

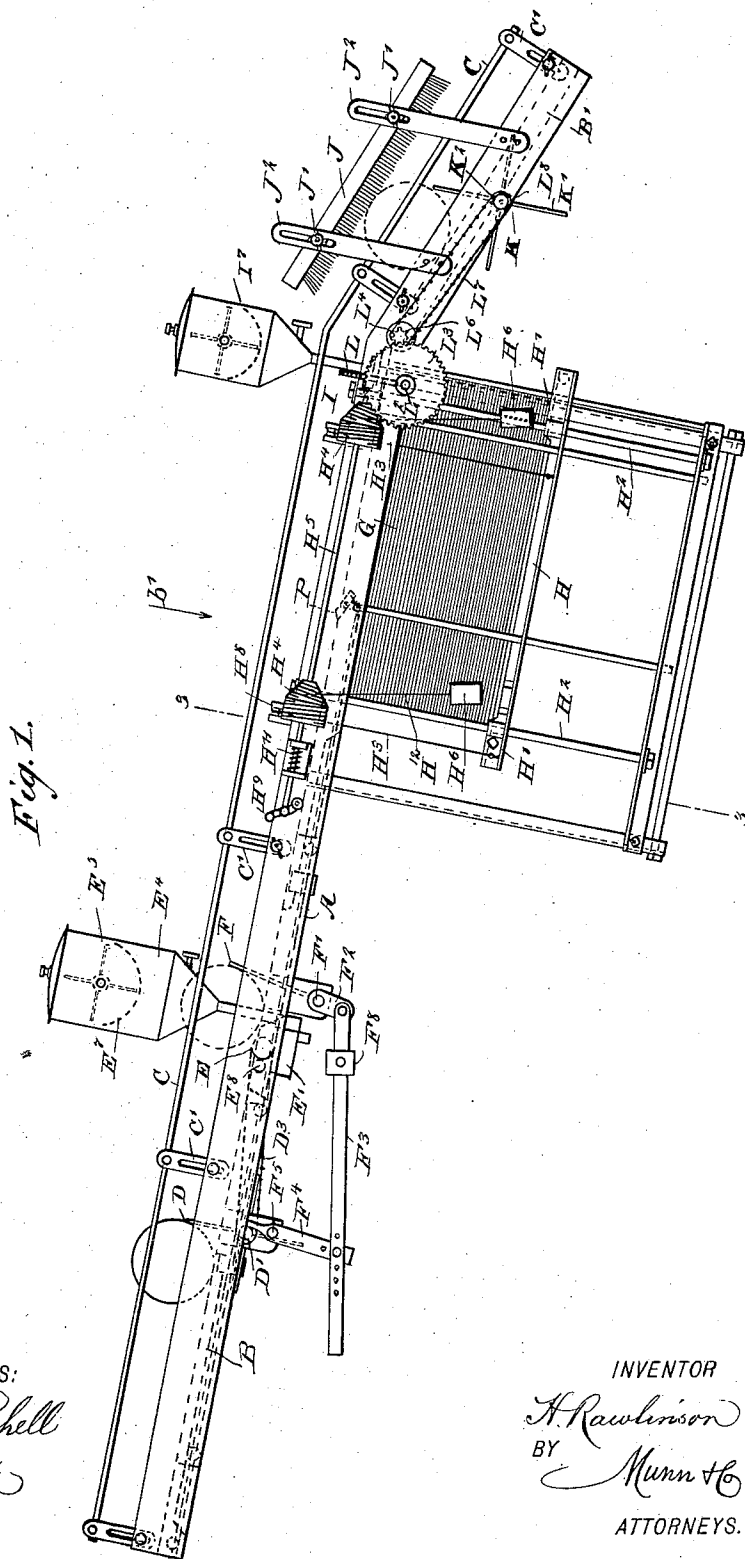
(No Model.)

4 Sheets—Sheet 1.

H. RAWLINSON.
LABELING MACHINE.

No. 567,041.

Patented Sept. 1, 1896.



