Oct. 7, 1952 C. OUELLETTE 2,613,008

LABELING APPARATUS

Filed Oct. 31, 1950 4 Sheets-Sheet 1

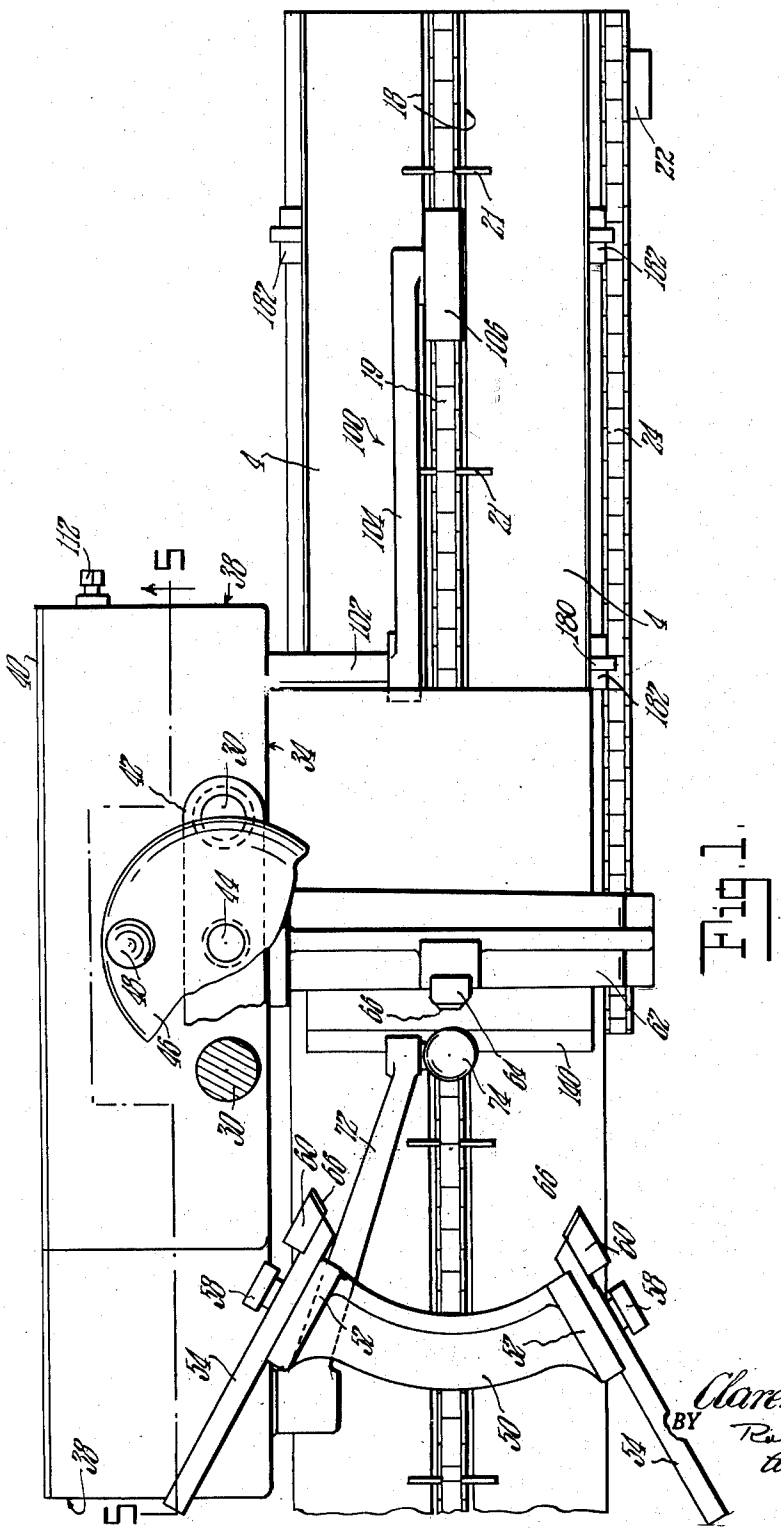


