(No Model.) 2 Sheets—Sheet 1.

J. P. SIMMONS.

CAN LABELING MACHINE.

No. 589,673. Patented Sept. 7, 1897.

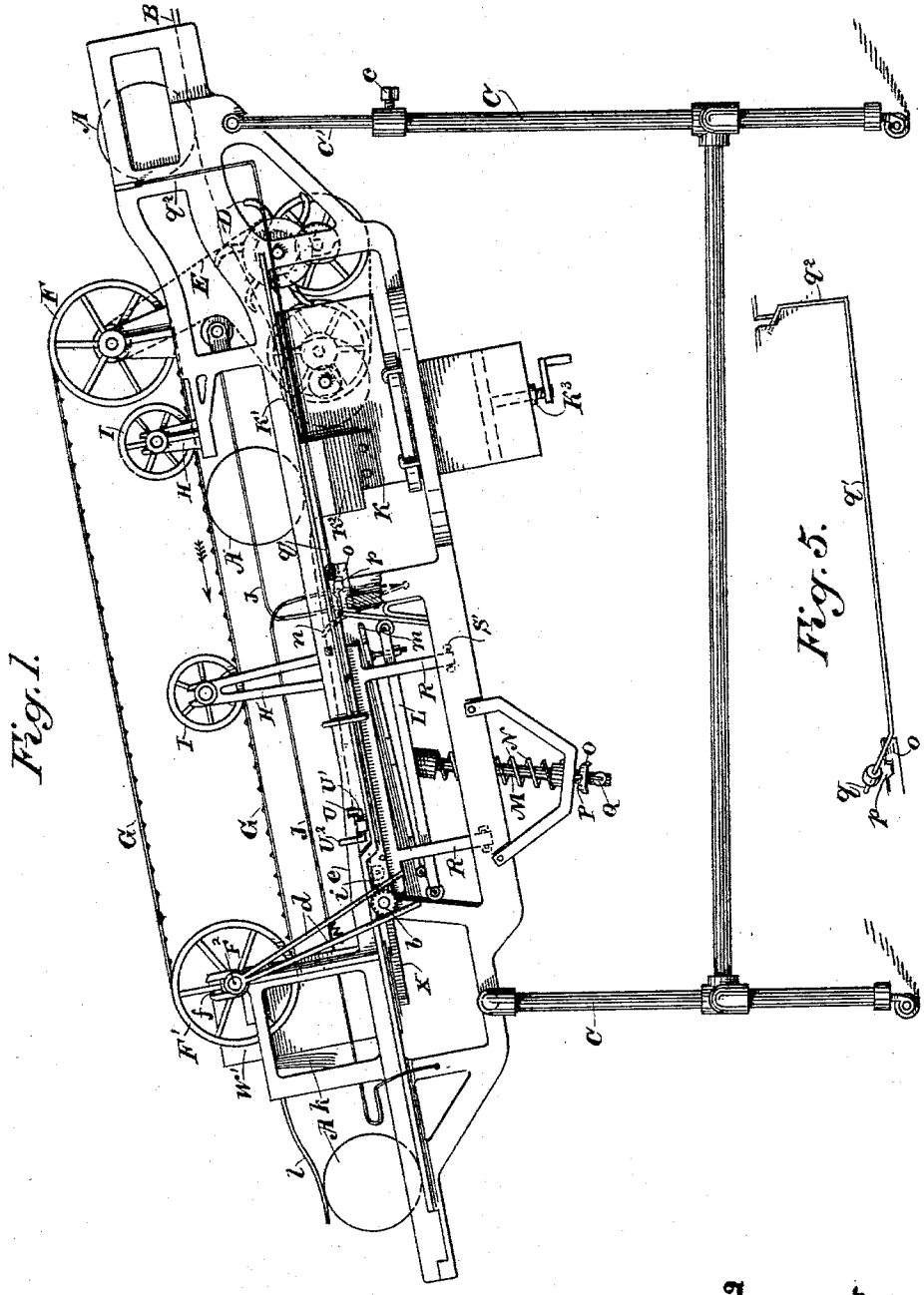


Fig. 1.

Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

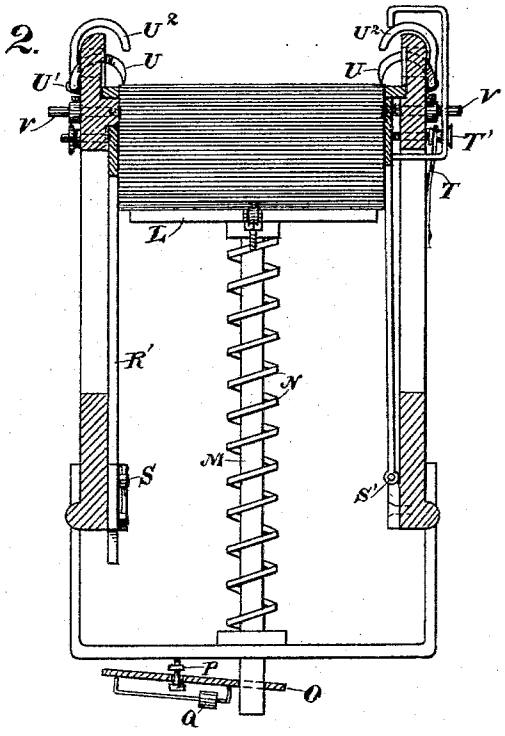


Fig. 3.

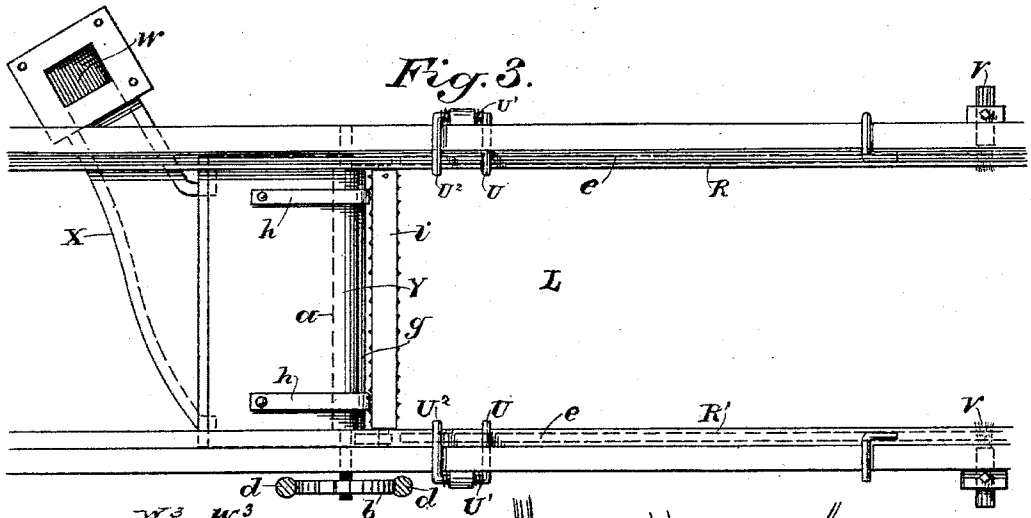
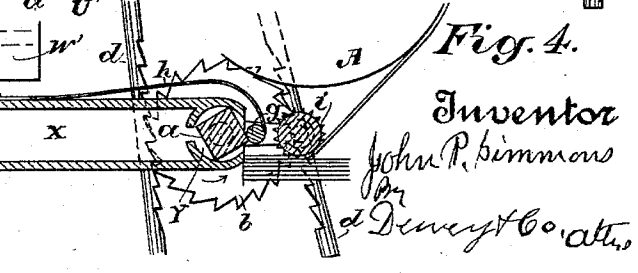


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN P. SIMMONS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO LYMAN C. PARKE, OF SAME PLACE.

