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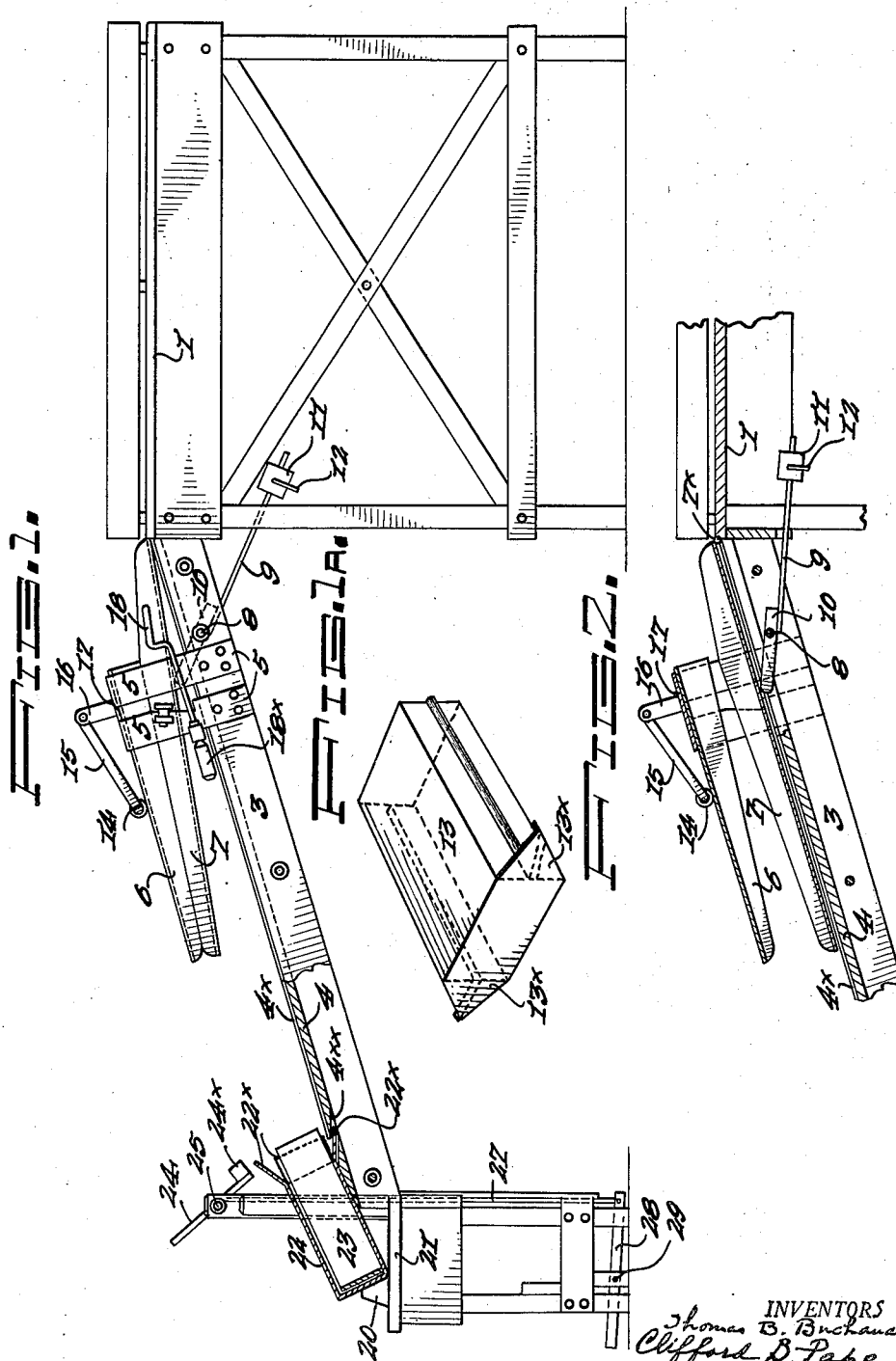
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2,402,869

