Sept. 1, 1925. 1,551,772

M. F. PHELPS

MEANS FOR FEEDING LABELS AND OTHER ARTICLES

Original Filed Oct. 10, 1921 4 Sheets-Sheet 1

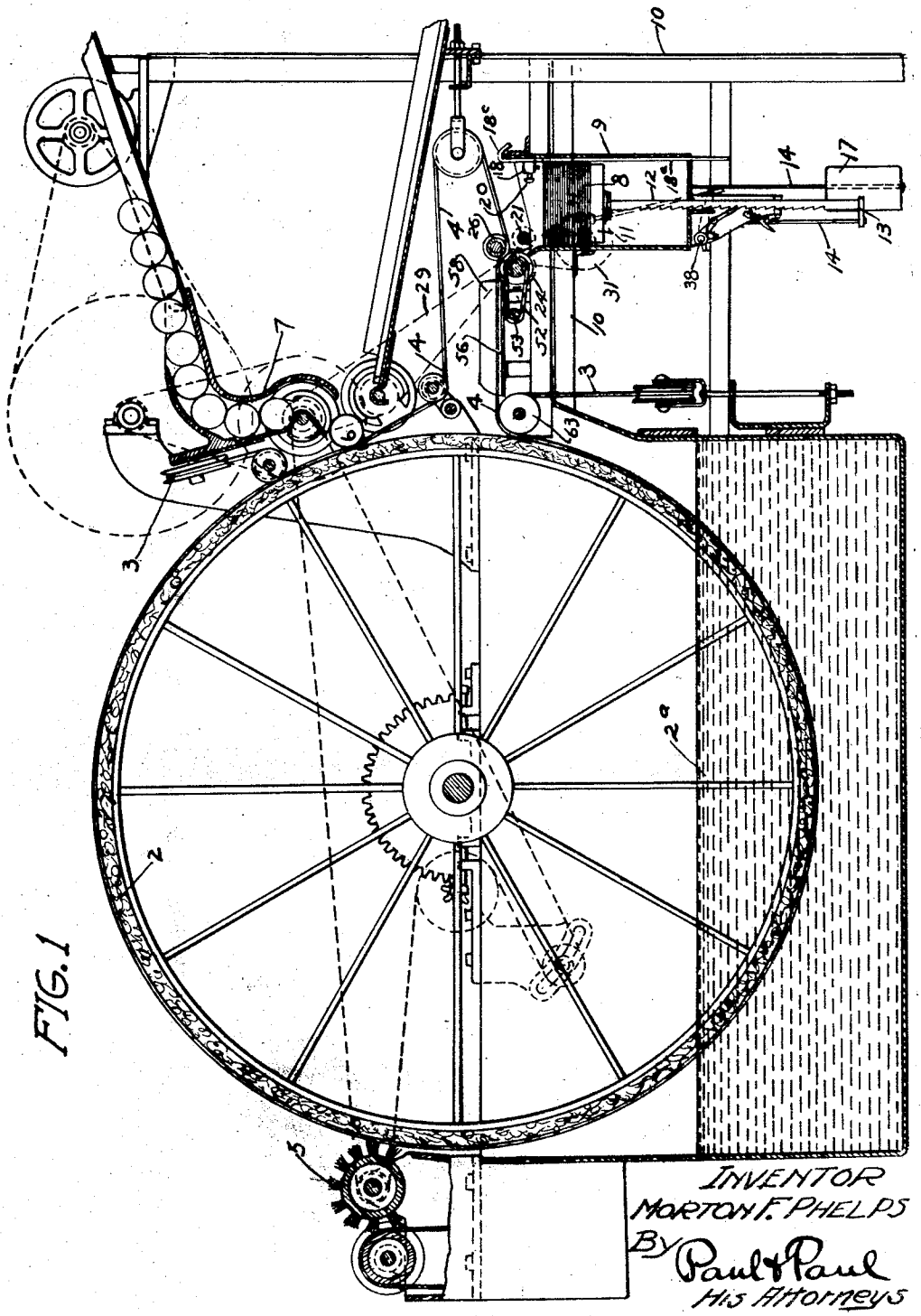


FIG. 1

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Original Filed Oct. 10, 1921 4 Sheets-Sheet 2

