June 18, 1946. H. O. BATES 2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Filed June 12, 1943 5 Sheets-Sheet 1

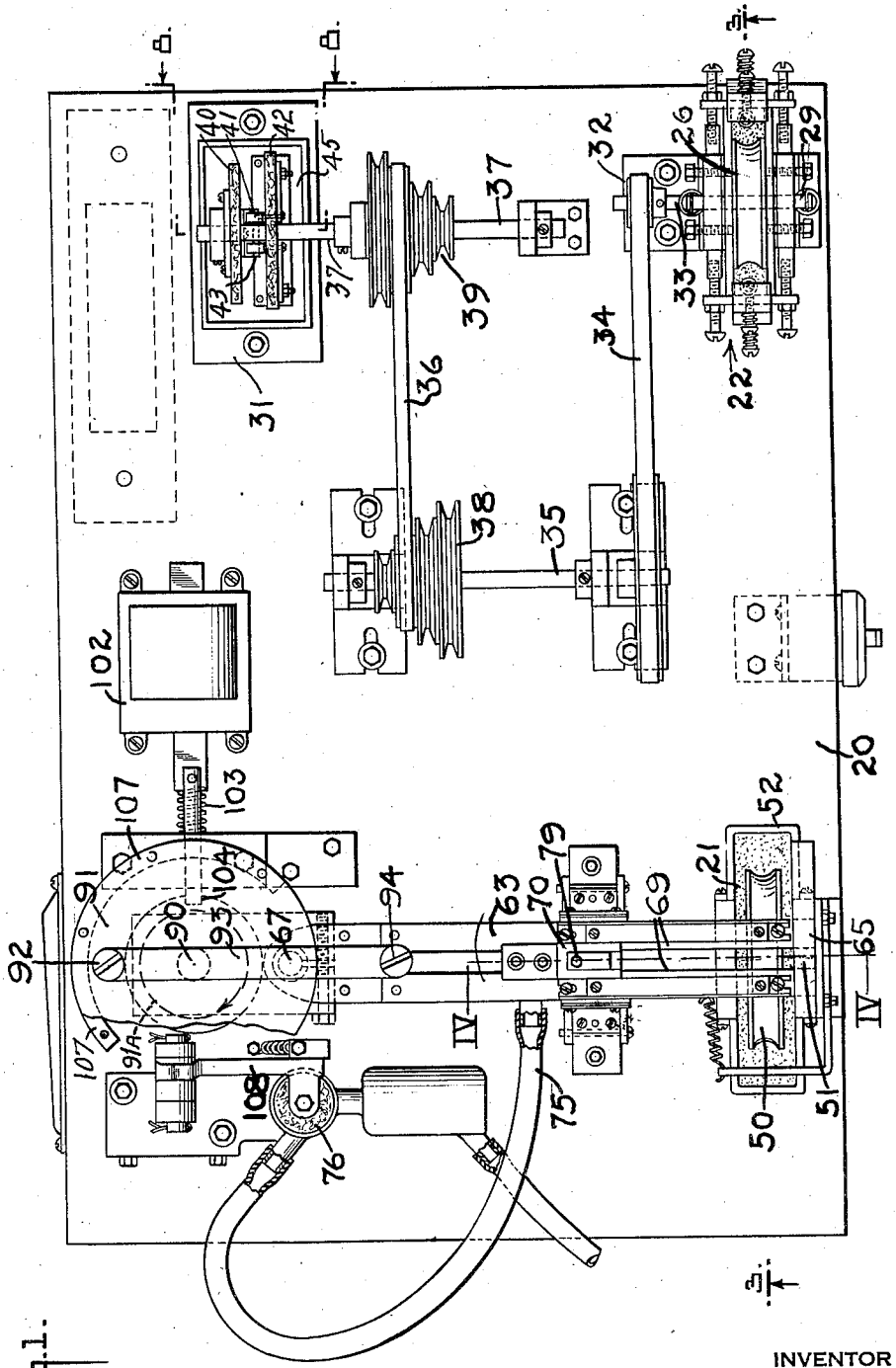


Fig. 1.