WITNESSES:

Donn Titchell
C. Sedgewick

INVENTOR

A. Rawlinson
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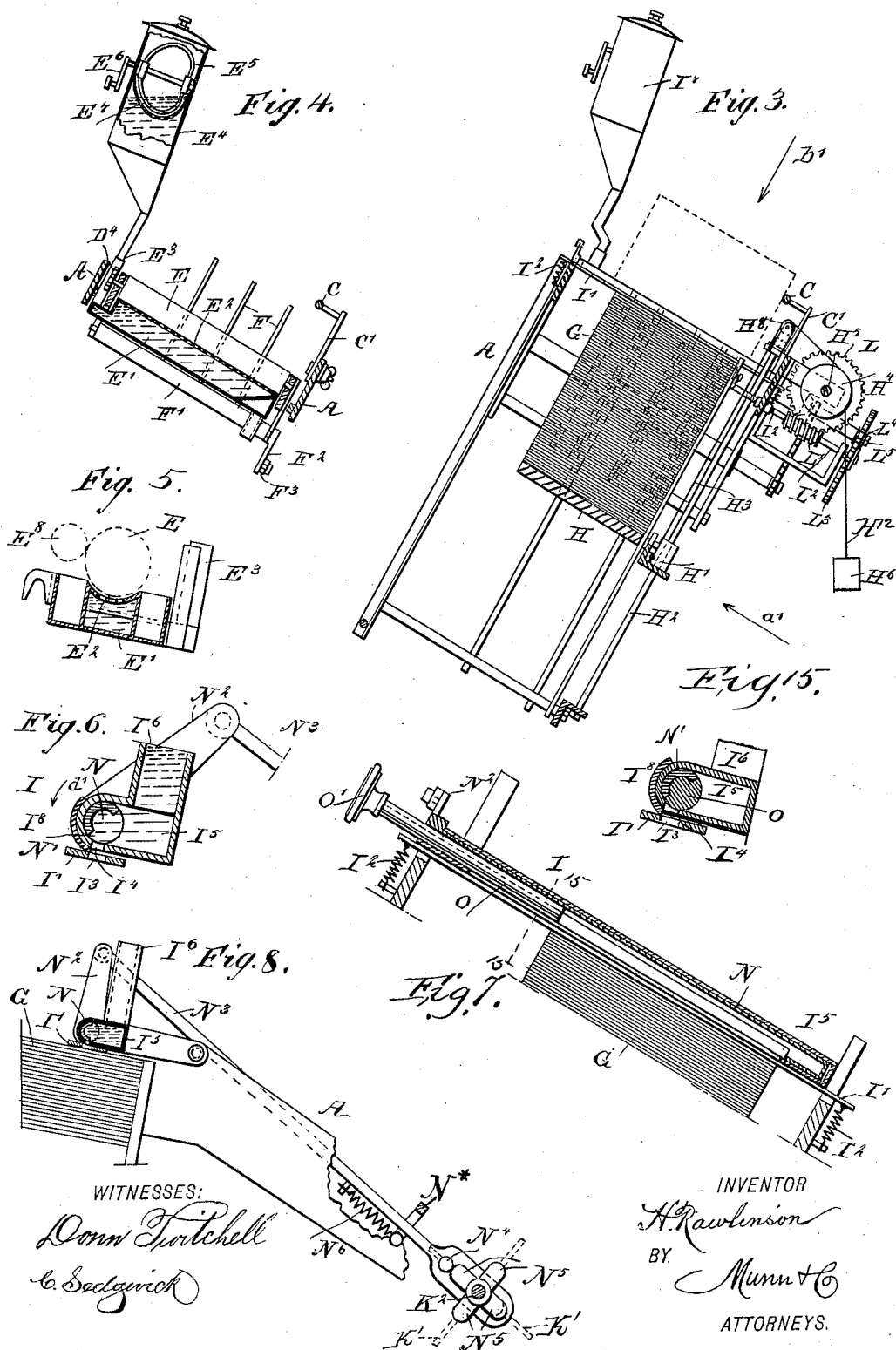
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H. RAWLINSON.
LABELING MACHINE.

