Aug. 12, 1969 C. F. KEAS 3,460,314

LID DISPENSING APPARATUS

Filed Oct. 17, 1966 5 Sheets-Sheet 1

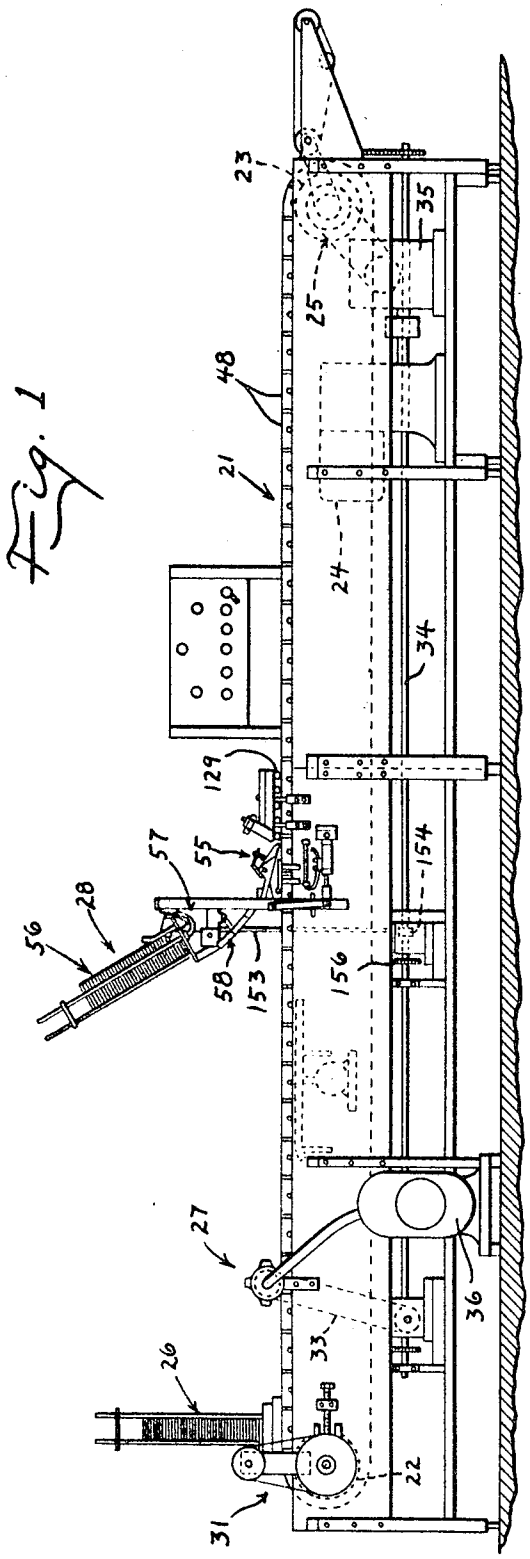


Fig. 1

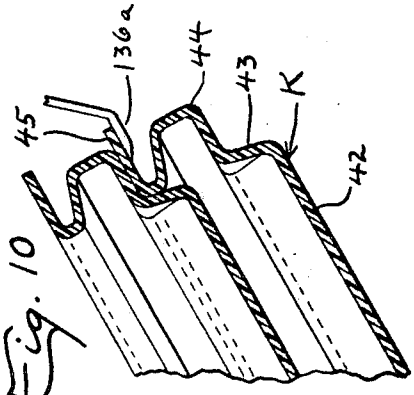
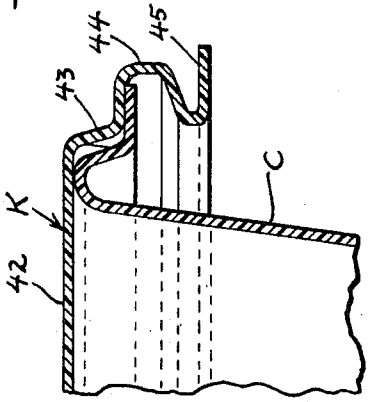


