July 19, 1966 C. W. BOPP ETAL 3,261,637

SELF-RELEASING PICKUP UNIT

Filed March 13, 1964 3 Sheets-Sheet 1

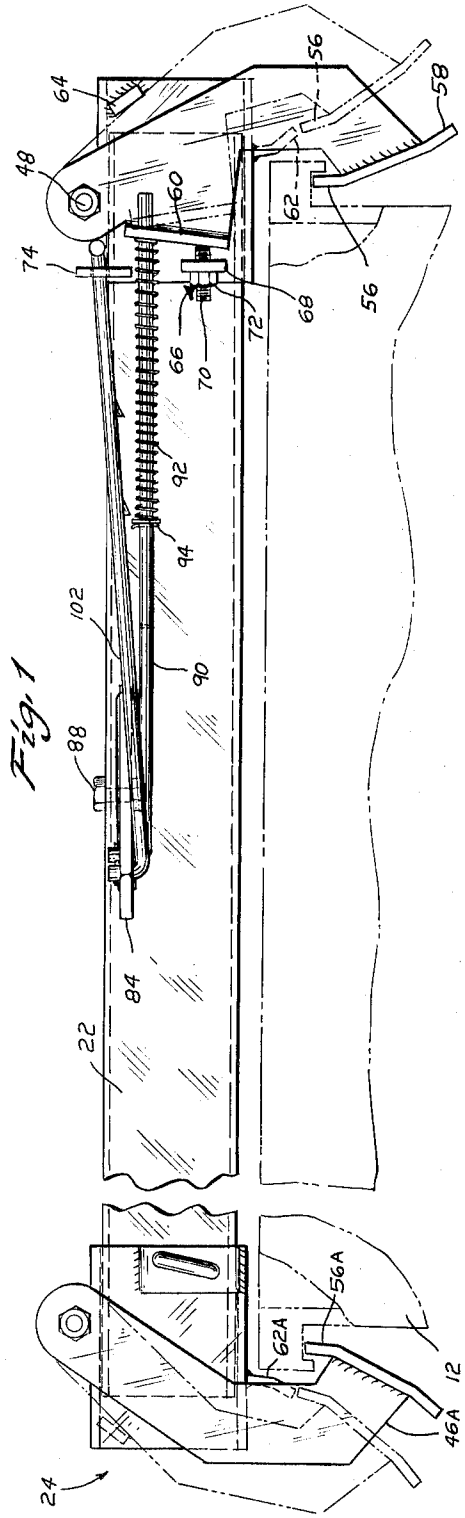



Fig. 1

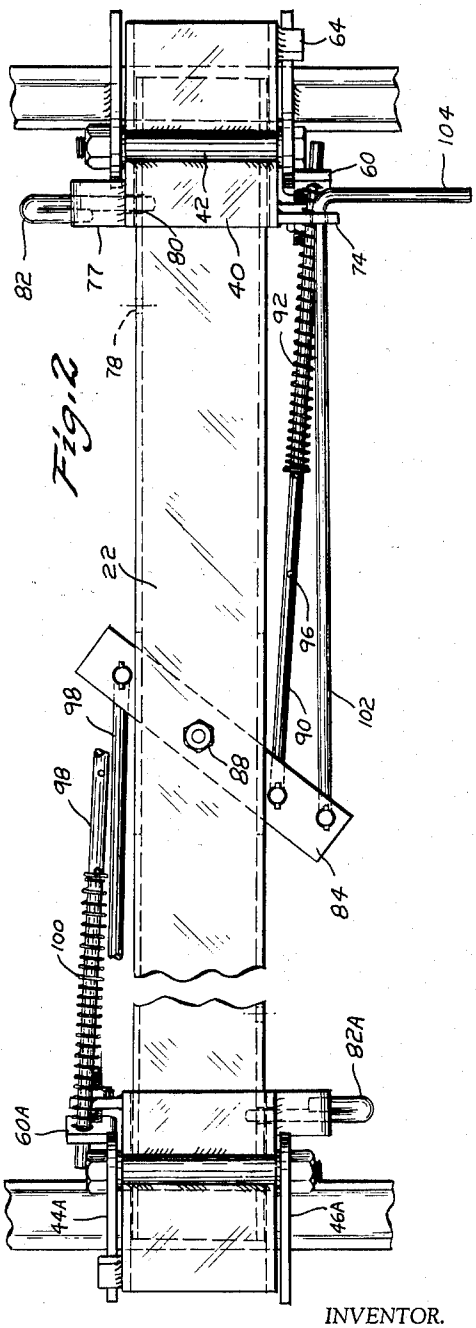


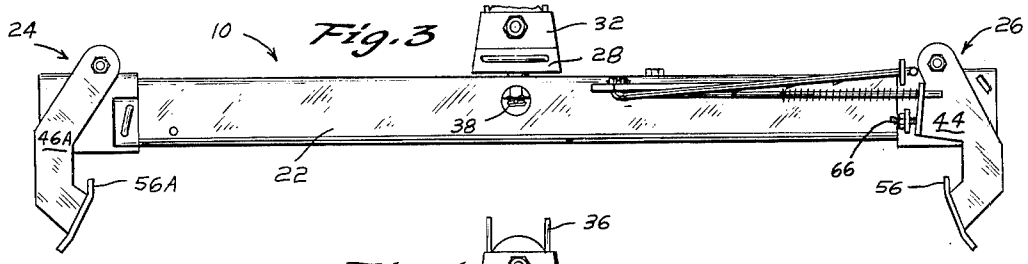

