March 8, 1949. J. C. STRICKLER 2,463,576

CAN PACKAGE STRIPPING MACHINE

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Fig. 1

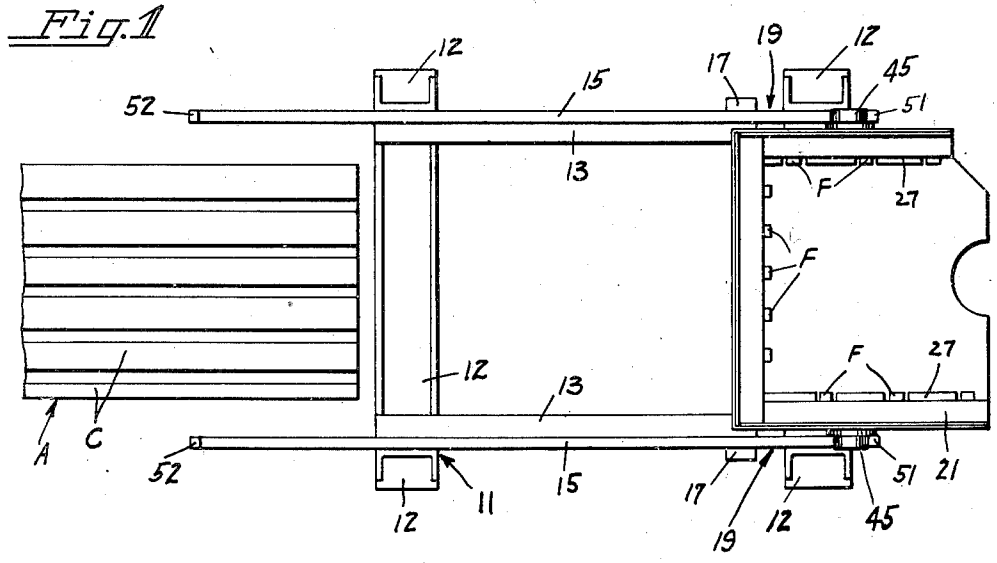


Fig. 2

