Aug. 2, 1966 J. H. HOLSTEIN 3,263,842

CASE DUMPER

Filed Aug. 12, 1963 2 Sheets-Sheet 1

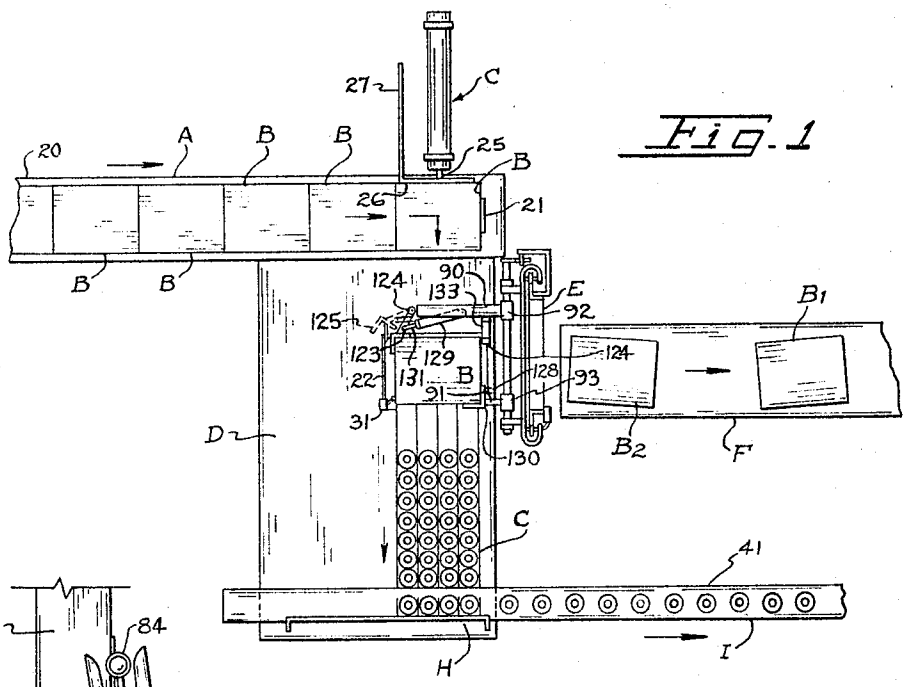


Fig. 1

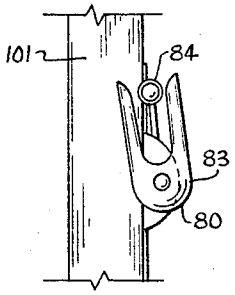


Fig. 7

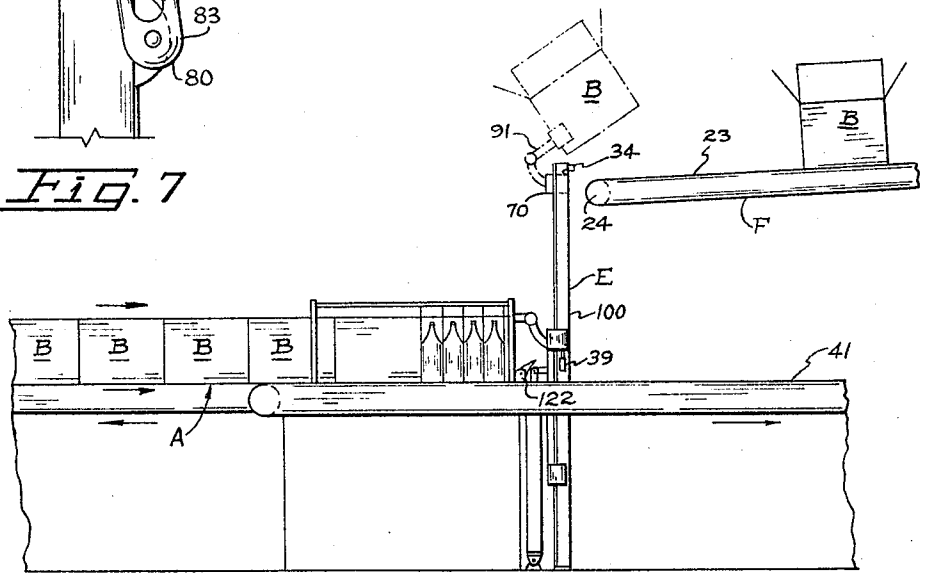


Fig. 2

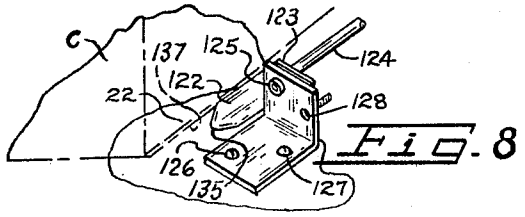


Fig. 8

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CASE DUMPER

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TRANSFER RAM FORWARD	×——× ×——×
TRANSFER RAM RETURN	×——×
ELEVATOR DOWN	×——×
