Feb. 11, 1969 O. E. JENKINS 3,427,040

CONTAINER INCLUDING ANTI-FRICTION SUPPORT MEANS

Filed May 16, 1966 Sheet 1 of 3

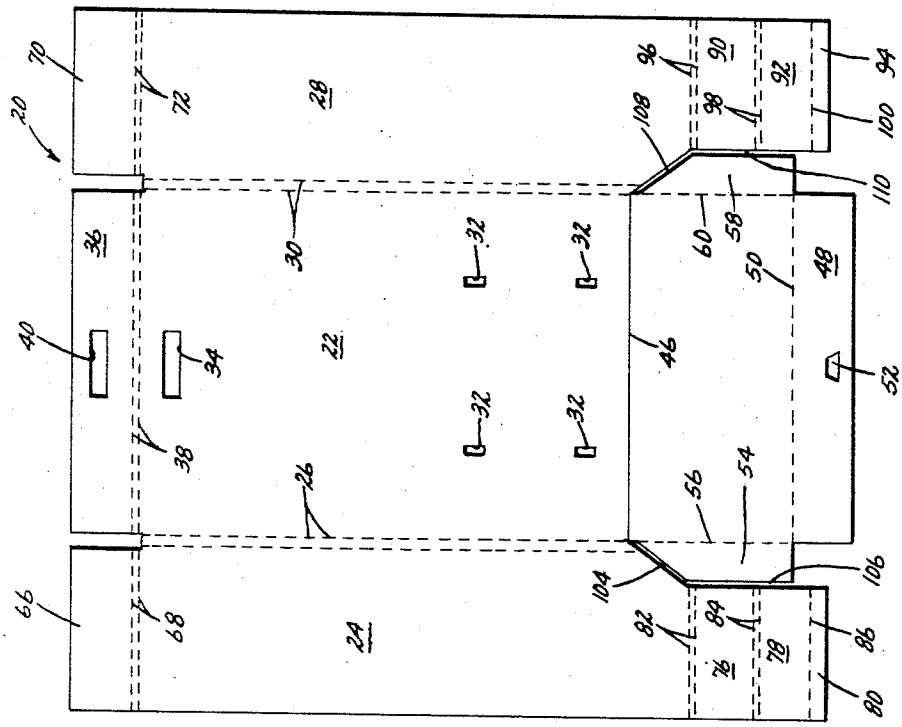


Fig. 1

Inventor:
Owen E. Jenkins,
by Hood, Gust & Irish
Attorneys.