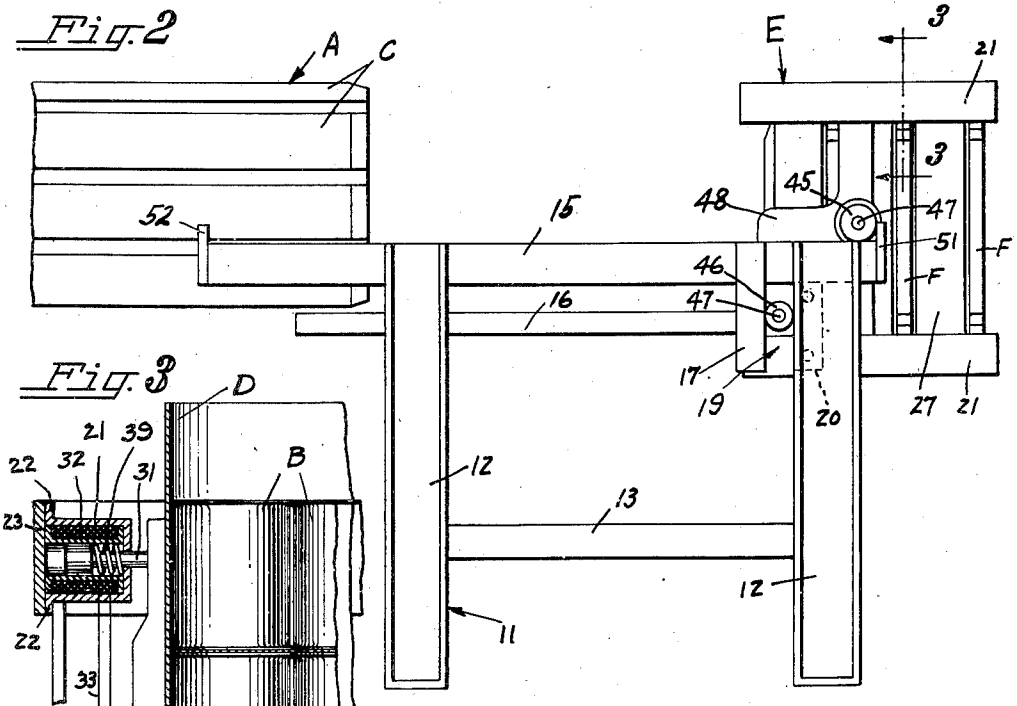


Fig. 3

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Fig. 4

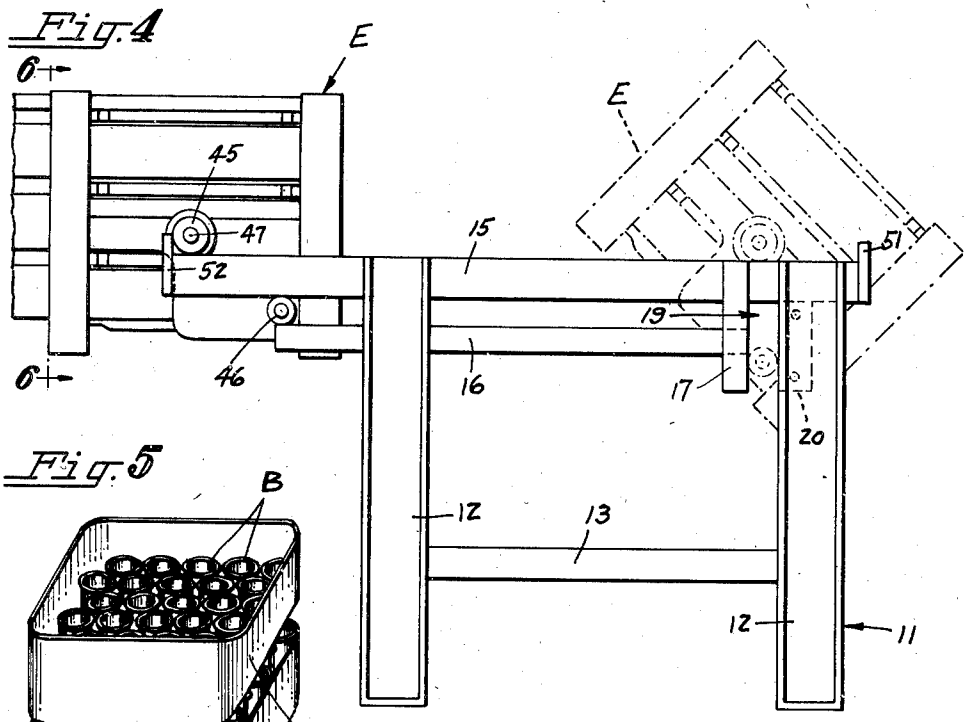
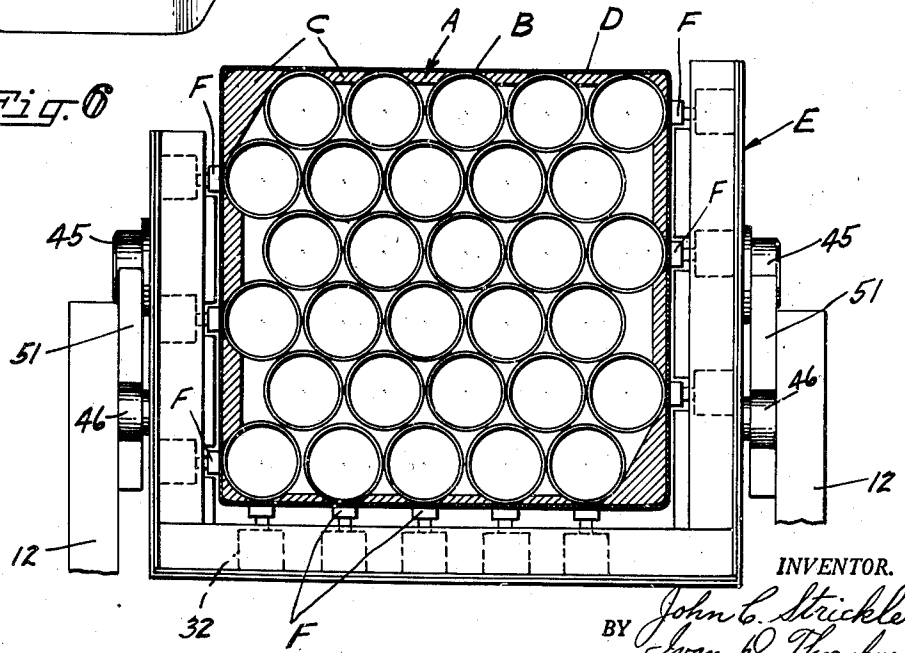


