United States Patent

Siegel

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[45] **Feb. 29, 1972**

[54] PACKAGING DEVICE

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[52] **U.S. Cl.** ..... **53/124 B,** 53/374

[51] **Int. Cl.** **B65b 63/00**

[58] **Field of Search** ..... 53/124 B, 138

[56] **References Cited**

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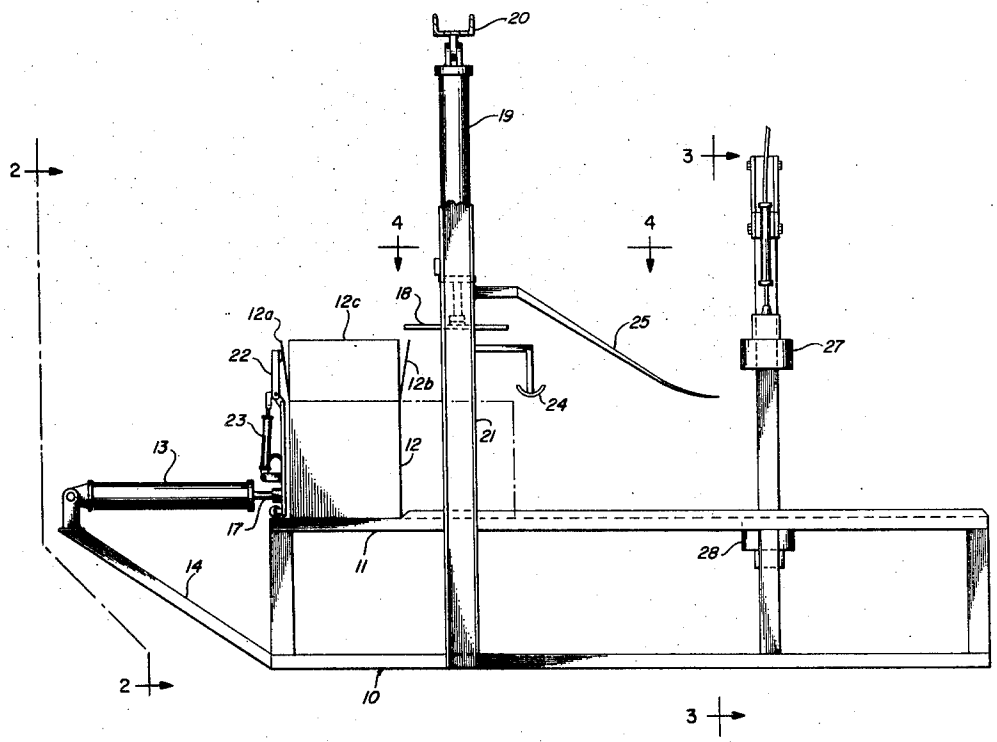
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[57] **ABSTRACT**

The present invention discloses a packaging machine for sequential packing and securing cartons of cloth material such as rags and waste. The invention includes a novel packing carton for holding the packaged material in the compressed state.