Fig. 1

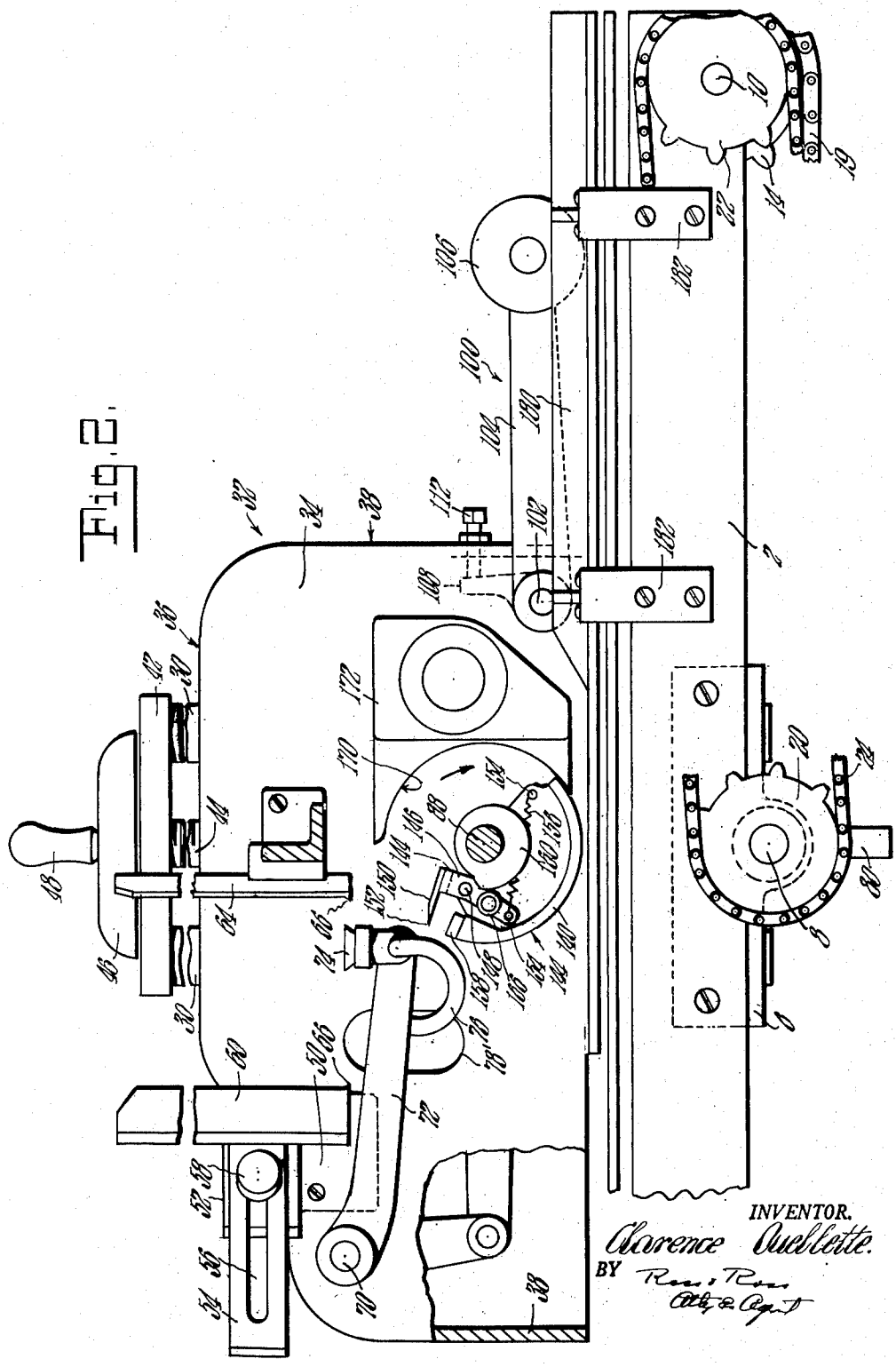
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Fig. 2.



