

No. 635,108.

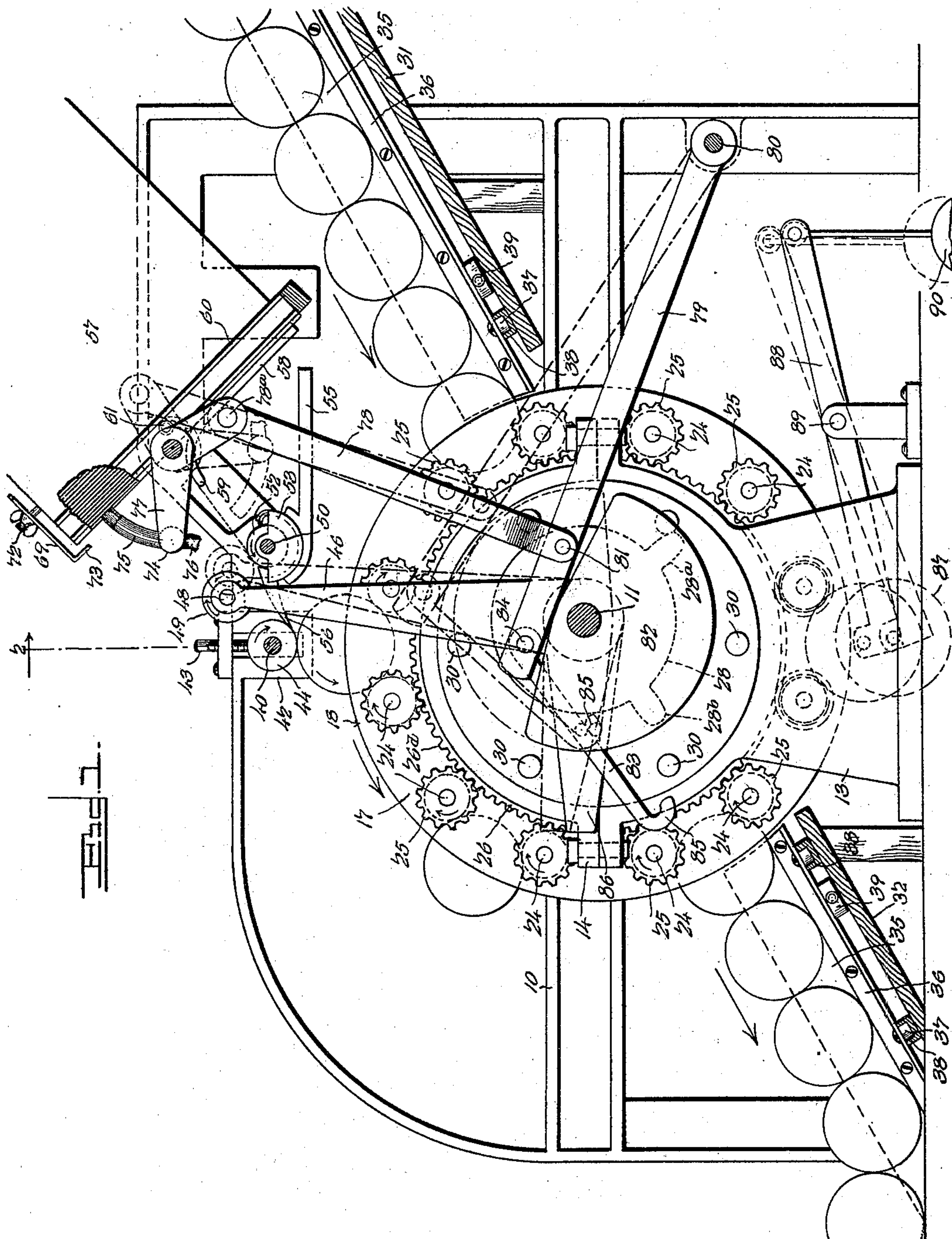
Patented Oct. 17, 1899.

J. & D. DE P. A. OUTCALT.
LABEL AFFIXING MACHINE.

(Application filed May 20, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

E. F. Stewart

H. J. Berneke

By their Attorneys,

John Outcalt Inventors
David D. A. Outcalt

C. A. Snow & Co.

No. 635,108.

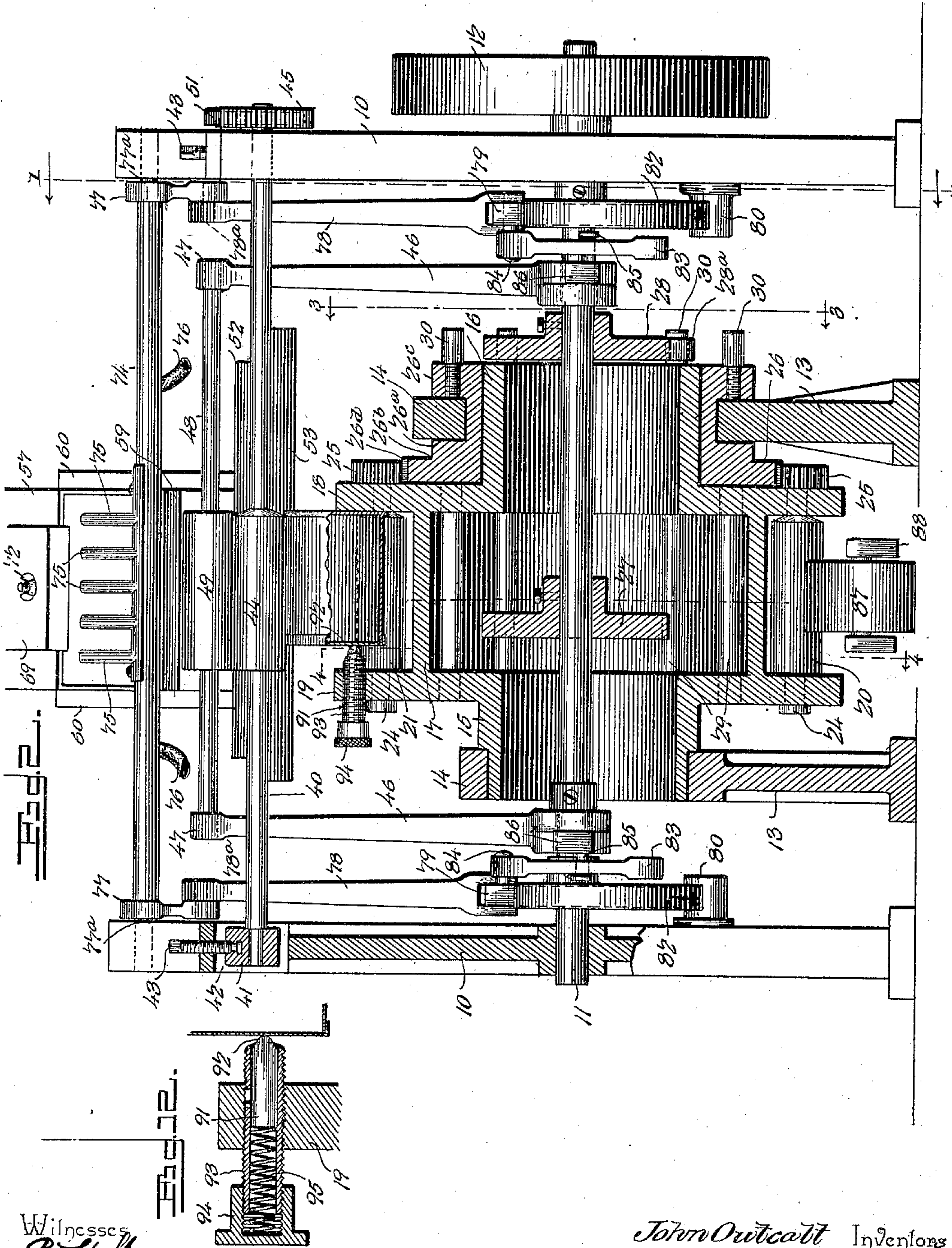
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Witnesses
E. C. Stewart

H. J. Burkhart

By their Attorneys,

John Outcalt Inventors
David D. A. Outcalt

C. A. Snow & Co.

No. 635,108.

