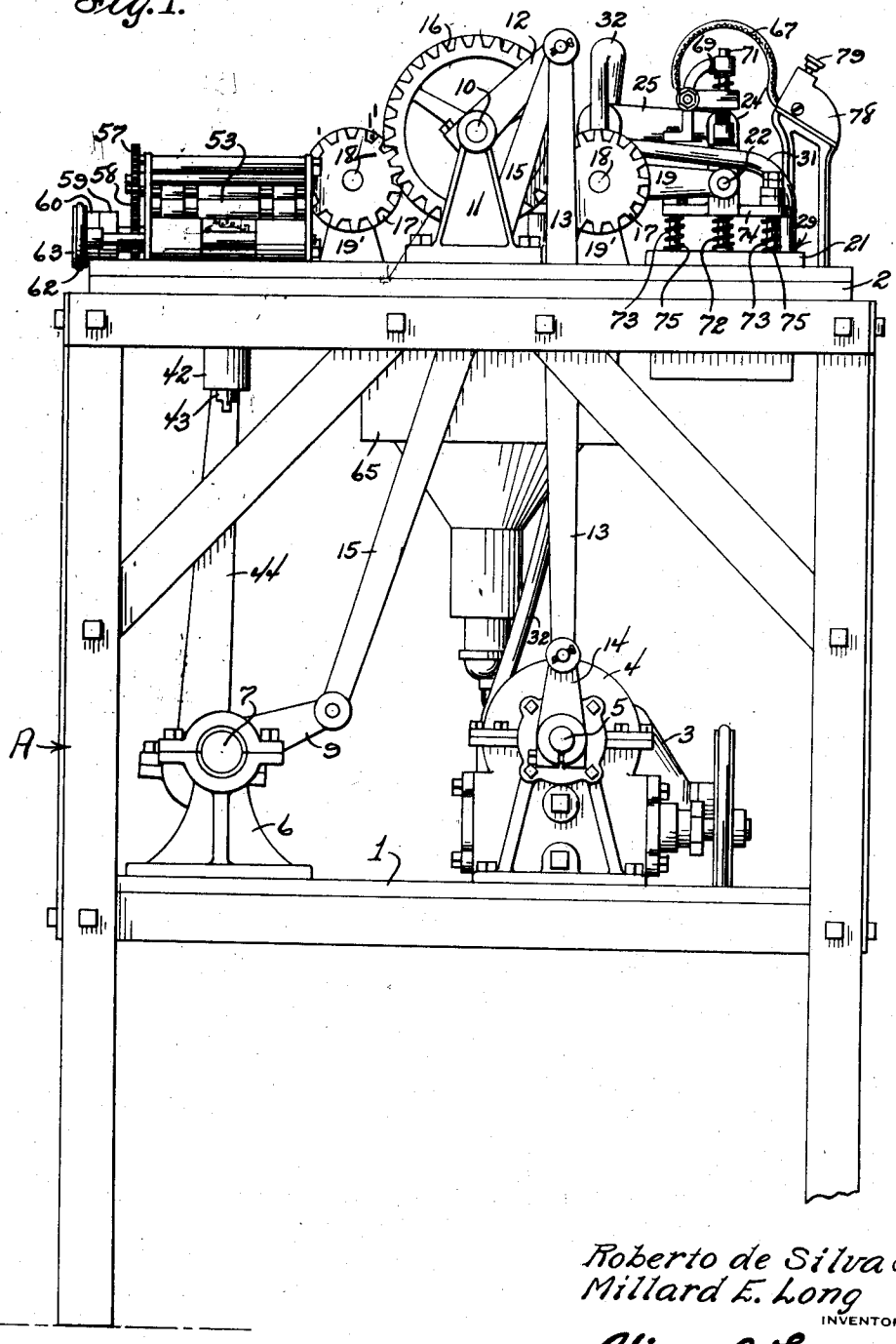
Aug. 4, 1931. R. DE SILVA ET AL 1,817,880

AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 1

Fig. 1.



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AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 2

Fig. 2.