Fig. 10



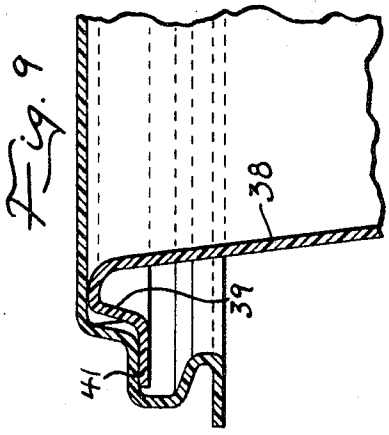


Fig. 9

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Fig. 3

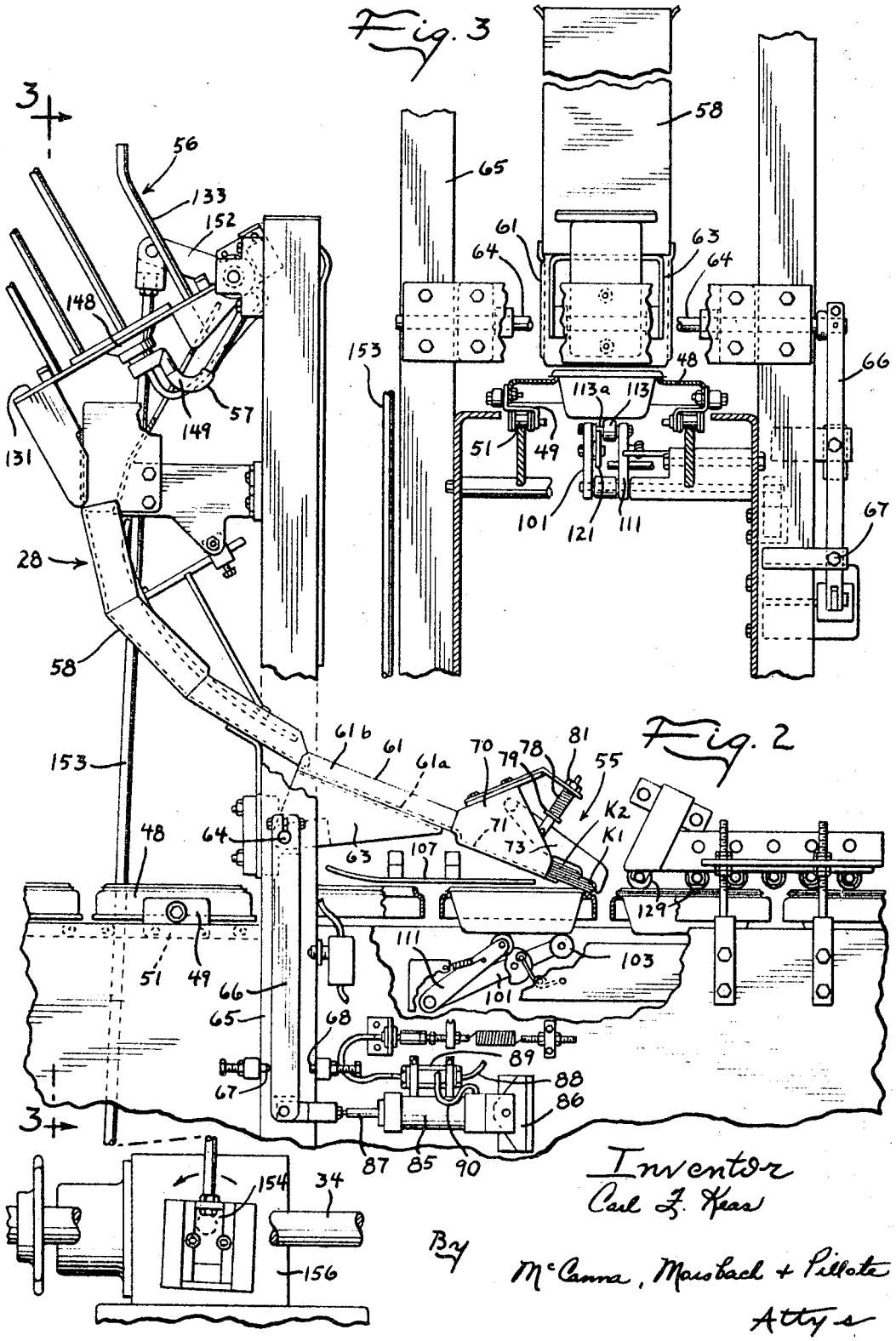

Fig. 2

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Fig. 4

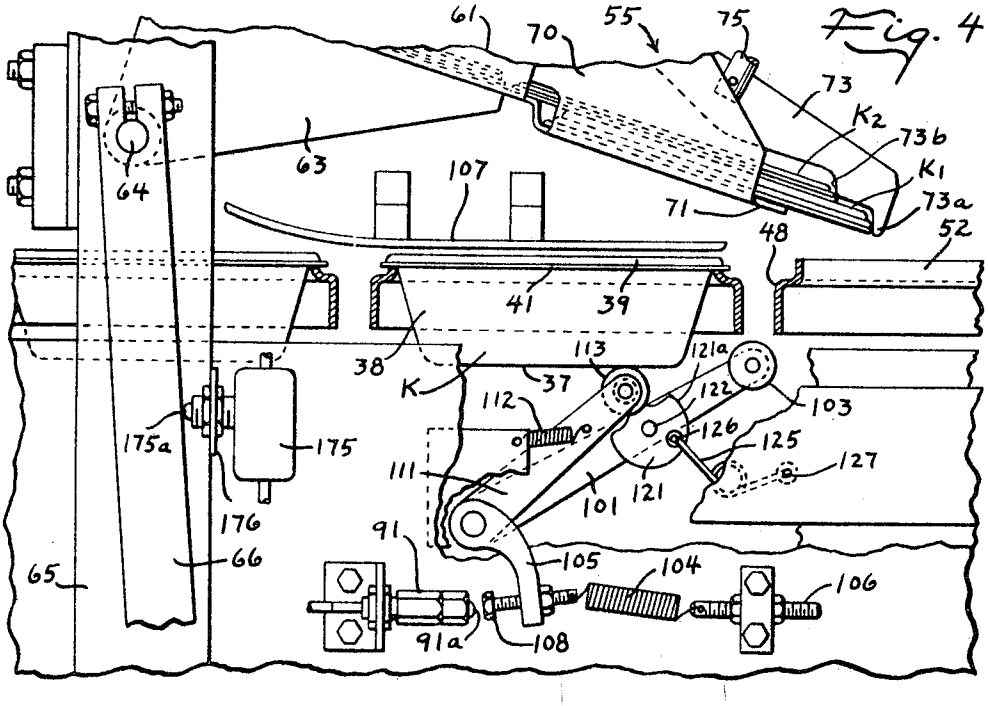

