

Aug. 7, 1973

HANS-DIETER SCHULZ

3,751,322

LABEL TRANSPORTING DEVICE FOR A PRICE CALCULATING SCALE

Filed June 23, 1971

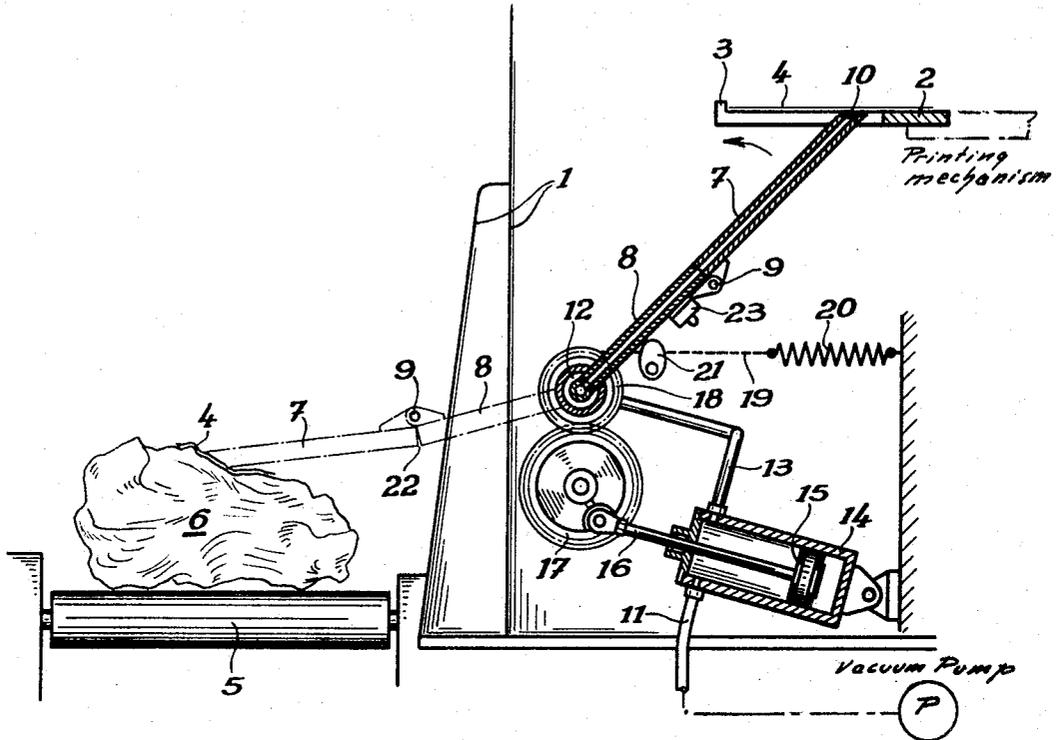


FIG. 1

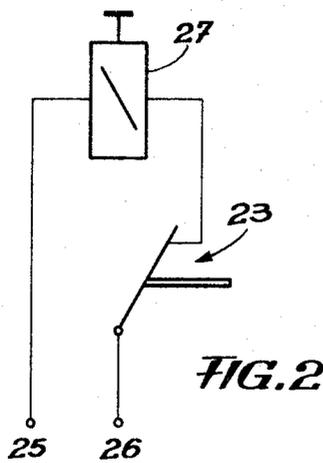


FIG. 2

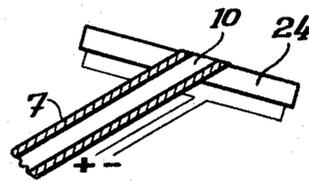


FIG. 3

INVENTOR  
Hans-Dieter Schulz  
By *Walter Becker*

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## LABEL TRANSPORTING DEVICE FOR A PRICE CALCULATING SCALE

Hans-Dieter Schulz, Breitscheid, Germany, assignor to  
Espera-Werke Aktiengesellschaft, Duisburg, Germany

Filed June 23, 1971, Ser. No. 155,860

Claims priority, application Germany, June 24, 1970,

P 20 31 193.7

Int. Cl. F16p 3/12; G01g 13/00

U.S. Cl. 156-360

7 Claims

### ABSTRACT OF THE DISCLOSURE

A label transporting device for use in connection with calculating scales, according to which pivotable suction pipe means is pivotable into a label receiving position for picking up a label and then is shifted into a label applying position for applying the picked up label to weighed goods, said suction pipe means being vented when said suction pipe means has applied the label to the goods to release said label.

