

April 13, 1943.

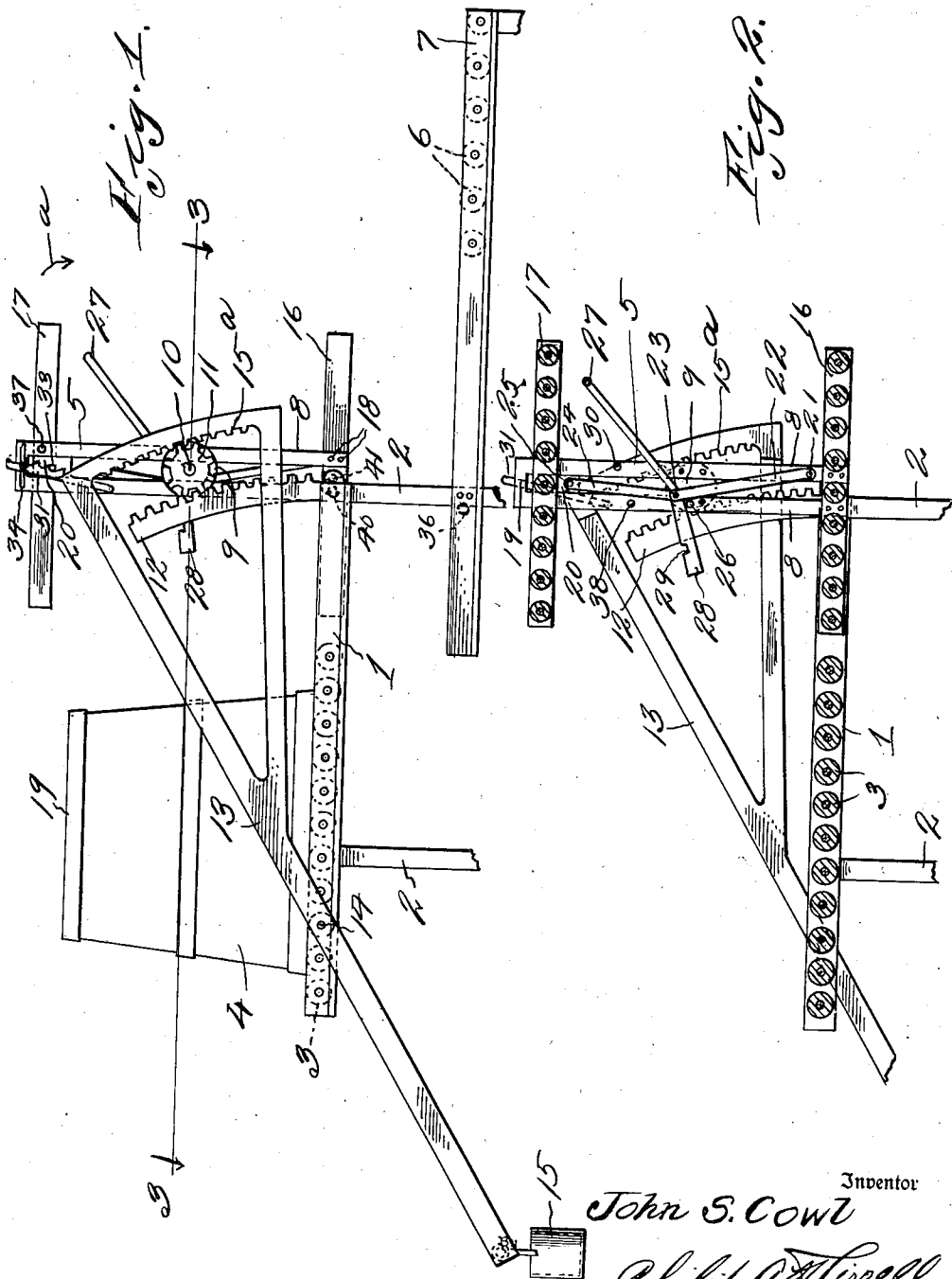
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2,316,407

PACKAGE INVERTING MACHINE

Filed July 23, 1942

3 Sheets-Sheet 1



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April 13, 1943.