Fig. 5

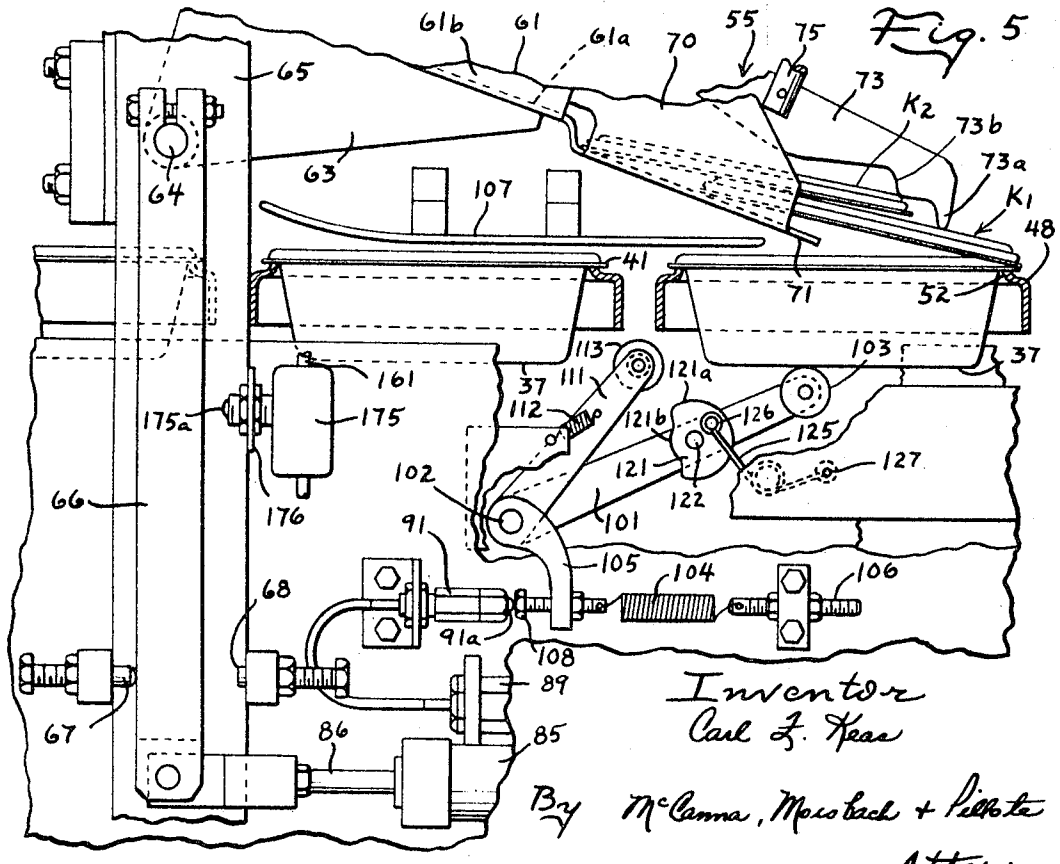

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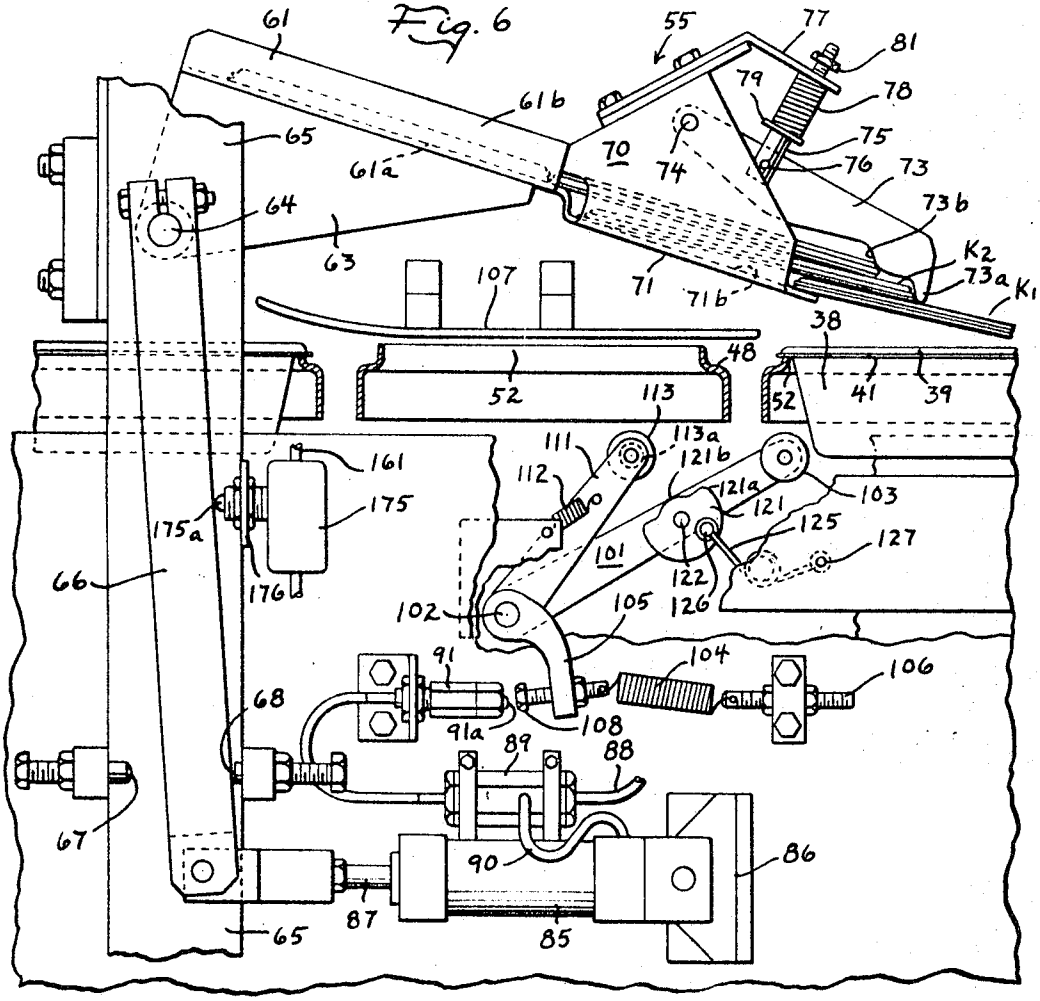
Fig. 6



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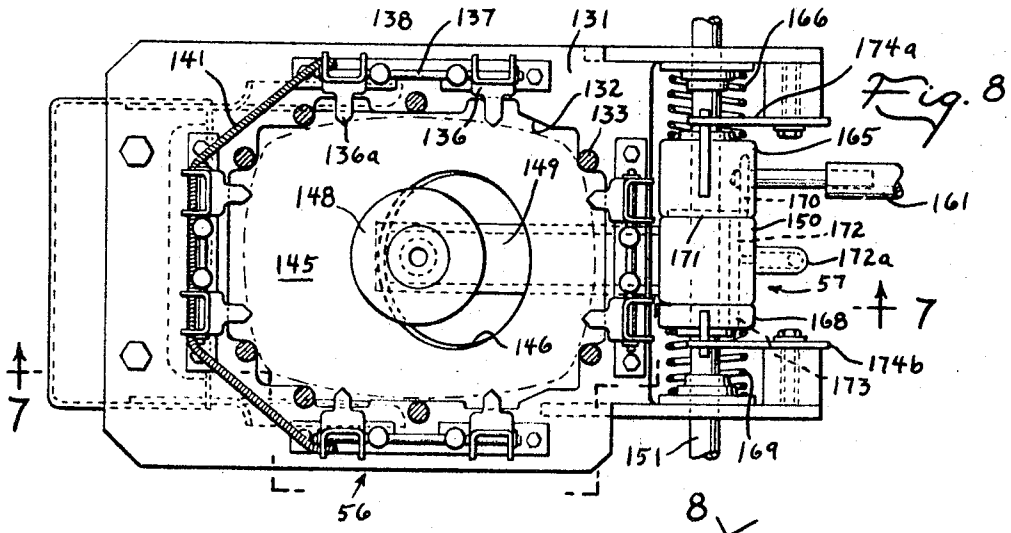