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WITNESSES:

Donn Twitchell
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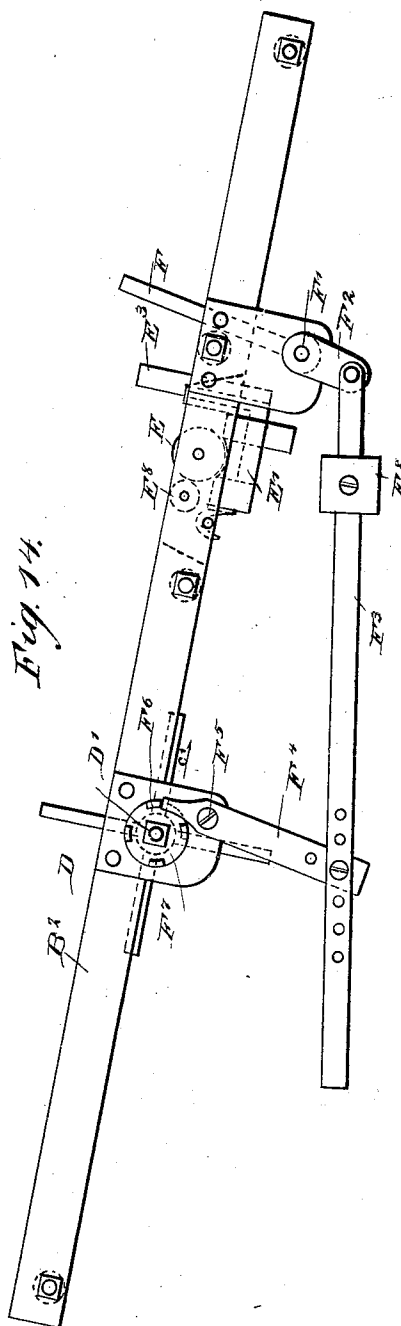
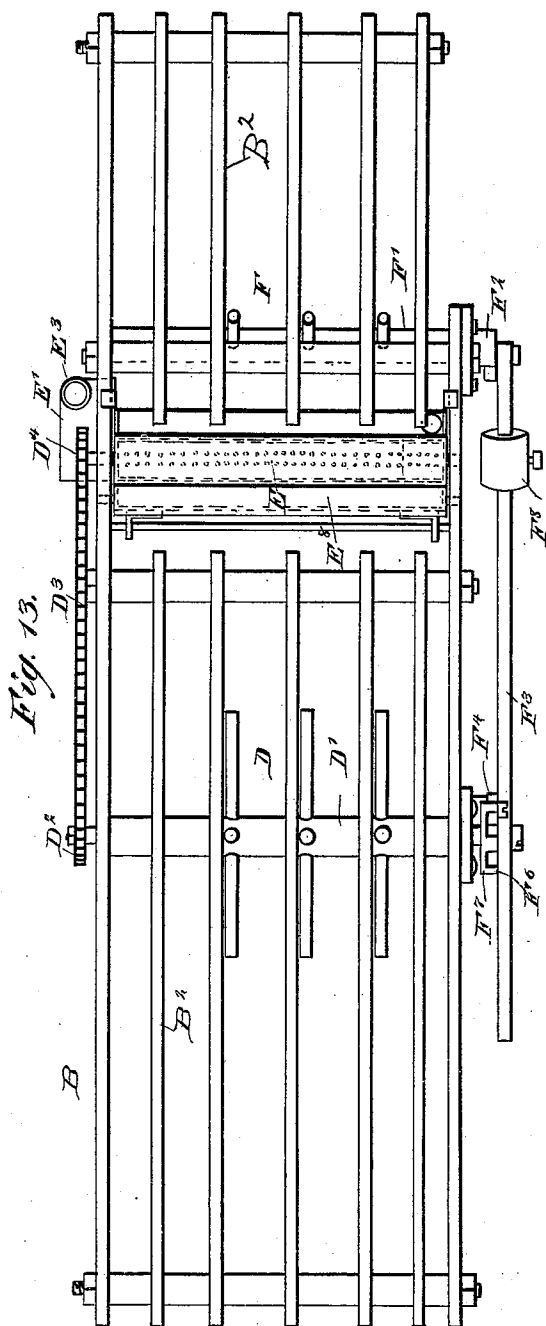
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UNITED STATES PATENT OFFICE.

HERBERT RAWLINSON, OF SAN FRANCISCO, CALIFORNIA.

LABELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,041, dated September 1, 1896.

Application filed February 17, 1893. Serial No. 462,769. (No model.)