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Fig. 2

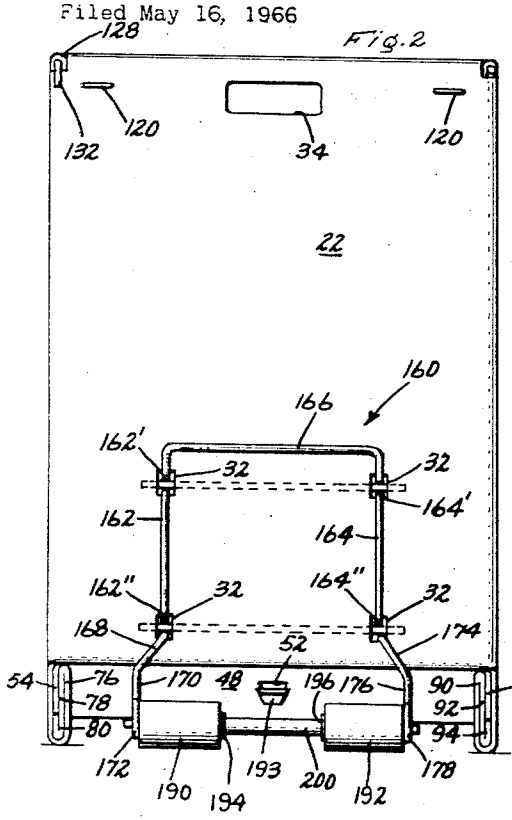



Fig. 3

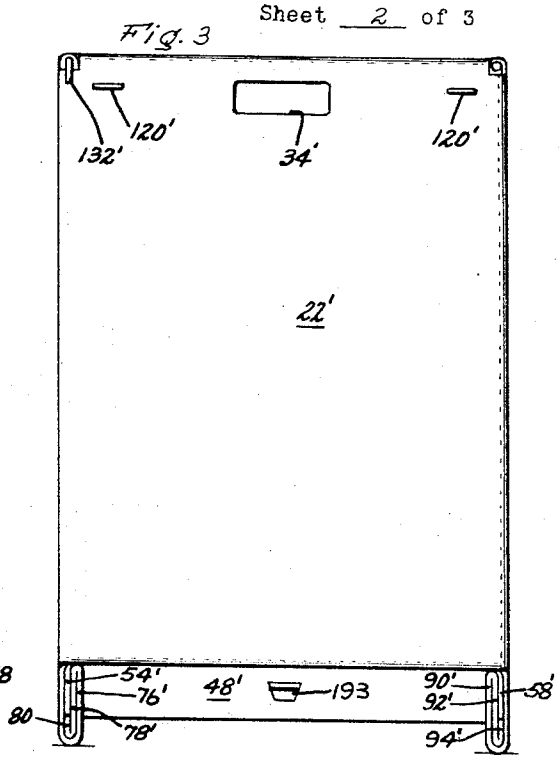



Fig. 4

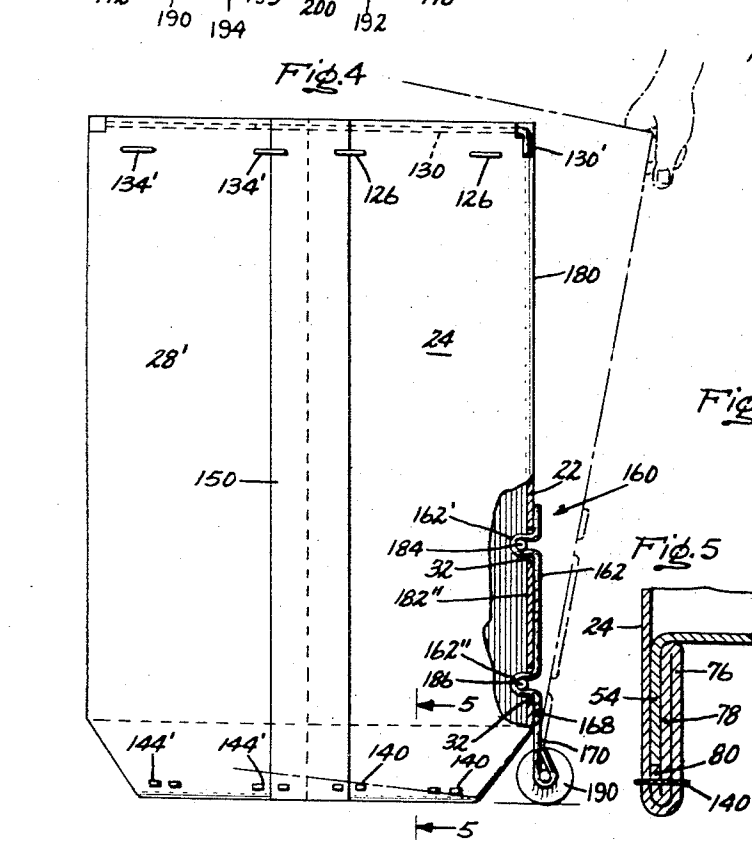
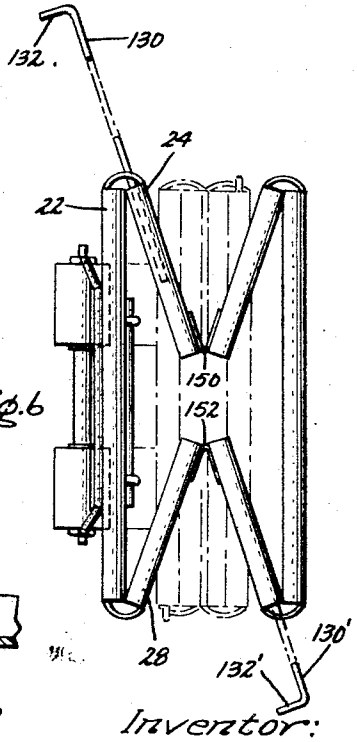



Fig. 5




Fig. 6

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by Hood, Gust & Irish
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CONTAINER INCLUDING ANTI-FRICTION SUPPORT MEANS

