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[56]

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[54] **QUICK-CHANGE SUPPLY SYSTEM**
8 Claims, 6 Drawing Figs.

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 221/106

[51] **Int. Cl.**..... **B65g 59/02**

[50] **Field of Search**..... **214/8.5,**
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 155, 162; 221/104, 106; 29/211L, 33.12; 53/385,
 188, 189

ABSTRACT: A multimagazine supply system, including a magazine support having an active station and at least one inactive magazine, a plurality of supply magazines adapted to be slidably mounted on said tray support, camming means mounted on each of said supply magazine, locating means having a cam follower surface in spaced relationship with said camming means on said supply magazine, wherein sliding movement of a supply magazine from an inactive position on the magazine support to the active station will cam said locating means out of engagement with a magazine in said active position, allowing said last-named magazine to be removed from said magazine support and be replenished.

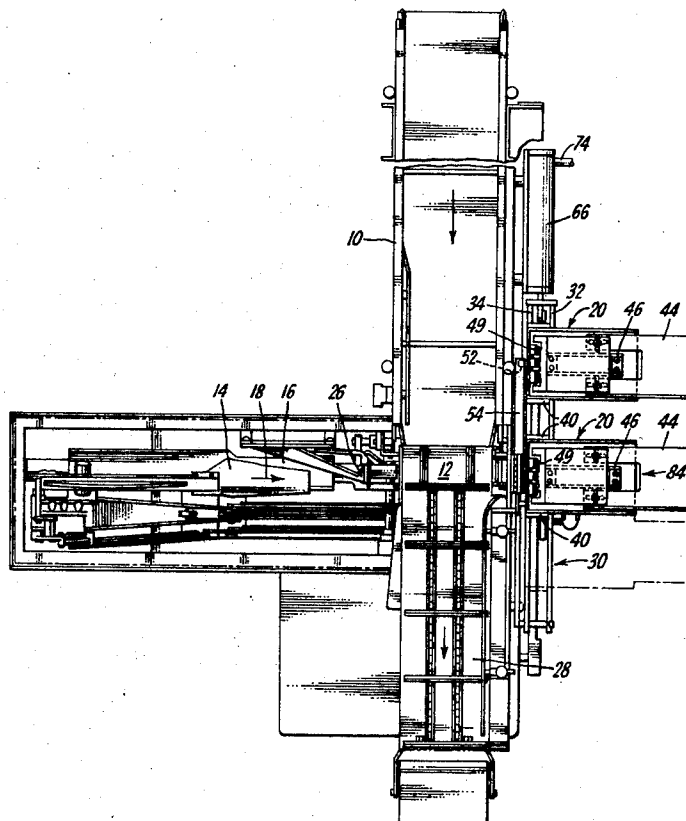


FIG. 1

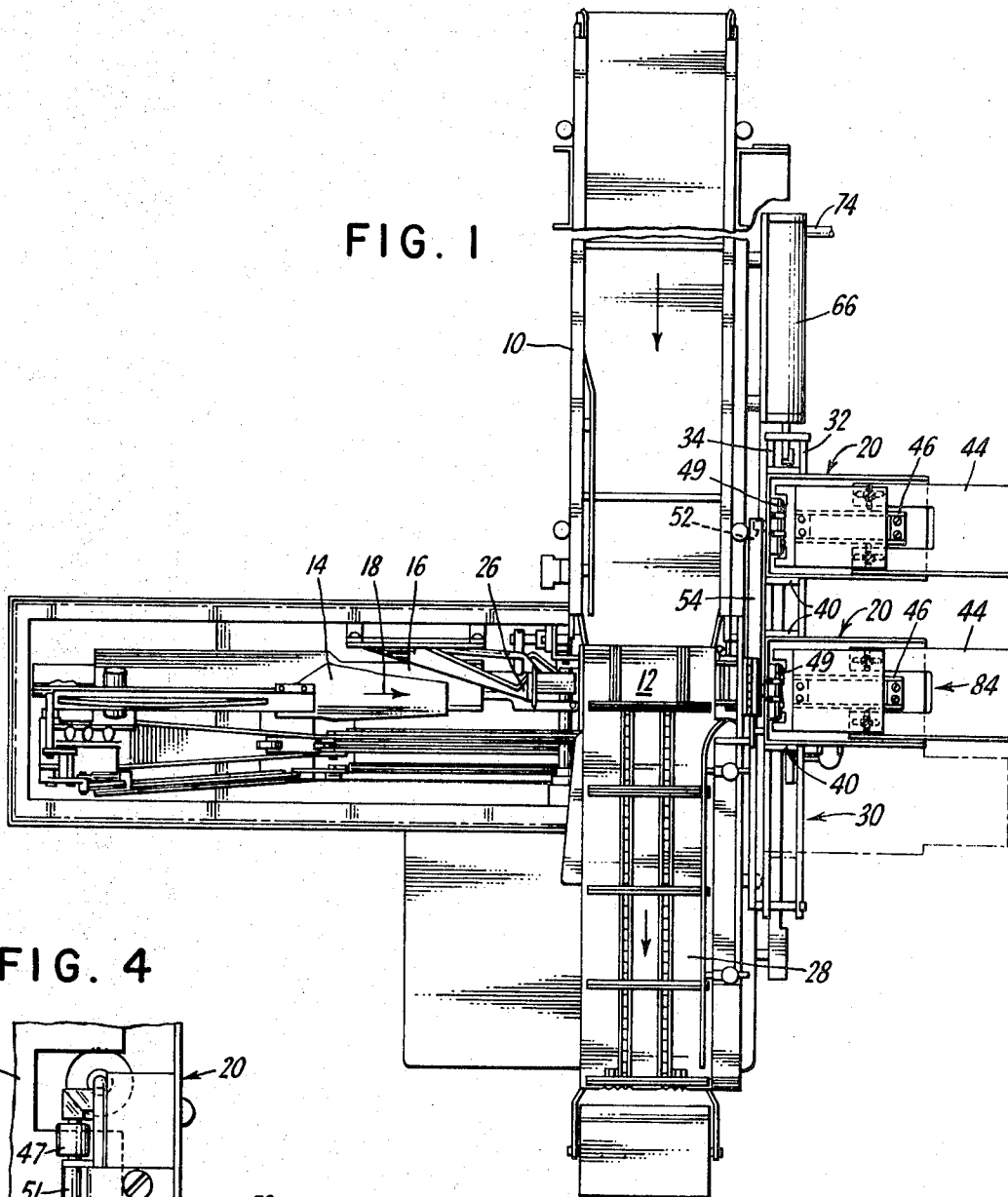
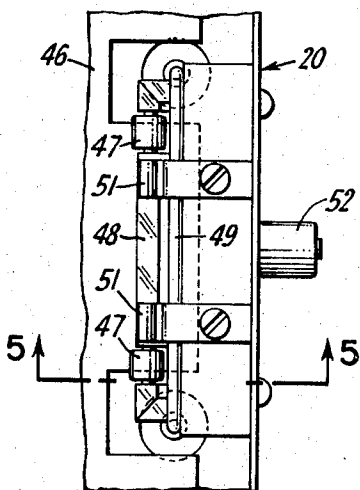
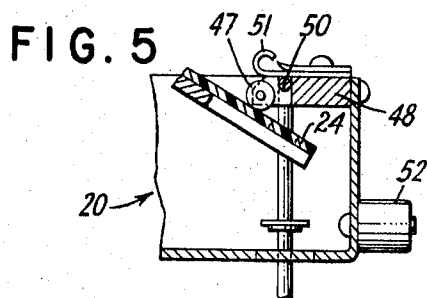
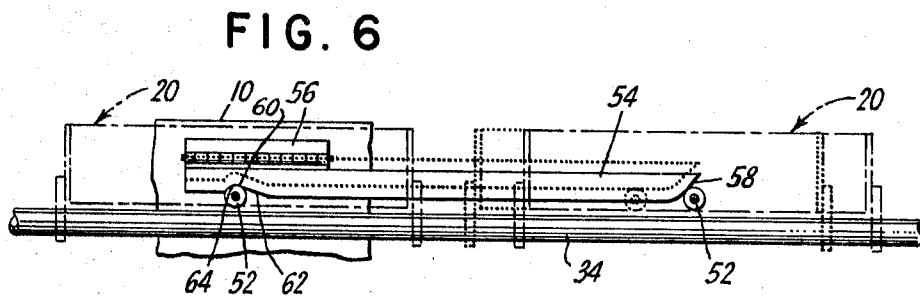
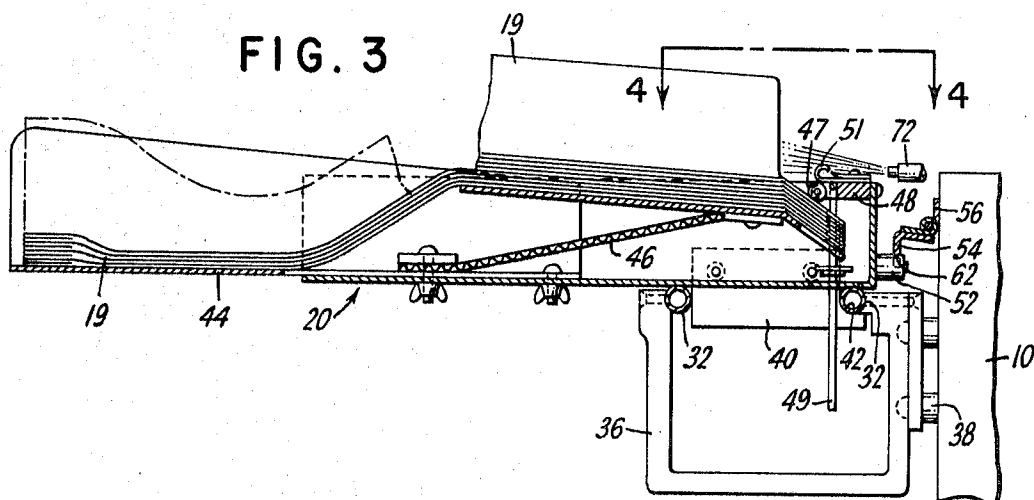
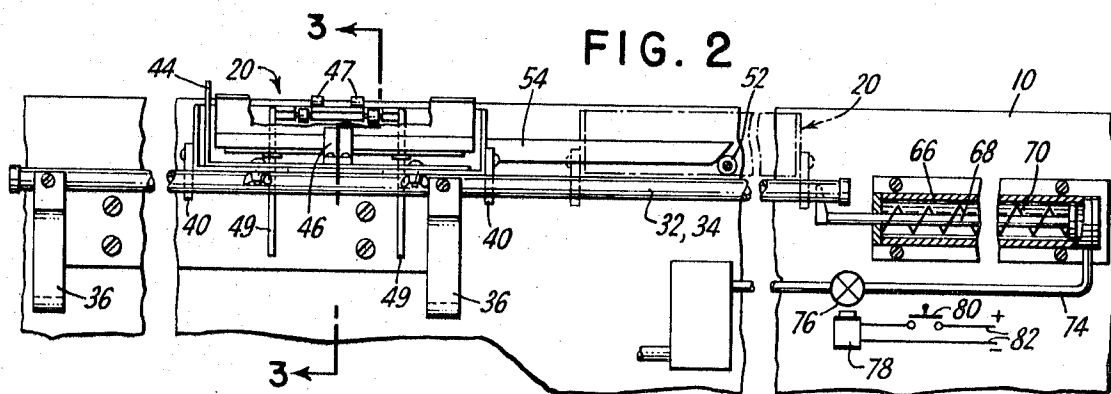