ELEVATOR UP	×——×
CASE GRIPPER	×——×
RELEASE BAR	×——× ×——× ×——× ×——×

Fig. 4

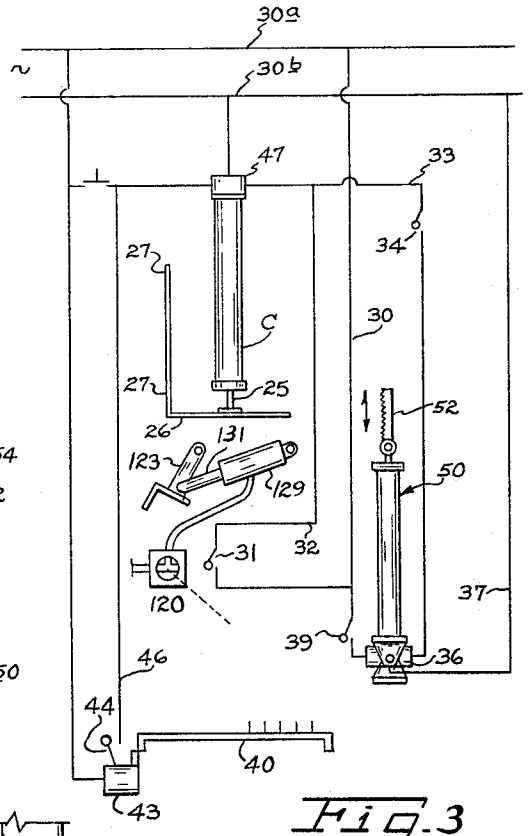


Fig. 3

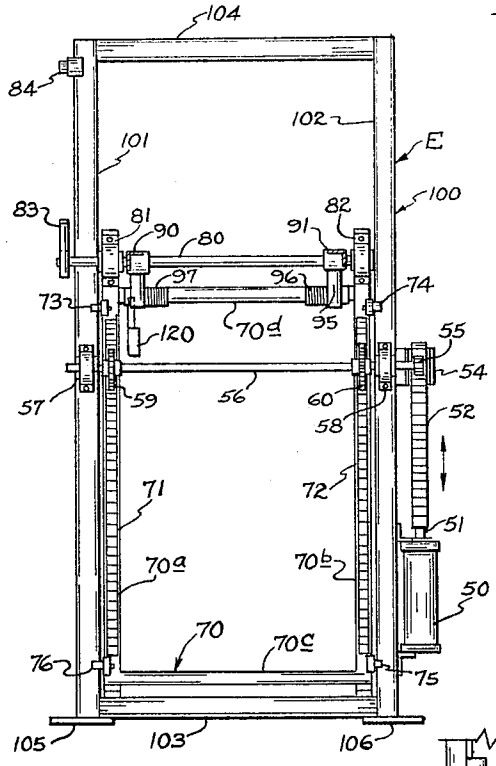


Fig. 5

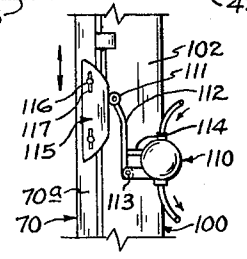


Fig. 6

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CASE DUMPER

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10 Claims. (Cl. 214—304)

This invention relates to an emptying device which automatically removes the contents of a container in an orderly manner.