Fig. 2

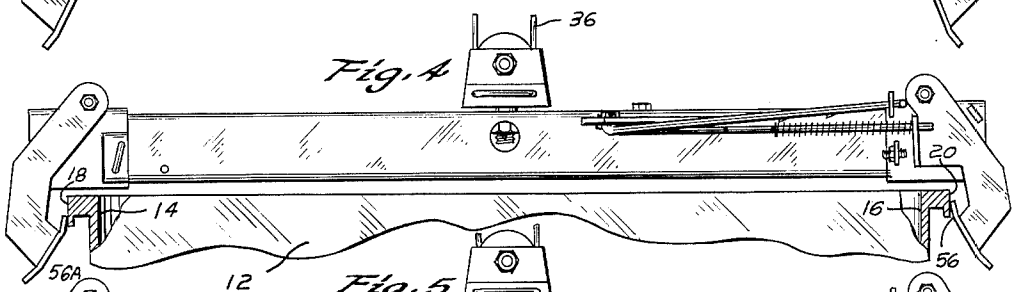
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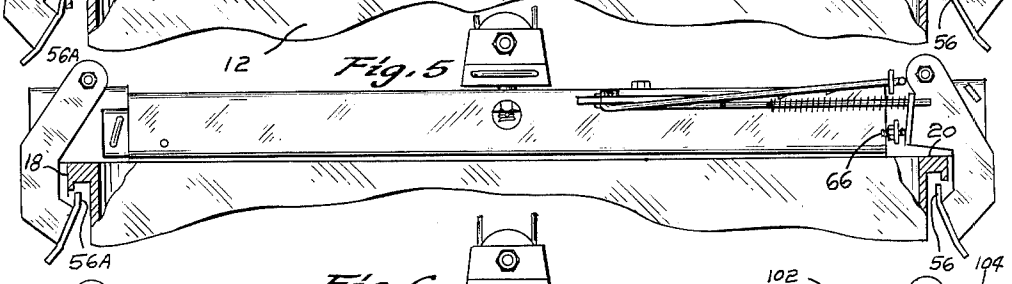
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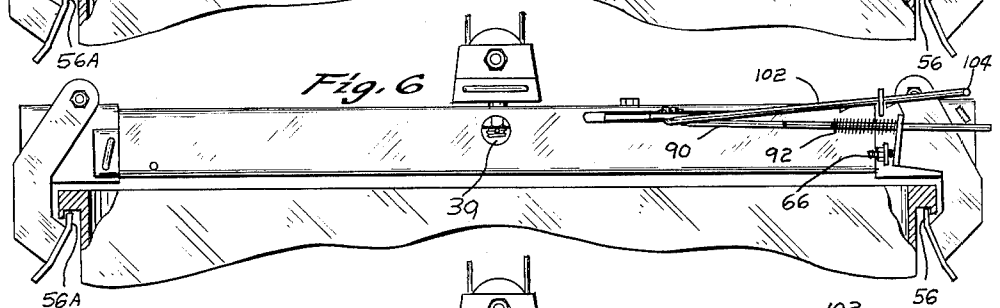
