

C. DE LUKACSEVICS.
 ROTARY ENVELOP MACHINE.
 APPLICATION FILED SEPT. 7, 1905.

945,181.

Patented Jan. 4, 1910.

4 SHEETS—SHEET 1.

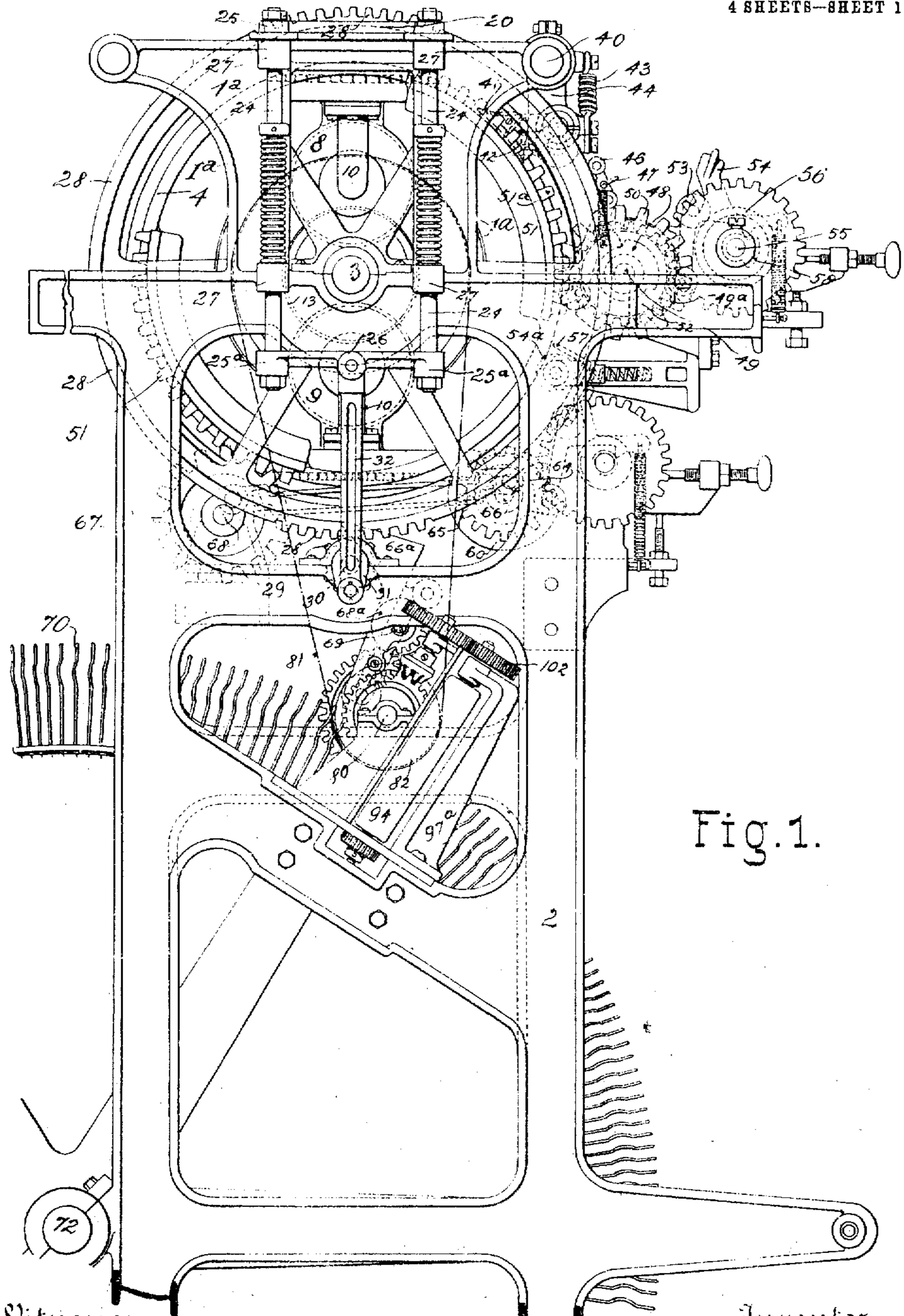


Fig. 1.