FIG. 2

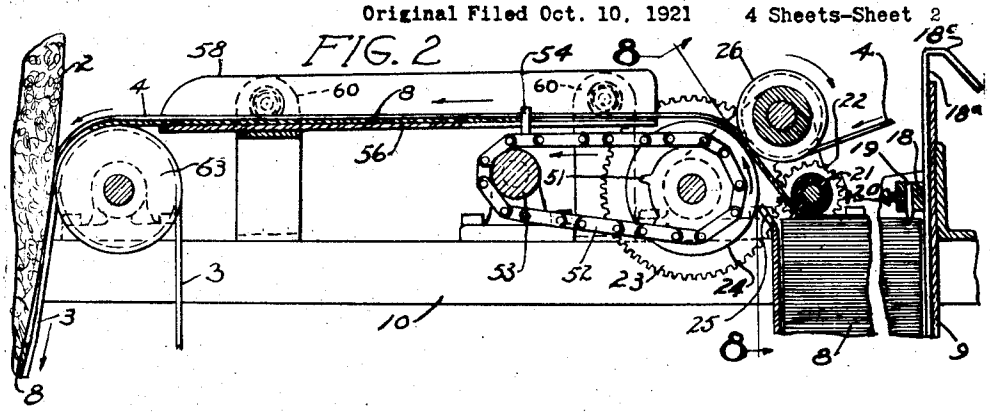
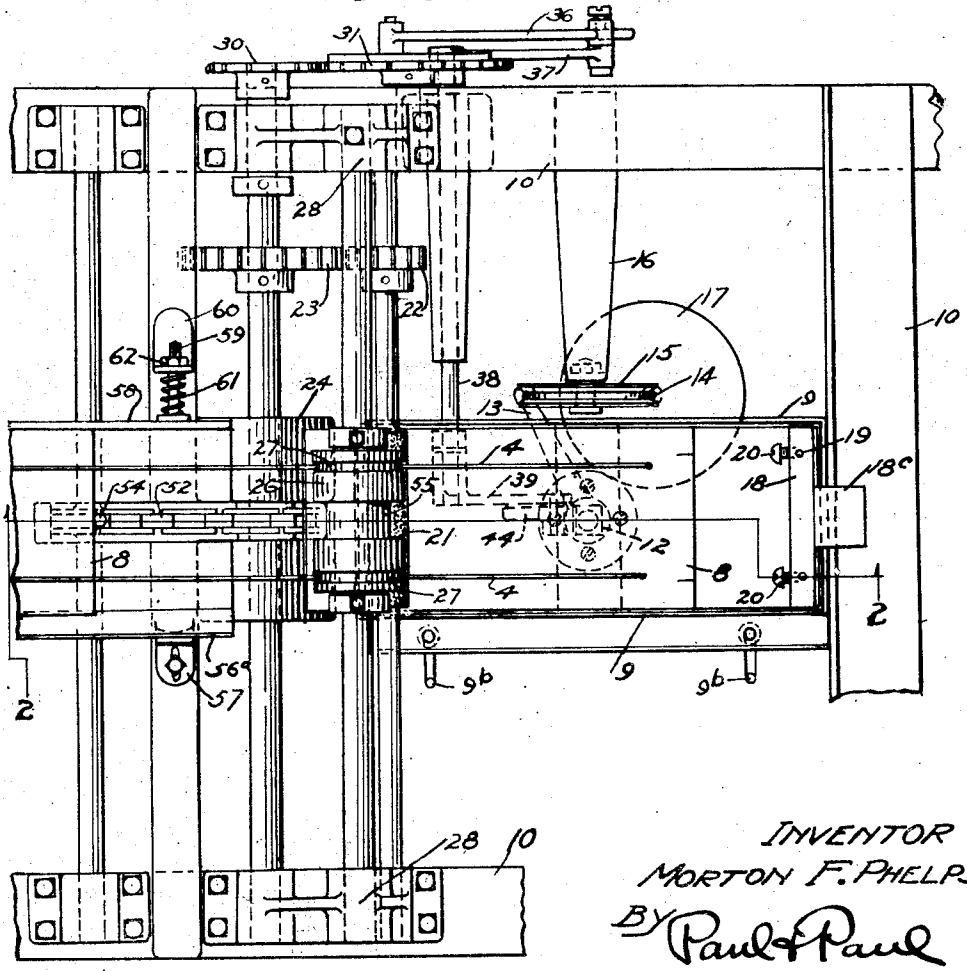