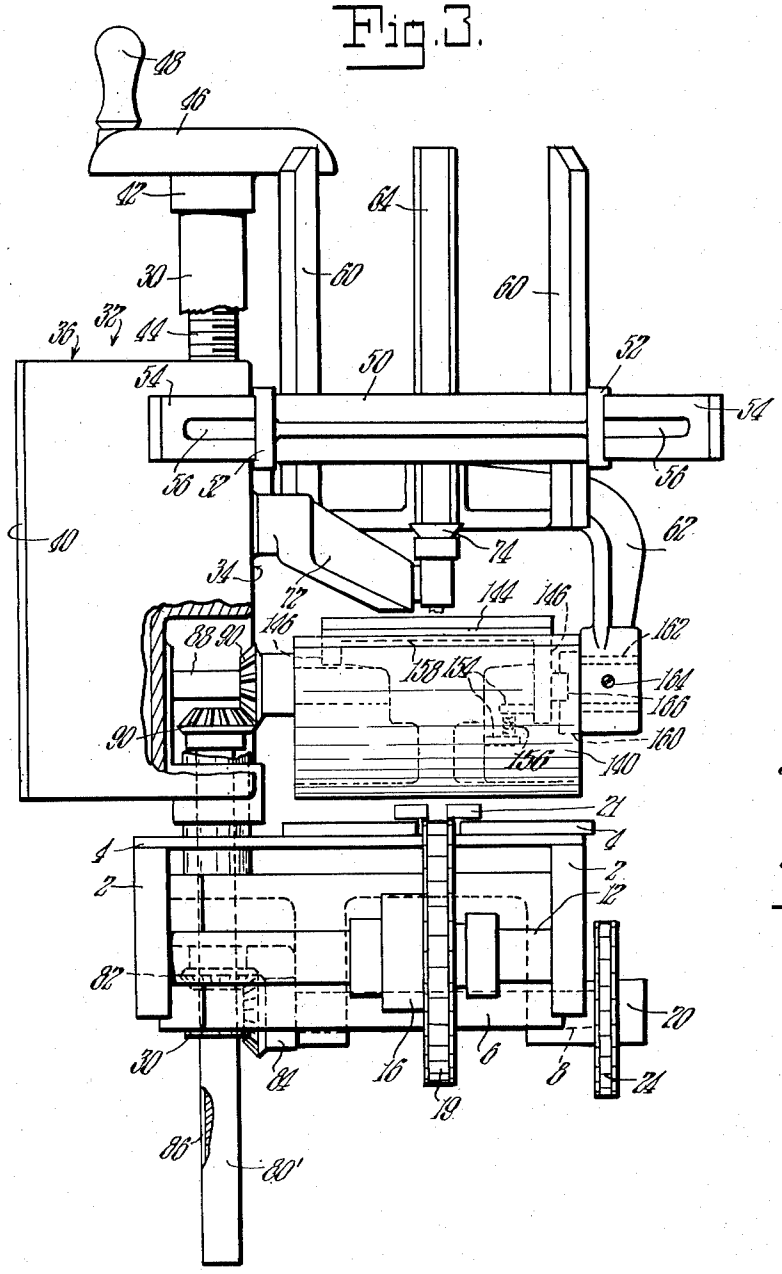
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Fig. 3.



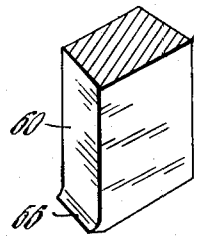


Fig. 4.

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Fig. 7.