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3 Sheets-Sheet 2

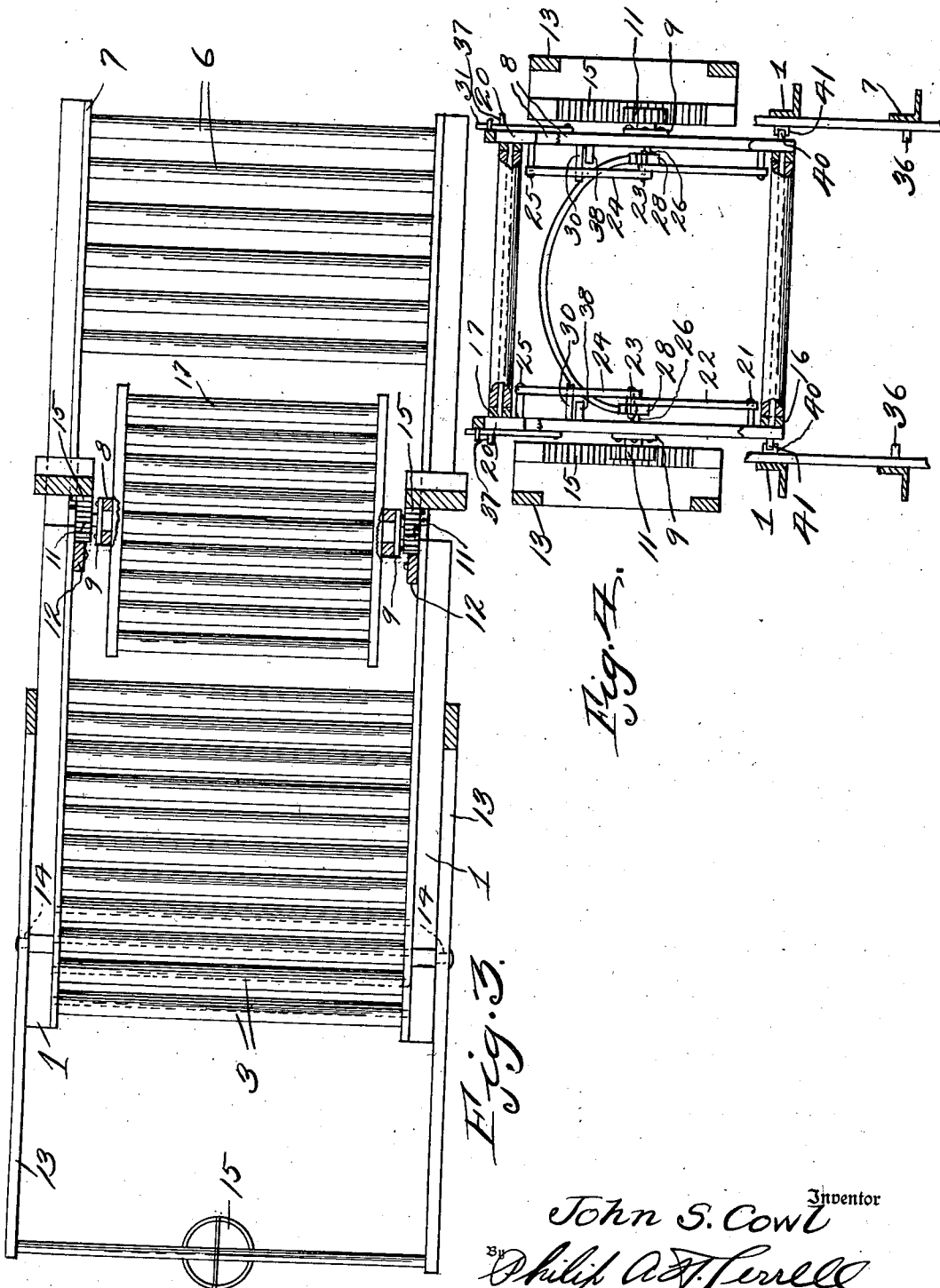


Fig. 3.