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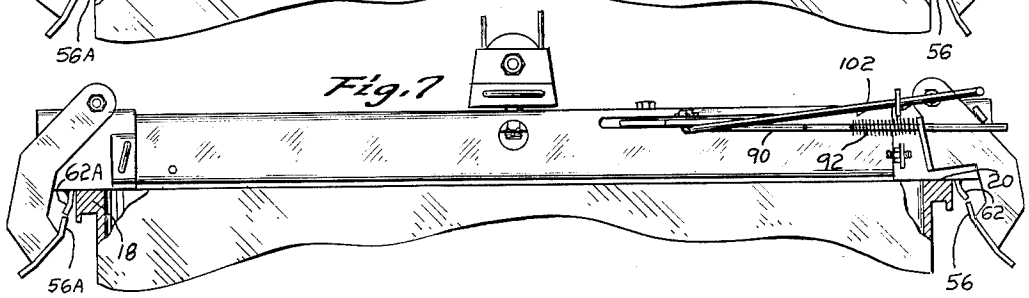
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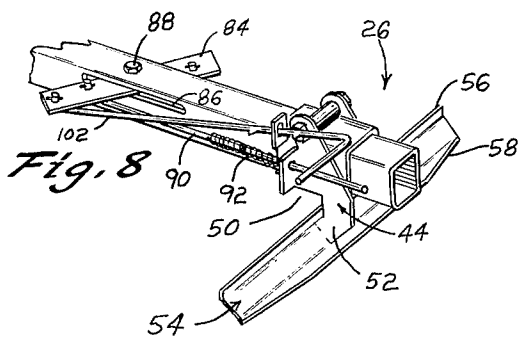



