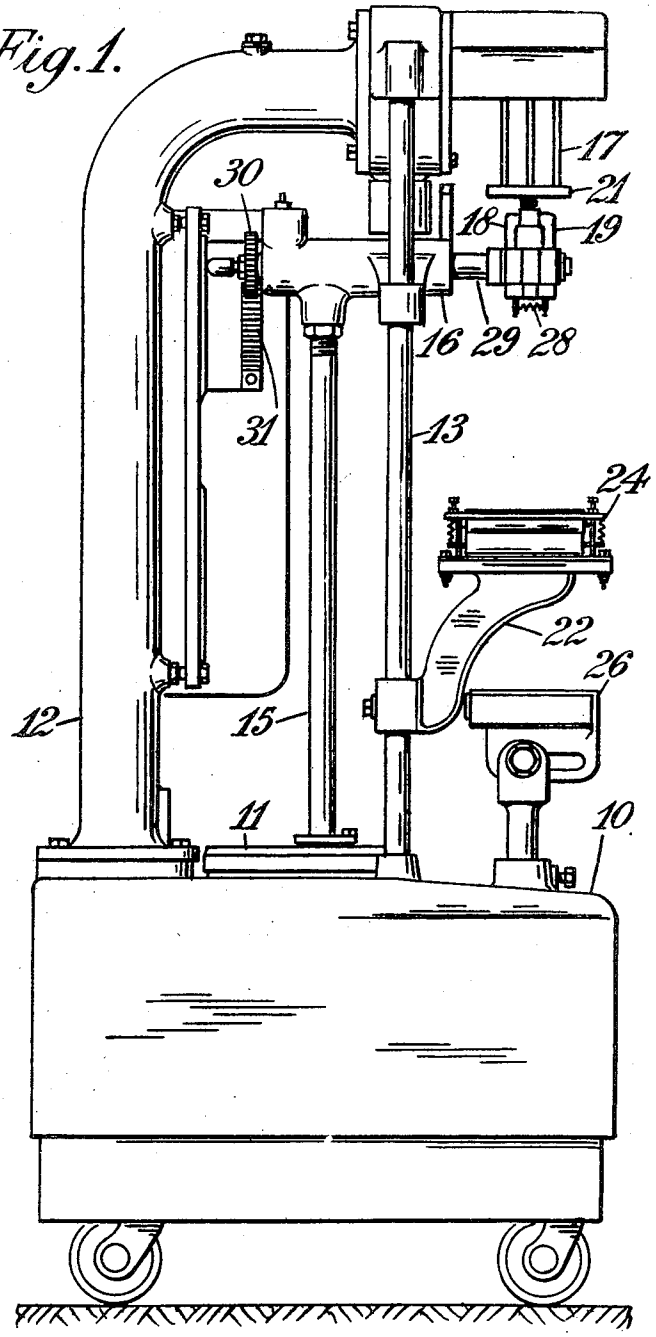
May 20, 1952 N. BECK 2,597,431

LABELING MACHINE

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Fig. 1.