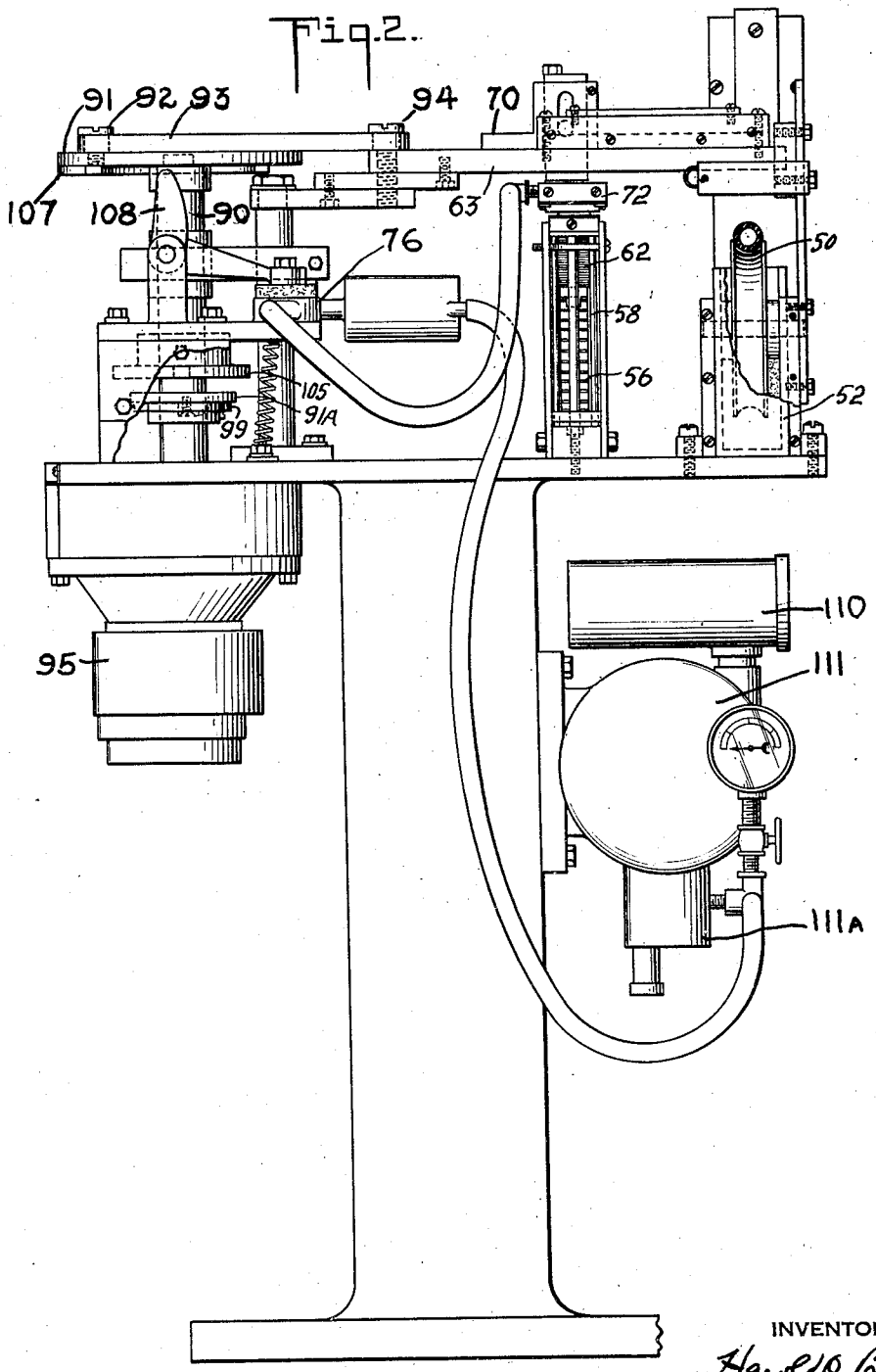
INVENTOR
Harold O. Bates
BY
Lewis B. Rice
ATTORNEY

June 18, 1946. H. O. BATES 2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Filed June 12, 1943 5 Sheets-Sheet 2

Fig. 2.