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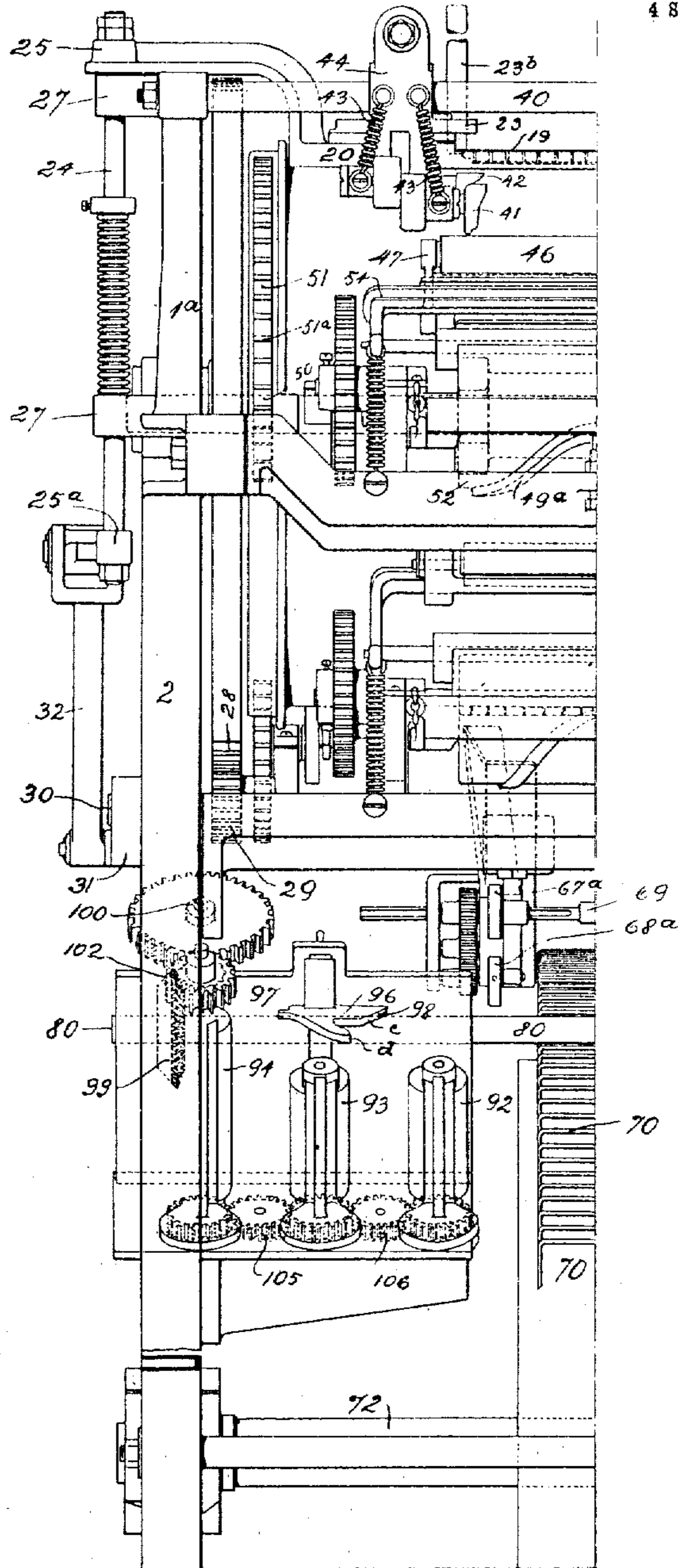
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Fig. 2.



