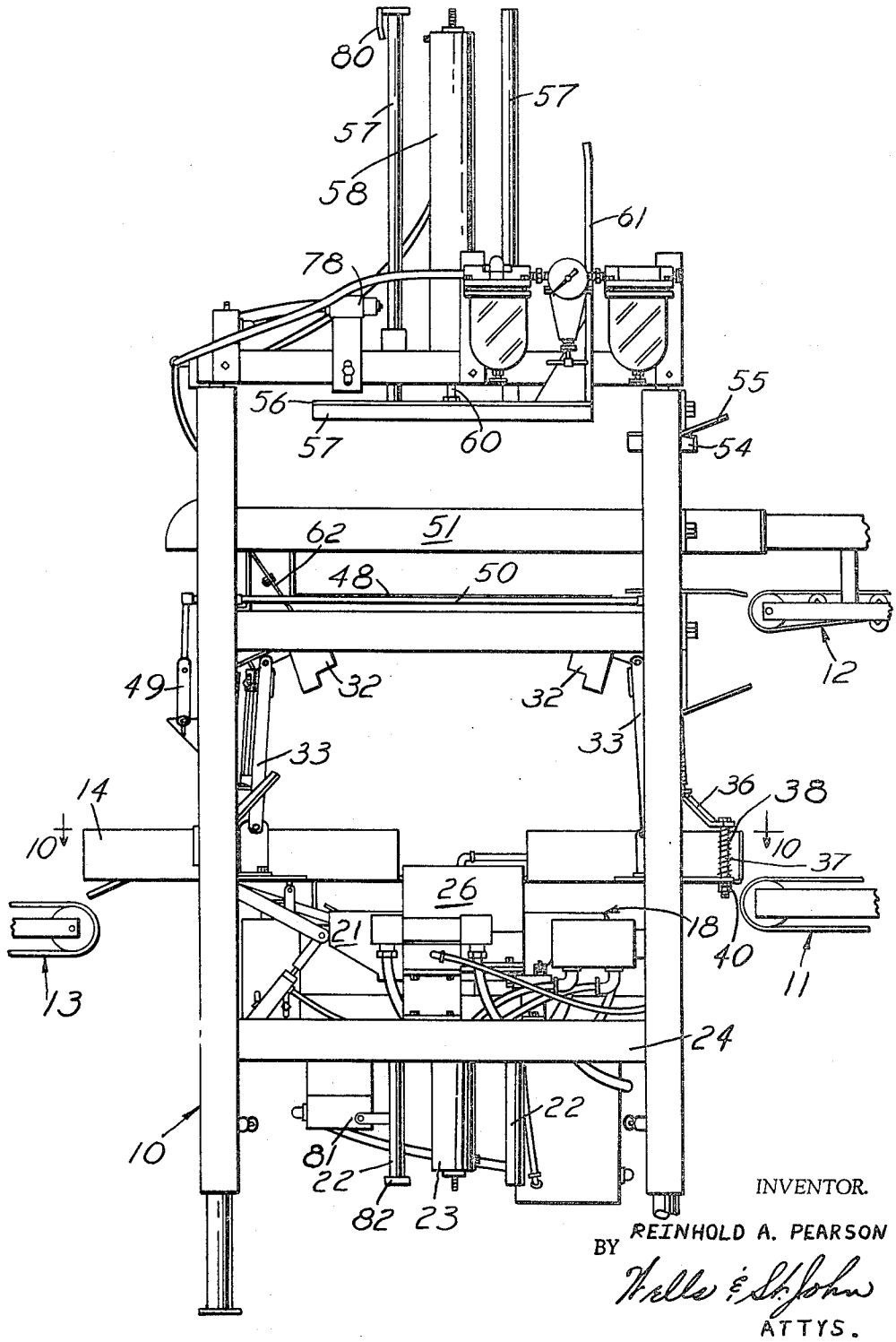
May 21, 1968 R. A. PEARSON 3,383,833

CASE PACKING MACHINE

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Fig. 1



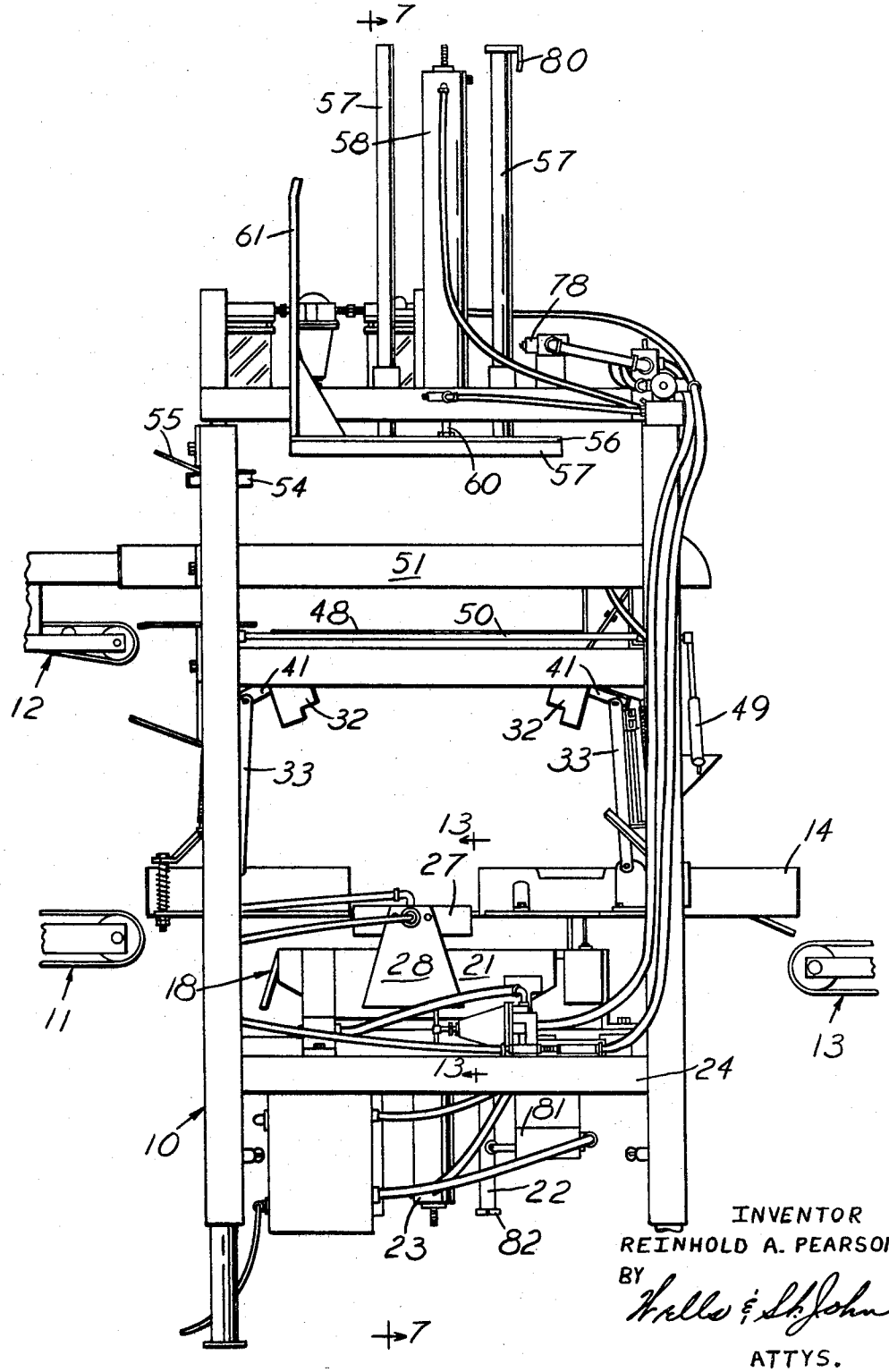
INVENTOR.
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Fig. 2



