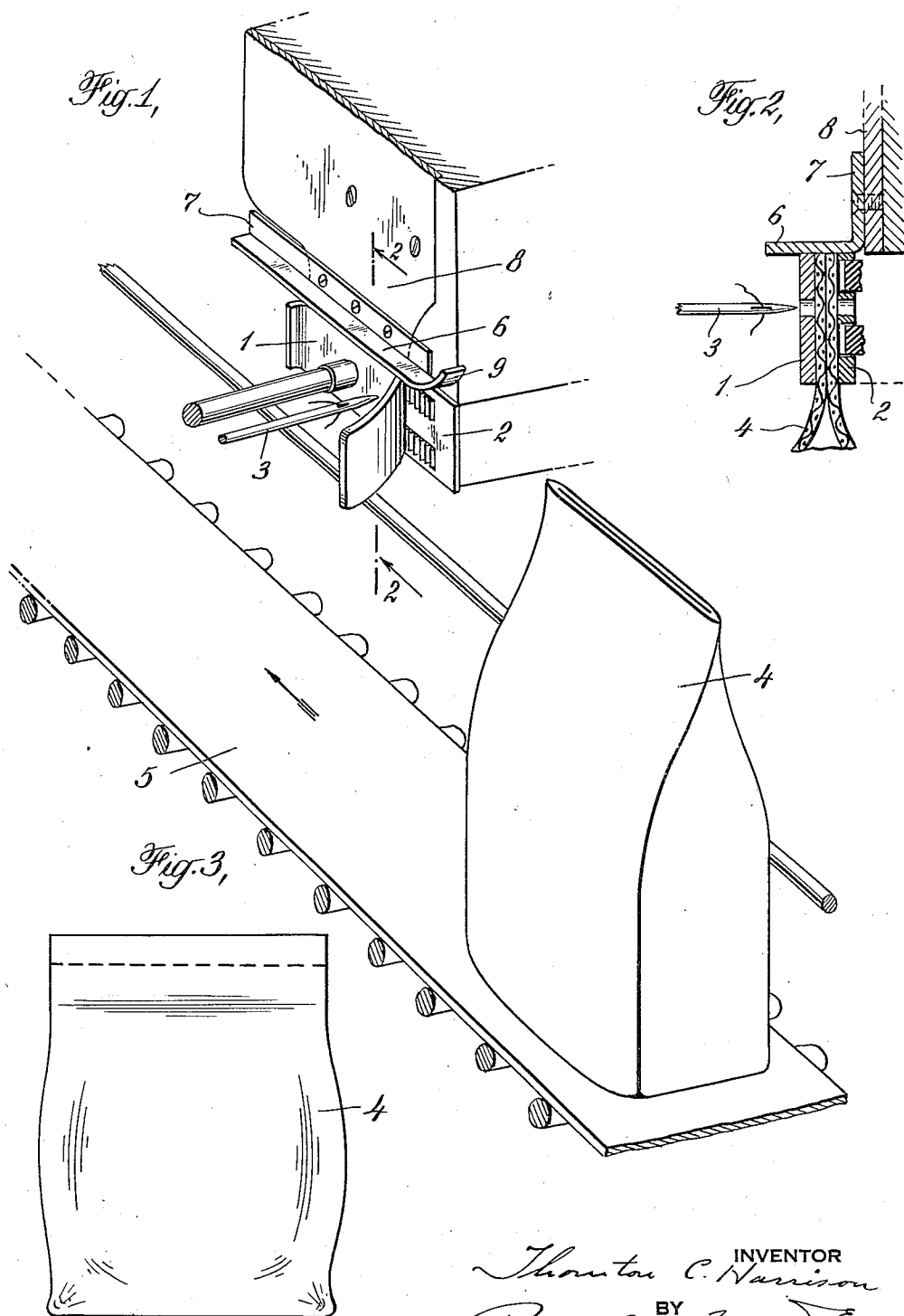


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T. C. HARRISON
BAG CLOSING MACHINE
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INVENTOR
Thornton C. Harrison
BY
Phineas Davis, William T. Church
ATTORNEYS

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BAG CLOSING MACHINE

Thornton C. Harrison, Cincinnati, Ohio, assignor
to Lektophone Corporation, a corporation of
Delaware

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This invention relates to bag closing machines. Certain commodities such as chemicals and fertilizers are sold in bags usually made of burlap lined with paper. After the bags are filled they are passed through a machine which closes their tops. Considerable difficulty has been experienced in causing the upper edge portion of the bag to travel in a straight line as the bag is passed through the machine. This prevents the closing from being accurately effected. This is especially so where the bag is closed by stitching it across the top on a sewing machine, it having been found particularly difficult in this case to feed the upper edge portion of the bag through the sewing machine with enough accuracy to make the line of stitching straight. An attendant usually guides the upper edge portion of the bag through the machine and attempts to keep the row of stitches straight by depressing or elevating the rear upper corner of the bag but even so, the line of stitching is usually waved or arched upwardly or downwardly. The crooked row of stitches detracts from the appearance of the bag and the close attention required on the part of the operator slows up the procedure. Moreover, more material must be left at the top of the bag to accommodate the crooked row of stitches than if the stitching were straight.

The principal object of the invention is to obtain an accurate guiding of the upper edge portion of the bag through the machine so that the closing will be accurately effected.

Another object is to so improve a bag sewing machine as to insure that the row of stitching across the top of the filled bag will be straight.

Other objects are to effect a saving in the amount of material used for each bag, to speed up the operation of closing the filled bags, and to effect a saving in labor.