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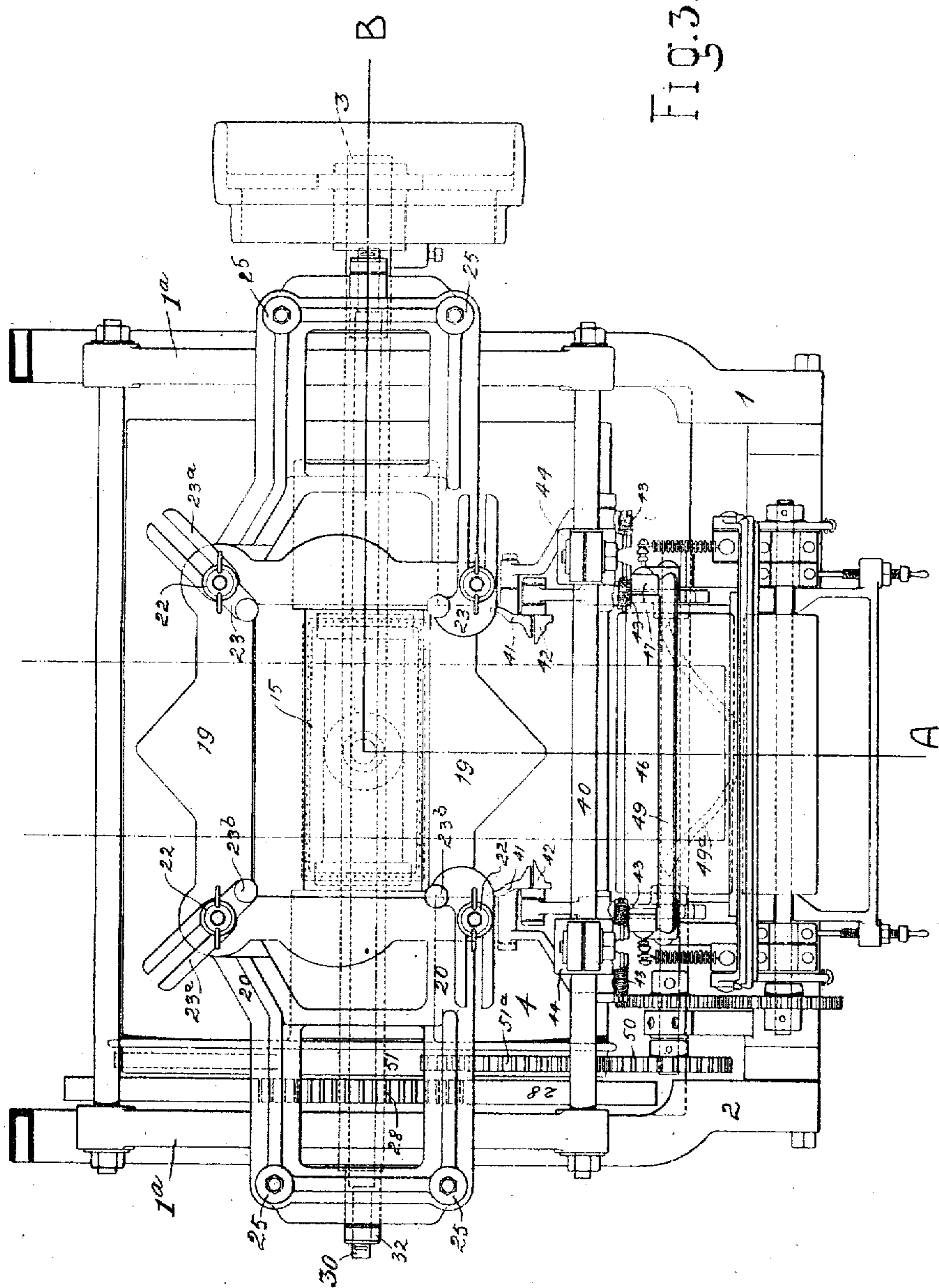


FIG. 3.