Fig. 17.

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Fig. 5.

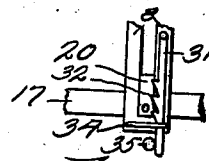
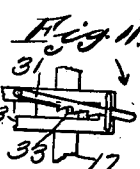
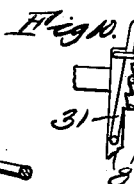
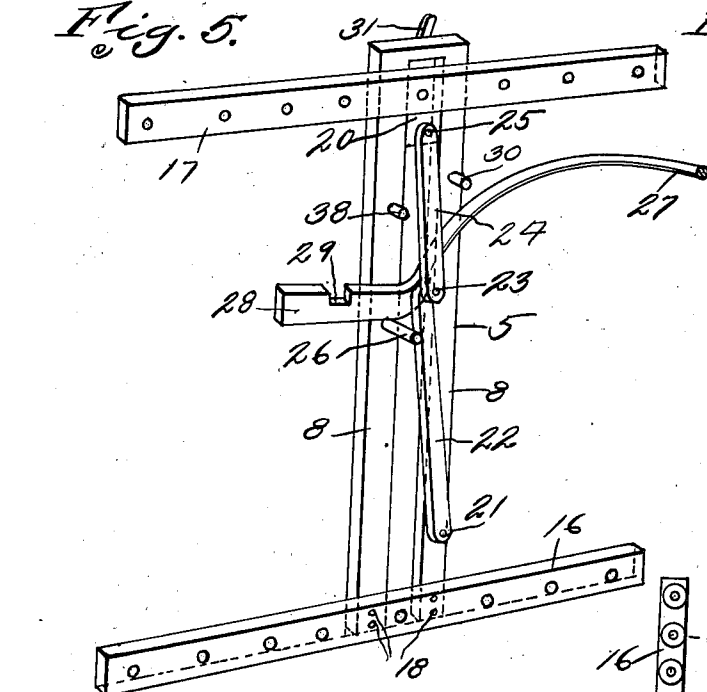


Fig. 12.

Fig. 6.

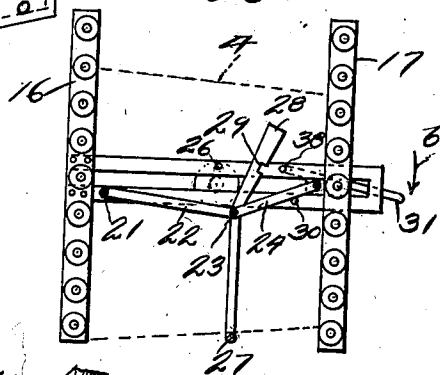


Fig. 9.

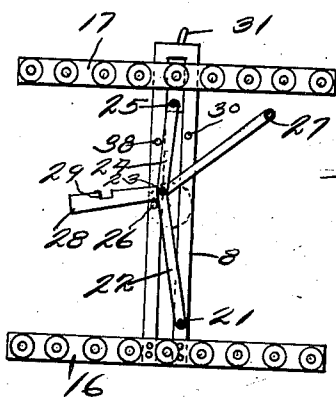


Fig. 8.