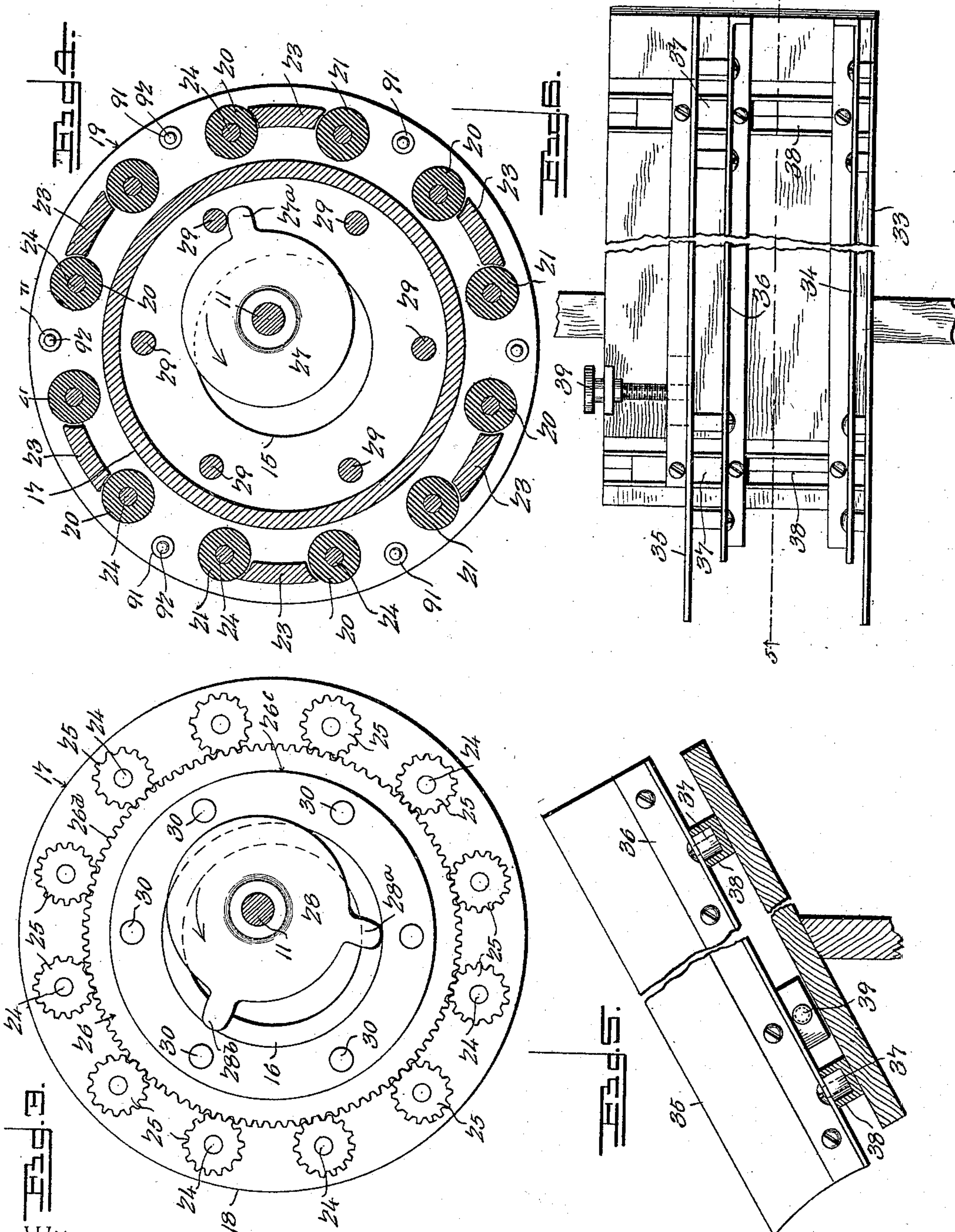
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4 Sheets—Sheet 3.



Witnesses
E. F. Stewart
H. A. Bunker

By their Attorneys,

John Outcalt Inventors
David H. A. Outcalt

C. A. Snow & Co.

No. 635,108.

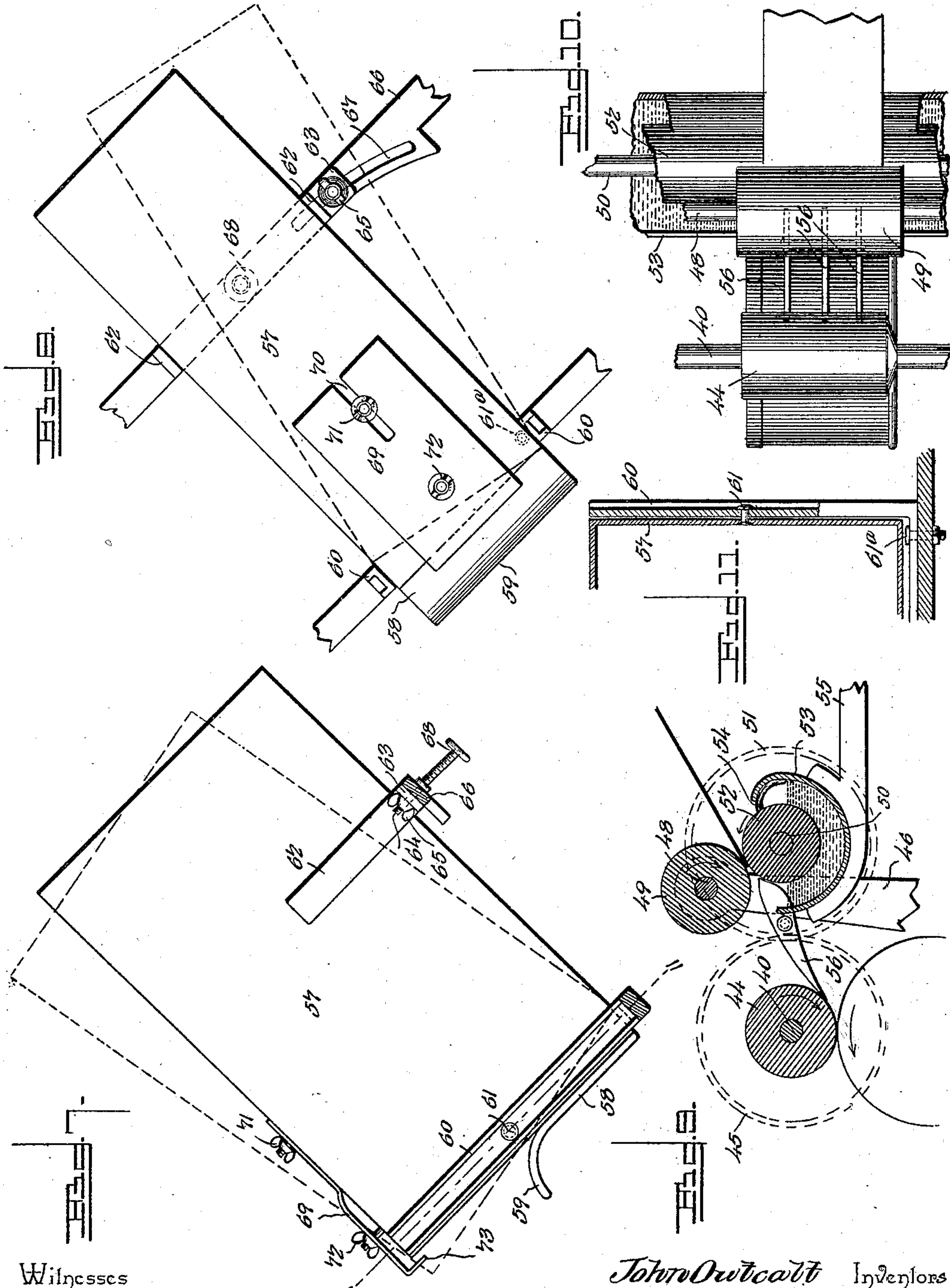
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4 Sheets—Sheet 4.