1 Claims, 6 Drawing Figures



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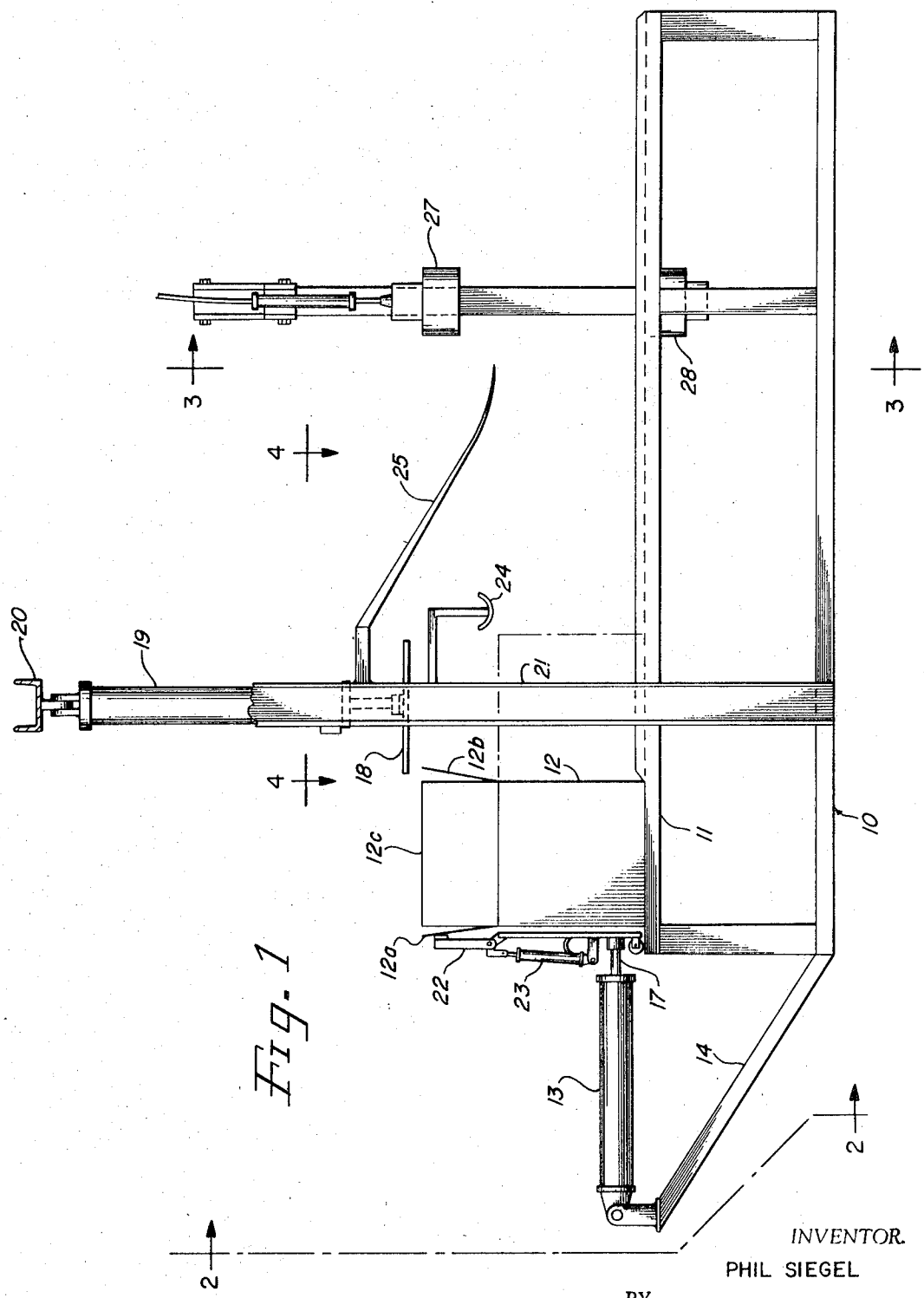


Fig. 1

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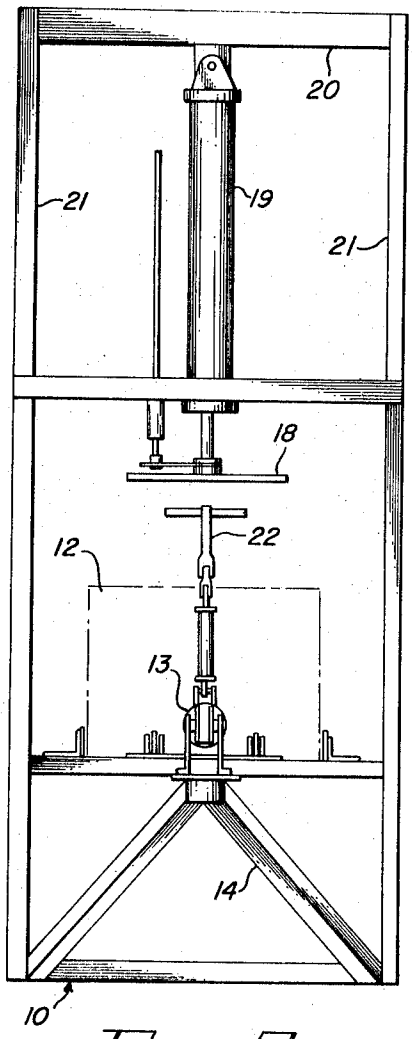


