May 8, 1928. 1,668,837

M. E. AVERA

FRUIT AND VEGETABLE PACKING MACHINE

Filed June 29, 1927 2 Sheets-Sheet 1

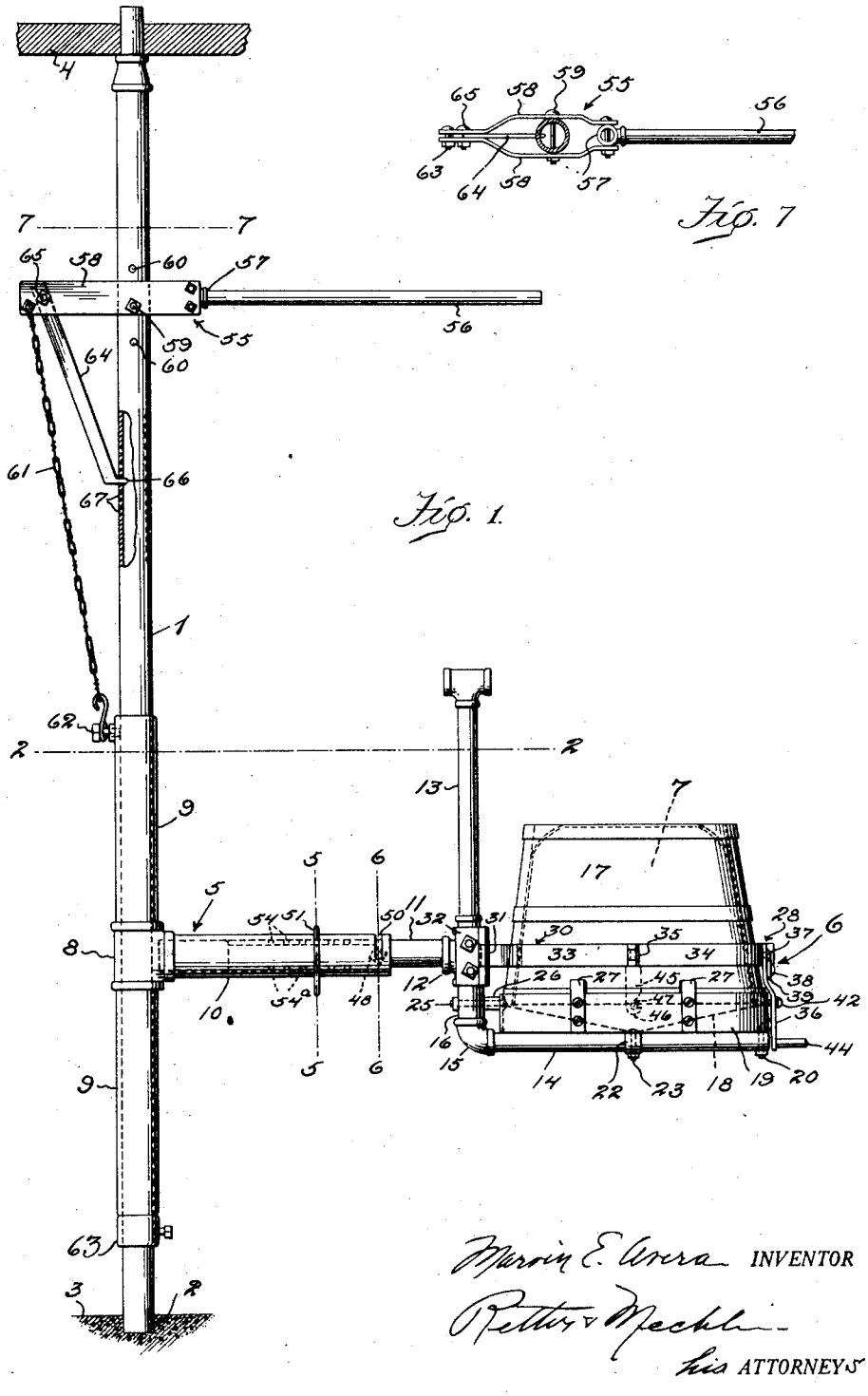


Fig. 7

Fig. 1.