FIG. 3



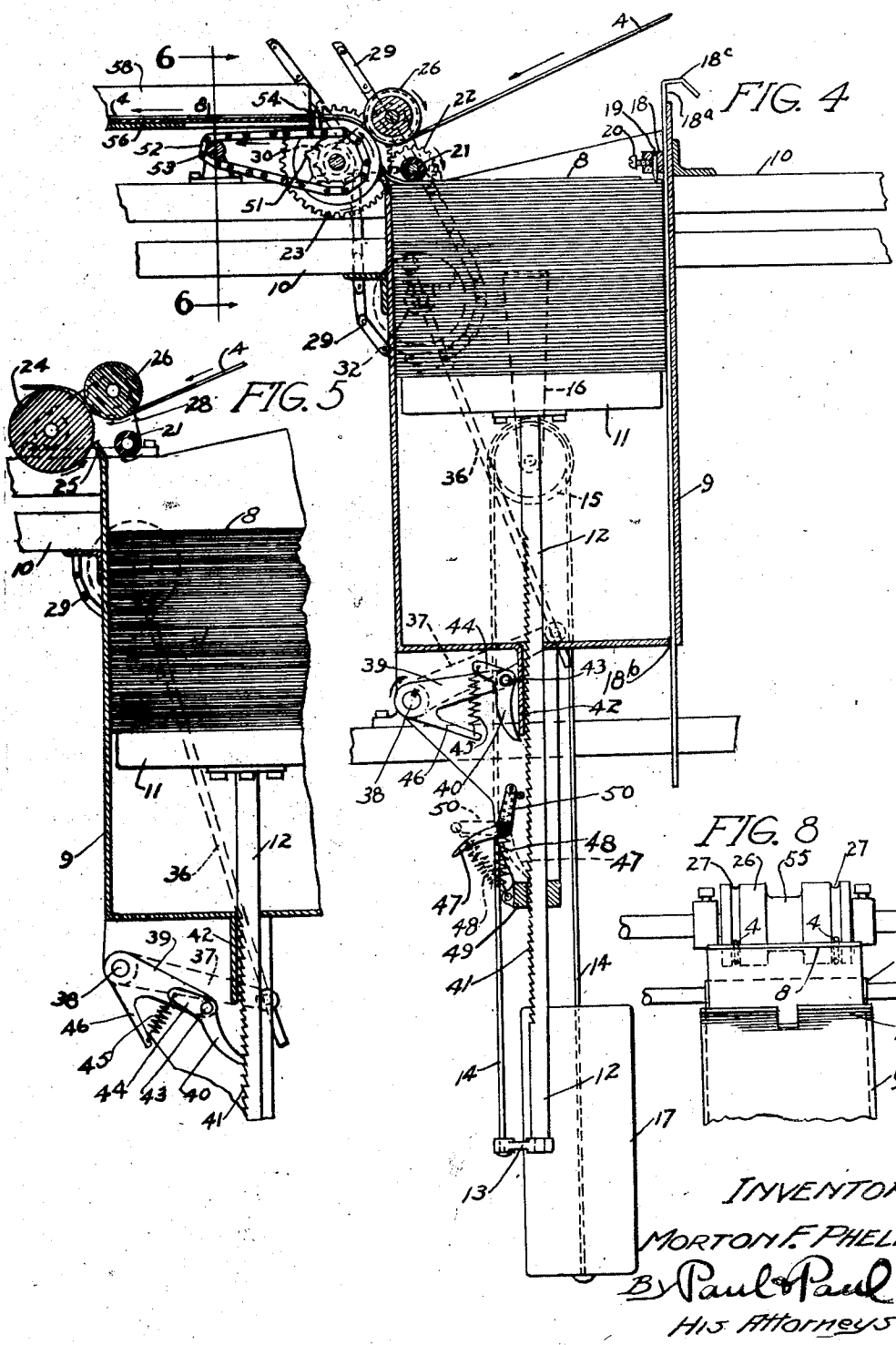
INVENTOR
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HIS ATTORNEYS.