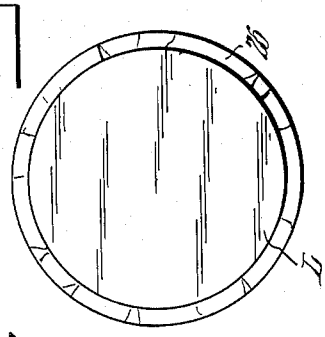


Fig. 8.

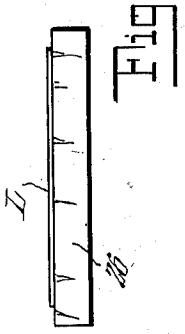


Fig. 5.

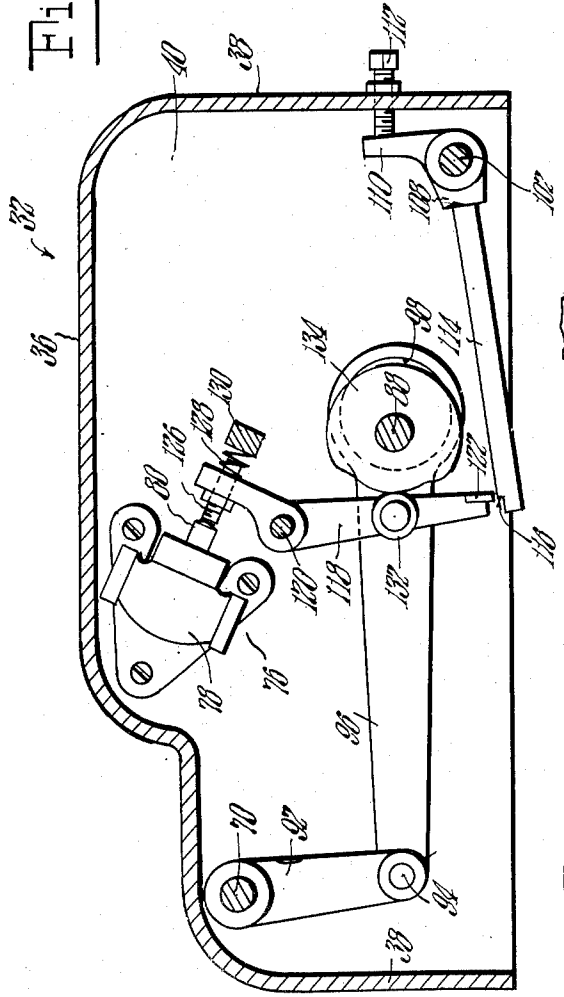
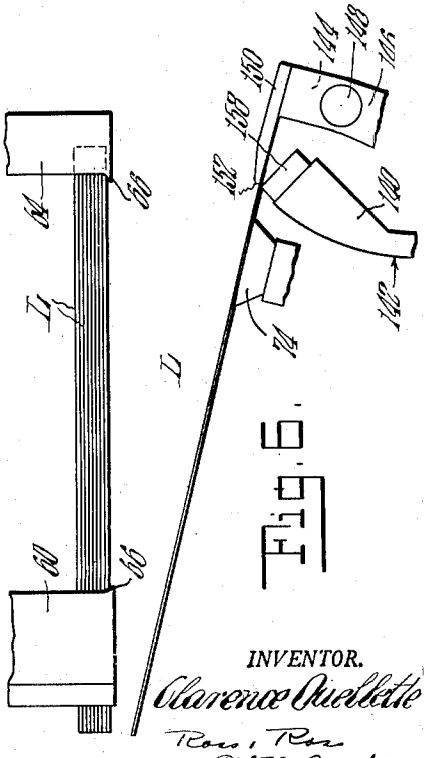


Fig. 6.



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LABELING APPARATUS

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Application October 31, 1950, Serial No. 193,222

3 Claims. (Cl. 216—55)

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This invention relates to improvements in labeling apparatus.

The principal objects of the invention are directed to the provision of labeling apparatus which is constructed and arranged for use as a unit or in conjunction with other apparatus such as a wrapping machine or the like.

