July 12, 1960 A. H. DAHLHAUSER ET AL 2,944,722

CRATE STACKER

Filed June 9, 1958

Fig. 4

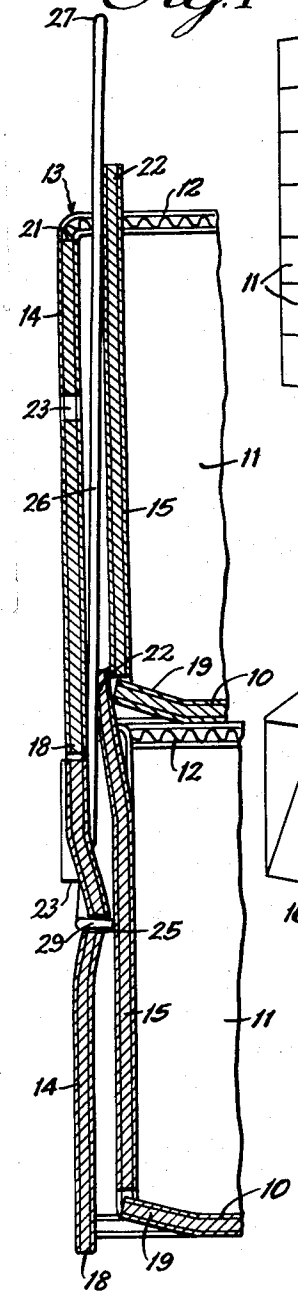


Fig. 1

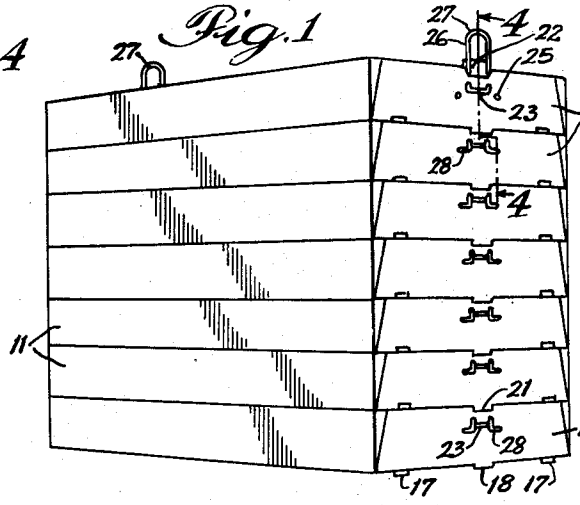


Fig. 2

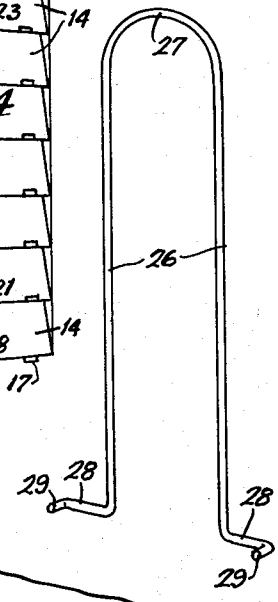
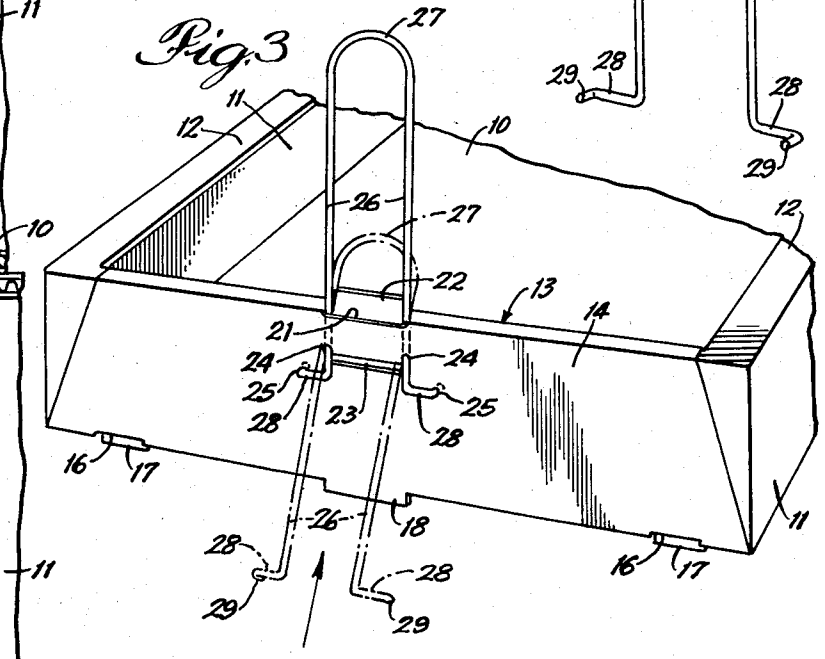