Fig. 5

Fig. 6



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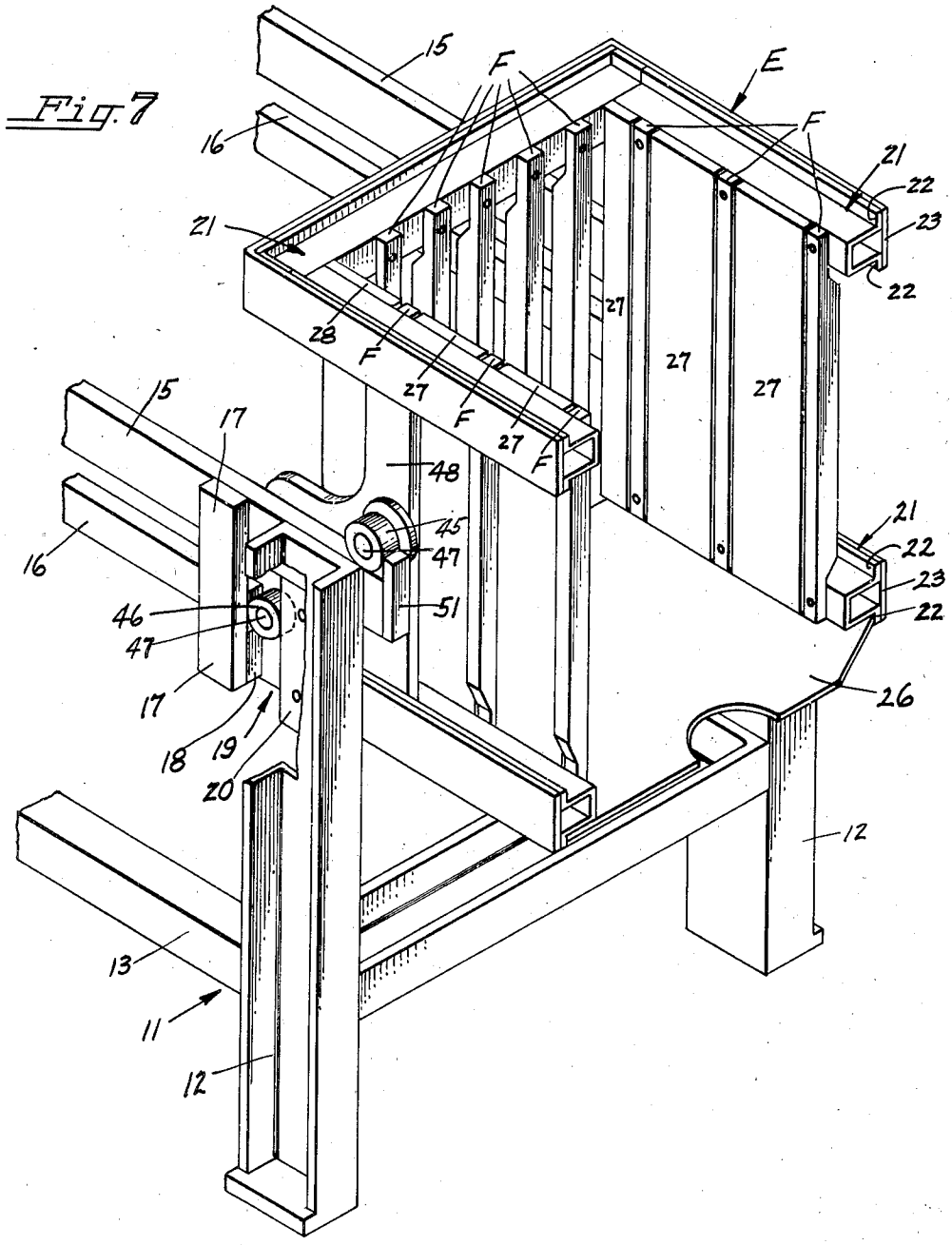
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Fig. 7



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CAN PACKAGE STRIPPING MACHINE

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7 Claims. (Cl. 226—18)

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The present invention relates to a machine for packaging containers or cans for shipment and storage and has particular reference to a packing stand mechanism for stripping stacked cans from a stacking device and for moving the cans so received to a place of discharge.

In the can making industry certain kinds of cans, especially those of the "sanitary" or full open mouth type such as those used for fruits and vegetables and other food products, are packed in sealed paper bags for shipment to or storage at canning plants, to protect the cans before filling against contamination. Each bag contains approximately two hundred cans.

For best results, the cans are arranged in the bags in an orderly fashion that will make a compact, solid package so that it can readily be handled. The cans sometimes are arranged in such order by a stacking machine which assembles layer units of the cans in a mould or cage ready to be placed into the bag.