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MEANS FOR FEEDING LABELS AND OTHER ARTICLES

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MEANS FOR FEEDING LABELS AND OTHER ARTICLES

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FIG. 6

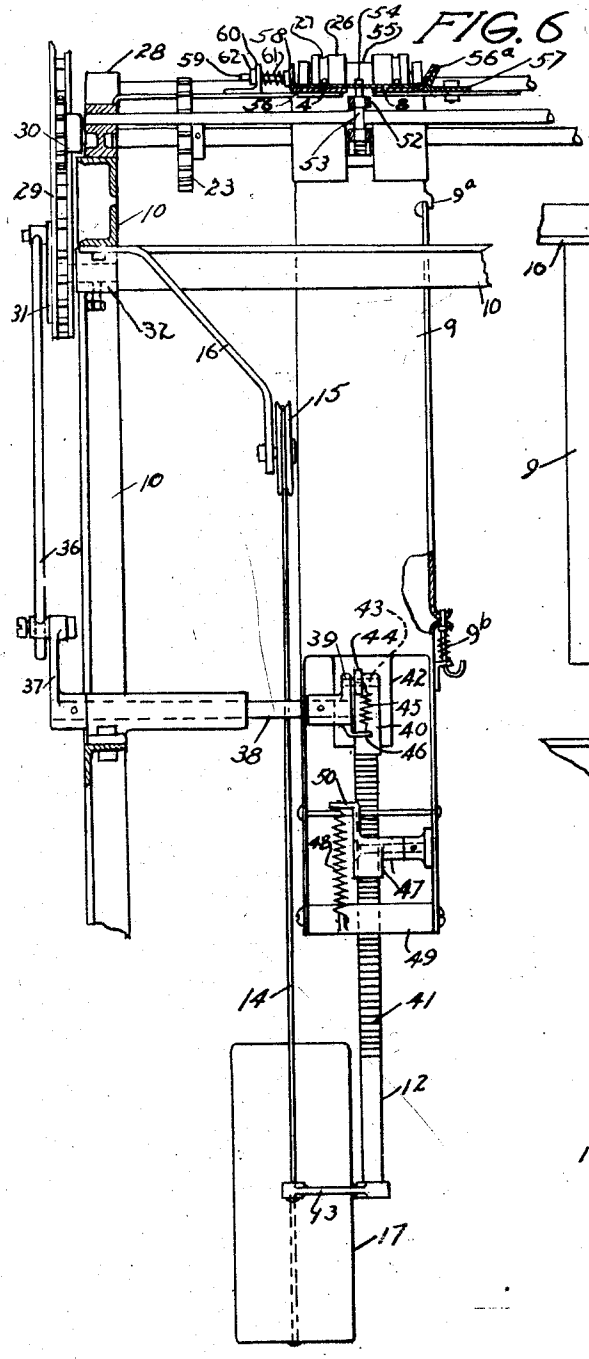
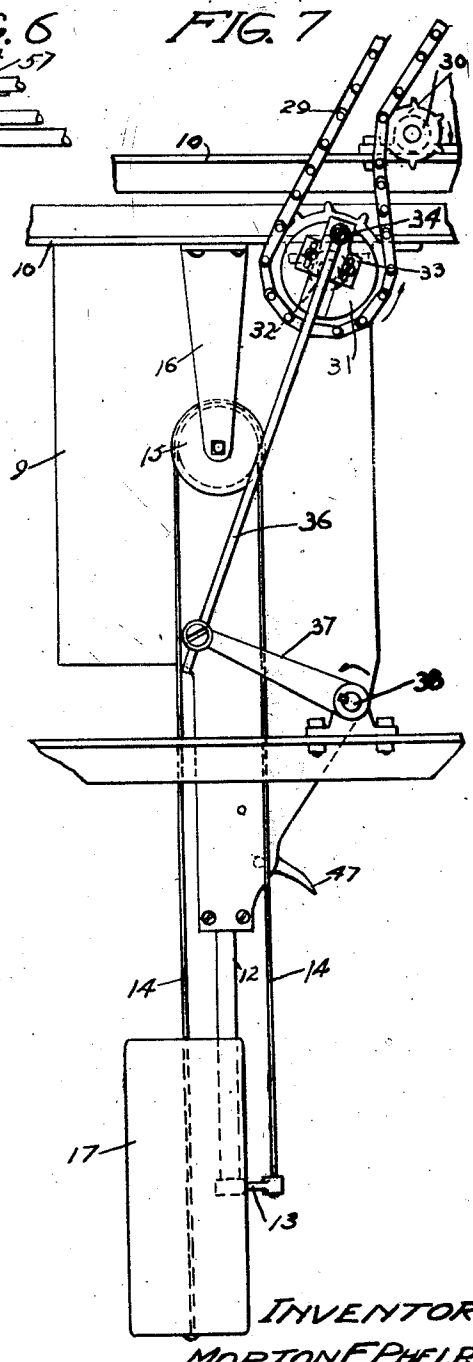


