that is to say, after each downward movement of the knife 75—which effects the severing of a label from the forward end of the printed and pasted strip, the action of the bars 71 and 72 and of the fingers 73 of the latter being to lift the pasted strip from the lower cutting-knife 74, so that the next forward feed of the same will not be interfered with. The bar 76 and its cutting-blade 75 not only serve to sever the label from the forward end of the printed and pasted strip, but also to apply said label to the box by pressing it down against the side or end of said box, the latter being mounted upon a supporting device located immediately below the bar which carries the cutting-blade 74. The purpose of the bar 72 is to restrain the forward edge of the paper strip and prevent it from rising so far that it will not on the next feeding movement be projected beneath the upper knife 75.

The support for the box to which the label is to be applied consists of a pair of bars 86, which are ribbed for engagement with the grooved upper ends of a pair of vertical slides 87, the bars being movable back and forth on said slides and being secured in position after adjustment by means of clamp-screws 88. By this means the box may be properly positioned for the reception of the label, it being understood that the box is pushed over the outer ends of the bars 86 until the latter strike the bottom of the box. Hence by adjustment of the bars on the slides 87 the label can be applied to the side or end of the box at any desired point between the bottom or top of the same. The vertically-adjustable slides 87 are mounted upon laterally-adjustable slides 89 by means of clamping-screws 90, adapted to slots 91 in said slides 87, and the lateral slides 89 can be adjusted from and toward each other by means of a right and left hand threaded screw-shaft 92, adapted to bearings on the fixed frame of the machine and having its threaded portions engaging nuts formed on the respective slides 89, so that by turning the screw-shaft by means of a suitable handle 93 at one end of the same the bars 86 may be moved toward or from each other, so as to adapt them to the size of the box which they are intended to support. A vertical adjustment of the slides 87 upon the slides 89 can be effected by means of screws 94, carried by

the slides 89 and bearing upon the lower ends of the slides 87, as shown in Figs. 1 and 2. By adjusting the lower end of the rack-bar 63 on the slotted arm 61 nearer to or farther from the shaft 9 the throw of said rack-bar can be regulated and the extent of each movement of partial rotation imparted to the upper feed-roll 53 can be correspondingly governed, so that each forward feed of the paper strip will be directly proportionate to the desired size of the label which is to be cut therefrom.

Adjustment of the roller 44 is provided for in order to vary the length of the strip of paper intervening between the printing mechanism and the feed-rolls, this length being dependent upon the size of the label. When it is desired to print the labels in more than one color, the printing mechanism can be duplicated and an adjusting-roller located between the successive printing devices to govern the length of strip between them.

In carrying out my invention numerous modifications in the mechanical details of the same may be made without departing from the essential spirit of the invention. Hence it is to be understood that my claims are to be considered as independent of matters of detail except when specifically limited thereto in their terms.

Having thus described my invention, I claim and desire to secure Letters Patent—

1. In a machine for labeling boxes, the combination of the box-support, label-strip-pasting devices, label-strip feed-rolls, label-strip severing-knives, and a wipe-roll operating in conjunction with that one of the label-strip feed-rolls which contacts with the printed side of the strip, substantially as specified.

2. In a box-labeling machine, the combination of the label-applying devices, with a pair of bars serving to support the side or end of the box, said bars being adjustable longitudinally in respect to the cutting-off devices, so as to determine the position of the label upon the box, substantially as specified.

3. In a box-labeling machine, the combination of the label-applying devices, with a pair of bars serving to support the side or end of the box, said bars being adjustable laterally to suit boxes of different sizes, substantially as specified.

4. In a box-labeling machine, the combination of the label-applying devices, with a pair of bars serving to support the side or end of the box, said bars being adjustable longitudinally in respect to the cutting-off devices, so as to determine the position of the label upon the box, and being also adjustable laterally to suit boxes of different sizes, substantially as specified.

5. The combination in a box-labeling machine, of the label-applying devices, with a box-support comprising longitudinally-adjustable bars on which the box rests, vertically-adjustable slides carrying said bars, and



laterally-adjustable slides on which said vertical slides are mounted, substantially as specified.

6. The combination in a box-labeling machine, of feeding and cutting-off devices, with a support over which the strip is fed before reaching said cutting-off devices, and means for raising and lowering said support to prevent the strip from adhering to the cutting-knife, substantially as specified.

7. The combination in a box-labeling machine, of feeding and cutting-off devices, with a support over which the strip is fed before reaching said cutting-off devices, and means for raising and lowering said support to prevent the strip from adhering to the cutting-

knife, said support also having a guard-bar to limit the rise of the strip, substantially as specified.

8. The combination in a box-labeling machine, of label-strip printing and feeding devices, with an adjustable guide for varying the length of the printed strip which intervenes between said printing and feeding devices, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. KACHLINE.

Witnesses:

CHARLES C. MORRIS, Jr.,

WALTER CHISM.