April 24, 1956 W. R. KOHL 2,742,748

DEVICE FOR PACKAGING SHIRTS AND THE LIKE IN BAGS

Filed Sept. 11, 1953

Fig. 1

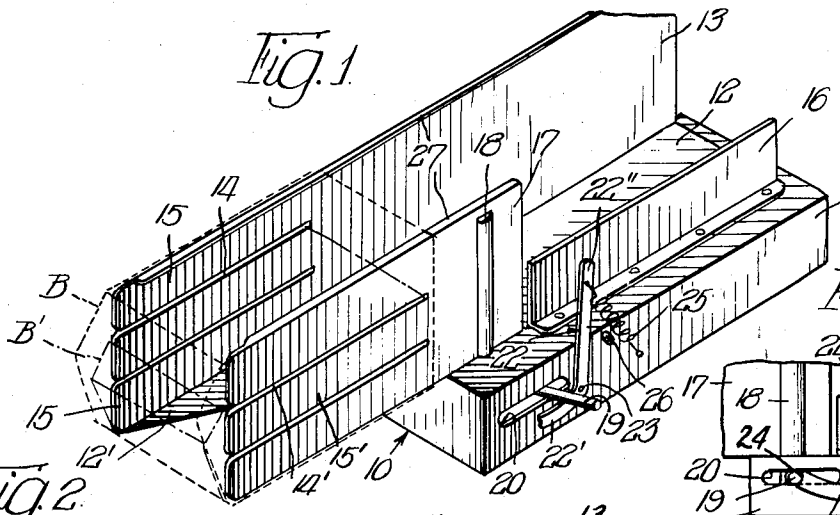


Fig. 2

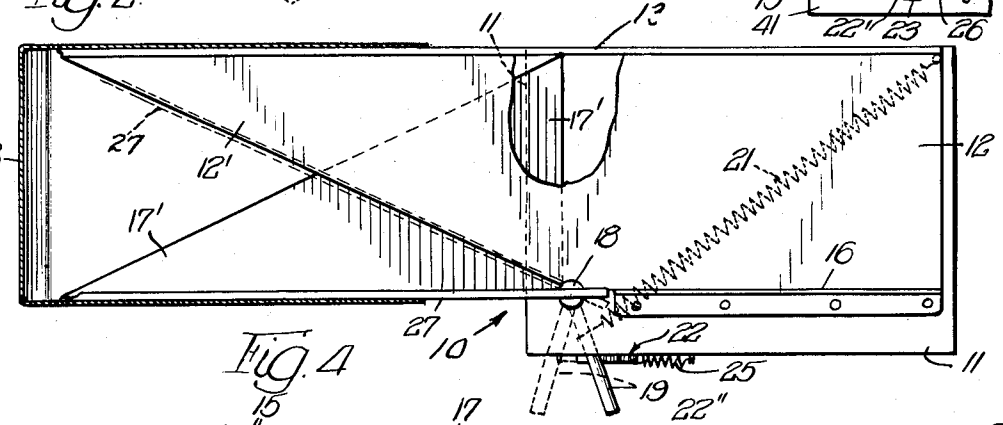


Fig. 3

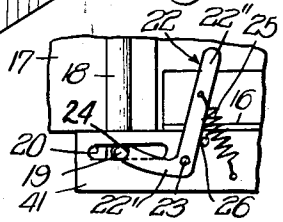


Fig. 4

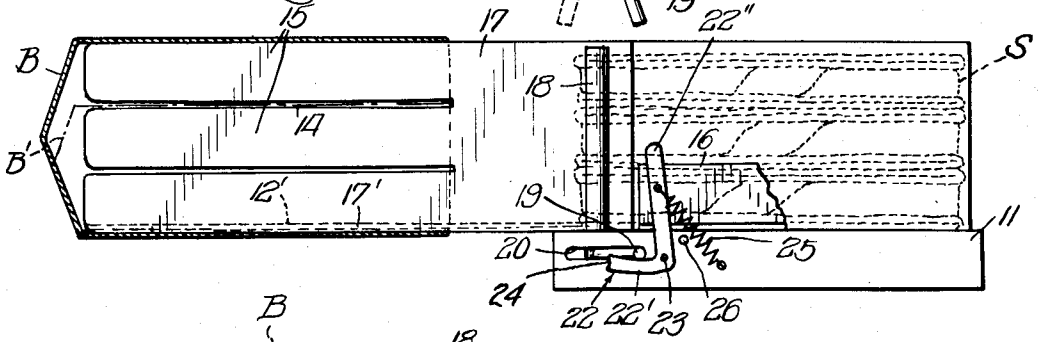
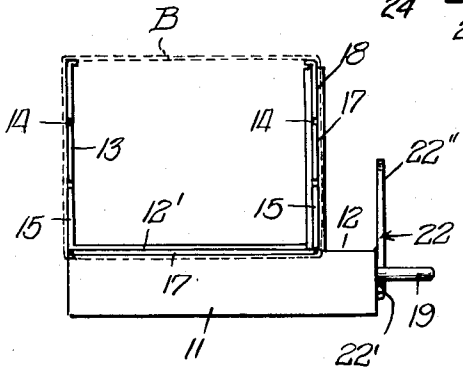


Fig. 5



INVENTOR.
William R. Kohl,
BY
Cromwell, Bristol & Warden
attys

United States Patent Office 2,742,748 Patented Apr. 24, 1956

2,742,748

DEVICE FOR PACKAGING SHIRTS AND THE LIKE IN BAGS

William R. Kohl, Glenview, Ill.

Application September 11, 1953, Serial No. 379,527

4 Claims. (Cl. 53—261)

The present invention relates to an improved semi-automatic device for packaging a relatively soft flexible object, such as a stack of men's shirts, in a conventional flexible and expansible paper bag. A general object of the invention is to provide a device of this sort which is very rapidly and easily operated by unskilled personnel, requiring a minimum of manual operations to produce a very rugged and high quality bag type bundle or package, of any one of several different sizes depending on the size of the object packed.

The device acts automatically to expand a partially open paper bag to a true rectangular cross sectional outline, to hold the bag in this shape, and to brace the same laterally along its whole length for the endwise sliding insertion of a stacked bundle of shirts or another elongated, structurally similar object.

Provisions are incorporated in the device to enable stacks of different height, composed of different numbers of shirts, to be inserted in the appropriate size of bag, automatically expanded to rectangular shape, without any adjustment or alteration of the device. After this the filled bag is expelled from the device in a continuation of the sliding, stack inserting motion, which greatly expedites the operation as a whole, so as to permit completion of the packaging operation by folding and sealing the open end of the bag.