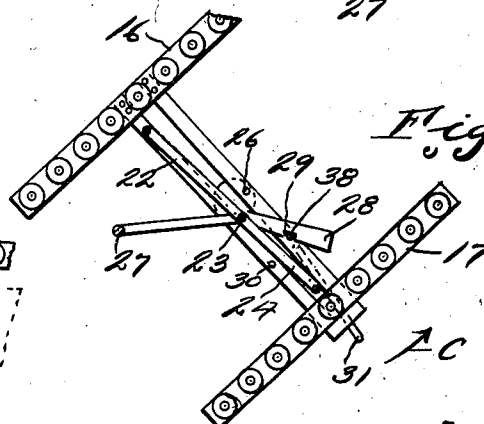
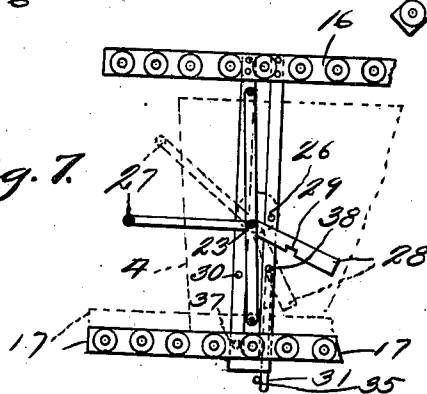


Fig. 7.



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UNITED STATES PATENT OFFICE

2,316,407

PACKAGE INVERTING MACHINE

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Application July 23, 1942, Serial No. 452,097

12 Claims. (Cl. 214—1)

The invention relates to package inverting machines of the type wherein fruit baskets are fed into the machine in an upside down position with a form in the open end of the basket and the baskets are turned right side up and discharged from the machine.

A further object is to provide a basket inverting machine comprising an oscillating frame into which the baskets are intermittently fed, and to utilize the weight of the basket for rotating the frame against the action of a counterweight and utilizing the counterweight for partially rotating the gripping frame to initial position for the reception of the next basket to be inserted.

A further object is to provide a basket engaging bail, counterweighted, and having a link connection to a gripping member slidably mounted on the frame and forming means whereby the basket is gripped and latched in the rotatable frame when the basket is forced therein and the gravity of the basket utilized for the inverting operation.

A further object is to provide the frame of the machine with gear segments with which pinions carried by the inverting carriage mesh, and on which said pinions travel and rotate downwardly against the action of a counterweighted lever having a gear segment meshing with the opposite sides of the pinions.

A further object is to provide sufficient counterweights to the counterweight levers to return the rotatable carriage to normal position after each basket is inverted and discharged from the carriage.

A further object is to provide a basket inverting machine so constructed and arranged, whereby the baskets are inverted and then discharged from the machine at a lower elevation.

A further object is to provide latching means in connection with the gripping frame whereby said gripping frame is held in gripped position against the basket when the carriage is rotated and traversed downwardly and to control the movement of the gripping frame and latching means by a basket engaging member when the basket is forced into the carriage.

A further object is to provide an operating bail having a counterweight latching arm for latching the gripping frame in outer position as it is returned to initial basket receiving position and the gravity latching arm and bail restored to normal initial position when the carriage is returned to basket receiving position.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within

the scope of what is claimed without departing from the spirit of the invention.

In the drawings:

Figure 1 is a side elevation of the machine showing the parts in position to receive a basket to be inverted.

Figure 2 is a longitudinal sectional view through the machine.

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 1.

Figure 4 is a vertical transverse sectional view through the inverting carriage and part of the frame of the machine.

Figure 5 is a detail perspective view of one side of the carriage, showing the bail in position to be engaged by a basket for forcing the gripping frame downwardly to be latched in gripping position.

Figure 6 shows the frame rotated ninety degrees in basket gripping position.

Figure 7 is a transverse sectional view through the carriage showing the same rotated one hundred and eighty degrees to the basket discharge position.

Figure 8 is a view similar to Figure 9 showing the return or reverse rotation of the carriage with the counterweighted latch carried by the bail in latched position for holding the gripping frame outwardly so the basket can be received within the carriage when the carriage assumes its normal position as shown in Figure 9.

Figure 9 is a vertical transverse sectional view through the carriage showing the parts in initial position for receiving a basket.