Witnesses

E. F. Stewart.
H. J. Berwick.

By their Attorneys,

John Outcalt Inventors
David D. A. Outcalt

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOHN OUTCALT AND DAVID DE PYSTER ACKER OUTCALT, OF SPOTSWOOD,
NEW JERSEY.

LABEL-AFFIXING MACHINE.

SPECIFICATION forming part of Letters Patent No. 635,108, dated October 17, 1899.

Application filed May 20, 1899. Serial No. 717,582. (No model.)

To all whom it may concern:

Be it known that we, JOHN OUTCALT and DAVID DE PYSTER ACKER OUTCALT, citizens of the United States, residing at Spotswood, in the county of Middlesex and State of New Jersey, have invented a new and useful Rotary Label-Affixing Machine, of which the following is a specification.

Our invention relates to rotary label-affixing machines designed to automatically carry the work in the form of cans or other packages into position to receive the labels which are successively supplied, pasted, and wrapped in a smooth condition around the work without creasing thereof, after which the labeled work is discharged automatically from the machine.

The machine of our invention is adapted to affix labels to cans or packages of different sizes automatically and continuously without attention on the part of the operator other than to keep the machine supplied with the articles to be labeled, the mucilaginous or adhesive material, and the labels themselves; but we do not of course desire to confine the use of the machine to the one specific purpose of affixing labels to cans, because other articles or packages may be fed to, labeled by, and discharged from the machine.

In our invention we employ a carrier-drum which is revoluble on its axis and is equipped with a plurality of work-rolls adapted to travel with the drum in its intermittent feed and also capable of rotation on their axes independently of the feed motion of the drum for the purpose of wrapping the label around the article or work. With the carrier-drum and the work-rolls is combined a driving-gear adapted to turn with the carrier-drum in its feed motion and capable of an intermittent motion independently of the drum, so as to positively actuate the work-rolls. The work is supplied to the carrier-drum by an inclined feed-runway arranged to present the articles to the work-rolls and the labeled work is carried away from the drum by a delivery-runway, and both of these runways are equipped with work-tracks which minimize the friction on the articles and which runways are furthermore adjustable to accommodate articles of different sizes. A label-feed mechanism

is provided for supplying the labels one at a time to the work as the latter are brought one after the other into position by the carrier-drum below a presser-roll, and between this pressure-roll and the label-feed devices is a pasting mechanism, across and in contact with which the labels are moved, so as to be applied to the work and to have their pasted faces forced by the pressure-roll upon the work which is confined between the work-rolls upon the carrier-drum. This pasting mechanism is equipped with guide-fingers to direct the label, and said pasting mechanism is actuated to hold the fingers in contact with a swinging label-feed roller arranged to be brought intermittently into contact with a driven roll of the pasting mechanism. The label mechanism is equipped with a receptacle capable of adjustment to variable positions with relation to the pasting mechanism to insure the removal of the labels individually by the feed mechanism, and this receptacle when empty is capable of removal bodily from its supporting and adjusting devices.

The carrier-drum is equipped with retainers arranged to frictionally engage with the work and assist in holding the latter in position as the drum travels from the feed-runway to the position where the label is applied to the work and from thence is moved to the delivery-runway, and these frictional retaining devices are adjustable to make the carrier-drum receive and support articles of different sizes.

The invention further consists in the novel combination of mechanisms and in the construction, arrangement, and adaptation of the various parts for service, as will be hereinafter more fully described and claimed.

To enable others to understand the invention, we have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of our rotary label-affixing machine, showing the various working elements thereof and a number of cans in position for delivery to and in the act of being discharged from the revoluble carrier-drum, said view being a section

in the plane indicated by the dotted line 1 1 of Fig. 2. Fig. 2 is a vertical transverse sectional elevation in the plane indicated by the dotted line 2 2 of Fig. 1, looking in the direction indicated by the arrow. Fig. 3 is a vertical section in the plane indicated by the dotted line 3 3 of Fig. 2, looking in the direction indicated by the arrow and showing the intermittently-operated master-gear for positively rotating the work-rolls on their axes. Fig. 4 is a vertical section through the carrier-drum in the plane indicated by the dotted line 4 4 of Fig. 2, looking in the direction indicated by the arrow and illustrating the driving-eccentric by which the carrier-drum is rotated with an intermittent motion. Fig. 5 is a detail longitudinal sectional elevation through one of the runways on the line 5 5 of Fig. 6. Fig. 6 is a plan view of the runway shown by Fig. 5. Fig. 7 is an enlarged view, in side elevation, of the label-receptacle, showing parts of the framework in section, the dotted lines illustrating the vertical adjustment of the receptacle within its supporting-yoke. Fig. 8 is a plan view of the devices shown by Fig. 7, the dotted lines representing the horizontal adjustment of the receptacle and its yokes. Fig. 9 is an enlarged detail sectional elevation through the pasting mechanism and the pressure-roll. Fig. 10 is a plan view of the parts represented by Fig. 9. Fig. 11 is a vertical section through the front part of the label-receptacle and the front yoke thereof, the section being taken on the line 11 11 of Fig. 7. Fig. 12 is an enlarged fragmentary sectional view through one of the frictional retaining devices in one rim or flange of the carrier-drum.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

The sides 10 of the framework are provided with journal-bearings for the reception of the main power-shaft 11, arranged in a horizontal position to extend across from one side frame to the other, and to one end of this driving-shaft is secured a belt-pulley 12, adapted to receive a belt, which may be driven from a line-shaft or an engine.