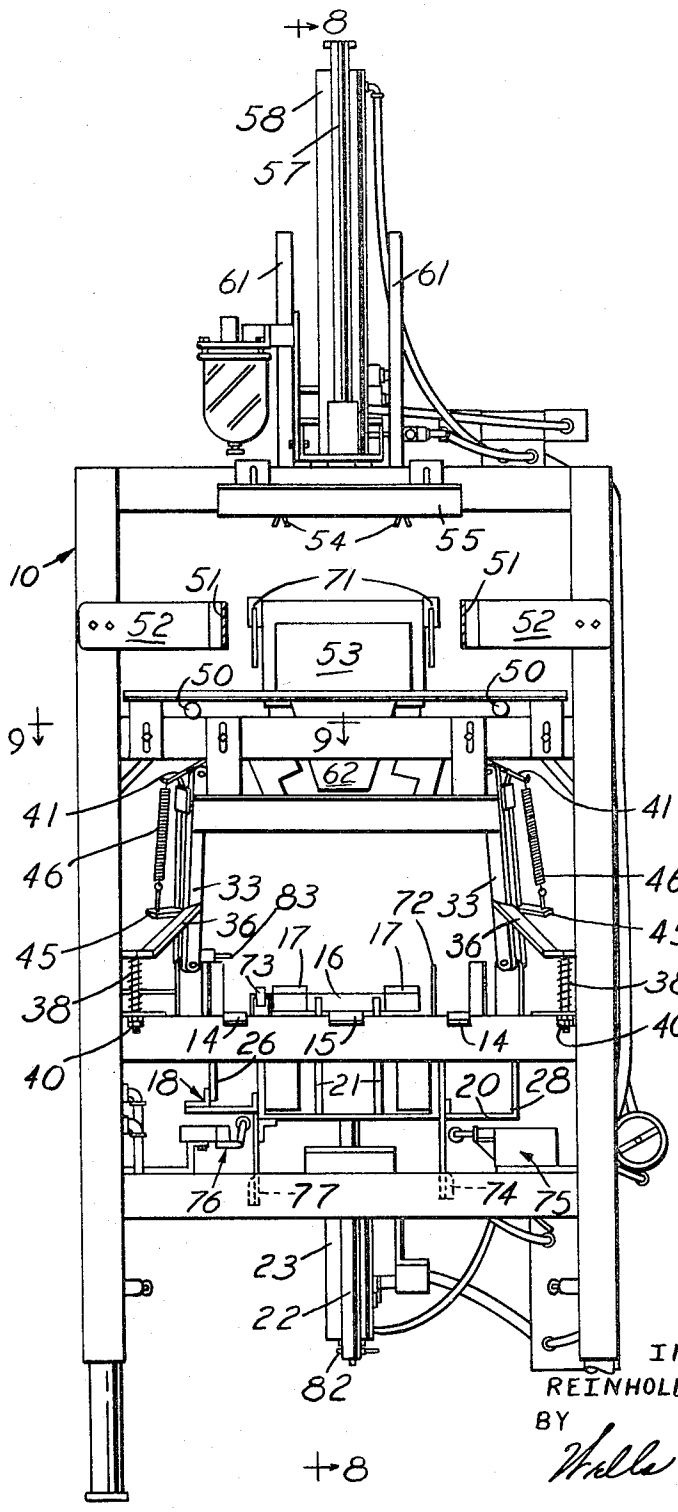
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Fig. 3



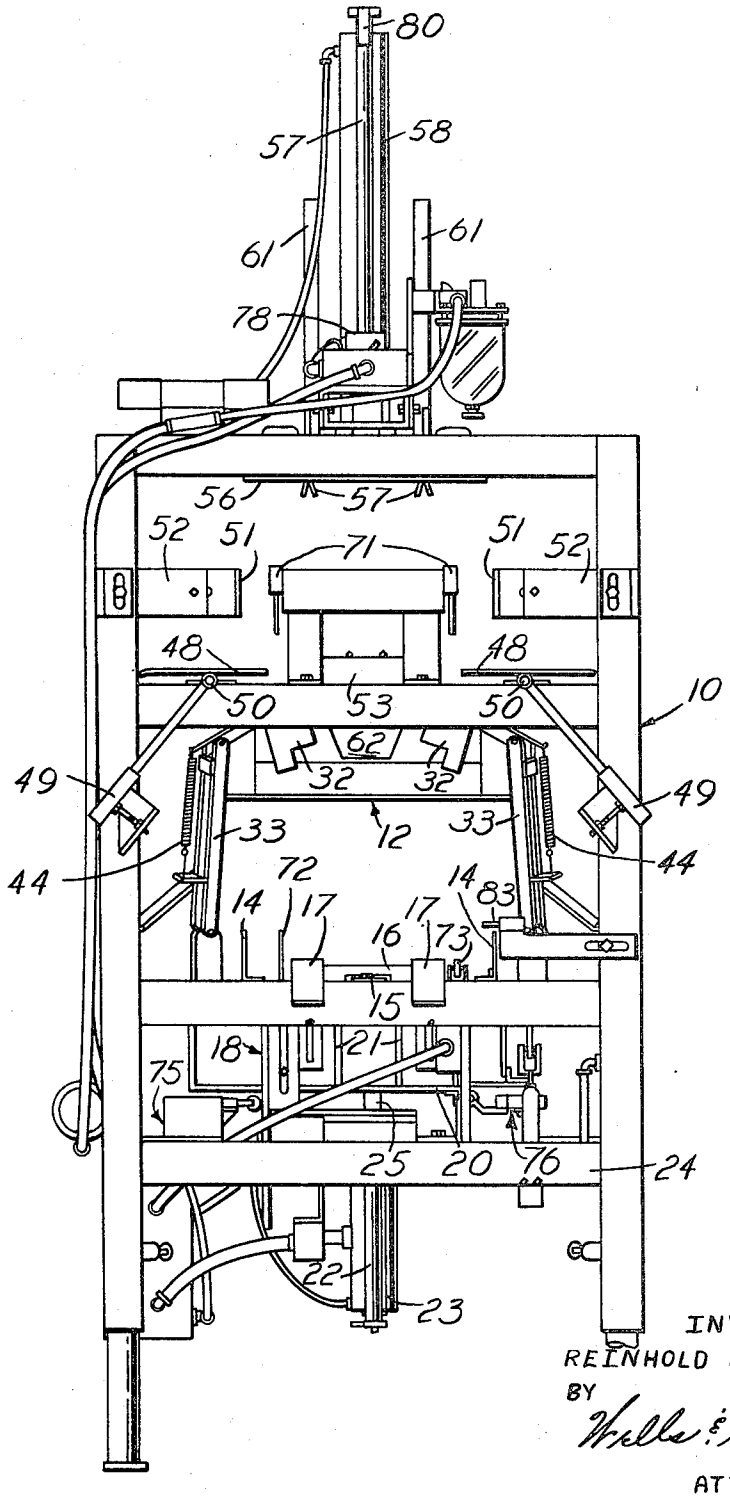
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Fig. 4



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Fig. 5

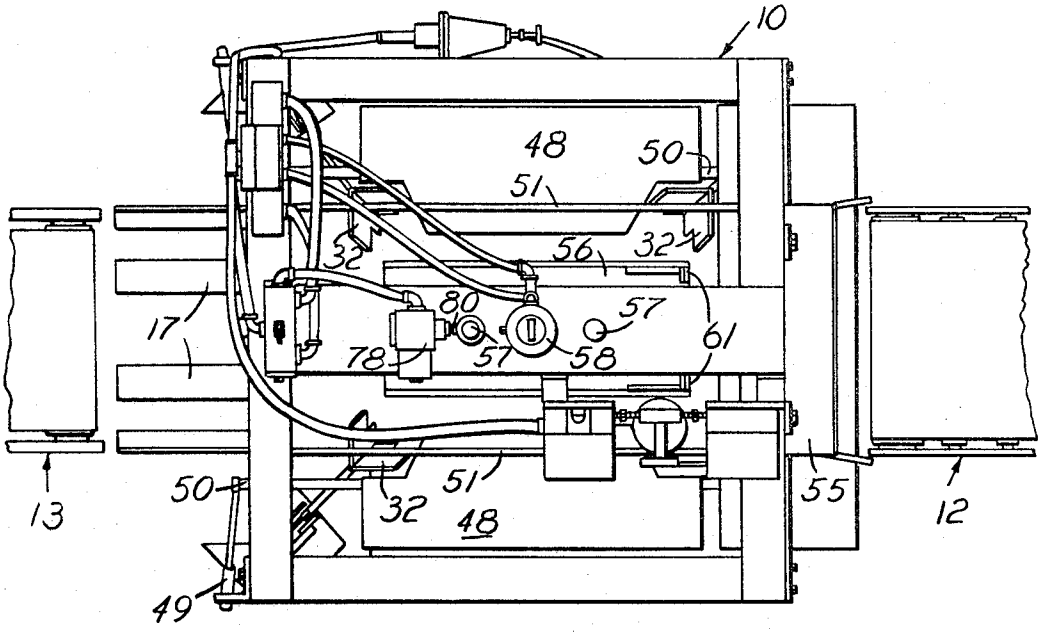
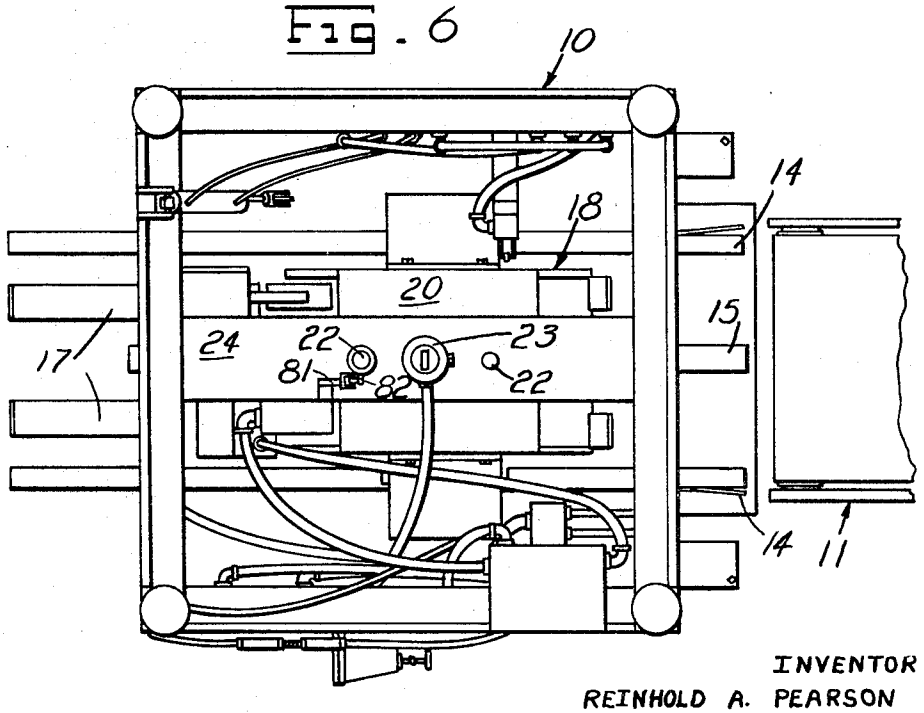