The present invention relates to a label transporting device for a price calculating scale. Price calculating scales for which the device according to the invention is intended ascertain the weight of the respective goods and enter the weight into a calculating mechanism in which a multiplication is effected with the set price per weight unit. Thereupon the label is printed upon with the indications required for the price marking and then the label is issued.

For purposes of automating the transport of the goods to the scale and from the scale to the issue station for the labels, various devices have become known. However, difficulties are encountered in conveying the labels issued by the printing mechanism directly from the issue station of the printing mechanism to the wrapping of the goods and to press the adhesive-covered side of the labels onto the wrapping.

It is, therefore, an object of the present invention to provide a label transporting device for applying the labels issued by a calculating scale onto the wrapped goods after the goods have been weighed, which device will be able directly to convey the labels issued by the printing mechanism onto the wrapped goods while the goods pass by the calculating mechanism of the scale.

It is another object of this invention to provide a label transporting device as set forth in the preceding paragraph, which will be able to effect the application of the labels to the wrapping of the goods with a minimum of energy and in a trouble-free manner.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing in which:

FIG. 1 diagrammatically illustrates a device according to the invention for applying labels to goods wrapped in a bag of synthetic material.

FIG. 2 shows a circuit for use in connection with a microswitch actuated by a suction pipe.

FIG. 3 represents a modification of that end of the suction pipe which is located at the side of the suction opening.

The label transporting device according to the present invention is characterized primarily in that it comprises a suction pipe which is linked to the calculating mechanism and is adapted to be tilted back and forth, the suction pipe being connected to a vacuum pump and having its movement controlled in such a way that in its starting position it is adapted by means of its suction opening to engage from below the label ejected by the printing mechanism, to grasp the same and after pivoting

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to press it onto the wrapped goods while at the same time a venting of the suction pipe is effected; thereupon the suction pipe is pivoted back to its rest position.

By the above outlined design a device has been created which will grasp the labels ejected by the printing mechanism independently of the size of the labels and which while holding a label, by tilting the suction pipe, will transport the label to the goods and press the same onto the goods. The release of the labels from the suction pipe is made possible by venting the suction pipe without the necessity temporarily to interrupt the suction air flow. Instead, the suction effect during the pressing-on operation is eliminated by venting the suction pipe.

More specifically, it is suggested according to the present invention that the pivotable suction pipe is preceded by a cylinder piston system passed through by suction air in a transverse direction in which the piston during the closing of the suction opening of the suction pipe by the label, is displaced in the cylinder whereby through the intervention of intermediate members the pivoting movement of the suction pipe is effected against the thrust of a spring. Thus, the present invention results in a design in which the pivoting of the suction pipe transporting the label is effected directly by suction air which is adapted to effect both the adherence of the label to the suction pipe and also the pivoting movement of the latter.

According to a further development of the invention, the rest position of the suction pipe after a pivoting movement is so selected that the suction opening of the suction pipe is located at a slight distance from and below the depositing plane for the label when the latter leaves the printing mechanism. In this position, a rotatable cam catches from below the suction pipe and by means of a pulse emitted by the printing mechanism after the ejection of the label lifts the suction pipe with its suction opening by turning the same directly onto the label which latter thereby closes the suction opening. In this way it is assured that the suction air generated by the vacuum pump can pass through the suction pipe in an uninterrupted flow also when the label is already above the suction opening. The sucking of the label onto the suction pipe is effected only when the suction opening, in view of the slight tilting movement of the suction pipe, is brought into direct engagement with the label and when the label closes the suction opening. Only in view of this closing action the suction air will bring about the movement of the piston which in its turn during its movement and through the intervention of intermediate members permits the pivoting movement of the suction pipe which latter applies the label to the goods which goods at this time are in the pivoting path of the suction pipe and to which the ejected label belongs.

According to a further feature of the invention the suction pipe may consist of two pipe sections which for purposes of venting the suction pipe are connected to each other so as to be tiltable or pivotable relative to each other against the thrust of a spring. This design of the suction pipe has the advantage that the goods to be provided with the labels may have different heights. In this connection it should be noted that when the suction pipe with the label reaches the goods at a different height, the suction pipe will tilt whereby the suction effect is lost due to the fact that the suction pipe is vented at the tilting point. Thus, the pressing of the label onto the goods and the venting of the suction pipe coincide. The label sticks to the goods and in view of the absence of a suction effect, the suction pipe with its free suction opening will pivot or tilt back to its rest position and will be ready for the application of the next label to the next goods.

When labels are employed which are not self-sticking

but which have to be heated to make their adherence effective, it is possible in conformity with the present invention to provide the suction pipe within the region of the suction opening with an electrically heated plate extending in the plane of the label.