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SELF-RELEASING PICKUP UNIT

Filed March 13, 1964 3 Sheets-Sheet 3

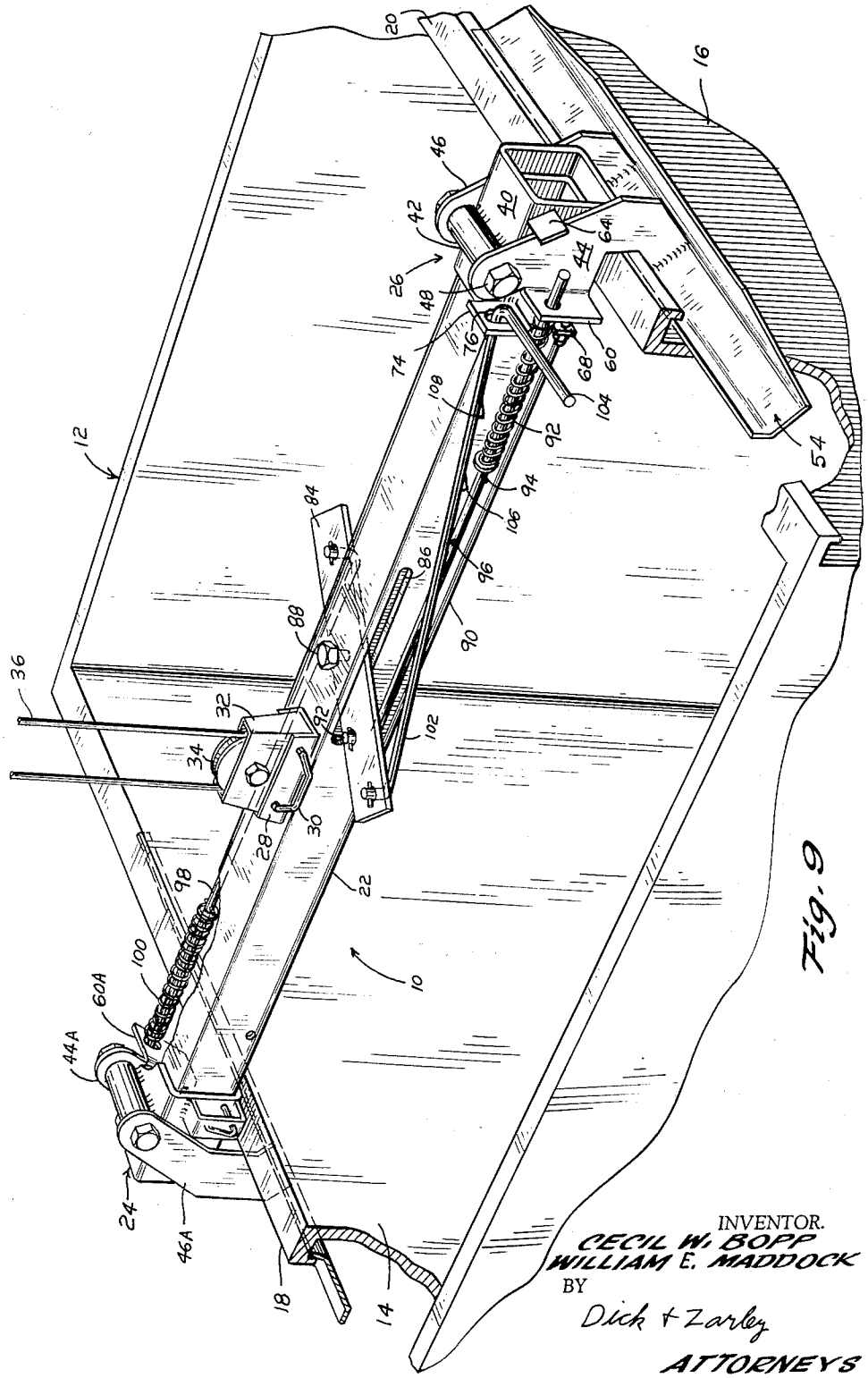



Fig. 9

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# SELF-RELEASING PICKUP UNIT

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16 Claims. (Cl. 294—81)

This invention relates to a self-releasing pickup unit which may be carried by a crane or the like that is well suited for moving containers and packages short distances.

It is therefore one of the objects of this invention to provide a self-releasing pickup unit which may be readily clamped to a container or package for transporting wherein after the container or package is lowered to a supporting surface the pickup unit will automatically be disengaged thereby eliminating the need for manually separating the pickup unit from the object being moved.

It is another object of this invention to provide a self-releasing pickup unit which may be carried by any type of lifting mechanism including cranes or the like.

A still further object of this invention is to provide a self-releasing pickup unit which has adjustable clamp assemblies to fit different sized containers and packages.

A still further object of this invention is to provide a self-releasing pickup unit wherein when the unit is released from the container or package means is provided for preventing accidental engagement between the clamp assemblies of the pickup unit with the hook means on the container or package.

A more particular object of this invention is to provide a self-releasing pickup unit which may be lowered onto a container or package wherein the clamping assemblies will automatically move into locking engagement with hook means on the container or package.

A still further particular object of this invention is to provide a self-releasing pickup unit wherein the clamp assemblies move together towards and away from each other.

A further object of this invention is to provide a self-releasing pickup unit which is simple in design, economical to manufacture and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings, in which:

FIG. 1 of the drawings is a side elevation view of the self-releasing pickup unit showing in particular the clamp assemblies in their solid line position in locking engagement with hook means on a milk cart and also the clamp assemblies in their dash line positions disengaged from the milk cart;

FIG. 2 is a top plan view of only the self-releasing pickup unit;

FIGS. 3 through 7 are reduced in size side elevation views of the self-releasing pickup unit illustrating it in sequential positions as it is secured to the milk cart and then automatically released therefrom;

FIG. 8 is a fragmentary perspective view of the self-releasing pickup unit showing in particular the lever means for cocking the means which yieldingly biases the clamp assemblies to a position disengaged from the milk cart or the like; and

FIG. 9 is a top fragmentary view of the self-releasing pickup unit in use mounted on a milk cart.