INVENTOR
Harold O. Bates
BY Willis B. Rice
ATTORNEY

June 18, 1946. H. O. BATES 2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Filed June 12, 1943 5 Sheets-Sheet 3

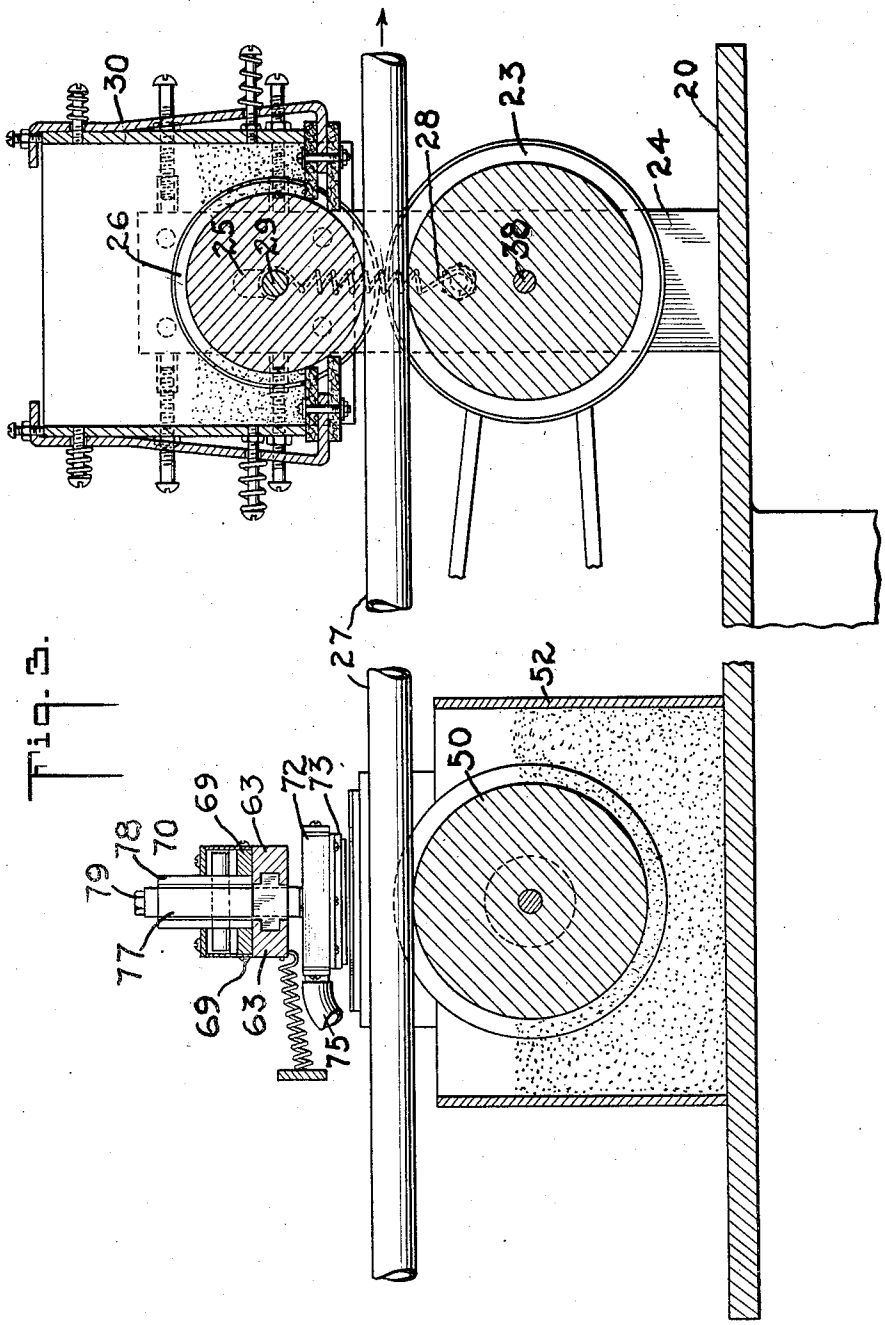


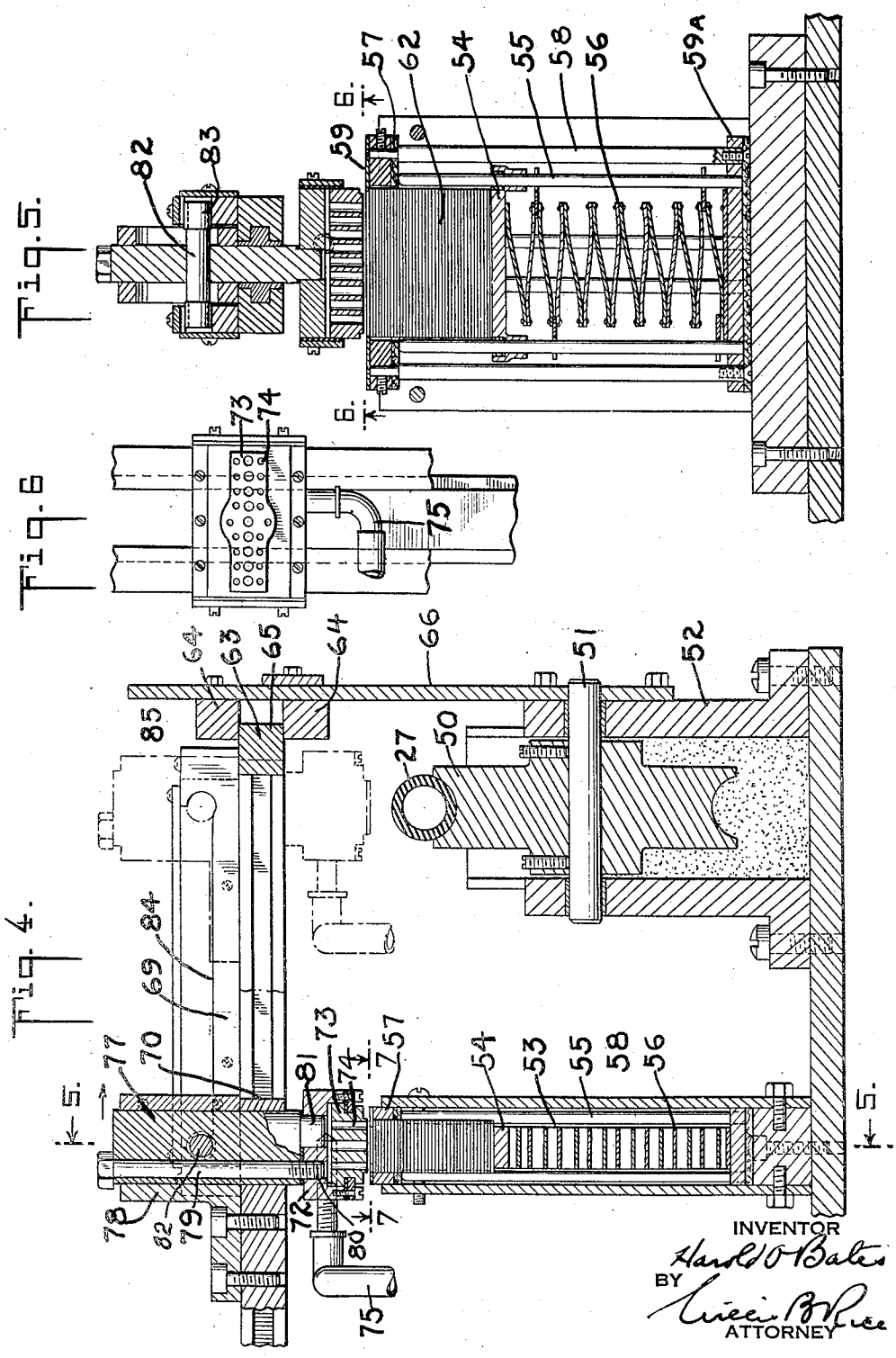
Fig. 3.

INVENTOR
Harold O. Bates
BY
Lucius B. Rice
ATTORNEY

June 18, 1946. H. O. BATES 2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Filed June 12, 1943 5 Sheets-Sheet 4



June 18, 1946. H. O. BATES 2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Filed June 12, 1943 5 Sheets-Sheet 5

Fig. 9.