To all whom it may concern:

Be it known that I, HERBERT RAWLINSON, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Labeling-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved labeling-machine which is simple and durable in construction, very effective in operation, and arranged for automatically attaching a label, wrapper, or like article to circular bodies as they roll down an incline.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement in the direction of the arrow *a'*, Fig. 3. Fig. 2 is a plan view of the same in the direction of the arrow *b'*, Figs. 1 and 3. Fig. 3 is a cross-section of the same on the line 3 3 of Fig. 1. Fig. 4 is a transverse section of the paste-delivery device on the line 4 4 of Fig. 2. Fig. 5 is a longitudinal section of the same. Fig. 6 is an enlarged sectional side elevation of part of the label paste device on the line 6 6 of Fig. 2, the paste-valve being shown open. Fig. 7 is a transverse section of the same on the line 7 7 in Fig. 2. Fig. 8 is a reduced sectional side elevation of the same taken essentially on line 8 8 of Fig. 2, also showing the means for operating the valve, the latter being shown closed. Fig. 9 is a side elevation of part of the guideway. Fig. 10 is a plan view of the same. Fig. 11 is a perspective view of the label-gage. Fig. 12 is an enlarged plan view of part of the mechanism for raising the label-table. Fig. 13 is an enlarged plan view of the guideway, the paste-delivery device, and the stopping devices for the bodies rolling on the guideway; and Fig. 14 is a side elevation of the same. Fig. 15 is a cross-sectional elevation of the paste-delivery valve and its plunger on the line 15 15 of Fig. 7.

The improved labeling-machine is mounted

on a suitably-constructed frame A, supporting a guideway B, inclined longitudinally and tilted laterally, as plainly shown in Figs. 1, 2, and 3. The guideway B is preferably made of longitudinal rods and transverse bars held adjustably in the frame A, so that part of the guideway can be adjusted longitudinally for the purpose hereinafter more fully described. The lower part B' of the guideway is inclined downwardly at an angle to the main part of the guideway, as plainly shown in Fig. 1.

On the lower side of the frame A is arranged a guard-rail C, supported on arms C', held vertically adjustable on the lower side of the main frame A, the said guard-rail serving as a guide for the lower end of the cylindrical body rolling down the guideway B by its own weight. Owing to the lateral inclination of the guideway, cylindrical bodies of different length will have a perfectly-guided downward movement, since one end of said bodies will remain in contact with the guard-rail C during said downward movement. In the upper part of the guideway B is journaled a stop-wheel D, serving to arrest the body rolling down the guideway, the said wheel being composed of a transversely-extending shaft D' and radial arms, as plainly shown in the drawings. The arms are so arranged that one of the arms extends vertically into and another arm extends in line with the path of the rolling body to stop the same temporarily until the shaft D' is unlocked, as hereinafter more fully described, to permit the body to turn the shaft D' by pressing on the vertically-extending arm to then roll farther down the guideway B onto or over a transversely-extending cylinder E, forming part of a paste-delivery device to deliver a streak of paste transversely onto the downwardly-rolling body.

The body, after leaving the cylinder E, rolls against a second wheel F, composed of a number of arms secured on a transversely-extending shaft F', journaled in the guideway B, the said arms being depressed or swung downward by the weight of the downwardly-rolling body striking the said arms, which latter control the locking device for the stop-wheel D. When the arms of the wheel F swing downward, the body can roll farther down the guideway B onto the uppermost one of a

pack of labels G, supported on an upwardly-sliding table H, mounted to slide in suitable bearings on the main frame A. (See Figs. 1 and 3.) The distance between the cylinder E and the upper end of the label G is such that the downwardly-rolling body brings the streak of paste taken up from the cylinder E onto the upper end of the label, so that the said label adheres to the paste and the body on the further downward rolling and wraps up the label, which latter receives at its lower end a streak of paste from a label paste device I, hereinafter more fully described, and shown in details in Figs. 6, 7, and 8. After the rolling body leaves this device I it passes onto the steep inclined part B' of the guideway B and there comes in contact at its top surface with a brush J for firmly brushing the label in position on the rolling body.

A third wheel K, similar to the wheels F and D, is adapted to be turned by the downward movement of the rolling body on the lower part B' of the guideway, the said wheel K being formed of radial arms K' and a shaft K², journaled in the sides of the main frame A, as plainly shown in the drawings. When the wheel K is turned, it actuates the label paste device I and also a device for lifting the labels G, as will be more fully described hereinafter. The cylindrical body after turning the said wheel K rolls off the lower end of the guideway.

