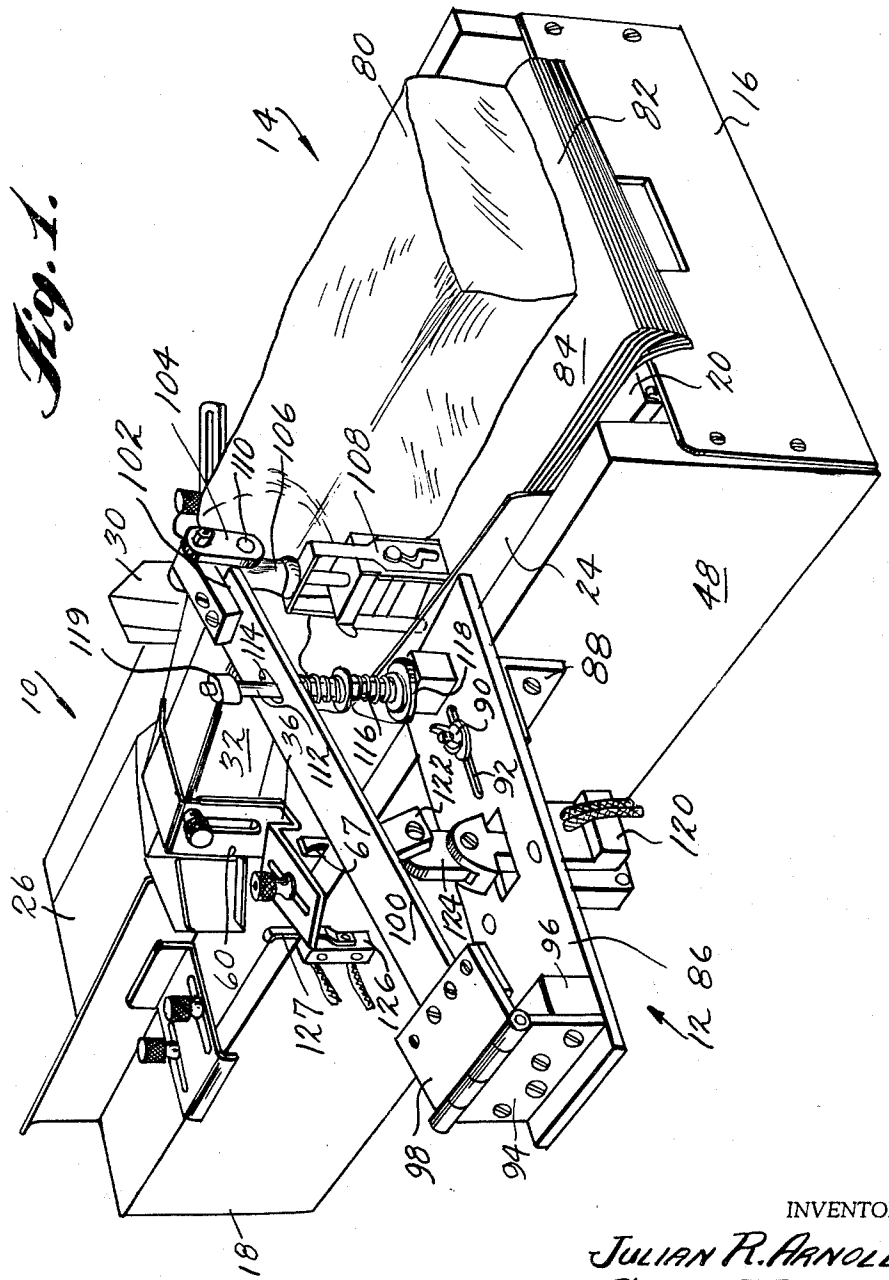
June 22, 1965 J. R. ARNOLD ETAL 3,190,054

PRINTING FLEXIBLE BAGS

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Fig. 1.