APPARATUS FOR PACKAGING

Filed April 1, 1943

3 Sheets-Sheet 1



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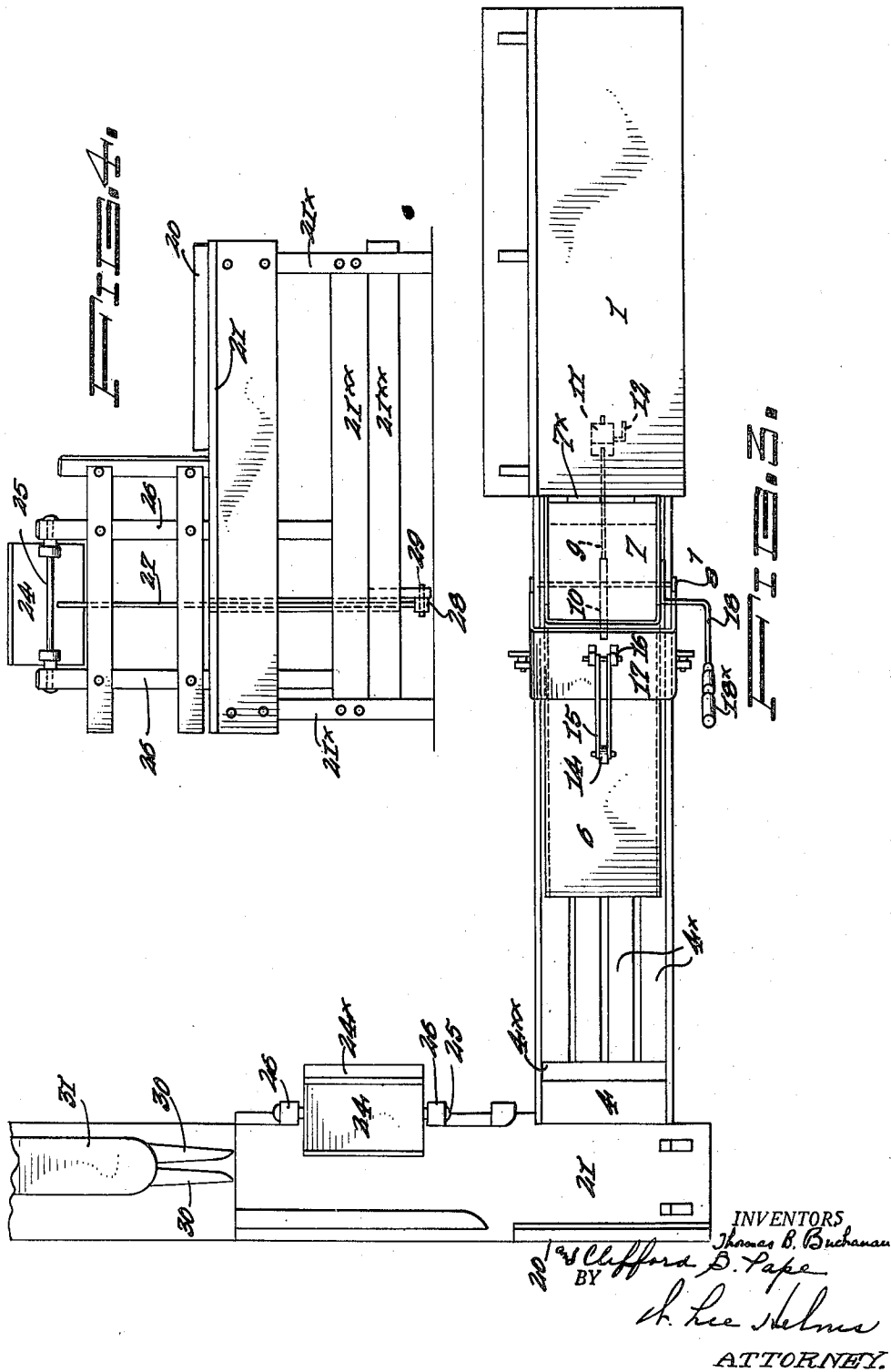