The paste-delivery device for supplying a streak of paste to the periphery of the rolling body has its cylinder E in contact at its bottom with a perforated segmental plate E², forming part of a paste-box E', containing the paste, and supported in the guideway B by suitable means. On one end of this paste-box E' is arranged an upwardly-extending inlet-pipe E³, connected with the paste-supply vessel E⁴, containing a sufficient quantity of paste to supply the necessary paste for a large number of cans, say for a day's work. This paste-supply vessel E⁴ has a removable cap for the introduction of the paste, and is also provided in its upper part with an agitator E⁵, made in the shape of a wheel adapted to be revolved from the outside by a handle E⁶ on the shaft of the said wheel. This agitator E⁵ serves to stir up the paste to prevent the same from forming lumps, the fine paste passing through a perforated segmental bottom E⁷ into the lower part of the supply vessel E⁴ to finally pass through the pipe E³ into the paste-box E'. In order to distribute the paste passing onto the cylinder E, I provide a distributing-roller E⁸ in frictional contact with the said cylinder E. It is understood that the top surface of this cylinder E is about in line with the guideway B, so that the rolling body in passing down the guideway passes over the said cylinder and thereby comes in contact with the paste on the periphery of the said cylinder. A streak of paste is thus left on the rolling body as the latter passes farther down to the wheel F.

The cylinder E is rotated from the shaft D' of the stop-wheel D, and the latter is actuated from the wheel F, as presently to be described.

On the outer end of the shaft F' of the second wheel F is secured an arm F², pivotally connected by a link F³ with a lever F⁴, pivoted at F⁵ to a projection or bracket extending from the guideway B, as plainly shown in Figs. 1, 13, and 14. The upper end of this lever F⁴ is adapted to engage one of a series of stop-lugs F⁶, arranged in a circle on a disk F⁷, secured on one end of the shaft D' of the stop-wheel D. A weight F⁸ is held adjustably on the link F³ and serves to return the wheel F to its original position, and thus again lock the stop-wheel D. Now, when the arms of the wheel F stand upwardly, as illustrated in Fig. 14, then a corresponding arm of the stop-wheel D is in a like position to interrupt the downward movement of the rolling body. At the same time the lever F⁴ engages one of the lugs F⁶, thus locking the stop-wheel D in position. Now, a body rolling down the guideway B between the stop-wheel D and the second wheel F finally passes over the cylinder E to take up the streak of paste and then moves against the wheel F. Then the latter is swung downward by the force of the rolling body, so that then the said rolling body can keep on on its downward rolling course by passing over the wheel when the upper end of the arm of the latter has swung down to the bottom of the guideway B. This downward swinging motion of the wheel F causes a turning of its shaft F' and a swinging of the arm F², so that the link F³ imparts a swinging motion to the lever F⁴ in the direction of the arrow c'. The upper end of the lever thus disengages the respective stop-lug F⁶ to unlock the wheel D, which latter is now turned by the force of the body rolling down the guideway B and passing against the uppermost arm of the stop-wheel D. As soon as the rolling body has passed the stop-wheel D the next arm of the latter stands in an uppermost position, and as the second wheel F returns to its normal position by the action of the weight F⁸ the stop-wheel D is again locked in place by the return movement of the lever F⁴, passing with its upper end under the next following lug F⁶.

On the end of the shaft D' opposite the disk F⁷ is secured a sprocket-wheel D², connected by a sprocket-chain D³ with a sprocket-wheel D⁴, fastened on one outer end of the cylinder E. Now, when the stop-wheel D is turned, as above described, the wheel D², by the sprocket-chain D³ and wheel D⁴, imparts a partial rotary motion to the cylinder E, so that the latter always presents a new streak of paste to the body passing over the cylinder.

For bodies of more or less diameter the distance between the cylinder E and the upper edge of the topmost label G has to be correspondingly increased or diminished to bring the streak of paste on the rolling body in

contact with the upper edge of the label. For this purpose I mount the wheel D and cylinder E and adjacent parts, as well as the second wheel F, onto the part B² of the guideway B, this part being mounted to slide longitudinally in the frame A to move the cylinder E the proper distance from the upper edge of the label G. In order to make, however, an uninterrupted rolling-surface for the body, I provide a part B³ of the guideway, which has its lower end close to the upper end of the label, and this part B³ is separate from the part B², but can be secured thereon after the guideway has been adjusted by means of the clamping device B⁴, as plainly illustrated in Figs. 2, 9, and 10. It is understood that the part B³ is moved longitudinally on the lower end of part B², so as to fill the gap which would otherwise exist between the end of part B² and the upper end of the top label G.