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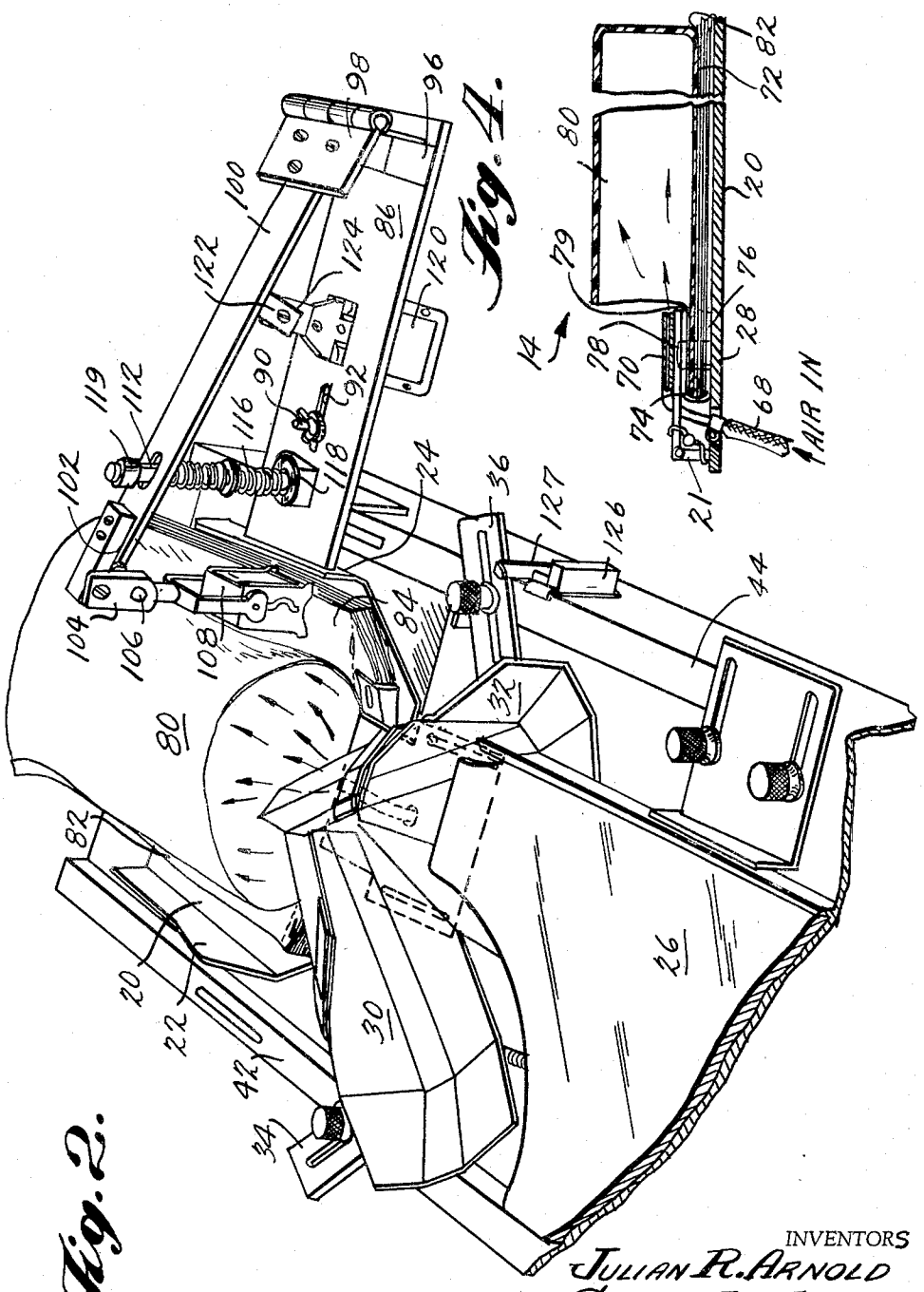


Fig. 2.

Fig. 4.