Fig. 2

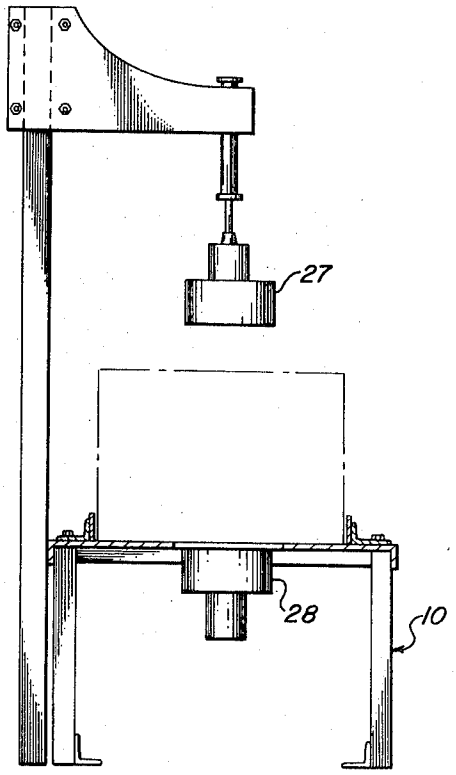


Fig. 3

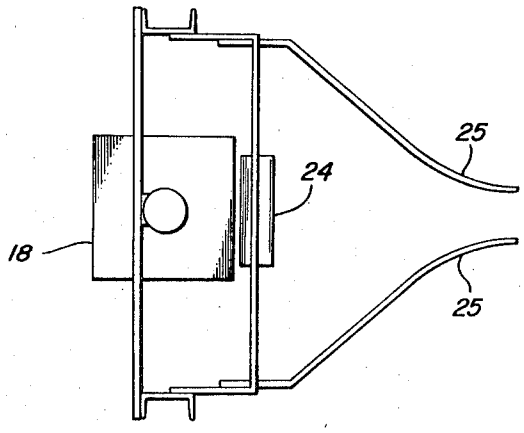


Fig. 4

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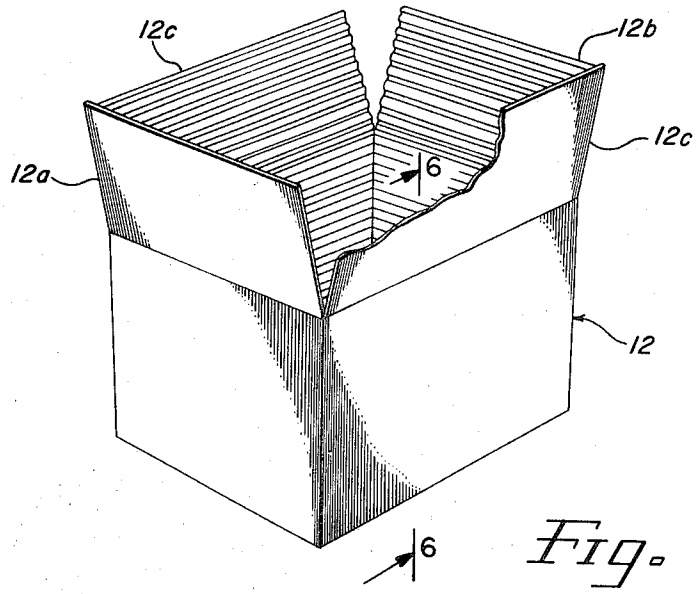


Fig. 5

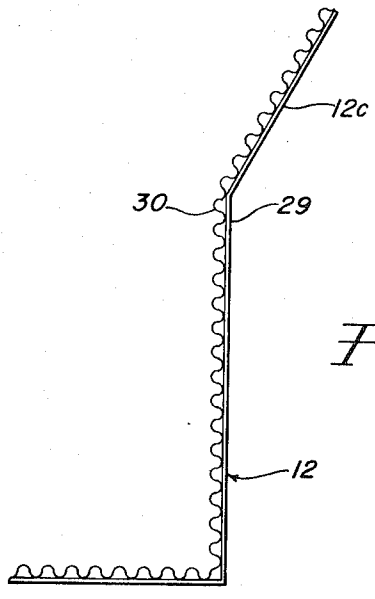


Fig. 6

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PACKAGING DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to packaging machines.