Fig. 8

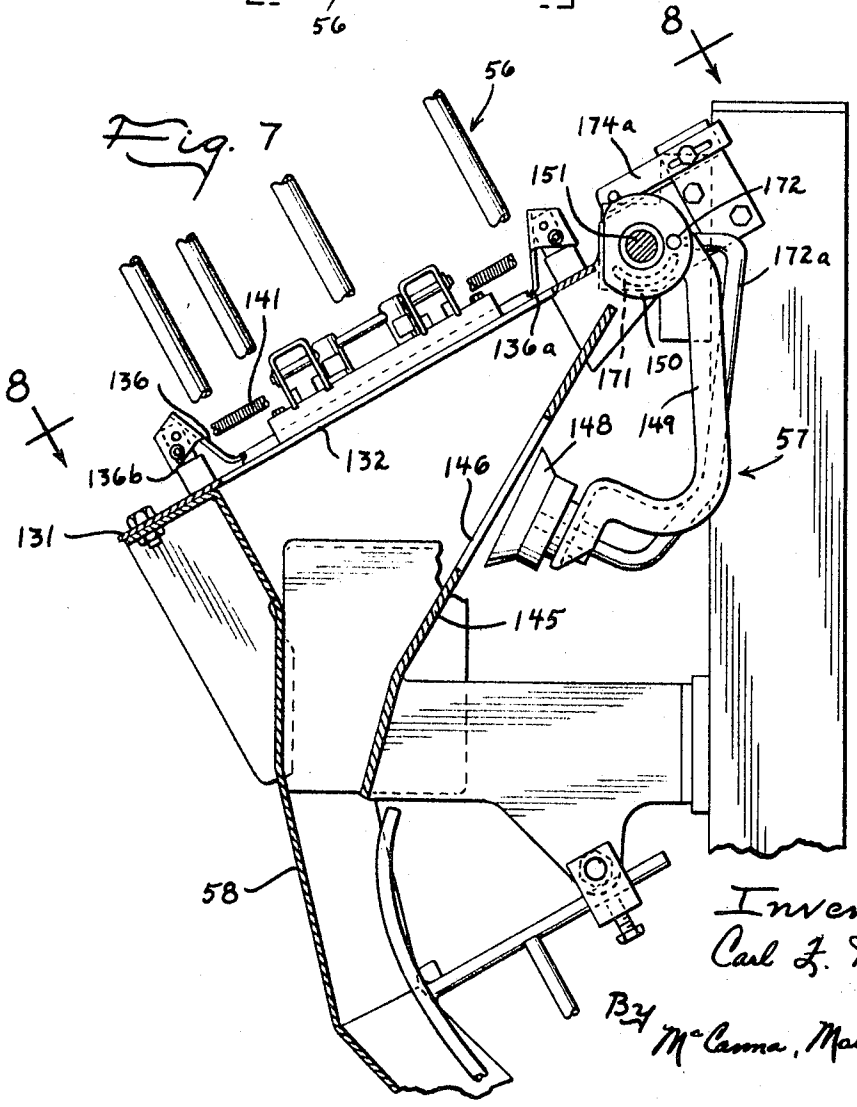

Fig. 7

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LID DISPENSING APPARATUS

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Int. Cl. B65b 57/02, 7/28
U.S. Cl. 53—72 17 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for applying skirted covers to containers as they are advanced by a conveyor in which the cover applying head normally supports a cover in downwardly converging relation to the containers on the conveyor in a position such that the container engages the cover in the head and strips the cover off the head, and in which the cover applying head is automatically moved to an inoperative position out of the path of movement of the containers on the conveyor in the absence of a container on the conveyor adjacent the capping station. The capping apparatus also includes an improved head construction in which the lowermost cover is supported by the head in the cover applying position to be engaged by a container on the conveyor, and a second cover is supported in the head in stepped overlapping relation to the lowermost cover to minimize the time required for the second cover to move into cover applying position.

This invention relates to improvements in cover applying apparatus.

It is a general object of this invention to provide an improved cover applying apparatus which will reliably and rapidly apply skirted covers to containers while the containers are in motion past the cover applying apparatus.

Another object of this invention is to provide a cover applying apparatus of the type wherein containers are advanced by a conveyor past a cover applying head to strip the cover from the head as they move therepast and which has an improved arrangement for preventing dispensing of the cover in the absence of a container on the conveyor as it moves past the cover applying head.

Another object of this invention is to provide a cover applying apparatus of the type wherein containers are advanced in spaced container receiving pockets on a conveyor past a cover applying head and wherein the head is automatically moved from an operative cover applying position to an inoperative position to prevent dispensing of the cover in the absence of a container in the conveyor pocket as it moves past the head.

A further object of this invention is to provide a cover applying apparatus in accordance with the foregoing object and having an improved arrangement for sensing the presence of a container in the conveyor pockets as they move past the cover applying head and which sensing apparatus controls movement of the head to its inoperative position only in the absence of a container in the conveyor pocket at the cover applying station and which avoids spurious movement of the head into and out of its operative position due to the normal spacing of the containers in the pockets on the conveyor.

Yet another object of this invention is to provide a cover applying apparatus wherein the cover applying head is automatically moved to an inoperative position in the absence of a container in proper position below the cover

applying head to prevent dispensing of covers in the absence of a container in capping position and wherein an improved arrangement is provided for interrupting the feed of covers to the cover applying head while the latter is in its inoperative position.

Still another object of this invention is to provide a cover applying apparatus of the type wherein the covers are supported by a cover applying head in a downwardly inclined position in the path of movement of containers to be stripped from the head by the containers, and which cover applying apparatus is arranged to minimize the time required to move a succeeding cover into position on the cover applying head for a subsequent capping operation.

These, together with other objects and advantages of this invention, will be better understood by reference to the following detailed description when taken in connection with the accompanying drawings, wherein:

FIGURE 1 is a side elevational view of a packaging machine embodying the cover applying apparatus of the present invention;

FIG. 2 is a fragmentary side elevational view illustrating the cover applying apparatus on a larger scale than FIG. 1 and with parts broken away and shown in section to illustrate details of construction;

FIG. 3 is a fragmentary transverse sectional view taken on the plane 3—3 of FIG. 2;

FIGS. 4, 5 and 6 are fragmentary side elevational views of the cover applying apparatus with parts broken away and illustrating the parts on a larger scale than FIG. 2 and in different moved positions;

FIG. 7 is a fragmentary vertical sectional view through the cover feed apparatus taken on the plane 7—7 of FIG. 8;

FIG. 8 is a sectional view through the cover magazine taken on the plane 8—8 of FIG. 7;

FIG. 9 is a fragmentary view of a container and cover of a type adapted for use with the present invention; and

FIG. 10 is a fragmentary sectional view illustrating nested covers as they stack in the magazine.

The cover applying apparatus of the present invention is generally adapted for use in applying skirt-type covers to containers as they are advanced along a path and may, for example, be used in conjunction with a packaging machine as shown in FIG. 1. The packaging machine includes a pocketed conveyor 21 of the endless type which is entrained over sprockets 22 and 23 adjacent opposite ends of the machine and which conveyor is driven in continuous fashion as by a motor 24 through a speed reducing drive mechanism 25. As shown in FIG. 1, a container dispenser 26, a filler 27 and a capper 28 are disposed at spaced stations along the conveyor to sequentially dispense containers into the pockets, fill the pockets and apply covers to the filled containers. The container dispenser and filler may be of any conventional construction, details of which form no part of the present invention. However, both are preferably driven in timed relation with the movement of the conveyor. As shown, the container dispenser is driven through a drive mechanism 31 off one of the conveyor sprockets 22 to dispense containers into the pockets in timed relation with the movement of the pockets past the container dispenser. The filler 27 shown herein is of the rotary nozzle type which is driven in timed relation with the conveyor through a drive mechanism 33 operatively connected to a drive shaft 34 which extends lengthwise of the filling machine

and which is driven in timed relation with the conveyor through a power take-off mechanism **35**. As shown, product is supplied to the filler **27** through a product pump **36**.

While the capping apparatus of the present invention is generally adapted for applying skirted covers to containers, it is particularly designed for use in applying covers to relatively lightweight, flexible containers formed of plastic or the like. A typical container C and cover K therefor are illustrated in FIGS. 9 and 10. As shown, the containers are in the form of a cup-like body having a bottom wall **37**, marginal side walls **38** and an outwardly and downwardly extending rim portion **39** which terminates in an outwardly extending flange **41**. The covers K are shaped to overlie the container and flange and include a mouth-spanning portion **42**, a downwardly extending rim **43**, a peripheral bead **44** and an outwardly extending flange **45** at the lower end of the bead. As shown in FIG. 9, the bead portion **44** on the cover is adapted to snap over the container flange **41** to releasably lock the cover on the container.