Fig. 6



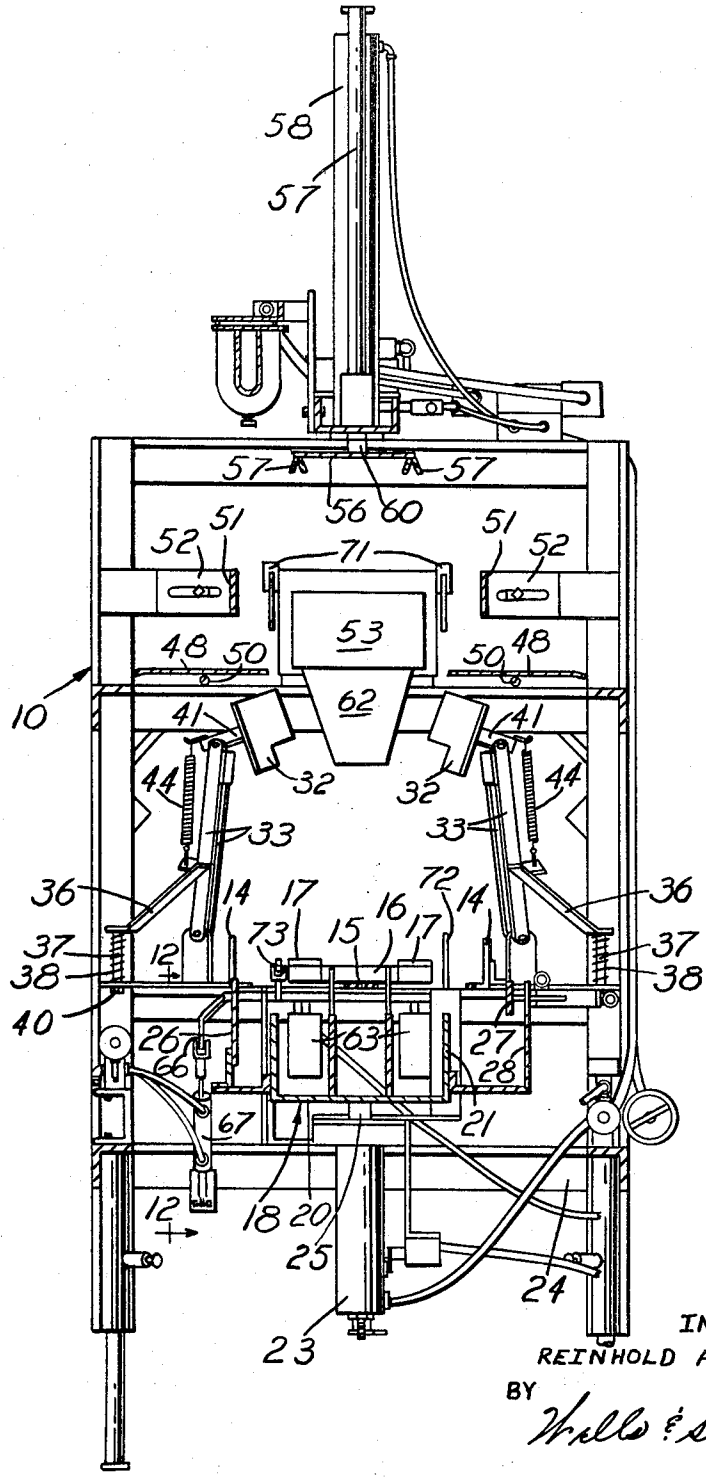
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Fig. 7



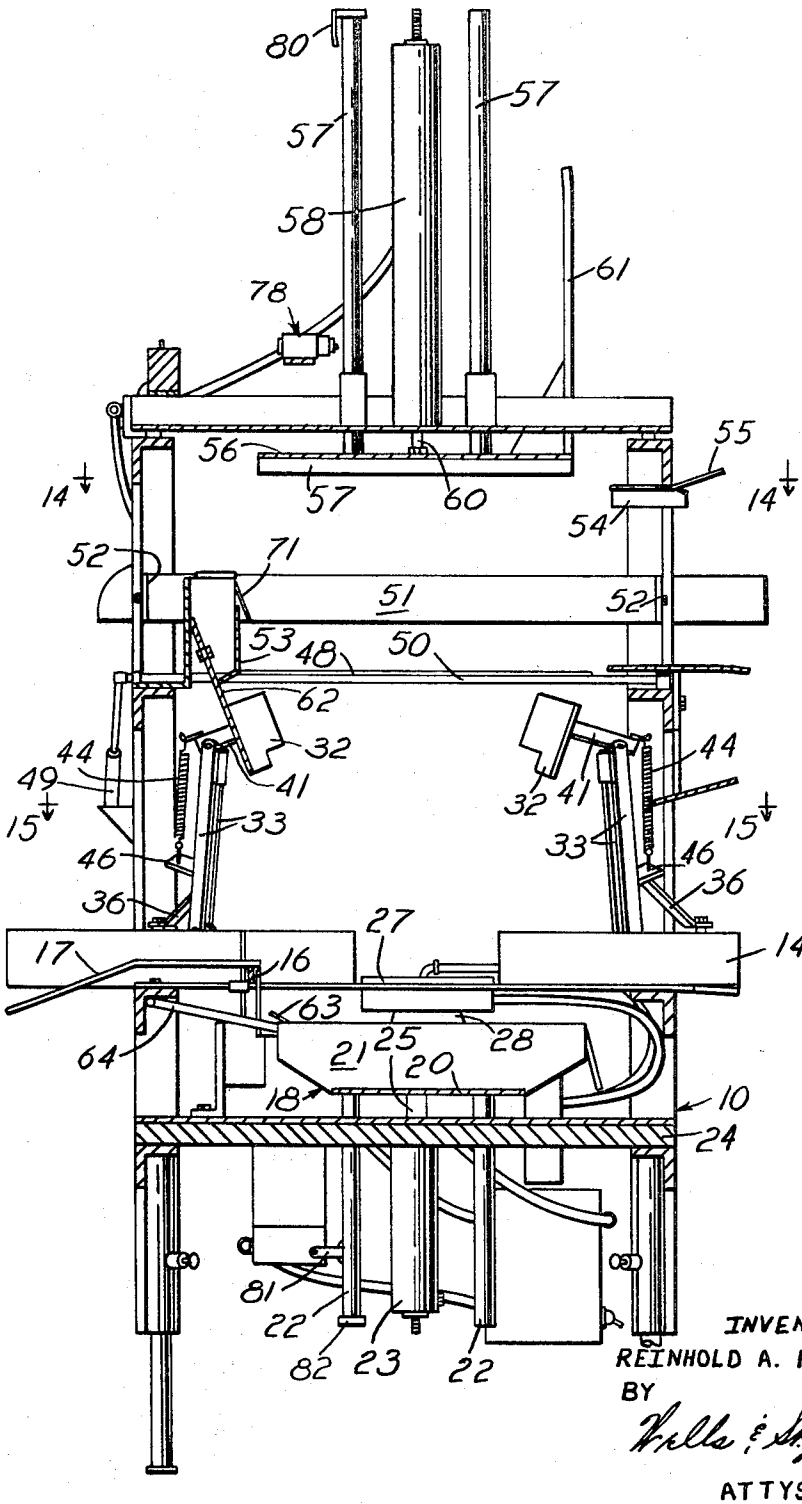
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Fig. 8