Between the sides of the framework are arranged the standards 13, firmly secured to the floor and provided with the ring-like bearings 14, arranged in alinement with each other, to support the revoluble carrier-drum 17. This drum is provided at its opposite sides with the large hollow trunnions 15 16, adapted to be supported in the ring-like bearings of the standards 13, and through the drum and its hollow trunnions extends the shaft 11. The carrier-drum is supported by the trunnions in the standards 13 for its axis to lie at one side of the axis of the shaft 11, so that the revoluble drum occupies an eccentric relation to the main power-shaft, and this is an important feature of our machine, because it enables the cams or eccentrics which actuate the carrier-drum and the master-gear for the

work-rolls to rotate the drum and rolls intermittently, as will hereinafter appear. This carrier-drum is provided on one side with an annular gripping-flange 18, adapted to project from the periphery of the drum and to bear against one end of the cans or other work while they are confined in the drum for movement therewith and the application of the labels thereto, and on the other end of the drum is an annular flange 19, which supports the work-retaining devices. This carrier-drum is equipped with a plurality of work-rolls arranged in annular series around the periphery of the drum and between the annular flanges 18 19 thereof. These work-rolls are arranged in pairs, as indicated at 20 21 in Fig. 4 of the drawings, and the spaces between adjacent pairs of the rolls are closed by means of the blocks or abutments 23, which span the space between and are attached to the annular flanges 18 19 of the drum. The space between the rolls constituting each pair is open or unobstructed for the introduction of the work, which is supplied by the feed-runway on one side of the machine, while the abutments close the spaces between adjacent pairs of rolls, so as to prevent the work from being improperly introduced into the carrier-drum. Each work-roll is made of an elastic or resilient body—as, for instance, rubber—to secure frictional contact between the rolls and the cylindrical work, and said elastic rolls are carried by shafts 24, which are journaled in proper bearings on the flanges of the carrier-drum. The shafts are extended beyond the rim or flange 18 of said drum to receive the gear-pinions 25, and with said pinions meshes a master-gear 26, which is arranged in concentric relation to the carrier-drum and is revolubly fitted on the hollow trunnion 16 thereof. This master-gear is provided with an annular groove 26^a in its outer circumference which forms the flanges 26^b and 26^c, while the inner surface of the master-gear is cylindrical and unbroken. The master-gear is arranged for its groove 26^a to receive the ring-like bearing 14 on one of the standards, while the trunnion 16 of the carrier-drum fits in the master-gear, whereby the gear is interposed between the trunnion 16 and its bearing in the standard 13. The drum is free to rotate with the master-gear in the bearings 14; but this master-gear is adapted in the operation of the machine to rotate independently of the motion of the drum, while under certain conditions the master-gear rotates with the drum. The inner flange 26^b of the master-gear is provided with a series of gear-teeth 26^d, which mesh directly with the gear-pinions 25 on the shafts of the elastic work-rolls; but the flange 26^c of said master-gear is equipped with a series of pins or studs 30, which are adapted to be engaged successively by the teeth on an eccentric 28.

The power-shaft 11 carries two eccentrics or cams 27 28, which are fixed to said shaft

to rotate therewith under all conditions, and the eccentric 27 is arranged on the shaft in substantially central relation to the carrier-drum 17, while the other eccentric 28 is mounted on the shaft 11 in the vertical plane of the series of studs 30 on the outer flange of the master-gear 26. The carrier-drum 17 is provided with a continuous series of pins or studs 29, which are secured internally to the drum and are arranged therein in annular series with proper intervals between said pins or studs to enable them to be engaged successively by the single tooth 27^a on the drum-driving eccentric 27. This eccentric 27 is on the power-shaft 11 to occupy an eccentric relation to the annular series of studs 29 on the carrier-drum, and the single tooth 27^a of this eccentric is adapted to engage successively with each of the studs 29, so that the tooth may turn the carrier-drum for a part of a revolution before the tooth clears the pin 29 to allow the drum to come to a period of rest, and as the drum is partly rotated by the engagement of the cam-tooth 27^a with one stud 29 the rotation of the drum presents another stud 29 in the path of the cam-tooth, so that the tooth will engage with the stud last presented in its path as the eccentric completes its rotation. The described arrangement of the cam 27 with relation to the annular series of studs 29 on the drum permits the cam to rotate continuously while the carrier-drum is rotated intermittently or with a step-by-step feed motion, and in the embodiment of this part of the invention (represented more clearly by Fig. 4) we have shown the carrier-drum equipped with a series of six studs 29, so that the cam 27 will turn the drum one-sixth of a revolution at each engagement of the tooth 27^a with one of the series of pins.

The master-gear 26 is mounted on the drum concentric therewith, so that its gear-teeth will mesh at all times with the gear-pinions on the work-rolls, and this master-gear is driven by its cam 28 to rotate with the drum as it is moved by its cam 27, while at the same time the master-gear is capable of an intermittent motion independently of the feed motion of the drum in order to rotate the work-rolls on their axes for the purpose of wrapping the label around the can or other work which is contained in the machine.

This is attained by providing the gear-driving cam 28 with the teeth 28^a 28^b, which are properly spaced apart to engage successively with the series of studs 30 on one flange of the master-gear. The annular series of studs 30 occupy the eccentric relation to the shaft 11 and the cam 28 in a manner similar to the studs 29 of the carrier-drum with relation to the cam 27, and the finger 28^a of the cam 28 is adapted to engage with one of the studs 30 on the master-gear at the same time that the finger 27^a of the cam 27 engages with one stud 29 of the carrier-drum, whereby the cams operate to move the master-gear in unison with the feed of the carrier-drum. As

the tooth 28^a of the cam 28 clears its stud at the termination of the feed motion of the carrier-drum and as the cam 28 continues to rotate with the shaft the other tooth 28^b of the cam is brought into engagement with another stud 30 on the master-gear; but at this period the tooth 27^a of the cam 27 is free from engagement with the drum, whereby the cam-tooth 28^b is adapted to move the master-gear independently of the carrier-drum for the purpose of making the master-gear rotate the work-rolls on their axes independently of the feed motion of the carrier-drum.

The work is supplied to the carrier-drum by means of an inclined feed-runway 31, which is arranged on one side of the carrier-drum, and the work after the label has been applied thereto is discharged from the carrier-drum upon a delivery-runway 32, which is arranged in an inclined position on the opposite side of the carrier-drum from the feed-runway. Each runway is suitably attached to the framework of the machine, and the two runways are similar in construction for receiving cans of different sizes and for directing the same with minimum friction to and from the machine. Each runway is provided on one side with a longitudinal permanent side wall 33, (see Figs. 5 and 6,) and on the bottom of the runway is secured a permanent track-rail 34. The opposite side wall 35 of each runway is made adjustable, and with this side wall 35 is associated an adjustable track-rail 36. The adjustable side wall 35 and the adjustable track-rail 36 are parallel under all conditions of service with the wall 33 and rail 34, and this is attained by fastening the adjustable parts 35 36 to slide-blocks 37, which are confined in suitable guideways 38, arranged transversely on the bottom of the runway.