Containers formed of thin, flexible plastic material are subject to warpage and to distortion due to pressures applied during handling and capping the same. The container receiving pockets on the conveyor **21** are accordingly advantageously constructed and arranged to firmly support the containers adjacent the tops thereof as the containers are advanced through the machine and past the cover applying apparatus. As best shown in FIGS. 3–6, the container receiving pockets on the conveyor are in the form of trays **48** connected as by brackets **49** to endless conveyor chains **51**. The trays have container receiving openings therein with upturned flanges **52** along the sides and ends of the openings. The flanges are arranged to closely surround the side walls **38** of the container and extend into the space between the container side walls and the downturned rim **39** to firmly support the containers adjacent their upper ends.

The cover applying apparatus **28** includes a cover supporting and applying head **55** for applying covers to the containers as they move past the head and a feed means for feeding covers to the head. This feed means includes a cover magazine **56**, a cover feed mechanism **57** for removing individual covers from the magazine, and a chute **58** for conveying the covers in edge-to-edge relation to the head **55**. As will be seen, the conveyor pockets **48** advance the containers along a path with the tops of the containers at a preselected level, and the cover applying head **55** is arranged to support a cover in downwardly converging relation to the path of travel of the containers and with the lower edge of the cover extending below the level of the top of the containers to be engaged thereby and stripped off the cover applying head as the containers move below the head.

In order to prevent dispensing of a cover in the absence of a container, provision is made for automatically moving the cover applying head to an inoperative position when no container is present in the pocket below the head. The cover applying head is preferably made vertically swingable into and out of cover applying position and, as best shown in FIGS. 3–6, the head includes a lower chute portion **61** having a bottom guide **61***a* for guidably supporting the bottom of the cover and laterally spaced side guides **61***b* for laterally guiding the cover. The lower chute portion **61** is nonrotatably secured as by brackets **63** to a shaft **64** rotatably mounted on frame members **65** on the packaging machine adjacent the capping station. An arm **66** is non-rotatably secured to one end of the shaft **64** and is operated by a head moving apparatus described hereinafter to move the head between a lower or operative cover applying position and an upper or inoperative position. As shown in FIG. 6, stops **67** and **68** are adjustably secured to the frame member **65** and arranged to engage the arm **66** to limit movement of the cover applying head between its lower cover applying position and its upper inoperative position respectively.

As will be seen, the spacing between adjacent container receiving pockets is small as compared to the length of the containers and, particularly when the conveyor is operated at a relatively high speed, problems are encountered in moving a succeeding cover into proper position on the head in time to apply the same to the next succeeding container. An important feature of the present invention resides in an improved cover applying head construction which minimizes the time required to move a succeeding cover into cover applying position. The head includes spaced side plates **70** which are generally coplanar with the lateral carton guides **61***b* of the lower chute portion and form extensions thereof, and a bottom wall **71** which extends between the side plates **70** to engage and support the underside of the cover. The bottom wall **71** may be either continuous or in the form of inwardly directed flanges and defines a cover support ledge which preferably generally parallels but is offset below the bottom guide **61***a* of the lower chute portion a distance slightly greater than the depth of one cover. The bottom wall or ledge **71** is inclined downwardly and supports the lowermost cover K, as shown in FIGS. 2 and 4 in downwardly converging relation to the path of the movement of the containers on the conveyor with the top of the lowermost cover no higher than the bottom guide **61***a* of the lower chute portion so that a succeeding cover designated K2 can pass through the lower chute portion into overlying relation to the cover on the support ledge **71**. A cover gate is provided for releasably supporting the covers in the head and, preferably, the cover gate is arranged to support the overlying cover K2 in staggered relation with respect to the cover K1 on the ledge **71**, as best shown in FIG. 4, to inhibit nesting of the covers in the head. The cover gate is preferably in the form of one or more gate members **73** conveniently pivotally mounted at **74** on the side plates **70** of the head for vertical swinging movement relative to the head. A guide pin **75** is pivotally secured to the gate member **73** as by a pin **76**, and the guide pin **75** extends through a bracket **77** attached to the cover applying head. The gate member is yieldably urged to a lowered position as by a compression spring **78** interposed between the bracket **77** and a stop washer **79** on the guide pin, and a stop nut **81** is adjustably secured to the pin to engage the other side of the bracket **77** as shown in FIG. 2 and limit downward movement of the gate member to a normal cover stop position shown in FIGS. 2 and 4. The gate member has a downwardly projecting finger **73***a* arranged, in the cover stop position thereof, to engage the lower edge of the cover K1 on the support ledge **71**, to releasably hold that cover on the head. The gate member also includes a shoulder **73***b* defining a second stop portion which is spaced above the finger **73***a* to engage the overlying cover K2, and which second stop portion is offset relative to the finger **73***a* to support the overlying cover in staggered relation with respect to the cover on the ledge **71**. As shown in FIG. 4, the finger **73***a* is spaced from the end of the lower chute portion **61** a distance somewhat greater than the length of a cover to allow the cover K1 to rest on the support ledge **71**, and the shoulder **73***b* is spaced from the chute portion a distance less than the length of a cover so that the overlying cover K2 is supported at its upper end on the bottom guide **61***a* of the lower chute portion. The finger **73***a* has a length slightly greater than the depth of a cover and, during withdrawal of the lowermost cover K1 as shown in FIGS. 5 and 6, the finger rides over the top of the lowermost cover and spaces the shoulder **73***b* thereabove to allow the overlying cover K2 to move downwardly into engagement with the finger **73***a*. As will be seen, the withdrawal of the lowermost cover K1 tends to drag the overlying cover K2 therewith until it engages the stop finger **73***a*, to thereby aid in moving the succeeding cover into proper position.

The means for moving the head into and out of its operative cover applying position is conveniently of the fluid operated type and, as shown, includes a linear actuator having a cylinder **85** mounted by a bracket **86** on the machine frame and a piston rod **87** operatively connected to the lever **66**. The fluid actuator can be of either the single or double acting type and is herein shown of the single acting type having a spring (not shown) for yieldably urging the piston rod **87** to its retracted position, that is to the right as viewed in FIG. 6. A selectively operable means is provided for controlling the application of air to the fluid actuator to extend the same and, in the form shown, this means includes a control valve **89** for controlling the supply of air from a supply line **88** through a line **90** leading to the actuator cylinder **85**. The control valve **89** is normally arranged to block flow of air from the supply line **88** to the cylinder **85**, and any suitable means may be provided for moving the control valve to its open position. In the form shown, the control valve is operated under the control of a remote pilot **91** having an actuator **91***a* so arranged as to cause the control valve to move to its open position when the actuator **91***a* is depressed.