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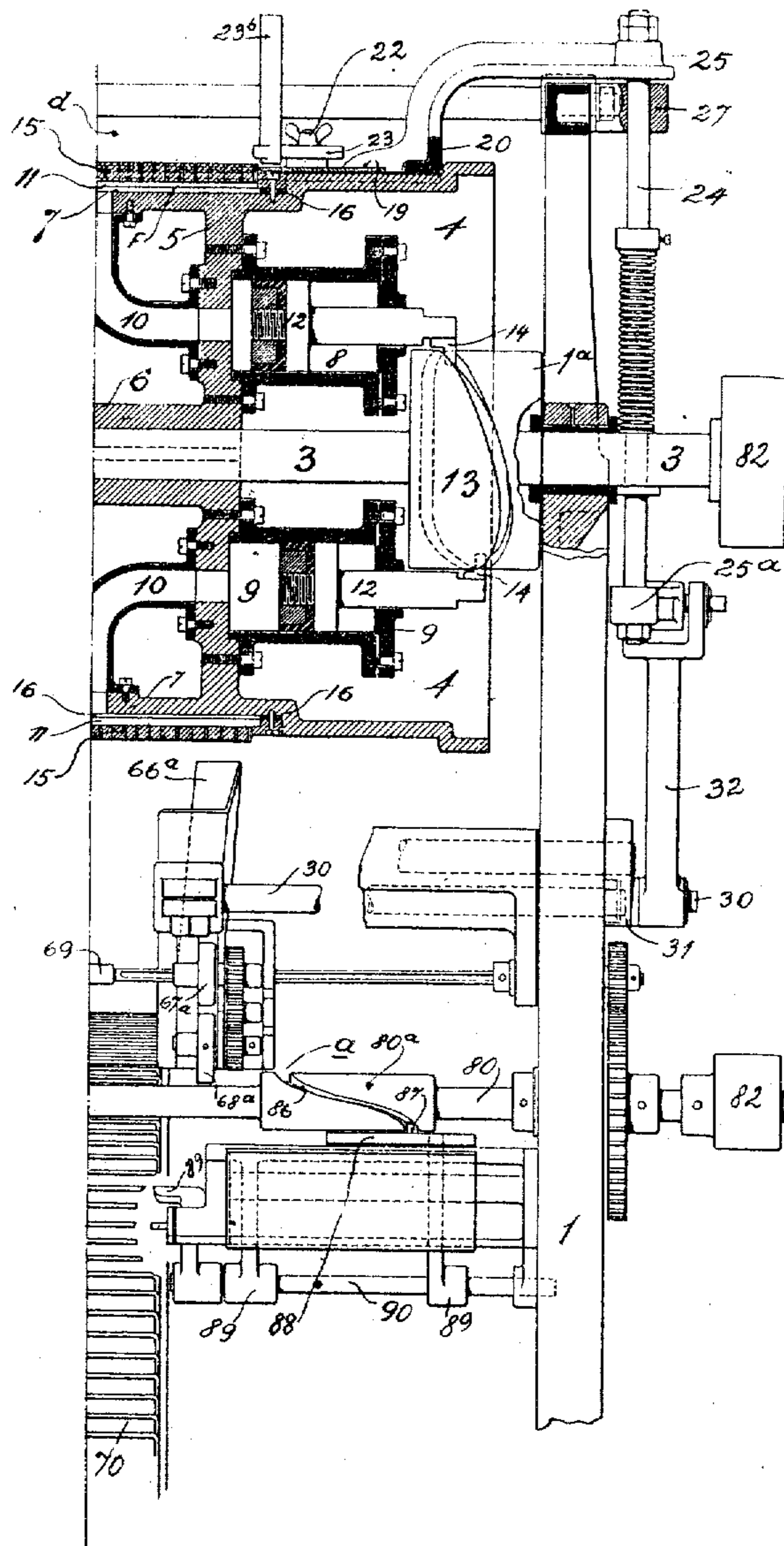


Fig. 4.

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UNITED STATES PATENT OFFICE.

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ROTARY ENVELOP-MACHINE.

945,181.

Specification of Letters Patent.

