June 24, 1930. T. M. AVERY 1,768,097

BOX BAG PACKING DEVICE

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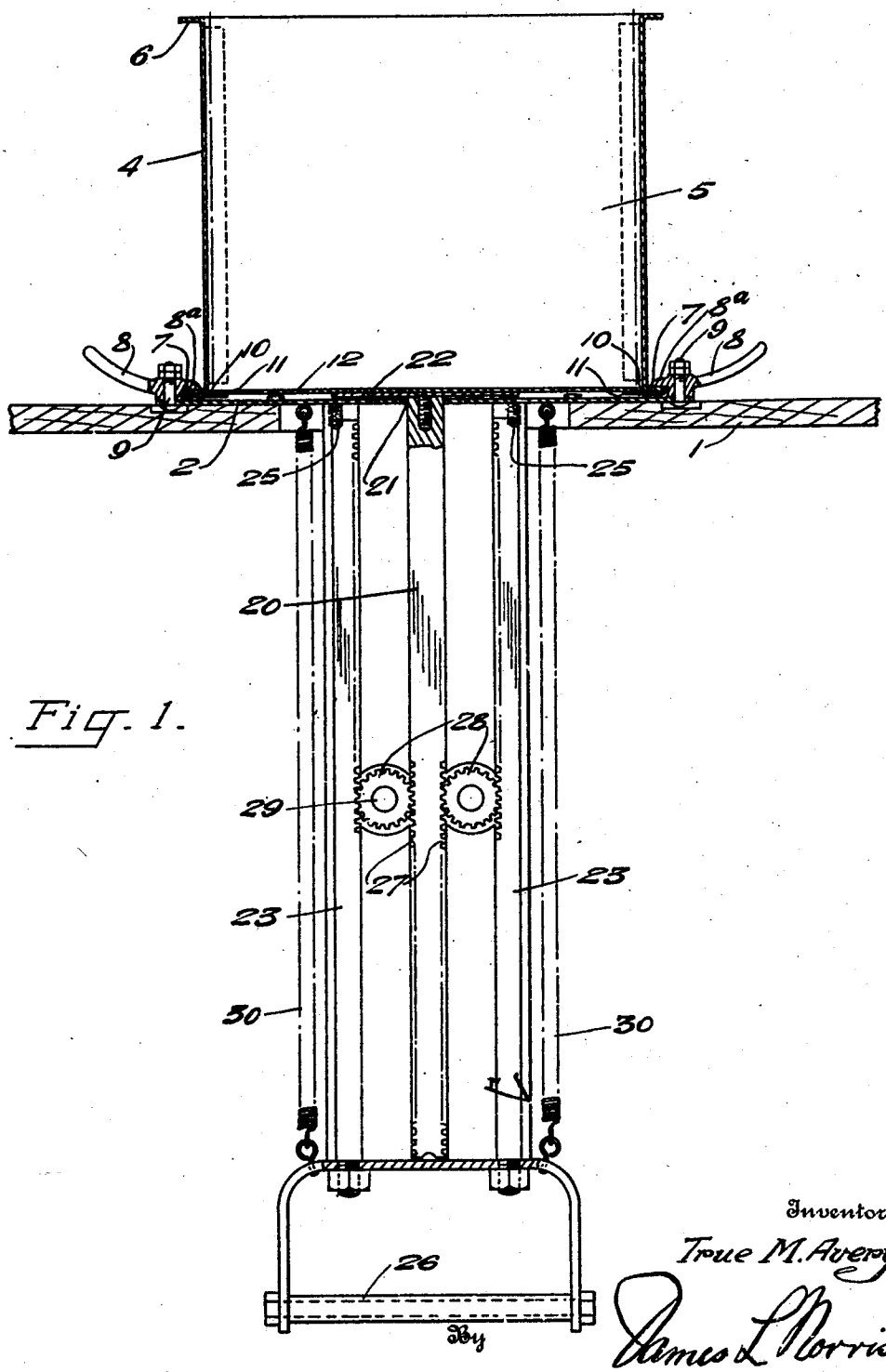


Fig. 1.

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Fig. 10.