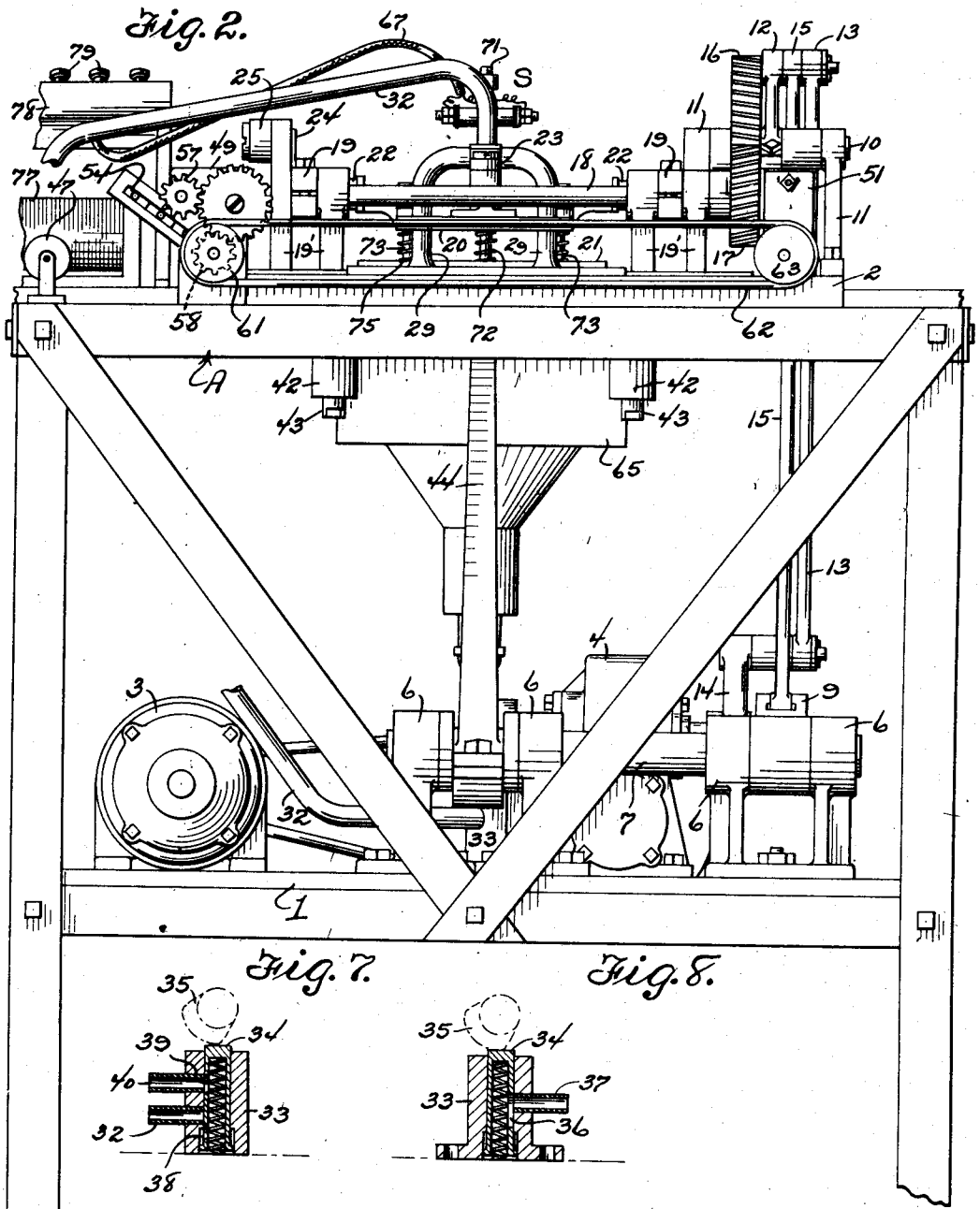


Fig. 7.

Fig. 8.

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AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 3