Fig. 3



INVENTORS:
Anthony H. Dahlhauser
and Adolph H. Yaeger,

BY Blair Freeman & Molinare
ATTORNEYS.

United States Patent Office 2,944,722 Patented July 12, 1960

2,944,722

CRATE STACKER

Anthony H. Dahlhauser and Adolph H. Yaeger, Santa Clara, Calif., assignors to Keystone Steel & Wire Company, Peoria, Ill., a corporation of Delaware

Filed June 9, 1958, Ser. No. 740,620

2 Claims. (Cl. 229—34)

This invention relates to crate stackers, and more particularly to stacker members for use with corrugated board crates of the type in which fruits and vegetables are shipped to enable the crates to be secured together in stacks for handling and shipping.

Many different types of fruits and vegetables are shipped and stored in corrugated board or pressboard crates which are stacked to a substantial height for storage and shipment. Heretofore wire stackers have been employed which are mounted at the ends of the crates and which extend through openings in the end walls of the next higher crates to hold the crates in alignment, and which can, if desired, be bent over to secure the crates together.

Such stackers as previously constructed have been relatively difficult to install and/or to remove. In some cases the stackers must be inserted from the bottom of the crate and cannot be inserted after a crate has been placed on the stack. Other types of stackers may be inserted from the top of a crate but are difficult to remove.

It is one of the objects of the present invention to provide a crate stacker which is simple and inexpensive in construction and which can easily be installed on and removed from a crate at the end thereof.

Another object is to provide a crate stacker which is securely attached to the double end wall of a crate by passing through slots therein and between plys of the end wall.

A further object is to provide a crate stacker which is securely held against vertical movement on a crate by bent over end portions on the stacker fitting into openings in the end wall of the crate.

The above and other objects and features of the invention will be more readily apparent from the following description when read in connection with the accompanying drawing in which:

Figure 1 is a perspective view of a stack of crates equipped with crate stackers embodying the invention;

Figure 2 is a perspective view of the crate stacker per se;

Figure 3 is a partial enlarged perspective view of a crate end showing attachment of the crate stacker thereto; and

Figure 4 is a partial sectional view through two adjacent crate ends with a crate stacker embodying the invention installed.

The crate stacker of the present invention is adapted to be applied to conventional types of corrugated board or pressboard crates in which various types of fruits, vegetables and the like are stored and shipped. A conventional crate of this type as shown in the drawing is formed of a single piece of corrugated board cut, scored and folded to form a crate having a flat bottom **10**, integral side walls **11**, which may be folded inward at their upper edges as indicated at **12** for stiffening and reinforcement, and end walls indicated generally at **13** which include two or more plies of material.

The end walls as partially shown in section in Figure 4 may be formed of outer plies **14** foldably hinged at their lower edges to the bottom wall **10** and folded upward therefrom and then doubled over to define an inner ply **15** spaced from the outer ply **14**. The end edges of the side walls may be folded in between the plies at the ends of the end walls, and may be secured by staples, gluing or similar fastenings. To secure the various wall portions more tightly, the end wall portions may be cut out to define openings near the ends thereof as indicated at **16**, and the inner wall portions may be cut out to form tabs **17** projecting into and through the openings **16** to assist in locking the plies together. Centrally of the end wall the material may be slit to define a downwardly projecting tongue **18** on the outer ply, and a short hinged flap **19** near the center of the end wall, which can swing upward slightly as shown in Figure 4 for stacking. Additionally, the end wall is cut away to define a central opening **21** in its upper edge and to leave an upwardly projecting tab **22** extending upwardly from the inner ply **15**.

To receive the crate stacker of the present invention the outer ply **14** of the end wall is formed centrally of its length with a horizontally extending slot **23** which preferably has short upwardly extensions **24** at its ends. Laterally beyond the ends of the slot **23**, and preferably slightly below it, the outer end wall ply **14** is formed with openings **25**.