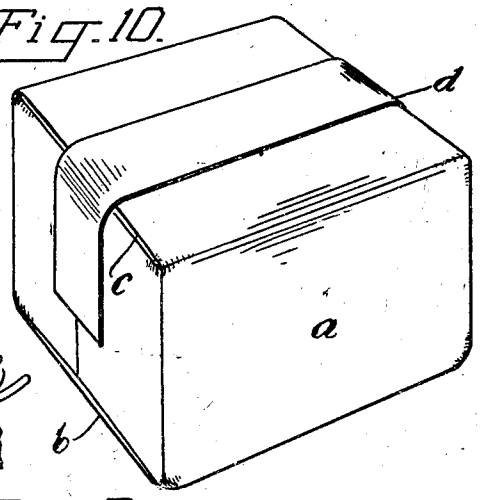


Fig. 2.

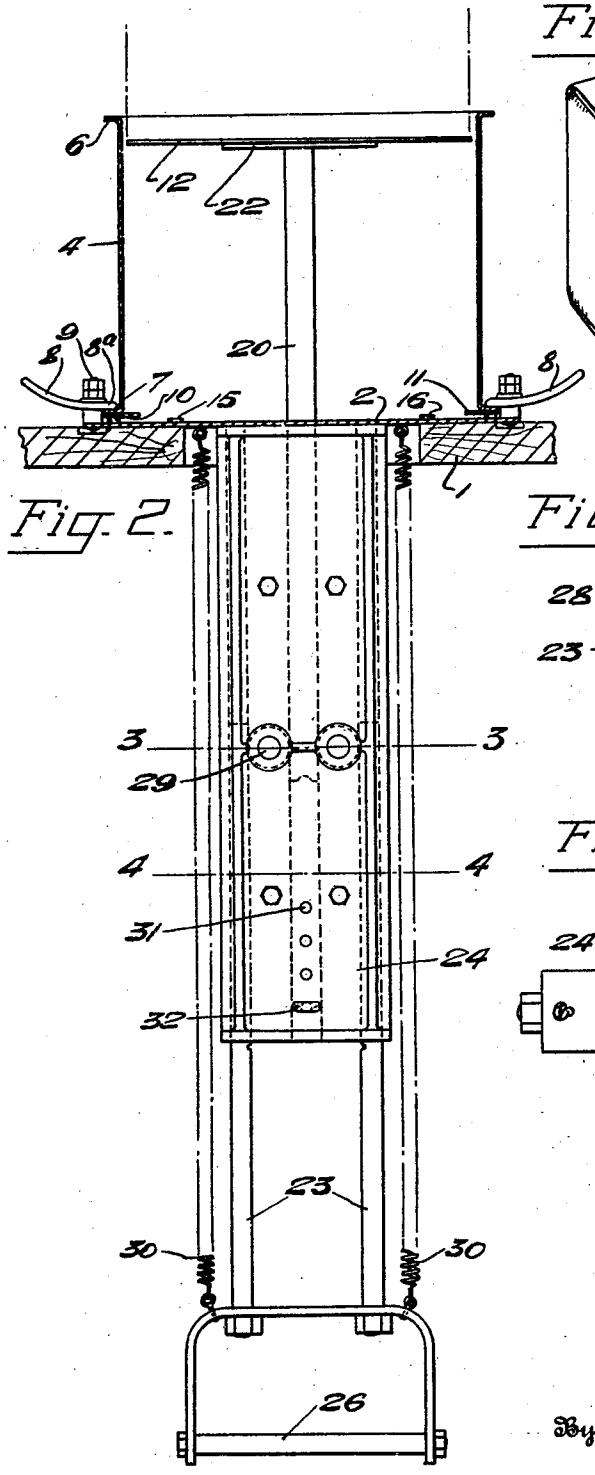


Fig. 3.

