Sept. 6, 1966 D. L. KNEPPER 3,270,485

ARTICLE LOADER

Filed Oct. 1, 1965 2 Sheets-Sheet 1

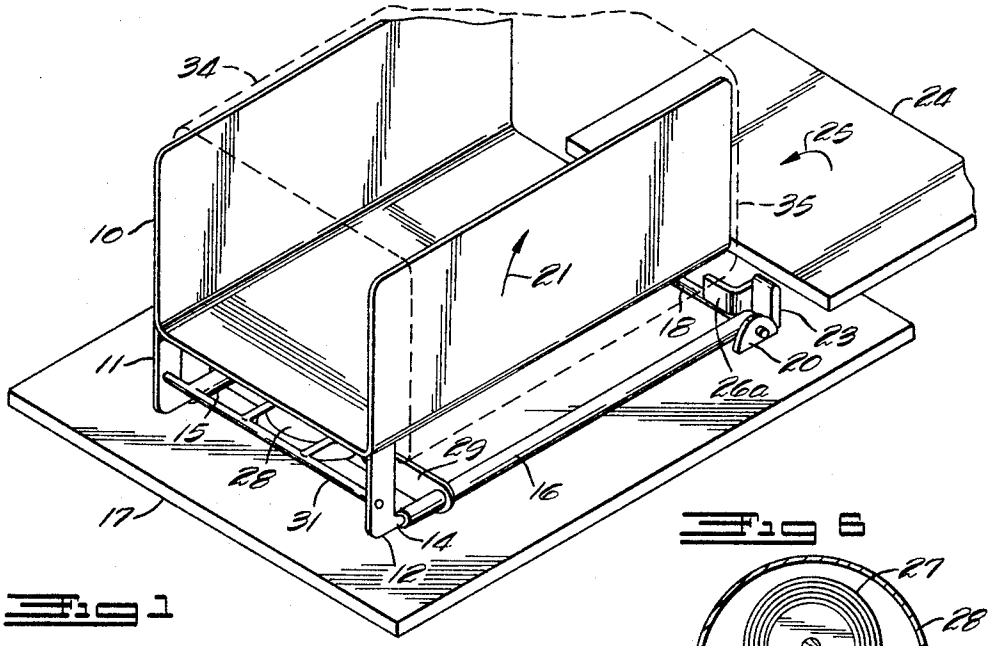


Fig 1

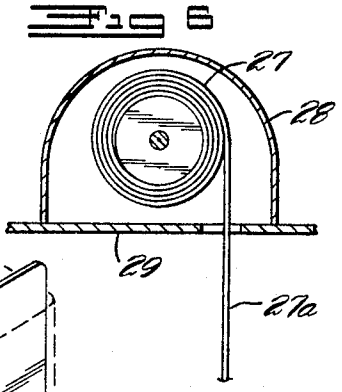


Fig 6

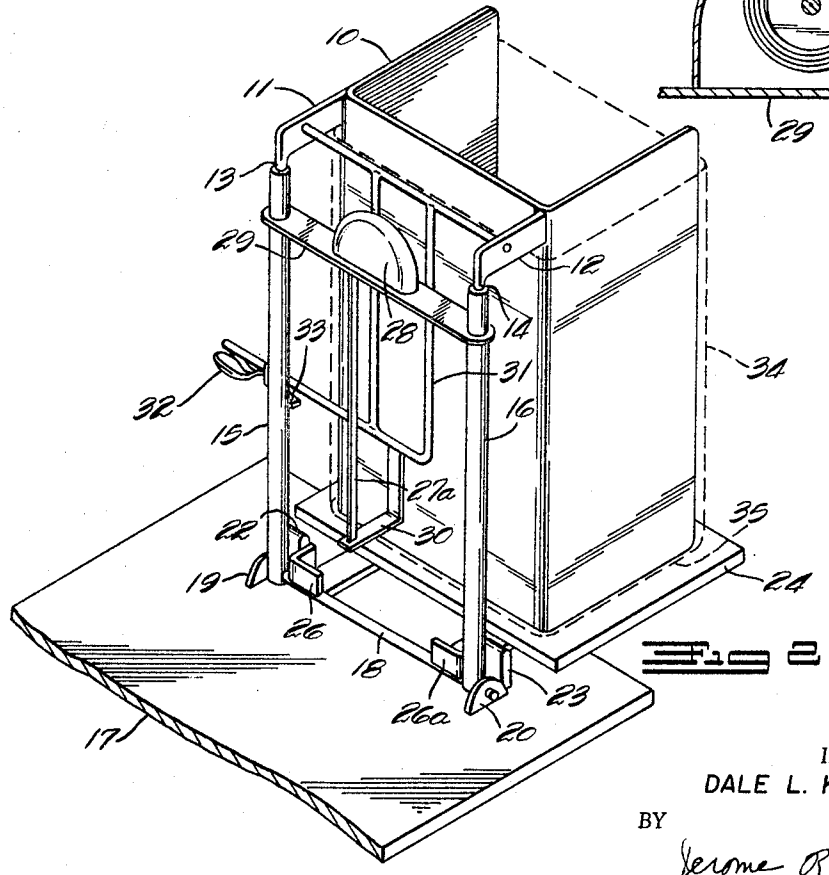


Fig 2

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ARTICLE LOADER

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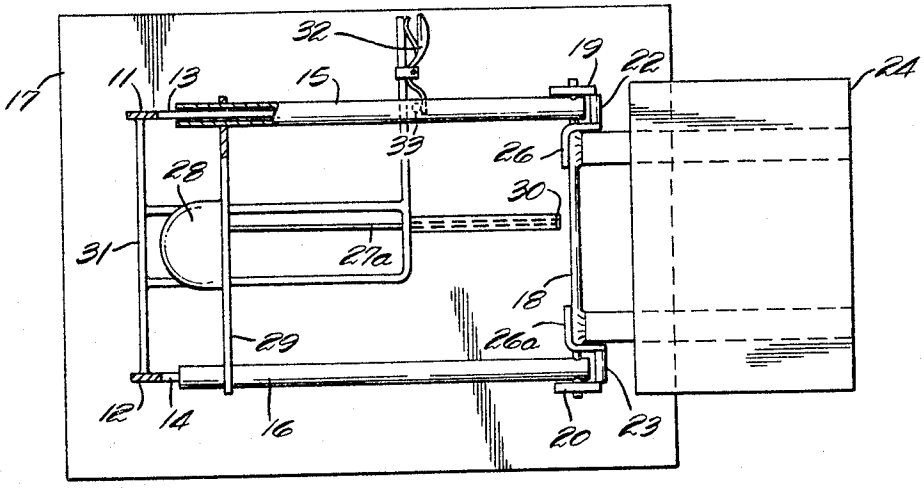