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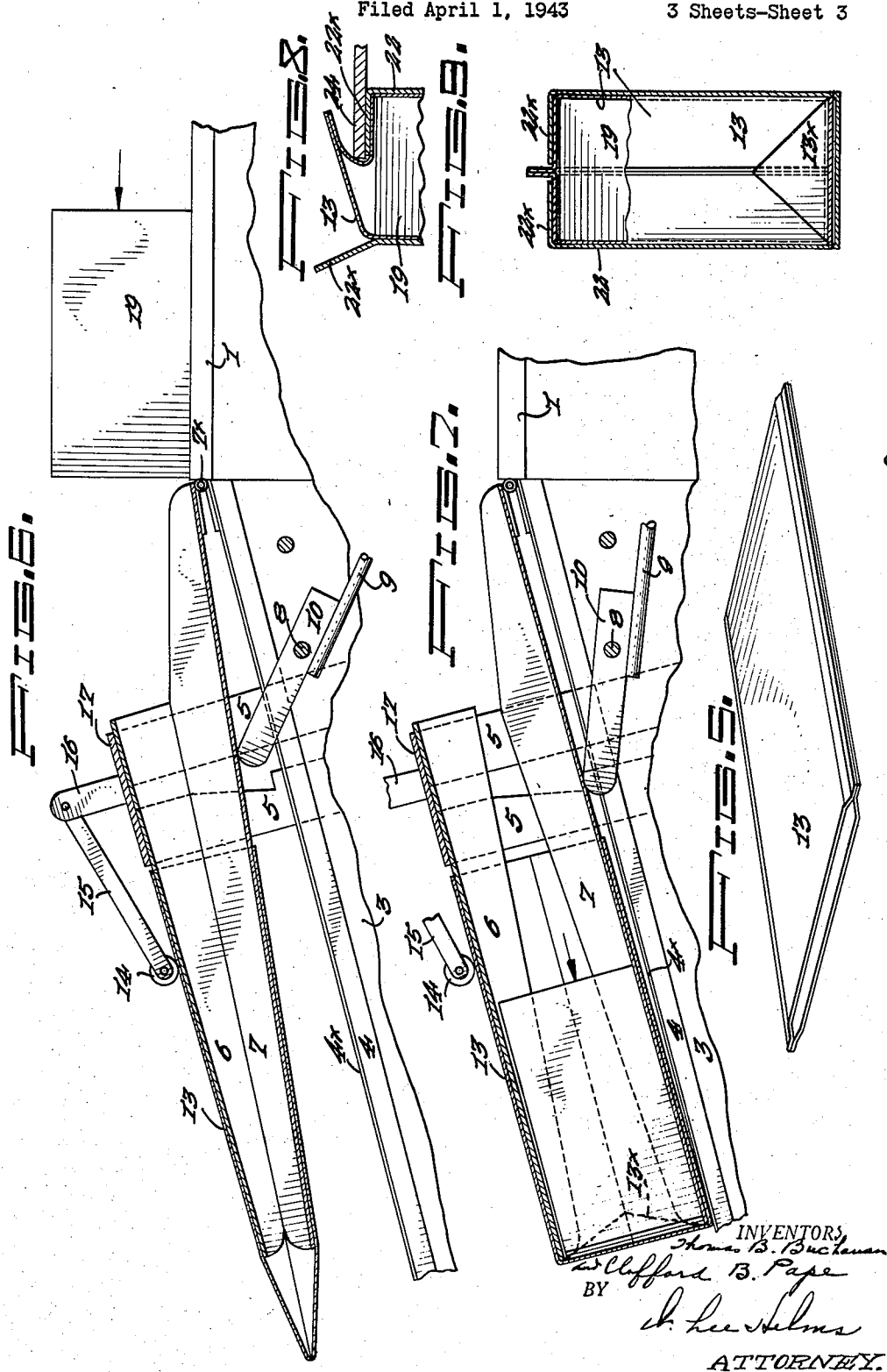
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UNITED STATES PATENT OFFICE