Marvin E. Avera INVENTOR

Pettis & Mechlin

his ATTORNEYS

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Fig. 2

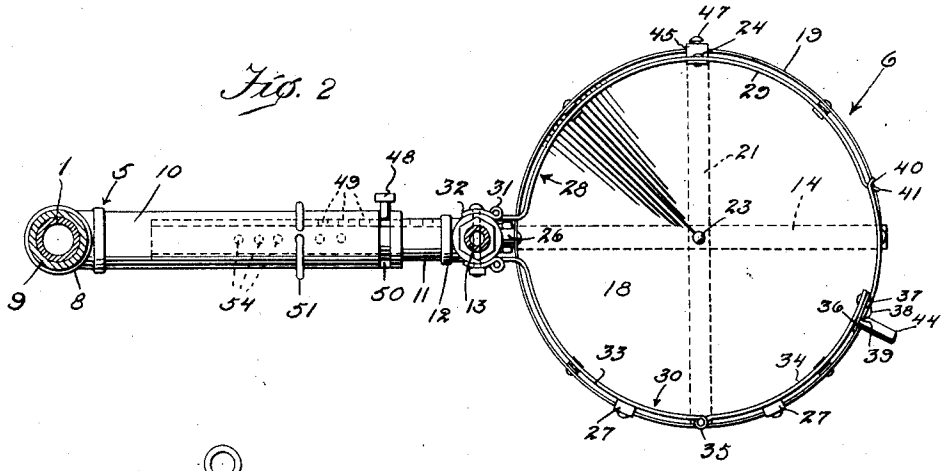
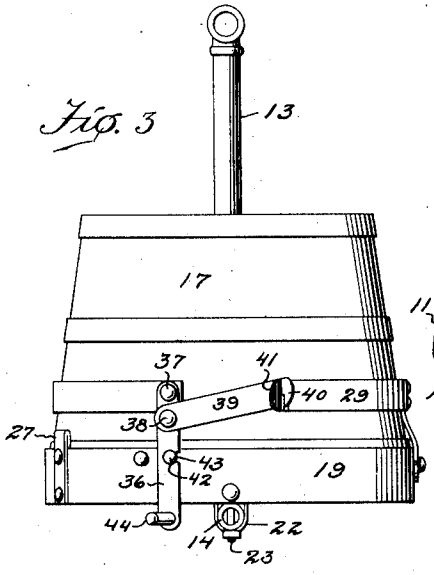


Fig. 3



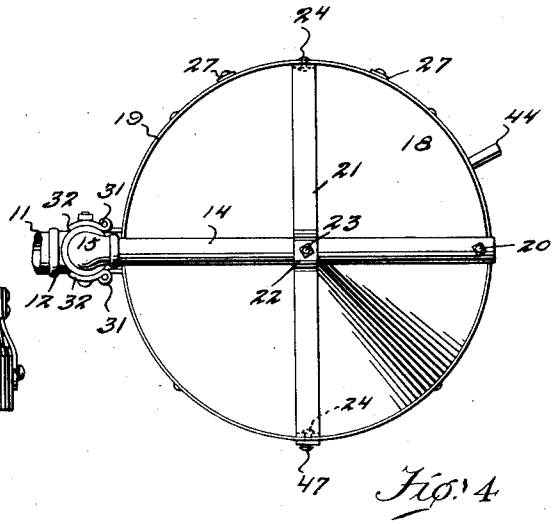


Fig. 4

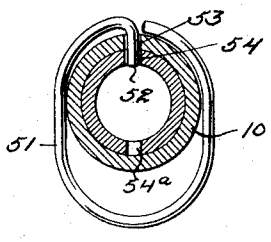


Fig. 5

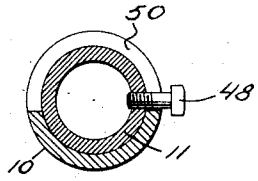


Fig. 6

Marvin E. Avera INVENTOR

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Patented May 8, 1928. 1,668,837

UNITED STATES PATENT OFFICE.

MARVIN E. AVERA, OF TAMPA, FLORIDA.

FRUIT AND VEGETABLE PACKING MACHINE.

Application filed June 29, 1927. Serial No. 202,398.

The invention relates to the packing art and has special reference to the packing of fruits, vegetables and similar commodities in receptacles or containers for transportation or storage.

The principal object of the invention, generally stated, is to provide a machine for facilitating the handling of shipping receptacles or containers during the operation of filling and otherwise preparing them for subsequent treatment.