The self-releasing pickup unit of this invention is generally referred to by the reference numeral **10** in FIG. 9 and is shown clampingly engaging a milk cart **12**.



The milk cart **12** is shown as an enclosed container having a pair of side walls **14** and **16** opposite each other with inverted U-shaped channels **18** and **20** respectively extending along the upper peripheral edges thereof.

The self-releasing pickup unit **10** has a main elongated channel frame member **22** with adjustable clamp assemblies **24** and **26** mounted at opposite ends. As is apparent and will be described in detail hereinafter, the clamp assemblies **24** and **26** are generally similar.

On the top side of the frame member **22** is a channel shaped member **28** which is detachably connected by a pin **30** to a housing **32** containing a sheave **34**. A cable **36** extends around the sheave **34** and is suitably connected to the boom of a crane or the like (not shown). As is more clearly illustrated in FIGS. 3 through 7, the channel member **28** is rotatably connected to the main frame member **22** by a bolt **38** which is accessible in the channel of the frame **22** through an opening **39** in the side wall thereof.

The clamp assembly **26** at the right end of the frame **22** includes an enclosed channel sleeve member **40** which slidably embraces the main frame **22**. On top of the sleeve **40**, a bearing sleeve **42** is welded and extends transversely of the frame **22**. A pair of arm plates **44** and **46** are disposed on opposite sides of the sleeve **40** and are pivotally connected at their upper ends to the bearing sleeve **42** by a bolt **48**. As is best shown in FIG. 8, the plate arm **44** is provided with a cut-out portion **50** and terminates in a portion **52** extending downwardly and inwardly along the main frame **22**. The plate arm **46** has a similar cut-out portion **50** and end portion **52**. The end portions **52** of the plate arms **44** and **46** are welded to a hook-like plate member **54**. The hook plate member **54** is formed with flanges **56** and **58** which extend upwardly and outwardly of the plate arm portion **52**.

Adjacent its pivotal connection to the bearing sleeve **42**, the plate arm **44** is provided with an ear **60** extending perpendicular thereto.

As best shown in FIG. 1, the lower side of the sleeve channel **40** has a guide flange plate element **62** which extends downwardly and outwardly thereof. In the upper and outer corner of the side wall of the sleeve **40** facing the plate arm **44**, a stop element **64** extends perpendicularly outwardly therefrom and serves to limit the upward movement of the plate arm **44** and consequently the hook-like plate element **56**. An adjustable stop **66** is secured to the same sleeve side wall and comprises a plate element **68** having a bolt **70** extending therethrough and adjustably secured by a nut **72**. The outer end of the bolt **70** is adapted to bear against the ear **60** formed on the plate arm **44**. Directly above the adjustable stop **66** on the same sleeve side wall is another ear **74** which has an elongated opening **76** formed therein.

The opposite vertical side wall of the sleeve **40** has a U-shaped plate element **77** secured by its free ends thereto. The base portion of the clip **77** has a pair of holes formed therein, one of which is adapted to be aligned with one of several holes **78** or **80** formed in the side wall of the main channel member **22** as shown in FIG. 2. A J-shaped pin **82** is detachably mounted in the U-shaped element **77** with its longest leg extending into the hole **80** and its shorter leg being received in the other hole formed in the base portion of the U-shaped element **77**.

As indicated above, the component construction of the clamp assembly **24** is similar to that of clamp assembly **26** but it is noted that clamp assembly **26** has the additional ear element **74**. Otherwise, the assemblies are the same and are interchangeable. Components of the clamp assembly **24** having corresponding parts in clamp **26** are referred to in the drawings by the same reference numerals but with the addition of the subscript letter A.