Each track-rail consists, preferably, of an angular strip or length of metal adapted to receive the fastening-screws by which the rail may be fastened to the runway or to the slide-blocks. It will be noted that the wall 35 and rail 36 are fastened to slide-blocks, and these parts may be adjusted by the screws 39, which are mounted in suitable posts on the bottom of the runway and are engaged with the wall 35, whereby the distance between the permanent and adjustable walls and track-rails may be varied to adapt the runway to receive cans or other work which may vary in length. The employment of the track-rails enables the work to be supplied to and delivered from the carrier-drum with a minimum amount of friction, and these track-rails on the delivery-runway are especially useful because they do not have a tendency to crease or wrinkle the labels applied to the articles.

A pressure-roll shaft 40 is arranged above the carrier-drum and substantially in the vertical plane of the power-shaft 11, and this shaft extends across the machine from one side frame to the other, so that it may be journaled in bearings 41, which are supported

adjustably on the side frames. (See Figs. 1 and 2.) These bearings 41 are confined slidably in guides 42 on the side frames of the machine, and to these bearings are connected the adjusting-screws 43, adapted to raise or lower the shaft 40. A pressure-roll 44 is attached to or mounted on the shaft 40, so as to lie directly over the carrier-drum in a position to ride upon the cylindrical work which is confined or gripped between one pair of work-rolls on said drum, and as these work-rolls are driven positively by the master-gear the pressure-roll 44 is adapted to be rotated by frictional contact with the work which is rolled on its axis by engagement with the work-rolls which for the time being are driven positively by the master-gear. The shaft 40 is thus adapted to be driven intermittently, and to one end of this shaft is secured a gear 45, which is adapted to rotate the pasting-roll shaft during the operation of feeding one label from the label-receptacle to the work which is temporarily in engagement with the pressure-roll 44.

A pair of angular rocking arms 46 are fitted loosely on the power-shaft 11, so as to turn or swing thereon independently of the rotary motion of said shaft, and the long ends of these rocking arms are provided with journal-bearings 47, which receive the shaft 48, that carries the label-feed roll 49. The arms 46 are disposed on the shaft on opposite sides of the carrier-drum and the standards 13 therefor, (see Fig. 2,) and the shaft 48 and roll 49 are supported by said rocking arms in positions above the pressure-roll 44 and between the pasting mechanism and said pressure-roll. (See Fig. 1.) The long members of the rocking arms are disposed in nearly-upright positions, while the short members of the arms extend outwardly from the shaft 11 in substantially horizontal positions, so that the short arms will overbalance the long arms and the weight of the label-feed roll supported thereby. The gravity of the short members of said rocking arms 46 tends to normally hold the label-feed roll away from the pasting mechanism and in close relation to the pressure-roll 44; but with the suction devices of the label-feed mechanism are combined devices which actuate the rocking arms 46 positively, so as to move the label-feed roll 49 into operative relation to a positively-driven pasting-roll, whereby the label-feed roll and the pasting-roll are made to coact for advancing the label from the suction feed devices to the work below the pressure-roll 44.

The paste-roll shaft 50 is arranged in a horizontal position across the frame and to one side of the pressure-roll shaft and the label-feed-roll shaft, said pasting-roll shaft being supported for revoluble motion in the side frames of the machine. A gear-pinion 51 is fixed to one end of this paste-roll shaft to intermesh directly with the gear 45 on the pressure-roll shaft 40, and thus the paste-roll shaft is adapted to be rotated in unison with

the shaft 40 when the latter is rotated by the pressure-roll 44 engaging with the can which is rotated by the pair of rolls 20 21, which in turn are driven by the master-gear. The shaft 50 carries a paste-roll 52, which is fixed to said shaft to rotate therewith. A paste-trough 53 is hung loosely on the shaft 50, and this trough is arranged to partly surround the roll 52 in order that the lower surface of said roll may dip or be immersed in the bath of mucilaginous substance, which is contained within the trough. As shown more clearly by Fig. 9, the trough is curved in cross-section and is closed at its ends, so as to be suspended loosely from the paste-roll shaft 50, as shown by Fig. 1. At one side the paste-trough is provided with a brush 54, which is extended or projected from the edge of the trough in order to frictionally sweep against the surface of the paste-roll, and this brush serves the purpose of partly clearing the paste from the surface of the roll and of uniformly distributing the paste thereon, thus preventing too much paste from being supplied to the rear face of the label. To the lower side of the paste-trough is secured an arm 55, which extends in a forward direction from the trough, and to the rear edge or side of this paste-trough is secured a series of guide-fingers 56, which extend rearwardly from the trough and engage normally with the periphery of the pressure-roll 44. The upper edges of the guide-fingers lie in the plane of feed of the label as it is drawn through the coacting paste-roll 52 and the label-feed roll 49, and these guide-fingers span the space between the trough and the pressure-roll 44, whereby the fingers direct the label from the feed-trough to the pressure-roll, so that the label may be properly applied to the surface of the can or other article. It is important that the guide-fingers 56 shall engage properly with the pressure-roll 44, and this is attained by mounting the paste-trough loosely on the paste-roll shaft and by providing said paste-trough with the weighted arm 55, which tends normally to turn the trough in a direction for the guide-fingers 56 to bear against the pressure-roll. We do not, however, desire to confine ourselves to the weighted arm for actuating the trough and the guide-fingers, as equivalent devices, such as springs, may be employed to normally hold the fingers 56 in frictional contact with the pressure-roll.

The label-receptacle 57 is arranged in an inclined position on the framework of the machine and in front of the pasting mechanism, as shown by Figs. 1 and 7 of the drawings. This label-receptacle is closed on its top, sides, bottom, and front end; but the rear end of the label-receptacle, which lies next to the pasting mechanism, is partly closed by a plate 58, the upper edge of said plate having a curved lip 59. (See Fig. 7.) We do not, however, desire to limit ourselves to any particular construction of this label-receptacle, be-

cause the same may be varied in limits suggested by the skilled constructor. The end of the label-receptacle which is contiguous to the pasting mechanism is fitted in a yoke 60, and this yoke is attached by an upright pivot 61^a, as indicated by dotted lines in Fig. 8, to a part of the machine-frame. Said end of the receptacle is connected to the yoke by a horizontal pivot 61^a, and the receptacle is thus pivotally attached to the yoke for vertical adjustment therein, and it is capable of adjustment in a horizontal plane with the yoke when the latter turns on the pivot 61^a. (See Figs. 7, 8, and 11.) The front part of the receptacle is fitted slidably in a yoke 62, which rests on and is fastened adjustably to a bar 66 of the machine-frame. The yoke 62, which is fitted loosely around the receptacle, is provided on one side with a laterally-extending lug 63, that receives a bolt 64, having a nut 65, adapted to bind against the lug 63, and this bolt 64 is fitted slidably in a segmental slot 67, which is formed in the frame-bar 66. The slot 67 is concentric with the vertical pivot 61 of the yoke, so that the bolt 64 may travel in the slot on the adjustment of the yoke 60 and the receptacle with the pivot 61^a as the axis of movement. The nut 65 is adapted to confine the bolt and the receptacle at any point of its horizontal adjustment on the frame, and this bolt 64 and the yoke 60 are adapted to permit the adjustment of the receptacle in a vertical direction on the pivot 61 as the axis of motion. The vertical adjustment of the receptacle is effected by turning the screw 68, which finds a threaded bearing in the yoke 60 and is adapted to impinge against the bottom of the label-receptacle, as shown by Fig. 7 and by dotted lines in Fig. 8. It will thus be seen that the receptacle 57 is capable of adjustment in a horizontal plane for bringing its delivery end into proper relation to the pasting mechanism, and said receptacle may also be adjusted in a vertical direction to vary the angle thereof to the axis of the pasting-roll in order to facilitate the delivery of the labels from the receptacle. On the top of the receptacle is arranged a spring-plate 69, which is provided with a slot 70, adapted for the reception of a bolt 71, which is attached to the receptacle and serves to adjustably confine the spring-plate thereon. A regulating-screw 72 is fitted in the spring-plate to bear against the top of the receptacle, and at its rear end this spring-plate is provided with a depending flange 73, which lies in advance of the open end of said receptacle, so as to catch the labels which are exposed by the open end of said receptacle.