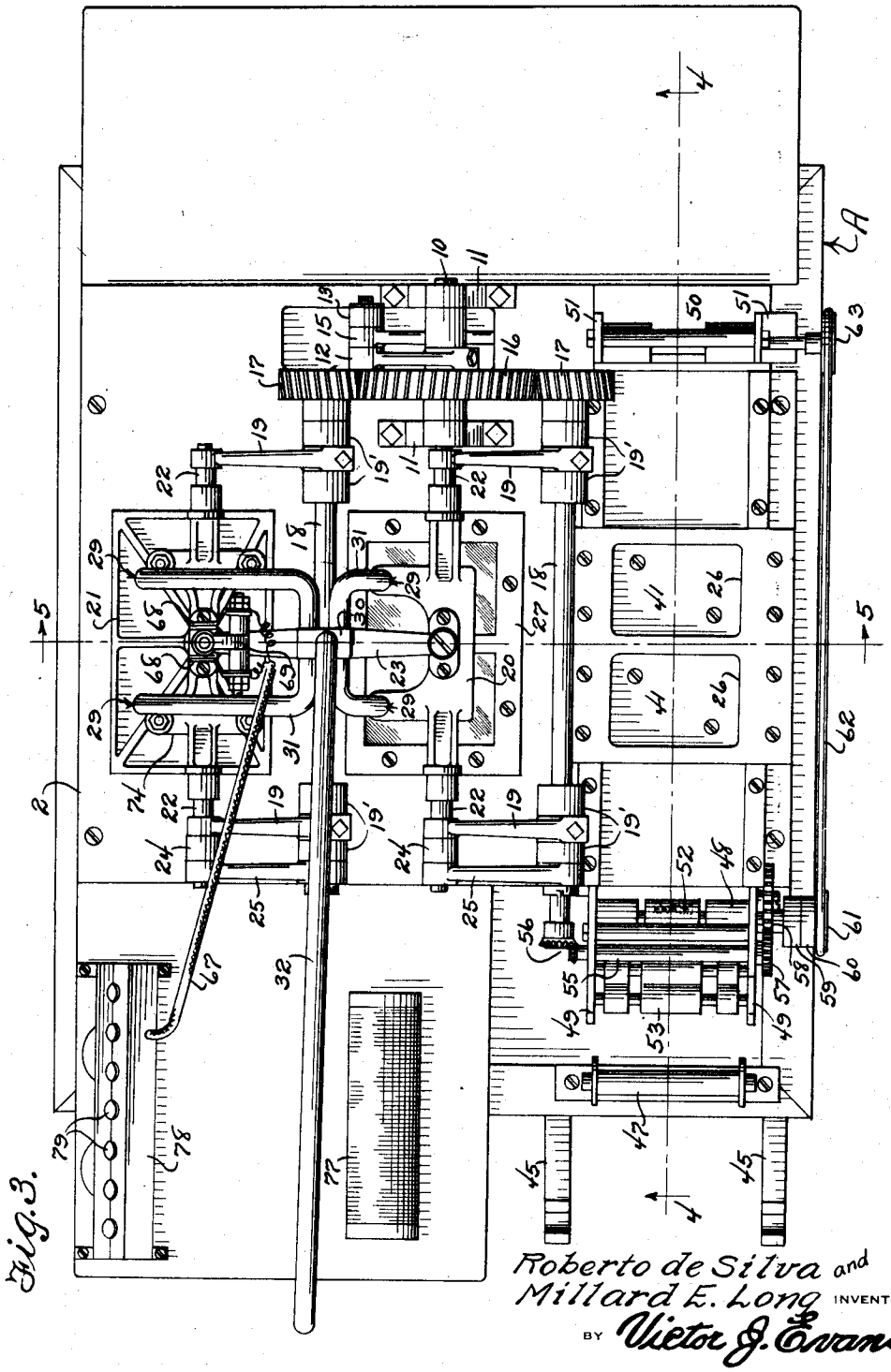


Fig. 3.

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AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 4