Filed May 16, 1966 Sheet 3 of 3

Fig. 7

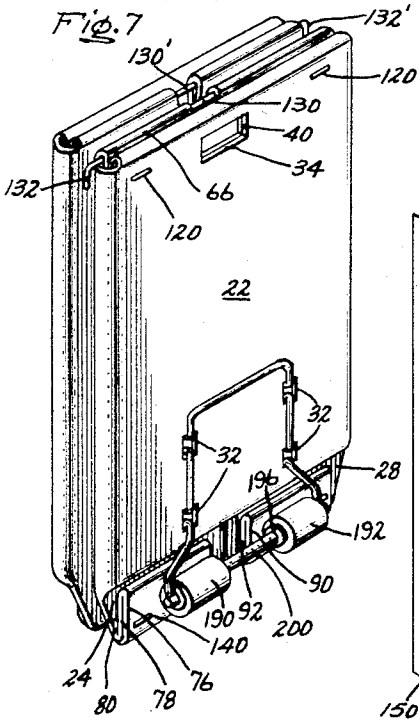



Fig. 8

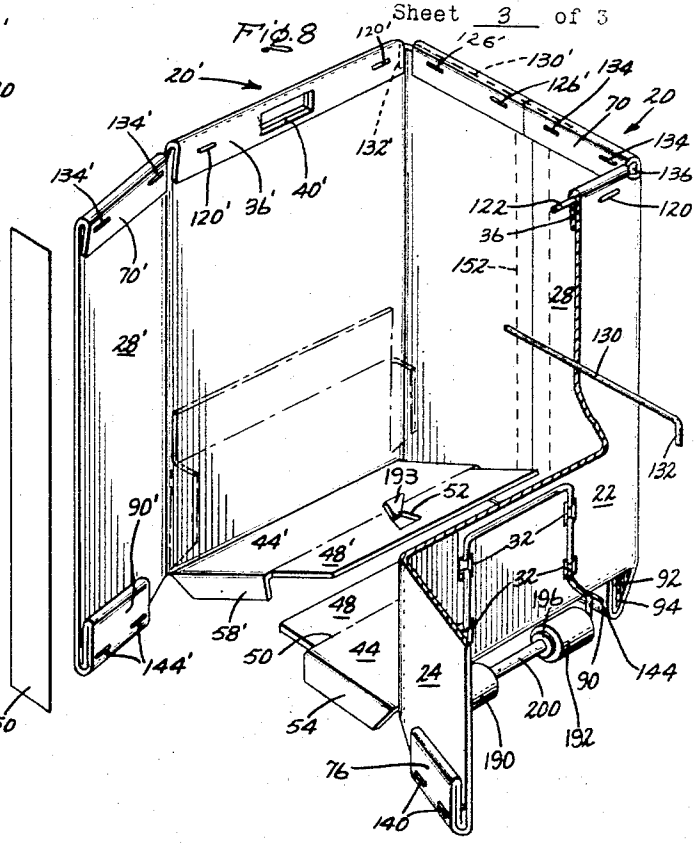



Fig. 9

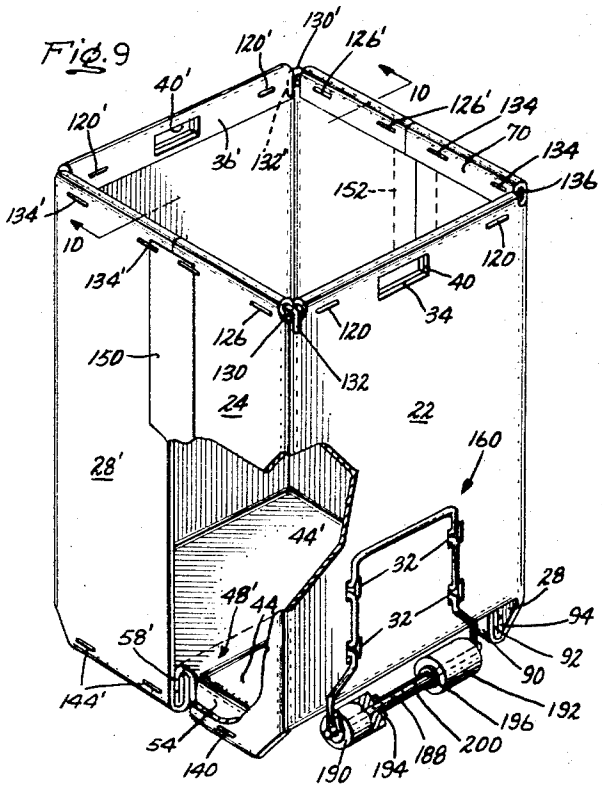
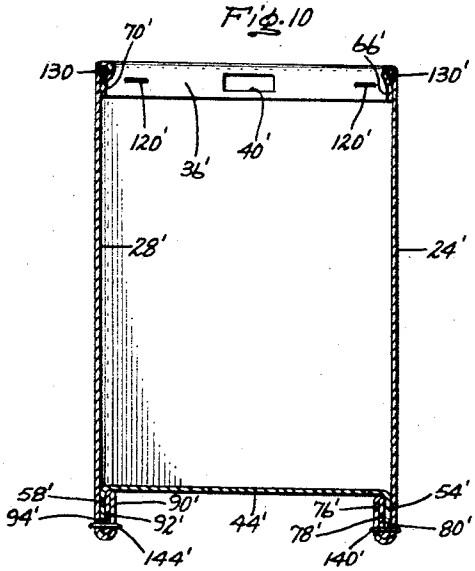



Fig. 10




Inventor:
Owen E. Jenkins,
by Hood, Gust & Dick
Attorneys.