According to still a further feature of the invention, a microswitch may be so arranged in relation to the suction pipe that it will respond to the suction pipe reaching its starting rest position and will cause the printing mechanism to issue the next label.

Referring now to the drawing in detail, the arrangement shown therein comprises a price calculating scale the front portion of which is indicated by the lines 1. The device for applying the labels issued by the printing mechanism to the goods is arranged on one side of the price calculating mechanism with printing mechanism. Of the printing mechanism, the drawing shows only the depositing plate 2 which is provided with a wide longitudinal slot. The depositing plate 2 has its free end provided with the angled-off portion 3 in order to prevent the label 4 from sliding therebeyond when the label passes from the non-illustrated printing mechanism to the depositing plate 2. The depositing of the label 4 is effected at the rhythm or rate of the weighing operation of the scale and, more specifically, in such a way that the respective label 4 pertaining to the weighed goods is deposited when these goods are moved into the range of the device according to the invention. The transport of the goods may be effected on driven conveying rollers 5 as illustrated in FIG. 1 or may be effected by means of a corresponding conveyor belt. According to the specific embodiment shown, the goods 6 represent a bag of synthetic material containing, for instance, fruit or the like, previously weighed by the scale. The main components of the device according to the present invention are represented by a suction pipe comprising two pipe sections 7 and 8 which are linked to each other at 9 and consequently can tilt or pivot relative to each other. The two pipe sections 7 and 8 normally in alignment with each other and are held in this position by means of a non-illustrated spring. In this aligned or stretched position, the gap between the pipe sections is sufficiently narrow so that essentially only suction air can pass into the suction pipe through the suction opening 10 at the free end of the pipe section 7. The suction air is generated by a vacuum pump connected to the suction line 11.

The suction pipe is pivotally journaled by means of the hollow shaft 12 the inner space of which, on one hand, communicates with the suction pipe section 8 and, on the other hand, communicates with the suction line 13 which leads into one end of the cylinder 14. Cylinder 14 communicates with the conduit 11 so that the suction air passes in transverse direction through the cylinder 14. Within cylinder 14 there is provided a longitudinally displaceable piston 15 the piston rod 16 of which is eccentrically linked to a gear 17 which later meshes with a gear 18. Gear 18 in its turn is fixedly connected to the hollow pivot shaft 12. The outer circumference of gear 18 is additionally engaged by a pull chain 19 with a spring 20 so that the pivoting of the suction pipe 7, 8 is effected in counterclockwise direction against the pulling force of spring 20.

The suction pipe 7, 8 is in FIG. 1 shown in a position in which the label closes the suction opening 10, in other words, in a position in which by means of the suction air the pivoting movement of the suction pipe 7, 8 is brought about. The starting rest position of suction pipe 7, 8 is at a somewhat lower level so that a certain distance will prevail between the engaging plane of label 4 on plate 2, on one hand, and the suction opening 10, on the other hand, so that the suction air below the label 4 can enter the suction pipe 7, 8 without affecting the location of the label 4.

The pivoting movement of the suction pipe 7, 8 is initiated when the rotatable cam 21 receives a turning pulse from the printing mechanism as a result of which

the rotatable cam 21 is pivoted into the illustrated position in which it pivots the suction pipe 7, 8 from its starting rest position into the illustrated starting position. If at this time a label is located on plate 2 as shown in FIG. 1, the label 4 closes the suction opening 10. Since therefore suction air can no longer be drawn through the suction opening 10, an underpressure is created in the suction pipe 7, 8, in the hollow shaft 12, in the conduit 13, in cylinder 14 and in the adjacent conduit up to the vacuum pump. As a result of this underpressure, the piston 15 moves toward the left with regard to FIG. 1. This displacement will through the intervention of a piston rod 16 bring about a turning movement of gear 17 in clockwise direction so that the gear 18 and therefore the suction pipe 7, 8 turns in counterclockwise direction. As a result thereof, the suction pipe 7, 8 together with the sucked label 4 carries out a pivoting movement until the position shown in dash lines has been obtained while the label 4 is pressed onto the goods 6. While in the starting position, the adhesive layer of the label 4 is located at the top, it now is directed downwardly and engages the goods 6 so that the label will stick to the goods. When the suction pipe 7, 8 rests on the goods 6, the sections 7, 8 of the suction pipe are pivoted relative to each other at 9 so that suction air can now pass through gap 22 into the suction pipe section 8. As a result thereof, the suction effect in the region of the suction opening 10 on label 4 will be eliminated. At the same time, however, spring 20 becomes effective which returns the suction pipe 7, 8 to its starting rest position. Simultaneously, in view of the elimination of the vacuum in the pneumatic system, the piston 15 is subjected to a displacement toward the right with regard to FIG. 1 and occupies its starting position. In the interval also the rotatable cam 21 has been turned back to its starting position. When the suction pipe 7, 8 has reached its starting rest position, the microswitch 23 responds and causes the printing mechanism to eject the next label for the goods weighed in the meantime. This is effected by the microswitch 23 closing the circuit for the pull magnet 27 initiating the operation of the printing mechanism. This relationship is clearly evident from the circuit of FIG. 2.