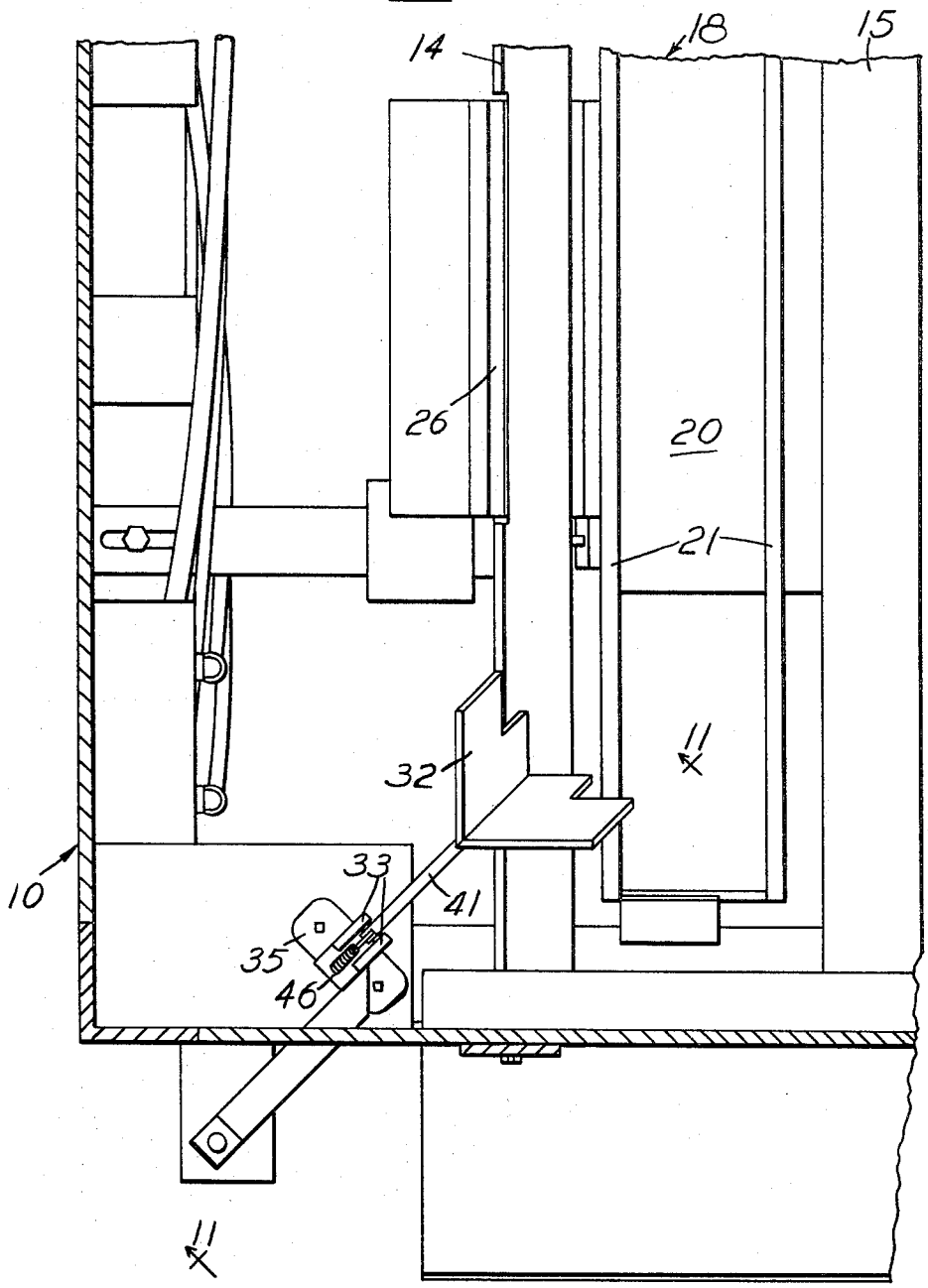
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Fig. 9



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Fig. 10

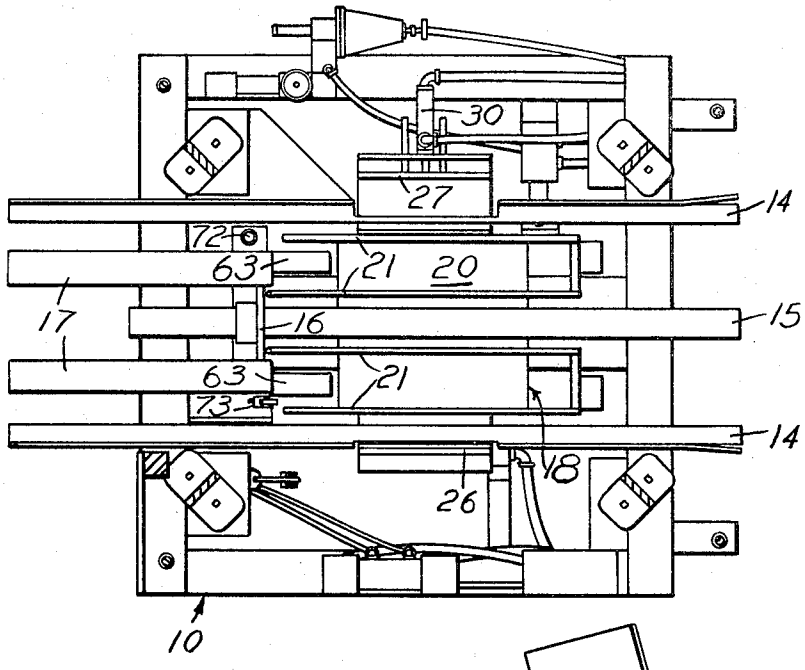
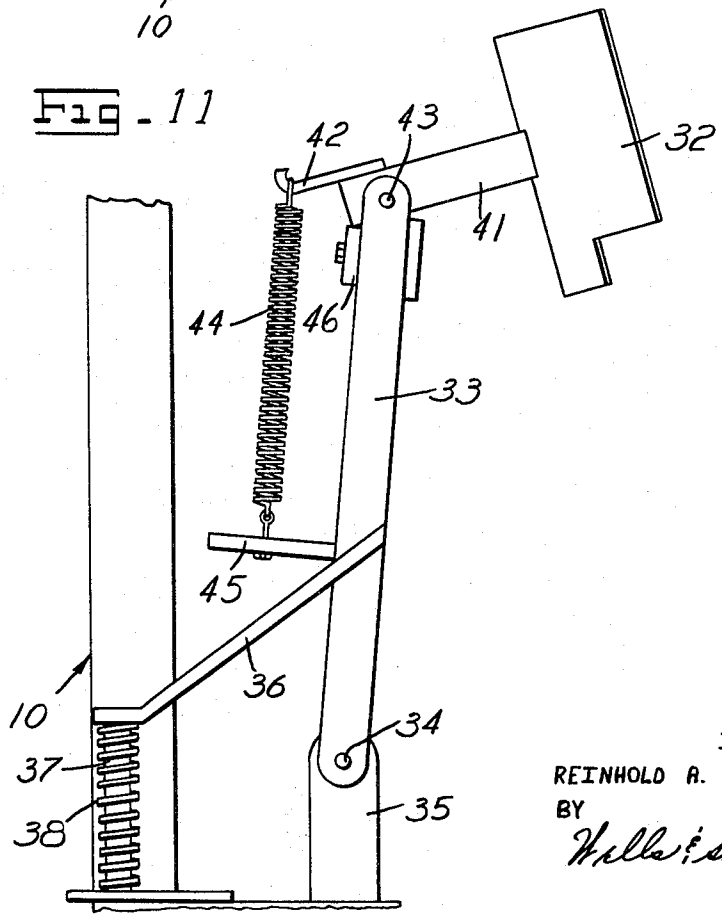


Fig. 11



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Fig - 12

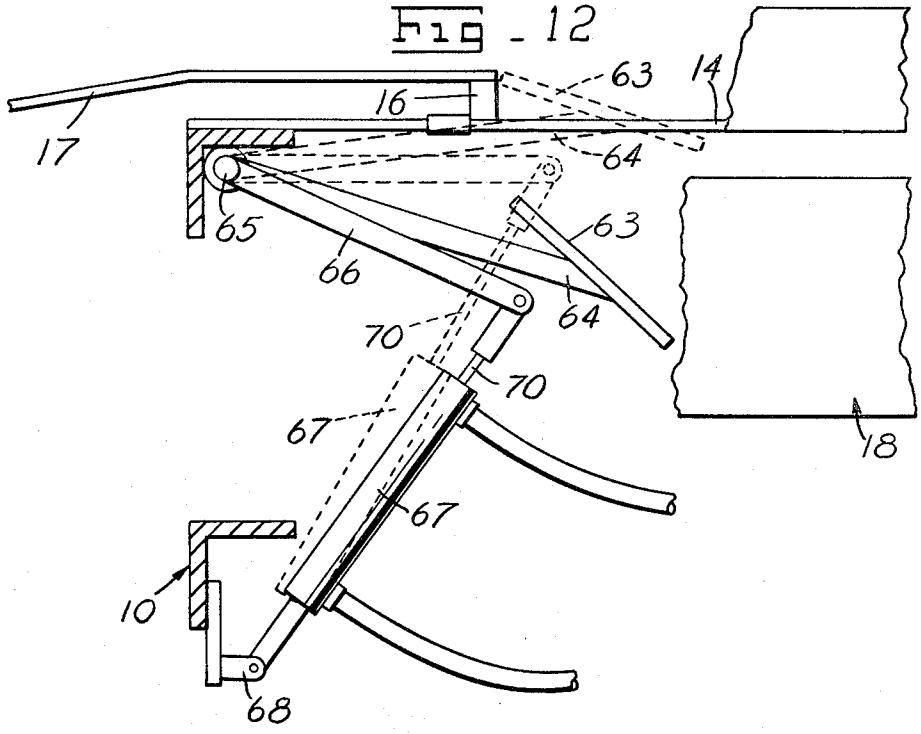
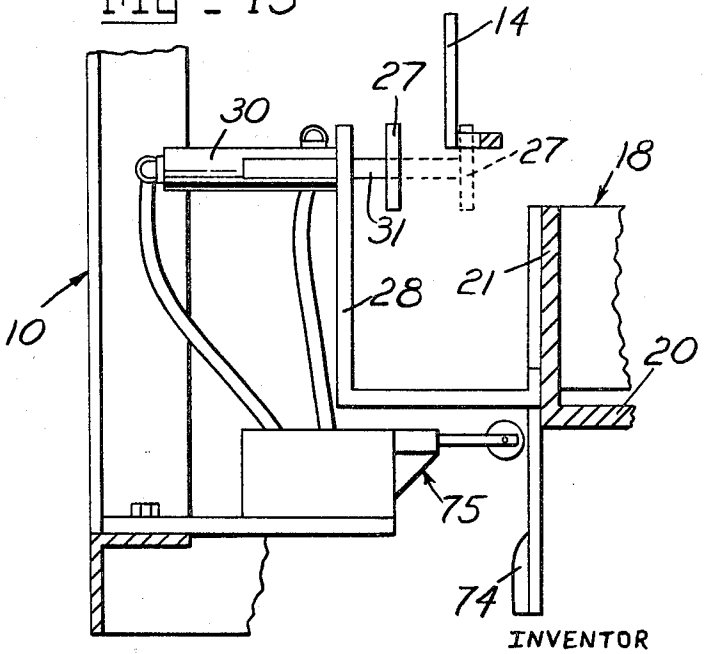