In emptying cases of articles such as bottles it is necessary to have an automatic device which will do this in as orderly a manner as possible while at the same time attaining substantial speed of operation. From this standpoint, the instant or time period at which the bottles drop from the case is most critical if smooth, continuous, uninterrupted operation is to be obtained.

Accordingly, it is an object of this invention to provide an automatic case dumper which will gently free articles by vertically lifting the case from a case conveying means thereby permitting the bottles or articles to remain on a dumping station for further transfer. By so lifting the case, a vertical distance substantially greater than the height of the dumped articles, the case will not have the tendency to tip or tilt the articles, thereby aiding in maintaining an orderly deposit of dumping station.

It is another object of this invention to provide a case dumper which will initially separate the case from the articles in a gentle, positive manner and will thereafter attain substantial speed of operation. An advantage of this initial gentle operation is that fragile articles such as glass bottles may be removed from the case with a lessened chance of breakage.

It is still another object of this invention to provide a case dumper of the above type in which the unloading station beneath the case dumper is in the form of a dead plate and wherein the sequential transfer of full cases into position on the dead plate pushes the emptied articles onto a live conveyor for subsequent transfer onto an assembly line.

A feature and advantage of using a dead plate at the unloading station is that no live conveyor action is present which could tilt the articles and tip them before they have dropped completely free of the rising case.

It is still another object of this invention to provide a case dumping elevator in which the carriage will be driven a substantial vertical distance by only a short stroke from a driving means. As a result, the space limitations associated with many assembly line installations is overcome in a simple and facile manner.

Still another object of this invention is to provide an improved case dumper in which the full cases are passed in an unobstructed manner to an unloading station adjacent an unscrambling mechanism. At this point, the case is gently lifted by an elevator allowing the bottles to drop free. This elevator continues to lift the case until eventually the case is flipped over and deposited free of the dumping station. As a subsequent case is fed onto the unloading station, the case's side wall pushes the bottles onto an unscrambling mechanism which has a live conveyor associated with it for carrying the bottles toward the assembly line conveyor.

An advantage of this arrangement resides in the fact that the case dumper can be installed along side a conventional case conveyor mechanism to replace manual case dumping operators without requiring substantial or

extensive structural and engineering changes in the existing case conveyor. Thus, there is provided a reliable case dumper which can be transported from one case dumping line to another or can be easily removed from the line for repair, while permitting a human operator to dump the cases as a temporary replacement.

Other objects and advantages of this invention will become apparent upon reading the following detailed description and referring to the accompanying drawings in which:

FIGURE 1 is a top plan view of the case dumping system;

FIGURE 2 is an end elevational view of the case dumping mechanism of FIGURE 1;

FIGURE 3 is a schematic circuit diagram of the case dumper of FIGURES 1 and 2;

FIGURE 4 is a timing chart showing one possible sequence of operation of the circuit of FIGURE 3;

FIGURE 5 is a front elevational view of the case dumping elevator showing the carriage in the lowermost position;

FIGURE 6 is an enlarged fragmentary rear elevational view of the elevator showing a throttling cam arrangement;

FIGURE 7 is an enlarged fragmentary side elevational view of the elevator showing the case gripper flipping cam; and

FIGURE 8 is an enlarged fragmentary perspective view of one of the flap opening fingers.

Referring generally to the schematics of FIGURES 1 and 2 and the timing chart of FIGURE 4, the case dumping system comprises a feed conveyor A which can be gravity operated or have a live conveyor belt for feeding a plurality of cases B to a transfer ram station C. Actuation of transfer ram C moves individual cases in the direction of the arrow onto the top of the unscrambling table D. When a case B reaches the forwardmost position on dumping or unloading station **22**, microswitch **31** is activated causing a carriage on elevator E to lower and clamp onto the case. Thereafter, the case B is lifted and the bottles gently dropped through its opening bottom flaps. These bottles thus remain on a dead plate **22** or unloading station. When the elevator carriage reaches an upper portion of the elevator frame, the case is tilted or flipped over and released onto the empty case conveyor F for transportation to another section of the bottling line. At this upper position, the elevator carriage closes a second micro-switch **34** on the elevator frame and places the transfer ram C in a ready state for transfer to a subsequent case B to the unloading station or dead plate **22**. While all this is happening, release bar H is periodically actuated to release a row of empty bottles onto a bottling line conveyor I. Once release bar H has been actuated a sufficient number of times, three for example, a counter circuit to transfer ram C is closed causing it to transfer another full case B to the dead plate where the side wall of the case will push the already unloaded bottles into the unscrambling troughs G where they are carried by a live conveyor toward release bar H.