Fig 4

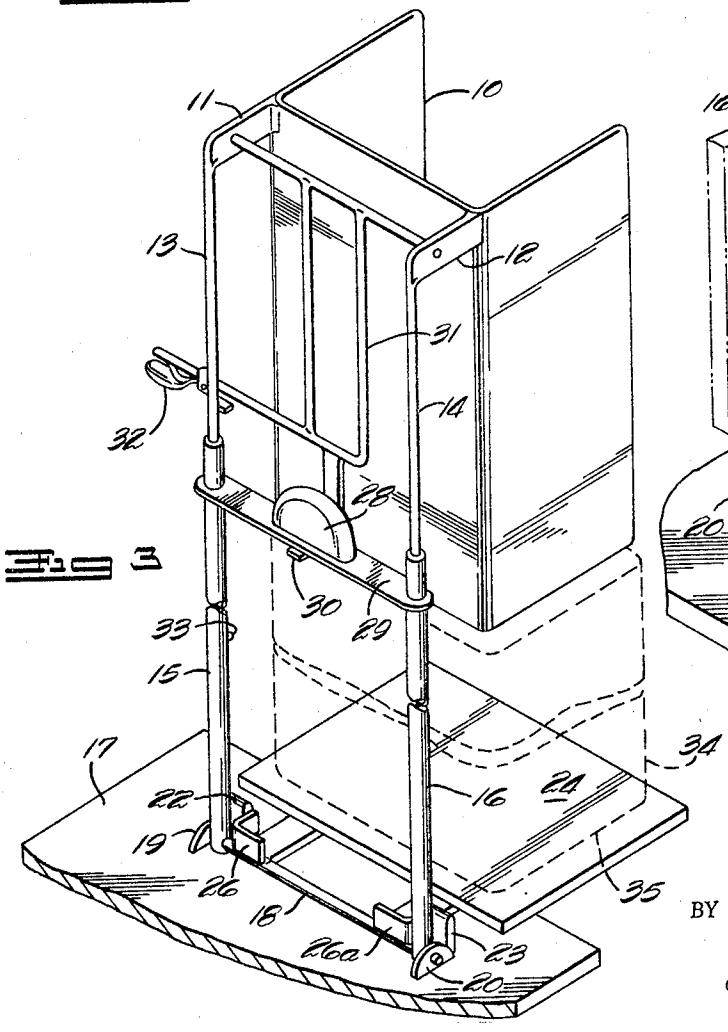


Fig 3

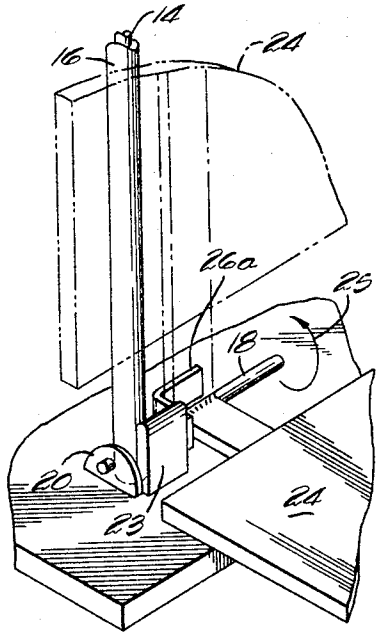


Fig 5

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ARTICLE LOADER

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16 Claims. (Cl. 53—255)

This invention deals with a device for use in the packaging of articles in a box or sack.

Packaging of a number of assorted and irregular sized objects in a sack or box can be a time consuming and economically wasteful task. This is particularly true at busy checkout counters in hardware and grocery stores but is also true in the shipping department of factories which supply, for example, hobby or repair kits which include a number of pieces of assorted sizes and shapes. One problem, for example, encountered in the packaging of groceries, stems from the fact that grocery sacks are relatively deep and narrow and therefore time consuming exercise in judgment is frequently resorted to by the clerk in order to attain a suitable package. This latter problem is accentuated when the items to be packaged include breakable items such as bottles of milk or bottles of liquid bleach or when the items; for example, certain fruits and vegetables; bruise easily.

Objects

It is therefore an object of my invention to provide a device for use in the packaging of articles in a box, sack, or the like.

It is a further object to provide a device of the nature described which provides an easily accessible, defined space in which articles to be packaged can be positioned individually and then transferred en masse to a box or sack.

It is a still further object of my invention to provide a loader device from which fragile or easily bruised articles; for example, milk bottles or fruit, respectively; can be transferred en masse to a sack without movement of the articles relative to each other.

I have now found that the foregoing and related objects can be attained in a loading device comprising: (1) a base member; (2) a trough provided with an open end, said trough being adapted to be positioned horizontally for loading with articles and being adapted to be swung into a vertical position to make said open end the bottom; (3) a telescopic assembly comprising an extensible member and a non-extensible member, said extensible member secured to said trough for simultaneous translational movement therewith, and said non-extensible member being swingably secured to said base