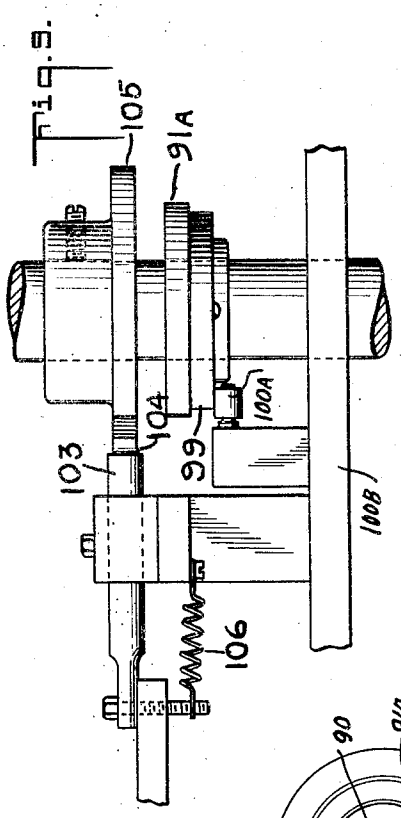
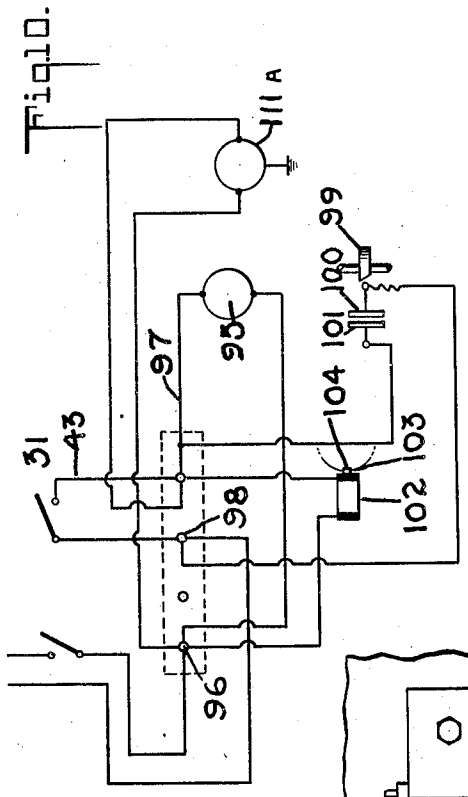


Fig. 10.



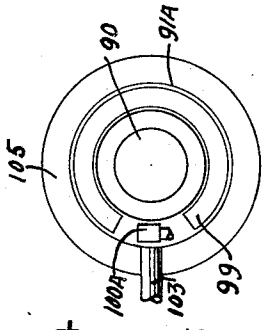


Fig. 11.

Fig. 8.

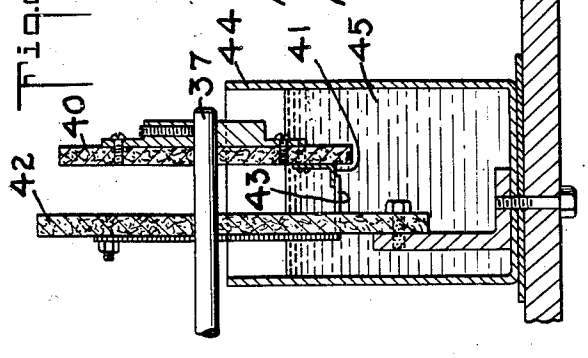
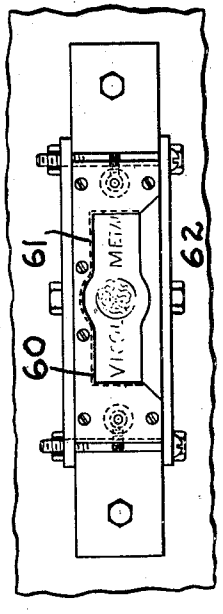


Fig. 7.



INVENTOR
Harold O. Bates
BY Lucius B. Rice
ATTORNEY

Patented June 18, 1946 2,402,357

UNITED STATES PATENT OFFICE

2,402,357

MACHINE FOR APPLYING LABELS TO RUBBER HOSE OR CABLE OR THE LIKE

Harold O. Bates, Cranford, N. J.

Application June 12, 1943, Serial No. 490,620

9 Claims. (Cl. 216—55)

1

This invention relates to a machine for applying labels to rubber hose or cable or the like.

It is an object of this invention to provide an apparatus which will automatically apply a label to the hose, at spaced intervals, as it is fed through the machine.

It is a further object to provide apparatus of the character described which operates simply and efficiently at the speed of movement of the hose, regardless of what the speed of the latter may be.

The invention accordingly comprises a device possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawings, in which:

Fig. 1 is a top plan view of an apparatus embodying this invention.

Fig. 2 is an end elevation looking at the apparatus from the left-hand end as seen in Fig. 1.

Fig. 3 is a section along the line 3—3 of Fig. 1, the section being broken in the middle to permit illustration, to a larger scale; the apparatus behind the section being omitted for the sake of clarity.

Fig. 4 is a fragmentary section of the apparatus along the line 4—4 of Fig. 1, the portion of the apparatus behind this section being omitted for clarity.

Fig. 5 is an enlarged detailed section of the label magazine and label handling head.

Fig. 6 is a detail of the head.

Fig. 7 is a top plan view of the magazine holder.

Fig. 8 is a section on the line 8—8 of Fig. 1 showing the contact making device.

Fig. 9 is a fragmentary side elevation of a detail of the labeling device operating mechanism.