Another general object of the invention is to provide a device of the foregoing character which produces a very neat and attractive package, including a paper bag and stacked shirt-like objects packed therein, which is very rugged and has great resistance to distortion or destruction under very severe usage, notwithstanding the fact that its components are all readily flexible and yieldable in character. This results from the fact that the device properly expands a bag to a size only a trifle greater, or even somewhat less, than the cross sectional area of the compressible stack, yet allows the stack to be slidingly inserted endwise in the bag without snagging. Consequently a very compact, tightly bundled unit is produced in which there is a mutual reinforcing and stiffening interaction of packed objects and packaging member.

A more specific object of the invention is to provide a bagging device as described generally above, in which a pair of elongated, transversely spaced side guide plates, both being preferably of relatviely flexible sheet material, are disposed in upright position on a suitable supporting base, overhanging the base substantially forwardly, and in which one of the side plates is pivoted on a vertical axis and spring urged in a direction to bring the same into parallelism with the other plate, in which position the guide plates engage opposite sides of a collapsed paper bag initially telescoped thereover to spread the bag to a rectangular outline. The spring urged, pivoted plate is initially held in a collapsed or contracted position, at a forwardly convergent angle to the other side plate, by means of a semi-automatic latch mechanism, so as to facilitate initial sleeving of the partially opened mouth of the bag onto the plates. The latch is then disengaged,

manually in the illustrated embodiment, and the plates are automatically spring-spread to parallel relation and to operative bag opening and bracing condition, in which they yieldably brace the expanded bag.

Another specific object is to provide a device of the above description, in which upstanding, fixed and pivoted guiding and bag spreading plates embody forwardly extending spring fingers spaced from each other in vertically aligned relation so as to enable bags of different size to be positioned on the spreader plates for loading with a desired number of stacked shirts or like objects.