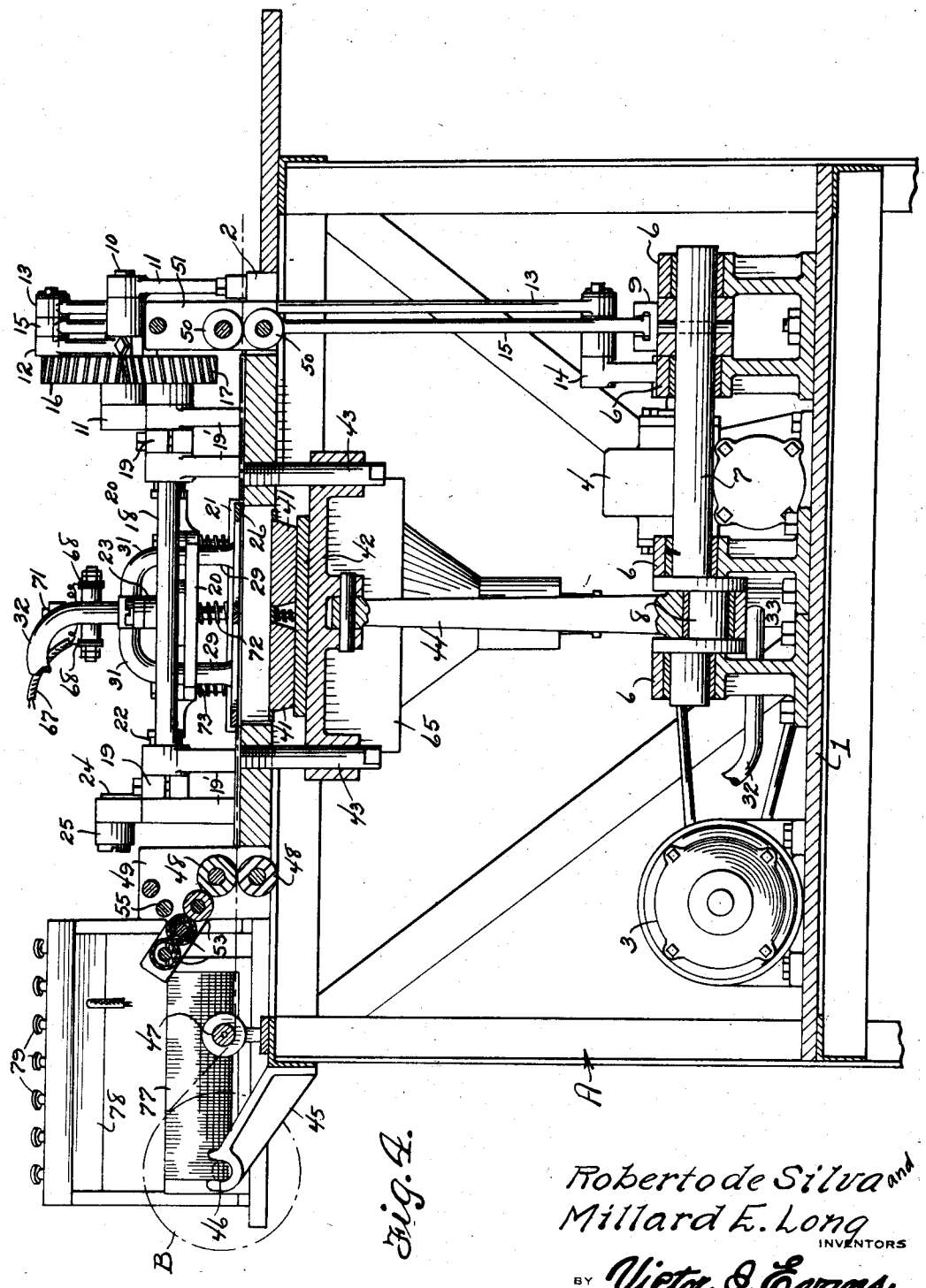


Fig. 4.

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AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 5

Fig. 5.

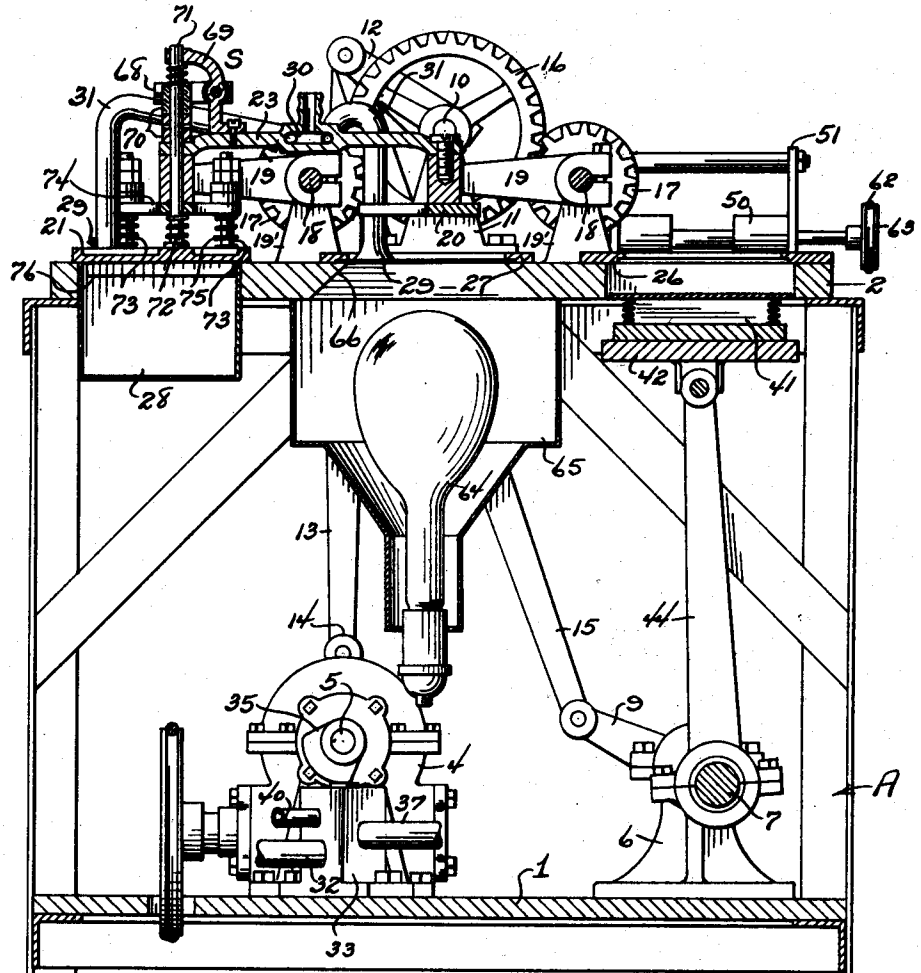
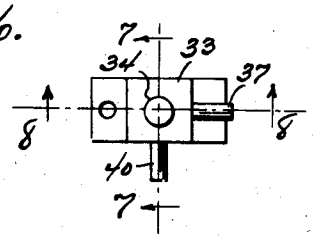


Fig. 6.