The instant invention contemplates the provision of a packing stand mechanism which removes the stacked cans from the mould and carries them to a place where the bag containing the cans may be readily sealed.

An object of the invention is the provision of a packing stand mechanism which may be used in connection with a can stacking machine and wherein the stacked cans may be removed from the machine as a unit sufficient to form a package and may be carried to a place of deposit.

Another object is the provision of such a packing stand mechanism wherein containers already stacked into a bag may be stripped away from the machine while in the bag and the filled bag turned into a convenient position for sealing before being discharged to a place of deposit.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan view of a packing stand mechanism and an adjacent portion of a can stacking machine embodying the instant invention;

Fig. 2 is a side elevation of the apparatus shown in Fig. 1;

Fig. 3 is an enlarged vertical sectional view, partly broken away of a portion of the mechanism, as taken substantially along the line 3—3 in Fig. 2, the view showing a portion of a bag filled with stacked cans and also showing a wiring diagram for the electrical apparatus used in the mechanism;

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Fig. 4 is a view similar to Fig. 2 with a carriage portion of the mechanism shown in a different position, this carriage portion also being indicated by dot and dash lnes in an intermediate position;

Fig. 5 is a perspective view partly broken away of a bag filled with cans and constituting a package of the type handled in the mechanism illustrated in the other views;

Fig. 6 is an enlarged vertical sectional view taken substantially along the line 6—6 in Fig. 4 and showing a bag of cans in the stacking machine ready to be stripped away; and

Fig. 7 is an enlarged perspective view of the carriage portion and discharge end of the mechanism.

As a preferred embodiment of the invention the drawings illustrate a packing stand mechanism used in connection with a can mould or cage A of a can stacking machine in which rows of cans B are stacked in a staggered layout in layer units, the layer units being deposited subsequently into the mould as best shown in Fig. 6, to build up a mass sufficient to form a package. The mould is open at both ends and comprises a plurality of horizontally disposed spaced and parallel can confining bars C forming apertures therebetween arranged to surround a package unit of cans and retain them in their staggered and layered formation. The mould also serves an an interior support for a paper bag D into which the cans are to be packed. The bag telescopes over the mould and may be placed thereon manually or in any other suitable manner.

In the packing stand mechanism a movable carriage E is provided for movement into position around the bag D on the mould A. This carriage is equipped with gripper bars F (Fig. 7) which are movable into between the apertures defined by the spaced can confining bars C of the mould A into position against the cans B in the mould and acting through interposed opposite walls of the bag to grip the cans and withdraw them and the bag simultaneously from the mould when the carriage is shifted away from the mould.

The bag D and its load of cans B thus stripped from the mould A is carried to the discharge end of the mechanism where it is turned from a horizontal position into an upright or vertical position with the open end of the bag up (see also Figs. 1 and 2). While in this convenient position the upper marginal or flap edges of the bag may be turned down against the cans therein and an end member may be pasted in place over the turned

down flaps to seal the package. The sealed package then may be lifted out of the carriage or otherwise discharged to any suitable place of deposit.

The packing stand mechanism includes a support or frame 11 (Figs. 1 and 2) which comprises a pair of spaced leg frames 12 disposed at the opposite ends of the mechanism and which are tied together by longitudinal beams 13 (see also Fig. 7). The leg frames support a pair of spaced and parallel upper and lower rails 15, 16 which are disposed in a horizontal position extending longitudinally of the machine. These rails provide an open or supporting track and a lower closed confining or guiding track for the carriage E. The upper rails 15 are secured to the inner faces of the leg frames 12 and extend for the full length of the machine. The inner ends of the upper rails (at the left as viewed in Figs. 1 and 2) project beyond the leg frames into a position parallel with and adjacent to the can confining bars C of the stacking mould A.

The lower rails 16 at one end are mounted on the inner leg frame 12 directly below the upper rails 15. These lower rails adjacent their outer end terminate short of the outer leg frame and are secured to vertical support plates 17 which extend down from the upper rails. The lower ends of the support plates on their inner faces directly below the lower rails and on both sides of the machine, carry guide blocks 18. Each guide block together with the associated end of the rail form one face of a vertical runway 19. The inner edge of a guide block 20 secured to the adjacent leg frame on each side forms the other face of the runway. These two vertical runways are used during the turning of the carriage E, as will be hereinafter explained.