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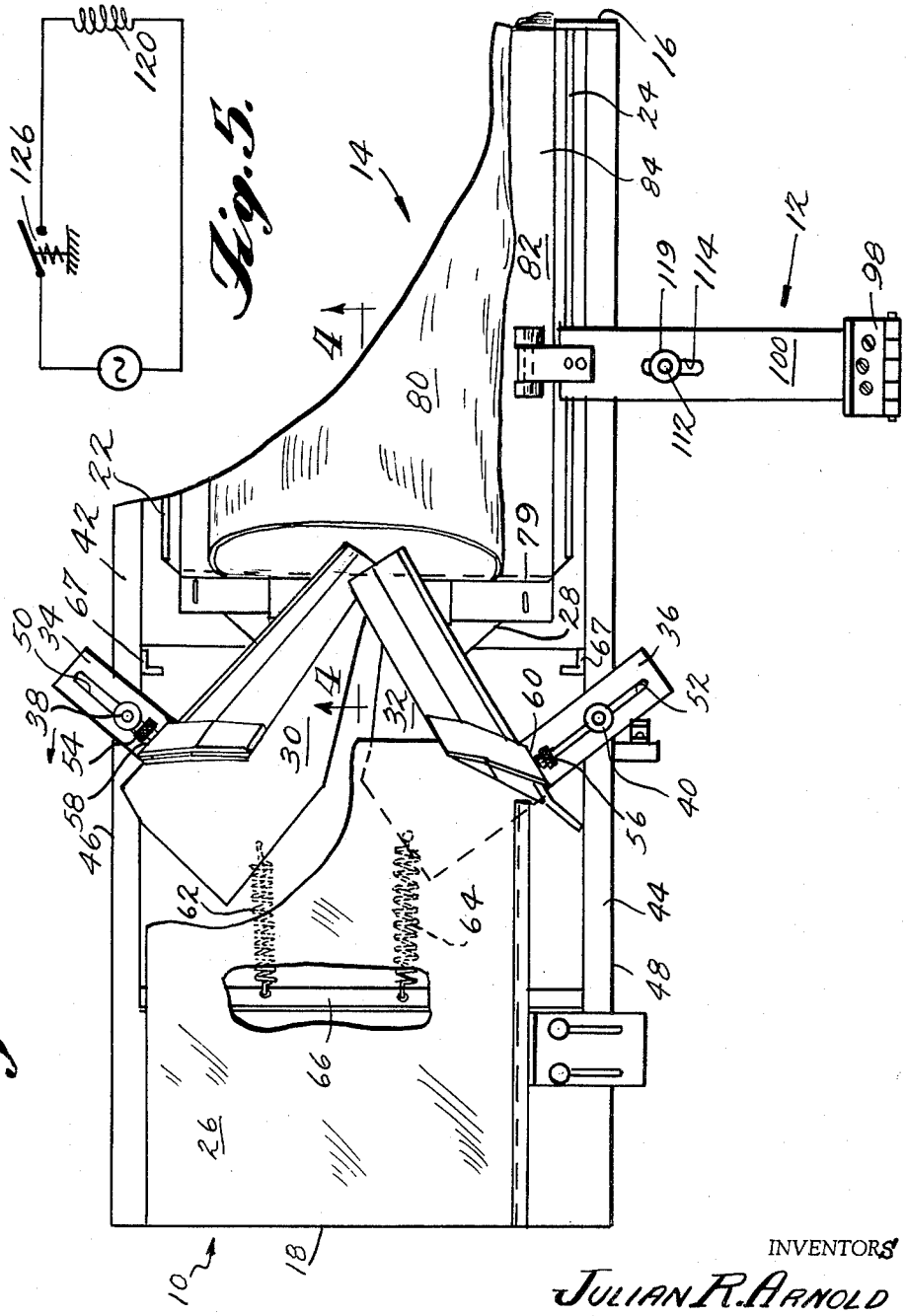


Fig. 5.