FIG. 4



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QUICK-CHANGE SUPPLY SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

The apparatus described herein is adapted to be utilized as an attachment to machinery of the type described in assignee's copending application Ser. No. 396,430, now U.S. Pat. No. 3,451,192 entitled "Bread Bagger".

BACKGROUND OF THE INVENTION

This application relates to the packaging of commodities, and more particularly to a system for providing the packaging medium wherein an exhausted supply of the packaging medium may be replaced in a rapid and efficient manner.

Previously, one of the leading causes of downtime in automatic packaging apparatus was the difficult and time-consuming task of replenishing the packaging material supply. For example, in a number of prior art machines, it is necessary to detach a supply magazine from the machine and replace it with a full magazine, taking care to align the new magazine with the segments of the machine that withdraws the packaging material from the magazine.

SUMMARY

It is, therefore, an object of this invention to provide a multi-magazine supply system capable of rapid and simple changeover of supply magazines.

It is another object of this invention to provide a multi-magazine system wherein an exhausted supply magazine may be quickly and simply removed from place and be replaced by a full magazine that can be easily put in the same place as the exhausted magazine.

In accordance with these and other objects, the invention comprises a magazine support adapted to receive a plurality of supply magazines in such a fashion that the supply magazine are movable thereon to and from a work station, and a locating member connected to said support member, said locating member having means for locating a supply magazine at the work station, and means in spaced relationship with said supply magazine for disengaging the locating member from supply magazine at the work station when a new supply is moved along the support to the work station.

DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of a preferred embodiment of the invention shown attached to a machine.

FIG. 2 is a front elevation view, partly in section, of the preferred embodiment of the invention.

FIG. 3 is a sectional view taken along lines 3-3 of FIG. 2.

FIG. 4 is a plan view of a portion of a supply magazine according to the invention.

FIG. 5 is a sectional view taken along lines 5-5 of FIG. 4.

FIG. 6 is a partial front elevation view of the preferred embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. 1, a preferred embodiment of the invention is shown attached to the machine disclosed in assignee's pending application Ser. No. 396,430. As discussed in that application, items to be packaged are advanced along conveyor 10 to a station 12. Prior to the arrival of an item at station 12, a pair of scoops, 14, 16, which are movable relative to each other between open and closed positions, are driven, while in their closed positions, along the direction indicated by arrow 18 into an open mouth bag 19 (FIG. 3), said bag being the topmost of a plurality of bags supported on a supply magazine 20. A blast of air from a pneumatic source 22 opens the bag before the scoops are driven therein.

As can be seen in FIG. 3, these bags are longer on one side than the other, and are held in supply magazine 20 by the extended portion 24 of the longer side of the bag. When the scoops enter the topmost bag, they are moved into their open position, gripping the bag by frictional force and removing it

from the supply magazine 20. The scoops then are driven rearwardly past station 12, whereat an item is "dumped" from conveyor 10 into bottom scoop 16. Then, as the scoops moved rearwardly, the item in scoop 16 is stopped by a blockade 26 and pushed against the back of the bag, forcing the bag and the item therein off the scoops, the bagged item falling onto an exit conveyor 28.

In its preferred embodiment, the invention comprises a magazine support 30 which includes a pair of spaced rails 32 and 34 mounted on a yoke 36, which yoke is connected to the main portions of the machine at 38. Each supply magazine 20 includes a mounting member 40 which has a C-shaped portion 42 adapted to engage rail 34. The supply magazine may be readily placed on and removed from support 30 by threading rail 34 in C-shaped portion 42, the magazine proper resting on the top of the rails, as shown in FIG. 3.

Each of the supply magazines 20 also includes (FIG. 3) a tray portion 44 adapted to support a stack of the open mouth bags 19. A tension spring arrangement 46 provided the stack of bags against a pair of retaining rollers 47 which are mounted on a member 48, serving to maintain the position of the uppermost bag at a constant level opposite pneumatic source 22 as bags are removed from the stack. Alignment of the bags in the stack is assisted by threading them on a pair of spaced rods 49, which are the legs of a U-shaped wicket. The crossbar of the wicket is mounted in slot 50 in member 48, being retained therein by a pair of springs 51. The bags are made of such material, or provided with suitable cut portions, that the scoops may easily remove the bags from rods 49 when they engage the bag and move incrementally to the left, as viewed in FIG. 3. Once placed on the rails, the magazines are readily slidable therealong. To facilitate this slidable relationship, coupling member 40 is preferably made of plastic having a low coefficient of friction. Each magazine 20 also includes a camming member 52, the purpose of which will be made apparent hereinafter.