The apparatus of the invention is characterized by its adjustability whereby labels of various sizes and shapes may be affixed to objects of various sizes and shapes.

As a special feature of the invention, the lowermost one of a stack of labels is removed from the stack to an applicator which applies the label to an object and transports said label past means for the action of heat to condition the adhesive.

As another feature of the invention, means is provided for detecting the presence of an object to be labeled so that, in the absence of an object, a label is not removed from the stack.

All of the above objects I accomplish by means of such structure and relative arrangements of parts thereof, as will fully appear by a perusal of the description below and by various specific features which will be hereinafter set forth.

To the above cited and other ends and with the foregoing and various other novel features and advantages and other objects of my invention as will become more readily apparent as the description proceeds, my invention consists in certain novel features of construction and in the combination and arrangement of parts as will be hereinafter more particularly pointed out in the claims hereunto annexed and more fully described and referred to in connection with the accompanying drawings wherein:

Fig. 1 is a plan view of the labeling apparatus embodying the novel features of the invention;

Fig. 2 is a front elevational view of the labeling apparatus shown in Fig. 1;

Fig. 3 is an end elevational view of the apparatus shown in Figs. 1 and 2;

Fig. 4 is a perspective view of the lower end of one of the guides for supporting labels in stacked relation;

Fig. 5 is a sectional elevational view on the line 5—5 of Fig. 1;

Fig. 6 is a diagrammatic elevational view to explain the cooperative action of the label picker and applicator; and

Figs. 7 and 8 are plan and elevational views of an object having a label affixed thereto according to the invention.

Referring now to the drawings more in detail, the invention will be fully described.

A conveyor for presenting successive objects to the apparatus for labeling is provided and, in the form of the apparatus to be shown and described, it is supported by said conveyor.

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A pair of elongated transversely spaced side rails 2 form the basis of the conveyor. These support in any convenient manner horizontally disposed elongated object supporting plates 4 which have inner longitudinal edges spaced apart.

A bracket 6 extends between the side rails 2 and is secured thereto in any suitable manner, see Figs. 2 and 3. A transverse shaft 8 is rotatable in the bracket 6 and forward side rail and a rear conveyor shaft 10 is rotatable in the side rails as shown in Fig. 2.

A forward conveyor shaft 12 is rotatable in the side rails 2, see Fig. 3, and said shaft and the shaft 10 carry sprockets 14 and 16 disposed in the longitudinal slot 18 between adjacent inner edges of members 4.

An endless conveyor chain 19 is in engagement with the sprockets 14 and 16 which carries pushers 21 in spaced relation therealong.

Sprockets 20 and 22 are carried by shafts 8 and 10 which are operably connected by a chain 24.

Either shaft 8 or 10 may be driven by any suitable means so that the upper run of chain moves in object conveying direction to the left in Figs. 1 and 2. Successive objects to be labeled placed on members 4 are conveyed to the left by the pushers.

The objects to be labeled may take various forms but for purposes of description may be circular as at 26 in Figs. 7 and 8.

Rods 30 extend vertically upwardly from the bracket 6, see Figs. 1, 2 and 3 and have lower ends fixed in said bracket.

A housing 32 is slidable on said rods and has a front wall 34, an upper wall 36, end walls 38, and a rear wall 40.

An upper bracket 42 is fixed to the upper end of rods 32 and an adjusting screw 44 rotatable and non-reciprocable therein is in threaded engagement with the upper wall of the housing whereby as the screw is rotated in one direction or the other the housing is moved up or down. A wheel 46 fixed on the upper end of the screw is provided with a manually engageable member 48.

A bracket 50 is secured to the front wall of the housing and has pads 52 on opposite ends. Plates 54 are slidable back and forth on the pads and are slotted at 56. Binding screws 58 are in threaded engagement with the pads 52 for securing the plates in adjusted positions. Label guides 60 are fixed to the plates 54 and extend vertically, as shown.