Fig. 3.

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PRINTING FLEXIBLE BAGS

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This invention has reference to printing flexible bags, there being provided a method and apparatus for printing a stack of flexible bags joined to one another. The printing takes place when the uppermost bag is blown up for filling purposes, at which time the next lower bag is printed by a stamp or the like on the area thereof left exposed by the uppermost blown bag.

With the advent of wide commercial use of flexible bags for marketing purposes, there are available numerous bag loading or wrapping machines which facilitate bag filling on a mass scale. However, it is oftentimes necessary to print-stamp the bag for various reasons. For example, the bag may require indicia representing dates, serial numbers of various sorts, and otherwise identifying indicia. Once filled, the bags are not easily stamped in view of the flexible nature of the bag material. Further, if the bags are all stamped prior to insertion in a loading machine, there is a loss of time and labor in view of the manual labor requirements involved.

According to this invention, there is provided a printing mechanism which is conveniently operative for attachment to conventional bagging machines, bag loading machines, or the like, which are operative to carry a stack of flexible bags joined to one another at their open ends, and assembled to the machine. An air blast is directed across the uppermost bag, blowing up the same so that this bag may be filled. At this time, the next lower bag is both flat and has its side margins exposed due to the transverse reduction in area occupied by the uppermost blown bag. This side margin is stamped prior to blowing up the same in an automatic fashion, in response to the filling of the uppermost blown bag.

Accordingly, there is provided a printing attachment operative for connection with a loading machine or the like, which carries a conventional stamp, such as commonly used in marketing packages, this stamp being positioned immediately above the side margin area of the stacked bags. Means are provided for actuating this stamp to print this side margin of the next lower bag, which includes, in the preferred embodiment of this invention, a solenoid operatively connected to the stamp. This solenoid is actuated in response to the filling of the bag by a microswitch disposed in a suitable electric circuit. When the microswitch is actuated by a linkage connection, the bag is stamped; when the microswitch is deactuated the printing stamp returns to its inoperative position, spaced from the bag stack. Thus, the stack of bags are stamped in a reliable manner with a minimum effort and expense.

Still further, this invention contemplates (1) the combination of a bag loading machine and a printing arrangement whereby the bags are stamped in response to filling the bags, and, (2) a new and improved method for sequentially stamping a stack of flexible bags.

These and still further objects, advantages, and novel features of the present invention will become apparent in the specification and claims taken in connection with the accompanying drawings.

In the drawings:

FIGURES 1 and 2 are perspective views of a bag loading machine with a printing attachment according to this invention, viewed from the opposite ends thereof;

FIGURE 3 is a plan view of the assembly partially broken out;

FIGURE 4 is a longitudinal section view taken generally along line 4—4 in FIGURE 3; and

FIGURE 5 is a circuit diagram for the assembly.

Referring now to the accompanying drawings, there is shown a bag loading machine 10 of conventional construction, the machine carrying an attachment 12 for printing a stack of flexible bags 14. As will become evident, the attachment 12 is not confined in utility to the specific loading machine 10 here shown, as various types of packaging equipment, such as wrapping machines, are equally well suited to actuate the printing attachment 12 which constitutes the present invention. Generally, the bag loading machine may be automatically or manually operated, the machine 10 being of the manually operative type for purposes of illustration.

The machine 10 is of oblong box-like construction having a front end 16 and a rear end 18. Further, the machine includes a bag-stacking plate 20 adjacent its front end 16 for receiving the stack of flexible bags 14, the stack of bags being joined to the stacking plate 20 by releasable spring clips 21 (FIGURE 4). Alternative arrangements such as U-bars, carried in spaced apertures through the stack are likewise suitable for joining the bag stack to the machine 10. Conveniently, the plate 20 has upstanding sidewalls 22 and 24 for retaining the stack of bags 14 in longitudinal alignment.