The table H, supporting the labels G, is provided with bearings H¹, fitted to slide up and down on rods H², forming part of the main frame A. The table H is connected with two or more-ropes or cords H³, which extend upwardly and wind on the cylindrical portions of spirally-grooved drums H⁴, secured on a longitudinally-extending shaft H⁵, mounted to turn in suitable bearings in one side of the frame A. (See Figs. 1, 2, 3, and 12.) The shaft H⁵ is rotated at stated intervals to raise the table H to bring the uppermost label in alinement with the guideway B, so that the rolling body will take up the label and wind the same around its periphery, as hereinafter more fully described.

In order to rotate the shaft H⁵, I provide the outer end of the same with a worm-wheel L, in mesh with a worm L', secured on a transversely-extending short shaft L², journaled in a suitable bracket supported on the frame A. On this shaft L² is secured a gear-wheel L³, in mesh with a pinion L⁴, held on a shaft L⁵, also journaled on one side of the frame A and carrying a sprocket-wheel L⁶, connected by a sprocket-chain L⁷ with a sprocket-wheel L⁸ on the shaft K² of the third wheel K. Thus when the latter is rotated by a body rolling down the inclined part B' of the guideway B its shaft K² is rotated, and this rotary motion is transmitted by the sprocket-wheels L⁸ L⁶ and sprocket-chain L⁷ to the shaft L⁵, which, by the pinion L⁴ and gear-wheel L³, rotates the shaft L², and the latter by the worm L' and worm-wheel L imparts a rotary motion to the shaft H⁵, so that the drums H⁴ wind up the ropes or cords H³ at stated intervals, that is, every time the third wheel K is turned the drums H⁴ are revolved to cause the ropes to lift the table H to bring the uppermost label in alinement with the guideway B.

In order to counterbalance the table H and the labels thereon, I provide downwardly-hanging ends ropes or cords H¹² with weights H⁶, and in order to compensate for the con-

stantly-decreasing weight of the labels by the removal of the same, I pass the downwardly-hanging weighted end of each rope or cord over a conical end H⁷ of each drum H⁴. Before passing the ropes onto the drums I guide the latter over friction-rollers H⁸, journaled on the upper ends of the rods H², as plainly shown in Figs. 2 and 3.

In order to revolve the shaft H⁵ when filling the table H with labels and to prevent turning of the gearing mechanism for revolving the shaft H⁵, as above described, I arrange the said shaft H⁵ to slide longitudinally, so as to move the worm-wheel L in or out of mesh with its worm L'. For this purpose I connect one outer end of the shaft H⁵ with an arm H⁹, (see Figs. 1 and 2,) pivoted on the frame A, and serving to shift the shaft H⁵ laterally for the purpose above mentioned. A spring H¹¹ serves to hold the shaft H⁵ in its normal position, that is, with the worm-wheel L in mesh with the worm L'. The lower end of the topmost label receives a streak of paste from the paste-delivery device I, (shown in detail in Figs. 6, 7, and 8,) and this device is provided with a transversely-extending plate I', hung at its outer ends on springs I², which serve to press the under side of the plate I' in firm contact with the upper surface of the topmost label at the lower end thereof. This plate I' is formed with a slot I³, registering with a slot I⁴, formed in the bottom of a paste-box I⁵, connected by a pipe I⁶ with a paste-supply vessel I⁷, similar in construction to the paste-supply vessel E⁴ above described. In the paste-box I⁵ is arranged a valve N, which controls the slot I⁴, so as to admit paste to the said slot I⁴ at stated intervals, the paste flowing through the said slot I⁴ into the slot I³ and from the latter onto the lower end of the uppermost label.

In order to regulate the paste according to the width of the label, I provide a plunger O, fitted to slide in the valve N from the upper end thereof, the said plunger being moved farther in or out according to the width of the label under treatment. The shape of the plunger will be seen best in Fig. 15. The valve N has part of one side cut out, as at N', so as to admit the paste to the slot I⁴ when the valve is turned to the position shown in Fig. 6. When the valve is turned in the direction of the arrow d', then the solid part of the valve cuts off the paste from the slot I⁴.