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3,427,040

# CONTAINER INCLUDING ANTI-FRICTION SUPPORT MEANS

Owen E. Jenkins, 3318 River Forest Drive, Fort Wayne, Ind. 46805

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U.S. Cl. 280—36 17 Claims
Int. Cl. B62d 21/14; B62b 1/00; B65d 5/00

## ABSTRACT OF THE DISCLOSURE

An apparatus comprising a collapsible container having a bottom and upstanding side walls. Rod receiving passageways are provided in each of the side walls which function toegther with two rods slidably positioned therein to lock the container either in a collapsed or an expanded position as desired. Two of the side walls have flange portions which depend downwardly beyond the bottom upon which the container may rest to elevate the bottom from a supporting surface. An anti-friction support means is secured to one of the side walls not having a depending flange by which the container may be tilted so as to be solely supported by the anti-friction means whereby the container may be easily slid over a supporting surface.

The present invention relates to a new and novel container including anti-friction support means which permits the container to be readily moved from place to place over a supporting surface.

The container of the present invention incorporates a novel anti-friction support means which is adapted to engage a supporting surface when the container is in its normal erected relationship and wherein there is no tendency for the container to slide over the supporting surface.

At the same time, the anti-friction support means is so positioned adjacent one side wall of the container that by grasping the upper portion of the container and tilting it slightly about the axis of the anti-friction support means, the container is adapted to be supported solely by the anti-friction support means, whereupon the container may be readily moved from place to place along the supporting surface.

The anti-friction support means of the present invention employs a very simple and compact arrangement for rigidly attaching it to the associated side wall of the container, and this support means may be readily assembled or disassembled with respect to the container in a minimum amount of time. Accordingly, the container itself may be readily stored and/or shipped with the anti-friction support means either already in operative position relative thereto, or the anti-friction support means may be stored and/or shipped separately and then readily assembled in operative relationship.

A further important feature of the present invention is the construction of the container so that it is collapsible and may be stored or shipped in a very small space. Unique locking means is also provided for locking the container either in its collapsed position or in its erected position, this locking means being of a simple yet efficient construction which may be readily manipulated.

An object of the present invention is to rovide a container including anti-friction support means which permits the container to be readily moved from place to place over a supporting surface.

Another object of the invention is the provision of a container including anti-friction support means which is collapsible so that it can be stored or shipped in a very small space.



Still another object of the invention is to provide a container including anti-friction support means, which is of collapsible construction, and which includes novel locking means for locking the container either in its collapsed or erected condition.

Yet another object of the invention is the provision of a container including anti-friction support means wherein this anti-friction support means comprises a very simple and effective structure which can be readily assembled or disassembled in a minimum amount of time.

A still further object of the invention is to provide a container including anti-friction support means which is quite simple and inexpensive in construction, and yet which provides a very strong and sturdy versatile container.

Other objects and many attendant advantages of the invention will become more apparent when considered in connection with the specification and accompanying drawings, wherein:

FIG. 1 is a plan view of a blank of material which may be employed in the construction of the container according to the present invention;

FIG. 2 is a side view of the erected container;

FIG. 3 is a view of the opposite side of the erected container;

FIG. 4 is a view of one end wall of the container partly broken away for the purpose of illustration;

FIG. 5 is a sectional view taken substantially along line 5—5 of FIG. 4 looking in the direction of the arrows;

FIG. 6 is a top view of the container of the present invention in an intermediate position between the collapsed position and the erected position;

FIG. 7 is a top perspective view of the container in its collapsed condition;

FIG. 8 is a top perspective view partly broken away for the purpose of illustration and showing the container in a partly erected position;

FIG. 9 is a top perspective view partly broken away illustrating the container in its erected position; and

FIG. 10 is a sectional view taken substantially along line 10—10 of FIG. 9 looking in the direction of the arrows.

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, a blank employed in the finished container is illustrated, this blank being indicated generally by reference numeral 20 and comprising in a typical example double-faced corrugated cardboard.