Between the sheave housing **32** on top of the main

frame 22 and the clamp assembly 26, a link plate member 84 is received in elongated longitudinal slots 86 in the side walls of the channel member 22 and is pivotally connected by a bolt 88 to the top channel wall. A rod member 90 having a right angle end portion 92 pivotally connected to one end of the link member 84 extends along the channel frame 22 and has its other end slidably received in a slot formed in the ear 60 on the plate arm 44. A coil compression spring 92 embraces the rod 90 and bears against the ear 60 and a pin 94 extending through the rod. The pin 94 may be moved to a second position in an aperture 96 when the clamp assembly 26 is moved inwardly on the frame 22 to a position where the J pin 82 is received in the pin hole 78. Thus the pressure on the ear 60 forcing the hook-like plate member 54 outwardly is the same whether the clamp assembly 26 is in its outermost position or the inner position on the channel 22.

A second rod 98 which is similar to the rod 96, but longer, is pivotally connected to the other end of the link member 84 and extends slidably through an aperture formed in the ear 60A on the plate arm 44A. Also, a compression spring 100 is provided on the rod 98 to yieldingly bias the clamp plate arms 44A and 46A outwardly. These springs 92 and 100 are normally relaxed until the link member 84 is pivoted a predetermined distance in a counterclockwise direction as viewed in FIG. 9. To accomplish the pivotal movement of the link member 84, a third rod 102 is pivotally connected to the link member 84 adjacent the rod 90. The other end of the rod 102 extends through the elongated opening 76 in the ear 74 on the channel member sleeve 40. The rod 102 then terminates in a lever portion 104 for manual operation thereof. A pair of dogs 106 and 108 are formed on the bottom face of the rod 102 for selective engagement with the base portion of the slot 76. Thus when the clamp assemblies 24 and 26 are in their outward position as shown in FIG. 9, the lever 104 need only be moved to a position wherein the dog 108 engages the slot 76, but if the clamp assemblies 24 and 26 are moved inwardly then the lever 104 would be moved still farther for the dog 106 to engage the slot 76 thereby maintaining the same spring pressure on the clamp assemblies as existed when the clamp assemblies were in their outward positions.

Thus in operation it is understood that initially the lever 104 will not be cocked and thus no spring pressure will be placed on the clamp assemblies 24 and 26. Instead these clamp assemblies will move by gravity to a first position hanging vertically downward as shown in FIG. 3. As the pickup unit 10 is lowered onto the cart 12, as shown in FIG. 4, the hook-like plate elements 56 and 56A bear against the outer face of the U-shaped channels 18 and 20 thereby pivoting the plate assemblies 24 and 26 outwardly. Once the top edge of the hook-like plate elements 56 and 56A are below the lowest point on the channels 18 and 20, the hooks 56 and 56A may move back to their normal first position (FIG. 5). Next, the power means not shown carried by a boom mounted on a crane or the like is operated to raise the pickup unit 10 thereby moving the hook plates 56 and 56A into locking engagement with the channels 18 and 20. With the clamp assemblies 24 and 26 locked to the cart 12 the lever 104 is then cocked by moving it to a position with the appropriate dog 106 or 108 in engagement with the slot 76 depending on whether the clamp assemblies 24 and 26 are in their inner or outer positions on the frame 22. This places forces on the clamp assemblies 24 and 26 tending to pivot the plate arms 44, 46, 44A, and 46A outwardly. Now the milk cart 12 or the like may be moved as desired from one location to another. Once the destination has been reached the pickup unit 10 is lowered by the cable 36 until the cart 12 is resting on a supporting surface as shown in FIG. 7 of the drawings. At this point the frame 22 and the clamp assemblies 24 and 26



are each resting on the top peripheral surfaces of the channels 18 and 20 and the compression springs 92 and 100 have kicked the plate arms 44, 46, 44A and 46A outwardly while the guide flanges 62 and 62A are now in a position closely adjacent the outer faces of the channels 18 and 20 to prevent horizontal movement of the pickup unit 10 relative to the cart 12. These flanges of course prevent the accidental engagement of the hook-like plates 56 and 56A in the channels 18 and 20 on the cart 12. The pickup unit 10 may now be reused for moving another cart 12 or the like.