In order to turn the valve, I provide the outer end thereof with an arm N², pivotally connected with a bar N³, mounted to slide at its free end in a suitable guideway N^x attached to the main frame A. A pin N⁴ projects from the head of the bar N³ and is adapted to be acted on by arms N⁵, secured on the shaft K² of the last wheel K. The pin N⁴ normally projects into the space between two of the arms N⁵, the bar N³ being pressed downward by the spring N⁶. The valve N will therefore be open in its normal position, as shown in Fig. 6; but when the wheel K

is rotated by the rolling body, as previously mentioned, its shaft K^2 causes one of the arms N^5 to move against the pin N^4 , so as to impart a sliding motion to the bar N^3 , which, by its connection with the crank-arm N^2 , turns the valve N to close the slot I^4 to shut off the supply during the time the uppermost label is pulled out from under the plate I' . As soon as the arm N^5 has passed the pin N^4 the bar N^3 returns by the action of a spring N^6 , connected with the said bar, as shown in Fig. 8. The arm N^2 is then again turned so that the valve N moves in the inverse direction of the arrow d' , thus opening the slot I^4 to permit the paste from the box I^5 to pass through the slots I^4 and I^3 onto the top label. In order to prevent any paste from passing over the plate I' onto the top label, I interpose a piece of rubber or other material I^8 between part of the box I^5 and the said plate I' , as plainly shown in Fig. 6.

In order to hold the labels G in the proper position at the lower side of the frame A , I provide a number of gage-plates P , (see Figs. 2 and 11,) each pivoted at P' on an arm or bracket U of the frame A . The said bracket is held in position by means of a screw-bolt V and nuts X . A spring P^2 is connected with the said bolt V and the lower end of the plate P to hold the latter in proper position, so that the upper end of each plate slightly projects above the topmost label, and when the body rolls down over the label the plate can swing, being depressed by the weight of the body, and as soon as the latter has passed the plate and taken along the topmost label, then the plate P swings back to its normal position by the action of the spring P^2 . The lower edges of the several uppermost labels rest on the plates P , so that the said labels are always in proper alinement with the bodies rolling down. The brush J , previously described, is supported on its sides on bolts J' , held vertically adjustable in slotted arms J^2 , secured on the frame A , as plainly shown in the drawings.

The brush J is made adjustable, so that its bristles come in contact with the top surface of the body passing down the lower end B' of the guideway B to securely and firmly brush or press the label in place on the body. This extra inclination is given to the lower end B' of the guideway B , so that the downwardly-rolling body attains sufficient momentum to press against and pass under the tightly-pressing bristles of the brush J and to turn the third wheel K for actuating the paste-feeding device I and also the table H , supporting the labels G , as previously described.

In using the machine, the bodies to be labeled are passed on the upper end of the guideway B and are then left to roll down the guideway to first move in contact with the stop-wheel D , then to take up a streak of paste on the cylinder E , then roll onto the arms of the second wheel F , which arms are

caused to swing downward to actuate the stop-wheel D to permit a second body to travel on the guideway B between the stop-wheel and the second wheel F .

The body passing the second wheel F rolls down the guideway B to pass with its streak of paste in a lowermost position onto the upper end of the topmost label G , so that the said label will adhere at its upper end to the body, which on its further down rolling rolls up the label on its periphery, and when the body finally passes over the paste-box I^5 it pulls the lower end of the label from under the spring-pressed plate I' , so that this pasted end of the label on the further rolling of the body becomes attached to the periphery of the same, it being understood that then the two ends of the label are attached to the body by paste. The label is firmly and closely pressed onto the body by the action of the brush J , as previously described. Now, it will be seen that when the machine is in operation one body after another is fed at the upper end of the guideway B onto the stop-wheel D , which releases that body as soon as the previous body has actuated the second wheel F in the manner described. The apparatus can thus be continually used, that is, one body can be fed after another and the labels are attached automatically to the bodies, as above described.

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

1. A labeling-machine comprising a longitudinally-inclined guideway on which the bodies to be labeled are adapted to roll, a paste-supplying cylinder arranged in the said guideway and adapted to supply a streak of paste to the body rolling over the cylinder, a wheel extending into the said guideway and adapted to be turned by the rolling body, and a driving connection between the said wheel and the said cylinder to turn the latter each time a body rolls past the said wheel, substantially as described.

2. A labeling-machine comprising a longitudinally-inclined guideway on which the bodies to be labeled are adapted to roll, a paste-supplying cylinder arranged in the said guideway and adapted to supply a streak of paste to the body rolling over the cylinder, a paste-box for supplying paste to the said cylinder, a wheel extending into the said guideway and adapted to be turned by the rolling body, and a driving connection between the said wheel and the said cylinder to turn the latter each time a body rolls past the said wheel, substantially as described.