CAN-LABELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,673, dated September 7, 1897.

Application filed March 12, 1897. Serial No. 627,091. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. SIMMONS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Can-Labeling Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in that class of machines which are designed to automatically apply labels to cans while the latter are rolled by gravitation successively over the labels; and it consists in the parts and the constructions and combinations of parts hereinafter described and claimed.

Figure 1 is a side elevation illustrating my apparatus. Fig. 2 is a transverse section showing the labels and the holding and guiding devices. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged section of the paste-receiving chamber, the paste-carrying shaft, and the means for applying the paste to the ends of the labels. Fig. 5 is a perspective view showing the device for arresting the cans when the labels have been exhausted.

The object of my invention is to improve the mechanism of gravity can-labeling machines, so as to more accurately apply the labels to the cans as they pass.

In my apparatus the cans A are delivered continuously at the upper end of a chute B, having ledges or tracks upon the inner sides upon which the ends of the cans are adapted to rest as they roll down the chute. This chute or framework is here shown supported by legs C, the longer ones, which support the upper end of the chute, having telescopic extensions C′ and suitable locking nuts or devices *c*, by which the telescopic extension may be lengthened or shortened, so as to regulate the inclination of the chute. The shorter legs at the lower end are pivoted to the frame, so that the latter may move about these pivot-points as it is raised and depressed.

The cans after being delivered to the upper end of the chute are received and carried forward successively by the wings or arms of a rotary carrier D. These arms project radially from a hub or center, are slightly curved, and are separated at the ends sufficiently to allow the curvature of a can to fall between each pair of these wings, and as the movement of the can rolling down the chute rotates this device its motion is communicated through intermediate wheels by means of a chain or belt E, so as to rotate a pulley or drum F. Around this pulley or drum and a corresponding pulley F′ at the lower end of the chute passes a belt G. This belt has small protuberances on the inner surface which engage corresponding depressions of the drums. This allows the belt to run loosely without slipping, so that the lower part of the belt may be pressed down upon the cans as follows: The lower part of this belt travels in the direction in which the cans move, as shown by the arrow, and it rests in contact with the upper surface of the can, so that the latter is allowed to move down the incline by the movement of the belt G, which is in turn controlled by the rotation of the feed device D.

Standards or supports H are fixed to the frame or chute upon each side, and rollers I have the ends of their shafts journaled in the upper ends of these standards, so that they may rise and fall freely. The weight of the rollers I is thus brought upon the lower part of the belt G and will press it upon the cans, so as to insure a contact at all times.

J J are guide-rods upon one side fixed so as to be approximately at or above the center of the can ends, and these rods serve as guides to cause the cans to roll evenly down the chute, the opposite ends of the cans being guided by the front of the chute or runway.

As a can passes down the chute it rolls over the paste-receptacle K, from which a small amount of paste is applied by a roller K′, which dips into the paste-receptacle to the periphery of the can at such a point that when the can has completed a revolution this pasted edge will be brought into contact with the upper edge of the uppermost label. The receptacle is supplied from time to time through a side hopper K^2. A plunger within the receptacle is moved upward to advance the paste, as required, by a screw K^3.

The labels are supported upon a table L, and this table has a shaft M, extending downwardly through suitable guides, and a spring N, surrounding it and acting to normally force the table up.

When the table is to be charged with labels, it is pressed down, thus compressing the spring N and pushing the rod M down through the lower guide.

O is a plate having a hole through it of such diameter that when the plate is in the position shown in Fig. 2 the rod M will slide freely through it when it is being moved up. When it is pushed down and after it reaches its lowest point, the plate O may be tilted upward, so that the hole will bind upon opposite sides of the rod.

The plate O is loosely suspended upon a fulcrum-pin P and has upon the lower side a rod, upon which a weight Q is slidable. When this weight is moved to the rear end of the rod, (which is the position it will occupy when the shaft M is being pushed down,) the other end of the plate O will be tilted upward, so that it will bind against the shaft M to prevent its sliding up and thus lock it in its lowest position while the labels are being placed upon the table.