Blank 20 forms substantially one half of the finished container and includes a side wall 22 hingedly connected with a first end wall panel 24 by a double fold line 26. A second end wall panel 28 is hingedly connected with side wall 22 by a double fold line 30.

Four spaced holes 32 are provided through side wall 22 for a purpose hereinafter described. A hand hole 34 is provided through side wall 22 adjacent the upper portion thereof. A reinforcing flap 36 is hingedly connected with the upper portion of side wall 22 by a double fold line 38, reinforcing flap 36 having a hand hole 40 formed therethrough adapted to be aligned with hand hole 34 when the reinforcing flap is folded over.

A bottom wall 44 is hingedly connected with side wall 22 by a fold line 46. Bottom wall panel 44 is in turn hingedly connected with an integral support flap 48 by a fold line 50. Support flap 48 has a hole 52 formed therethrough for a purpose hereinafter described.

A first locking flap 54 is connected with bottom wall panel 44 by a fold line 56, and a second locking flap 58 is connected with the opposite end of the bottom wall panel 44 by a fold line 60.

End wall panel 24 is provided with an integral reinforcing flap 66 at the upper portion thereof and connected

therewith by a double fold line 68. In a similar manner, end wall panel 28 is connected with an integral reinforcing flap 70 by a double fold line 72.

End wall panel 84 is also connected with an integral support flap including portions 76, 78 and 80. Portion 76 is connected with the end wall panel 24 by means of double fold line 82, and portion 78 is interconnected with portion 76 by a double fold line 84. Portion 80 is in turn connected with portion 78 by a fold line 86. In a similar manner, end wall panel 28 is integrally connected with a support flap including portions 90, 92 and 94. Portion 90 is connected with end wall panel 28 by a double fold line 96, while portion 92 is connected with portion 90 by a double fold line 98. Portion 94 is in turn connected with portion 92 by a fold line 100.

Locking flap 54 is separated from end wall panel 24 and the portions 76 and 78 of the integral support flap by cut lines 104 and 106. In a similar manner, locking flap 58 is separated from end wall panel 28 and the associated portions 90 and 92 of the integral support flap by cut lines 108 and 110.

Referring now particularly to FIGS. 2, 4, 5, 7, 8 and 9, the manner in which blank 20 is assembled for use in the finished container may be more clearly understood. The integral reinforcing flap 36 at the upper portion of side wall 22 is folded over and secured in position by a pair of spaced staples 120 passing through wall 22 and the reinforcing flap 36. As seen particularly in FIG. 8, a rigid reinforcing rod 122 of steel or the like is enclosed by the folded-over flap 36 for rigidifying the upper edge of the container adjacent to the hand hole defined by the aligned holes 34 and 40 since this is the hand hole which is generally employed for holding the container when it is moved along on its anti-friction support means hereinafter described.

The integral reinforcing flap 66 at the upper portion of end wall panel 24 is folded over and held in place by a pair of staples 126 passing through members 24 and 66. The folded-over flap 66 is spaced from the upper edge of end panel 24 to provide a passageway 128 as seen most clearly in FIG. 2, this passageway being adapted to slidably receive a locking means in the form of an elongated rigid locking rod 130 having an offset end portion 132 to limit inward movement of the locking rod within the associated passageways.

The reinforcing flap 70 at the upper portion of end wall panel 28 is folded over and secured in position by a pair of staples 134 passing through members 28 and 70. Flap 70 is suitably spaced from the upper edge of end wall panel 28 to provide a passageway 136 as seen most clearly in FIG. 8 for receiving a locking means hereinafter described.

As seen most clearly in FIGS. 4 and 5, the integral support flap including portions 76, 78 and 80 at the lower end of end wall panel 24 is doubled upon itself so as to form a double layer formed by portions 76 and 78, while portion 80 serves as a spacer means for providing a space so that the locking flap 54 of the bottom wall panel 44 is adapted to be snugly received in such space and to rest upon portion 80, these portions 76, 78 and 80 all being retained in operative position by a pair of spaced staples 140. It will be apparent that with this arrangement, when the bottom wall panel 44 is swung downwardly so that the locking flap thereof enters the space as shown in FIG. 5, the bottom wall panel and the associated end wall panel will be interlocked together to prevent spreading of the lower portion of the container.

It will be understood that the opposite side of the blank is substantially symmetrical in that the integral support flap at the lower portion of end wall panel 28 is similarly folded upon itself and stapled in operative position so as to snugly receive the locking flap 58 at the opposite end of the bottom wall panel 44. One of the staples for holding portions 90, 92 and 94 in operative position is visible in FIG. 8 and is indicated by reference numeral 144.