2,402,869

APPARATUS FOR PACKAGING

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4 Claims. (Cl. 226—18)

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The object of the present invention is primarily to provide apparatus for efficiently receiving and expanding envelope-type bags about a hollow former and into which may be received a package of suitable form, as, for example, a rectangular box enclosing foodstuffs or any other articles or materials. Such a bag is slipped over upon the hollow former, one member of the latter may be pivotally moved relatively to a second member, and the closed end of the envelope brought inwardly into right-angular relation to the envelope side walls, except at the corner of the envelope which are brought into outwardly extending triangular folds adapted for inward movement to lie flat against the expanded bottom of the envelope. This object and the additional objects of the invention will be described with reference to the accompanying drawings, in which—

Figure 1 is a view in elevation, showing the side of the forming apparatus and ends of certain table elements related thereto, part of the view being in section.

Figure 1A is an isometric view of a formed envelope bag expanded by means of the apparatus.

Figure 2 is a fragmentary view, partly in section, showing the expander after an operative movement thereof.

Figure 3 is a plan view of the apparatus.

Figure 4 is a view in front elevation showing top folding elements for the envelope.

Figure 5 is a perspective view of the envelope in flat form, looking toward the open end thereof.

Figure 6 is an enlarged fragmentary view showing the former in closed position with the bag thereon.

Figure 7 is a similar view showing the former elements spread apart and the bag expanded.

Figure 8 is a schematic view in section showing the top of the bag after downward movement of the top folding plate member of Figure 4.

Figure 9 is a view in vertical section through the envelope and box enclosure thereof with the top folded and ready for hot plate or other sealing.

Referring to the drawings, we have shown at 1 a receiving table for the boxes or other articles to be packaged. In register with an end wall of the table and preferably secured thereto is a frame 3 carrying at its top a plate or other covering 4, the latter preferably being inclined downwardly from its end attached to table 1 to the end remote therefrom.

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Each side face of frame 3 carries two upwardly extending bracket arms 5 and between these arms is secured the upper member 6 of the bag expander. The said member 6 is a trough open at its end nearest the table 1 and its side walls gradually converge as to width. A second expander member 7 is trough-like in form, its side wall extending upwardly, whereas the side walls of member 6 extend downwardly. It is pivoted at 1x, as by a hinge arrangement, to table 1.

In order to provide a readily adjustable and balancing separation between the two members of the expander, I pivot on a rod 8 a lever 9, which at its upper end carries a contact finger 10. Slidingly mounted on lever 9 is a weight 11 which in practice will be formed with a threaded aperture to receive a set screw 12. Rod 8 is carried by frame 3 and finger 10 bears against the underface of expander member 7. By adjusting the position of the weight the gravitational downward movement of member 7 on its pivot 1x will be overcome and member 7 brought upward at its front end to a desired position relative to member 6. The adjustment may be such that member 7 will be so balanced that very slight pressure thereon will cause it to descend.

The envelope bags to be acted upon are generally the type illustrated in Figure 5 at 13. With the expander member closed as shown in Figure 1 the open end of the bag receives the forward portions of the members 6 and 7 and the bag is pushed up to the position illustrated in Figure 6. In such movement the bag passes under a weight in the form of a roller 14 carried by an arm 15 pivoted upon a bracket 16 which may be carried by a top connector plate 17 for the arms 5.

The bag being upon the expander elements the handle 18x of a lever 18 secured to expander member 7 may be grasped by the operator and the lever moved downward to carry expander member 7 to the position of Figure 7, whereupon the bag will be expanded to the form shown in Figure 1A. At this point the articles or a package containing the same, carried by table 1, may be pushed down into the expanded bag, such a package being indicated at 19, Figure 6 and in additional figures.

The insertion of the package into the bag will ordinarily by the weight thereof cause the filled bag to move downwardly away from the expander, because of the inclined position of frame 3 and cover 4, and the latter may have applied thereto polished metallic or other surface elements 4x to reduce friction.

The downwardly moved filled envelope or bag

will meet a stop member 20 on a receiving table 21 and the envelope may be then sealed and the seal then folded. Usually, however, the downwardly moving filled envelope will be discharged from cover 4 into a box 22.

Box 22 is prepared by moving outwardly its closure flaps 22x and by the insertion of the lowermost closure flap into a slot at 4x in the cover 4 of frame 3, these elements providing a slide for the filled envelope as above explained.