The stacker of the present invention, as shown in Figure 2, is formed of a single length of wire bent into a hairpin shaped loop with straight parallel leg portions **26**, an upper rebent portion **27**, and lower foot portions. The foot portions of the stacker are formed by outwardly bent parts **28** at the lower ends of the leg portions which extend outward in opposite directions at right angles to the leg portions, and which are bent at right angles at their ends to define short tips **29** extending at right angles from the general plane of the crate stacker.

To assemble a crate stacker embodying the invention on a crate, the rebent end **27** thereof may be slipped upwardly from the outside of the crate through the slot **23** and out through the opening **21** in the top edge of the crate end wall, as illustrated in dot-dash lines in Figure 3. The stacker is pulled upward until the bent over tips **29** are in registration with the openings **25** in the outer ply **14** of the crate end wall and are then slipped into these openings. When so installed, the stacker will extend approximately vertically upward from the end wall of the crate, as shown in Figure 3.

With stackers installed on a crate in the manner described, a second crate may be stacked thereon, as illustrated in Figure 4. When a second crate is placed on the first one, the upwardly projecting stacker loop will extend through the opening in the bottom edge of the end wall of the upper crate formed by cutting out the lug **18**, and up between the inner and outer plies **14** and **15** of the end wall, as shown in Figure 4.

As the upper crate rests on the upper edge of the lower crate, the upwardly extending tongue **22** on the lower crate will be deflected outwardly by the flap **19** on the upper crate into the space between the outer and inner plies of the end wall thereof. The width of the tongue **22**, as shown, is slightly less than the space between the legs **26** of the stacker, so that its upper edge can pass between the legs of the stacker, as illustrated in Figure 4. With the two crates stacked, the upper end of the stacker, which is preferably of a length to project above the end wall of the upper crate, can be bent over, if desired, to secure the crates together, or can be left projecting upward. At this time crate stackers can be in-

stalled on the upper crate for stacking of additional crates thereon, or if preferred, the stackers could be installed on the crates before they are placed in the stack.

With the crates stacked, the stackers will hold them securely in alignment, and entry of the projecting tongue **18** at the lower edge of each crate into the opening **21** of the crate immediately therebelow, will further assist in holding the crates in alignment. Once the crates are stacked, and particularly if the upper ends of the stackers are bent over, the crates will be securely held in alignment for storage and handling.

When it is desired to remove the crates, they may be unstacked from the top by straightening out the bent over ends of the stackers in the event they have been bent over to lock the crates together, or simply by lifting the upper crates from the lower if the stackers have not been bent over. In addition to holding the crates securely in alignment in a stack, the stackers can be used as handles where desired for handling the crates. Due to engagement of the bent over tips **29** in the openings **25**, the stackers are securely held against either upward or downward movement so that the stacking and unstacking operations can be performed easily and quickly.

While one embodiment of the invention has been shown and described in detail, it will be understood that this is illustrative only and is not intended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A crate stacker comprising, in combination with a crate having a multi-ply end wall, vertically aligned openings in the top and bottom edges of the end wall registering with the space between adjacent plies thereof, a horizontal slit in the outer ply of the end wall in vertical alignment with the openings, and spaced openings in the outer ply of the end wall spaced from the slit, a generally U-shaped wire member of a width to fit through the openings and the slit, said member extending through the slit and through the opening at the top edge of the end wall with its closed end up and adapted to extend through the openings in the top and bottom edges of the end wall of an adjacent crate, the ends of the legs on the member being bent over perpendicular to the crate end wall and fitting respectively into the spaced openings in the outer ply of the end wall.

2. A crate stacker comprising, in combination with a crate having a multi-ply end wall, vertically aligned openings in the top and bottom edges of the end wall registering with the space between adjacent plies thereof, a horizontal slit in the outer ply of the end wall in vertical alignment with the openings, and spaced openings in the outer ply of the end wall spaced horizontally from the slit, a generally U-shaped wire member fitting through the slit and the opening in the upper edge of the end wall with its closed end up and adapted to extend through the openings in the top and bottom edges of the end wall of an adjacent crate, the ends of the legs on the member being bent outward away from each other beyond the ends of the slit and then at right angles to the end wall and fitting into the spaced openings in the outer ply of the end wall.

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