Figure 10 is a side elevation of the upper end of the carriage showing the gripping frame latching means in position to hold the gripping frame inwardly when said frame is pulled downwardly by the basket engaging bail.

Figure 11 is a view similar to Figure 10 but showing the carriage rotated downwardly ninety degrees and the gripping frame latched.

Figure 12 is a view similar to Figure 10 but showing the latching means released at the point of basket discharge.

Referring to the drawings, the numeral 1 designates spaced angle bars supported on legs 2 and forming the main stationary frame of the machine. Rotatably mounted between the spaced bars 1 are rollers 3 which support the basket 4 in its inverted position with the facer plate therein, and said basket is adapted to be manually forced into the rotatable carriage 5, which carriage is adapted to grip and hold the basket and to simultaneously rotate substantially one hundred and eighty degrees in the direction of the arrow *a*, and bodily move downwardly or traverse as far as its axis is concerned to a discharge position as shown in Figure 7 for releasing the basket and allowing the same to be discharged

onto the rollers 6 of the table 7. The carriage 5 comprises spaced bars 8 at opposite sides thereof, to the outer sides of which are secured plates 9, having stub shafts 10 on which are secured gears 11 so that when the gears 11 are rotated said carriage will be rotated therewith. Extending upwardly from the forward end of the spaced bars 1 are stationary gear segments 12, with which the gears 11 mesh, therefore it will be seen that when the carriage is rotated in the direction of the arrow *a*, Figure 1, or in a reverse direction, the carriage as a whole will be rotated and simultaneously bodily moved downwardly or upwardly.

The carriage is normally maintained in the raised position, as shown in Figure 1, when unloaded, by means of counterweighted levers 13, which levers are pivotally connected at 14 to the spaced bars 1 and a delicate adjustment is obtained by means of a weight receiving receptacle 15 in which weights may be placed. The ends of the levers 13 terminate in gear segments 15^a which mesh with the gears 11 opposite the stationary gear segments 12, therefore it will be seen that when the basket 4 is forced onto the lower roller frame 16 of the carriage to past center position as shown in dotted lines in Figure 6, the off-center weight of the basket will overcome the gravity of the counterweight 15, thereby rotating the gears 11 so they will move downwardly on the stationary gear segments 12 and simultaneously rotate the carriage until the movable frame 17 of the carriage assumes various positions from that shown in Figure 6 to the discharge position shown in Figure 7. As soon as the basket is discharged the counterweight 15 will cause the gears 11 to travel upwardly on the stationary gear segments 12 for again returning the carriage to initial raised position as shown in Figure 1 with the gripping frame 17 at its upper side and latched in raised position by means hereinafter set forth.

The spaced bars 5 are anchored at 18 to the stationary frame 16 and preferably connected together at their upper end as at 19. The gripping frame 17 is provided with guide blocks 20, slidably mounted between the spaced bars 8, and adapted to move downwardly for moving the gripping frame 17 into gripping engagement with the bottom 19 of the basket for holding the basket during the inverting operation.

Pivotally connected at 21 to one of the bars 8 are upwardly extending links 22, which links are in turn pivotally connected at 23 to links 24 having their ends pivoted at 25 to the slidable blocks 20. This mechanism is duplicated on both sides of the carriage as shown in Figure 4.

When the carriage is in the position shown in Figure 1 for the reception of a basket, the pivotal point 23 is on the feed side of the machine and out of alinement with a line drawn through pivotal points 21 and 25 and is limited in its movement by means of a stop pin 26, all of which is clearly shown in Figure 9. Also pivotally mounted on the pivotal point 23 is a counterweighted basket engaging loop 27, the arms of which terminate in counterweights 28 having latching notches 29, the purpose of which will presently appear.