In order to complete the container, a second blank 20' is provided, this second blank being substantially identical with blank 20 with the only exceptions being that in blank 20', the four holes 32 are eliminated from the corresponding side wall, and in place of the hole 52 provided in the support flap 48 of blank 20, a tab of corresponding configuration is provided in blank 20' to fit through this hole as hereinafter explained. Since blank 20' is in all other respects identical with blank 20, blank 20' has been given the same reference numerals primed as applied to blank 20, it being understood that blank 20' is folded and stapled in place in a similar manner, the only difference being that there is no reinforcing rod similar to rod 122 incorporated in the structure of blank 20' in its assembled position.

In the assembled container, the end wall panels 24 and 28' are hingedly interconnected with one another along the vertical edges thereof by a strip of flexible material 150 which is disposed in spanning relationship to these adjacent end wall panels and secured thereto. In a typical example, member 150 may comprise a strip of tape having an adhesive substance on one side thereof. In a similar manner, the end wall panels 28 and 24' are hingedly interconnected with one another by a flexible strip of material 152 which is adhesively secured to these members.

A second elongated locking member 132 is provided similar to the locking member previously described, this locking member also being slidably received within suitable passageways provided at the upper ends of end wall panels 24' and 28.

Referring now to FIGS. 2, 4 and 6–9 inclusive, the anti-friction support means of the present invention is attached to side wall 22 of the container and includes a frame means indicated generally by reference numeral 160, this frame means preferably being formed as a one-piece member of relatively rigid material such as steel rod stock or the like. The frame means includes a pair of opposite leg members 162 and 164 which are generally parallel with one another and which are joined by a connecting portion 166 at the upper ends thereof. Leg member 162 joins with an outwardly flaring portion 168 which in turn is connected with a downwardly extending portion 170 which terminates in a looped portion 172 for supporting an axle means hereinafter described.

Leg portion 164 is joined with an outwardly flaring portion 174 which in turn is connected with a downwardly extending portion 176 which terminates in a looped portion 178 for supporting the opposite end of the axle means hereinafter described.

As seen most clearly in FIG. 4, leg portion 162 is provided with a pair of integral inwardly extending offset portions 162' and 162'', these offset portions having a generally U-shaped configuration and extending inwardly through the aligned holes 32 provided in side wall 22 of the container. In a like manner, a pair of similar integral offset portions 164' and 164'' are provided in leg member 164 and extend in through the other pair of openings provided in side wall 22.

In the assembled position as seen in FIG. 4, it will be noted that the major portion of frame means 160 is disposed in abutting relationship to the outer facing surface 180 of side wall 22, while the offset portions of the leg members extend inwardly of the inner facing surface 182 of side wall 22 so as to provide spaces for receiving locking members 184 and 186, locking member 184 extending through aligned offset portions 162' and 164', and locking member 186 extending through aligned offset portions 162'' and 164''. These locking members are formed of a relatively rigid material such as steel rod stock or the like. The interrelationship and dimensions of the components are such that when the frame means is in the operative clamped position shown, locking members 184 and 186 are in engagement with the inwardly facing surface 182 of side wall 22 and the frame means

is tightly clamped in the operative position shown. It is evident that the frame means can be readily mounted in this operative position by inserting the offset portions through the holes in the side wall and then sliding the locking members into place as shown, the frame means being readily removable by reversing this process.

An axle means **200** has the opposite ends thereof supported within the looped portions **172** and **178** previously described, and a pair of rollers or wheel members **190** and **192** are freely rotatably supported upon this axle means. A pair of washers **194** and **196** are disposed about axle means **188** and are disposed inwardly of the wheel members **190** and **192** respectively. Washers **194** and **196** are retained in proper spaced relationship by a rigid sleeve **200** of cylindrical configuration and disposed in surrounding relation to axle means **188**. It is apparent that with this arrangement, the two wheel members **190** and **192** will be retained in spaced relationship from one another and are mounted for free rotation.

Considering now the manner in which the container of the present invention is utilized, let us first assume that the container is in its collapsed position as shown in FIG. 7. In this position, locking member **130** extends through the aligned passageways provided at the upper portions of end wall panels **24** and **28**, while the locking member **130'** extends through aligned passageways formed in the upper portions of end wall panels **24'** and **28'**. It will of course be understood that the bottom wall panels are folded up into the phantom line position shown in FIG. 8 and are sandwiched between the associated side wall and end wall panels. It is apparent that the locking members **130** and **130'** will prevent the container from being opened into its erected position when in the relationship as shown in FIG. 7.