The carriage E is preferably constructed in the form of a hollow cube or rectangular holder which when in the position of Fig. 7 has one side and the top open. The carriage comprises a plurality of separate parts which includes two vertically spaced and horizontally parallel U-shaped supports or frames 21 (see Fig. 7). These supports are channel shaped in cross section and are formed with outer flanges 22 to which side plates 23 are attached. A flat bottom plate 26 is secured along the lower edges of the lower support 21. The upper and lower supports are tied together by a plurality of spaced and parallel side plates 27, the opposite ends of which are secured to the inner faces of the two U-shaped supports.

Some of the gripper bars or elements F, hereinbefore mentioned, are located in the spaces between the side plates 27 and others extend along the bases of the U-shaped supports 21. Thus all of these bars extend vertically from one support to the other. The upper and lower ends of the bars F (Fig. 3) are carried on the inner ends of movable core elements 31 of electric solenoids 32 housed within the channels of the U-shaped supports. There is one solenoid for each end of each gripper bar. It will be evident, therefore, that a row of solenoids is arranged around the three inner faces of each U-shaped support 21. Fig. 6 shows in dotted lines the row of solenoids associated with one of the supports.

The solenoids 32 are connected by wires 33, 34 (Fig. 3) to a main lead wire 35 and a return lead wire 36 of an electric circuit which is supplied with electric energy from any suitable source of energy such as a generator 37. A switch 38 connected into the main lead wire 35 is provided for completing the circuit to energize and deenergize the solenoids to actuate the gripper bars F as hereinbefore mentioned. A compression spring 39 located in each solenoid and disposed around its movable element operates against a shoulder on the element and keeps the gripper bars in engagement with the U-shaped supports when the solenoids are deenergized.

The entire carriage E is supported for movement along the main frame rails 15, 16 (Fig. 7) by a pair of upper flanged or support rollers 45 and a pair of lower or guide rollers 46 which operate on the rails. The two rollers 45, 46 on each side are mounted in an offset position, as shown in Figs. 2 and 7, on stub shafts 47 which are carried in anchor plates 48. The upper and lower ends of the anchor plates are secured to the bottom and top flanges 22 of the upper and lower U-shaped supports 21 of the carriage. There is therefore one of these anchor plates on each side of the carriage.

The normal position of the carriage E is its vertical outermost position as shown in Figs. 1, 2 and 7. In this position the flanged rollers 45 rest on the upper rails 15 and are disposed against stop blocks 51 secured to the outer end of the rails. The lower rollers 46 are disposed in the vertical runways 19 in the main frame. The offset position of each pair of rollers holds the carriage in this vertical position.

When a unit of cans B and its bag D is to be stripped off the mould A, as hereinbefore explained, the carriage E is pushed back toward the mould. This pushing action, at first, tilts the carriage over backwards as shown in the dotted lines in Fig. 4 until the carriage reaches a horizontal position parallel with the rails 15. During this tilting movement the flanged rollers 45 of the carriage roll back along the upper rails 15 while the lower or guide rollers 46 move up along the vertical runways 19 until these rollers engage against the lower face of the upper rails 15. The guide rollers 46 are confined between the ends of the lower rails 16 and the guide blocks 18 and the inner face of the front leg frame guide blocks 20 during this movement so as to control the tilting of the carriage.

When the carriage is in its horizontal position the guide rollers 46 are in alignment with the spaces between the upper faces of the lower rails 16 and the lower faces of the upper rails 15, which spaces constitute the closed track hereinbefore mentioned. From this position the carriage can be pushed back adjacent to and surrounding the mould A, as shown in Fig. 4. During this rearward or inward travel of the carriage, the flanged rollers 45 roll along the upper rails 15 and the guide rollers 46 are confined between the lower faces of the rails 15 and the upper roller faces of the lower rails 16. The confined guide rollers 46 thus maintain the carriage in its horizontal position while the support rollers 45 support the load of the carriage. Stop blocks 52 secured to the inner ends of the upper rails 15 limit the inward travel of the carriage and position it in a proper location relative to the mould A. The bottom plate 26 of the carriage is thus disposed in engagement with the bottom of the bag D and the outer ends of the mould bars C may be said to be substantially disposed against the plate since only the thickness of the bag is therebetween.

While the carriage E is in this position adjacent the mould A, the electric switch 38 in the solenoid circuit hereinbefore mentioned, is closed and this energizes all of the solenoids 32. This

energization of the solenoids pushes the gripper bars F inwardly toward the mould and thus engages the bag D and forces the engaged portions of the bag by inward pressure directed through the spaces between the mould bars C so that pressure is brought to bear against the sides of the several rows of cans B located in the mould. This action is best illustrated in Figs. 3 and 6. It should be noticed that when the carriage E is in its horizontal position adjacent the mould, the gripper bars F are disposed parallel with the mould bars C and are in registry with the spaces between the mould bars so that an improved gripping action against the cans and the bag is brought about.