A sensing means is provided for detecting the presence of a container in the conveyor pockets as they move past the capping head and for operating the head moving means to raise the head in the absence of a container in the pocket as it moves past the cover applying station, to prevent dispensing of a cover under these conditions. This sensing means includes a main sensor herein shown in the form of an arm **101** pivotally mounted on a shaft **102** attached to the main support frame and having a container engaging element **103** at its outer end. The sensing arm **101** is normally urged to a raised position as by a spring **104** connected at one end to an arm **105** on the shaft **102** and at the other end to an adjustable support **106** on the main machine frame. The sensing arm is normally urged upwardly into engagement with the bottom of the containers as they move past the capping head, and an adjustable actuator finger **108** is connected to the arm **105** to operate the pilot valve actuator **91***a* when the container engaging element **103** engages a container. As will be seen from FIGS. 4–6, the container engaging element on the sensor arm **101** is positioned to engage the containers only slightly in advance of the position at which the container tops engage the covers in the head and such that the head moving means can move the head downwardly to position the lower edge of the cover between adjacent containers on the conveyor. The "lead," that is the positioning of the container engaging element **103** in advance of the cover applying position is selected in accordance with the spacing between adjacent containers and the time delay inherent in the head moving means, so as to assure that the container engaging head moves downwardly between adjacent containers when the container engaging element **103** engages the bottom of a container and depresses the arm, and that the head moves upwardly between adjacent containers, when the container engaging element **103** disengages a container and allows the arm **101** to move upwardly. A container hold-down guide **107** is preferably mounted to extend slightly above the level of the tops of the containers in the region adjacent the container sensor, to hold the containers in the pockets when the sensor engages the underside of the containers. A means is advantageously provided to prevent spurious raising and lowering of the head when the intervening space between adjacent containers passes the container engaging element **103** on the sensor arm **101**. This means includes a second sensor herein shown in the form of an arm **111** conveniently supported on ths shaft **102** for free swinging movement relative thereto, and which arm is yieldably urged to a raised position as by a spring **112**. The arm **111** has a container engaging element **113** thereon which is spaced lengthwise of the conveyor means in a direction opposite the direction of movement of the conveyor a distance greater than the effective spacing between adjacent containers on the conveyor at the point of engagement of the sensors therewith. The second sensor **111** including the container engaging element **113** is thus arranged to engage a container in a succeeding pocket before the container engaging element **103** on the first sensor arm **101** disengages the container at the conveyor applying station.

The second sensor is arranged to provide a secondary type of control for the head moving means and only prevent raising of the cover applying head when the head is already in a lowered position applying a cover to a container moving past the head, if a container is present in the next succeeding pocket on the conveyor. Stated otherwise, the arrangement is such that the second sensor will not operate to lower the cover applying head if the latter has previously been raised, even if the second sensor detects a container in the succeeding conveyor pocket. Instead, movement of the cover applying head to its lowered position remains under the control of the first sensor and lowering of the head is therefore delayed until that container in the succeeding conveyor pocket advances to a position to engage the first sensor. In the embodiment illustrated, the second sensor arm controls raising of the first sensor arm and is operative, when depressed, to prevent raising of the first sensor arm if the latter is already in its lowered position, but the second sensor arm will not effect lowering of the first sensor arm if the latter is in its raised position. This operation is achieved by a cam member **121** which is movably mounted as by a pin **122** on the first sensor arm **101**. The cam member has a lobe portion **121***a* and a well portion **121***b* spaced relatively different distances from the pivot axis **122** of the cam member, and the cam member is movable relative to the first sensor arm from an operative position shown in FIG. 5 when the first sensor arm is depressed to an inoperative position as shown in FIGS. 4 and 6 when he first sensor arm is raised. When the cam member is in its operative position shown in FIG. 5, the lobe portion **121***a* is positioned to engaged a part such as a hub **113***a* on the container engaging element **113** of the second sensor arm so that, when the second sensor arm is thereafter depressed in response to engagement with a container in the succeeding pocket, it will hold the first sensor arm in its lowered position as shown in FIG. 2. However, when the first sensor arm is in its raised position, the cam member is moved to its inoperative position shown in FIGS. 4 and 6, and the well portion **121***b* is positioned in the path of movement of the second sensor arm. The well portion is shaped so that the depressing of the second sensor arm is ineffective to depress the first sensor arm and the head will therefore remain in raised position until the first sensor arm is thereafter depressed in response to engagement with a container. Any suitable means may be provided for moving the cam member relative to the first sensor arm between its operative and inoperative positions and, in the form shown, this comprises a resilient spring link **125** having one end pivotally connected at **126** to the cam member and the other end pivotally connected at **127** to a stationary part of the frame. As will be seen, the resilient link **125** is connected to the cam member eccentrically of its pivot axis **122** and will move the cam member between its operative position when the arm **101** is lowered and its inoperative position when the sensor arm **101** is raised. With this arrangement it is apparent that raising and lowering of the cover applying head is controlled primarily by the first sensor arm **101**, and the second sensor arm is operative only to maintain the cover applying head in its lowered position if there is a container in the next succeeding pocket on the conveyor. A means is provided for firmly pressing the covers on the containers, as the containers are advanced away from the capping head. In the embodiment illustrated, this means includes a plurality of rollers **129** mounted on a carriage to extend

crosswise above the conveyor at a level to engage and firmly press the covers on the containers.

A nested stack of covers is supported in the magazine **56** in an inverted position as shown in FIG. 10. The magazine includes a frame **131** having an opening **132** dimensioned to allow passage of covers therethrough and guide means such as rods **133** for guidably supporting the nested stack of covers. The covers in the stack are in an inverted position as shown in FIG. 10 and the lowermost cover in the stack is releasably supported around the periphery of the opening **132** by a plurality of cover engaging fingers **136**. The cover engaging fingers, as best shown in FIGS. 7 and 8, are preferably pivotally mounted as on pins **137** supported by brackets **138** on the magazine frame, and the fingers have inwardly directed tip portions **136***a* arranged to engage the flange on the cover to underlie and support the same. The container engaging fingers are yieldably urged inwardly into engagement with the cover as by a girdle spring **141**, and stop portions **136***b* are provided on the fingers to limit inward swinging movement of the latter.

The chute **58** has a portion **145** that underlies the opening **132** in the magazine frame to guide the covers into the chute, and the vacuum operated cover feed mechanism is arranged for movement through an opening **146** in the portion **145** between a retracted position as shown in FIG. 7 and an extended position engaging the end cover in the stack as shown in FIG. 3. The vacuum operated feed mechanism includes a vacuum cup **148** conveniently mounted by an arm **149** on a hub **150** nonrotatably secured to a shaft **151**. The cover feed mechanism is operated in timed relation with the movement of the conveyor and, for this purpose, an arm **152** (FIG. 3) is secured to the shaft **151** and is connected through a link **153** to a crank **154**. The crank **154** is rotated in timed relation with the movement of the conveyor so as to complete one revolution each time the conveyor is advanced a distance corresponding to the center-to-center spacing of the conveyor pockets. As shown in FIGS. 1 and 2, the crank is driven through a power take-off **156** from the shaft **34** which, as previously described, is driven in timed relation with the movement of the conveyor. The vacuum operated feeder is thus cyclically oscillated from its retracted position to its extended position and back each time the conveyor is advanced a distance corresponding to one pocket. Vacuum is applied to the vacuum cup **148** through a line **161** (FIG. 8) and, preferably, a valve means is provided for interrupting the vacuum supply to the cup when the arm is in its retracted position shown in FIG. 7, to thereby facilitate release of the cover. The valve means shown herein (FIGS. 7 and 8) comprises a bushing **165** supported on the shaft **151** for turning relative thereto and yieldably urged by a spring **166** against the end of the hub **150**. A second bushing **168** is preferably mounted on the shaft **151** for turning relative thereto and yieldably urged into engagement with the other end of the hub as by a spring **169**. The vacuum supply line **161** communicates through a passage **170** with an arcuate valve port **171** formed at the end face of the bushing **165** and the hub has a valve passage **172** opening at the end faces thereof and arranged to communicate with the arcuate valve port when the vacuum cup is in its extended position shown in FIG. 2 and until the vacuum cup is retracted to a position adjacent the opening **146** in the portion **145** of the cover chute. The valve passage **172** communicates through a line **172***a* with the vacuum cup **148** and, when the vacuum cup is in its fully retracted position, the valve passage **172** in the hub is out of communication with the valve port **171** to shut off vacuum to the vacuum cup and the valve passage then communicates with atmosphere through a port **173** in the other bushing **168** (FIG. 8). The valve bushings **165** and **168** are held against turning by brackets **174***a* and **174***b*, and the brackets are adjustably secured to the magazine frame as shown in FIG. 7 to enable adjustment of the timing of the valving operations.