If it is now desired to open up the container into its erected position, the locking members **130** and **130'** are withdrawn as illustrated in FIG. 6 so that the inner ends of these locking members do not extend outwardly of the end wall panels **24** and **28'** respectively. When the locking members have been so moved outwardly as illustrated in FIG. 6, the end wall panels are then free to pivot into the aligned relationship as shown in FIG. 9. When the end wall panels **24** and **28'** are aligned, locking member **130** is then pushed back into the aligned passageway so that it enters the passageway in the upper portion of end wall panel **28'**. In a similar manner, when end wall panels **28** and **24'** are aligned with one another, locking member **130'** is again pushed inwardly so that it will enter the passageway formed at the upper portion of end wall panel **28**. The container is then locked in the relationship shown in FIG. 9.

The bottom wall panels **44** and **44'** are then pivoted downwardly with the locking flaps **54** and **58** of bottom wall panel **44** entering into the spaces provided by the folded-over support flaps at the lower portion of end wall panels **24** and **28** respectively so as to be in the locked position shown in FIG. 2. In a similar manner, bottom wall panel **44'** is pivoted downwardly so that the locking flaps **54'** and **58'** thereof are disposed in the locking relationship shown in FIG. 3.

As the bottom wall panels are swung downwardly, the integral support flaps **48** and **48'** of bottom wall panels **44** and **44'** respectively are bent down at substantially right angles to the associated bottom wall panels **44** and **44'** so that they are disposed in abutting relationship with one another with the outermost edges thereof resting on the supporting surface. These integral support flaps are locked to one another by passing the tab **190** formed integral with support flap **48'** through the previously mentioned hole **52** provided in support flap **48**. The tab is seen in FIG. 8 wherein it is apparent that it is cut out of the material of support flap **48'** and is hingedly connected thereto along a fold line **192**. The tab may also be seen in FIGS. 2 and 3, FIG. 2 illustrating the manner in which the tab extends through hole **52**.

The container is now in its fully erected operative relationship wherein a very sturdy structure is provided.

If it is now desired to move the container along a supporting surface on the anti-friction support means, the container may be tilted from the full line position shown in FIG. 4 to the phantom line position shown therein whereby it is apparent that the full weight of the container and its contents are supported on the wheel members of the anti-friction means. The container can then be readily moved along a supporting surface. It will also be noted that when the container is in its full line position, the anti-friction support means is in such a position that it assists in supporting the container which is also supported by the integral folded-over support flaps at the lower ends of each of the end wall panels as well as the integral support flaps formed on the two bottom wall panels.

If it is desired to again collapse the container, the above-described procedure for erecting the container can simply be reversed.

It is apparent from the foregoing that there is provided according to the present invention a container including anti-friction support means which permits the container to be readily moved from place to place over a supporting surface. The anti-friction means of the present invention is mounted in a very simple and effective manner whereby it can be readily assembly or disassembled in a minimum amount of time. The container is also of a collapsible construction so that it may be stored or shipped in a very small space, the container including novel locking means for locking the container either in its collapsed or erected position as desired. The container is quite simple and inexpensive in construction, and yet at the same time provides a very strong and sturdy versatile arrangement.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the meters and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

**1.** A container comprising a bottom wall and upstanding side walls, said bottom wall closing off the bottom of said container, first support means connected to said side walls for supporting said bottom wall at the periphery thereof and between opposite peripheral boundary portions of said bottom wall, second support means including a portion of said first support means depending from said container for engaging a supporting surface, and third support means, said third support means being attached to one side wall of the container, said one side wall having an outwardly facing surface, said third support means including a frame means and at least one antifriction supporting element supported on said frame means for engaging a supporting surface, said antifriction element being generally beneath said one side wall, whereby the container is supported with said bottom wall being generally parallel to a supporting surface and capable of being tilted about said axis thereby to be supported solely by said third means and readily moved over the supporting surface.

**2.** Apparatus as defined in claim **1** wherein said one side wall of the container has a plurality of holes formed therein, said frame means including a plurality of offset portions extending through said holes, and holding means engaging said offset portions for retaining the frame means in operative position on said container.

**3.** Apparatus as defined in claim **2** wherein said one side wall also has an inner facing surface, a portion of said frame means being disposed adjacent said outer surface, said offset portions extending inwardly through said holes and inwardly of said inner facing surface, said holding

means extending through said offset portions and being disposed adjacent said inner facing surface.

4. Apparatus as defined in claim 3 wherein said frame means comprises a one-piece rigid member, an axle means supported by said frame means, and wheel means mounted on said axles means so that said wheel means may rotate with respect to said frame means.