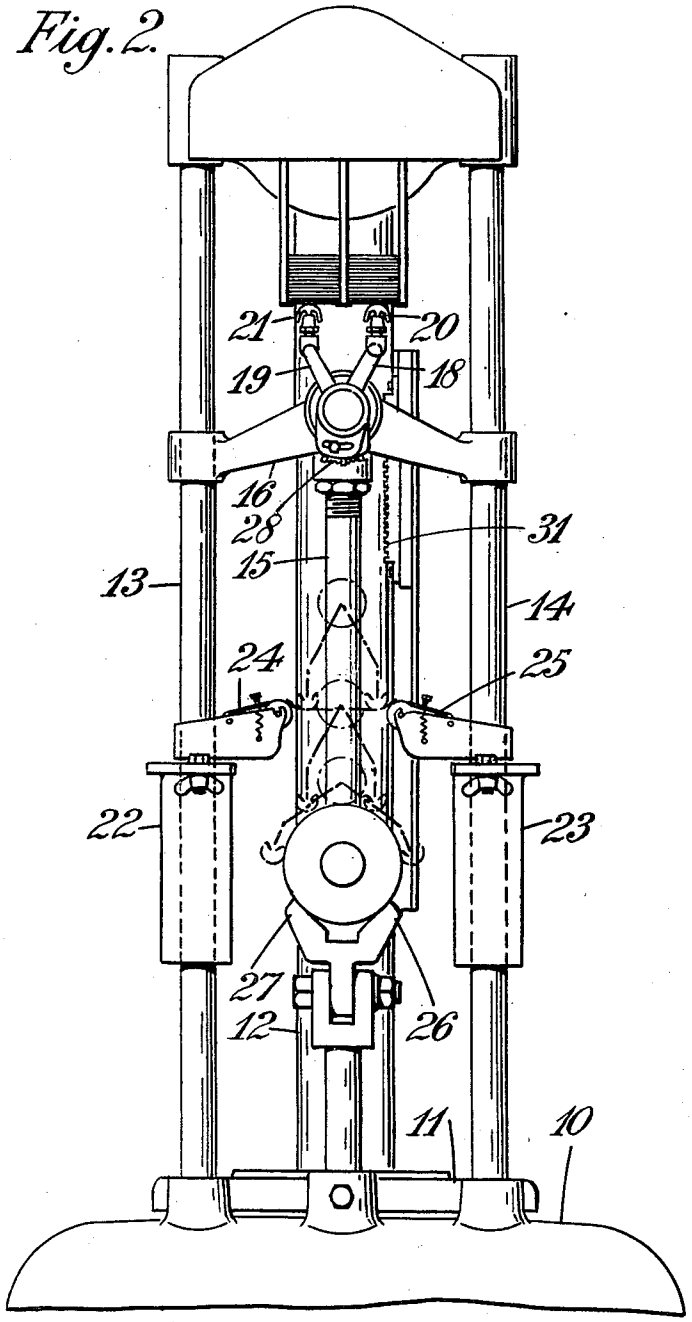
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Fig. 2.



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Fig. 3.

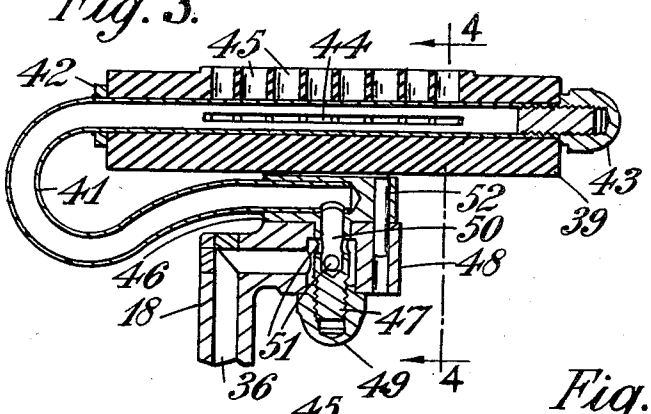


Fig. 4.

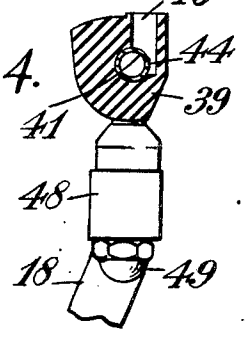
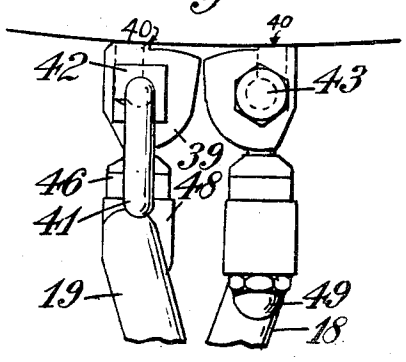


Fig. 5.



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UNITED STATES PATENT OFFICE

2,597,431

LABELING MACHINE

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Application September 8, 1950, Serial No. 183,886
In Great Britain September 5, 1949

3 Claims. (Cl. 216—55)

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This invention is for improvements in or relating to labelling machines, and is concerned with machines of the type in which a suction pad on a movable arm takes a label from a stack and forwards it through a gumming device to the bottle or the like to which it is to be applied. The invention has for one of its objects to provide a more efficient machine of this type than has heretofore been available.

According to the primary feature of the present invention, the suction pad has a universal joint connection with the arm on which it is mounted, which connection is such as to afford a substantial range of angular adjustment of the pad relatively to the arm, and also such as to enable the said parts to be clamped in any chosen position. This adjustability enables the setting of the pad in relation to the arm to be varied according to requirements, for example to suit the contour of the bottle or the like to which the label is to be applied.