The counterweights normally maintain the loop 27 in raised position as shown in Figures 1 and 2. When the basket 4 is forced onto the carriage it engages the loop 27 and the loop rides downwardly on the basket and pulls the pivotal point 23, connecting the links 22 and 24, through and beyond a line drawn between pivotal points 21 and 25 and this movement is limited by stop pin

30. It will be noted that the links have a greater amount of movement in this direction than in the direction of the feed side of the carriage. During this movement the gripping frame 17 is pulled downwardly into gripping engagement with the bottom end 19 of the basket and as the center of gravity of the basket has passed beyond the center of the carriage the weight of the basket will cause the gears 11 to rotate on the stationary gear segments 12 and the carriage as a whole will move downwardly and simultaneously rotate.

The gripping frame 17, as it is pulled downwardly by the loop 27, is held against outward movement by a pivoted latch 31 at each side of the carriage, and these latches are provided with spaced teeth 32 which hook over the pins 33 carried by the gripping frame. It is to be understood that these latches 31 are gravity actuated and swing within loops 34 at opposite sides of the frame. As the carriage is rotated and traversed downwardly, it first assumes the position shown in Figure 6, at which time it is rotating in the direction of the arrow *b*. The carriage continues its rotation in the direction of the arrow *b* until it approaches the position shown in Figure 7, and the latches 31 engage stop pins 35 carried by the frame bars 1 and is unlatched, and at which time the gripping frame 17 drops downwardly, thereby releasing the basket after the inverting operation. This operation is facilitated by the engagement of the jarring pins 36 carried by the frame 7 of the table, and which pins are in the path of the pins 37 carried by the carriage. It has been found that the jarring action at the discharge position, shown in Figure 7, causes the loop 27 to force the basket outwardly towards the table 7 incident to the rebound of the basket away from the loop at the time of sudden stoppage of the rotation of the carriage. When the loop is released at the point of discharge, as shown in Figure 7, the counterweight arm 28 swings downwardly to the dotted line position shown in Figure 7 and the latching pins 38 are received in the notches 29 of the counterweight arms 28. Therefore the gripping frame 17 is held in extended position for the return upward rotation in the direction of the arrow *c*, Figure 8. When the carriage again assumes the position shown in Figure 9, the counterweight 28 is in a position to swing out of latching engagement with the pins 38 for again raising the loop 27. The latter part of the movement of the links in the last mentioned operation is facilitated by a further jarring operation, and this is accomplished by means of lugs 40 carried by the opposite end of the carriage from the latching members 31, and which lugs are in the path of stop lugs 41 carried by the frame side 1. It will be seen that the latches 31 only operate on the down stroke of the carriage and they are inoperative but gravity actuated on the up movement, and on the up movement of the carriage that the gripping frame is latched and out of position solely by the counterweighted latching arms 28 cooperating with the lugs 38. It will also be noted that the last jarring operation jars the linkage across center from the position shown in Figure 8 to the position shown in Figure 9 incident to the sudden stoppage of the carriage, momentum of the counterweights, and final downward movement of the counterweights.

It has been found that a machine constructed as above set forth will automatically invert and discharge baskets as they are fed into the rotat-

able carriage and that the counterweighting means will return all of the parts to initial position without the use of motors, springs or the like.

The invention having been set forth what is claimed as new and useful is:

1. A basket inverting machine comprising a frame, a rotatable carriage for receiving and inverting a basket, said carriage having gears at opposite sides thereof, said gears meshing with stationary elongated gear members carried by the frame and counterweighted gear members pivoted to the frame and cooperating with the gears of the carriage for simultaneously rotating said carriage and traversing said carriage on the stationary gear members.

2. A basket inverting machine comprising a frame, a rotatable upwardly and downwardly movable traversing carriage, means for moving said carriage, said means comprising gears carried by opposite sides of the carriage, gear segments carried by the frame and meshing with the carriage gears, counterweighted levers carried by the frame, and gear segments carried by the counterweighted levers and meshing with the gears of the carriage on opposite sides of the gear segments carried by the frame.