member for simultaneous swingable movement with said trough; (4) a gate member swingably mounted to said trough to swing, when said trough is in its horizontal position, from a vertical position where said gate member closes said open end to a horizontal position where it does not obstruct said open end; and wherein, in sequence, the trough may be loaded with articles, a sack may be slid over said trough from the open end thereof, the gate member may be swung into a vertical position against the bottom of the sack, the trough may be swung into a vertical position, and the trough may be lifted vertically away from said sack by extension of said telescopic assembly.

I prefer to construct the trough with a U-shape cross section and with two open ends in order to make the loading space easily accessible. In this manner, loading is done from the top, into a relatively shallow, relatively wide space rather than in a relatively deep, relatively narrow sack.

Further objects and features of the invention will be-

come evident from the description set out in this specification, from a consideration of the claims appended hereto, and from the accompanying drawings which illustrate an embodiment of my invention.

In the drawings:

FIG. 1 is a perspective view, partially cut away, of the loader of the invention in its horizontal position, illustrating the loader at a time when it has been loaded, a sack has been put into place, but the gate has not yet been raised;

FIG. 2 is a perspective view, partly in section, of the loader illustrating the loader at a time when the gate has been raised and the loader has been swung into its vertical position;

FIG. 3 is a perspective view, partly in section and partly cut away, of the loader illustrating the loader at a time when it is in its extended vertical position; that is, when the loader has been raised away from the sack;

FIG. 4 is a plan view of the loader, partly in section and with the trough removed, when the latter is in the horizontal position illustrated in FIG. 1;

FIG. 5 is a perspective view, partially cut away and enlarged as compared to FIGS. 1–4, of the means provided to permit the swinging of the trough and gate members of my device from horizontal to vertical positions; and

FIG. 6 is an enlarged view, partly in section, showing the spring loaded reel of ribbon by which tension is placed on the trough and telescopic assembly of my invention.