FIG. 7



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Patented Sept. 1, 1925. 1,551,772

UNITED STATES PATENT OFFICE.

MORTON F. PHELPS, OF LITTLE ROCK, ARKANSAS, ASSIGNOR TO PHELPS MANUFACTURING COMPANY, OF LITTLE ROCK, ARKANSAS, A PARTNERSHIP CONSISTING OF FRANK PHELPS AND MORTON F. PHELPS.

MEANS FOR FEEDING LABELS AND OTHER ARTICLES.

Application filed October 10, 1921, Serial No. 506,780. Renewed July 20, 1925.

To all whom it may concern:

Be it known that I, MORTON F. PHELPS, a citizen of the United States, resident of Little Rock, county of Pulaski, and State of Arkansas, have invented certain new and useful Improvements in Means for Feeding Labels and Other Articles, of which the following is a specification.

This invention relates particularly to improvements in means designed for feeding labels to can-labeling machines. It is, however, adapted and may be used for feeding slips or sheets of paper or similar material to other machines or devices.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a partial side elevation and vertical section of the main elements of a can-labeling machine showing my improved feeding device arranged in connection therewith,

Figure 2 is a vertical section on line 2—2 of Figure 3,

Figure 3 is a plan view of a portion of the feeding mechanism, some of the parts being omitted for greater clearness,

Figure 4 is a vertical section of the feeding mechanism,

Figure 5 is a partial section of a portion of the same mechanism with the parts arranged in different positions,

Figure 6 is a section on line 6—6 of Figure 4, looking in the direction of the arrow,

Figure 7 is a side elevation of the mechanism shown in Figure 6 looking in the direction of the arrow,

Figure 8 is an elevation of parts of the mechanism, looking in the direction of the arrows, on line 8—8 of Figure 2.

This label feeding mechanism has been designed by me particularly for use in connection with the can-labeling machine illustrated and described in my application for Letters Patent filed in the United States Patent Office September 25th, 1920, Serial No. 412,665. In Figure 1 of the drawings I have shown some of the principal features of my can-labeling machine, with my newly invented feeding mechanism in operative relation thereto.