In conformity with the circuit of FIG. 2, the pull magnet 27 is through terminals 25, 26 for the operating voltage of magnet 27 arranged in series with the rest contact of the microswitch 23. When the terminals 25, 26 of the circuit receive the operating voltage of the pull magnet 27 from the control of the scale, the pull magnet 27 which is adapted to initiate the operation of the printing mechanism will attract only when the rest contact of the microswitch 23 is closed. This will be the case when the suction pipe 7, 8 is located in its rest position in which a further label 4 may be attracted. The microswitch 23 thus will assure that the printing mechanism will release the next label only when the suction pipe 7, 8 has again returned to its rest position.

If labels are employed which do not have a self-sticking layer but are provided with an adhesive layer which must be activated by heat, it is provided according to the present invention that within the range of the suction opening 10 there is provided an electrically heated plate which is located in the ejecting plane of the label 4. Such an arrangement is indicated in FIG. 3 according to which the heated plate 24 is located on the suction pipe section 7 around the suction opening 10. Plate 24 has approximately the length of the label and has a width which is less than the width of the slot in plate 2 so that the heating plate together with the suction pipe 7, 8 will be able to swing through the slot in plate 2 in counterclockwise direction and in clockwise direction.

It is, of course, to be understood that the present invention is, by no means, limited to the specific showing in the drawing but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. A label transporting device for use in connection with a calculating scale comprising a mechanism for printing and issuing labels grasped by suction and pressed by way of pivoting an adhesive containing side thereon upon weighed packaged goods with the price of the weighted goods with simultaneous discontinuance of suction flow and thereafter pivotally returning automatically to label receiving position, which includes: pivotable suction pipe means having a suction mouth and being pivotally journaled so as to be movable controllably in one direction from a label receiving position to a label applying position to apply the label to weighed goods, said suction pipe means also being movable controllably in the reverse direction, vacuum pump means operable to communicate with said suction pipe means to create a suction effect therein to cause said suction pipe means to pick up and hold a label, and means capable of having suction air passage transversely therethrough associated with said suction pipe means always subjected to suction air that effects pivotal movement of said suction pipe means only when opening thereof becomes closed through a label located thereon and operable to bring about venting of said suction pipe means in response to the latter having reached its label applying position.

2. A device according to claim 1, which includes cylinder-piston means interposed between and communicating with said suction pipe means and said vacuum pump means and operatively connected to said suction pipe means, said cylinder-piston means being operable in response to a suction effect created therein when said suction mouth of said suction pipe means is covered and substantially closed by a label thereby to effect pivot movement of said suction pipe means from its label receiving position to its label applying position.

3. A device according to claim 2, which includes spring means associated with said suction pipe means and continuously urging the same in effect to its label receiving position.

4. A device according to claim 1, which includes deposit means with a deposit plane for receiving a label to be applied to weighed goods, said deposit means being arranged near said label receiving position and being

provided with passage means for permitting passage of a portion of said suction pipe means therethrough, and cam means arranged below rest position of said suction pipe means and operable after a label has been deposited upon said deposit plane of said deposit means pivotally to move the suction mouth of said suction pipe means into engagement with a label in said plane so that said suction mouth is closed by said label.

5. A device according to claim 1, in which said suction pipe means comprises two hingedly connected pipe sections adapted from an aligned position therebetween in which an approximately tight connection exists between said two sections to be pivoted against resilient force relative to each other for venting said suction pipe means.

6. A device according to claim 1, which includes electrically heatable plate means within the region of said suction mouth for activating an adhesive layer on a label to be applied to goods.

7. A device according to claim 1, which includes micro-switch means adapted to be connected to the printing and label issuing mechanism of a calculating scale and responsive to said suction pipe means having reached its label receiving position for causing triggering of said printing and label issuing mechanism to print a label and deposit the same released for pickup by said suction pipe means.

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GEORGE F. LESMES, Primary Examiner

M. E. McCAMISH, Assistant Examiner

U.S. Cl. X.R.

156—378, 384, 566