We provide pneumatic devices for transferring the labels individually and successively from the receptacle 57 to the driven roll of the pasting mechanism, and this pneumatic feed device includes a tubular metallic rod or shaft 74, which is arranged in a horizontal position between the pasting mechanism and the label-receptacle. This shaft or rod car-

ries a series of hollow curved fingers 75, which communicate with the space of the pneumatic tubular rod, and these fingers are adapted to be presented in contact with the label which is exposed at the open delivery end of the receptacle 57. Suction-tubes 76 of flexible material are connected or attached to the pneumatic rod 74, so as to create a suction through the curved fingers 75 and the tubular shaft 74, and said flexible tubes are led or carried from the machine to a suction-pump or other exhausting mechanism (not shown) for creating a vacuum through the pneumatic device, so as to cause the label to adhere to the ends of the curved fingers 75. The rod or shaft 74 and the fingers are adapted to travel away from the label-receptacle in order to bend the label over the curved edge 59 and to rest one end of the label upon the paste-roll 52, and this is attained by mounting the tubular rod 74 in the rear ends of bell-crank levers 77. (See Figs. 1 and 2.) Said levers are disposed within the side frames 10 and are fulcrumed thereto, as at 77^a, and to the other ends of said bell-crank levers are pivoted the upper ends of the inclined links 78, the pivots being indicated by the numeral 78^a in Fig. 1. These links and the bell-cranks are actuated by levers 79, which are hung at their front ends, as at 80, to the machine-frame, and the links 78 have their lower ends pivoted at 81 to the levers 79 at points intermediate the length of the latter. The free ends of the levers which actuate the label-feed mechanism rest upon the cams 82, which are fixed to the power-shaft 11 to rotate therewith, and these cams are adapted to lift the levers and the links 78 for the purpose of turning the bell-cranks 77 on their fulcra to lower the suction-tube and the fingers 75 away from the label-receptacle and to the position indicated by dotted lines in Fig. 1. It will thus be seen that the pneumatic label-feed mechanism is adapted to be operatively connected with an exhausting mechanism to create a suction through the curved hollow fingers 75 and that said pneumatic devices are movable bodily from the label-receptacle in a downward direction to make the free ends of the curved hollow fingers 75 lie close to the pasting-roll 52, as shown by dotted lines in Fig. 1. This movement of the pneumatic feed devices bends a label over the lip 59 and carries the edge of the label beyond the detaining-lip 73 on the spring-plate 69, and the label is thus made to rest on the roll 52, as indicated in Fig. 9, after which the label-feed roll 49 is moved in position to coact with the paste-roll 52 for the purpose of drawing the label out of the receptacle 57 by the rotary motion of the paste-roll 52, and thereby feed or advance the label across the guide-fingers 56 to a position below the pressure-roll 44, which serves to force the label around the can, the latter being driven by the work-rolls 20 21, propelled from the master-gear. The pneumatic feed devices remain in their low-

ered positions during the period of feeding the label through the pasting mechanism and of wrapping the label around the can or other work; but as the carrier-drum is moved to shift the labeled can away from the pressure-roll and to move an unlabeled can in position beneath the same the label-feeding roll 49 and the pneumatic label-feed devices are returned by their actuating mechanisms to their normal positions. (Indicated by full lines in Fig. 1.) To positively shift the label-feeding roll 49 into active relation to the paste-roll 52 in unison with the depression or lowering of the pneumatic label-feed devices, we employ the lifting-rods 83, which are pivoted at 84 to the free ends of the levers 79. These lifting-rods are provided with hooks 85, adapted to engage with pins or studs 86 on the short members of the angular rock-arms 46, which carry the label-feed roll 49. The lifting-rods 83 are of such length that the hooks 85 will not engage with the studs 86 on the rocking arms 46 until the levers 79 shall have moved the pneumatic feed devices from their highest to their lowest points; but when the label has been moved for its free edge to rest upon the paste-roll the hooks of the lifting-rods 83 engage with the pins on the rocking arms 46 in a manner to turn the arms on the shaft 11, so as to bring the roll 49 over the roll 52, whereby the roll 52 applies the paste to the label and coacts with the roll 49 to draw the label from the receptacle and move said label over the fingers 56 and below the pressure-roll 44.

It will be observed that the carrier-drum is designed to come to a period of rest in the intervals between the step-by-step feed imparted thereto by the cam mechanism for the purpose of wrapping the label around the work which lies below the pressure-roll 44, and to detain the carrier-drum against accidental rotation, particularly from moving by reason of the frictional engagement of the master-gear with the drum-trunnion 16, we employ means which tend to restrain the carrier-drum against rotation except under the action of the cam 27. In one embodiment of this arresting mechanism we employ a counterpoised brake, which consists of a roll 87, a lever 88, and a drop-weight 90. The brake-lever is arranged below the carrier-drum in a position to present the brake-roll 87 where it will engage with two of the work-rolls 20 21, and the drop-weight 90 is connected to the free end of this brake-lever so as to yieldably hold the brake-roll in frictional engagement with the rolls of the carrier-drum. This brake-lever is fulcrumed at a point intermediate its length on a short fixed post 89, (see Fig. 1,) and by connecting the drop-weight to one end of the lever and pivoting the brake-lever in the other end of the lever the parts are disposed to retard the rotation of the drum 17, except when the cam 27 acts on one of the studs 29 to positively turn said carrier-drum, the brake-lever yielding to permit the work-rolls to pass the brake-roll.

The annular flanges 18 19 of the carrier-drum are spaced a distance to accommodate the longest articles which are to be fed to the machine for the application of the labels, and to enable the drum to receive and retain articles of different lengths we provide a series of clamping devices on the flange 19 of the carrier-drum. These retaining devices are in the form of spring-actuated plungers 91, which are supported in the drum-flange 19 in the intervals between the pair of coacting rolls 20 21. Each plunger is provided with a conical end 92, adapted to bear against one end of the can, as shown by Figs. 2 and 12, and this plunger is confined slidably in a tube 93, which is externally screw-threaded and is adjustably supported in the flange 19 of the carrier-drum. A female-threaded cap 94 is screwed to the other end of the threaded tube 93, and this cap bears against a coiled pressure-spring 95, which acts against the heel of the plunger 91. The threaded tube and the plunger supported thereby may be adjusted in the flange of the carrier-drum in order to engage with one end of the can, which at its opposite end rides frictionally against the gripping-flange 18 of the carrier-drum, and the retaining device is thus adjustable to enable the carrier-drum to receive cans which vary in length.