Yet another specific object is to provide a device in accordance with the foregoing paragraphs in which the side plates each have an integral bottom panel extending laterally inwardly from the bottom margin thereof. The bottom panel of the fixed plate includes a rectangular stack positioning and slide area at its rear and a forward extension coacting with the bottom panel of the upstanding pivoted plate to afford bottom slide support for the stack as it progresses into the spread bag.

A further specific object is to provide a device as set forth in the preceding paragraph in which the bottom panel of the pivoted plate and the forward extension of the fixed plate are both triangular in shape, their inner margins angling forwardly to the extreme outer tips of the upstanding portions of the respective plates. The triangular member on the pivoted plates is partially underlapped beneath that on the fixed plate, sliding under the same as swinging of the pivoted plate occurs; accordingly no forward obstruction is presented, when the plates are spread, to snag a stack of shirts as it is pushed forwardly off the rear area of the fixed plate panel onto the forward portions of the two panels and into a bag spread by the plates.

The foregoing statements are indicative in a general way of the nature of the invention. Other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and operation of the device.

A single embodiment of the invention is presented herein for purpose of illustration. It will be appreciated that the invention may be incorporated in other modified forms coming equally within the scope of the appended claims.

In the drawings:

Fig. 1 is a fragmentary perspective view of the improved shirt bagging device, illustrating the same in solid line in an operative, bag-spreading position of its stack guide and spreader plates, and showing in dot-dash line how bags of different sizes are optionally positioned on the plates;

Fig. 2 is a top plan view, partially broken away, of the device in the bag spreading position of Fig. 1, illustrating in dotted line the position of a pivoted, spring urged spreading plate when collapsed for the initial reception of a bag;

Fig. 3 is a fragmentary view in side elevation illustrating a latch mechanism of the device in its position to hold the pivoted plate in the inwardly collapsed position shown in dotted lines in Fig. 2;

Fig. 4 is a view in side elevation, partially broken away, illustrating the relationship of the device to a stack of shirts to be bagged and to a bag spread on the spreader plates thereof; and

Fig. 5 is a view of the device in end elevation as viewed from the left of Fig. 4.

The reference numeral 10 generally designates the bagging device. It is primarily intended for use in a modern laundry establishment to simplify the operation of packaging men's shirts. These are often boxed in stacks, but this is a relatively expensive practice. They are also stack-wrapped in paper wrapping sheets, which

is a very time consuming expedient. Hence it is highly desirable to provide means whereby a stack of such articles can be quickly and easily packed, as at a laundry, in a well known, inexpensive type of flexible, expansible paper bag, which is subsequently closed and sealed at its open end. It is evident that, without a practical device for the purpose, the bagging procedure is just as time consuming as wrapping and, moreover, it is difficult if not impossible to get a compact, tightly bagged package in a rapid way and without rumpling the shirts by a manual operation, pure and simple.

Bags of larger and smaller size are shown in dotted and dot-dash lines in Fig. 1, being designated by the reference characters B, B', resectively. A stack of shirts, designated S, is depicted in Fig. 4 of the drawings, and it should be understood that these are ordinarily stacked in groups of two, four or six, with neckband portions of the shirts alternating in the longitudinal sense and with the shirts alternately reversed in the vertical sense (Fig. 4).

Device **10** comprises a hollow rectangular, box-like base **11** which is relatively shallow in its vertical dimension, and certain operating mechanism for the device, to be described, is mounted in the interior of the base. An elongated, sheet metal stack guide unit, comprising a horizontal stack support and slide **12** and 90° upstanding side guide plate **13** integral therewith, is fixedly secured by any appropriate means to extend along one side of the flat top surface of the base. The horizontal slide area **12** is generally rectangular in outline and has an integral forward extension **12'** which is triangular, its hypotenuse edge converging from a point just to the rear of the forward edge of base **11** (Fig. 2) to a junction with the extreme outer tip of upstanding side guide plate **13**, it being understood that the plate is integral at its bottom margin with the slide structure **12**, **12'** throughout its entire length.

It may be desirable to shim the rear stack slide **12** a bit above the top of base **11** so as to afford a slight vertical clearance for a flat swinging panel part, to be described, or this may be done by suitably cutting the base top, if desired. The specific provisions for this purpose do not constitute a part of the invention hence are not specifically illustrated or described.