A positioning and latching member 54 is pivotally mounted (at 56) to the frame of the machine, as best seen in FIG. 3, and includes a cam follower surface 58 as seen in FIG. 2. The cam follower surface is in spaced relationship with the camming member 52 of the magazines when they are on support 30. While this surface is shown (in FIGS. 2 and 6) at only one end of member 54, it is to be understood that it may be on both ends thereof within the scope of the invention. Member 54 also includes a recess 60. On the embodiment disclosed herein, one side 62 of the recess has a more gentle slope than the other side 64. However, both sides of the recess would be as side 64 if a cam follower surface 58 is provided at both ends of member 54.

For substantially automatic changing of magazines, an automatic changing system 65 may be provided at one or both sides of member 54. Automatic changing system 65 comprises an air cylinder 66, including a piston rod 68 and a spring return element 70, the air cylinder being mounted on the frame of the machine adjacent magazine support 30. A finger member 72 is mounted on piston rod 68 in spaced relationship with the coupling member 40 of magazines mounted on magazine support 30. Air is supplied to cylinder 66 from a suitable hose or pipe 74 connected thereto, and to a hose source (not shown), the hose having a valve 76 provided therein. The valve is operated by a solenoid 78 which is connected, through a switch 80, to a power source 82. Valve 76, and therefore air cylinder 66, is activated by manipulation of switch 80. This causes finger member 72 to be driven to the left, as viewed in FIG. 2, where it engages the coupling member 40 of a magazine placed on support 30 and drives the magazine to the left.

With reference to FIGS. 2-4, in operation, at the startup of the main machine, a magazine 20 having a full supply of bags therein is placed on support 30 at the right end thereof. The magazine is then slid along the support to the left. When the camming member 52 engages cam follower surface 58, and is moved therealong, the positioning and latching member 54 is

pivoted upwardly to a raised position shown in phantom in FIG. 6. The member 54 stays in its raised position as the magazine is slid further to the left until it reaches recess 60, whereupon member 54 drops, latching the magazine in position. Member 54 could be lightly spring-biased downwardly, although this is not necessary. In addition, member 54 need not be one piece, although that is most convenient, but can be any combination of elements, as long as the cam follower surface or its equivalent, such as a switch-operated solenoid, is operatively connected to a recess 60, or means equivalent thereto.

The position defined by recess 60, indicated by numeral 84 on FIG. 1, is in spaced relationship with scoops 14 and 16, and when a supply magazine is positioned thereat the machine is ready to operate. As the machine withdraws bags from the magazine in position 84, another magazine, which has been filled with bags, may be placed on support 30 in anticipation of the exhaustion of the magazine in position 84. When that occurs, button 80 is depressed, activating air cylinder 66, driving finger member 72 into engagement with the full magazine and driving the magazine along support 30. Piston rod 68 is sized such that the stroke thereof is sufficient to allow the second magazine to be driven along support 30 to a point opposite recess 60. Accordingly, the second magazine is driven into latched emplacement at position 84. When said second magazine is driven past cam follower surface 58, locating and latching member 54 is raised, unlatching the exhausted magazine. Whereupon, when the second magazine is driven to position 84, the original magazine is unlatched therefrom, and is pushed away therefrom by the second magazine, if it has not been removed prior to the arrival of the second magazine at position 84.

Of course, the magazine change may be executed by hand by placing a second magazine on one side of support 30 and sliding it toward position 84. When locating and latching member 54 is raised by the second magazine by the action of camming member 52 on cam follower surface 58. The exhausted magazine is unlocked and may be slid off as the second magazine is slid into position 84 and positioned thereat. An exhausted magazine may be refilled by removing the U-shaped wicket therefrom and placing a new wicket, containing a new supply of bags therein.

It will be appreciated that this invention will function with any machine that includes means for withdrawing material from a stack, and thus exhausts the stack, requiring a new supply to be placed adjacent or on the machine. And, if a machine includes a plurality of such means, a corresponding plurality of the instant invention may be attached thereto.