Now referring more specifically to FIGURES 1 and 2 there is provided a case feeding conveyor A which can be of conventional line belt type. The flat continuous belt **20** travels in the direction of the arrow carrying the cases B to the bumper or stop **21**. This bumper **21** blocks the travel of the lead case and positions it in front of the face of transfer plate **26** of ram C.

With the lead case positioned against stop bumper **21**, transfer ram C is adapted to move this case from feed conveyor A toward the dumping station on unscrambler top D. Thus when the transfer ram C is actuated, the arm **25** extends in a reciprocal manner to urge the transfer plate **25** against the side wall of the case thereby shoving the case toward the unloading station or dumping station **22** located on the unscrambler table top D. A rearward extending portion **27** of the transfer plate **26** blocks the next case on feed conveyor A until the ram C is retracted. When case B finally reaches its forwardmost position on top of the dumping station or dead plate **22**, micro-switch **31** is closed causing the transfer ram circuit to be readied for return to the inactivated position. Once the ram transfer plates **26** and **27** are sufficiently retracted, the next or subsequent case B moves into position against the bumper **21**. As a result the next case is ready for transfer.

Considering the closing of ram retract microswitch **31** to be the start of a case dumping cycle, and understanding that the elevator carriage **70** is in the uppermost position on the elevator frame **100** at this time, and is arranged to close the microswitch **34**, elevator ram **50** is actuated causing carriage **70** to lower. Referring now to the circuit daigram of FIGURE 3, with microswitches **31** and **34** closed, an electrical circuit is completed from the power lead **30A**, through now closed case actuated microswitch **31**, leads **32** and **33**, carriage closed microswitch **34** and to the electrically operated air switch **36**. Common lead **37** provides a return to the other power lead **30B**. This energization of air switch **36** directs pressurized fluid into elevator ram **50** to operate on a piston to pull the rack gear **52** downwardly thereby rotating the pinion gear **55** and pinion gear shaft **56** (FIGURE 5). As the pinion gear shaft **56** rotates within the two bearing clamps **57** and **58**, which are connected to the elevator frame **100** by means of bolts or welding or other conventional fastening means, the two larger pinion gears **59** and **60** are also rotated. Since these two larger pinion gears in turn mesh with the rack gears **71** and **72** connected along the side rails of the elevator carriage **70**, as will be explained shortly, the carriage is lowered. Before proceeding further with the description, it should be understood that subsequent opening of upper microswitch **34** will not affect the operation of electromagnetic air valve **36** since it is of a type which only requires an instantaneous circuit closure. When elevator carriage **70** reaches its lowermost position, it activates microswitch **39** to close the circuit and reverse the current to the electromagnetic air valve **36**. This causes the elevator ram **50** to reverse its direction driving the reciprocating rack gear **52** upwardly. The reversal in direction in rack gear **52** rotates to meshed pinion gears in the opposite direction causing the elevator carriage **70** to rise in much the same mechanical manner as previously discussed for the downward stroke.

With elevator carriage **70** on the lower portion of frame **100**, the case gripper arms **90** and **91**, as illustrated in FIGURE 1 and FIGURE 5, are supported on the carriage in a horizontally extending position. Once carriage **70** reaches a lowermost position, the case gripper three-way control valve is cammed open to retract the piston arm **121** of the case gripper piston cylinder **122** thereby pivoting the case gripper arm **123** inward so that the clamp bracket **125** grips one corner of the case. The angle bracket **130** which is secured to the end of the short arm **91** grips the diametric opposite corner of the case thereby permitting the case B to be held as it is lifted free of the dumping station **22** on the upward stroke of the elevator.