Referring more particularly to the drawings, I show an open ended U-shaped trough **10** which is attached via bands **11**, **12** to spaced extensible rods **13**, **14**, each of the latter being telescopically fitted into one of the spaced cylinders **15**, **16**. The cylinders **15**, **16** are attached to a base member **17** via a rod **18** rotatably fixed in lugs **19**, **20**. The rotatable rod **18** provides the means whereby the trough **10** and the telescoped rods **13**, **14** and cylinders **15**, **16** can be swung from the horizontal position of FIG. 1 to the vertical position of FIG. 2. The latter movement is indicated by the arrow **21** (FIG. 1). Stop members **22**, **23** prevent the cylinders **15**, **16** and hence the trough **10** from moving past their vertical position upon being swung from their horizontal position.

A gate member **24** is secured, as by welding, to the rotatable rod **18** and can swing, with said rotatable rod **18**, as an axis, from its horizontal position (as shown in FIG. 1) to a vertical position, the latter movement being indicated by the arrow **25** (FIGS. 1 and 5). Stop members **26** and **26***a*; as well as the end of the trough **10**; limit the degree of swing of the gate member **24**.

A coil **27** of ribbon **27***a*, preferably steel ribbon, under spring tension is positioned within a container **28** which is secured to a bar **29** stretching between and secured to the cylinders **15**, **16**. The end of the coiled ribbon **27***a* is secured to a portion **30** of a framework **31** which is, in turn, secured to the bands **11**, **12**.

A latch **32** is secured to the frame **31** and is adapted to engage releasably a nut **33** secured to the cylinder **15**.

A sack **34** is shown in phantom in FIGS. 1–3, the bottom **35** of the sack **34** being at the open end of the trough **10** near the gate member **24**; that is, to the right as shown in FIG. 1 and at the bottom as shown in FIGS. 2 and 3.

Operation

The loader is placed horizontally, as in FIG. 1. In this position, the trough **10** is under tension from the extended ribbon **27** of the spring loaded coil **26**. This tension tends to pull the trough to the left when the trough is in the position shown in FIG. 1, and tends to pull the trough upward when the trough is in the position shown in FIG. 2. Such movement of the trough is pre-

vented by the latch 32 which engages the nub 33.

Groceries or other articles are then placed in the trough 10. When the trough is suitably loaded, a sack or box such as sack 34 is slid over the end of the trough, the bottom end 35 of the sack 34 being positioned toward the gate member 24. The gate member is then swung upwardly through 90°, about rotatable rod 18 as an axis, to a position against the bottom of the sack.

The loader 10; extensible rods 13, 14; cylinders 15, 16; and sack 34 are then swung about the rotatable rod 18 as an axis into a vertical position (FIG. 2). This movement returns the gate 24 to its horizontal position. In this position the trough 10 and sack 34 are both positioned vertically and the gate 24 is supporting the bottom 35 of the sack. The operator then presses down on the latch 32 to release the engagement of the latch and nub 33, and lifts the trough vertically away from the sack, the latter remaining in its position on the gate 24. During this latter movement, the extensible rods 13, 14 move telescopically out of the cylinders 15, 16. Also, during this latter movement the ribbon 27*a* is wound on the spring loaded coil 27. The release of the tension causes the trough to remain in its vertically extended position since any tendency of the trough to fall is offset by the tension which tends to develop in the coil 27 during lowering of the trough.

The sack 34 can be picked off the gate 24 when the loader 10 is in its extended vertical position, as shown in FIG. 3.

When the sack 34 has been removed, the trough 10 is pulled vertically downward until the latch 32 engages the nub 33 (as in FIG. 2), the loader is then swung to its horizontal position (as in FIG. 1) for reloading.

It is to be understood that the above described embodiment of my invention is for the purpose of illustration only, and that various changes may be made therein without departing from the scope of the invention which is defined in the following claims.

I claim:

1. A loading device comprising
(1) a base member;
(2) a trough provided with an open end, said trough being adapted to be positioned horizontally for loading with articles and being adapted to be swung into a vertical position to make said open end the bottom;
(3) a telescopic assembly comprising an extensible member and a non-extensible member, said extensible member secured to said trough for simultaneous translational movement therewith, and said non-extensible member being swingably secured to said base member for simultaneous swingable movement with said trough;
(4) a gate member swingably mounted relative to said trough to swing, when said trough is in its horizontal position, from a vertical position where said member closes said open end to a horizontal position where said member does not obstruct said open end; and
wherein, in sequence, the trough may be loaded with articles, a sack may be slid over said trough from the open end thereof, the gate member may be swung against the bottom of the sack, the trough may be swung into a vertical position, and the trough may be lifted vertically away from said sack by extension of said telescopic assembly.