It is well known that in accordance with modern systems of handling more or less perishable commodities, the articles are packed or filled within containers or receptacles such as boxes, baskets and crates and it is customary, or at least a common habit among growers and packers, to place a layer of select fruit, vegetables or the like at the top for display purposes so that the goods will have a highly attractive appearance when the cover is removed from the container. The usual method of packing is to place a layer of fruit, most attractive side down, upon a support upon which is set a retainer which may be a metal shell or a liner formed of cardboard or some other suitable cheap material and of a size to fit within a shipping container such as a box, basket or crate. The ordinary run of fruit or other commodity is then poured, packed or otherwise placed within this shell or liner, and after the same is filled to its capacity the box, crate or basket is placed thereover in inverted position. The next step is to invert the assembly so as to bring it into a normal or upright position with the open side at the top. If a metal shell is used it is then removed, and if a liner is employed it may be left in place or removed at the option of the packer and, regardless of which of these plans is adopted, a cover is then placed over the open side and secured in some suitable manner. It is usually the practice to shake the support and retainer thereon either during or after the filling operation for the purpose of effecting settling. This shaking step and the turning of the inverted filled container into a normal or upright position has ordinarily required manual labor which is very fatiguing and more or less slow and accompanied by a certain amount of risk of dropping the filled container and consequently bruising the fruit or vegetables with the possible result that the goods may be unmarketable.

It is with the above facts in view that I have designed the present invention which has for an object the provision of a machine by means of which the above described operation may be carried out mechanically instead of by entirely manual means, it being further contemplated that power mechanism might be provided for performing some of the more arduous steps.

An important object of the invention is to provide a machine of such construction as to hold a support and retainer, either a shell or liner, thereon during filling thereof with fruit or other similar articles and provided with means for clamping and supporting a basket or crate, or similar container, placed over and about the filled retainer, the machine being moreover provided with means whereby the filled retainer may be shaken to effect settling during the filling action and the entire assembly turned over ready for heading or covering.

A still more specific object of the invention is to provide a machine of this character having novel means for clamping and holding a container during the inverting step and means whereby not only vertical reciprocation may be imparted to the clamp carrier for effecting settling of the packed articles, but also whereby the carrier may be swung laterally to facilitate depositing the filled container onto a conveyor or chute.

Still another object of the invention is to provide a machine of this character in which the container holder may be adjusted to a desired height above the floor or other support to suit the convenience of the operator depending upon his stature.

Another specific object is to provide a machine of this character in which most of the parts may be formed of pipe sections together with ordinary fittings therefor, the purpose being to obtain strength and rigidity with comparatively little weight.

The invention further contemplates the provision of a machine of this type capable of being used in connection with any ordinary or preferred variety of container and retainer, no special equipment in this respect being required, the various moving parts being, moreover, related in such manner and provided with such adjustments as

to meet any and all conditions which may exist or circumstances that may arise.

An additional object of the invention is to provide a machine of this character which will be simple and inexpensive to manufacture, easy to set up and operate, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of the complete machine,

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1,

Figure 3 is a front elevation of the container support and clamp,

Figure 4 is a bottom plan view thereof,

Figure 5 is a detail cross sectional view taken on the line 5—5 of Figure 1,

Figure 6 is a similar view taken on the line 6—6 of Figure 1, and

Figure 7 is a detail cross section taken on the line 7—7 of Figure 1.

Referring more particularly to the drawings I have shown the device as comprising a stationary upright support 1 of any desired length and of suitable size and material. In actual practice this support may conveniently be formed as a length of pipe and it may be mounted in any desired manner as for example by having its lower end engaged within a socket 2 in or upon the floor 3 or other support, and its upper end engaged through or otherwise connected with a beam, bracket or the like indicated at 4.

The relatively movable portion of the mechanism is here represented as comprising a carriage indicated generally by the numeral 5 upon which is mounted the means indicated at 6 for holding and handling the retaining shell or liner 7 here represented as the latter. The carriage 5 is intended to slide vertically upon the stationary support 1 and while it may be constructed in any one of several ways, it is here disclosed as comprising a T 8 with the opposite sides of which are connected pipe sections or tubular members 9 slidable upon the member 1, the carriage further including a tubular member or pipe section 10 extending horizontally from and connected with the T, the member 10 constituting a bearing and support for an arm 11 forming part of the holding and clamping means 6 and likewise conveniently constructed as a suitable length of pipe carrying a T 12 with which is connected a pipe section 13 or its equivalent serving as a handle for effecting rotation of the arm 11 during the carrying out of the operation of packing the retainer 7. The device 6 further includes a horizontally extending arm 14 connected with the arm 11 in some suitable manner as for instance by means of the elbow 15 and short pipe section 16 illustrated, the latter being connected with the T 12