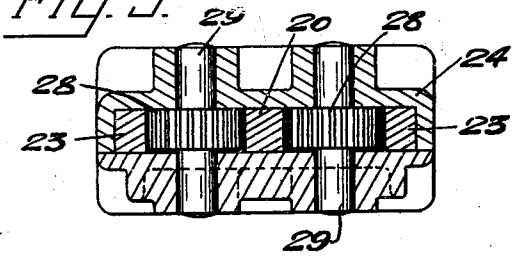
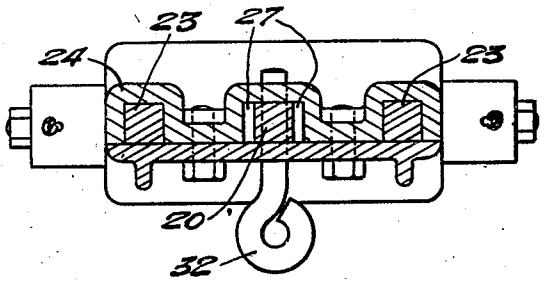


Fig. 4.



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Fig. 5.

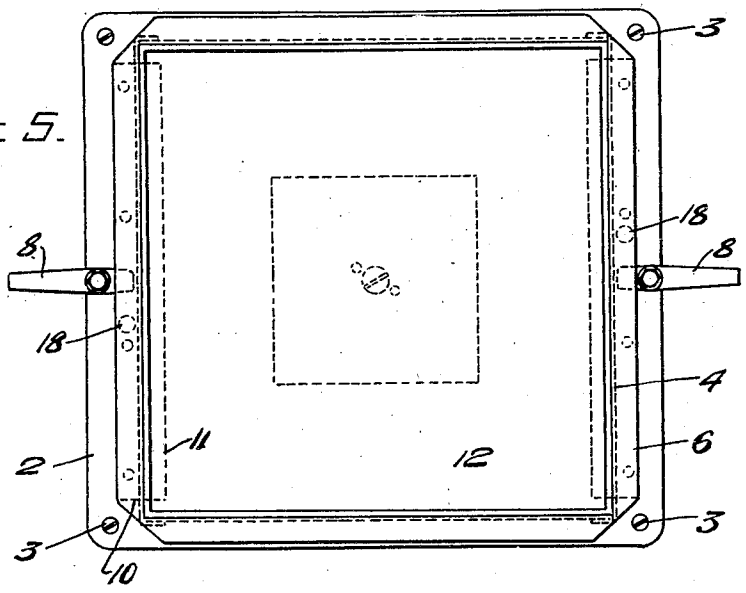


Fig. 6.

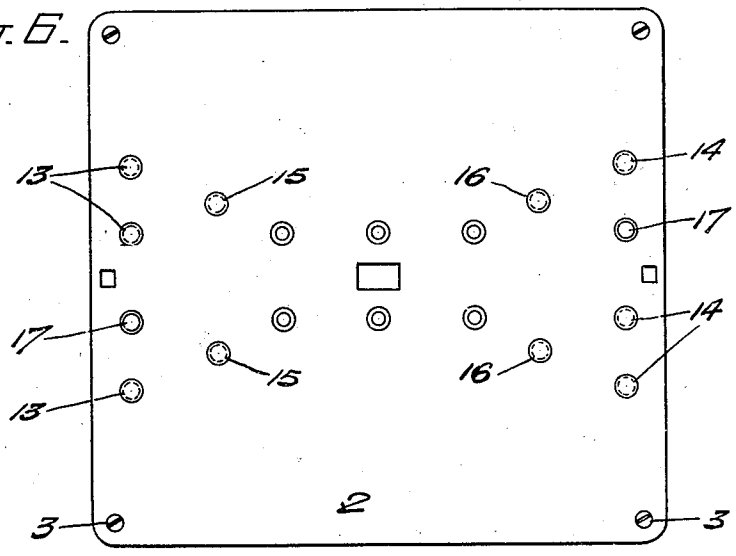
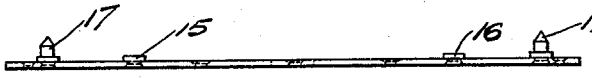


Fig. 7.



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BOX BAG PACKING DEVICE

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Fig. 8.