A bracket 62 has its rear end secured to the front wall of the housing and extends forwardly therefrom and has a label guide 64 fixed thereto and extending vertically therefrom.

The lower ends of the label guides 60 and 64 are provided with lips 66 as clearly shown in Fig. 4. A stack of labels L between the guides

is supported by the lips, as shown in Fig. 5. The lowermost label may be removed with those thereabove remaining in stacked relation. By means now to be described successive labels are removed from the bottom of the stack for application to successive objects.

A shaft 70 is oscillatable in the housing and has an arm 72 fixed on its forward end. A suction cup 74 is carried by the outer end of arm 72 and is connected by a flexible tube 76 which extends through an opening 78' in the front wall of the housing, see Fig. 2. The tube 76 is connected to a control valve 78 secured in the housing, see Fig. 5. Said control valve 78 is connected to a source of suction which may be a vacuum pump or the like.

The valve 78 is a shut off valve having a plunger 80 projecting therefrom which has a valve member cooperating with a seat to close the valve. A spring urges the valve member towards its seat and the plunger outwardly. As the stem is moved inwardly the valve is opened against the spring so that the suction cup is connected to the source of suction. The valve may take any of the well known normally closed forms. The tube 76 is omitted in Figs. 1 and 3 for clearness.

As the shaft 70 is oscillated the arm 72 is swung between upper label engaging position shown in Fig. 2 and lower postion shown in Fig. 6. With the suction cup 74 connected through valve 78 to suction a lowermost label is engaged and swung downwardly to the applicator.

A vertical shaft 80' is rotatable in the housing and depends therefrom so as to be rotatable in bracket 6 and slidable therein accordingly as the housing is moved up and down.

A gear 82 in which said shaft 80' is slidable and non-rotatable is in mesh with a gear 84 fixed on shaft 8. Said shaft 80' is splined at 86 and a key, not shown, in gear 82 permits the shaft to slide in gear 82, see Fig. 3.

A transverse shaft 88 is rotatable in the housing and bracket 62 and gears 90 fixed on said shafts 88 and 86 operatively connect them. As shaft 8 is rotated shaft 88 is rotated thereby, see Fig. 3.

A lever 92 is fixed to shaft 70 and its lower end is connected at 94 to the outer end of an eccentric arm 96 which encircles an eccentric hub 98 fixed to shaft 88, see Fig. 5. As shaft 88 rotates lever 92 is swung back and forth whereby suction cup arm 72 is swung up and down.

It is desired that the suction means become inoperative in the event there is no object presented by the conveyor for labeling.

To that end a detector 100 is provided.

A shaft 102 is oscillatable in the housing and has an arm 104 fixed thereto which carries a roll 106 on its outer end, see Figs. 1 and 2.

A member 108 on the shaft 102 within the housing has an upstanding lug 110. An adjusting screw 112 in threaded engagement with the wall 38 of the housing is provided whereby the shaft 102 is limited in swinging movements clockwise.

As successive objects 26 are moved to the left by the conveyor they pass under roll 106 so as to swing arm 104 upwardly counterclockwise so that lug moves away from stop screw 112.

A rod 114 extends to the left from member 108 of shaft 102 which has a shoulder 116 on its outer end, see Fig. 5. A lever 118 is swingable on a transverse stud 120 of the housing and has a plate 122 on its lower end for engaging the shoulder 116. An upper end portion 124 of lever 118 carries an adjusting screw 126 engageable with the member 80 of valve 78 and a spring 128 between said lever portion 124 and a transverse bar 130 of the housing tends to swing lever 118 counterclockwise to move a roll 132 on said lever into engagement with a cam 134 fixed on shaft 88.

In Fig. 5 the plate 122 is disengaged from shoulder 116 as member 114 is swung downwardly by an object passing beneath roll 106 of the detector. The cam 134 is so arranged in this position of the parts to actuate lever 118 so that plunger 80 of valve is depressed and the suction cup subjected to suction for engaging the lowermost label of the stack thereof.