The cover feeding mechanism thus normally operates to feed a cover through the chute **58** to the cover applying head each time the conveyor is advanced a distance corresponding to the center-to-center spacing of the pockets. However, provision is advantageously made for interrupting feeding of covers when the cover applying head is moved to its inoperative position, to thereby prevent excessive accumulation of covers in the chute. This is conveniently achieved in the present apparatus by providing a valve **175** in the vacuum line **161** leading to the vacuum cup and arranging the valve for operation to shut off the vacuum to the cups whenever the head is raised. As shown, the valve **175** is mounted by a bracket **176** on the machine frame and has an actuator **175***a* arranged to be engaged by the head operating lever **66** when the latter is moved to its head raising position, to thereby shut off the vacuum supply to the cover feed mechanism.

From the foregoing it is thought that the construction and operation of the cover feed mechanism will be readily understood. The cover feed mechanism operates to remove individual covers from the stack and deposit the same one at a time in the chute, in timed relation with the movement of the conveyor, and the covers are guided through the chute in edge-to-edge relation to the cover applying head. One cover K1 is supported in the head on the support ledge **71** at a level below the bottom of the chute so that a second cover K2 can overlie the lower cover as shown in FIG. 4. If a container is in the pocket as it is advanced below the cover applying head, the sensor arm **101** engages the container and operates to move the cover applying head to its lower position as shown in FIG. 2 with the lower edge of the cover disposed in the path of movement of the container. The container thus strips or withdraws the lower cover from the head as it is advanced past the head as shown in FIG. 5, and the cover gate members **73** ride over the top of the lower container. If a container is present in the next succeeding pocket, the second sensor arm will engage that container before the first sensor arm disengages the container at the cover applying head so that the head will remain in its lowered position. If no container is present in the pocket as it is moved past the head, the first sensor arm moves to its raised position and automatically raises the cover applying head as shown in FIG. 4 so as to prevent dispensing of a cover in the absence of a container. On the other hand, it a container is present in the pocket moving past the cover applying head, but no container is present in the next succeeding pocket, the second sensor arm will move upwardly as shown in FIG. 6 and allow the first sensor to also move upwardly after it passes out of engagement with the container at the cover applying head. Whenever the cover applying head is in its raised position, vacuum to the feed mechanism is shut off so that feeding of successive covers is interrupted.

Since the cover applying head supports several covers in superposed but staggered relation, it will be seen that the time required to move a succeeding cover into proper cover applying position is minimized. This enables the cover applying apparatus to be used in machines where the container receiving pockets are spaced closely together, as well as in machines where the conveyor is operated at a relatively high speed.

What is claimed as new is:

1. In an apparatus for applying skirted covers to containers including conveyor means having container receiving pockets at spaced points therealong movable along a path past a cover applying station, said container receiving pockets each having means extending upwardly to a preselected level for supportably engaging a container adjacent the top thereof to advance the containers with the tops of the containers adjacent said preselected level, a cover supporting and applying head at said station having means for releasably supporting a skirted cover,

and means for feeding covers to said head, the improvement comprising, means mounting said cover supporting and applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the container receiving pockets with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container receiving pockets in the conveyor means, means for sensing the presence of a container on the conveyor means at the cover applying station, and head moving means operated by said sensing means for moving said cover supporting and applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station.

2. An apparatus according to claim 1 wherein said cover supporting and applying head is pivotally mounted for vertical swinging movement from said operative to said inoperative position.

3. An apparatus according to claim 1 wherein said means for feeding covers to said head includes a cover magazine, a cover feed mechanism for serially withdrawing covers from the magazine and for delivering them to the cover supporting and applying head, means for operating said cover feed mechanism in timed relation with said conveyor means, and means for rendering said cover feed mechanism inoperative to feed covers when said cover supporting and applying head is moved to its inoperative position.

4. In an apparatus for applying skirted covers to containers comprising, conveyor means having spaced container receiving pockets at spaced points therealong movable along a path past a cover applying station, said container receiving pockets each having means extending upwardly to a preselected level for supportably engaging a container adjacent the top thereof to advance the containers with the container tops adjacent said preselected level, a cover supporting and applying head at said station having means for releasably supporting a skirted cover, and means including a chute for feeding covers to said head, the improvement comprising means mounting said head for vertical swinging movement between a lower and a raised position, said head in said lower position supporting a skirted cover in downwardly converging relation to said path of movement of the container receiving pockets in the conveyor with the lower edge of the cover extending below said preselected level to apply the cover to a container as the latter is advanced past the head, sensing means for detecting the presence of a container in the conveyor pocket as it moves past the head, and head moving means operatively connected to said sensing means for moving said head to said lower position in the presence of a container in the conveyor pocket at the cover applying station and for moving the head to said raised position in the absence of a container in the pocket at that station, said head in its raised position supporting a cover with its lower edge substantially above said preselected level to thereby prevent dispensing of a cover in the absence of a container.

5. An apparatus according to claim 4 wherein said means for moving said head includes a fluid actuator and valve means controlled by said sensing means for operating said fluid actuator.

6. An apparatus according to claim 4 wherein said means for feeding covers to said head includes a cover magazine and vacuum operated gripper means operable to withdraw covers from the magazine and deliver the same one at a time to said chute, means for operating said gripping means in timed relation with said conveyor means, and means for interrupting the vacuum to said gripper means when said head is in its raised position.

7. In an apparatus for applying skirted covers to containers comprising, conveyor means for advancing containers along a path with the tops of the containers at a preselected level, means including a chute for delivering downwardly facing skirted covers to a capping station, said chute including a lower chute portion having a downwardly inclined bottom guide for guiding covers in edge-to-edge relation, a cover applying head including a downwardly inclined cover support ledge at the lower end of said chute portion and offset below said bottom guide a distance slightly greater than the depth of a skirted cover whereby a second cover can pass through the chute portion and into overlying relation to the cover on the support ledge, cover gate means defining a first stop portion engageable with the cover on said ledge portion for releasably retaining that cover on the ledge and for releasing that cover when a container engages the same, and means defining a second stop portion engageable with the overlying cover to stop the latter in a position staggered with respect to the cover on the ledge.