5. Apparatus as defined in claim 1 wherein said upstanding side walls comprise two oppositely disposed end walls and two oppositely disposed side walls, each of said opposite side walls including a pair of end wall panels, each of said end wall panels having a vertically extending edge remote from said opposite side walls, said edges of said end wall panels each being adjacent to a similar edge of an end wall panel of the other of said two opposite side walls thereby defining a pair of adjacent end wall panels, each adjacent pair of end wall panels being hingedly interconnected with one another, said end wall panels also being hingedly interconnected with their respective opposite side walls, said bottom wall comprising a pair of bottom wall panels each of which is hingedly interconnected with one of said side walls, whereby said container is adapted to be collapsed and moved into erected position, locking means for engaging portions of said end wall panels to lock the container either in its collapsed position or its erected position.

6. Apparatus as defined in claim 5 wherein the end wall panels of each end wall are hingedly interconnected with one another by a flexible strip of material disposed in spanning relationship to the two adjacent panels and secured thereto.

7. Apparatus as defined in claim 5 wherein each of said end wall panels is provided with an integral folded-over reinforcing flap at the upper portion thereof, each of said flaps being secured to the associated end wall panel and defining therewith a passageway adapted to receive a rigid locking member.

8. Apparatus as defined in claim 7 wherein said locking means includes a plurality of elongated rigid locking members slidably positioned in said passageways.

9. Apparatus as defined in claim 5 wherein each of said side wall panels has an integral folded-over support flap at the lower portion thereof and defining a space with respect to the associated end panel for receiving a locking flap, each of said bottom wall panels having a locking flap formed along opposite ends thereof and adapted to be received within said space and to be interlocked with said support flaps at the lower portions of said end panels to prevent spreading of the lower portion of the container in erected position.

10. Apparatus as defined in claim 5 wherein each of said bottom wall panels includes an integral support flap spaced from the associated side wall, said support flaps being disposed in abutting relationship with one another when the container is in erected position so that the lower edges of said last-mentioned integral support flaps are adapted to engage a supporting surface.

11. Apparatus as defined in claim 10 wherein one of said last-mentioned integral support flaps has a locking tab formed integral therewith, the other of said last-mentioned integral support flaps having a hole formed therein for receiving the locking tab to hold the last-mentioned integral support flaps in assembled relationship.

12. Apparatus as defined in claim 1 wherein said first support means includes two of said side walls each having a flange portion depending downwardly beyond said bottom wall.

13. Apparatus as defined in claim 12 wherein each of said flange portions extend transversely away from said axis, said flange portions each having an upwardly opening elongated groove therein also extending transversely of said axis, wherein said bottom wall has a pair of flaps connected to opposite edges thereof, said flaps being positioned in said grooves, respectively.

14. Apparatus as defined in claim 13 further comprising means underlying said bottom wall and extending between opposite peripheral boundary portions thereof for supporting said bottom wall.

15. Apparatus as defined in claim 11 wherein one of said side walls has spaced holes formed therethrough, said frame means of the anti-friction support means having a plurality of offset portions thereof extending through said holes in said one side wall, holding means engaging said offset portions for retaining the frame means in operative position on said one side wall, axle means supported by said frame means, and said anti-friction elements being mounted on said axle means for rotation with respect to said frame means.

16. A container comprising a bottom wall and upstanding side and end walls, said bottom wall closing off the bottom of said container, and anti-friction support means, said support means including a frame means, and at least one anti-friction supporting element supported on said frame, said frame being attached to one of said side walls with said element in position for engaging a supporting surface, said side walls each having a pair of end wall panels, each of said end wall panels of said side walls being hingedly interconnected with an end wall panel of the other of said side walls, each pair of said end wall panels also being hingedly connected, respectively, with said side walls, said bottom wall comprising a pair of bottom wall panels each of which is hingedly connected with a respective one of said side and end walls, whereby said end wall panels and said bottom wall panels may be swung about the hinge interconnections thereof for collapsing and erecting the container, and locking means for locking the container in either its collapsed position or its erected position.

17. Apparatus as defined in claim 16 wherein each of said end wall panels includes means for defining passageways for receiving locking members, the passageways of adjacent end wall panels of each end wall being adapted to be aligned with one another for receiving a locking member to lock the container in its erected position, and the passageways of end wall panels of opposite end walls being adapted to be aligned with one another for receiving a locking member to lock the container in its collapsed position.

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BENJAMIN HERSH, *Primary Examiner.*

J. E. SIEGEL, *Assistant Examiner.*

U.S. Cl. X.R.

229—16; 280—47.26