In order that the retaining shell or liner 7 and the container 17 to be placed thereover in a certain stage in the operation may be supported properly, I provide a pan 18 upon the arm 14 and secured thereto in some suitable manner. The pan is represented as being of circular form inasmuch as the container to be filled in the present instance is shown as a round basket but it should be distinctly understood that in case the intention is to pack receptacles of a different type, such as a box or crate, the pan would necessarily be of corresponding shape. However, this detail, though mentioned, is not believed to be one of any material importance. Regardless of the question of shape, the pan is preferably provided at its periphery with a flange or ring portion 19 which may be integral with the bottom or formed separately therefrom and attached thereto, all such variations being of course within the scope of the invention. The means for mounting the pan upon the arm 14 may consist of a securing element such as a bolt 20 passing through the arm and having a curved shape so as to pass likewise through the flange or ring 19. In addition to this I preferably provide a transverse bracket-like member 21 having a saddle portion 22 embracing the arm and fastened thereto as by a bolt or the like 23, the ends of this bracket member being vertically extended and riveted or otherwise suitably secured to the flange or ring 19 as at 24. To provide additional holding means I may employ a bolt 25 passing through the member 16 and ring or flange 19, a spacing sleeve 26 being interposed for maintaining the pan in the proper relation to the other parts.

As stated above, the pan 18 is intended to serve as a support for a retaining shell or liner, as the case may be, and it is the intention that the flange or ring 19 extend upwardly beyond the top of the pan so as to retain such a shell or liner in position. As additional guide means for reducing likelihood of the shell or liner being pushed too far or off from the pan when initially placed in position thereon, I may provide upstanding guides 27 suitably mounted on the flange as indicated in Figure 1.

As the intention is to invert the container which is placed over the retainer after filling of the latter, it becomes necessary to provide some means for positively holding the container during the inverting step. As a consequence, I provide a clamping device which is here represented as including a con-

tractile ring structure indicated generally at 28 and including arcuate sections 29 and 30 hinged at 31 upon leaves or plate elements 32 secured in some suitable manner to the T 12. The section 30 is disclosed as formed of two sections or parts 33 and 34 hinged or pivoted together at 35. The means for contracting this clamping ring structure about the container preferably includes a lever 36 pivoted at 37 upon the section or part 34 and having pivoted thereto at 38 a link 39 having a slotted or hooked end 40 cooperatively engaging the correspondingly hooked or slotted end 41 of the section 29 as clearly illustrated in Figure 3. For holding the lever 36 in depending position with the clamp in contracted relation, I have shown a headed keeper 42 mounted on the ring 19 and engaged within a notch 43 in one edge of the lever 36. To facilitate manipulation the lever is shown as equipped with a handle 44. For bracing the section 29 of the clamping member for preventing it from dropping down prior to the tightening of the clamp, it may be equipped at one side with a depending latch 45 terminating in a hook 46 engaging with a headed stud 47 or the like projecting from the flange or ring 19.

The entire assembly 6 is intended to be rotatable with respect to the carriage of which it forms a part and for this reason the arm 11 is rotatably mounted within the tubular member 10. Furthermore the intention is that the arm 11 be extensible with respect to the tubular member. The rotary movement may be prevented at times by means to be described but even when permitted it is intended to be limited as by means of a bolt 48 engageable within a selected one of a plurality of holes 49 in the arm 11 and extending through a slot 50 in the member 10, the ends of the slot being engageable by the bolt for the purpose of limiting the movement of the entire supporting structure 6 in both directions. Clearly, the provision of the holes 49 will permit the desired degree of extension of the arm 11. In order to hold the structure 6 against movement, as when filling a shell or liner supported on the pan 18, I provide a locking means which may conveniently comprise an elongated loop or link 51 engaged about the member 10 and having a finger 52 thereon passing through a hole 53 in the member 10 and engaging within a selected one of a plurality of holes 54 in the arm 11. Clearly, the adjustment of this locking member must correspond with the adjustment of the bolt 48 and it is evident that when the locking member has the finger 52 engaged through one of the holes 54 and the hole 53 the arm 11 will be held stationary with respect to the member 10, it being necessary to lift the link or loop to withdraw the finger 52 from the hole 54 within which it is engaged whenever it is desired to rotate the supporting structure 6 for the purpose of inverting the container placed over the filled shell or liner. Of course the lever 13 is for the purpose of effecting the inverting movement.