In one form of the invention, a length of the suction tube reaches through the pad to provide the suction through apertures in the contact surface of the pad, and the pad is rotatably adjustable about the longitudinal axis of the said tube length, which latter has means for clamping the pad on it in any chosen setting. Conveniently, the suction tube also carries a stem, the longitudinal axis of which has substantially at right angles to, but substantially in the same plane as, the longitudinal axis of the said length of tube, which stem is received to be rotatable about its longitudinal axis in a socket provided by the said movable arm, which latter also carries means for clamping the pillar in any chosen relative setting in the socket. A locking pin may be placed in position in engagement with the stem and movable arm to preclude rotation of the stem in the socket when once the correct setting for a particular type of label or bottle or the like has been determined. In this construction, a suction conduit extends from the contact surface of the pad, through the suction tube, to the interior of the stem, and thence through lateral ports in the latter and in the socket to the interior of the movable arm, which lateral ports are of such number or sufficiently large as to ensure that the suction conduit is open throughout the operative range of rotative adjustment of the stem in the socket. It is preferred also to arrange that the length of tube in the suction pad communicates with the apertures in the contact surface of the latter through lateral ports in the tube, which lateral ports or the apertures in the pad

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are of such number or sufficiently large as to ensure that the interior of the tube is open to the apertures throughout the operative range of rotative adjustment of the pad on the tube. It will be appreciated that in this form of the invention, as with the form of the invention previously mentioned, the setting of the pad in relation to the arm can be varied according to requirements, and the suction will be operative no matter what setting may be chosen for the pad.

For a more complete understanding of the invention, there will now be described, by way of example only and with reference to the accompanying drawings, certain constructions according to the invention. It is to be understood, however, that the invention is not restricted to the precise construction details set forth.

In these drawings:

Figure 1 is a side elevation of a labelling machine embodying the present invention,

Figure 2 is a front elevation of certain of the parts of the machine shown in Figure 1 but on a scale larger than that of Figure 1,

Figure 3 is a longitudinal section through a suction pad and associated parts on a scale larger than that of the preceding figures,

Figure 4 is a cross-section on the line 4—4 of Figure 3, and

Figure 5 is an elevation of two associated suction pads according to Figures 3 and 4.

Like reference numerals indicate like parts throughout the drawings.

Referring firstly to Figures 1 and 2, the machine comprises a base 10 in which there is located a cylinder, the head of which is shown at 11. Reaching up from the base 10 is a column 12, the upper end of which is bent forwardly and is supported by two standards 13 and 14. Associated with a piston in the cylinder 11 is a piston rod 15 having at its upper end a cross-head 16 which takes a sliding bearing on the standards 13 and 14. A label carrier is shown at 17. The cross-head 16 carries two rotary arms 18 and 19 with suction pads 20 and 21, and fixedly mounted on the standards 13 and 14 are brackets 22 and 23 carrying gumming devices 24 and 25. Below the space between the latter is a bottle-reception table 26, a bottle being shown at 27. The arms 18 and 19 are urged towards each other by spring means 28 and they are carried on one end of a spindle 29, the other end of which carries a pinion 30 which during the movement of the piston rod 15 traverses a rack 31 to turn the spindle 29 through 180°. Thus, at the top of the stroke of the piston rod 15, the arms 18 and 19

are upwardly-directed and take a label from the carrier 17. As they move down, they are turned with the spindle 29 by the rack 31 through 180°. The downwardly-directed arms carry the label through the gumming devices 24 and 25 and apply it to the bottle 27. The mounting of the arms on the spindle 29 permits their angular spacing to be adjusted.

In the construction shown in Figures 3–5, the pad 39 is elongated and is slightly convex at 40 along part of its contact surface. A suction tube, bent more or less into U shape, is shown at 41. A shoulder 42 is provided on this tube, and beyond the shoulder there is a straight length of the tube which reaches longitudinally through the pad 39 with a sliding fit and receives a clamping nut 43, the tube being closed at this extremity. This straight length of the tube has an elongated port 44 formed in it and communicating with this port are suction apertures 45 in the pad. The pad can be rotatively adjusted on the suction tube and the apertures 45 are sufficiently large as to ensure that the interior of the tube is open to the apertures 45 throughout all desired angular adjustment of the pad on the tube.