As elevator carriage **70** approaches its lowermost portion, a floating bar or arm **133** which is connected to case gripper, arm **90** tilts a pair of flap opening fingers **122** so that they are inserted between the case flap to insure opening of the case. As illustrated in FIGS. 1, 2, and 8,

bar **133** contacts the beveled top **123** of one of the fingers **122**, the latter being coupled to the other finger **122** by shaft **124**. Fingers **122** then swing upwardly against the adjacent side case C. The pointed ends **135** of the fingers will then be partially disposed between the outer bottom flaps **137** and the inner bottom flaps. Collars **125** on each side of each finger **122** keeps the latter secured adjacent support bracket **126** coupled to shaft **124**, bracket **126** being secured to dead plate **22** by bolts **127**. As the case is lifted, fingers **122** continue to rotate until one finger is stopped by a projection **128** on bracket **126**. The result is that fingers **122** will impede the upward travel of the outer bottom flaps **137** as case C continues upwardly thus causing the bottom of the case to open.

As case B is lifted free of the dumping station, the weight of the bottles also opens the flaps causing the bottles to separate or drop from the case. Eventually the bottles are completely free of the case and are left standing upright on a dead plate **22** mounted on the top of the unscrambler table D. When elevator carriage **70** again reaches the uppermost position, the arms are tiltably swung over the top of the elevator frame **100** by cam and cam follower **83** and **84**. When the carriage reaches a certain height, the case gripper height, the case gripper piston valve **120** is cammed closed cutting off the pressurized fluid and causing an internal spring means to extend the rod **131** and pivotally release the case gripper clamp **125** from the corner of the case allowing it to fall onto empty case conveyor F. With reference to the case gripper piston, this can be of any conventional type in which pressurized fluid such as air causes the piston rod **131** to retract into cylinder **129** against the force of a coil spring and the removal of the air pressure causes the same arm to extend outward from the cylinder **129** under spring pressure.

Once the empty case is on empty case conveyor F the endless belt **23**, which is wrapped around sleeve roller **24**, carries it in the direction of the arrow.

With elevator carriage **70** returned to the uppermost position on frame **100** microswitch **34** is again closed. This again instantaneously closes part of the power circuit to the electromechanical valve **36** to ready the elevator ram **50** for downward operation. During the time that the case transfer, dumping, and releasing steps have been taking place, release bar H has been periodically releasing a rank of bottles onto the bottling line conveyor I. As the bottles are positioned on endless belt **41** of the bottling line conveyor I, they are carried in the direction of the arrow toward a filling mechanism (not shown). Everytime release bar **40** releases a third rank of bottles onto the bottling line conveyor belt I, counter **43** is actuated closing switch **44** to complete input power circuit from lead **30***a* through leads **45** and **46** through the electro-mechanical valve **47** associated with transfer ram C. Thus, pressurized fluid entering the transfer ram C extends the piston rod **25** thereby shoving the next case onto the unscrambler table top D in the manner previously described.

As this subsequent case reaches the dead plate **22** or dumping station, the case's forward wall shoves the bottles, which were dumped from the preceding case, into the unscrambling frame G where they are transferred along parallel troughs by means of a live belt running along the unscrambling frames.

When the subsequent case has reached the edges of the unscrambling troughs, it is stopped and the elevator and transfer ram control microswitch **31** closed. With both microswitch **31** closed by case B and upper limit microswitch **34** closed by the carriage **70**, the circuit to the elevator cylinder electro-mechanical control valve **36** is closed in the opposite direction to energize elevator cylinder **50** thereby retracting the rack **52** and driving carriage **70** downward in the manner previously discussed. In addition, closure of limit switch **31** completes the circuit to the right hand side of the

transfer ram's electro-mechanical control valve **47** from the input power lead **30***a*, lead **30**, and lead **32**. With the current polarity so reversed on electro-mechanical valve **47**, the input fluid operates on a piston to retract arm **25** within cylinder C in the manner previously discussed, thereby setting up the next full case for sequential transfer onto the unscrambling table D.