In the absence of an object to be labeled the roll 106 and arm 104 swings downwardly to bring lug against stop screw 112 and member 114 to upper position where plate 122 abuts shoulder 116. The roll 132 of lever 118 is held from off the cam so that it will not swing counterclockwise and open valve 78.

Thus in the absence of an object to be labeled and through the suction cup arm 72 may be swung up and down the suction cup 72 will not engage a label unless there is an object to receive the label.

An applicator drum 140 is fixed to shaft 88 and has a circular peripheral surface 142. A longitudinal bar 144 has side portions 146 pivoted at 148 to the drum and carries an elongated plate 150 having a rather sharp forward edge 152.

Pins 154 carried by side portions 146 are connected by a spring 156 which urges the bar 144 and plate 150 counterclockwise on the drum to engage the edge 152 of the plate 150 onto a plate 158 of the drum.

A cam 160 has a hub 162 held in the bracket 62 by a set screw 164 and a roll 166 on the forward side portion 146 is in engagement with said cam.

The before-mentioned spring 156 urges the member 144 counterclockwise so that roll 166 rolls around the cam 160 which is non-rotatable but adjustable by means of set screw 164. The said cam is arranged whereby when the drum is in label receiving position the member 150 at its forward edge engages a label between it and member 158 as shown in Fig. 6.

The drum 140 is rotated clockwise to carry a label on the surface 142 thereof past the curved surface 170 of a heater device 172.

The forward edge of a label being gripped between members 150 and 158 said label is more or less wrapped around the surface of the drum so as to be drawn across the surface 170 of the heater.

The label on the side outermost from the drum will carry an adhesive substance which is softened by heat. The object to be labeled is moved along beneath the rotating drum so that the label having the softened or tacky adhesive is rolled onto the object the cam 160 being formed to bring about release of the label by members 150 and 158 as the label is applied to the objects.

Side guides 180 for guiding objects along the supports 4 may be secured to the rails 2 by brackets 182.

The heating device may include a housing having electrical resistance units therein which are adapted or controlled to provide that temperature adapted to soften and render tacky the particular adhesive carried by the labels.

In the operation of the apparatus the conveyor operates to convey successive objects to be

wrapped to the left in Fig. 2. The drum rotates clockwise to receive successive labels for applying them to the objects and moving them past the heater.

The arm 72 swings up and down to remove the lowermost label from the stack and present it to the drum. The detector mechanism operates to prevent the suction cup from engaging a label in the absence of an object to be labeled it being understood that the components are operated in predetermined timed relation for the feeding and labeling of successive objects.

The invention may be embodied in other specific forms without departing from the essential characteristics thereof. Hence, the present embodiments are therefore to be considered in all respects merely as being illustrative and not as being restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all modifications and variations as fall within the meaning and purview and range of equivalency of the appended claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. Unitary self-contained apparatus for applying labels adapted for securement to a conveyor for conveying successive objects comprising, rods extending vertically upwardly from said conveyor, a housing slidable up and down on said rods provided with a front wall and having means for moving said housing up and down, a drum shaft extending through and rotatable on a horizontal axis in said front wall having a label receiving and applying drum fixed thereto forwardly of said wall, a vertically extending guide fixed to said wall having a lower end above said drum, a pair of separate vertically extending movable guides and means adjustably connecting said guides to said front wall, said fixed and movable guides cooperating to provide a chute for a vertical stack of horizontally superposed labels with a leading edge of a lowermost label adjacent said drum, a shaft oscillatable in said front wall, a lever fixed on said oscillatable shaft forwardly of said front wall having a free end provided with suction cup for engaging and transferring a lowermost label of a stack therefrom and presenting and releasing a leading edge thereof to said drum, means for rotating said shaft and drum in label applying direction, operative connections between said drum and second-named shafts for oscillating the latter for swinging said arm between label engaging and releasing positions, said drum provided with relatively movable means for engaging a label presented thereto and for releasing the same, a bearing fixed to said front wall in which said drum shaft is journalled having a cam fixed thereto for operating said label engaging means as said label drum rotates, said drum having a surface concentrically disposed relative to its axis of rotation for supporting a label engaged by said movable means, and a heater fixed to said front wall having an inner surface complemental to that of the label supporting drum and closely adjacent thereto for heating a label as it is moved therepast by said drum.