When the labels have been thus placed, the weight Q may be shifted to the position shown in Fig. 2, and this will tilt the plate O downward, so that the shaft M will slide freely through the plate O and not bind therein, the spring N acting to force it and the table up as fast as the labels are removed from above.

The labels are guided and kept in place edgewise by means of plates R R′, extending up on each side. The plate R′ at one edge, as shown in Fig. 2, is slidable in guides S, so as to move up and down and retain its position and thus form a stop against which the edges of the labels are held true upon that side. The plate R upon the opposite side is hinged at the bottom, as shown at S′, Fig. 2, and the upper portion is pressed against the front edge of the labels by a spring T, acting upon the adjustable screw T′, which in turn presses against the plate R and holds it against the edges of the labels opposite to the plate R′. This keeps the labels from being moved out of place edgewise.

The rear ends of the labels are held down by curved arms U, which are pointed, so as to slightly indent the uppermost label and prevent its being pulled out of place when the pasted side of the can picks up the opposite end of the label and begins to roll it around the can. These pointed arms U project from a spring-actuated shaft U′, journaled upon the side of the runway, and these shafts extend a little way along the side of the runway and then have inwardly-projecting arms U^2, which extend into the pathway of the can, so that as the latter reaches them it pushes these arms outwardly, and this rotates the shaft U′, and this lifts the pointed arms U, so as to release the lower end of the label and allow it to be applied to the can as the latter passes. As soon as the can has passed the arms U^2 the shaft U′ will be rotated by its spring, so as to again press the pointed arms U down upon the remaining labels, and this operation continues as long as the cans are passing and labels are being applied.

In addition to the guides R and R′, I have shown flexible brushes fixed at the inner ends of rods V, which are slidable and adjustable in the runway, so that the inner ends of the brushes may press against the edges of the labels, as plainly shown in Fig. 3, and thus assist in keeping them in proper position sidewise.

In order to apply the paste properly to the lower end of the label which is last applied to the can, I have shown a paste-receptacle W, connected by a suitable channel X with a horizontal tubular chamber Y, into which the paste passes from the chamber or channel X.

On the top of the receptacle W is a removable supply-hopper W′, secured by a clamp W^6, as shown. Within this hopper is a weighted plunger W^3, which may consist merely of a metal plate fitting the inside of the hopper, said plunger pressing upon the paste to keep up the supply in W. Between the two is an opening controlled by a sliding gate W^2 in the bottom of the hopper, so that the supply may be regulated or cut off if it is desired to remove the hopper to clear the parts, or for other purposes.

Within the tubular chamber Y is a square or polygonal shaft *a*, turnable within the tube.

I have found that a square shaft is very suitable, but it will be manifest that a polygonal or a chambered shaft might be employed. This shaft has upon its outer end a ratchet-wheel *b*, which is gradually rotated by the movements of two toothed rack-bars *d*, the teeth of which are adapted to engage the ratchet upon opposite sides and in opposite directions, as shown in Fig. 4. The upper ends of these rack-bars *d* terminate in a ring or eye for the shaft F^2, and by this means said rack-bars are connected with the shaft of the belt-pulley F′, (shown in Fig. 1,) and this shaft is movable in the vertically-slotted bearings at the ends, (shown at *f*, Fig. 1,) so that a movement of the can beneath the roller F′ will raise it. This movement to raise the roller is effected by means of an incline in the runway, as shown at *e*, which gradually raises the cans as they pass beneath the roller F′, and thus push it up, carrying with it the pawl-rods *d*, and as these rods move up the one at the right, as shown in Figs. 1 and 4, will engage the teeth of the ratchet and advance it one tooth.