Fig. 10 is a wiring diagram showing the electrical connections.

Fig. 11 is a section on the line XI—XI of Fig. 9 looking upwardly.

The numeral 20 comprises a base having at 21 a label applying mechanism and at 22 a guide and feed mechanism that is operated by movement of the hose through the device and which in turn causes the periodic operation of the label applying mechanism. The guide and feed mechanism (Fig. 3) comprises primarily a grooved roller 23 pivoted in upstanding brackets 24 upon the base 20. Mounted in slots 25 in the brackets 24 is a second grooved roller 26, the grooves in the rollers 23 and 26 being of a diameter to conform to the diameter of the hose 27 which is to be labeled. Springs 28 urge the shaft 29 of the

2

roller 26 downwardly so as to grip the hose between the rollers 23 and 26. Mounted about the roller 26 is a box 30 adapted to contain a soapstone or the like to give to the roller 26 a surface character which will not adhere to the hose 27.

The guide and feed mechanism just described is arranged to operate the contact device 31 at regular intervals which in turn operates the label applying mechanism. To accomplish this first result, a pulley 32 is mounted on the end of the shaft 33 of the grooved roller 23 which by means of a belt 34 drives a counter shaft 35 which by means of a belt 36 drives a shaft 37 upon which the operating part of the contact device 31 is mounted. In order to permit a variation in the spacing upon the hose between the labels, I prefer to provide at each end of the belt 36 a set of cone pulleys 38 and 39 in any pair of which the belt 36 may be placed.

The contact making device 31 itself is illustrated more fully in Fig. 8, in which it will be seen there is provided upon shaft 37 a disc 40 of insulating material carrying a contact 41, and mounted upon an insulated support 42 is a pair of terminals 43 spaced apart from each other concentrically about the shaft 37 in such position that the contact 41 may bridge between them once in each revolution. In order to prevent arcing when the contact is broken between the terminals 43 and the contact 41, there is provided around the contacts a casing 44 containing a body of oil 45 in which the terminals 43 are continuously immersed so that the contact is always broken under oil. The shape of the contact members 41 and 43 is not important so long as they are so arranged that the member 41 will swing past the members 43 and bridge across between them once during each revolution.

The label applying mechanism (see Figs. 3 and 4) includes a roller 50 journaled on a shaft 51, the roller 50 being substantially in alignment with the roller 23 previously described. This roller 50 is also grooved to the diameter of the hose 27 and itself turns in a box 52 likewise containing powdered soapstone to prevent the hose from sticking to the wheel. Mounted beside the box 52 is a label magazine 53 arranged in a vertical position, containing a follower 54 (see Fig. 5) sliding upon guide rods 55 and urged upwardly by a spring 56.

At the top end of the magazine there is provided a head 57 supported by bolts 58 from a base 59a in which the guide rods 55 are also fastened. Above the head 57, there is supported a plate 59 which is attached to the head.

The opening 60 in the magazine 53 and in the head 57 is of the size and shape of the labels to be supplied, but the opening in the plate 59 is slightly smaller on the side away from the roller

50 and on both ends so as slightly to overlap the opening in the magazine itself, as shown at 61, so that as the labels 62 are pressed upwardly by the spring 56, they are held by the plate 59 from being ejected. We have stated that the overlap occurs on three sides; on the fourth side, that is the side toward the roller 50, the plate 59 is cut away entirely so that the topmost label may be slid out from under the plate 59 laterally, or up and out from under the plate.

Mounted above the roller 50 and the label magazine 53 are a pair of bars 63 having their front ends at 65 sliding between the blocks 64 mounted upon an upright 66 carried from the base 20, as for example, by being mounted on the box 52.

The other end of the bars 63 are pivoted by a vertical pivot 67 mounted on a post 68 supported from the base 20 (see Figs. 1 and 2).

These bars carry horizontal tracks 69 on which is slidable a cross head 70 carrying the label transferring device.

This label transferring device comprises primarily a hollow head 72 carrying on its lower face a flat, curved or concaved suction plate 73 (see Figs. 4, 5 and 6) of substantially the size and shape of the label to be affixed and having a plurality of holes 74 leading from the interior of the head to the lower face. A conduit 75 connects the interior of the head 74 with a valve 76 (see Fig. 1). The head 72 is carried by a vertically sliding member 77, slidable in vertical guide 78, mounted upon the crosshead 70. The hollow head 72 is attached to the member 77 by a screw 79, screwing into the head 72 at 80 and by a pin 81 extending downwardly from the member 77 into a recess in the head 72.