2. The device according to claim 1 wherein the top of said trough, when the latter is in the horizontal position, is open.

3. The device according to claim 1 wherein the end of the trough opposite said open end is also open.

4. The device according to claim 1 wherein said trough has a U-shaped cross section and is open at both ends.

5. The device according to claim 1 wherein said gate member and said non-extensible member swing about a common axis, said axis defined by a rod rotatably mounted in lugs projecting from said base member.

6. The device according to claim 1 wherein said base member comprises a first stop member adapted to limit the swing of said trough and said non-extensible member to about 90° from their horizontal position and a second stop member adapted to limit the swing of said gate member to about 90° from said horizontal position.

7. The device according to claim 1 wherein said telescope assembly comprises tension means adapted to extend said assembly.

8. The device according to claim 1 wherein said telescope assembly comprises latch means to prevent, when latched, the extension of said assembly.

9. The device according to claim 1 wherein there are two said telescopic assemblies spaced from each other.

10. A loading device comprising:
(1) a base member;
(2) a trough provided withan open end, said trough being adapted to be positioned horizontally for loading with articles and being adapted to be swung into a vertical position to make said open end the bottom;
(3) a telescopic assembly comprising a rod and cylinder, said rod being secured, for simultaneous movement therewith, to said trough adjacent the end opposite said open end, and said cylinder being swingagly secured to said base member adjacent the open end of said trough;
(4) a gate member swingably secured to said base member and adapted to swing from a position where, when said trough is positioned horizontally, said gate member closes said open end to a position where it does not obstruct said open end;
(5) tension means tending to pull said rod outward from said cylinder;
(6) latch means adapted, when latched, to prevent said tension means from pulling said rod outward from said cylinder,
wherein, in sequence, said trough may be loaded with articles; a suitable sack may be slid over said trough from the open end thereof; said gate member may be swung against the bottom of said sack; said trough may be swung into a vertical position; the latch may be unlatched; and the trough, with the assistance of said tension means, may be lifted vertically away from said sack by telescopic extension of said rod and cylinder assembly.

11. The device according to claim 10 wherein said tension means comprises a spring loaded coil of metal ribbon said coil being secured to said cylinder and an end of said ribbon being secured to said rod.

12. The device according to claim 10 wherein said latch means comprises a fixed nub secured to said cylinder and a nub engaging lever secured to said rod wherein said lever is adapted for manual disengagement from said nub.

13. The device according to claim 10 wherein said trough has a generally U-shaped cross section and is open on both ends.

14. The device according to claim 10 wherein said base member is a flat plate adapted to rest on a flat horizontal surface.

15. The device according to claim 10 wherein there are two said telescopic assemblies spaced from each other.

16. A loading device comprising
(1) a base member comprising a flat plate adapted to rest on a flat horizontal surface;
(2) a pair of spaced lugs extending upwardly from said base member;
(3) a rotatable rod journalled into said lugs;
(4) a U-shaped trough provided with a first open end and a second open end, said trough being adapted to be positioned horizontally for loading with articles

and being adapted to be swung into a vertical position about said rotatable rod as an axis to make said first open end the bottom;

(5) a pair of spaced cylinders spaced from and parallel to said trough, each of said cylinders being swingably secured at an end thereof to said rotatable rod for simultaneous swinging with said trough;

(6) a pair of extensible rods, each telescopically engaged in one of said cylinders and secured to said trough near said second open end for simultaneous translational movement with said trough;

(7) a gate member swingably secured to said rotatable rod and adapted to swing from a position where, when said trough is positioned horizontally, said gate member closes said first open end to a position where it does not obstruct said first open end;

(8) tension means tending to pull said extensible rods from said cylinders and comprising a spring loaded coil of metal ribbon, said coil being secured to said cylinders for simultaneous swinging motion therewith and an end of said ribbon being secured to said rods for simultaneous translational movement therewith and wherein telescopic extension of said extensible rods reduces said tension;

(9) latch means adapted, when latched, to prevent said tension means from pulling said extensible rods from said cylinders said latch means comprising a fixed nub secured to a cylinder and a nub-engaging lever secured to an extensible rod wherein said lever is adapted for manual disengagement from said nub; and

wherein, in sequence, said trough may be loaded with articles; a suitable sack may be slid over said trough from said first open end; said gate member may be swung to a vertical position against the bottom of said sack; said trough may be swung into a vertical position; said latch may be manually unlatched; and said trough, with the assistance of said tension means, may be lifted vertically away from said sack by telescopic extension of said extensible rods from said cylinders.

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