As shown in Figure 1 of the drawings 2 represents the rotatable wheel or drum to which the labels are fed and upon which they are held by the cords or belts 3 and 4. The labels are first wet as by passing through a bath 2^a and paste is applied to the labels as by a suitable brush 5. The cans 6 are fed to the machine through a chute 7 and are brought in proper relation to have the moistened and pasted labels wrapped around them.

My present invention provides mechanism for rapidly feeding the labels from a bunch or stack to the label-carrying drum, the labels being brought between the cords or wires 3 and 4 passing inside of one set (3) and outside of the other set (4), as shown in Figures 1 and 2.

The labels, indicated at 8, are placed in a pile or stack in a holder 9 suitably supported upon a frame 10. They are arranged in the holder 9 upon a follower 11. This follower is carried by a rod 12, extending through the bottom of the holder, and provided with a lug 13 to which is connected a cord or wire 14, which passes over a wheel or pulley 15 carried by a bracket 16 depending from the frame of the machine, and preferably located at one side of said holder. A weight 17 is secured to the cord 14, and said weight tends to move the follower and the labels carried thereby upward in the holder, said upward movement being controlled by the ratchet mechanism hereinafter described.

Arranged against the inner wall of the holder above the labels is a bar or projection 18 having secured therein one or more sharp pointed pins 19. I have shown two of such pins in Figure 3 though a greater or less number might be used if preferred. These pins are held in position by set-screws 20. The bar 18 is carried by a strip 18^a that extends down inside of the wall of the holder, passing through a slot 18^b at the bottom thereof, as shown in Figure 4. This strip has an end 18^c extending outward over the upper edge of the holder as shown in Figure 4. When the follower 11, carrying the labels, is lowered the bar and the strip

18ª drop down by gravity until the projecting end 18ᶜ rests on top of the wall of the holder 9. (See Figure 1.) When the labels are lifted the top of the stack strikes the ends of the pin 19. The upward movement of the stack of labels lifts the bar 18 and at the same time causes the pins 19 to penetrate a few, preferably two or three, upper labels.

Arranged above the label holder, near its front edge and extending crosswise thereof, is a roller 21, preferably formed of rubber, and so located that when the labels are moved upward in the holder, as hereinafter described, the top label will be brought against the under surface of this rapidly rotating roller, as indicated in Figures 2 and 4. The result is that the top label will be drawn forward by the friction of the roller 21, and its rear edge will be torn away from the pins 18, while the second label and all those below the second will retain their original position in the stack and will not be disturbed by the feeding off of the top label.

The shaft of the roll 21 is provided with a pinion 22 which meshes with a gear 23 upon the shaft of a roller 24, located preferably with its axis slightly above the top of the roller 21 (see Figure 5). The roller 24 is preferably located close to the upper edge of the holder 9. This edge of the holder is preferably provided with an outwardly inclined lip 25 extending quite close to the surface of the roller 24. The rolls 21 and 24 are geared and rotate together. The pinion 22 being smaller than the gear 23 the roll 21 is turned faster than the roll 24.

Above the roll 21 and in contact with the roll 24 is a roll 26, having grooves 27 through which the cords or wires 4 of the labeling machine pass, so that said roll 26 is driven by the engagement of said cords or wires with said roll.

I prefer to provide suitable castings 28, supported on the frame of the machine, at each side thereof, which furnished bearings for the shafts of the roll 21, 24 and 26. (See Figures 3 and 6.)

The rolls 21 and 24 are driven by a sprocket chain 29 (Figures 1, 4 and 6), which engages a sprocket 30 upon the shaft of the roll 24 (Figures 4 and 7). The sprocket chain 29 is preferably driven from one of the shafts or rolls of the labeling machine, as indicated by dotted lines in Figure 1. This sprocket chain 29 also drives a sprocket wheel 31, mounted, as here shown, in a bearing 32 secured to the frame of the machine (see Figures 1, 4 and 5).