When the can has passed and the roller F′ is allowed to drop, the rack-bar *d* upon the left will in a corresponding manner engage the teeth and again advance the ratchet. By this means the shaft *a* is rotated within the tubular chamber Y, and a small portion of paste is temporarily inclosed between each of the rectangular or chambered sides of this shaft and the interior curvature of the two. This paste is cut off from that in the supply tube or chamber X, and is advanced to the opposite open side of the tube Y, where it is

rubbed off from the side of the shaft *a* by a rod *g*, which extends across in front of the opening in the tube Y and is continually pressed against the sides of the shaft *a* by a spring *h*, which yields to allow the rod *g* to pass over the angles of the shaft *a* and to follow the straight sides of the shaft, so as to push the paste off. This small amount of paste is thus applied to the rear ends of the labels, and as the can A passes over this point it pulls the end of the label up and into contact with itself, the labels being of such length that this end just overlaps the end previously pasted.

A toothed roller *i* extends across and presses upon the label just in front of the rod *g* and thus holds the label in place until it is finally pulled through by the rolling action of the can. As a can passes over the roller *i* the roller F′ is pushed upward and the can squeezes its way between those two rollers and thus a yielding pressure is obtained by the elevation of the roller F′. By reason of the depth and open character of the teeth of the roller *i* it does not interfere with the paste upon the label, but allows that to pass in sufficient quantity to properly attach the label to the can. After leaving this point the can continues rolling down the incline and passes beneath flexible brushes *k*, which, sweeping over the joint of the label as the can rolls beneath them, will smooth any possible wrinkles out of the label. The can then passes beneath a spring-arm *l*, which presses upon it with sufficient force, so that when the overlapping ends of the label are being rolled upon the table beneath this spring acts to press them together as a final operation before the can rolls out of the chute.

As the labels are removed from the table and the latter gradually rises it reaches a point where a projecting end or lug *m* engages a curved spring-arm *n* and forces it along the line of the chute. This spring has attached to it a sliding bar *o*, which is notched, as shown at *p*, and more plainly shown in Fig. 5. Above this sliding notched arm *o* is the bent arm *q* of a rod *q′*, which is journaled longitudinally upon the runway. At the opposite end of this rod *q′* is another bent arm q^2, the end of which extends through the side of the chute or runway, so that it may be brought in front of the moving cans A to arrest them.

The operation will be as follows: When the lug or projection *m* strikes the spring *n*, it moves the sliding bar *o* until the notch or depression *p* is beneath the bent arm *q*. The latter will drop into it by gravitation, aided by a small weight fixed upon this arm, as shown in Fig. 5. This action tilts the rod *q′*, and this moves the bent arm q^2 until its end is projected in front of the can A, and this arrests the cans and allows no more to pass down the runway until the table is again depressed and loaded with labels. By means of these mechanical details I have been enabled to greatly improve the accuracy with which the labels are automatically applied to the cans.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a can-labeling machine, an inclined runway over which the cans are adapted to move by gravitation, a label support or table interposed in the length of the runway, with means for raising it so as to keep the surface of the labels at a constant level, means comprising a horizontal tubular chamber and a rotatable compartment-shaft therein, for applying paste and means for rolling the labels upon the cans as they pass.

2. In an apparatus for applying labels to cans, an inclined runway through which the cans are adapted to roll by gravitation, arms projecting radially from a shaft into the line of travel of the cans, whereby the passage of the cans causes them to engage with each arm successively and rotate the shaft, an endless traveling belt passing around rollers above the runway, a chain or belt and intermediate pulleys by which said endless belt is advanced by the movement of the cans engaging the arms above described, rollers pressing upon the lower side of the belt having vertically-movable shafts whereby the rollers exert a pressure to force the belt into contact with the cans passing beneath, while allowing the belt to adjust itself to irregularities in the passing cans.

3. In a gravity can-labeling machine, an inclined runway, mechanism by which the cans are guided and directed down the runway, a vertically-movable spring-actuated table carrying labels, guide-plates upon opposite sides between which the edges of the label are movable, and by which they are retained in line, one of said plates being slidable in guides and the other plate being hinged at the bottom and provided with means for adjusting its free end.