We claim:

1. Apparatus for providing supply units at a work station, which comprises:

a support adapted to receive supply units in such a fashion that the supply units are movable thereon to and from a work station;

a member mounted adjacent said support, said member having means for engaging and retaining a supply unit at the work station against movement along the support in either direction; and

means normally in spaced relationship with a supply unit at the work station for disengaging said engaging and retaining means from a supply unit at the work station in response to the movement of a new unit along the support to the work station.

2. In apparatus wherein articles are withdrawn from a supply magazine, a quick-change supply system, which comprises:

a magazine support having an active station and at least one inactive station;

a plurality of supply magazines adapted to be slidably mounted on said support;

camming means mounted on each of said supply magazines; and

means mounted adjacent said support for fixing a supply magazine in said active station against movement along said magazine support in either direction, said fixing means also including a cam follower surface normally in spaced relationship with the camming means on said supply magazines, wherein sliding movement of a supply magazine from an inactive position on the support to the active position will cam said fixing means out of fixing engagement with the magazine in said active position, allowing said last-named magazine to be removed from said magazine support.

3. A multiunit supply system according to claim 2, wherein each of said supply units includes:

a tray portion for receiving a stack of articles in such manner that they may be withdrawn therefrom; retaining means for engaging a portion of the top article of said stack; and

resilient means biasing said stack of articles against said retaining means for maintaining the height of the top article constant as articles are withdrawn from the tray.

4. A multimagazine supply system, which comprises:

a magazine support having an active station and at least one inactive station;

a supply magazine adapted to be slidably mounted on said magazine support;

means mounted adjacent to said support for positioning and latching said supply magazine at the active station;

means operatively connected to said last named means for unlatching said supply magazine at the active station; and

means mounted in spaced relationship with the supply magazine for driving another supply magazine along the magazine support from an inactive station to the active station, wherein movement of the other supply magazine from said inactive station operates said unlatching means, freeing the supply magazine at the active station for removal from the support.

5. In apparatus having means for withdrawing articles from a supply magazine, a quick change system for supply magazines which comprises:

a magazine support having an active station opposite said withdrawing means and at least one inactive station;

a plurality of supply magazines adapted to be mounted on said support such that they are movable thereon;

a camming member mounted on each of said supply magazines;

an element mounted adjacent said support and pivotable with respect thereto between at least first and second positions, said element including a recess therein at the active station, which recess is shaped to engage the camming member on a supply magazine and latch the latter at the active position when said element is in its first position, said element also including a cam follower surface normally in spaced relationship with said camming members; and

movement of a supply magazine from an inactive station to the active station being operable to bring the camming member thereon into engagement with said cam follower surface to pivot said element from its first position to a second position whereat said latching recess is disengaged from the camming member of the supply magazine at the active station to allow the latter to be removed from the support.

6. A quick-change system for supply magazines according to claim 5, wherein:

said magazine support comprises at least two spaced rails; and

said supply magazines include:

a tray portion adapted to be supported on top of said rail and containing a plurality of articles to be withdrawn therefrom; and

a mounting element adapted to engage other portions of said rails to limit movement of said magazines on said rails to said sliding movement.

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7. A quick-change system for supply magazines according to claim 5, further comprising: driving means for moving the supply magazine at an inactive station along said support toward the active station, said driving means comprises an air cylinder, a piston rod mounted for reciprocal movement therein, and a member connected to the piston rod in spaced relationship with the mounting members of the supply magazines, wherein activation of the air cylinder causes said member connected to the piston rod to strike the mounting member of a supply magazine and drive the supply magazine along the support rails.

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8. A quick-change system for supply magazines according to claim 5, wherein each of said supply magazines includes:
a tray portion for receiving a stack of articles in such manner that they may be withdrawn therefrom;
retaining means for engaging a portion of the top article of said stack; and
resilient means biasing said stack of articles against said retaining means for maintaining the height of the top article constant as articles are withdrawn from the tray.

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