Positioned adjacent the rear end of the machine 10 is a dispensing plate 26 which may be longitudinally movable towards and away from the stacking plate 20 on a guide track (not shown), or stationary. Positioned between the rear end 28 of the stacking plate 20 and this dispensing plate 26 are transversely pivotable funnel guide members 30 and 32. Each of these funnel guide members carries a transversely extending lever arm 34 and 36, respectively, which are in turn pivotally connected at their opposite ends to the machine 10 by upstanding screws 38 and 40. In this regard, the screws are joined to opposed top flange portions 42 and 44, respectively, of the opposite side walls 46 and 48 of the machine 10. Means for transversely adjusting the funnel guide members 30 and 32 are provided by virtue of the elongated slots 50 and 52 in the respective lever arms 34 and 36 adjacent their respective screws 38 and 40. Further, vertical adjustment of the funnel guide members 30 and 32 are provided by set screws 54, 56, which extend transversely from the outer sides of the funnel guide members 30 and 32, these set screws engaging upwardly extending slotted portions 58 and 60 of the lever arms 34 and 36 adjacent thereto.

The funnel guide members are normally biased against one another by tensioned springs 62 and 64. These spring 62 and 64 are joined to the respective funnel guide members 30 and 32 beneath the dispensing plate 26, and extend rearwardly where they are retained by a transverse angle plate 66 carried by the machine 10 beneath the plate 26. Thus, when funnel guide members 30 and 32 are pivoted away from one another e.g. manually, the spring 62 and 64 tend to bias them back toward one another. Opposed upstanding stops 67 are carried by the sidewalls 46 and 48 to limit the maximum extent to which the funnel guide members 30 and 32 may be pivoted away from one another.

Positioned closely adjacent to the edge of the dispensing plate 26 is an air supply pipe 68 (FIGURE 4) which is operated to direct a blast of air across the stacking plate 20 from its horizontally extending upper end 70.

The stack of flexible bags 14 is constructed according to the teaching of our co-pending application Serial No. 47,253 filed August 3, 1960, now Patent No. 3,126,094. As disclosed in this application, the bags are formed of a flexible material such as cellophane or the like, the bottom side of 72 of each bag having an extending lip 74 beyond its open end and all the bags in the stack 14

are joined together along these lips 74. As best shown in FIGURE 4 the bag ends are conveniently joined by a U-shaped cardboard strip 76 surrounding the lips 74, the entire assembly being secured together by spaced apart staples 78. Each bag has transverse tear lines 79 on the bottom side 72 in spaced relationship to the coardboard strip 76.

Thus, when the air blast is directed across the stack of bags 14, the uppermost bag 80 is blown open. Accordingly, the uppermost bag 80 occupies, when blown up, a lesser transverse area than the next lower bag 82, so that the exposed side margins 84 are here provided. According to this invention, this side margin 84 of the next lower bag 82 is printed while the uppermost bag 80 is blown up and the same is filled.

To this end, the printing attachment 12 operates. The printing attachement 12 takes the form of a transversely extending carriage plate 86, which is joined to the sidewall 48 of the machine 10 adjacent to the stacking plate 20 by an angle plate 88. The angle plate 88 is conveniently bolted to the side wall 48, and carries an upstanding bolt connection 90 which is received in longitudinal slot 92 in the carriage plate 86. This adjustable connection allows the printing machine 12 to be transversely spaced with respect to the stacking plate 20 as desired. The free end of the carriage plate 86 opposite the sidewall 48 carries a hinge 94 which is joined to the carriage plate 86 by a block 96. The other freely pivotable end 98 of the hinge 94 carries on operating bar 100 which extends at ats other end 102 to a position above the side margin 84. The end 102 of the operating bar 100 carries a depending link 104 which, in turn, is joined to the handle 106 of a printing stamp 108. In this regard a pin connection 110 through the handle 106 conveniently performs this function. The printing stamp 108 is a well known construction and is suitable for stamping the side margin 84 of the next lower bag 82 when forced downwardly thereby printing the same.