4. In a gravity can-labeling machine, an inclined runway, mechanism by which the cans are guided and their rate of motion regulated, a vertically-movable spring-actuated table carrying labels, a guide-plate against which one edge of the labels contact, said plate being slidable in guides so as to move up and down and retain its position, and form a stop against which the edges of the labels are held true upon that side, a hinged spring-actuated plate pressing against the opposite edge of the labels to retain them in position and an adjusting-screw for the free end of the hinged plate.

5. In a gravity can-labeling machine, an inclined runway, mechanism by which cans are guided therethrough, and their rate of motion regulated, a vertically-movable spring-actuated label-carrying table with directing-guides, and guides upon the sides by which the edges of the labels are retained in proper line, a device by which the rear edges of the labels are retained in position, consisting of

spring-actuated rotary shafts extending along the runway, having curved pointed projecting arms U adapted to press upon and hold the ends of the labels, and other arms U^2 also projecting from said shafts and extending into the pathway of the can, in advance of the first-named arms, whereby said arms U^2 are actuated by the passing cans to release the labels from the pointed holders.

6. In a gravity can-labeling machine, an inclined runway, mechanism by which the cans are guided and their rate of passage therethrough is regulated, a vertically-movable spring-actuated table with guides and plates for retaining the labels in their proper position, a spring-actuated sliding arm having a depression made in its upper surface, a rod q' having a bent arm projecting over the sliding bar and another arm at the opposite end adapted to move in or out the line of the runway, a lug projecting from the table so as to engage the spring-arm when the table has nearly reached the top, whereby the notched bar is moved to allow the bent arm to drop into it and the arm at the opposite end to be projected in front of the moving cans to arrest them.

7. In a gravity can-labeling machine, a runway through which the cans are passed, and mechanism by which they are guided and their rate of motion determined, a spring-actuated vertically-movable label-carrying table, a paste-receptacle, a channel connecting said receptacle with a horizontal tubular chamber into which the paste is delivered, a rectangular compartment-shaft rotatable within the tubular chamber adapted to carry forward a small portion of paste in each compartment as it rotates, a spring-actuated rod pressing against the front edge of the shaft so as to wipe off the paste and deposit it upon the rear edge of the labels ready to be applied to the approaching can.

8. In a gravity can-labeling machine, an inclined runway through which the cans pass by gravitation, a label-carrying table over which the cans are adapted to roll in contact with the uppermost labels successively, a horizontal tubular chamber with a means for supplying paste thereto, a polygonal or compartment shaft with means for rotating it within the chamber, whereby a portion of paste is advanced in each compartment by its rotation, a spring-actuated rod pressing against the front edge of the shaft whereby the paste in each compartment is successively forced off upon the edge of a label beneath and a corrugated or toothed roller i by which the rear edge of the label is held so as to be properly smoothed and applied to the passing can.

9. In a gravity can-labeling machine, an inclined runway through which the cans pass by gravitation, guides and mechanism by which their rate of speed and direction are regulated, a label-carrying table with labels, the upper surface of which is constantly kept in position to be picked up by the can rolling over them, a device for applying paste to the rear ends of the labels, consisting of a polygonal or chambered shaft rotating within a tubular casing to which paste is constantly supplied, a rod by which the paste is forced out of each compartment upon the edge of the label beneath, and a mechanism for rotating the shaft, consisting of a ratchet-wheel upon its outer end, rack-bars engaging the teeth of the ratchet-wheel, said rack-bars being connected with a vertically-movable shaft or arm, and an upward inclination of the runway over which the cans pass whereby said shaft or arm is periodically lifted so that the rack-bars will act upon the ratchet-wheel, substantially as described.

In witness whereof I have hereunto set my hand.

JOHN P. SIMMONS.

Witnesses:
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PETER T. BARCLAY.