After such a shell or liner has been filled or is being filled it is desirable to shake or jolt it or its support for the purpose of causing the fruit, vegetables or other commodity to settle so that the shell or liner may be filled to the maximum extent. For this reason I have provided means whereby the carriage 5 may be reciprocated vertically, the means being conveniently a lever structure 55 mounted on the stationary support 1 and operatively connected with the carriage. In the present instance this means is shown in detail as comprising an elongated hand lever 56, which may be a section of pipe secured to a T 57 to opposite sides of which are secured plate or bar members 58 adapted to be pivoted at a selected height above the floor or other support as by means of a bolt 59 passing through the plate or bar elements 58 and through a selected one of a plurality of holes 60 in the member 1. A chain or other flexible member 61 is shown as connected with the plate or bar members 58 and with a bolt or other securing element 62 at the upper end of the uppermost tubular member 9. A stop collar 63 may be provided on the post or support 1 for maintaining the carriage at a certain normal position. Obviously, by grasping the hand lever 56 and alternately pulling it down and permitting it to reascend the carriage 5 and all the parts supported therefrom will be moved up and down to shake the articles in the shell or container.

When it is desired to hold the carriage stationary at a level other than its lowest position with the lower member 9 in engagement with the stop collar 53, this may be accomplished by means of the latch device I have provided, this latch device including an elongated latch element 64 pivoted at 65 at its upper end and having its lower end formed with a reduced extension or toe 66 engageable within a selected one of a plurality of openings 67 in the upright member 1.

In the use of the device, the initial position of the parts is such that the carriage is preferably in the lowermost desired position with the assembly 6 arranged with the pan 18 lowermost and the lever 13 extending vertically. The lever 36 is of course disengaged from the keeper 42 and the link 39 disengaged from the hooked or slotted end 41 of the clamp section 29 so that the clamp may be opened and be disposed in non-obstructing relation to the pan. The operator then places upon the pan the shell or

liner 7 to be filled with whatever commodity is to be prepared for shipment. A layer of select articles is then packed carefully by hand upon the pan, subsequently to which the remaining fruit, vegetables or the like may be dumped, poured or otherwise placed within the shell or liner. Either during or after this filling operation the operator grasps the lever 56 and moves it alternately up and down to reciprocate the carriage and jar or shake the articles to effect settling thereof. During these operations it is intended that the link or loop 51 be disposed with its finger 52 in locking engagement with the tubular member 10 and arm 11 for the purpose of preventing any accidental turning of the supporting structure 6. The liner or shell having been thus filled, the operator places thereover the container 17 in inverted position and after this the sections 29 and 30 of the clamp are swung toward each other, the hooked end 40 of the link 39 engaged with the hooked or slotted end 41 of the clamp section 29 and the lever 36 moved to engage the notch 43 therein with the keeper 42 so as to hold the clamp in firm embracing engagement upon the container. The operator then lifts the link or loop 51 into its released position and, grasping the lever 13, rotates the structure 6 to invert it so that the container 17 will be disposed in normal or upright position, in which it may be locked by engaging the finger 52 in the proper one of a second series of holes 54ª located diametrically opposite the holes 54. Clearly, there should be some type of support located at a convenient point upon which the filled container may then be deposited. Inasmuch as the entire carriage structure 5 is rotatable with respect to the post or upright 1 this support may be located at some distance away so that when the entire carriage is swung in an arc the filled container will be brought over whatever support is provided. In case the work is done on a large scale it is obvious that a travelling conveyor may constitute the support though in a smaller plant it is apparent that it may consist simply of some stationary device. Regardless of this detail, it will be seen that when the filled container is in proper position over whatever support is provided, the lever 36 is disengaged from the keeper 42 to release the clamping action so that the link 39 may be released and the clamp opened out of engagement with the container. The lever 56 may then be pulled down to lift the carriage and the supporting pan and clamp structure carried thereby to a sufficient height to clear the container, after which the carriage is swung back to its original position and the structure 6 returned to normal ready for the next filling operation.