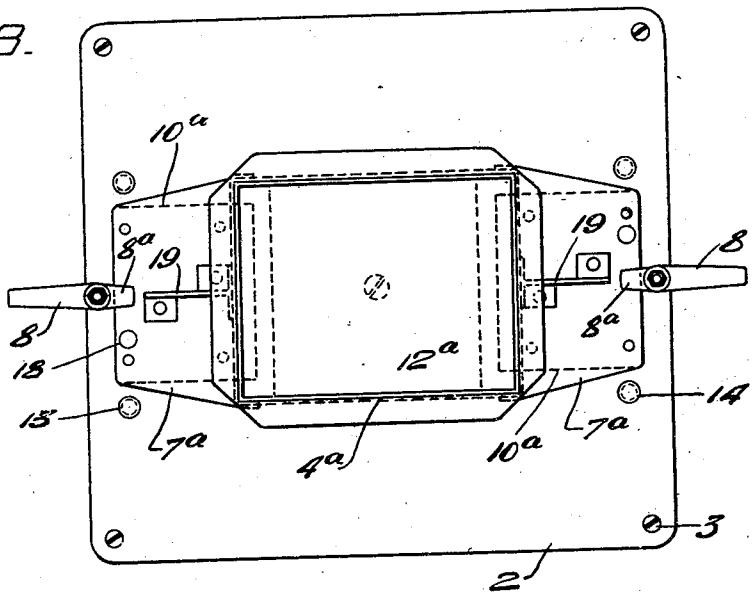
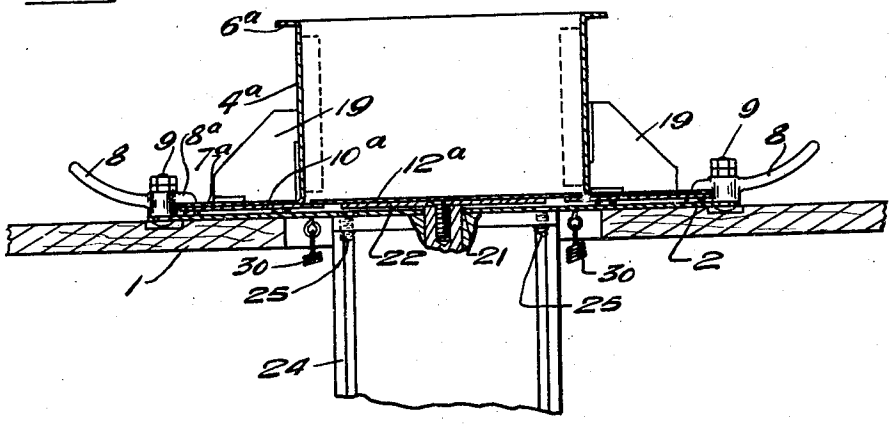


Fig. 9.



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Patented June 24, 1930

1,768,097

UNITED STATES PATENT OFFICE

TRUE M. AVERY, OF GLENS FALLS, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARSHALL FIELD & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

BOX-BAG-PACKING DEVICE

Application filed December 15, 1925. Serial No. 75,642.

The present invention relates to improvements in packing devices and the primary object is to provide a novel and improved packing device which enables bags, and especially box bags, to be packed with a variety of articles while the bag is contained in a holder of appropriate size and shape which acts as a mold or former, after which the top of the bag which is exposed above the mold may be easily and quickly closed, as by folding the top flaps, following which the bag is pushed upwardly or out of the mold while a length of gummed tape is stretched over the top and pressed against opposite sides of the bag to secure or seal it. Heretofore it has been the general custom of department and other stores to pack various articles and goods in cartons which were made of paper board or other relatively heavy material to enable them to retain their form during packing and shipment, such practice being followed especially when the goods were intended for shipment by parcels-post or similar transportation, but such practice has been expensive, owing to the relatively high cost of the cartons and the amount of labor involved in packing and closing or sealing them. The present invention enables relatively inexpensive paper bags to be employed instead of the cartons heretofore used, and it enables such bags to be packed while held in proper form by a mold, and the operations of closing the bag and the application of a securing or sealing strip thereto are facilitated.