From Fig. 2 it will be clear that the crosshead 70 is slidable along the guides 69 from a position in registry with the label magazine to a position, as shown in dotted lines in Fig. 4 immediately above the hose 27, and back again.

The vertical position of the member 77 is determined by pins 82 carrying at their ends rollers 83 which run on a track surface 84 on the track 69. This track surface 84 is preferably provided at each end with a depressed portion 85 to cause the head to drop at each end of its stroke and to rise slightly before commencing movement in the guideway.

To effect the reciprocation of the crosshead, there is mounted upon the base a vertical shaft 90 carrying at its upper end a circular plate 91, upon which is eccentrically mounted a pin 92 serving as a pivot for a connecting rod 93, which is in turn connected by a pin 94 with the crosshead 70, so that the reciprocation of the crosshead occurs once for each revolution of the shaft 90.

The shaft 90 is driven by a motor 95 one terminal of which, as will be seen from Fig. 10, is connected at 96 with one side of the power mains, and the other terminal at 97 with one of the terminals 43 of the contact device 31, the other terminal 43 of which is connected to the other power main at 98. Disc 91*a* upon the shaft 90 carries a circumferential cam 99 in position to engage an arm 100*a* of a contact making device 100*b* to make contact between the contacts 100 and 101. This cam 99 is a circumferential strip extending almost around the periphery of the disc 91*a*, so that the contact maker 100*b* will be operated just after the parts begin to move upon the closing of the contact 31, and will keep the contact closed until one revolution has been almost completed

and the core 103 is almost ready to enter into notch 104. Connected across the terminals 96 and 97, and thus in multiple with the motor 95 is a solenoid 102, the movable core 103 of which is in position to enter a notch 104 of a disc 105 on the same shaft 90 with the plate 91, and this core 103 is urged outwardly into the notch 104 by a spring 106. Thus the movable core serves to lock the shaft 90 against rotation.

The member 99 is so positioned relative to the notch 104 that the members 100 and 101 are out of contact at the time the core 103 rests in its notch, which is at the completion of the return stroke of the label applying head, that is while the head is in registry with the magazine. Mounted also upon the underside of plate 91 on shaft 90 is a cam 107 operating an arm 108 which moves a plunger 109, forming the valve 76 which, when open, affords communication between the conduit 75 and a reduced pressure chamber 110, in which the vacuum is automatically maintained by a suitable exhaust pump 111 driven by a motor 111A which, subject to its automatic control, operates continuously while the device is in use.

The construction of member 99 is such that the contact is closed shortly after the motor 95 starts to operate through the contact maker 31, and the contact continues to be closed until a short time before the revolution is completed and the core 103 is ready to enter into the notch 104, the completion of this movement being accomplished by the momentum of the parts. The actual construction of the operating mechanism of the valve 109 is best shown in Fig. 2, in which the cam 107 which operates arm 108 is mounted on the underface of the plate 91, the valve being normally biased to closed position, but being held open while the cam 107 holds the arm 108 against the action of its spring. The cam 107 is of such size and is so positioned that the valve 71 is opened to apply suction immediately after the commencement of the movement of the shaft 91, and to continue to apply that suction until the label has been taken from the label magazine and carried over to the position shown in dotted lines in Fig. 4, where it is immediately above the hose.

It will be understood that the hose is ordinarily fed to the machine immediately after fabrication while its surface is still sticky enough to adhere to the label. Otherwise, means will be required to supply an adhesive.

The operation of the machine will be obvious from the foregoing description. The hose or cable 27 is intended to be drawn through the machine either by an external mechanism which fabricates it, or by any other external means, and thus the hose or cable serves as the driving force for the machine operation. This is accomplished by the roller 24 itself driven by the cable, which in turn drives the contact maker 31 through the adjustable reduction gearing, thus closing the contact 31 once for every length of hose which passes through the machine, the exact length being determined by the adjustment of the reduction gearing. When the contact has been made, the label applying mechanism starts in operation by the motor starting rotation of the shaft 90. Thereafter the label is picked up and applied to the hose, whereupon the machine comes to rest, until the contact 31 is again closed by the movement of the hose.