3. A device as set forth in claim 2 comprising an upper gripping frame slidably connected to the carriage and adapted to grip a basket and means controlled by the basket when placed in the carriage for forcing said gripping frame against the basket and positively gripping said basket during the rotation of the carriage to an inverted discharge position.

4. A device as set forth in claim 2 wherein the carriage comprises a lower stationary frame, an upper slidable gripping frame, double link connections between the slidable gripping frame and the carriage, the adjacent ends of the links of the link connection being pivoted together and floatable through a line drawn between the outer ends of the links and adapted to swing to opposite sides of said line according to the rotative position of the carriage for gripping the container or releasing the same, a basket engaging loop pivoted to the link connection, a counterweight carried by said loop and adapted to maintain the same raised until forced downwardly by the placing of the basket in the carriage, latching means for holding the slidable frame in engagement with the basket on the down rotation of the carriage, said counterweight having means whereby a latch connection is made with the carriage during the upward rotation of the carriage.

5. The combination with a rotatable basket inverting carriage, said carriage having a stationary frame for engaging one end of a basket, a slidable gripping frame for engaging and gripping the other end of the basket, of means for gripping said basket and releasing the same after a partial rotation of the frame, said means comprising a double link connection between the slidable gripping member and the frame, the adjacent ends of the links of the double link connection being pivoted together at a point adapted to bisect a straight line between the pivotal points at the outer ends of the link connection, latching means for holding the slidable frame in gripping position during downward movement of the carriage, a basket engaging loop pivoted on said double link connection and floatable therewith, a

counterweight carried by said loop for normally maintaining the loop raised, a latching element carried by the counterweight, a latching element carried by the carriage, said latching elements being positioned whereby they will interengage upon the initial upward rotation of the upper end of the carriage, said latching element forming means for holding the gripping frame in outer position when the slidable gripping frame is in lowered position and is returning to the basket receiving position.

6. A device as set forth in claim 5 wherein the sides of the carriage are formed from spaced bars, said spaced bars forming guide ways for the slidable gripping frame.

7. A device as set forth in claim 5 including stop members on opposite sides of the link connections for limiting the freedom of movement of the inner ends of its links.

8. A device as set forth in claim 5 including spaced bars carried by opposite sides of the lower frame, said slidable gripping frame being slidably mounted between said spaced bars, one end of the double link connection being anchored to one of said spaced bars, gears carried by said spaced bars and means cooperating with said gears for imparting partial rotation in opposite directions to said carriage from a basket receiving position to an inverted basket discharging position.

9. A device as set forth in claim 2 wherein the carriage comprises a lower stationary frame, an upper sliding gripping frame, latching means for holding said slidable gripping frame in engagement with the basket upon the downward rotation of the carriage and for releasing the same at the bottom of the rotation and latching means carried by the carriage for holding the gripping frame in extending position when the carriage is rotated upwardly from discharge position to initial basket receiving position.

10. A basket inverting machine comprising a stationary frame, a rotatable basket gripping carriage carried by said frame and movable upwardly and downwardly and rotatable on a transverse axis, pivoted operating levers carried by the frame, said levers terminating in rack bars to one side of the axis of the carriage, gears carried by said carriage on its axis and meshing with said rack bars, stationary rack bars carried by the frame and meshing with the carriage gears opposite the first mentioned rack bars, said rack bars and gears forming means whereby said carriage may be moved downwardly and upwardly and simultaneously rotated from a basket receiving position to a basket discharge position, and vice versa.

11. A device as set forth in claim 10 including means carried by the carriage whereby the basket may be placed in an off-center position to one side of the axis thereof, counterweight means carried by the lever, said off-center positioning of the basket forming means whereby the carriage will be rotated in one direction against the counterweight means incident to the weight of the basket.

12. A device as set forth in claim 10 including means cooperating with the levers for returning said levers and the carriage to initial loading position when the basket is discharged therefrom at the discharge position.

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