Fig - 13



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Fig. 14

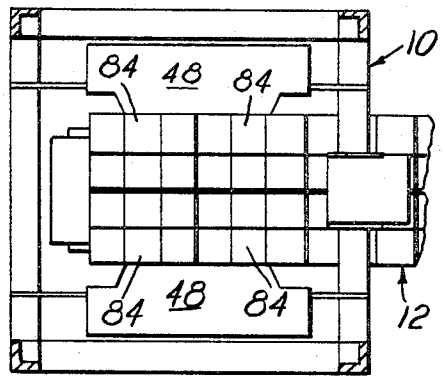


Fig. 15

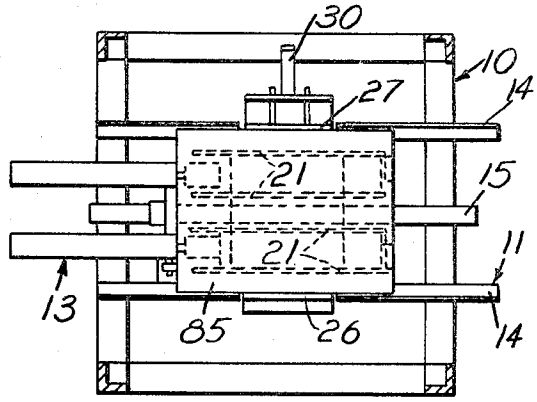


Fig. 16

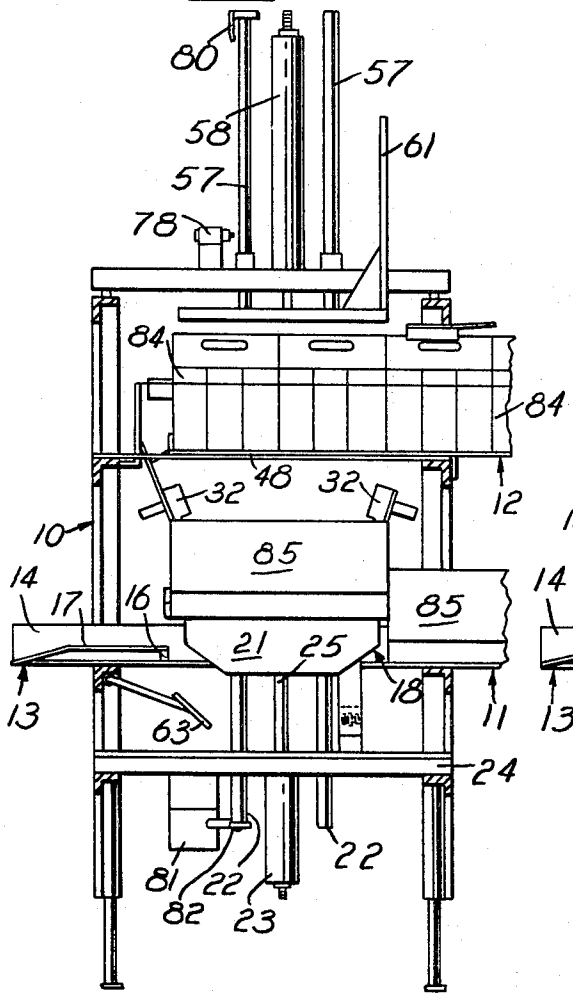
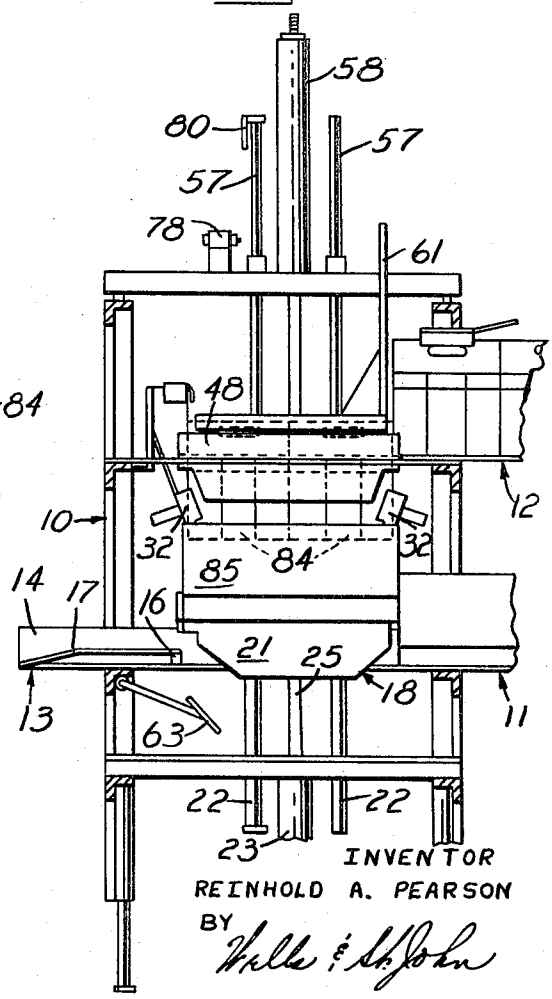


Fig. 17



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Fig. 18

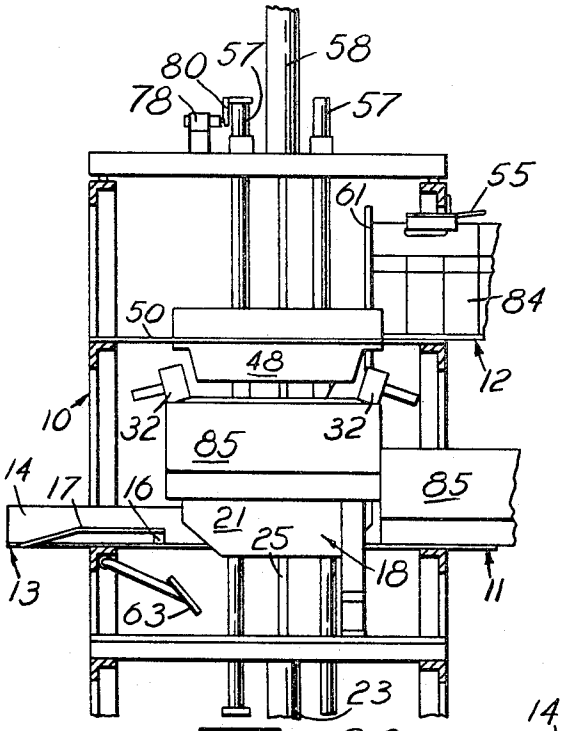


Fig. 19

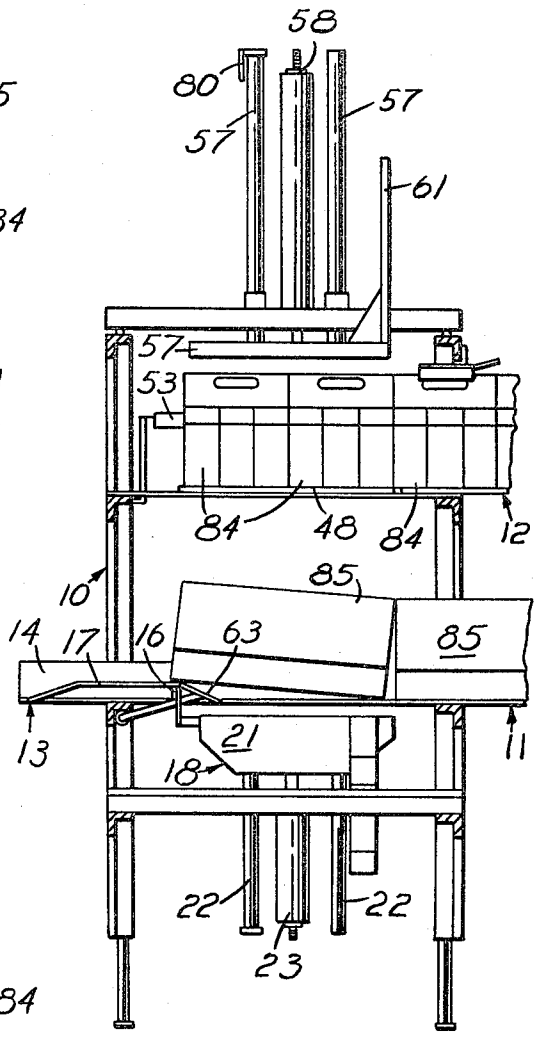
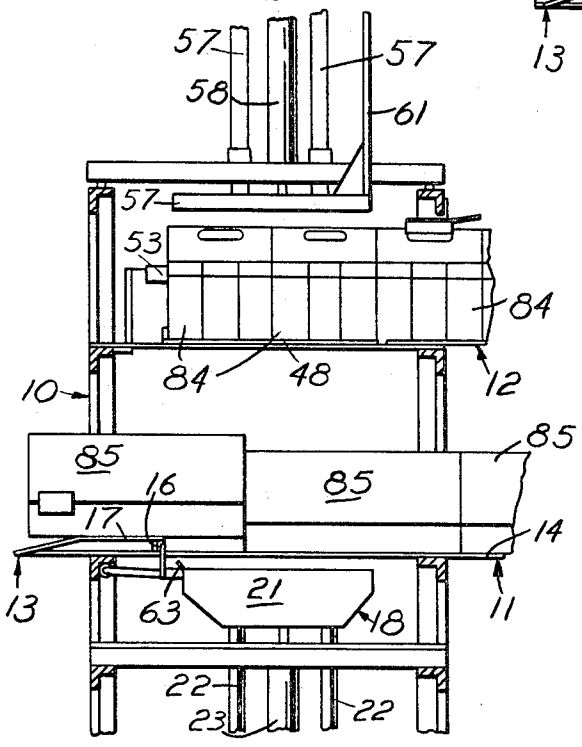


Fig. 20



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Patented May 21, 1968

3,383,833

CASE PACKING MACHINE

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Filed Dec. 17, 1965, Ser. No. 514,440
5 Claims. (Cl. 53—247)

ABSTRACT OF THE DISCLOSURE

A machine for packing articles within open cases, particularly for placing cartons within exterior corrugated cases. The cases and cartons are carried along adjacent conveyors, and the cartons are centered with respect to each case. The case is centered with respect to yieldably mounted corner guides which serve to assist in easing the carton or article into the case. The cartons are pushed by a hydraulic mechanism, and an elevator is provided for moving each case into packing position.