While the gripper bars F are thus held tightly against the bag D and exert pressure against the cans B in the mould, the carriage E is moved outwardly away from the mould. The electric switch **38** remains closed and the solenoids thus remain energized during this movement. The bag and the cans under pressure thus move with the carriage and are shifted or stripped out of the open end of the mould thus completing the transfer of bag and cans from mould to carriage.

When the guide rollers **46** on the carriage reach the tops of the vertical runways **19** in the main frame **21** they strike against the stop blocks **51** and the rollers drop into the runways. This turns the carriage upwardly and outwardly through an angle of **90** degrees. This brings the carriage into a vertical position again as shown in Figs. 1 and 2, with the open top of the can filled bag D facing upwardly. Figure 5 shows the vertical position of the filled bag, but all parts of the carriage have been removed to better show the cans.

When the loaded carriage E is in its vertical position, the electric switch **38** is opened and this breaks the electric circuit and deenergizes the solenoids **32**. The springs **39** in the solenoids shift the gripper bars F outwardly away from the bag D and thus release all pressure on the cans in the bag. The filled bag may then be lifted out of the carriage for sealing as hereinbefore mentioned. If desired the bag may be left in the carriage while it is sealed and then removed to any suitable place of deposit. This completes a cycle of operation of the packing stand mechanism.

It is thought that the invention any many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting a bag into which the containers are packed, comprising a carriage movable toward and away from said mould, and gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould for stripping the bag and the containers simultaneously from the mould upon movement of the carriage away from the mould.

2. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting a bag into which the containers are packed, comprising a carriage movable toward and away from said mould, movable gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould, and actuating means for shifting said gripper members into engagement with the bag for stripping the bag and its enclosed containers simultaneously from the mould upon movement of the carriage away from the mould.

3. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting a bag into which the containers are packed, comprising a carriage movable toward and away from said mould, movable gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould, and electric actuating means for shifting said gripper members into engagement with the bag for stripping the bag and its enclosed containers simultaneously from the mould upon movement of the carriage away from the mould.

4. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting on its exterior surface a bag into which the containers are packed, comprising a carriage movable toward and away from said mould and having side members adapted to surround said mould, and a plurality of gripper bars disposed within said carriage adjacent to and extending along said side members, said gripper bars being movable through the mold apertures to exteriorly engage the bag on the mould to press the bag inwardly against the containers within the mould for stripping the bag and the enclosed containers simultaneously from the mould upon movement of the carriage away from the mould.

5. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting on its exterior surface a bag into which the containers are packed, comprising a carriage movable toward and away from said mould, a track for guiding said carriage toward and away from said mould, and gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould for stripping the bag and the containers simultaneously from the mould upon movement of the carriage away from the mould.

6. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting on its exterior surface a bag into which the containers are packed, comprising a carriage movable toward and away from said mould, gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould for stripping the bag and the containers simultaneously from the mould upon movement of the carriage away from the mould, a pair of parallel rails for guiding said carriage toward and away from said mould, rollers carried on said carriage for operation along said rails, and a vertical runway disposed at the termination of one of said rails for the reception of one of said rollers for turning said carriage into a different position when it is moved to the end

of the rails so that the loaded bag may be readily removed from said carriage.

7. A packing stand mechanism for stripping a package unit of containers from within an apertured mould supporting on its exterior surface a bag into which the containers are to be packed, comprising a carriage movable toward and away from said mould, gripper members on said carriage engageable with portions of the bag on said mould to press said bag portions through the mould apertures into gripping engagement with the containers within the mould for stripping the bag and the containers simultaneously from the mould upon movement of the carriage away from the mould, supporting rollers and guiding rollers carried on said carriage, a pair of spaced and parallel rails disposed on each side of said mechanism setting off open horizontal tracks for said supporting rollers and closed horizontal confining tracks for said guiding rollers to maintain said carriage in a horizontal position during its movement toward and away from said mould, and

vertical runways adjacent the discharge end of the mechanism and connecting with the closed tracks for the reception of said guiding rollers when the carriage is moved to the discharge end of the machine for turning said carriage into a vertical position so that the loaded bag may be readily removed from said carriage.

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