8. An apparatus according to claim 7 wherein said cover gate means includes a member mounted on the head above said ledge for movement relative to the head between a lower stop position and an upper release position, said member having a stop finger at its outer end spaced from said chute portion a distance greater than the length of a cover and operative in said stop position to engage the lower edge of a cover on said ledge, said member having a shoulder disposed above said stop finger and offset therefrom toward said chute portion to engage the lower edge of an overlying cover and stop the latter in staggered relation relative to the cover on said ledge.

9. An apparatus according to claim 8 wherein said shoulder is spaced from said chute portion a distance less than the length of a cover.

10. An apparatus according to claim 8 wherein said stop finger has a length greater than the depth of a single cover, said finger being adapted to ride over the top of the cover as it is withdrawn from the ledge to space said second shoulder above the cover a distance greater than the depth of the overlying cover whereby to allow the latter to move into engagement with said stop finger during withdrawal of the lower cover from the support ledge.

11. In an apparatus for applying skirted covers to containers including conveyor means for advancing containers along a path past a cover applying station with the tops of the containers at a preselected level, a cover applying head at said station having means for releasably supporting a skirted cover, and means for feeding covers to said head, the improvement comprising, means mounting said cover applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the containers with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container by the conveyor means, means for sensing the presence of a container on the conveyor means at the cover applying station, and head moving means operated by said sensing means for moving said cover applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station, said means for feeding covers to said head including a cover magazine and vacuum gripper means operable to remove covers from the magazine and to feed them to the head, means for operating said vacuum gripper means in timed relation with said conveyor means, and means for interrupting the vacuum to

said gripper means when said cover applying head is in its inoperative position.

12. In an apparatus for applying skirted covers to containers including conveyor means for advancing containers along a path past a cover applying station with the tops of the containers at a preselected level, a cover applying head at said station having means for releasably supporting a skirted cover, and means for feeding covers to said head, the improvement comprising, means for mounting said cover applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the containers with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container by the conveyor means, means for sensing the presence of a container on the conveyor means at the cover applying station, and head moving means operated by said sensing means for moving said cover applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station, said conveyor means having container receiving pockets therealong separated from each other by an intervening space, said sensing means including a first sensor actuatable by a container in the conveyor pocket as it moves past the cover applying station, a second sensor spaced in a direction opposite the direction of movement of the conveyor means from the first sensor a distance greater than said intervening space and actuatable by a container in the next succeeding pocket in the conveyor means, said head moving means including means controlled by said first sensor for moving said cover applying head to its operative position when the first sensor is actuated and to its inoperative position when the first sensor is deactuated, and means responsive to actuation of said second sensor by the container in a succeeding pocket while said first sensor is actuated for preventing operation of said cover applying head to its inoperative position when the intervening space between adjacent pockets passes said first sensor.

13. In an apparatus for applying skirted covers to containers including conveyor means for advancing containers along a path past a cover applying station with the tops of the containers at a preselected level, a cover applying head at said station having means for releasably supporting a skirted cover, and means for feeding covers to said head, the improvement comprising, means mounting said cover applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the containers with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container by the conveyor means, means for sensing the presence of a container on the conveyor means at the cover applying station, and head moving means operated by said sensing means for moving said cover applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station, said conveyor means having container receiving pockets for supporting containers at spaced locations therealong, said sensing means including a first sensor arm having a container engaging follower thereon positioned to be depressed by a container at the cover applying station, a second sensor arm having a container engaging follower thereon spaced in a direction opposite the direction of movement of the conveyor means from the follower on the first sensor arm a distance greater than the spacing between adjacent containers to be depressed by the next succeeding container before the follower on the first arm disengages the container at the cover applying station, and means responsive to depressing of said second sensor arm and operative only when said first sensor arm is depressed for holding said first sensor arm in a depressed position.

14. An apparatus according to claim 13 wherein said last mentioned means includes a member on said first arm movable relative thereto into an operative position when said first arm is depressed, said second sensor arm, when depressed, engaging said member when the latter is in its operative position.

15. In an apparatus for applying skirted covers to containers including conveyor means for advancing containers along a path past a cover applying station with the tops of the containers at a preselected level, a cover applying head at said station having means for releasably supporting a skirted cover, and means for feeding covers to said head, the improvement comprising, means mounting said cover applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the containers with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container by the conveyor means, means for sensing the presence of a container on the conveyor means at the cover applying station, and head moving means operated by said sensing means for moving said cover applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station, said cover applying head including a downwardly inclined chute portion having a bottom guide for guiding skirted covers in edge-to-edge relation, a downwardly inclined cover support ledge at the lower end of said chute portion and offset below said bottom guide a distance at least as great as the depth of a skirted cover whereby a second cover can move through the chute portion and into overlying relation to the cover on said support ledge, and a cover gate having a lower stop portion engageable with the lower cover on the support ledge and an upper stop portion engageable with an overlying cover, said upper stop portion being offset from said lower stop portion in a direction to stop the overlying cover in staggered relation to the lower cover on said support ledge.

16. In an apparatus for applying skirted covers to containers including conveyor means for advancing containers along a path past a cover applying station with the tops of the containers at a preselected level, a cover applying head at said station having means for releasably supporting a skirted cover, and means for feeding covers to said head, the improvement comprising, means mounting said cover applying head for movement between an operative cover applying position and an inoperative position spaced from said operative position, said cover applying head in said operative position thereof releasably supporting a skirted cover in downwardly converging relation to said path of movement of the containers with the lower edge of the cover extending below said preselected level to apply the cover to the container as the latter is advanced by the conveyor means past the cover applying head, said head in said inoperative position supporting a cover away from the path of movement of the container by the conveyor means, means for sensing the presence of a container on the conveyor means at the cover apply-

ing station, and head moving means operated by said sensing means for moving said cover applying head from said operative position to said inoperative position in the absence of a container on the conveyor means at said cover applying station, said cover applying head including a downwardly inclined chute portion having a bottom guide for guiding skirted covers in edge-to-edge relation, a downwardly inclined cover support ledge at the lower end of said chute portion and offset below said bottom guide a distance at least as great as the depth of a skirted cover whereby a second cover can pass through the chute portion and into overlying relation to the cover on said support ledge, a vertically yieldable cover gate having a lower stop portion engageable with the lead edge of the lower cover on the support ledge and an upper stop portion engageable with the lead edge on a cover that overlies the lower cover, said upper stop portion being offset from said lower stop portion in a direction toward said chute portion to stop the overlying cover in staggered relation to the lower cover.

17. An apparatus according to claim **16** wherein said lower stop portion comprises a depending finger on said cover gate having a length greater than the depth of one cover and less than the combined depth of two covers,

said finger being adapted to ride over the upper surface of the lowermost cover as it is withdrawn from the cover supporting ledge to allow the overlying cover to move in engagement with said lower stop portion.

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