Patented Jan. 4, 1910.

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To all whom it may concern:

Be it known that I, CHARLES DE LUKACSEVICS, a citizen of the United States, and resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Rotary Envelop-Machines, of which the following is a specification.

My invention relates to rotary envelop machines and the object is to improve the construction of this class of machines, increase the capacity, produce a more perfect and uniform envelop preferably of standard type.

Another object is to permit any size of envelop to be made without the use of special or separate machinery to produce the same as is the case with other machines.

My invention consists in novel features and combinations for holding and picking up the envelop blanks off the revolving drum.

It also consists in novel means for turning and gunning the lapels.

It also consists in means for removing the envelop from the cylinder.

It also consists in novel means of removing the made-up envelop from the drying wheel.

Referring to the drawings, Figure 1 is an end elevation of my improved envelop machine; Fig. 2 is a side view of a portion of the same; Fig. 3 is a plan view of the same; and Fig. 4 is a section on line A—B, Fig. 3; this view also showing a partial front elevation of the lower part of the machine and also the intermediate and finishing mechanism.

In the drawings 1 and 2 designate the frame of the machine suitably held apart. The upper part of this frame supports the driving shaft 3 suitably journaled thereon. Onto this shaft is keyed the drum or cylinder 4 by means of a hub 6 connected to the rim or outer body of the cylinder by the cylinder heads or flanges 5. The head or flange 5 supports the air pumps, 8, 9, each having inlet or outlet pipes, 10, which lead from the pumps to the air or suction chamber 11, two of which are formed opposite each other in the face of the rim of the cylinders. The pistons, 12, of each pump are

operated by the grooved cam, 13, fastened to the frame 1^a which is the upper part of the main frame of the machine. The said cam acts upon the pins, 14, fastened on the pistons 12 to cause reciprocations of the pistons for pumping purposes. The arrangement of these pistons is such that when one is moving outward the other is moving inward, and the object of this will be herein- after described.

The air or suction chambers 11, formed in the face of the cylinder are in size equal to a folded envelop. The chambers are each covered with a plate, 15, having perforations as shown and suitably held down in place. An interposed rubber rim, 16, is placed under each plate to insure tightness. The envelop blanks extend over these chambers and are held above and partly upon the cylinder by means of the resting plate, 19, resting and held on to a separating frame, 20, by means of the thumb-screws, 22. These screws also set and adjust the blank-holders, 23, which consist of the slotted arms, 23^a, having upright pins or arms, 23^b to provide means for the easy manipulation of the blank holders 23. By means of the slots between the arms 23^a and also by means of the upright pins or arms 23^b, the desired adjustment of the blank holders 23 can be secured. The actual points of contact between the blanks and the blank holders are at the bottom of the several pins or arms 23^b as clearly shown in Fig. 4.

The separating frames are provided with an opening somewhat larger than the size of the opening in the drum or cylinder, 4, and the shape of this frame is similar to the envelop blank.

It will be seen that the separating frame at each end is connected to the cross heads, 25, 25^a, by rods, 24, which pass through suitable bearings, 27, in the frame. The resting plate 19 is given an intermittent upward and downward movement through the medium of the gear wheel, 28, which is keyed on shaft 3. This gear wheel 28 acts upon the spur wheel, 29, keyed on shaft 30, journaled in the frame 1, 2. The cross-heads, 25, 26, being connected to the cranks, 31, on shaft 30 by means of the rods, 32, are given the re-