The sprocket wheel 31 is preferably provided upon its face with a slot in which is mounted an adjustable plate 33, carrying a crank pin 34, as shown in Figure 7, which may be secured at any desired point of adjustment on the face of the sprocket wheel 31. A connecting rod 36 has one end swiveled upon the crank pin 34 and its other end connected to a crank 37 secured upon a rock shaft 38. A crank 39 arranged in the plane of the follower rod 12 is carried by the other end of the shaft 38. This crank has pivoted to it a dog 40. The follower rod 12 is provided with a series of ratchet teeth 41 adapted to be engaged (Figure 5) by the end of the dog 40, when the cranks 37 and 39 are moved downward by the connecting rod 36 through rotation of the sprocket wheel 31. A guard plate 42 is arranged to cover that part of the ratchet 41 that is immediately below the bottom of the holder 9. This guard plate disengages the dog 40 from the ratchet teeth 41 when the cranks 37 and 39 are in their upper position. The dog 40 is preferably mounted upon the crank 39 by means of a pin 43. This dog is also provided with a heel 44, connected by a spring 45 to an arm 46, projecting at an angle from the crank 39. (See Figures 4 and 5.)

The sprocket wheel 31 makes a complete revolution as each of the labels is fed from the stack by the rotation of the rolls hereinbefore described. When the crank pin 34 passes the central point at the top of the sprocket wheel and begins to move downward the shaft 38 is rocked in the direction of the arrows in Figures 4 and 7 by the crank 37. This movement pulls the crank 39 downward and as soon as the end of the dog 40 clears the guard plate 42 it engages one of the teeth of the ratchet 41 on the follower rod 12. The further rotative movement of the sprocket 31 carries the crank pin 34 downward and thereby causes the follower 11 to travel downward in the holder 9, the stack of labels moving with said follower, and the bar 18 moving with said stack of labels until the outturned end 18ᶜ of the strip 18ª rests upon the upper edge of the wall of the follower 11. The follower 11 and the supporting stack of labels, travel downward in the holder 9 until the crank-pin 34 reaches and passes the lowest point in the revolution of the sprocket disc 31. After the crank-pin passes this point and begins to travel upward the follower rod and follower, with the stack of labels are carried by the follower, and moved upward by the weight 17 until the top of the stack strikes the pins 19 which are caused to penetrate two or more labels near the rear wall of the holder, and the top label is brought into contact with the rapidly rotating roll 21. The rotation of this roll tears the top label away from the pins 19 and brings the edge of this label into contact with the roll 24. This label will then be carried forward between the rolls 24 and 26 and moved toward the label-

ing machine, as indicated in Figures 1, 2 and 4.

Before the follower reaches the upper limit of the movement that it makes in bringing the labels into contact with the pins 19 on the bar 18, and with the roller 21, the dog 40, engaging the lower edge of the guard plate 42, is turned outward away from the ratchet 41 (see Figure 4), leaving said follower and follower rod free to move upward as far as they can travel under the influence of the weight 17. With this arrangement the top label will always be brought in contact with the pins 19, and the roll 21, no matter how many or how few, labels there may be in the stack resting on the follower 11.

I prefer to provide a locking dog 47, pivoted upon the frame of the holder 9 and provided with a spring 48 arranged to engage a stationary lug 49 carried by the holder frame, and an arm 50 on the dog 47. When it is desired to hold the follower against upward movement by the weight 17, as for instance when filling the holder with labels, the end of the dog 47 may be swung inward from the position shown by full lines in Figure 4 to the position shown by dotted lines in the same figure, and the follower can then be pushed down, or pulled down by drawing downward on the follower rod 12, until it reaches the bottom of the holder. One wall of the holder 9 is preferably made removable as indicated in Figure 6, the upper edge of the removable wall being held on position by a hook 9^a, and the lower edge being secured by a suitable spring latch 9^b. This removable wall forms a door through which the labels may be placed in the holder. The holder may be filled with labels through the door formed by the removable wall and the dog 47 may then be swung out in the direction indicated by full lines in Figure 4 and the follower will now be under control of the weight 17 and the action of the dog 40, as hereinbefore described.