Some changes may be made in the construction and arrangement of our SELF-RELEASING PICKUP UNIT without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

1. A self-releasing pickup unit for containers or the like, comprising,
an elongated frame member,
a first arm pivotally connected to one end of said frame member,
a second arm pivotally connected to the opposite end of said frame assembly,
a hook means provided on the outer end of each of said arms,
means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like, and
means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other, said arms being maintained in said first position against the action of said last mentioned means when said hook means are in lifting engagement with a container or the like.

2. A self-releasing pickup unit in combination with a milk cart or the like, comprising,
a means on said cart or the like for engagement by said pickup unit,
an elongated frame member,
a clamp assembly at opposite ends of said elongated frame member, each clamp assembly having a downwardly extending arm pivotally connected at its upper end to said frame member, a hook means secured to the lower end of said arm, and each of said arms adapted to pivot to a first position with said hook in engagement with said means on said cart and to a second position with said hook spaced outwardly from said cart, the distance between said hook means being such that when said pickup unit is placed over said cart said hook means will engage said means on said cart and pivot outwardly until said unit is lowered sufficiently for said hook means to move inwardly toward each other under the lowest portion of said means on said cart for engagement therewith, said means on said cart being lockingly engaged to each of said hook means upon said pickup unit being raised to lift said cart,
power means connected to said elongated frame for raising and lowering said pickup unit,
means connected to each of said arms for selectively and yieldingly biasing them outwardly away from each other whereby when said pickup unit is lowered onto said cart after said power means has raised said pickup unit and said cart, each of said hook means will be disengaged from said means on said cart and each of said arms will pivot outwardly away from said cart.

3. The pickup unit of claim 2 and a downwardly extending guide means is provided at each end of said frame to limit horizontal movement of said pickup unit relative to said cart when said pivotal arms are moved to their second position with said hook means spaced

outwardly from said cart thereby preventing said hook means from inadvertently engaging said means on said cart.

4. The pickup unit of claim 2 and means interconnecting said clamp assemblies whereby said arms pivot together towards and away from each other.

5. The pickup unit of claim 2 wherein each of said clamp assemblies are movable on said frame member.

6. The pickup unit of claim 2 and a link member is pivotally connected intermediate its ends to the frame member intermediate its ends, and a first push pull rod extends between one of the opposite ends of said link member and one of said arms, and a second push pull rod extends between the other of said opposite ends of said link member and the other arm whereby as one of said arms is pivoted in one direction the other of said arms is pivoted in the opposite direction.

7. A package in combination with a self-releasing pickup unit, said combination comprising,

a package having hook means on a pair of sides opposite from each other, said hook means being at the top and on the exterior of said package sides,

a pickup unit having an elongated frame member adapted to rest on the top peripheral edges of said container's sides,

a first arm pivotally connected to one end of said frame member,

a second arm pivotally connected to the other end of said frame member,

said arms extending downwardly from said frame member, and

said arms being spaced apart a sufficient distance that when the frame member is lowered over said package a portion of said arms slidably engage the peripheral edge of said package sides thereby pivoting said arms outwardly away from each other, and the hook means on said sides and the hook means on said arms lockingly engage each other upon said arms being moved a first predetermined distance downwardly along the respective package sides, said arms having sufficient length to move a second predetermined distance down along said sides for said arms to freely pivot outwardly away from said package sides,

power means for raising and lowering said package unit,

means for limiting pivotal movement of said arms upon said package being raised with said hook means on said arms being in locking engagement with the respective hook means on said package, and

means connected to each of said arms for selectively and yieldingly biasing them together outwardly away from each other against the action of said means for limiting pivotal movement of said arms, whereby when said pickup unit and said package moves towards each other moving said arms through said first and second predetermined distances, said arms are pivoted outwardly from said package by the action of said means for selectively biasing them outwardly.