To these and other ends the invention consists in certain improvements and combinations and arrangements of parts, all as will be hereinafter more fully described, the features of novelty being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings:—

Figure 1 is a side elevation, partly in section, of a box bag packing device constructed in accordance with the present invention;

Figure 2 is a view similar to Figure 1 but on a reduced scale, showing the parts of the device in the relative positions they occupy after the packed bag has been removed from the mold;

Figure 3 is a detail section, on an enlarged scale, taken on the line 3—3 of Figure 2;

Figure 4 is a detail section on an enlarged scale taken on the line 4—4 of Figure 2;

Figure 5 is a top plan view of a device equipped with a mold or former of one size and shape adapted to be used for the packing of box bags of corresponding size and shape;

Fig. 6 is a top plan view of the top plate of the device;

Fig. 7 is an edge view or elevation of the supporting plate shown in Fig. 6;

Figure 8 is a top plan view of a mold or former of different size and shape as compared with the mold or former shown in Fig. 5;

Figure 9 represents a vertical section through the mold shown in Fig. 8 and through the supporting plate of the device on which it is mounted; and

Figure 10 is a perspective view of a box bag packed, closed and secured or sealed in accordance with the present invention.

Similar parts are designated by the same reference characters in the several views.

The present invention provides a packing device which may be used with speed and facility to pack, close and secure or seal bags of various kinds, although it is particularly adapted to the packing, closing and securing or sealing of box bags which are formed from a tube pleated at opposite edges, folded at the bottom and slitted at the four corners of its mouth to form four separately foldable top flaps, so that when such bags are open or expanded they assume rectangular form in both transverse and longitudinal cross-section, such bags having square bottoms and four flaps foldable into the same plane to form a flat top or closure, bags of this particular kind being usable as substitutes for cartons in the packing of articles or materials of various kinds. The preferred embodiment of the invention is shown in the accompanying

drawings, and will be hereinafter described in detail, but it is to be understood that the invention is not restricted to the precise construction shown as equivalent constructions are contemplated, and such will be included within the scope of the claims.

In the present instance, the packing device comprises a support 1 which may be the top of a table or stand on the upper side of which is mounted a plate 2. This plate, which may be rectangular in form, as is shown in Fig. 6, is secured to the support 1 by screws 3 which extend through its corners. A mold or former 4 of appropriate size and shape is adapted to be mounted on the plate 2, it projecting upwardly from the plate and providing a chamber or pocket 5 in which the bag to be packed is placed. The plate 2 and the mold 4 are preferably constructed from sheet metal of suitable kind and thickness, the upper and lower edges of the mold being preferably formed with out-turned flanges 6 and 7 to stiffen it so that it will retain its shape, the upper flange also providing a rounded edge which the part of the bag projecting above it may engage and thus avoid cutting or tearing of the bag. The lower flange 7 at opposite sides of the mold is utilized as a means for securing the mold immovably in position on the supporting plate 2. Preferably, a pair of clamping or locking levers 8 are provided, each being pivoted on a pin or bolt 9 which may extend through the plate 2 in the margin thereof beyond the periphery of the mold, the portions 8^a of these levers being arranged to move into a position above and to bear on the flange 7, when these levers are swung about their pivots, thereby clamping and holding the mold against the supporting plate. Preferably, a strip 10 is riveted or otherwise secured to the opposite lower edges of the mold, they being shown applied and riveted to the underside of the flange 7, and these strips are sufficiently wide to project inwardly and thus form ledges 11 which are adapted to provide a support for a follower plate 12 when the latter is in its lowermost position, the follower plate 12 being thus supported firmly at its edges, so that it will provide a suitable support against which the articles or contents may be packed in the bag. This follower plate preferably conforms substantially to the size and shape of the mold, as will be understood from Fig. 5, although it may rise and descend within the mold incident to the operation of removing a packed bag from the mold and restoring the packing device to receive another bag.

The supporting plate 2 is provided with means for accurately supporting the mold or former thereon. Preferably, and as shown, the supporting plate is provided with rows of mold positioning and supporting buttons 13, 14, 15, and 16 which may be composed of steel or other hard material and project upwardly from the surface of the plate, the tops of these buttons all lying in the same plane. These rows of buttons are so positioned that the strips 10 of the mold will register with and rest thereon, and are for the purpose of suporting the mold above the supporting plate in order to avoid interference with the proper positioning of the mold by excelsior or other packing material which may lodge on the supporting plate or lie beneath the mold, and to avoid interference with the proper placing of another mold which may be interchanged for one previously used.