The operating bar 100 is biased in an upward direction so that the stamp 108 is normally spaced above the stack of bags 14. To this end, the carriage plate 86 carries an upwardly extending rod 112 which passes through longitudinal slot 114 in the operating bar 100. This rod 112, in turn, carries a compression spring 116 between the carriage plate 86 and the underside of the operating bar 100. Conveniently, the spring 116 carries a washer 118 at its bottom end for retaining purposes. A retaining collar 119 holds the bar 100 on the rod 112 as by a jam fit.

The operating plate 100 is pivoted in a downwardly direction for stamping purposes by a solenoid 120 which is joined to the underside of the carriage plate 86 and extends upwardly therethrough in a position between the hinge 94 and the rod 112. The operating bar 100 is connected to the solenoid 120 by a depending link 122, which, in turn, is connected to the solenoid 120 by an intermediate pivotally connected link 124. It is thus apparent that actuation of the solenoid 120 in a downward direction causes the operating bar 100 to pivot downwardly, causing the printing stamp 108 to stamp the side margin 84 of the next lower bag 82. The operating bar 100 is then returned to its upper position by the compression spring 116.

There is provided a microswitch 126 which is carried by the sidewall 48 of the machine 10 in the path of pivotal movement of the lever arm 36. The microswitch 126 is directly actuated by a spring plate 127 joined thereto. When the funnel guide member 32 is pivoted transversely away from its central position, the lever arm 36 will engage the microswitch 126, closing an electrical circuit (FIGURE 5) connected with the solenoid 120, to thereby actuate the latter. When the funnel

guide members 30 and 32 are pivoted back to their center closing position, by the springs 62 and 64, the microswitch 126 is opened and the solenoid 120 is consequently deactuated.

In operation, it is evident that a person places the stack of bags 14 into the stacking plate 20, engaging the cardboard strip 76 with the spring clips 21 carried by the machine 10. To commence the filling of the bags, a blast of air from supply pipe 68 is directed across the top bag thereby inflating it. Material, such as food, hardware or the like, is then inserted into the uppermost blown bag 80 by opening the funnel guide members 30 and 32. This movement closes the microswitch 126, which actuates the solenoid 120 to thereby print the bag 82. When the uppermost bag 80 is filled the funnel guide members 30 and 32 are pivoted back to their central position by the springs 62 and 64 so that the microswitch 120 is opened. The operator then tears the uppermost filled bag 80 along the score line 79 and the sequence is repeated until the entire stack of bags is used.

From the foregoing description of the various embodiments of this invention, it is evident that the objects of this invention, together with many practical advantages are successfully achieved. While preferred embodiments of my invention have been described, numerous further modifications may be made without departing from the the scope of this invention.

Therefore, it is to be understood that all matters herein set forth are shown in the accompanying drawings are to be interpreted in an illustrative, and not in a limiting sense.

What is claimed is:

1. In combination, a bag loading machine comprising means for supporting a stack of flexible bags; means for inflating the uppermost one of the bags of said stack to thereby expose a side margin of the bag immediately below said uppermost bag; guide means to assist in loading material into said inflated uppermost bag, said guide means including at least one movable member which is displaced from its normal position during loading of said uppermost bag; printing means positioned to permit contact with the exposed side margin during actuation thereof; actuating means coupled to said printing means and operable by said movable member during displacement of the member to actuate said printing means to print indicia on said exposed side margin.

2. The combination defined in claim 1 wherein said actuating means includes electrical means and a switch, said switch being closed by the displaced movable member to operate the electrical means thereby actuating the printing means.

3. The combination defined in claim 1 wherein said printing means includes an operating bar constructed and arranged for generally vertical movement relative to said bag supporting means, and a downwardly facing printing stamp carried by said operating bar; said actuating means being connected to said operating bar to move said bar downwardly during operation of said actuating means to thereby contact the exposed side margin with said stamp.

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