This invention is concerned with a machine for packing a grouped series of cartons within an open case for shipping purposes.

The present machine is designed to place four cartons, conventionally known as "six-packs," within the confines of a shipping case or container for packing and shipping purposes. The outer case with which the invention is concerned is a corrugated board container having open top flaps folded back against its side and end walls and held by interconnections between the flaps at two opposite corners of the container. The four six-packs, in side by side positions, are placed within the container walls by the machine, the fit being quite close. The cartons can then be filled within the container for shipping purposes. The cartons are of the type conventionally used in the beverage industry, particularly for beer and soft drinks.

It is the first object of this invention to provide a machine that can handle cartons and containers at a rate of speed sufficiently high to be compatible with modern bottling and carton handling machines.

Another object of this invention is to provide a mechanical device to effectively place the cartons within the tight fit provided in the shipping containers used in the industry, there being little tolerance between the cartons and container since movement of the cartons within the container might result in damage to the bottles shipped therein.

Another object of this invention is to provide such a machine which is totally automatic, the various operations of the machine being used to control the successive movements of the cartons and containers.

Another object of this invention is to provide such a machine that can be interposed in a typical conveyor system for handling the cartons and containers after being set up by other machines. The present machine can be easily interposed in conventional conveyor systems found in such installations.

These and further objects of the invention will be obvious from the following description, taken together with the accompanying drawings, which illustrate in detail a preferred form of the invention. It is to be understood that this form of the invention is only presented by way of example and that the specific details disclosed are not intended to limit the scope of the claims appended to the specification.

In the drawings:

FIGURE 1 is a side elevation view of the machine, showing the adajcent ends of the feed and discharge conveyors;

FIGURE 2 is a side elevation view taken oppositely to FIGURE 1;

FIGURE 3 is a rear elevation view of the machine as seen from the right in FIGURE 1 with the feed conveyors being eliminated;

FIGURE 4 is a front view of the machine as seen from the left in FIGURE 1 with the delivery conveyor being eliminated;

FIGURE 5 is a top view of the machine as shown in FIGURE 1;

FIGURE 6 is a bottom view of the machine as shown in FIGURE 1;

FIGURE 7 is a vertical sectional view of the machine as taken along line **7—7** in FIGURE 2;

FIGURE 8 is a vertical sectional view through the machine taken along line **8—8** in FIGURE 3;

FIGURE 9 is an enlarged fragmentary sectional view taken along line **9—9** in FIGURE 3;

FIGURE 10 is a sectional view taken along line **10—10** in FIGURE 1;

FIGURE 11 is a fragmentary sectional view taken along line **11—11** in FIGURE 9;

FIGURE 12 is an enlarged fragmentary sectional view taken along line **12—12** in FIGURE 7;

FIGURE 13 is an enlarged fragmentary sectional view taken along line **13—13** in FIGURE 2;

FIGURES 14 through 20 are a series of schematic views illustrating the operation of the machine;

FIGURE 14 is a schematic horizontal sectional view taken substantially along line **14—14** in FIGURE 8 illustrating the grouping of cartons in the machine;

FIGURE 15 is a schematic horizontal sectional view taken substantially along line **15—15** in FIGURE 8 illustrating the positioning of a container in the machine;

FIGURE 16 is a schematic elevational sectional view similar to FIGURE 8 showing the container in a raised position prior to filling;

FIGURE 17 is a view similar to FIGURE 16, illustrating the downward movement of cartons into the container;

FIGURE 18 is a fragmentary view similar to FIGURE 16 showing the machine immediately after placement of cartons within the container;

FIGURE 19 is a view similar to FIGURE 16 showing the ejection of a filled container; and

FIGURE 20 is a view similar to FIGURE 18, showing the exit of the filled container.

The machine is generally shown in the four elevational views, FIGURES 1 through 4. It generally comprises a rigid supporting framework **10**. Leading to the framework **10** are two parallel feed conveyors: a container delivery conveyor **11** and a carton delivery conveyor **12**. The two conveyors **11**, **12** are stacked vertically above one another. An outfeed conveyor **13** extends from the opposite side of the machine. The conveyors **11**, **12**, and **13** are of conventional construction, generally utilizing an endless belt, powered rollers, or equivalent devices.

In referring to the machine, the side of the machine shown to the left in FIGURE 1 shall be termed the "front" of the machine, while the side shown to the right shall be termed the "rear" of the machine. The side of the machine illustrated in FIGURE 1 shall be termed the right side of the machine and the side illustrated in FIGURE 2 shall be termed the left side of the machine. Thus, the left and right sides of the machine will correspond to the machine orientation illustrated in FIGURE 4. This designation of "front" and "rear" relates the parts of the machines to the flow of containers and cartons from conveyors **11**, **12** to the outfeed conveyor **13**.

Generally speaking, the machine is designed to handle shipping cases having the open top flaps thereof folded

back against the respective sides and end walls of the case. This can be accomplished by interconnections between adjacent pairs of top flaps or by any other suitable temporary holding device. Into this case is deposited a group of smaller cartons, the cartons illustrated being generally termed "six-packs," used in the distribution of beverages such as beer and soft drinks either in bottles or cans. The machine is used to properly group and locate the cartons above the cases, the cartons being fed to the machine on the upper conveyor **12** and the cases being fed to the machine on the lower conveyor **11**. The grouped cartons are inserted into the individual cases and the filled cases are then ejected and fed from the machine on outfeed conveyor **13**.

Case handling mechanism

The apparatus for handling the shipping cases can best be understood from a study of the general FIGURES 1 through 4, the vertical sections, FIGURES 7 and 8, and the horizontal section, FIGURE 10. Referring specifically to FIGURE 10, the handling apparatus for the shipping cases comprises two side supports **14** each having a horizontal supporting ledge and a vertical outside wall to both support the case and locate it transversely relative to framework **10**. There also is provided an intermediate center support strip **15** having an upper surface positioned in the same plane as the horizontal ledges of the side supports **14**. The cases are fed onto the horizontal portions of side supports **14** and center support strip **15** by the case delivery conveyor **11** (FIGURE 1).

Forward movement of the case on the horizontal supporting surfaces **14**, **15** is limited by a fixed vertical stop **16** on framework **10**. Stop **16** faces rearwardly and will be contacted by the lower portion of each case as it moves forwardly on supports **14** and strips **15**. Each case will be pushed by successive cases rearward of it on the case delivery conveyor **11**, so as to be definitely in contact with the rearwardly facing stop **16**. In this manner, the case is also positively positioned longitudinally with respect to framework **10**. Exit ramps **17** are fixed to the framework **10** and extend forwardly over stop **16** (FIGURE 8). These facilitate ejection of the filled cases in the manner to be described below.

In the operation of the machine, it is necessary that the individual cases be elevated prior to filling each with a group of cartons. This is accomplished by an elevator generally designated by numeral **18** and best seen in FIGURES 7, 8 and 10. Elevator **18** includes a base plate **20** and transversely spaced upright plates **21** fixed to the base plate **20**. The upright plates **21** are located in the area between the side supports **14** and the center supporting strip **15** of framework **10**. They can thus be freely moved in a vertical direction and are not obstructed by the fixed portions of framework **10**. This movement is guided by two vertical rods **22** fixed to the base plate **21** and suitably guided on framework **10**.

Elevator **18** is powered by a double acting pneumatic cylinder **23** anchored to a horizontal frame member **24** on framework **10**. Cylinder **23** is provided with a vertically reciprocable piston rod **25** having its upper end fixed to the base plate **20** of elevator **18**. Thus, by proper operation of cylinder **23**, the upright plates **21** can be moved from the position illustrated in FIGURES 7 and 8, recessed below the supporting horizontal surfaces of side supports **14** and strip **15**, to a raised position wherein the upper surfaces of upright plates **21** are elevated at a height above the elevation of supports **14** and strip **15**. This elevated position is schematically illustrated in FIGURE 16 and will be described in detail below.