quired movement when the shaft 30 is rotated, being lifted and depressed once during each rotation thereof. The upper part, 1^a, of the frame, 1, 2, also supports the shaft 40. This shaft also supports the folder supporting frame, 44, to which are connected the lifters, 41, and turners, 42, in such a manner as to permit of their moving up and down upon the cylinder 4. This movement is effected by the coil-springs, 43, (see Figs. 1 and 3.) Beneath this folder-supporting frame 44 are placed the rollers, 46, used for pressing down the turned over lapels. This roller is supported on the frame, 47, which is securely held on the frame of the machine, and pressed down upon the cylinder by the cam, 48, on shaft, 49, supported on the frame 1, see Fig. 1. This shaft 49 is revolved by the gear pinion, 50, keyed thereon, and into which meshes the intermittent teeth, 51^a, of the intermittent gear wheel, 51, keyed on the main shaft 3. The shaft 49 also supports the gumming roller, 52, the gumming surface, 49^a, thereof being supplied at intervals with the necessary gum by the distributing roller, 53, on the rocking arm, 54, fulcrumed on frame 1, 2, and intermittently operated by the cam 58, on the shaft 55, supported on the main frame. This shaft 55 derives its movement from gear wheel, 56, acted upon by pinion, 50, see Fig. 1.

Beneath the gumming rollers is supported on the frame the angle plate or blade 57 used to raise and fold the gummed lapel. And just underneath this blade is located the roller 54^a for pressing down the gummed lapel into place. This roller 54^a is supported in sliding bearings and is also given the required tension by means of the springs shown. Further underneath the cylinder is placed the second gumming device being similar in parts and operation to the one already described. The intermittent revolution of the gumming roller 60 of this device is effected by the crank, 64, on a gear wheel, 65, on the shaft, 66, suitably supported on the frame. The other end of this crank arm is connected to the gear wheel, 67, on the shaft, 68, also supported on the frame. The intermitting teeth of the wheel, 51, mesh into the gear wheel, 67, and revolve the parts in the same manner as the parts of the previous mechanism were revolved. At the time the second gumming is being done and near the finishing of the same, the folded part of the envelop is expelled from off the cylinder by the air pump which retained it because at this point the piston thereof has moved inward and interrupted the suction. By expelling or ejecting the made up envelop in the above manner the same is permitted to turn and enter the chute, 66^a, edge-wise as it falls. It is then caught up at the edge by the rollers, 67^a, 68^a,

the latter being mounted on shaft, 69, journaled on frame 1.

When the envelop leaves the chute it drops into one of the compartments of the drying wheel, 70, on shaft, 72, suitably supported. The shaft, 80, is supported in the frame 1, 2, and is driven by the belt, 81, passing over pulley, 82, see Fig. 1. The shaft 80 at *a* is provided with a cylinder, 80^a, having a cam shaped groove, 86, into which enters the pin, 87, of the envelop delivery slide, 88, which is connected to the device for intermittently revolving the drying drum. This device consists of a rocking arm, 89, suitably supported on shaft, 90, which is given an escapement action against one of the wings of the drying drum. This only takes place when the delivery mechanism has shoved off one envelop. At the time this is being done the envelop passes over or before the rollers, 92, 93 and 94, but before the envelop passes the roller 92 the upper lapel is turned and pressed down by the arm, 96, supported on the finishing bracket, 97, secured on the frame of the machine. This turning arm, 96, is shaped as shown in Fig. 2, the upper or flange portion, 98, is given the angle *c* and the part *d* is given a curve. Now when the lapel strikes the angle 98 it is caused to be lifted and turned, and then the curve completes the same, and the roller 94 finishes the pressing and manufacture of the envelop. Motion is given to the rollers, 92, 93 and 94 through the bevel wheel, 99, on shaft 80, meshing a bevel wheel on the axle, 100, having support in bracket, 97^a. This axle, 100, on the top has a large gear wheel which meshes into the pinion, 102, on the axle of the roller, 94. The other end of this roller has another pinion which meshes into an idler, 105, transmitting the motion to roller, 93, and thence to roller, 92, through the pinion, 106, see Fig. 2.