2. Unitary self-contained apparatus for applying labels adapted for securement to a conveyor for conveying successive objects comprising, rods extending vertically upwardly from said conveyor, a housing slidable up and down on said rods provided with a front wall and having

means for moving said housing up and down, a drum shaft extending through and rotatable on a horizontal axis in said front wall having a label receiving and applying drum fixed thereto forwardly of said wall, a vertically extending guide fixed to said wall having a lower end above said drum, a pair of separate vertically extending movable guides and means adjustably connecting said guides to said front wall, said fixed and movable guides cooperating to provide a chute for a vertical stack of horizontally superposed labels with a leading edge of a lowermost label adjacent said drum, a shaft oscillatable in said front wall, a lever fixed on said oscillatable shaft forwardly of said front wall having a free end provided with suction cup for engaging and transferring a lowermost label of a stack therefrom and presenting and releasing a leading edge thereof to said drum, means for rotating said shaft and drum in label applying direction, operative connections between said drum and second-named shafts for oscillating the latter for swinging said arm between label engaging and releasing positions, said drum provided with relatively movable means for engaging a label presented thereto and for releasing the same, a bearing fixed to said front wall in which said drum shaft is journalled having a cam fixed thereto for operating said label engaging means as said label drum rotates, said drum having a surface concentrically disposed relative to its axis of rotation for supporting a label engaged by said movable means, and a heater fixed to said front wall having an inner surface complemental to that of the label supporting drum and closely adjacent thereto for heating a label as it is moved therepast by said drum, said relatively movable means including an elongated member fixed to said drum and a member hinged to said drum coacting therewith to engage a label.

3. Unitary self-contained apparatus for applying labels adapted for securement to a conveyor for conveying successive objects comprising, rods extending vertically upwardly from said conveyor, a housing slidable up and down on said rods provided with a front wall and having means for moving said housing up and down, a drum shaft extending through and rotatable on a horizontal axis in said front wall having a label receiving and applying drum fixed thereto forwardly of said wall, a vertically extending guide fixed to said wall having a lower end above said drum, a pair of separate vertically extending movable guides and means adjustably connecting said guides to said front wall, said fixed and movable guides cooperating to provide a chute for a vertical stack of horizontally superposed labels with a leading edge of a lowermost label adjacent said drum, a shaft oscillatable in said front wall, a lever fixed on said oscillatable shaft forwardly of said front wall having a free end provided with suction cup for engaging and transferring a lowermost label of a stack therefrom and presenting and releasing a leading edge thereof to said drum, means for rotating said shaft and drum in label applying direction, operative connections between said drum and second-named shafts for oscillating the latter for swinging said arm between label engaging and releasing positions, said drum provided with relatively movable means for engaging a label presented thereto and for releasing the same, a bearing fixed to said front wall in which said drum shaft is journalled having a cam fixed thereto for operating said label engaging means

as said label drum rotates, said drum having a surface concentrically disposed relative to its axis of rotation for supporting a label engaged by said movable means, and a heater fixed to said front wall having an inner surface complemental to that of the label supporting drum and closely adjacent thereto for heating a label as it is moved therepast by said drum, a shut-off valve adapted to be connected to a source of suction having a member movable between open and closed positions of the valve and connections between said valve and said suction cup, operating means oscillatable in said housing for engaging and operating the movable member of said valve and a cam fixed on said drum shaft for engaging and actuating said operating means,

and means controlled by objects to be labeled arranged to control the engagement of said cam and operating means.

CLARENCE OUELLETTE.

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