If the retainer 7 consists of a metal or other shell of a permanent nature, such shell should then be withdrawn from about the fruit or vegetables within the container, but if the retainer consists merely of a cardboard or other similar liner it may be left in the container and will actually be of benefit inasmuch as it will serve to cushion the commodity and prevent bruising thereof during shipment. Regardless of which type of retainer is used the cover, of any suitable kind desired is placed upon and secured to the container which is then ready for shipment.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed and very easily operated device which will be a great saver of time and labor in the packing of fruit, vegetables and other articles in containers such as are in popular use. Ample provision has been made for any and all adjustments which may be found desirable. It is believed that all the details of construction and the operation will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that the disclosure is merely an exemplification of the principles involved as the right is reserved to make all such changes in the details of construction as will widen the field of utility and increase the adaptability of the device provided such changes constitute no departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, I claim:

1. In a packing machine of the character described, an upstanding stationary support, a carriage vertically slidably and rotatably mounted thereon, and a combined supporting and clamping device rotatably mounted upon and forming part of the carriage.

2. In a packing machine of the character described, an upstanding stationary support, a carriage vertically slidably and rotatably mounted thereon, a combined supporting and clamping device rotatably mounted upon and forming part of the carriage, and means for locking said supporting and clamping device against movement.

3. In a packing machine of the character described, an upstanding stationary support, a carriage vertically slidably and rotatably mounted thereon, a combined supporting and clamping device rotatably mounted upon and forming part of the carriage, and means connected with the carriage for reciprocating the same upon said stationary support.

4. In a packing machine of the character described, an upstanding stationary support, a carriage vertically slidably and rotatably mounted thereon, a combined supporting

and clamping device rotatably mounted upon and forming part of the carriage, and a lever device pivoted upon said stationary support and connected with the carriage for moving the same vertically upon the support.

5. In a packing machine of the character described, an upstanding stationary support, a carriage vertically slidably and rotatably mounted thereon, a combined supporting and clamping device rotatably mounted upon and forming part of the carriage, a lever device pivoted upon said stationary support and connected with the carriage for moving the same vertically upon the support, and latch means connected with said lever and cooperating with the stationary support for holding the carriage in a vertically adjusted position.

6. In a packing machine of the character described, a stationary upstanding support, a carriage mounted thereon, a combined supporting and clamping device, and an arm carried by said combined supporting and clamping device and rotatably mounted in the carriage, and means for limiting rotatable movement of the arm with respect to the carriage.

7. In a packing machine of the character described, a stationary upstanding support, a carriage mounted thereon, a combined supporting and clamping device, and an arm carried by said combined supporting and clamping device and rotatably mounted in the carriage, means for limiting rotatable movement of the arm with respect to the carriage, and means cooperating with the carriage and arm for locking the latter against rotation.

8. In a packing machine of the character described, a stationary upstanding support, a carriage mounted thereon, a combined supporting and clamping device, and an arm carried by said combined supporting and clamping device and rotatably mounted in the carriage, means for limiting rotatable movement of the arm with respect to the carriage, and means cooperating with the carriage and arm for locking the latter against rotation, said limiting means and said locking means being adjustable longitudinally of the arm for permitting extension or retraction thereof with respect to the carriage.

9. In a packing machine of the character described, a stationary upstanding support, a carriage mounted thereon, and a combined supporting and clamping device rotatably mounted on the carriage and including a pan and a separable clamp in spaced relation thereto.

10. In a packing machine of the character described, a stationary support, a carriage mounted thereon and including a tubular bearing member, and a combined supporting and clamping device rotatably mounted with respect to the carriage and including a lever, a supporting arm carried by the lever, a second arm having limited rotatable movement within said bearing member, a pan mounted on said first named arm, and a clamp carried by the lever and spaced from said pan.

11. In a packing machine of the character described, a stationary support, a carriage mounted thereon and including a tubular bearing member, and a combined supporting and clamping device rotatably mounted with respect to the carriage and including a lever, a supporting arm carried by the lever, a second arm having limited rotatable movement within said bearing member, a pan mounted on said first named arm, a clamp carried by the lever and spaced from said pan, the clamp including pivoted sections, means for connecting the sections, and a contracting lever connected with said connecting means for urging the clamping sections together.

12. In a machine of the character described, the combination of an upstanding stationary support, a carriage rotatable and slidable thereon, means mounted on the carriage and having limited rotary movement with respect thereto, said means being adapted to support a retainer and container, and means adjacent said means for clamping a container.

13. In a packing machine of the character described, the combination of stationary supporting means, movable supporting means slidable and swingable with respect to the stationary supporting means and embodying an invertible combined support and clamp.

14. In a machine of the character described, the combination of a stationary supporting means, movable means rotatable and slidable with respect to the stationary means and embodying supporting and clamping means, means for holding said last named means stationary with respect to the second named means, and means for effecting inversion of the last named means with respect to the second named means.

In testimony whereof I affix my signature.

MARVIN E. AVERA.