With regard to the details of elevator E, the carriage **70** and frame **100**, illustrated in FIGURE 5, may be taken as representative. Carriage **70** is substantially rectangular in shape having two vertically extending support members **70***a* and **70***b* with a lower horizontal support member **70***c* and an upper horizontal support member **70***d* extending between them. Each of the horizontally extending members **70***c* and **70***d* are secured to the vertically extending members by means of welding, rivets or any other conventional fastening means. Thus, all the carriage members are rigidly maintained in a substantially rectangular relationship.

Referring now to details of elevator frame **100**, there is provided a pair of vertically extending guide rails **101** and **102** which are maintained in parallel spaced apart relationship by means of a lower horizontal brace **103** and upper horizontal brace **104**. Both lower brace **103** and upper brace **104** are rigidly secured to the vertically extending guide rails **101** and **102** by welding, riveting, bolting, or any other conventional fastening means. In dimensioning the horizontal braces, they should be sufficiently long so that the elevator rails **101** and **102** are maintained in a spaced apart distance slightly greater than the width of the carriage **70**. This relationship thus permits the carriage **70** to freely travel within the frame.

Referring now to carriage **70**, as mounted within frame **100**, a plurality of guide rollers **73** to **76** are attached to the vertically extending carriage members **70***a* and **70***b* near each corner of the carriage frame **70**. Each of these guide rollers extend sufficiently far horizontally to ride on vertically extending elevator frame guide rails **101** and **102** to guide carriage **70** within frame **100**. An identical grouping of guide rollers (not shown) are provided on the reverse side of the elevator carriage frame **70** adjacent the front rollers **73** to **76**. The spacing between the rollers on opposite sides of the frame can be slightly greater than the thickness of the rails **101** or **102** thus guiding carriage **70** for free vertical travel within the interior portion of frame **100**.

In order to vertically drive carriage **70** within frame **100**, a rack and pinion gear arrangement mechanically connects carriage **70** with an elevator ram **50** secured to the side of elevator frame **100**. This ram **50** can be of any conventional pneumatic or hydraulic type in which pressurized fluid directed through orifices will selectively cause the piston rod **51** to move reciprocally. The body of valve **50** is secured to the side of guide rail **102** by means of upper and lower angle brackets. Ram **50** is thus maintained or secured in a vertically extending relationship for directing piston rod **51** and the attached rack **52** in linear vertical reciprocal motion. A rack gear guide **54** is also secured to side rail **102** at a point above ram **50** so that rack gear **52** is vertically guided during driving and left meshed with the small pinion gear **55**.

The small pinion gear **55** is secured to one end of the horizontally extending drive shaft **56** and meshes with the drive rack gear **52** for transferring driving power to carriage **70**. A pair of bearing brackets **57** and **58** are secured, one each, to the rails **101** and **102** and receive drive shaft **56** for free rotation therein. A pair of larger pinion gears **59** and **60** are also secured to this rotatable drive shaft **56** at points intermediate of the bearing brackets **57** and **58**, respectively. These larger pinion gears are mounted in substantial lateral registry with the vertical carriage frame members **70***a* and **70***b*. A pair of driven rack gears **71** and **72** are secured to the vertically extending carriage frame members **70***a* and **70***b*

by bolting, welding, or any other conventional means. The larger pinion gears **59** and **60** are in turn positioned so that they mesh with the teeth on rack gears **71** and **72**, respectively, so that rotation of drive shaft **56** and pinion gears **59** and **60** will raise and lower carriage **70** within frame **100**.

In operation, the elevator ram **50** is actuated in the manner previously described thereby vertically extending the piston arm **51** and the attached drive rack **52**. This rotates the smaller pinion gear **55** thereby rotating the shaft **56** at the two larger pinion gears **59** and **60**. As these larger pinion gears mesh with the carriage rack gears **71** and **72**, carriage **70** is raised vertically toward the top of the frame. Thus, it can be seen that by using a small pinion gear **55** and two larger pinion gears **59** and **60**, a mechanical advantage is attained wherein small movements of the elevator ram **50** will result in substantial vertical travel of carriage **70**.