The other end of the tube 41 has welded on to it a fitting which comprises a sleeve 46 in which the tube is received and by which this extremity of the tube is closed. Projecting at rightangles from the sleeve 46 is a stem 47 which reaches slidably right through a socket in the off-set portion 48 of the arm 18 to receive a clamping nut 49. The longitudinal axis of the stem 47 lies in, or substantially in, the plane of the length of the tube 41 on which the pad 39 is mounted. The stem 47 can be rotatively adjusted in its socket in the arm 18 and is partly hollow at 50 and is laterally ported at 51 to establish communication between the tube 41 and the suction supply conduit 36 on the arm 18. The ports 51 are of such number, or sufficiently large, as to ensure that this communication is not interrupted throughout all desired angular adjustment of the stem 47 in the arm 18. It will be appreciated that the mounting of the pad on the suction tube and the mounting of the latter in the arm together constitute a universal joint connection. A locking pin 52 may be inserted in aligned holes drilled in the fitting and the arm after a setting of the parts has been determined as suitable for a particular label or bottle or the like. This will preclude undesired turning of the stem in the arm.

Figure 5 shows a position which may be occupied by companion arms 18 and 19 and their suction pads. The latter, in both of the constructions described above, may be made of any suitable material, such as wood, rubber or "plastic."

Referring to Figure 2, the spacing of the arms 18 and 19 is so chosen in relation to the size of the labels to be dealt with, and in relation to the spacing of the gumming devices 24 and 25, and in relation to the diameter of the bottle or the like 27, and the two suction pads are so presented to the labels, that when the pads take a label from the carrier 17, that label bridges and extends beyond the pads on both sides. This is shown in the full line position near the upper end of Figure 2. As the arms move down, they are turned with the spindle 29 by the rack 31 through 180°. The upper chain line position shows that as the label is carried down between the gumming devices 24 and 25 its outer margins are wiped against the gumming devices. The two lower chain line positions show that when the label reaches the bottle or the like 27, the pressure of the pads against the latter moves the pads apart to wipe the label around the surface of the bottle or the like. The convex formation of the pads and the contour of the bottle or the like facilitate this spreading and wiping movement.

It is to be understood that the invention is not restricted to the precise constructional details set forth.

I claim:

1. A labelling machine comprising in combination a suction arm, means for moving said arm from a stack of labels through a gumming device to a bottle or the like at a labelling station, a suction pad for said arm, a suction tube, a length of which reaches through the pad to provide the suction through apertures in the contact surface of the pad, which pad is rotatively adjustable about the longitudinal axis of the said tube length, means for clamping the pad on said tube length in any chosen setting, a stem carried on said tube, the longitudinal axis of which stem lies substantially at right angles to, but substantially in the same plane as, the longitudinal axis of the said length of tube, a socket provided by the suction arm, in which socket the stem is received to be rotatable about its longitudinal axis, and means for clamping the stem in any chosen relative setting in the socket.

2. A labelling machine comprising in combination a suction arm, means for moving said arm from a stack of labels through a gumming device to a bottle or the like at a labelling station, a suction pad for said arm, a suction tube, a length of which reaches through the pad to provide the suction through apertures in the contact surface of the pad, which pad is rotatively adjustable about the longitudinal axis of the said tube length, means for clamping the pad on said tube length in any chosen setting, a stem carried on said tube, the longitudinal axis of which stem lies substantially at right angles to, but substantially in the same plane as, the longitudinal axis of the said length of tube, a socket provided by the suction arm, in which socket the stem is received to be rotatable about its longitudinal axis, screw means for clamping the stem in any chosen relative setting on the socket, and a locking pin adapted to be placed in position in engagement with the stem and suction arm to preclude rotation of the stem in the socket when once the correct setting for a particular type of label or bottle or the like has been determined.

3. A labelling machine comprising in combination a suction arm, means for moving said arm from a stack of labels through a gumming device to a bottle or the like at a labelling station, a suction pad for said arm, a suction tube, a length of which reaches through the pad to provide the suction through apertures in the contact surface of the pad, which pad is rotatively adjustable about the longitudinal axis of the said tube length, means for clamping the pad on said tube length in any chosen setting, a stem carried on said tube, the longitudinal axis of which stem lies substantially at right angles to, but substantially in the same plane as, the longitudinal axis of the said length of tube, a socket provided by the suction arm, in which socket the stem is received to be rotatable about its longitudinal axis, which stem is hollow to communicate with the interior of the suction tube and which stem and socket have

lateral ports to communicate with the interior of the suction arm and such as to ensure that the interior of the tube is open to the interior of the suction arm throughout the operative range of rotative adjustment of the stem in the socket, and means for clamping the stem in any chosen relative setting in the socket.

NORMAN BECK.

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