

Dec. 25, 1951

A. DONALD
COLLAPSIBLE CONTAINER

2,579,655

Filed June 27, 1949

2 SHEETS—SHEET 1

FIG. 1.

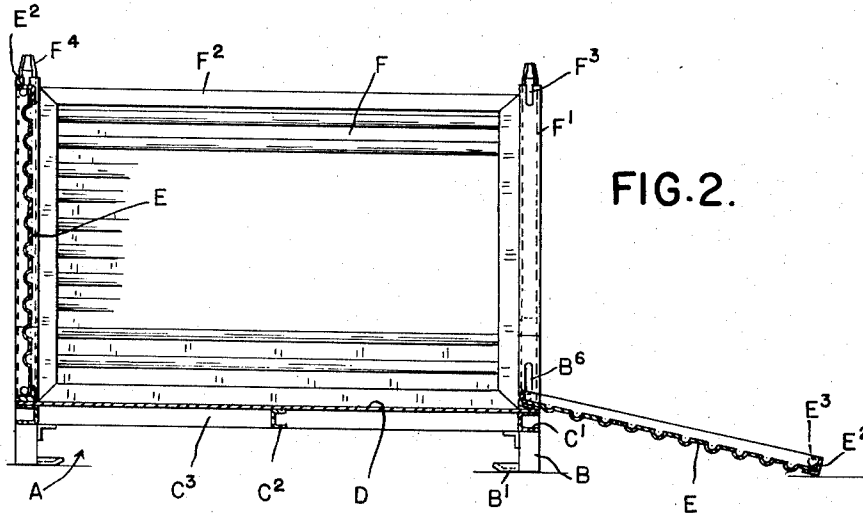
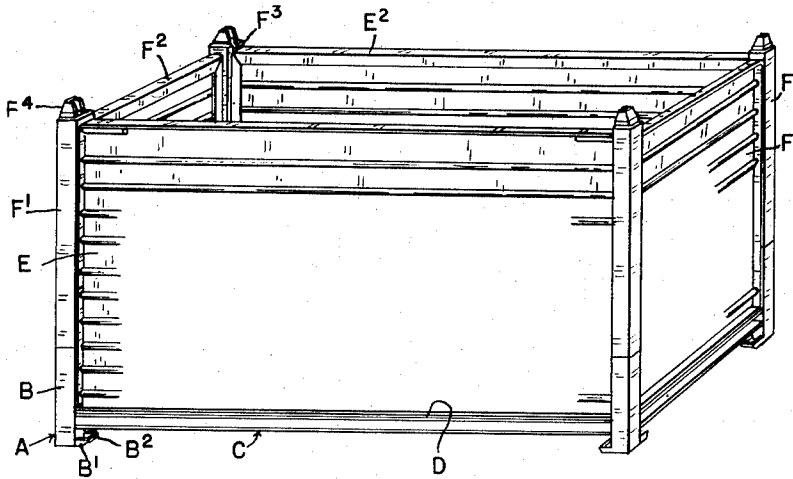


FIG. 2.

INVENTOR.
ARCHIBALD DONALD

BY
Whittemore Hulbert & Bell
ATTORNEYS

Dec. 25, 1951

A. DONALD
COLLAPSIBLE CONTAINER

2,579,655

Filed June 27, 1949

2 SHEETS—SHEET 2

FIG. 3.

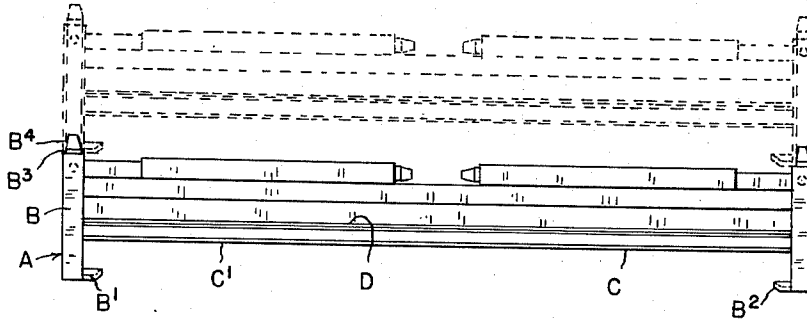


FIG. 6.

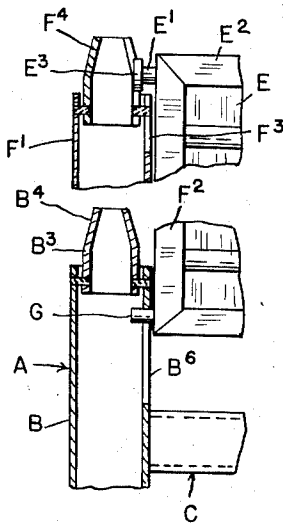


FIG. 5.