8. The combination of claim 7 wherein guide elements are secured to each end of said frame, said elements are spaced a sufficient distance apart and extend downwardly from said frame a sufficient distance to be positioned immediately adjacent the pair of sides of said package when said package and said pickup unit have moved towards each other with said arms having moved their second predetermined distance along the pair of sides of said package, thereby said pickup unit it limited against movement relative to said package preventing inadvertent engagement of said hook means on said arms with said hook means on said pair of package sides.

9. The combination of claim 7 wherein means is provided for selectively moving said arms along the length of said frame to embrace different size packages.

10. The combination of claim 7 wherein said means



for selectively and yieldingly biasing said arms outwardly from each other includes a compression spring means connected to each of said arms, each of said spring means extending towards the other and being connected to a respective end of a link member, said link member being pivotally connected to said frame.

11. The combination of claim 7 wherein said means for selectively and yieldingly biasing said arms outwardly from each other includes a compression spring means connected to each of said arms, each of said spring means extending towards the other and being connected to a respective end of a link member, said link member being pivotally connected to said frame, a lever is connected to said link member and latch means is provided for adjustably engaging said lever thereby permitting selective cocking of said lever.

12. A self-releasing pickup unit for containers or the like, comprising,

an elongated frame member,

a first arm pivotally connected to one end of said frame,

a second arm pivotally connected to the opposite end of said frame assembly,

a hook means provided on the outer end of each of said arms,

means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like,

means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other,

and means for selectively moving said arms along the length of said frame to embrace different size containers or the like.

13. A self-releasing pickup unit for containers or the like, comprising,

an elongated frame member,

a first arm pivotally connected to one end of said frame member,

a second arm pivotally connected to the opposite end of said frame assembly,

a hook means provided on the outer end of each of said arms,

means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like,

means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other,

a link member pivotally connected intermediate its ends to the frame member intermediate its ends,

and a push pull rod extending between each of the opposite ends of said link member and said arms whereby as one of said arms is pivoted in one direction the other of said arms is pivoted in the opposite direction.

14. A self-releasing pickup unit for containers or the like, comprising,

an elongated frame member,

a first arm pivotally connected to one end of said frame member,

a second arm pivotally connected to the opposite end of said frame assembly,

a hook means provided on the outer end of each of said arms,

means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like, and

means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other,

said means for biasing said arms outwardly from each other including a compression spring means con-

nected to said arms, each of said spring means extending towards each other; a link member pivotally connected to said frame between said arms, and each of said spring means being connected to a respective end of said link member whereby said link member upon being pivoted yieldingly biases each of said arms outwardly.

15. A self-releasing pickup unit for containers or the like, comprising,

an elongated frame member,

a first arm pivotally connected to one end of said frame member,

a second arm pivotally connected to the opposite end of said frame assembly,

a hook means provided on the outer end of each of said arms,

means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like, and

means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other,

said means for biasing said arms outwardly from each other including a compression spring means connected to said arms, each of said spring means extending towards each other; a link member pivotally connected to said frame between said arms, and each of said spring means being connected to a respective end of said link member whereby said link member upon being pivoted yieldingly biases each of said arms outwardly and a lever being connected to said link member and latch means for adjustably engaging said lever thereby permitting selective cocking of said lever.



16. A self-releasing pickup unit for containers or the like, comprising,

an elongated frame member,

a first arm pivotally connected to one end of said frame member,

a second arm pivotally connected to the opposite end of said frame assembly,

a hook means provided on the outer end of each of said arms,

means for yieldingly holding said arms in a first pivotal position, said arms adapted to pivot outwardly over the peripheral edge of a container or the like,

means connected to said arms and adapted to be cocked for biasing said arms outwardly to a second position away from each other, and

a downwardly extending guide means being provided at each end of said frame to limit horizontal movement of said pickup unit relative to a container or the like when said pivotal arms are moved to their second position with said hook means spaced outwardly from said cart thereby preventing said hook means from inadvertently engaging a container or the like.

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