Means is provided for registering or insuring proper positioning of the mold on the supporting plate, such means consisting preferably of dowel pins 17 which project upwardly above the plane of the tops of the buttons and are arranged to enter apertures 18 of corresponding size in the lower flange 7 of the mold. When the mold is placed on the buttons on the supporting plate so that the dowel pins register with the apertures 18, the levers 8 are swung outwardly, as shown in Figures 1 and 5, and the mold is then secured immovably to the supporting plate.

Molds or formers of different dimensions may be provided in order to adapt the device to the packing of bags of different sizes and shapes. One of such molds, which is interchangeable with the mold shown in Figures 1 and 5, is illustrated in Figures 8 and 9. In this instance, the body of the mold designated 4^a is shorter and narrower than the mold shown in Figures 1 and 5. The bottom flange 7^a is extended at the opposite ends of the mold. Also the strip 10^a is correspondingly extended so that it will bear on the pins 15 and 16, and also the pins 13 and 14. The extensions on the ends of this mold are sufficient to bring them in position to be engaged and clamped by the securing devices 8. Reinforcing webs 19 may be provided between the body of the mold and the end extensions thereof to insure rigidity. In using molds of a different size or different dimensions, a follower plate 12^a of corresponding size or dimensions will be used.

According to the present invention, the mold provides a chamber or pocket of appropriate size and shape in which the bag to be packed is opened so that its bottom is opposite to or rests on the follower plate 12 and the flaps or closing means for the bag project upwardly beyond the top of the mold, the follower plate 12 providing a support against which the articles and any packing material used may be packed. The upwardly projecting flaps or closing means,

after the packing of the bag has been completed, are folded or closed after which the bag and its contents are pushed upwardly and thus ejected from the mold, and during this operation a gummed strip may be held by the hands of the operator so that the strip will be stretched across the closed top of the bag and its ends brought into pasted relation with the opposite sides of the bag, this strip serving to secure or seal the flaps or closure.

Different means may be provided for ejecting filled or packed bags from the molds, it being preferable to actuate such means by a treadle or equivalent part capable of operation by a foot of the operator, so that both hands of the operator will be free to pack, close and seal the bag. As shown, a plunger 20 is employed to effect ejection of the bag, this plunger being arranged for reciprocation through an aperture 21 formed in the plate 2 and the upper end of the plunger has a head 22 fixed thereon which is arranged to bear on the under side of the follower plate 12. The head 22 is of such thickness that it will be accommodated in the space left between the follower plate 12 and the supporting plate 2 when the follower plate is in its lowermost position, at which time its ends rest on the ledges 11 which project inwardly from the strips 10. The plunger 20 is preferably raised to perform its bag ejecting function in consequence of the depression of a pedal. Different means may be employed to effect this result, the means employed for this purpose in the present instance comprising a pair of vertically movable rack bars 23 which are guided to reciprocate in a vertical guide or housing 24, the upper end of which may be fixed to the under side of the supporting plate 2 by the screws 25 or other suitable means. The lower ends of these rack bars are operatively connected to a treadle which may be in the form of the stirrup 26 shown. The opposite sides of the plunger 20 are provided with rack teeth 27, and pinions 28 having journals 29 which are mounted to revolve freely in the guide or housing 24 are interposed between the plunger 20 and the racks 23 and mesh with the teeth thereon. In such a construction, when the plunger 20 is in its normal or lowermost position, as is shown in Fig. 1, the racks 23 will be in their raised position, as shown in that figure and the treadle or stirrup will be elevated. Tension springs 30 stretched between the treadle and the supporting plate 2 may be used to return the treadle and rack bars to their elevated position and to retain them in such position until pressure is applied to the treadle. When the treadle is depressed the descent of the rack bars 23 in consequence thereof will cause rotation of the pinions 28 in directions to cause ascent of the plunger 20, the head 22 on the latter then acting on the follower plate 12 to push the packed or filled bag upwardly and thus eject it from the mold, and ascent of the treadle and the rack bars connected thereto, through the action of the springs 30, will cause the pinions to operate to retract or lower the plunger.