Since the proper positioning of each case to be filled during operation of the machine is very critical, it has been found necessary to positively clamp each case relative to elevator **18**. The structure by which this clamping action is achieved is best seen in FIGURES 10 and 13. At the right side of elevator **18** is a fixed upright side plate **26**. Plate **26** extends through a relieved part of the adjacent side support **14** so as to provide proper clearance of the plate **26**. When elevator **18** is in its lower or recessed position, plate **26** protrudes just slightly above the supporting horizontal surface of the side supports **14**. See FIGURE 1. At the left side of the machine is a transversely movable clamping plate **27** (FIGURE 13). It also is normally at an elevation just slightly above the horizontal supporting surface of the adjacent side support **14**, which is also relieved to permit proper operation of plate **27**. The movable plate **27** is positioned by means of a cylinder **30** anchored to a bracket **28** on elevator **18**. Cylinder **30**, a double acting pneumatic cylinder, is provided with a reciprocating piston rod **31** having the plate **27** fixed to its outer end. Plate **27** is movable in a transverse direction as illustrated in FIGURE 13, the initial retracted position of plate **27** being illustrated in full lines and its clamping position being illustrated in dashed lines.

Basically, a case entering the machine will ride along the support **14** and strip **15** with some lateral clearance between the vertical walls at the edges of supports **14**. When it has reached the stop **16** and is in contact with it, it will be properly positioned longitudinally relative to framework **10**. Cylinder **30** is used during upward motion of elevator **18** to urge clamping plate **27** inwardly to the dashed line position shown in FIGURE 13. This results in the carton being grasped and held immobile on elevator **18** between the fixed plate **26** and the movable plate **27**.

Corner guide apparatus

To facilitate the loading of a case on elevator **18**, it has been found advisable to provide angularly directed corner guides against each interior upper corner of the case. The structure utilized is shown in detail in FIGURES 9 and 11. Each guide is identical and only one will be discussed, although these same reference numerals are used in the drawings to designate identical parts of each guide. Each guide is directed so as to bisect the angle at the corner of the case within which it is positioned. This angular relationship can be seen in FIGURE 5, as well as in FIGURE 9.

Each corner guide **32** comprises two plates fixed to one another at right angles. The respective plates are adapted to rest against the respective sides of a case at one upper corner thereof. The guide **32** is movably carried relative to framework **10** for free movement in an angular direction bisecting the corner formed by the plates in guide **32** and also for limited vertical movement. This compound movement is provided by the supporting structure illustrated in FIGURE 11.

Two spaced support arms **33**, located in side by side positions, are pivotally connected at **34** to a fixed bracket **35** on framework **10**. The support arms **33** are provided with an integral downwardly and outwardly protruding bracket **36** having a rod **37** fixed to its outer end. The lower end of rod **37**, which is surrounded by a compression spring **38**, is slidably received through the framework **10** and capped by a lower nut **40** (FIGURE 7). Nut **40** limits upward movement of rod **37**, which is free to move in a downward direction, such movement being resisted by compression spring **38**. Thus, each support arm **33** is normally biased to the position shown in FIGURE 11. However, the arms **33** can swing outwardly and upwardly about the pivot **34** on framework **10**.

Each guide **32** has an integral outwardly protruding arm **41** formed thereon. The arm **41** is pivoted at **43** between the support arms **33**. The pivotal axis at **43** is parallel to the pivotal axis at **34**. Each arm **41** is formed with an outwardly protruding hook **42**. A tension spring **44** extends between hook **42** and an anchoring bracket **45** fixed to the arms **33** below it. The spring **44** thus biases the arm **41** and guide **32** in a counterclockwise direction as seen in FIGURE 11. The counterclockwise movement of arm **41** is limited by contact with an adjustable block

46 fixed between the arms 33 and adjustably released by means of a nut 47.

The initial position of guides 32 as shown in FIGURES 9 and 11, is such that the corner formed between the plates of guide 32 extends downwardly and inwardly at an angle relative to the vertical. The guide 32 is free to move about axis 43 in a clockwise or downward direction and the support arms 43 are free to move about pivot 34 in a counterclockwise or outward direction (FIGURE 11) so that guide 32 can swing both downwardly and outwardly as necessary. The vertical location of each guide 32 relative to elevator 18 is such that the lower edge of each guide 32 will be located within a case on elevator 18 when elevator 18 has been moved to its raised position. The guides 32 will fit loosely within the respective corners of the case.

Carton handling apparatus

The cartons to be inserted within a particular case are first grouped at the upper portion of the machine directly above a case on elevator 18. The cartons are received on the carton delivery conveyor 12 in two longitudinal side by side rows. The cartons continue movement into the machine, being fed onto support plates 48 (FIGURE 7) which are pivotally carried by longitudinal pivot rods 50 suitably journalled on framework 10. The axis of the respective plates 48 on the rods 50 is laterally outside the area of plates 48 which will be actually supporting the cartons. Each plate 48 extends transversely a substantial distance beyond the respective rods 50. Each plate is biased to a normal horizontal position by a counterbalance assembly 49 best seen in FIGURE 4. The framework 10 is provided with two laterally spaced vertical guides 51 above the respective plates 48 to guide the incoming rows of cartons. Guides 51 are carried on framework 10 by laterally adjustable brackets 52.

At the front of the machine is an upright stop 53 which will be contacted by the forward surfaces of the incoming cartons. Stop 53 is best seen in FIGURE 8. It is fixed to framework 10 and does not move.

At the rear of the machine is a stationary guide 54 adapted to longitudinally guide the incoming handles of the cartons, which protrude above the main body of each carton along the longitudinal center thereof. A rearwardly and upwardly directed guide plate 55 leads to the guide 54.

Located vertically above the supporting plates 48 is a pusher apparatus generally comprising a horizontal plate 56 having two inverted V-shaped brackets 57 fixed to its lower surface and extending longitudinally across the plate 56. The brackets 57 are longitudinally aligned with the handle guides 54 and are adapted to selectively abut the top surfaces of the respective handles in the cartons to be pushed downwardly into the waiting case. Plate 56 is vertically guided by two upright rods 57 suitably journalled in the framework 10. It is powered by a double acting pneumatic cylinder 58 anchored on framework 10 and having a downwardly protruding piston rod 60. Pusher plate 56 is fixed to the lower end of piston rod 60.

To further assist in the guiding of cartons as they move downwardly relative to framework 10, a downwardly tapered spring plate 62 is provided immediately forward of the stop 53. It can be seen in detail in FIGURES 7 and 8. It extends between the two forward corner guides 32 and is freely movable from its position shown, in contact with the lower edge of stop 53, to a more forward position as required, the lower edge of the spring plate 62 also being inserted within the confines of a case elevated by the elevator 18. During downward movement of cartons, the pivoting support plates 48, which are spring biased to a horizontal position as seen in FIGURE 7, provide lateral guides for the outer side edges of the respective cartons. They provide a transitional guide prior to engagement of the corner guides 32 by the outside corners of the grouped cartons.

The pusher plate 56 is provided with an upwardly protruding vertical rear plate 61, the plate 61 being vertically aligned with the rear edges of the carton contacted by the brackets 57. When the plate 56 is lowered due to action of cylinder 58, plate 61 will prevent further forward movement of the cartons immediately rearward of those being moved downwardly between the plates 48.

Container ejection apparatus

After a case has been filled with the grouped cartons, and is subsequently lowered by elevator 18, it is necessary to provide some positive release of the case so that it can pass over stop 16 and ride along the exit ramps 17. This is provided by the apparatus shown in detail in FIGURE 12. It comprises a pair of vertically movable inclined ramps 63 longitudinally aligned with the exit ramps 17. The inclined ramps 63 are fixed to supporting arms 64 which protrude forwardly and are fixed to a pivot shaft 65 carried on the framework 10 for movement about a transverse pivotal axis. At one end, rod 65 has a rearwardly and downwardly protruding crank arm 66 (FIGURE 7). This crank arm 66 is pivotally connected at its rear end to the piston rod 70 of a double acting pneumatic cylinder 67 pivotally anchored at its lower end to a bracket 68 on framework 10. By movement of piston rod 70 relative to cylinder 67, the inclined ramps 63 can be moved from a lower recessed position shown in full lines in FIGURE 12 to an elevated position shown in dashed lines in FIGURE 12. The front lower corner of a case will be permitted to pass over the stop 16 by the obvious bridging action of the ramps 63. Movement will be imported to the case by the incoming cases which continuously push against the cases at the bottom of the machine.

Operating controls

The various movements of the machine are performed by automatic operation of the previously described pneumatic cylinders. Each cylinder is provided with a conventional controlling solenoid to control movement of its piston rod between an extended or "out" position and a retracted or "in" position. While these solenoids and control devices are illustrated in the drawings, they will not be described in detail, since the choice of such components and physical placement of them on the machine are obviously within the skill of one trained in this field.

Upward movement of piston rod 25 in cylinder 23 is controlled by four switches, each of which must be activated or closed before the up solenoid for cylinder 23 is actuated. First, two switches 71 are fixed to stop 53 against which incoming cartons must abut. Since a continuous line of cartons is necessary to push cartons against the stop 53, contact of switch elements 71 will indicate that the necessary grouping of cartons on the yieldable plates 48 has been achieved. Also, an upstanding switch element 72 is provided just forward of stop 16 at the lower portion of the machine. It is normally closed, but will be open at any time during which a case is passing over stop 16 and resting on exit ramp 17 immediately forward of stop 16. Release of the switch elements 72 will signify that the preceding filled case has passed completely over stop 16. Finally, a limit switch 73 on the framework 10 is provided directly adjacent to the stop 16 so as to be contacted by each incoming case as it comes to rest against stop 16. When the four switches 71, 72 and 73 are closed, the up solenoid for cylinder 23 will be actuated.