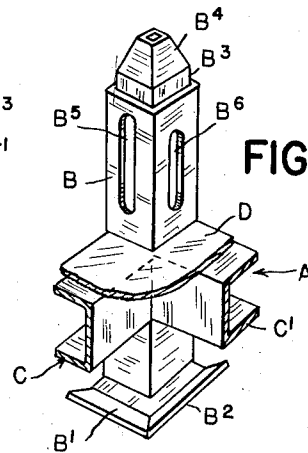
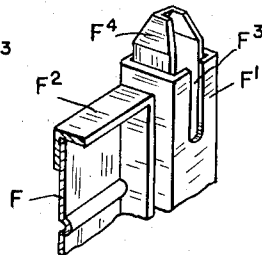


FIG. 4.

INVENTOR,
ARCHIBALD DONALD

BY

Whittemore Hulbert & Belknap

ATTORNEYS

UNITED STATES PATENT OFFICE

2,579,655

COLLAPSIBLE CONTAINER

Archibald Donald, Detroit, Mich., assignor to
Gabriel Steel Company, Detroit, Mich., a cor-
poration of Michigan

Application June 27, 1949, Serial No. 101,538

3 Claims. (Cl. 220—6)

1

The invention relates to containers designed to be used for the shipping of goods by railroad or other means of transportation and which are returned as empties.

It is the primary object of the invention to obtain a construction of collapsible container in which all movable parts are permanently attached to the structure so as to be incapable of separation therefrom or loss.

It is a further object to obtain a construction in which there are no projections either internal or external to reduce storage space or to interfere with other containers.

It is a further object to obtain a construction in which one side may be lowered to facilitate loading while the other sides are locked in position.

It is a further object to obtain a construction in which the sides in collapsed position are stacked upon each other and the bottom in parallel relation.

It is a further object to obtain a construction in which the containers may be stacked and secured to each other both when filled with goods and when empty.

With these and other objects in view the invention consists in the construction as hereinafter set forth.

In the drawings:

Fig. 1 is a perspective view of the container as ready for use;

Fig. 2 is a cross section showing one side turned down to facilitate loading;

Fig. 3 is a side elevation of the collapsed container indicating in dotted lines a second collapsed container in stacked relation to the first;

Fig. 4 is a perspective view of a corner portion of the container before the sides have been permanently assembled therewith;

Fig. 5 is a perspective view of a top portion of one of the end sections;

Fig. 6 is a vertical section through one of the corner posts showing the means of hinging and locking the sides to each other.

A characteristic feature of my improved collapsed container is that it is provided with corner posts which impart rigidity to the structure in both expanded and in collapsed positions thereof. These posts are preferably formed of hollow tubing, rectangular in cross section and each post is formed of interlocked aligned sections, one section being in fixed relation to the base structure and the other forming a portion of one of the sides. The complete structure includes a base section having corner posts extending above and below the loading platform thereof and side sections, each extending between a pair of said posts and hinged connected thereto to be movable from vertical to horizontal position.

More in detail A is the base section having

2

tubular posts B at each corner thereof, and a frame C connected to said posts intermediate the upper and lower ends thereof. Each post is provided at its lower end with a shoe B' which extends inward but not outward therefrom. The inner end portions are also preferably turned obliquely upward as indicated at B² to facilitate sliding over a supporting floor. At the upper end of each post is a cap member B³ for coupling engagement with another post section and terminating in an upwardly extending pyramidal end portion B⁴. The frame C includes marginal members C' preferably of channel cross section, a central longitudinal bar C² and one or more intermediate cross bars C³ which may be of either angle or channel cross section. A flat sheet D supported upon the frame forms the bottom for the container. All of these parts are rigidly attached to each other preferably by welding.

As specifically shown the base section is of oblong rectangular form and has permanently attached thereto side sections E and end sections F. These are similar in structure in that each has a border frame and a sheet, preferably corrugated, extending across said frame. Each end section F has secured to the vertical portions of the frame thereof post portions F' which align with the posts B of the base section. The length of these post portions F' is less than the height of the end section F, so that when coupled to the upwardly extending portions of the posts B they will be equal to the vertical dimension of said end. The border frame for this end section is preferably formed of angle bars F², which are mitered at the corners, and all parts are attached to each other by welding. The attachment between each end and the base section is formed by short rods G which when finally secured project laterally beyond the border frame to form hinged pivots engaging the posts B. Inasmuch, however, as the sides and ends are to be stacked upon the bottom D in the collapsed position of the counter and also as the post sections F' must be engaged with the caps B³ of the posts B, it is necessary that these hinged pivots should be vertically movable in said posts B. This adjustment is obtained by forming a vertical slot B⁵ in the side of the post adjacent to the end section F, into which slot the rod G extends. Obviously, it would be impossible to engage these rods G with the slots if they were first secured to the member F, but in the assembly operation the rods G are first placed loosely in the angle of the border frame F² and after being moved longitudinally into engagement with the slots B⁵ they are then welded to the border frame. Consequently, after the end section is thus secured to the base section it will be impossible to detach it. The length of the slot B⁵ is sufficient for the upward movement of

the end section F until the lower end of the post portion F' passes over the upper end of the cap member B and pyramidal extension thereof. The end may then be lowered to rigidly couple the post sections F' and B with each other.