To accomplish these objects I provide means which affords a channel-shaped passage through which the upper portion of the bag travels as the bag moves through the machine. This passage confines the upper portion of the bag so closely at the top and at the sides that it is compelled to retain its flat condition and to travel in a straight and horizontal line when the bag is urged in an upward direction into the channel during its travel through the machine. In a bag sewing machine, I may utilize the existing presser foot and throat plate for the lateral confinement of the upper portion of the bag and supplement them with an additional element in the nature of an edge guide for the top edge of the bag, this element being so associated with the presser foot

and the throat plate as to form a channel-shaped passage capable of functioning as above described. The upward urging of the top edge of the bag to keep it in contact with the edge guide is preferably accomplished mechanically as herein- 60 after described.

The accompanying drawing illustrates the application of one embodiment of the invention to a bag sewing machine. In the drawing,

Fig. 1 is a perspective view of those parts of a bag sewing machine to which the improve- 65 ment has been applied;

Fig. 2 is a transverse vertical section on an enlarged scale taken on the line 2—2 of Fig. 1;

Fig. 3 is a side elevation of a filled bag that 70 has been stitched across the top to close it.

The presser foot and throat plate of a bag sewing machine are shown at 1 and 2 respectively and the needle is represented at 3. These parts may be of the usual construction. One of 75 the filled bags is represented at 4 in readiness to be passed through the machine. The bags are preferably supported on a conveyor 5 which moves the bags through the machine.

Located above the presser foot 1, and the throat 80 plate 2 is an edge guide 6. It has a vertical flange 7 which may be secured to some part of the sewing head, such as the plate 8. The operating face of the edge guide lies in a plane at right angles to the plane of the opposing faces of the 85 presser foot and throat plate and the edge guide is located close enough to the upper edges of the presser foot and the throat plates so that the inner faces of these three parts form a substantially closed channel-shaped passage for the up- 90 per edge portion of the bag, as best shown in Fig. 2.

The vertical spacing between the conveyor 5 and the lower face of the edge guide 6 is preferably slightly less than the vertical height of the filled bags. This spacing may be obtained by a proper positioning of the parts when the machine is constructed, or by a relative adjustment between the parts. As the unstitched bags will project slightly above the edge guide 6, the 100 forward end of the edge guide may be turned upwardly as shown at 9, to assist in depressing the upper part of the bag and guiding it into the confined space formed by the presser foot, the edge guide, and the throat plate. As the bag 105 passes through the machine its upper edge will be continually urged into contact with the lower surface of the edge guide due to the fact that the distance from the conveyor to the under surface of the edge guide is less than the height 110

of the unstitched bag, and due to the fact that the bags are inherently stiff enough to tend to retain their normal height. When the upper edge of the bag is depressed by the edge guide, the inherent resiliency of the bag retains its upper edge in contact with the lower surface of the edge guide. In this way the upper portion of the bag is restrained against downward movement such as would deflect the line of stitching in an upward direction. The portion of the bag in the channel cannot turn back upon itself nor can any part of it escape from the passage and move in a general upward direction. In this connection it is important that any clearance or spacing which might exist between the lower face of the edge guide and the opposing faces of the presser foot and throat plate, should be less than the thickness of the bag material, so that no portion of the bag can escape through such clearance. The result of these things is that the row of stitches will be absolutely straight.

The upward urging of the top edge of the bag to keep it in contact with the edge drive may be accomplished in other ways than that described above. For instance, the bottom of the bag may be caused to move through the machine at a slower speed than the top. This may be effected by reducing the lineal speed of the conveyor 5 with respect to the lineal speed at which the top of the bag is fed by the feed dogs, or enough friction may be introduced between the bottom of the bag and its support (in case the support is stationary and the bag slides over it) to retard the movement of the bottom of the bag and reduce its lineal speed below that at which the top of the bag is fed by the feed dogs. This will cause the bag to tilt in the direction of travel and pivot about the needle, thus producing the same effect as the upward thrust caused by the resiliency of the bag material. This method of obtaining the upward thrust of the top edge of the bag against the edge guide may be utilized with bags made of most any kind of material.

The improvements above described are of such a simple nature that they may be readily applied to an existing machine if so desired. In spite of their simplicity, they speed up the operation of closing the filled bags as the usual care on the part of the operator in attempting to guide the upper portion of the bag through the machine in a straight line is eliminated. The appearance of the stitched bag is greatly improved due to the straight line of stitching. Moreover, the bag may be stitched very close to its upper edge, and it is not necessary to provide an excess of material at the top of the bag to accommodate the row of stitching as has been the custom in the past. This effects a considerable saving in the amount of material used for each bag, as the bags may be made of less height than has been necessary in the past.

While the invention has been described in connection with that type of bag-closing machine which affects the closing by a stitching operation, it is also applicable to machines in which the closing is effected in other ways.

I claim:

1. In a machine for closing filled bags, an edge guide for the upper edge of the bag, and means for urging the upper edge of the bag into engagement with the surface of said edge guide comprising means for feeding the top of the bag through the machine at a greater lineal speed than the bottom of the bag moves through the machine.

2. In a machine for closing filled bags, an edge guide for the upper edge of the bag, a surface on which the bag is supported as it moves through the machine, means operative on the top portion of the bag for feeding it through the machine, said last named means being capable of feeding the top of the bag through the machine at a greater lineal speed than the bottom of the bag moves through the machine.

THORNTON C. HARRISON.

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