As elevator 18 moves upwardly, a bracket 74 at its left side will also move with it (FIGURE 13). Bracket 74 is adapted to actuate a limit switch 75 fixed to framework 10. Switch 75, when closed, actuates a soleonid to extend piston rod 31 in cylinder 30 and thereby move clamping plate 27 to the dashed line position illustrated in FIGURE 13. Plate 27 will remain in this position dur-

ing further upward movement of elevator 18 due to continued contact of the switch element by bracket 74.

Downward movement of the piston rod 60 for the upper cylinder 58 is actuated by a limit switch 76 at the right hand side of the machine. This switch is actuated by a bracket 77 on elevator 18 (FIGURE 3). Switch 76, having its actuating element above the actuating element of switch 75, will be closed subsequent to closure of switch 75.

The "in" solenoids for cylinders 23 and 58 are controlled by a limit switch 78 at the top of the machine, having an actuating element engageable by a bracket 80 fixed to the top of one of the guide rods 57 (FIGURE 8). When switch 78 is closed, the two cylinders 23 and 58 will retract their piston rods 22 and 60 respectively to thereby raise the pusher plate 56 and lower elevator 18.

As elevator 18 is lowered, it will trip a switch 81 on framework 10. Switch 81, when tripped by a protruding bracket 82 at the lower end of one of the guide rods 22 for elevator 18, causes cylinder 67 to extend piston rod 70 and thereby bring the inclined ramps 63 to the dashed line positions shown in FIGURE 12. Switch 81 is inoperative during upward movement of elevator 18 and only operates when tripped during downward movement thereof.

As each filled case is ejected from the machine, it passes by another limit switch 83 directly adjacent to the stop 16. When switch 83 has been cleared by the case, it operates the "in" solenoid for cylinder 67 to cause the ramps 63 to return to their normal full line positions illustrated in FIGURE 12.

Operation

While the specific operations of the various mechanisms have been described above, the general scheme of operations can best be understood from a study of the schematic views presented in FIGURES 14 through 20. These views show the successive movements used to fit a group of four partitioned cartons into a container.

FIGURES 14 and 15 show the proper positioning of four cartons 84 and an open topped case 85. The cartons 84 are guided between the lateral guides 51 on framework 10 and rest on the support plates 48. The case 85 rests on the horizontal surfaces of side supports 14 and center strip 15. It is laterally guided by contact with the vertical portions of the side supports 14. The front edge of case 85 is in contact with stop 16. The front edges of cartons 84 are in contact with stop 53.

When the cartons 84 and case 85 are positioned as shown in FIGURES 14 and 15, the two carton switches 71 will be closed by contact with the cartons 84 and the limit switch 73 (FIGURE 10) will be closed by contact of case 85. Also, the immediately preceding case, after passing over stop 16, will clear the switch element 72, so that the necessary four switches will be properly closed.

When the four switches 71, 72, and 73 are closed, the cartons 84 and case 85 are in proper vertically aligned positions. Closure of the switches will actuate a solenoid to raise the elevator 18 by activating cylinder 23. As elevator 18 rises (FIGURE 16), the case 85 will be lifted on the upper surfaces of the upright blade 21. When the vertical movement of elevator 18 has progressed sufficiently, bracket 74 will actuate limit switch 75 to close the clamp plate 20 transversely against the bottom portion of container 85 (FIGURE 13). Container 85 will then be clamped transversely between the fixed plates 26 and the movable clamping plate 27 (FIGURE 10). Upward movement of the elevator 18 then continues, bringing the container 85 to a position wherein the corner guides 32 are located inside the four corners of the container 85 (FIGURE 16).

When the elevator 18 is at its top position, bracket 77 will close limit switch 76, which controls downward movement of the pusher plate 56 by activating cylinder 58. The assembled cartons 84 will be moved downwardly between the yieldable support plates 48 in the manner shown in FIGURE 17. The outer corners of the grouped cartons 84 wil push outwardly against the yieldable corner guides 32, which form a "funnel" to ease the cartons 84 into the relatively tight fit provided within case 85. The guides 32 are freely yieldable in a direction bisecting the respective corner angles of case 85 so as to assist in fittting the cartons 84 properly within case 85. Also, the front edges of cartons 84 are assisted in entering case 85 by the yieldable spring plate 62, which also extends into the opening of case 85.

When the cartons 84 are fully inserted within case 85, switch 78 will be tripped by the brackets 80 on the upper guide rod 57. This will reverse the two cylinders 23 and 58, causing the pusher plate 56 to be raised and the elevator 18 to be lowered. Forward movement of incoming cartons 84 is prevented by the upright plate 61 fixed to the pusher plate 56 (FIGURE 18) while forward movement of incoming cases 85 is prevented by the rear edge of elevator 18.

As elevator 18 comes downwardly, bracket 82 on the lower guide rod 22 will trip switch 81, causing the solenoid control for cylinder 67 to move the inclined ramps 63 to the raised position shown in dashed lines in FIGURE 12 and also illustrated in FIGURE 19. Thus, the filled case 85 is brought downwardly onto the inclined ramps 63. It can immediately move in a forward direction over ramps 63, which bridge the normally protruding stop 16. The fillled case 85 then moves forwardly due to the pressure exerted by the incoming empty cases 85, continuing over exit ramps 17 until it clears switch 83. When switch 83 is released, the inclined ramps 63 are lowered by reversal of cylinder 67, so that the incoming case 85 properly abuts atop 16 and the entire process is then repeated.

While great detail has been used in discussing the various features of this invention, it is to be understood that the above discussion is not intended to particularly limit my invention to these structural components. Many equivalent mechanisms could be used to achieve the desired results without deviating from my basic concept. Therefore, only the following claims are presented as definitions of my invention.

Having thus described my invention, I claim:

1. In a machine for placing an article within an encircling rectangular case:
   - a rigid framework;
   - case support means on said framework to carry thereon a succession of rectangular cases open at one side thereof;
   - case positioning means on said framework selectively engageable with individual cases on said case support means for fixing the position of a case relative to said framework;
   - inwardly projecting corner guide means mounted on said framework adjacent to said case support means for selective partial placement against the inside corner surfaces at the one open end of a case held fixed by said case positioning means;
   - said corner guide means comprising:
   - four corner guides each including two plates intersecting each other at right angles;
   - supporting means connected between said framework and the individual guides permitting each guide to move in a direction bisecting the angle formed between the plates thereof;
   - and biasing means connected between said framework and the supporting means for each guide to normally urge the inner ends of the guides inwardly of the corner of the case to be abuttted thereby.

2. An apparatus as set out in claim 1 further comprising:
   - article supporting and positioning means on said framework adjacent to said case support means to locate an

article relative to the framework with the corners thereof centered in alignment with the respective corner guides at the sides thereof opposite to a case aligned therewith;

and pushing means on said framework for forcing an article located by said article supporting and positioning means into a case by moving the article between said corner guides.

3. In a machine for placing a group of cartons within a shipping case:

a rigid framework;

case support means on said framework to carry thereon a longitudinal row of cases, each case being upwardly open;

stop means on said framework in the path of cases on said case support means to selectively fix the position of a case on said case support means relative to said framework;

downwardly and inwardly projecting corner guide means mounted on said framework vertically above said case support means for selective partial placement against the upper inside corner surfaces of a case;

and means on said framework to move a case relative to said corner guide means after contact of the container by said stop means to thereby place said corner guide means against the inside corner surfaces of the case with said corner guide means projecting upwardly and outwardly from each corner of the case;

wherein said last named means comprises:

a vertically movable elevator on said framework beneath said case support means adapted to selectively engage the bottom wall of a case contacted by said stop means;

powered means on said framework connected to said elevator means to selectively raise or lower said elevator means relative to said framework;

and a selectively engageable clamp on said elevator means to grip a case positioned thereon.

4. In a machine for placing a group of cartons within a shipping case:

a rigid framework;

case support means on said framework to carry thereon a longitudinal row of cases, each case being upwardly open;

stop means on said framework in the path of cases on said case support means to selectively fix the position of a case on said case support means relative to said framework;

downwardly and inwardly projecting corner guide means mounted on said framework vertically above said case support means for selective partial placement against the upper inside corner surfaces of a case;

and means on said framework to move a case relative to said corner guide means after contact of the container by said stop means to thereby place said corner guide means against the inside corner surfaces of the case with said corner guide means projecting upwardly and outwardly from each corner of the case;

said corner guide means comprising:

four corner guides each including two intersecting plates intersecting each other at right angles;

a supporting linkage connected between said framework and the individual guides permitting each guide to move in a direction bisecting the angle formed between the plates thereof;

and biasing means connected between said framework and said linkage for each guide to normally urge the lower portions of the guides inwardly of the corner of each case to be abuttted thereby.

5. An apparatus as defined in claim 4 further comprising:

downwardly yieldable carton supports on said framework vertically above said corner guides, said carton supports being biased normally to a horizontal position;

carton positioning means on said framework above said carton supports to longitudinally and transversely locate a group of cartons on said carton supports with the respective corners of the grouped cartons directly above the four corner guides;

a pusher plate mounted on said framework above said carton supports for vertical motion relative to said framework;

and powered means on said framework connected to said pusher plate to selectively urge said pusher plate downwardly to thereby force the grouped cartons between said corner guides.

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