More particularly, the invention concerns a packaging machine for use with cloth goods.

In a further aspect, the invention concerns a packaging machine of the above type utilizing an especially constructed carton to assist in the sequential operation of the packaging machine.

Expeditious packaging of certain cloth items, such as rags and waste material, is of concern to the high-volume user or producer. Factories and other industrial users of large quantities of rags must package the used and soiled ones for shipment to cleaning establishments. Dry goods manufacturers, on the other hand, are faced with the necessity of packaging vast quantities of remnant ends and other cloth waste for shipment to an eventual user.

Presently, such materials are stuffed by hand into a conventional carton. During this process the carton is filled with such materials and compressed as best can be achieved under present methods while the flaps of the carton are folded and stapled. This operation is cumbersome and produces a carton that, while filled as to volume, does not reach the weight or strength limits of the suggested carton. Therefore several cartons must be used to contain material which otherwise could be contained in a single carton if methods were available for further compacting the contents thereof, and retaining this compactness during the stapling or otherwise securing the carton. It would be highly advantageous, therefore, to provide convenient means for packaging cloth materials in a manner to provide compact storage and shipment.

SUMMARY OF THE INVENTION

Accordingly it is a primary object of the present invention to provide a packaging device for packing rags and raglike materials in cartons so that the rags are thoroughly compressed.

It is a further object of this invention to provide a packaging device wherein the carton flaps are folded and stapled while such raglike materials are in the carton in a compressed state.

Additionally it is an object of the present invention to provide a novel packaging device to sequentially perform the compression, flap-closing, and stapling operations in an automatic and sequential manner.

A still further object of this invention is to provide a novel carton design for holding the rags or raglike material inside the carton in a compressed state.

Briefly, to accomplish the desired objectives of my present invention, I provide a horizontal guide along which a rag carton is sequentially moved, a horizontally movable ram to provide such sequential movement, a vertically actuated platen in such sequential operation for compressing the rags, a toggle device for folding the upper rear flap for a carton after said compression, a shoe device for folding the upper forward flap of a carton, a pair of arms for folding the side flaps of the carton, and a stapling device for stapling the carton. My packaging device sequentially performs these operations. I further provide a carton construction wherein the interior of the carton comprises of horizontally disposed ribs for retaining packed raglike material in a compressed state after said platen has performed its compression operation.

BRIEF DESCRIPTION OF THE DRAWINGS

Other, further and more specific objects and advantages of the present invention will become readily apparent to those skilled in the art from the following detailed description of the preferred embodiment thereof, taken in conjunction with the drawings, in which:

FIG. 1 is an elevation view, partially in section, of a packaging machine constructed in accordance with the teachings of the present invention;

FIG. 2 is a view, taken along the line 2—2 of FIG. 1;

FIG. 3 is an elevational view partially in section, taken along line 3—3 of FIG. 1, and specifically detailing the stapling arrangement of the present invention;

FIG. 4 is a plan view, partially in section, taken along the line 4—4 of FIG. 1;

FIG. 5 is a perspective view of a packaging carton especially designed for use in connection with the device of FIG. 1; and

FIG. 6 is a sectional view taken along the line 6—6 of FIG. 5, especially detailing the construction thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to the drawings in which the same reference characters indicate corresponding elements throughout the several views, FIG. 1 shows the packaging machine, having a base frame generally designated by the reference character 10, and having an upper pair of opposed horizontal guide rails 11 for directing the movement of the packing carton 12, as will be herein further described in detail in connection with FIGS. 5 and 6, as it advances to the various stages of the machine. Initially the packing carton 12 is loosely filled to a position above the box proper with rags, industrial laundry, or cloth waste, and positioned between the guide rails 11 at the illustrated end of the packaging machine. An air cylinder 13, supported by an upwardly extending forward frame member 14 of the frame 10, has an actuating ram 17 of a length coincident with the length of the carton 12.