This movement of the hose driving the wheel 23 operates the contact maker 31 after a predetermined length of hose has passed through the

machine. When the contact maker 31 operates, it connects the circuit to the solenoid, withdrawing the plunger 103 from the notch 104, permitting the shaft 90 to rotate. At the same time the contact maker starts the motor 95 in operation to drive this shaft. The contact maker 31 breaks contact thereafter, but before this occurs the circuit is closed through the parts 100 and 101 so that the motor continues to operate under power for almost a complete revolution, whereupon the contacts 100 and 101 separate to open the circuit, permitting the momentum of the motor to continue the revolution as I have previously described.

During the early part of this revolution on the shaft 90, the valve 76 admits suction to the hollow head 72 to grasp the topmost label, and immediately thereafter the connecting rod 93 moves the head, carrying the label to the label applying position as previously described. At this point, the suction is cut off and the label drops on to the hose, the surface of which is prepared to receive and adhere to it. The connecting rod 93 immediately returns the hollow head to the position above the label mechanism and the power is cut off from the motor 95, and the label affixing mechanism becomes idle until the next operation of the contact maker 31. During this operation it will be noted that the label may be brought into contact with the hose before it is actually released by the suction, if desired, without disturbing the place of the label upon the hose by reason of the pivoted action of the guides 63 about the pin 67.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. A device for marking hose or the like which comprises a roller engageable by the hose, a label magazine, a head including a suction plate, means for moving said head from registry with the magazine to registry with the roller, to transfer a label from the magazine to the hose, and means operable by the movement of hose through said device for intermittently operating the head moving means, and means to press the label against the hose.

2. A device of the character described comprising a pair of rollers adapted to receive a hose between them, a reduction gearing connected to be driven thereby, a contact maker driven by said reduction gearing, a shaft driven by a motor, a latch constructed and arranged to lock said shaft at the close of each operation, and a magnet to withdraw said latch from locking position, a connection between said contact maker and said motor and said magnet to actuate said magnet and said motor, and means operated by the motor to connect the motor immediately after it is started by said contact maker, and to disconnect it just before said shaft has completed one label applying operation.

3. A device of the character described comprising a label magazine, a movable suction head for transferring labels from said magazine and applying the same to a hose, a motor driven shaft, a valve operated by said shaft for controlling the suction on said suction head, a contact maker

mechanism for connecting said motor, means operated by the movement of hose through said device to operate said contact maker at the beginning of each label applying operation, and means operated by the motor for connecting said motor for operation after the beginning of each label applying operation, and for disconnecting it at the close of each such operation.

4. A device of the character described comprising a label magazine, a movable suction head for transferring labels from said magazine and applying the same to a hose, a motor driven shaft, a valve operated by said shaft for controlling the suction on said suction head, a latch for retaining such shaft at the close of each labeling operation, a contact mechanism for connecting said motor, and releasing said shaft.

5. A device for applying labels to a hose during motion of the hose, comprising a magazine of labels, a head for transferring labels from the magazine and applying them to the hose, means for supporting said head in its movement from said magazine to a label applying position, constructed and arranged to permit movement of the head in the direction of movement of the hose during the application of label to the hose, and means for periodically operating said head.

6. A device, according to claim 5, in which the head has a suction head mounted for vertical movement thereon and the head supporting means is constructed and arranged to cause a downward movement of said suction head at the label applying position to cause a label carried by the suction head to be applied to the hose.

7. A device for applying labels to a hose during motion of the hose, comprising a magazine of labels, a head for transferring labels from the magazine and applying them to the hose, a track upon which said head slides for supporting said head in its movement from said magazine to label applying position, said track being pivoted about a pivot to make its end movable in the direction of movement of the hose, at the label applying position, and resilient means for restoring it to its original position after such movement about its pivot.

8. A device, according to claim 7, in which the head has a suction head mounted for vertical movement thereon and said track is provided with the depression at the magazine position and at the label applying position to cause said head to drop into contact with the top label on the magazine and to apply the label to the hose.

9. A device for marking hose or the like comprising a roller engageable by the hose, a label magazine, a head including a suction plate, means for moving the head from registry with the magazine to registry with the roller, for transferring a label from the magazine to the hose, a pair of control rollers engageable by the hose after it has passed through the first mentioned roller, a motor for operating said head moving means, a latch for locking said head moving means against operation including a releasing mechanism, a switch connected to be operated by the control roller after a predetermined number of revolutions thereof for connecting said motor for operation and for operating said latch releasing mechanism, and means operated by said head moving mechanism for disconnecting said motor at the close of each operation of said head moving means.

HAROLD O. BATES.