Plate **13** overhangs the forward end of base **11** a considerable distance and is subdivided by vertically spaced slots **14** into a plurality of vertically aligned fingers **15** which may be relatively flexible in character. There may be any desired number thereof and they may be of uniform or different vertical width in order to provide for increased variety in the number of sizes and shapes of packages which can be produced by the device.

A rigid upstanding side plate **16**, which may be of less vertical height than the plate **13**, is secured on the top of base **11** in rigid upstanding relation to the same and in laterally spaced, parallel relation to plate **13**. Plate **16** is positioned just outwardly of slide panel **12** and terminates short of the forward end of the base. Its sole function is that of facilitating the depositing of a stack of shirts to be packed in proper position relative to plate **13** for subsequent endwise shifting into a spread bag.

A swingable side guide and bag spreader plate **17** is mounted upright and in longitudinal alignment with the plate **16**, immediately forwardly of the latter. Plate **17** is also of sheet metal construction and is coextensive in height with the opposite fixed plate **13**, which it parallels when in the operative, bag-spreading position illustrated in Figs. 1, 2, 4 and 5. It is secured forwardly of its rear end to an upright pivotal mounting post **18**, which extends downwardly through the top of base **11** and is appropriately journalled by the latter for swinging movement about its own upright axis.

A radial operating rod **19** is secured to post **18** beneath the top of base **11** and extends outwardly through an elongated horizontal slot **20** in the base **11**. A contractile coil spring **21**, its far end suitably anchored, is connected to rod **19**, thus tending to urge pivoted bag spreading plate **17** in a counterclockwise direction about its mounting post **18** as an axis, i. e., in a direction to urge the plate to fully spread position. Engagement of rod **19** with the rear of slot **20** will limit counterclockwise outward, spring urged swing of plate **17** substantially beyond parallelism with plate **13**.

The other position of the plate is indicated in dotted lines in Fig. 2, and it is held in this position, angling forwardly toward fixed plate **13**, by means of a latch member **22** in engagement with rod **19**, as best shown in Figs. 2 and 3 of the drawings.

Latch member **22** is L-shaped in form being pivotally mounted on a side wall of base **11** by means of a pivot pin **23** located at the junction of its two arms **22'** and **22''**. The forward nose **24** of a shorter arm **22'** of the member is in concave form for stable engagement with the pin **19**, the concavity **24** engaging behind rod **19** to hold the same forwardly in slot **20** (Fig. 3), thus to hold the side plate **17** in the collapsed position illustrated in dot-dash lines in Fig. 2. A short coil spring **25** connected at one end to the base **11** and to the longer arm **22'** of the latch member at the other urges the latter, for this purpose, in clockwise direction about its pivot **23**. A fixed stop **26** on the base limits movement of member **22** under the influence of spring **25**.

The pivotal side guide plate **17** is preferably fabricated of a relatively light gauge, flexible sheet metal, the forward portion thereof being subdivided into vertically spaced spring fingers of considerable resilience, in the same manner as plate **13**; hence the same reference numerals, primed, designate the provisions for this purpose.

Like plate **13**, the pivotal plate **17** has a horizontal bottom panel, designated **17'**, integral with its lower margin. Panel **17'** is triangular, its hypotenuse edge converging forwardly to the extreme outer tip of the plate, and it is disposed beneath the corresponding panel extension **12'** of the plate **13** and its associated slide **12**. As illustrated best in Fig. 2, the rear portion of panel **17'** overlaps the front edge of base **11**, the panel thus sliding between slide panel **12** and the base.

Plates **13**, **17** are also preferably inwardly flanged along their top margins, as indicated at **27**, to afford upper restraining guides for a thick stack of shirts as the same is advanced forwardly over panel **12** for bagging. Snagging at the mouth of the bag is thus prevented.

In using the device the swingable plate **17** is brought to the collapsed, inward position thereof illustrated in dot-dash lines of Fig. 2 by manually operating rod **19** forwardly in its slot **20**, so that when the rod passes the forward extremity of latch arm **22'** the latch member is snapped clockwise by its actuating spring **25**. This engages latch recess **24** with the rod and holds the same forwardly, the member **22** being limited in its spring urged movement by stop pin **26**. It is thus unnecessary for an attendant to hold the plates in a retracted position.