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AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Filed Nov. 8, 1930 6 Sheets-Sheet 6

Fig. 9.

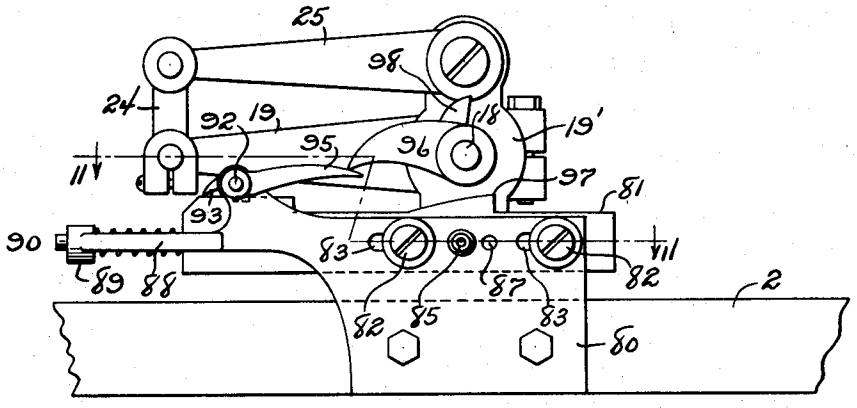


Fig. 10.

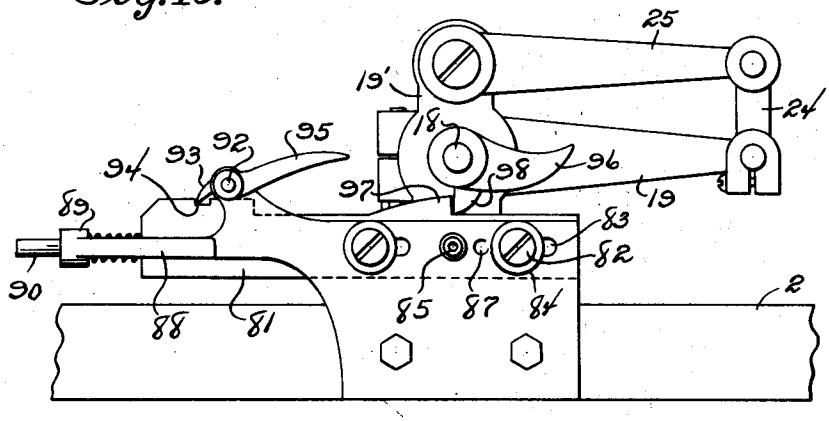
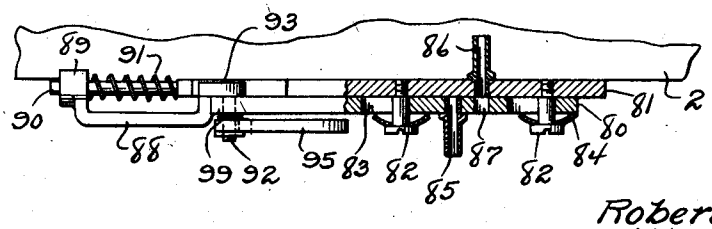


Fig. 11.



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Patented Aug. 4, 1931 1,817,880

UNITED STATES PATENT OFFICE

ROBERTO DE SILVA AND MILLARD E. LONG, OF SAN ANTONIO, TEXAS, ASSIGNORS TO CARL D. NEWTON, OF SAN ANTONIO, TEXAS

AUTOMATIC CUTTING, STAMPING, AND PHOTOPRINTING MACHINE

Application filed November 8, 1930. Serial No. 494,382.

This invention relates to an automatic cutting, stamping and photo printing machine, the general object of the invention being to provide means for feeding a strip of sensitized paper through the machine, stamping the same with a trademark or other indicia, cutting sheets from the strip of predetermined size, then transferring the sheets to a printing frame containing a negative and then transferring the printed sheets to a receptacle, so that photographic prints are quickly produced by the machine in an automatic manner.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an end view of the invention.

Figure 2 is a front view thereof.

Figure 3 is a plan view.

Figure 4 is a section on line 4—4 of Figure 3.

Figure 5 is a section on line 5—5 of Figure 3.

Figure 6 is a plan view of the valve means.

Figure 7 is a section on line 7—7 of Figure 6.

Figure 8 is a section on line 8—8 of Figure 6.

Figure 9 is a fragmentary elevation showing a modified form of valve means with the parts in position to release the vacuum.

Figure 10 is a similar view with the parts in position to create a vacuum.

Figure 11 is a fragmentary plan view partly in section with the parts in position shown in Figure 9.