Each mold or former is preferably made sufficiently deep to enable it to be utilized in the packing of bags of different vertical sizes or heights. When a bag of shallower depth than that of the mold is to be packed, the follower plate 12 and the plunger may be limited in their descent so that they do not recede to the bottom of the mold, but will be supported at an appropriate distance above the bottom of the mold to provide a space in the mold above the follower plate of a depth corresponding with the depth of the bag to be packed. For this purpose, the guide or casing 24 may be provided with a number of suitably graduated apertures 31 to receive a pin 32, and when this pin is inserted into one of these apertures, it extends through the guide or casing and is in a position to act as an abutment against which the lower end of the plunger will come to rest and the pin will thereby limit the depth of the bag-receiving cavity in the mold.

Figure 10 shows a box bag packed, closed and secured or sealed with the aid of the packing device. Such bags, when open or extended, have a body *a* which is substantially rectangular in both transverse and longitudinal cross-section, the bottom of the bag *b* is flat or substantially so, and the mouth of the bag is adapted to be closed by flaps *c* which project upwardly from the four vertical sides of the bag and are slit at the corners thereof so that these flaps are foldable inwardly one upon the other to form a substantially flat top or closure. *d* represents a length of a gummed or adhesive strip which is stretched across the closed top of the bag and has its ends extended downwardly along and pasted against opposite vertical sides of the bag.

The operation of a packing device embodying the present invention is substantially as follows: While the treadle is in its normal elevated position and the plunger 20 and follower plate 12 are in their lowermost position, as, for example, is shown in Fig. 1, the bag is expanded or opened and placed in the mold so that its bottom rests on the plate 12 and its flaps project upwardly beyond the top of the mold. The articles to be packed are then placed in the bag. These articles may be of various kinds such as those sold and shipped by department and other stores. In the packing of bottles or other fragile articles excelsior or other packing material is packed around the

articles and the spreading tendency of the bag under the packing operation is sustained by the side walls of the mold and the follower plate 12, so that tearing or breaking of the bag is avoided and the packed bag is molded into the shape determined by the mold. To add further security for the contents of the bag, the bag may be of the duplex type; that is, one bag contained within another bag to afford a double thickness.

After the packing of the bag has been completed, the mouth thereof which projects above the mold is closed, as by folding inwardly the top flaps, and after this has been done, the operator depresses the pedal by the foot in consequence of which the plunger 20 operates to force the plate 12 upwardly, thereby pushing the packed bag upwardly and out of the mold. While this ejecting operation is taking place, the operator stretches a length of gummed strip across the top of the bag and presses the ends of the gummed strip against the opposite sides of the ascending bag, whereby the closure of the bag is secured or sealed. This mode of operation enables the operator to apply the gummed strip across the top of the bag while the flaps are held in closed position and to effect the affixing of the ends of the gummed strip to the sides of the bag without the necessity of releasing the hands from the bag, and, hence, the closing and securing or sealing of the bag may be accomplished with speed and facility. As soon as one bag is ejected from the mold, the treadle is allowed to rise, thus lowering the plunger 20 and plate 12 to their initial position so that the mold may receive another bag ready for packing.

I claim as my invention:—

1. A bag packing device comprising a supporting plate having buttons projecting upwardly from its upper surface to interchangeably receive formers or molds of different sizes, a former or mold applied to the buttons of said plate, clamping devices engaging opposite edges of the former or mold, and means for supporting the bottom of a bag in the former or mold and for pushing the bag upwardly therein.

2. In a bag packing device, a supporting plate having receiving means to interchangeably cooperate with and hold formers or molds of different sizes, a former or mold mounted on said plate comprising a body which conforms with the bags to be packed and is open at opposite ends, out-turned flanges being formed on the opposite ends of the body, and plates secured to the flange at one end to provide bearing surfaces for the former or mold, said plates projecting inwardly to provide ledges to support a follower.

3. In a device of the character described, a bag supporting frame having a vertically movable bottom supporting member and means for moving said member comprising a rack attached to the bottom supporting member, a second rack having a portion for engagement by the operator and a gear mounted on a fixed pivot located between and in mesh with both of said racks.

4. In a device of the character described, a bag supporting frame having a vertically movable bottom supporting member and means for moving said member comprising a rack attached to the bottom supporting member, a second rack having a portion for engagement by the operator and a gear mounted on a fixed pivot located between and in mesh with both of said racks, and means for normally urging said racks in a direction to return the bottom supporting member to the bottom of said frame.

In testimony whereof I have hereunto set my hand.

TRUE M. AVERY.