At times it may be practical to provide a slow initial response or slight time delay as the elevator carriage **70** is started from its lowermost position. With such a time delay, it is possible to insure that the bottles initially leave the case in a gentle orderly manner. In order to accomplish this result, a cammed throttling valve **110** is secured to the vertically extending guide rail **102** (FIGURE 6) by welding, bracket means or any other conventional fasteners. A curved cam **115** is secured to the rear of vertical carriage frame member **70***b* by means of a pair of vertically spaced bolts **116** and extending through the slots **117**. As carriage **70** starts its upward vertical travel, cam follower roller **111** is moved laterally outward to pivot the follower arm **112** about the pivot pin **113**. Valve stem **114** is connected to follower arm **112** at an intermediate point and tends to decrease the opening in a valve passageway within throttling valve **110** to restrict fluid flow through the connected hoses or lines. The crown portion of cam plate **115** is in the form of a flat table which operates to restrict fluid flow through valve **110** over a desired time interval as carriage **70** starts to rise. After the cam follower wheel **111** travels beyond the flat table portion or cam apex, the cam wheel then swings outwardly to increase the opening of valve **110** to full fluid flow. As a result, the speed of elevator vertical rise increases substantially to increase the speed of the dumping cycle.

Now referring to the details of the tilt bar mechanism and the associated case clamping arm, attention is directed back to FIGURE 5. A tilt bar **80** is rotatably connected to elevator carriage **70** by a pair of bearing brackets **81** and **82**. Each bearing bracket has an aperture extending laterally through it for receiving the tilt bar **80**. Any appropriate connection between these bearing brackets **81** and **82** and the carriage members **70***a* and **70***c*, such as by bolts or rivets is acceptable. One end of tilt bar **80** has a cam **83** connected to it and positioned such that as an elevator carriage **70** reaches the upper portion on frame **100**, cam **83** engages the cylindrical cam follower **84** and rotates the tilt bar **80** for reasons to be explained shortly.

Referring now to the case gripping mechanism, there is provided a pair of spaced apart arms **90** and **91** which are secured to the tilt bar **80** by means of the collars **92** and **93**, respectively. Rotation of tilt bar **80** will also rotate these arms as will be explained. In order to prevent the arms **90** and **91** from dropping below a horizontally extending position when the carriage is on the lower portion of frame **100**, each arm has a downward depending flange **94** and **95**, respectively, which contacts resilient pads **94** and **95** secured to the horizontal brace **70***d* on carriage **70**.

The longer of the two arms **90** has a case gripping mechanism pivotally connected to the outer end of it and positoned such that it will swing in to grip one corner of case B when the piston cylinder **129** is cammed

open. The diametrically opposite corner of case B is held by the angle brackets **130** connected to the end of the shorter arm **91**.

In operation, the valve **120** to gripper piston cylinder **122** is of the conventional mechanical type which can be cammed open when the elevator carriage **70** reaches the lowermost position. At this time, the cylinder **129** is actuated and retracts the piston arm **131** to pivotally withdraw the clamping arm **123** about the pivot pin **124** to thereby rotate case corner gripper bracket **125** from the dashed line position to the solid position as shown in FIGURE 1. With the case so held and with elevator ram **50** driving carriage **70** vertically upward by means of the rack and pinion gear arangement, when the carriage approached the uppermost portion of the elevator frame **100**, case tilting cam **83** engages the cam follower cam **84** to thereby rotate tile bar **80**. As a result, the horizontally extending arms **90** and **91** are flipped over the top of the elevator frame **100** to position the empty case for release onto the empty case conveyor F. When the upper limit switch **34** is reached, elevator travel is stopped in that power input into the elevator ram or piston **50** is stopped. Just prior or at approximately the same time as the elevator carriage **70** reaches the uppermost position, the 3-way valve to the case gripping piston **122** is closed and a spring means internal of the cylinder **129** extend rod **131** to pivotally swing the case gripping clamp **125** away from the case B allowing it to fall to the conveyor F.

Although one embodiment of this invention has been described in detail for purposes of illustration, it should be understood that other changes can be made in the shape, design, parts and material in accordance with ordinary skills in the art, without departing from the invention as defined in the appended claims.