A conventional paper bag of a desired size, B or B' in Figs. 1 and 4, which may be a side gusseted type or plain sided type and may have any well known form of bottom construction, is then opened sufficiently to enable it to be positioned over the inwardly collapsed guide plates **13**, **17**, and is then sleeved rearwardly its full length over both sets of guide plate fingers **15**, or a lesser number of both sets which includes, however, the lowermost finger of each set.

When the bag is fully telescoped or inserted on plates **13**, **17** the latch member **22** is manually tipped counterclockwise, releasing operating rod **19** and causing pivoted plate **17** to snap outwardly automatically under the influence of its spreader spring **21**. This squares the bag to rectangular outline, whereupon a previously or subsequently assembled stack of shirts S on panel **12** is pushed by an attendant forwardly over the panel into the mouth of the spread bag. Overlapped panels **12'**, **17'** afford bottom support for the stack to avoid snagging

the lower lip of the bag. The forwarding motion of the stack is continued uninterruptedly after the shirts are fully inserted in the bag B or B', causing the filled bag to slide rearwardly off spreading plates **13**, **17**, after which the mouth of the bag is appropriately closed and sealed, preferably using a suitable adhesive tape.

The entire operation is exceedingly rapidly and easily performed, greatly increasing speed of output in comparison with that of the personnel of a plant unequipped with the improved device. The semi-automatic nature of the plate latching and latch release provisions frees the hands of the attendant for stacking the shirts and pushing the same into the spread bag, and the fit of the stack in the bag is a tight one, obtained without rumpling the shirts, such as could not be had without using the device. The device is inexpensive in character, small and light in weight for portability, if desired. It may be produced in any desired vertical dimension, for increased loading capacity; however a unit capable of packaging a half-dozen shirts, as illustrated in Fig. 4, accommodates the majority of bundle sizes commonly made up.

I claim:

1. A device for inserting a stack of shirts, or comparable object of relatively flexible character and of bulky, block-like shape, into a flexible, open ended container, comprising a pair of laterally spaced, vertically disposed expanding plates adapted to slidably receive said container, supporting means for said plates and for said object, a member pivoting at least one of said plates on said supporting means to swing about a vertical axis and thereby associate said plates in and out of a forwardly convergent relation to one another, means resiliently biasing said pivoted plate out of said convergent relation, and a manually releasable latch device mounted on said supporting means for movement to and from an operatively connected relation to said pivoted plate, in which it holds said plate in said convergent relation in opposition to said biasing means.

2. A device in accordance with claim 1, in which said plate pivoting member comprises an upright pivot post fixedly connected to said pivoted plate and mounted on a vertical axis on said supporting means, and in which said latch device comprises a latch member pivotally mounted on a horizontal axis on said supporting means,

said post being provided with a laterally extended operating member engageable and disengageable by said latch member upon swinging movement of the latter in one direction or another.

3. A device for inserting a stack of shirts, or comparable object of relatively flexible character and of bulky, block-like shape, into a flexible, open ended container, comprising a pair of laterally spaced, vertically disposed expanding plates adapted to slidably receive said container, supporting means for said plates and for said object, a member pivoting at least one of said plates on said supporting means to swing about a vertical axis and thereby associate said plates in and out of a forwardly convergent relation to one another, means resiliently biasing said pivoted plate out of said convergent relation, a manually releasable latch device mounted on said supporting means for movement to and from an operatively connected relation to said pivoted plate, in which it holds said plate in said convergent relation in opposition to said biasing means, and further yieldable biasing means acting on said latch device to urge the same in a direction to make said operative connection with said pivoted plate.

4. A device in accordance with claim 3, in which said plate pivoting member comprises an upright pivot post fixedly connected to said pivoted plate and mounted on a vertical axis on said supporting means, and in which said latch device comprises a latch member pivotally mounted on a horizontal axis on said supporting means, said post being provided with a laterally extending operating member engageable and disengageable by said latch member upon swinging movement of the latter in one direction or another.

References Cited in the file of this patent

UNITED STATES PATENTS

654,058	Fredrickson	July 17, 1900
1,385,498	Schaffer	July 26, 1921
2,640,638	Nichols	June 2, 1953

FOREIGN PATENTS

251,115	Great Britain	Apr. 19, 1926
410,133	Germany	Feb. 23, 1925