The operation of the machine herein described is as follows: The envelop blanks which can be of any number are placed under the plate 19 and held in place by the corner pins or studs 23^b. The blanks now lie upon the perforated plates of the suction chamber F of the pumps 8. The machine is now set in motion and as the shaft 3 revolves the intermittent wheel 28 will operate the plate 19 and cause it to draw down the blanks upon the suction plate. Instantly this operation takes place, the pump 8 is operated upon by the cam, causing the piston thereof to move outward. When this takes place the pump will by suction draw down one of the blanks closely upon the suction plate. Now, as the cylinder 4 revolves in the direction of the arrow it will carry with it the blank that has or is held to it by the suction plate, and hold it thereon until the lapel turning and gumming devices

have operated, to be hereinafter described. As the arms turn the blank on the cylinder lifters 41 will come in contact with the turners, 42, which will lift and turn over the end flaps upon the envelop proper; and when these flaps are turned sufficiently they are pressed down closely by the roller 46. After the blank has had its end lapel turned over and pressed down, it is still held on to the revolving drum by the suction and carried thereby to the gumming device, where one of the long lapels is gummed by the roller 52, intermittently operated upon by the gear wheel 51. In order to turn over this gummed lapel and press it down upon the turned over end lapels, the clinging blank is turned by the drum against the blade 57 which will raise the gummed lapel as before described and as it turns over the roller 54^a will press it down closely upon the envelop. The partially finished blank still clings to the drum and is carried toward the second gumming device, where the intermittently gumming roller 60 will gum the loose lapel. The blank is now ready to be thrown off the cylinder, which is done at the time the second gumming is taking place by the pump 8, and the pistons thereof moving inward through the cam which movement expels the air and destroys the suction. The object of expelling the blank when the gumming is taking place is to cause the finished envelop to fall edgewise into the chute 66 and between the traveling rollers, 67, 68, when it is carried downward until it falls into one of the compartments of the drying cylinder 70. After the finished envelop has remained on the drying wheel a suitable length of time, it is thrown therefrom by the ejecting device. That portion which effects the result is the delivery slide, 88, operated by the cam 86 shoving against the edge of one of the envelops on the drying wheel. At the time an envelop has been shoved out of the wheel, the escapement device is operated for turning the wheel one vane forward. As the delivery slide 88 returns into place, the rocking arm 89 is caused to turn so as to act upon one of the wheel vanes in such a manner as to move it forward. When the envelop is being shoved off the drying wheel it passes the rollers 92, 93 and the loose lapel already gummed and dried will come in contact with the turning lip or plate, 96, which lifts this lapel and causes the same to be turned down, where it is caught up by the roller 94 which completely finishes the envelop for use. When the envelop is being ejected from the drum by pump 8, the pump 9 is holding a blank on to the cylinders in the same manner that the pump 8 caught up the above blank. At the moment a blank is caught up, an envelop is being expelled from the cylinder.

I claim as my invention:

1. In a rotary envelop machine, a rotary carrier cylinder, and a reciprocable clamping frame for supplying blanks to the cylinder comprising a blank holder and adjustable clamps for the blanks whereby blanks of different sizes may be handled by the machine.

2. In a rotary envelop machine, a drum for carrying the blanks during the folding operations, a plurality of beds for envelop blanks carried thereby, and reciprocable means for feeding the envelop blanks to the beds, in combination with suction devices acting on the blanks through the beds for holding the blanks on the drum during the said operations.

3. In a rotary envelop machine, a plurality of beds for envelop blanks, and means for feeding the blanks to the beds suction devices acting on the blanks through the said beds, the latter being arranged in pairs on opposite sides of a drum or cylinder and means for actuating the suction devices to cause them to act to alternately apply and withdraw suction to the blanks on the said beds.

4. In a rotary envelop machine, a rotatable drum or cylinder, means for holding envelop blanks upon the said drum or cylinder during the folding operations, such means consisting of suction pumps carried by the cylinder, and means for operating the said pumps simultaneously in opposite directions, said pumps, when actuated in one direction, attracting an unfolded blank to the drum, holding said blank to the drum during the folding operations, and when actuated in the opposite direction ejecting the folded envelop from the drum.