3. A labeling-machine comprising a longitudinally-inclined guideway on which the bodies to be labeled are adapted to roll, a paste-supplying cylinder arranged in the said guideway and adapted to supply a streak of paste to the body rolling over the cylinder, a paste-box having a perforated plate in contact with the said cylinder for supplying paste thereto, a paste-supply vessel located above

the said paste-box to supply the latter with paste and force the same out of the paste-box to the said cylinder, a wheel extending into the said guideway and adapted to be turned by the rolling body, and a driving connection between the said wheel and the said cylinder to turn the latter each time a body rolls past the said wheel, substantially as described.

4. A labeling-machine comprising a longitudinally-inclined guideway on which the bodies to be labeled are adapted to roll, a stop-wheel extending into the guideway in the upper portion thereof, and adapted to arrest the rolling bodies, a paste-supply cylinder arranged in the said guideway at a suitable distance below the stop-wheel and adapted to supply a streak of paste to the body rolling over the cylinder, another wheel likewise extending into the guideway at a suitable distance below the paste-supply cylinder, a mechanism connected with both wheels and adapted to lock and unlock the stop-wheel from the said wheel located at a suitable distance below, and a driving connection between one of the said wheels and the said cylinder to turn the latter each time a rolling body actuates the said wheel, substantially as described.

5. A labeling-machine provided with a paste-delivery device comprising a revoluble cylinder, a paste-box having a segmental perforated top engaging the said cylinder, a distributing-roller in contact with the said cylinder, and a paste-supply vessel connected with the said paste-box, and located a suitable distance above the said box to fill the latter and force the paste through the perforated top onto the said cylinder, substantially as shown and described.

6. A labeling-machine provided with a paste-delivery device comprising a revoluble cylinder, a paste-box having a segmental perforated top engaging the said cylinder, a distributing-roller in contact with the said cylinder, a paste-supply vessel connected with the said paste-box and located a suitable distance above the said box to fill the latter and force the paste through the perforated top onto the said cylinder, an agitator in the said paste-supply vessel, and a perforated segment in the said supply vessel under the said agitator, substantially as shown and described.

7. A labeling-machine provided with an inclined guideway and two wheels projecting into the same at different levels, a disk provided with stop-lugs arranged on the shaft of the upper wheel, a lever adapted to engage the lugs of the said disk, a link connected with the said lever, and an arm arranged on

the shaft of the lower wheel and pivotally connected with the said link, substantially as described.

8. A labeling-machine provided with an inclined guideway and two wheels projecting into the same at different levels, a disk provided with stop-lugs arranged on the shaft of the upper wheel, a lever adapted to engage the lugs of the said disk, a link connected with the said lever, an arm arranged on the shaft of the lower wheel and pivotally connected with the said link, and a weight held adjustably on the said link, substantially as described.

9. A labeling-machine, provided with a stationary slotted paste-box connected with a paste supply a valve adapted to close the slot of the paste-box and a plunger fitted to slide in the said paste-box and in the said valve to regulate the length of discharge of paste through the slot in the said box, substantially as shown and described.

10. In a labeling-machine, the combination with a label-table mounted to slide and supporting the labels, a spring-pressed plate engaging the lower end of the uppermost label and provided with a slot for the passage of paste onto the label, a paste-box having a slot registering with the said plate, a valve arranged in the said paste-box for controlling the supply of paste to the slot in the paste-box, and means, adapted to be operated by the bodies to be labeled, for oscillating the said valve to open or cut off the said paste-box slot, as set forth.

11. In a labeling-machine, the combination with a stop-wheel adapted to be turned by the body to be labeled, of a label-table mounted to slide, weighted ropes for supporting the said table, drums on which wind the said ropes, and an intermediate mechanism, substantially as described, for connecting the said stop-wheel with the said drums to intermittently revolve the same, substantially as shown and described.

12. In a labeling-machine, the combination with a stop-wheel, adapted to be actuated by the body to be labeled, of a paste-box for supplying paste to the label, and a valve in the said paste-box and adapted to control the paste passing from the box to the label, and an intermediate mechanism substantially as described, for actuating the said valve from the said stop-wheel, as set forth.

HERBERT RAWLINSON.

Witnesses:

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CHAS. DUISENBERG.