Preliminary to the said automatic insertion of the filled envelope into the box, the latter may receive a folded reinforcing strip of cardboard 23 which will generally be U-shaped so as to reinforce the bottom and the seamed walls of the envelope. This insertion of the filled envelope will automatically bring its bottom wings 13x up against the seamed sides of the envelope. If necessary, the filled envelope may be guided by hand into the box and flaps 13x will be preliminarily folded back and held by hand, but by proper guiding and gravitational arrangement of the slide provided by members 3, 4 and 4x, gravitational insertion of the filled envelope within the box will be sufficient.

When the box is filled it will be moved to vertical position on table 21 and shifted along the table to a top folding device best shown in Figure 4, this device consisting of a pivoted folding plate 24, the pivot member being a rod 25 carried by a bracket frame shown at 26 supported by table 21 or the table standards which in the embodiment shown include the legs or risers 21x and the cross frame members 21xx. The plate may be weighted, as at 24x, Figure 1 to hold it in the position of that figure. The plate is engaged by an actuating rod 27 at the rear of its pivot, the rod being carried by a treadle lever 28 pivoted at 29 and having a foot pressure extension whereby pressure upon the treadle lever will cause the plate, as to its forward portion, to move downwardly. Prior to such action the underlying one of the box flaps 22 will be swung in slightly toward the center of the box and downward movement of the plate will have the action shown in Figure 8. The opposite one of box flaps 22x may then be brought down so that the top of the envelope will have opposite faces thereof brought together ready for sealing, and the upwardly projecting contacting walls of the envelope may be fed between spaced guides 30 and to a hot plate sealing device generally indicated at 31, the latter forming no part of the present invention. The sealed end may then be folded flat and the box flaps closed and sealed as in usual practice.

By means of the invention envelope-type bags may be formed up rapidly and with precision, articles, as within a container such as a carton, may be rapidly inserted into the open bag, and gravitational force employed for automatically inserting filled envelope bags into a shipping box held open by special means at the end of the slide device which enables the use of the gravitational force.

By means of the invention, the upper forming member is held in fixed position, the lower forming member only being movable for expansion of the envelope bag. This expanding movement, therefore, is downwardly and in the direction of the gravitational force exerted by the

weight of the package or other article or articles inserted. This is an important feature of the invention, because in types of expanders heretofore used, the forming elements acted upon the bag in opposite directions and fracture of bags was common, this defect being overcome by means of our constructions.

It will be understood that various rearrangements and modifications of the structural elements may be made without departing from the spirit of the invention.

Having described our invention, what we claim and desire to secure by Letters Patent is as follows:

1. In apparatus for packaging, an inclined slideway support, means carried above said slideway for receiving and expanding an envelope-type bag, said last named means comprising an upper member held in fixed position upon said support and a pivotally mounted lower member, both members being open at their ends, lever means for moving the lower member downwardly away from the upper member and means for automatically moving the lower member upwardly toward the upper member.

2. In apparatus for packaging, an inclined slideway support, means carried above said slideway for receiving and expanding an envelope-type bag, said last named means comprising an upper member held in fixed position upon said support and a pivotally mounted lower member, the latter member being trough-shaped with upwardly extending sides, means for holding the lower member upwardly in close relation to the upper member, lever means for moving the lower member away from the fixed upper member for expanding a bag held by said members, and means for automatically moving the lower member upwardly toward the upper member.

3. In apparatus for packaging, an inclined slideway support, means carried above said slideway for receiving and expanding an envelope-type bag, said last named means comprising an upper member held in fixed position upon said support and a pivotally mounted lower member, both members being open at their ends, and lever means for moving the lower member downwardly away from the upper member, including the combination of upwardly directed bracket arms carried by the inclined slideway near the upper end thereof and carrying the upper forming member, said bracket arms embracing the lower forming member and serving as guides in the movement thereof and as stops for the mouth edges of a bag to be received upon said forming member.

4. In apparatus for packaging, an inclined slideway support, means carried above said slideway for receiving and expanding an envelope-type bag, said last named means comprising an upper member held in fixed position upon said support and a pivotally mounted lower member, both members being open at their ends, lever means for moving the lower member downwardly away from the upper member, and adjustable means for counter-balancing the lower forming member which normally lies in abutment with the upper forming member.

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