In these drawings, the letter A indicates a table which is provided with a shelf 1 under its top 2, said shelf supporting the motor 3, the reducing transmission means 4 which is belted or otherwise connected with the motor and includes a shaft 5, and the bearing members 6 for the shaft 7 which is provided with a crank 8 and an arm 9. A stub shaft 10 is supported by the bearing members 11 from the table top and has an arm 12 attached thereto which is connected by a link 13 with an arm 14 on the shaft 5, so that shaft 10 is oscillated from the speed reducing means driven from the motor 3 or other power means. A link 15 also connects the arm 12 with the arm 9, so that the movement of the said arm 12 is communicated to the shaft 7. A gear 16 is fastened to the shaft 10 and meshes with the gears 17 fastened to the shafts 18 supported by the bearing members 19′ from the table top. As shown, these shafts 18 are arranged one on each side of the shaft 10, so that the shafts 18 are rotated from the gear 16 in opposite directions. A pair of arms 19 is fastened to each shaft 18. A plate-like member 20 is pivotally supported by one pair of the arms 19 and a plate-like member 21 is pivotally supported by the other pair of arms. Each member is provided with the trunnion members 22 which extend upwardly and outwardly from the member and pass through bearing parts in the outer ends of the arms 19. A bar 23 has its ends connected with the central portions of the members 21 and 22 and a crank 24 is connected with one trunnion member of each of the members 20 and 21, said crank being pivotally connected to an arm 25 which is pivotally connected to the upper end of one of the bearing members 19′. This arrangement causes the members 20 and 21 to move in unison and to remain in a horizontal position throughout their movements.

A female die member 26 is located at the front of the table, a printing frame 27 at the center thereof and a receptacle 28 at the rear thereof, these members being in transverse alignment and are so located that in one position of the members 20 and 21, member 20 will rest on the die member 26 and member 21 on the printing frame 27 and in another position of the members 20 and 21, member 20 will rest on the printing frame and member 21 on the receptacle 28.

Each of the members 20 and 21 is provided with a number of vacuum cups 29 which open

out through the lower faces of the members and the bar 23 is formed with the chamber 30 at its center and tubes 31 connect the cups with the chamber. A hose 32 connects the chamber with a valve casing 33 which contains a spring plunger 34 operated by a cam 35 on one end of the shaft 5 of the speed reducing means. The plunger is formed with a long port 36 which keeps the interior of the plunger always in communication with the tube 37 leading to a vacuum producing device and said plunger is also provided with the ports 38 and 39 for alternately connecting the interior of the plunger with the hose 32 and with a vent 40. The parts are so arranged tha the vacuum in the cups will be released when the members 20 and 21 are in the position they occupy in Figure 3.

The male members 41 of the cutting means are carried by a piston 42 located under the front part of the table top and guided by the depending members 43 having their upper ends connected with the top and the piston is connected with the crank 8 of shaft 7 by the connecting rod 44, the parts being so arranged that the male members will cooperate with the female members to cut the strip as the piston reaches its upward limit of movement.

Brackets 45 extend from one end of the table and rotatably support a shaft 46 which contains a roll B of sensitized paper in strip form. The strip passes under guiding rolls 47 supported from the table top and between the upper and lower rolls 48 journaled in brackets 49 attached to the top of the table and then the strip passes under the female member 26 and between the rolls 50 which are rotatably supported by the brackets 51 adjacent that end of the table opposite the end from which the roll B is supported. The upper roll 48 has its central portion provided with the type or the like, as shown at 52, so that portions of the strip passing between the rolls 48 will be printed upon and the rolls are so actuated that each sheet cut from the strip by the cutting means will contain the printed matter.

A number of inking rolls 53 have their pintles located in diagonal slots 54 in extensions of the brackets 49 so that the rollers are kept in contact with each other and the lower roller with the type carrying roller by gravity. The upper roller is perforated and carries a supply of ink or the like and the central roller carries a pad and the lower roller transfers the ink from the pad to the type part of the upper roller 48. A shaft 55 is journaled in the brackets 49 and is geared to the adjacent shaft 18, as shown at 56. The other end of the shaft 55 has a gear 57 thereon which meshes with a gear 58 attached to the hub of a coupling part 59 rotatably arranged on a projecting portion of the shaft of the printing roll 48. The other coupling part 60 is fastened to the shaft. The coupling parts are so formed that when the shaft 55 is being rotated from the shaft 18 in one direction, the coupling parts are out of engagement, so that the shaft of the printing roller will not be rotated, but when the shaft 55 is being rotated in an opposite direction, the coupling parts will be connected together so that the printing roller will be rotated and thus the strip will be fed. The coupling part 60 has a pulley 61 thereon over which passes a belt 62 which also passes over a pulley 63 fastened to the shaft of the upper roll 50, so that these rolls 50 will also be rotated when the clutch parts are in driving relation. The rolls 50 act to keep the strip taut as it is passing through the cutting means and to feed the remnants of the strip from the apparatus.