The operation of the machine is as follows: A series of cylindrical cans are supplied to the feed-runway 31, and the lowermost can is pressed by the weight of the following cans into position between a pair of elastic work-rolls 20 21. The cam 27 turns the carrier-drum and the can confined between its pair of rolls to move the can from a position opposite the runway to the position below the pressure-roll 44, and during this movement of the carrier-drum the cam 28 actuates, through the tooth 28^a, the master-gear 26 for the latter to turn in unison with the feed motion of the carrier-drum. The work having been brought into position beneath the pressure-roll, the brake mechanism engages with the pair of rolls at the lower side of the carrier-drum to restrain the latter against rotation, and at this period the levers 79 actuate the bell-crank levers 77 to move the suction-shaft 74 and the fingers 75 to the lowest limits of their travel, as indicated in dotted lines in Fig. 1. The lifting-rods 83 engage with the studs 86 to move the label-feed roll 49 above the pasting-roll 52, and the label thus occupies the position indicated by Fig. 9, which represents one edge thereof gripped between the rolls 41 and 52 in position to receive the paste from said roll 52. At this period in the operation of the machine the cam 28, through its finger 28^b, actuates the master-gear to rotate the latter independently of the drum, which is retained in a condition of rest by the brake mechanism, and this master-gear thereupon rotates the rolls 20 21 on their axes for the purpose of revolving the can. The rotary motion of the can is

communicated to the pressure-roll and the latter rotates the gear 45, which in turn drives the gear 51 on the shaft 50, thereby rotating the paste-roll 52. This roll coacts with the label-feed roll 49 to draw the label from the receptacle 57 and feed said label over the fingers 56. The label is thus fed and pasted to the can before the rotary motion of the master-gear is completed, and on the continued rotation of this gear the label is wrapped around the can and pressed thereon by the roll 44, so that the label is applied in a smooth condition on the can and free from wrinkles or creases. At this period the cams 27 28 again rotate the carrier-drum and the master-gear to carry the labeled can away from the pressure-roll and to present another can below the pressure-roll, and during this feed of the carrier-drum the roll 49 and the pneumatic feed mechanism are restored to the full-line positions shown in Fig. 1, so as to supply another label to the pasting mechanism. In the rotation of the carrier-drum the labeled cans are carried from the pressure-roll to the delivery-runway 32, and the cans are adapted to travel on the track-rails of this runway in a manner which will minimize any tendency of the moistened labels to wrinkle on said cans.

Changes may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention embodied. Hence we do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Although we have shown and described the pressure-roll 44 as adapted to be rotated by frictional contact with the work, which in turn is rotated by the work-rolls under the influence of the master-gear, so that the pressure-roll 44 will rotate the paste-roll, still we would have it understood that the roll 44 may be driven positively by suitable gears—as, for example, by gearing to the power-shaft. This positive driving of the roll 44 is desirable under some conditions.

Having thus described the invention, what we claim is—

1. In a label-affixing machine, the combination of a revoluble carrier-drum, a series of work-rolls journaled therein and arranged to travel therewith, means for rotating the work-rolls on their axes, means for giving a step-by-step feed to the carrier-drum, a pressure-roll, contiguous to the carrier and one work-roll and adapted to cooperate with each of the series of work-rolls as they are presented successively thereto, and a label-feed mechanism, substantially as described.

2. In a label-affixing machine, the combination of a revoluble carrier-drum, a series of work-rolls journaled therein, a master-gear concentric with the carrier-drum and meshing with said work-rolls, and feed mechanisms for giving a step-by-step motion to the carrier-drum and the master-gear and for

actuating said master-gear independently of the carrier-drum to rotate the feed-rolls on their axes during the periods of rest of the carrier-drum, substantially as described.

3. In a label-affixing machine, the combination of a revoluble carrier-drum, a series of work-rolls journaled therein, a master-gear concentric with the carrier-drum and meshing with said work-rolls, a cam for giving a step-by-step motion to the carrier-drum, and another cam in operative operation to the master-gear to move the latter in unison with the carrier-drum during its rotation and to actuate said master-gear during the periods of rest of the carrier-drum, whereby the work-rolls may be rotated on their axes independently of their travel with the carrier-drum, substantially as described.

4. In a label-affixing machine, the combination of a revoluble carrier-drum, a series of work-rolls journaled thereon, a master-gear arranged concentric with the drum and geared to said work-rolls, a shaft in eccentric relation to the axis of the carrier-drum and the master-gear, the cams revoluble with said shaft, and two series of studs carried respectively by the master-gear and the revoluble carrier-drum for engagement individually with said cams, substantially as described.

5. In a label-affixing machine, the combination of a carrier-drum, a series of work-rolls thereon, a master-gear fitted to said drum in concentric relation therewith and meshing with said work-rolls, the studs or pins carried by the drum and the master-gear, a shaft in eccentric relation to said drum and the gear, a single-toothed cam revoluble with said shaft and engaging successively with the studs on the drum for giving intermittent motion thereto, and a double-toothed cam also revoluble with the shaft and engaging with the studs of the master-gear for moving the latter in unison with the movement of the drum and for actuating said master-gear during the periods of rest of the drum, for the purpose described, substantially as set forth.

6. In a label-affixing machine, the combination of a carrier-drum, a master-gear revolvably fitted on said drum in concentric relation thereto and carrying a series of studs, a series of elastic work-rolls journaled in pairs on the drum and meshing with said master-gear, a series of studs carried by the drum within the work-rolls thereof, a shaft passing through the drum and arranged in eccentric relation to the two series of studs on said drum and master-gear, and cams revoluble with said shaft and arranged to engage respectively with the studs of the drum and the master-gear, substantially as described.

7. In a label-affixing machine, a carrier-drum having the annular flanges, and elastic work-rolls journaled on said drum and arranged in pairs thereon to receive the work successively, in combination with means for feeding the work to said rolls of the drum, a

feed mechanism for rotating the drum with the step-by-step motion, means for rotating the work-rolls on their axes, a pressure-roll, a label-feed mechanism, and a pasting mechanism, substantially as described.

8. In a label-affixing machine, the combination of a carrier-drum having a series of work-rolls, a feed mechanism for said drum, a feed-runway on one side of the drum, a delivery-runway on the opposite side of the drum, a pressure-roll between said runways, and means for rotating the work-rolls on their axes during the period of presentation of the work to the pressure-roll, substantially as described.

9. In a label-affixing machine, the combination with a carrier having a series of work-rolls, a pressure-roll arranged to coact with the work between a pair of said work-rolls, means for rotating the work-rolls and the pressure-roll during the presentation of the work to the latter, and a pasting mechanism revolvable in unison with the pressure-roll, substantially as described.