The side sections E are hingedly attached to the base section in the same manner as just described in connection with the end sections F. Thus the posts B have in the faces thereof adjacent to the ends of said side sections vertical slots B⁵ which, however, need not be quite as long as the slots B⁵. Also the upper ends of the post sections F' have vertical slots F³ for receiving locking pins attached to the upper ends of the sides E. These locking pins E' are attached to but project beyond the border frame E² of the side E. Each pin E' has a collar or head portion E³ at its outer end which will pass inside of the hollow post F' when the pin is engaged with the slot F³. This will hold the end sections F from pulling away from the side section due to any internal pressure of the load. The post sections F' are provided at their upper ends with caps F⁴ generally similar to the caps B³ of the posts B. However, to avoid interference with the locking pins E' or heads E³ thereof, the side of the cap which would be adjacent to each side section E is omitted leaving an opening through which the pin and its head may enter the post section.

With the construction formed as above described, when the sides E are unlocked from the ends F they may be folded inward over the bottom D of the base section A, one side centrally overlapping the other. The end sections F may then be disengaged from the base section by lifting the former until the lower ends of the post sections F' clear the top of the cap sections B³ of the posts B. The slot B⁵ is of sufficient length to permit of this movement, after which the end sections may be folded over the side sections. All of these sections will then be arranged horizontally and successively in contact with each other and all will be within the height of the corner posts B. In this collapsed position, the container occupies a minimum of space during return shipment and also the collapsed containers may be stacked in relation to each other by telescopically engaging the lower ends of the posts of superposed containers with the caps of the next lower container. Before reloading the collapsed containers have the sides and ends thereof turned to vertical positions, but to facilitate loading one of the sides may first be turned outward and downward. Later this side is turned up and locked in position by engaging the locking pins E' and heads E³ with the slots F³ in the post sections F'. As all of the members of the structure are permanently attached to each other by welding, it will be impossible for any one to be disengaged or lost. Also there are no projecting parts either externally or internally.

What I claim as my invention is:

1. A collapsible container comprising, a base section having vertical hollow posts at the corners thereof, a horizontal frame connecting said posts intermediate the upper and lower ends thereof, and a bottom plate supported on said frame; side sections each extending between a pair of said posts and having adjacent to its lower edge a non-detachable vertically movable hinge connection to said posts permitting of successive folding of said side sections over said

base and stacking thereon, certain of said side sections having hollow post portions rigid therewith complementary to the base post sections, and coupling means between the post portions on said side sections and the corresponding base posts engageable by a vertical movement of said side section.

2. A collapsible container comprising, a base section having hollow vertical posts at the corners thereof, each post having a coupling cap at its upper end for engagement with a superposed hollow post, a horizontal frame connecting said posts intermediate the upper and lower ends thereof, and a bottom plate supported on said frame; side sections each extending between a pair of said posts and having adjacent to its lower edge a non-detachable vertically movable hinge connection to said post, permitting of successive folding of said side sections over said base for stacking thereon, certain of said side sections having hollow post portions rigid therewith complementary to the corresponding base posts and engageable with the cap portions thereof by a vertical movement of said side section, the upper end of said hollow post portions having a vertical slot in the side thereof adjacent to another side section, and a headed pin non-detachably secured to the upper end of the latter side section engageable with said slot to interlock said side sections with each other.

3. A collapsible container comprising, a base section having vertical hollow posts at the corners thereof with vertical slots in the sides of said posts which are opposite sides of other of said posts, a hollow frame connecting said posts intermediate the upper and lower ends thereof and below said slots, and a bottom plate supported on said frame; side sections each extending between a pair of said posts having adjacent to its lower edge non-detachable pivot pins extending into the registering slots of said posts to form a vertically movable hinge connection thereto and permitting of successively folding said side sections over said base and stacking thereon, certain of said side sections having hollow post portions rigid therewith complementary to the corresponding base posts, the upper ends of said hollow post portions having open slots in the sides thereof adjacent to another side section, caps at the upper ends of said base section posts and also said hollow post sections for coupling engagement with superposed hollow posts, and headed pins non-detachably secured to certain of said side sections for engagement with the open slots of said hollow post sections to interlock adjacent side sections with each other.

ARCHIBALD DONALD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
909,614	LaBauve	Jan. 12, 1909
1,044,251	Safley	Nov. 12, 1912
1,125,100	Hoover	Jan. 19, 1915
1,432,454	Geraci	Oct. 17, 1922
2,497,453	HAZEN	Feb. 14, 1950

FOREIGN PATENTS

Number	Country	Date
188,785	Great Britain	Nov. 20, 1922