A lamp casing depends from the bottom of the table top and the rays of light from the lamp 64 in the casing 65 pass through an opening 66 in the table top to the printing frame 27.

The rod 71 passes through the bracket 69, the end of the connecting bar 23 and through the means which connect said bar to the supporting means for the member 21. The lower end of the rod is connected with the member 21 and springs 72 are placed on the rod, one spring being located between the member 21 and the supporting means and the other spring being arranged between the upper collar 70 and the bracket, so that these springs tend to hold the rod in its lowest position, with the circuit broken. Other rods 73 are connected with the member 21 and are slidably arranged in the supporting member 74 which is connected with the bar 23 and springs 75 are arranged on the rods 73 and act, with the springs 72, to hold the member 21 in its lowest position, but permitting the member 21 to move upwardly toward the supporting member 74. It will, of course, be understood that the trunnion members 22 are carried by the member 74. A pad 76 is attached to the under face of the member 21, this pad pressing the sheets in the printing frame against the negatives therein and said pad being of such a size as to enter the receptacle 28 when the member 21 is arranged over the receptacle.

A rheostat 77 is also arranged in the circuit of the lamp and the controlling means of said rheostat is shown at 78 and includes a plurality of buttons 79. By means of these buttons, the rheostat can be adjusted to control the intensity of the light from the lamp.

The drawings show the apparatus arranged to print from a pair of negatives, so that the cutting means will cut simultaneously two sheets from the strip, but it will, of course, be understood that the apparatus can be easily changed to handle one print at a time or a number of prints.

From the foregoing it will be seen that the

strip of sensitized paper is fed through the machine and is printed with a trade-mark or the like and then the cutting means cut a pair of sheets from the strip. These sheets are picked up by the vacuum cups carried by the member 20 and moved to the printing frame 27 by said member 20, while the sheets previously placed in the printing frame are picked up by the vacuum cups of member 21 and deposited in the receptacle 28. As the members 20 and 21 reach the printing frame and the receptacle, the valve cuts off the vacuum to the cups so that the sheets are released therefrom and then the members 20 and 21 are swung back so that the member 20 will pick up another pair of sheets from the cutting means and the member 21 will press the sheets in the printing frame against the negatives therein and as the rod 71 is forced upwardly as the pad 76 carried by the member 21 is pressed against the printing frame, the switch to the lamp will be closed so that the rays of light will cause the image on the negative to be printed on each sheet. The vacuum controlling valve then admits vacuum to the cups so that as the members 20 and 21 move from the cutting means and the printing frame, the sheets will be carried by said members, the printed sheets to the receptacle 28 and the sheets just cut to the printing frame. Of course, as the member 21 moves away from the printing frame, the springs will force the same downwardly and thus the rod 71 will be moved to break the circuit of the lamp.

Thus we have provided means for automatically cutting a strip of sensitized paper or the like into sheets, conveying the sheets to a printing frame, where the sheets are printed from negatives and then conveying the printed sheets to a receptacle, from which they can be taken for further treatment.

It will, of course, be understood that the sheets can be printed from ordinary negatives or they can be printed with borders, but in this case, the major portion of the sheets must be protected from the light rays so that these portions can be printed upon after the sheets are removed from the receptacle.

Instead of the valve shown in Figures 6, 7 and 8, a valve of the type shown in Figures 9, 10 and 11 may be employed. In this valve there is provided a plate or bracket 80 which is secured to the table top 2 which has connected thereto for horizontal movement, a slide 81. For this purpose, the slide 81 carries screws 82 which extend through slots 83 provided in the bracket 80, and which have mounted thereon spring washers 84, by means of which the slide may be held in proper working contact with the bracket 80. The slide 81 is adapted to be connected with the pump through the medium of a hose 85 whose inner end is adap ed to register with the inner end of a hose 86 leading to the vacuum cups of the member 20. In addition, the bracket or plate 80 is provided with a port 87 which is open to the atmosphere.

Extending from the bracket 80 is an arm 88 whose outer end is provided with a bearing 89 which slidingly receives a rod 90. This rod is attached to the adjacent end of the slide 81 and is surrounded by a spring 91 which bears against the end of the slide and against the bearing 89. The tension of this spring therefore is to force the slide away from the bearing 89 so that the hose 86 will be in communication with the atmosphere through the port 87.