Mounted preferably in a central position on the shaft of the roll 24 is a sprocket 51 upon which is mounted a sprocket chain 52 which passes around an idle roll 53 mounted in suitable bearings on the frame of the machine. This sprocket chain 53 is provided with a pin 54, and said chain travels in the direction of the arrow shown in Figure 4.

The roll 26 is preferably provided with a centrally arranged groove 55 (Figure 8) arranged to permit the pin 54 to travel by said roll.

Each label is moved forward as far as it can be by the engagement of the roll 24 with the lower surface of said label. Each label is brought by the roll 24 into a guiding tray 56, supported upon the frame of the machine end extending substantially from the roll 24 to a roll 63 in proximity to the cylinder of the labeling machine and over which roll 63 the cords or wires 3 and 4 both pass (Figures 1 and 2) in the manner fully described in my former application hereinbefore referred to. The sides of this tray are preferably laterally adjustable for the purpose of securing accurate lateral alignment of the labels with the cans when the labels reach the labeling point of the machine. One side plate 56^a is preferably slightly inclined as shown in Figure 6 and adjustable by means of slotted fastening lugs 57. This plate is permanently adjusted so that one edge of each label slightly rides the incline, tending to force the other edge of the label against the opposite guide plate 58, which positions the label laterally. The guide plate 58 is accurately adjustable by means of threaded rods 59 fastened to the plate and passing through brackets 60. A coil compression spring 61 is placed between the plate 58 and the brackets 60 by means of adjusting nuts 62 upon the rods 59. The lateral position of the guide plate 58 may be adjusted to keep the labels in exact alignment with the cans while the machine is running.

It is desirable to synchronize the movement of the labels as they are being fed into the machine with the other operations of the labeling machine, so that said label will be in proper position, on the face of the drum 2, to properly engage the surface of the can to which the label is to be applied. It is desirable, therefore, to time the movement of each label as it passes from the roll 24, and I accomplish this timing action by means of the sprocket chain 52, and its pin 54 hereinbefore described.

It will be seen that as a label passes beyond the roll 24 it will be picked up by the moving pin 54, which will engage the rear edge of the label, and the label will be carried forward by said pins, until it is gripped between the cords or wires 3 and 4, and held thereby against the face of the drum, which position it will maintain during the wetting and pasting operation, and until the front edge of the label is brought into contact with the can to which the label is to be applied. By this means the spacing of the labels on the face of the drum is absolutely uniform. The labels are each moved one at a time by the pin 54 on the chain 52, from the feed rolls to the point where they are gripped by the cords or wires 3 and 4. The operation of this part of the machine can, therefore, be synchronized with the feeding of the cans so as to have the action properly timed to produce the accurate application of the labels to the cans.

It will be understood that while I have, as hereinbefore stated, designed this label feeding mechanism particularly for use in

feeding labels to the can-labeling machine shown and described in my said prior application, the label feeding mechanism is of general application and may be employed wherever it is desired to feed slips or sheets of paper to machines of any kind, and for any purpose.

I do not limit myself, therefore, to the details of the construction herein shown and described nor to the use of the mechanism with a can-labeling machine, or any other specific machine.

I claim as my invention:

1. In a machine of the class described, the combination with a sheet holder and a follower arranged therein adapted to support a pile or stack of sheets, of means for alternately raising and lowering said follower and the sheets supported thereon, a bar arranged near the rear wall of said holder and provided with engaging pins arranged to pierce a plurality of sheets at the top of the stack, when said stack is elevated, and feeding means engaging the top sheet of the stack, drawing it away from said pins, and feeding it from said holder.

2. In a machine of the class described, the combination, with a sheet holder and a follower arranged therein adapted to support a pile or stack of sheets, of means for alternately raising and lowering said follower and the sheets supported thereon, gravity actuated perforating means engaging the rear portion of the top sheet of the stack, and feeding means engaging the top sheet of the stack and drawing it free from said perforating means and feeding it from the stack without disturbing the other sheets of the stack.

In witness whereof, I have hereunto set my hand this 8th day of July, 1921.

MORTON F. PHELPS.