10. In a label-affixing machine, the combination with a carrier and a pressure-roll coacting therewith, of a pasting mechanism including a positively-driven roll, a bodily-movable label-feeding roll adapted to coact with the pasting-roll, and means for presenting labels to said pasting-roll, for the purpose described, substantially as set forth.

11. In a label-affixing machine, the combination of a label pressure-roll, a carrier mechanism to present the work successively in operative relation to the label pressure-roll, a label-receptacle, a pneumatic label-feed mechanism movable between the label-receptacle and said pressure-roll, a pasting mechanism, and means for rotating the pressure-roll and the work during the periods of rest of the carrier, substantially as described.

12. In a label-affixing machine, the combination of a pressure-roll, a carrier mechanism to present the work successively and in operative relation to the pressure-roll, a label-receptacle, a pasting mechanism between the pressure-roll and the label-receptacle, a pneumatic label-feed mechanism movable between the label-receptacle and the pressure-roll to present the labels successively to the pasting mechanism, a feed-roll, and means for rotating the feed-roll and pressure-roll during the periods of rest of the carrier, substantially as described.

13. In a label-affixing machine, the combination with a work-carrier and a pressure-roll, of a pasting mechanism including a positively-driven roll, a label-receptacle, a pneumatic label-feed mechanism between the pasting mechanism and said receptacle, means for actuating the pneumatic feed devices, a label-feed roll in movable relation to the pasting mechanism, and means for moving the label-feed roll into active relation to the pasting-roll subsequent to the delivery of a label to the pasting-roll, substantially as described.

14. In a label-affixing machine, the combination with a work-carrier, a pressure-roll and a paste-roll, of a shiftable feed-roll, a label-feed mechanism, and means for adjusting the feed-roll into cooperative relation to the paste-roll when said label-feed mechanism supplies a label to said paste-roll, substantially as described.

15. In a label-affixing machine, the combination with a work-carrier, and a pressure-roll, of a balanced yieldable paste-trough in movable relation to the pressure-roll, fingers carried by the paste-trough to span the space between the same and the pressure-roll and normally held by said trough in contact with the roll, and means for feeding a label across the trough and the fingers to the pressure-roll and the work, substantially as described.

16. In a label-affixing machine, the combination with a work-carrier and a pressure-roll, of a pasting mechanism adjacent to said roll, a label-receptacle, bell-crank levers carrying a pneumatic label-feed mechanism which lies adjacent to said label-receptacle, a shaft provided with cams, levers actuated by said cams and linked to the bell-crank levers, and a label-feed roll arranged to coact with a roll of the pasting mechanism, substantially as described.

17. In a label-affixing machine, the combination with a work-carrier and a pressure-roll, of a pasting mechanism including a revolvable roll, rocking arms carrying a label-feed roll arranged to be presented in active relation to the pasting-roll, a label-receptacle, means for feeding a label from said receptacle to the pasting-roll, levers for actuating the label-feed mechanism, and rods connected with said levers and engaging with the lifting-arms to move the label-feed roll toward the pasting-roll subsequent to the delivery of the label to said pasting-roll, substantially as described.

18. In a label-affixing machine, the combination with a work-carrier and a pressure-roll, of a pasting mechanism, a label-receptacle, a pneumatic tube provided with a series of hollow fingers and with suction-tubes, means for supporting said pneumatic tube in movable relation to the label-receptacle and the pasting mechanism, and a feed-roll cooperating with the pasting mechanism, substantially as described.

19. In a label-affixing machine, a label-receptacle having its front partially closed by a wall, 58, which, at its top edge, is provided with a curved offstanding lip, 59, over which the labels are adapted to be bent prior to removal from the receptacle, in combination with a pneumatic feed mechanism which is presented to the open end of the receptacle above the curved lip thereof and draws the upper end of a label from the receptacle, and coacting rolls arranged to grip and feed a label presented thereto by the label-feed mechanism, substantially as described.

20. In a label-affixing machine, the combi-

nation with a pasting mechanism, of an inclined label-receptacle, means for adjusting said label-receptacle in a plane inclined to the horizontal plane of the pasting mechanism and for varying the angle of presentation of the receptacle to the pasting mechanism, and a pneumatic label-feed mechanism movable between the receptacle and the pasting mechanism, substantially as described.

21. In a label-affixing machine, the combination with a pasting mechanism, of an inclined yoke pivoted at a point contiguous to the pasting mechanism and adjustable on an inclined axis, and a label-receptacle mounted in the yoke for adjustment therewith, whereby the angular presentation of the receptacle to the pasting mechanism may be varied, substantially as described.

22. In a label-affixing machine, the combination with a pasting mechanism, of a pivoted yoke, a label-receptacle fitted in said yoke for adjustment therewith and pivotally connected to the yoke for adjustment in a vertical plane, and means for clamping the receptacle in its adjusted positions, substantially as described.

23. In a label-affixing machine, the combination with a pasting mechanism, a pivoted yoke, a receptacle pivoted in said yoke, another yoke in which the receptacle is slidably fitted, an adjusting-screw for raising and lowering the last-named yoke, and a clamping-screw for holding the receptacle in its adjusted positions, substantially as described.

24. In a label-affixing machine, a runway comprising an inclined bottom, a permanent side thereon, a movable side adjustable on said bottom in a direction laterally with respect to, and in parallel relation with, the permanent side, a fixed track-rail on said bottom, and a movable track-rail connected by intermediate devices with the movable side and adjustable therewith to occupy a parallel relation to the fixed track-rail, said track-rails presenting their edges to the travel of the work, substantially as described.

25. In a label-affixing machine, a runway comprising an inclined bottom provided with the transverse guides, slide-blocks confined adjustably in said guides, the adjustable

track-rail and the adjustable side fastened to said slide-blocks for adjustment therewith and maintained thereby normally in parallel relation one to the other, and the permanent side and the permanent track-rail fastened to the bottom of said runway, for the purpose described, substantially as set forth.

26. In a label-affixing machine, the combination of a revoluble carrier-drum provided with work-rolls, means for intermittently rotating said drum, a brake-lever carrying a roll adapted to engage with the work-rolls and provided with a drop-weight which maintains the brake-roll yieldably in contact with the work-rolls, and means for rotating the work-rolls, substantially as described.

27. In a label-affixing machine, a carrier-drum provided with a gripping-flange, a series of threaded tubes screwed into a flange of said drum, plungers confined in said tubes to be adjustable therewith, and tension-springs acting against said plungers, substantially as described.

28. In a label-affixing machine, a carrier-drum provided with a gripping-flange, threaded tubes supported adjustably on said flange, caps screwed to said tubes, plungers confined slidably in the tubes, and springs seated against the caps and the plungers, substantially as described.

29. In a label-affixing machine, the combination with a work-carrier having a series of intermittently-revoluble work-holders, of a pressure-roll mounted for propulsion intermittently and in unison with the revoluble motion of the work-holders, a pasting-roll driven by said pressure-roll, a label-feed mechanism, and a shiftable feed-roll mounted for adjustment into cooperative relation to the paste-roll when the label-feed mechanism advances a label to said paste-roll, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN OUTCALT.

DAVID DE PYSTER ACKER OUTCALT.

Witnesses:

JOSEPH HODAPP,

JOHN H. DILL.