Pivotally mounted upon the bracket 80 as shown at 92 is a dog 93 which is adapted to engage a shoulder 94 provided in the upper edge of the slide. An arm 95 is rigid with this dog and is adapted to be engaged by an arm 96 which is fast upon the shaft 18. Rigid with the arm 96 is a dog 97 which is adapted to engage a tooth 98 provided upon the upper edge of the slide 80.

With the parts in the position shown in Figure 9, the hose 86 is in register with the port 87 so that vacuum will be relieved in the vacuum cups for the purpose already explained. With the movement of the parts in a clockwise direction from the position shown in Figure 9 to the position shown in Figure 10, the dog 97 will engage the tooth 98 and move the slide 81 to the left of said figure, compressing the spring and permitting the dog 93, under the tension of its spring 99, to engage the shoulder 94 and hold the slide against reverse movement. In this position the tube 86 will be moved into alignment with the tube 85 so as to provide communication between the vacuum device or pump, and the vacuum cups to create a vacuum in the latter. Movement of the parts in an anti-clockwise direction from the position shown in Figure 10 to the position shown in Figure 9, will cause the arm 96 to engage the arm 95 and disengage the dog 93 from the slide 81, whereupon the tension of the spring 91 will return the slide to the position shown in Figure 11 and release the vacuum.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:—

1. An apparatus of the class described comprising means for feeding a strip, means for cutting the strip into sheets, printing means, a receptacle, means for conveying the sheets from the cutting means to the printing means, means for conveying the sheets from the printing means to the receptacle and means for operating the before mentioned means.

2. An apparatus of the class described comprising strip feeding means, means for cutting the strip into sheets, printing means, including a source of light, a receptacle, means for conveying the sheets from the cutting means to the printing means, means for conveying the sheets from the printing means to the receptacle, means for operating the before mentioned means and means whereby the prints are subjected to the light rays when they are placed in the printing means.

3. An apparatus of the class described comprising means for feeding a strip, means for cutting the strip into sheets, printing means, a receptacle, means for conveying the sheets from the cutting means to the printing means, means for conveying the sheets from the printing means to the receptacle, means for placing indicia upon the strip as it passes to the cutting means and means for operating the before mentioned means synchronously.

4. An apparatus of the class described comprising a table, a printing frame carried thereby, means at one side of the frame for cutting sheets from a strip of sensitized material, a receptacle at the other side of the frame, means for feeding the strip to the cutting means, a presser member for pressing the sheets against a negative in the printing frame, a conveyor member for conveying the sheets from the cutting means to the printing frame, means whereby the presser member will convey the printed sheets from the frame to the receptacle, means for operating the presser member and the conveying member synchronously and means operated by the movement of the presser member into the frame for exposing a negative in the frame and the sheet therein to rays of light.

5. An apparatus of the class described comprising a table, a printing frame carried thereby, means at one side of the frame for cutting sheets from a strip of sensitized material, a receptacle at the other side of the frame, means for feeding the strip to the cutting means, a presser member and a conveyor member, a pair of shafts journaled in the table, an arm connected with one shaft and to the presser member, an arm connected with the other shaft and to the conveyor member, a bar connecting the conveyor member with the presser member, means for rotating the shafts to cause the presser member to move from the frame to the receptacle and vice versa and the conveyor member from the cutting means to the frame and vice versa, vacuum cups carried by the presser and conveyor members, means for connecting the cups to a vacuum producing device, automatic means for breaking the vacuum in the cups when the presser member is over the receptacle and the conveyor member over the frame.

6. An apparatus of the class described comprising a supporting frame, printing means carried thereby, a receptacle at one side of the printing means, means for cutting a strip into sheets at the other side of the printing means, a pair of members, means for moving said members synchronously in an arc whereby one member will convey the sheets from the cutting means to the printing means and the other member will convey the sheets from the printing means to the receptacle, vacuum means for causing the sheets to adhere to the members, means for releasing the vacuum means when one member is over the receptacle and the other member over the printing means.

7. An apparatus of the class described comprising a table, a printing frame carried thereby, means at one side of the frame for cutting sheets from a sheet of sensitized material, a receptacle at the other side of the frame, means for feeding the strip to the cutting means, a presser member for pressing the sheets against a negative in the printing frame, a conveyor member for conveying the sheets from the cutting means to the printing frame, means for moving the presser member and the conveyor member synchronously whereby the conveyor member will move the sheets from the cutting means to the printing frame and the presser member will move the sheets from the printing frame to the receptacle, vacuum means for causing the sheets to adhere to said members, means for breaking the vacuum when the conveyor member is over the printing frame and the presser member over the receptacle, a lamp associated with the printing frame, a circuit for the lamp including a rheostat and a switch, means for closing the switch when the presser member moves into the printing frame and means for printing indicia upon the strip as it passes to the cutting means.

In testimony whereof we affix our signatures.

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MILLARD E. LONG.