5. As an element of a rotary envelop machine, a cylinder, provided with oppositely disposed beds for envelop blanks, a head in said cylinder and pumps supported by the said head, each of the said pumps being in operative connection with one of the said beds, and means brought into operation by the rotation of the cylinder for actuating the said pumps in opposite directions.

6. In a rotary envelop machine, a driving shaft, a drum or cylinder mounted thereon, oppositely disposed beds for envelop blanks on the said drum or cylinder, suction chambers in operative relation to the said beds, a clamping frame adapted to hold the blanks in place on one of the said beds, and automatic means for periodically relieving the pressure of the clamping frame and releasing a blank.

7. In a rotary envelop machine, a driving shaft, a drum or cylinder mounted thereon, oppositely disposed beds for envelop blanks on the said drum or cylinder, suction chambers in operative relation to the said bed, a

clamping frame adapted to hold the blanks in place on one of the said beds, and means for periodically relieving the pressure of the clamping frame and releasing a blank, such means consisting of a gear wheel on the driving shaft, a spur wheel on a subordinate shaft, and one or more cranks operated by the described gearing.

8. In a rotary envelop machine, a driving shaft, a cylinder mounted thereon, the said cylinder being provided with oppositely disposed beds for envelop blanks, a head in said cylinder, pumps supported by the said head, each of the said pumps being in operative relation with one of the said beds, and means brought into operation by the rotation of the cylinder for actuating the pumps in opposite directions, such means consisting of a bracket or frame having cam shaped slots, one engaging with the piston of one of the said pumps and the other engaging with the piston of the other pump.

9. In a rotary envelop machine, a driving shaft, and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank.

10. In a rotary envelop machine, a driving shaft, and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank, and a turning device adapted to turn over the ends of the blank.

11. In a rotary envelop machine, a driving shaft, and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank, a turning device adapted to turn over the ends of the blank, and a gumming device adapted to gum one of the lapels.

12. In a rotary envelop machine, a driving shaft and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the

blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank, a turning device adapted to turn over the ends of the blank, a gumming device adapted to gum one of the lapels, and means for pressing down the gummed lapel.

13. In a rotary envelop machine, a driving shaft and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank, a turning device adapted to turn over the ends of the blank, a gumming device adapted to gum one of the lapels, means for pressing down the gummed lapel, and means acting at a later period of the operation for gumming the second lapel.

14. In a rotary envelop machine, a driving shaft and a cylinder mounted thereon, the said cylinder being provided with a bed for receiving an envelop blank or blanks, suction devices operatively connected with the blank or blanks through the said bed, means for holding the blanks in place and periodically releasing a blank which is under suction during the forward movement of the cylinder, in combination with a lifter acting on the moving blank, a turning device adapted to turn over the ends of the blank, a gumming device adapted to gum one of the lapels, means for pressing down the gummed lapel, means acting at a later period of the operation for gumming the second lapel, and means for turning the second lapel.

15. In a rotary envelop machine having suitable driving mechanism, a rotating cylinder carrying envelop blanks, means operated by the driving mechanism for turning the ends of the blank, means for gumming the lapels, and folding the same, a drying wheel, means for turning the same and means for ejecting the envelop into the grasp of said drying wheel.

16. In a rotary envelop machine, a rotating cylinder adapted to support and feed envelop blanks, in combination with means for ejecting a completed envelop, such means consisting of a pump, a cam, and means for operating the same.

17. In a rotary envelop machine, a drying wheel, means for moving the same step by step and means for removing an envelop therefrom, such means consisting of a delivery slide, mounted to move parallel to the

axis of the wheel, a cam for operating the same, and means for actuating the cam.

5 18. In a rotary envelop machine, a drying wheel adapted to receive envelopes, a delivery slide arranged to remove the envelopes from said wheel and an escapement mechanism connected with said wheel so as to cause a step by step movement thereof, the same consisting of a rocking arm connected to

said delivery slide, and means for operating 10 the rocking arm.

Signed at New York, in the county of New York, and State of New York, this 5th day of September, A. D. 1905.

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