What is claimed is:

1. In a bottling system of the type which includes a feed means for moving cases of empty bottles toward a bottling line, a case dumper for removing the bottles from the case comprising: elevator means mounted for vertical movement adjacent the case conveyor, elevator drive means connected to reciprocally move said elevator between a lower and upper position, clamp means connected to said elevator and extending therefrom for gripping opposed sides of a case on the feed means when the elevator is in a lower position, cam means connected to tilt said clamp means when the elevator is in an upper position for releasing the case, whereby the bottles are released from the case and fed to the bottling conveyor as the case is lifted from the feed means.

2. The case dumper of claim **1** including first switching means connected to energize said drive means for raising said elevator when a case is gripped and second switch means connected to energize said drive means for lowering said elevator when a case is released.

3. A case dumper for removing bottles from cases comprising, feed means connected for intermittently moving cases of bottles toward an unscrambler, elevator means mounted for effective vertical movement with relation to said feed means, elevator drive means connected to move said elevator between a lowermost position and an uppermost position, case gripping means connected to said elevator including clamp arm extending therefrom for gripping opposed sides of a case of bottles when said elevator is in the lowermost position; first switch means connected to actuate said drive means for raising said elevator to an uppermost position when a case is gripped; cam means connected for tilting said case gripper, second switch means connected to release the case gripper for releasing the case when the elevator is in an uppermost position and for returning said elevator to a lowermost position.

4. A bottling system comprising in combination: feed conveyor means for carrying a plurality of cases of bottles to a transfer station; transfer ram means connected for intermittently removing said cases from the transfer station to a dumping station; elevator means mounted for reciprocating vertical movement with relation to the dumping station; case gripping means connected to said elevator for gripping a full case of bottles on the dumping station; reversible drive means connected for raising said elevator to an uppermost position wherein the bottles fall from the case onto the dumping station; tilting means connected to release the empty case from the case gripping means; bottle unscrambling means connected for receiving bottles from the dumping station; a bottling line conveyor connected for receiving bottles from said unscrambling means, release means connected to selectively release bottles from said unscrambler to said bottling line conveyor; transfer control means connected to reactivate said case transfer means when a predetermined number of bottles have been released to the bottling line conveyor.

5. The bottling line conveyor of claim **4** in which the dumping station includes a plate and said unscrambler includes a conveyor for transporting the bottles to the bottling line whereby the subsequently transferred case of bottles moves the dumped bottles onto the unscrambler conveyor.

6. The bottling system of claim **4** in which the said case gripping means includes a pair of spaced arms pivotally connected to extend horizontally from said elevator at the lowermost position thereof, one of said arms being adapted to swing horizontally for clamping a full case of bottles between said arms, said swingable arm being adapted to swing away relative to the other arm to unclamp the empty case when the elevator is in an uppermost position and said arms are pivotally tilted whereby the empty case is released away from the dumping station.

7. A case dumper for a bottling line including a case transfer mechanism having a dumping station located thereon for receiving full cases of bottles; elevator means including a vertically extending frame mounted adjacent said dumping station; carriage means mounted for reciprocal travel along said vertically extending frame between a lowermost position and an uppermost position; elevator drive means including a pressure actuated piston ram connected to drive said carriage vertically along said frame; switch means connected to actuate said drive means for alternately driving said carriage upwardly from a lowermost position and downward from an uppermost position; case gripping means pivotally connected to extend substantially horizontal from said carriage at the lower levels of carriage travel and to tilt upward and out of vertical registry with the dumping station at the uppermost level of carriage travel, case opening means connected to open the case flaps as the case is lifted from the dumping station to empty the bottles through the opening flaps onto the dumping station; means connected to remove bottles from said dumping station.

8. The case dumper of claim **7** in which the elevator drive means includes a rack and pinion gear, means connected to convert the short stroke reciprocal motion of the piston ram to relatively long reciprocal vertical travel of said carriage along said frame.

9. The case dumper of claim **7** in which the case opening means includes a pair of spaced apart fingers pivotally mounted to be inserted into the space between the case flap and case body as said carriage means reaches the lower portion of said elevator frame.

10. The case dumper of claim **7** including valve means connected to vary the rate of supply of power to said elevator drive means; and cam means connected to restrict power flow through said valve when the said elevator carriage is on the lower portion of said elevator frame and to open said valve means when said carriage is above the lower portion of said frame whereby the initial rate of carriage rise is relatively slow.

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