The first actuation of the ram 17 positions the carton under a platen 18 actuated by a vertically disposed air ram 19 supported by an overhead frame member 20 and side supporting frame members 21. After the carton is so positioned the ram 19 is actuated, causing the platen 18 to compress the material within the carton to a position not exceeding the height of the sidewalls of the carton. After the platen 18 is withdrawn to its rest position, a toggle device 22, actuated by the air cylinder 23 folds the flap 12*a* inwardly over the carton. The ram 17 is now withdrawn to receive a second carton in the initial position. It will be readily understood by those skilled in the art that each sequential operational position of the packaging machine is located along the length of the machine at a distance corresponding to the length of the cartons and that after initial set up, and the first carton has completed the cycle, the process is then continuous depending upon the insertion of successive cartons. It will, therefore, be assumed that for the purpose of this description subsequent cartons are positioned into the machine to advance the subject carton 12.

As the carton advances forwardly it passes under shoe 24, which closes flap 12*b*. Then it passes under a pair of downwardly, inwardly directioned arms 25 which fold the side flaps 12*c*. The carton 12, now filled with compressed material and having the upper flaps closed as heretofore described, passes under a conventional hydraulic stapling head 27 which lowers to position and spaces staples to secure the opposed side flaps 12*c*. Concurrent with the action of the upper stapling head 27 a lower stapling head 28 carried by the frame 10, staples the lower flaps which are analogous to the upper flaps and are hand folded prior to insertion of the carton 12 between the guide rails 11.

Turning now to FIGS. 5 and 6, the construction of the carton 12 is specifically detailed. The outer wall 29 of the carton is constructed of conventional corregated or multilayer cardboard as is normally used in the construction of cartons of this type. The interior of the carton is lined with a corregated cardboard layer 30 having horizontally disposed ribs. Interior corregation provides a holding force to retain the packed material in the compressed position after the platen 18 has been withdrawn.

Various changes in the embodiment herein chosen for purposes of illustration in the drawings will be readily apparent to persons skilled in the art having read the disclosure herein. To the extent that such modifications and variations do not depart from the spirit of the invention, they are intended to be

included within the scope hereof, which is not limited to the embodiment specifically illustrated but only by a fair interpretation of the following claims.

Having fully described the invention in such a manner as to enable those skilled in the art to understand and practice the same I claim:

1. Apparatus for packaging relatively large initial volumetric bulks of raglike materials in a retainer carton of relatively smaller volume, comprising:

a. means including a fluid actuated ram energizable to intermittently advance a line of cartons along a path of movement through a plurality of operation stations, said ram having a carton advancing extension stroke corresponding to the length of said carton along the axis of said line of movement;

b. means at one of said stations operable to compress material placed in a receiving carton at a prior filling station, said carton having open closure flaps at its upper end and said material having a volume greater than the closed carton volume, into a compacted mass of reduced size and of at least no greater volume than that of said carton;

c. mechanical toggle means and a fluid cylinder actuator therefor supported for movement by said ram as a unit with each carton as it is moved from the filling station to an operating position at said one station, said toggle means being operative at said one of said stations for first closing a rear closure flap of said carton after the actuation of the material compressing means;

d. a shoe on the carton exit side of said one station positioned to engage and close a forward flap of said carton in response to its advancing movement as it leaves said one station; and

e. a pair of elongate converging and downwardly inclined arms at said one station respectively positioned on opposite sides of the exit path of movement of said carton from said one station, said arms being operative to engage and close side flaps of said cartons over the previously closed rear and forward flaps prior to said carton reaching an operative position at a following flap-securing station.

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