KNOCKDOWN METALLIC RECEPTACLES
Oscar B. Cochran, Jr., Durham, Conn., assignor to Venture Products, Inc., Middletown, Conn., a corporation of Connecticut

Filed May 5, 1961, Ser. No. 126,737
9 Claims. (Cl. 312—257)

This invention relates to deposit and collection receptacles and more especially to a metallic box which can be quickly knocked down or put together. Receptacles of this type are generally used for storage of most solid substances, and especially for outdoor storage of articles such as newspapers, sand, wood, toys and implements.

It is an object of this invention to provide a knockdown metallic receptacle wherein the constituent parts, when dismantled, are substantially flat and capable of being packaged or stored together in a minimum amount of space.

It is a further object of this invention to provide a knockdown polygonal receptacle composed of a series of interconnecting members or group of members and in which each said member or members of the series locks an adjacent succeeding member or members in position.

This principle is illustrated in the drawings by a box in which the series comprises two side walls, a bottom, a front and rear wall, and an open frame near the top of the box, which frame serves as a key to the series. All of the members are connected in a series, with the key member. In order to dismantle the receptacle, the key member is first removed, after which the remaining members may be successively detached by proceeding to the side walls, bottom, front and rear walls in the order named.

It is another object of this invention to provide a metallic knockdown receptacle characterized by its exceptional light weight, strength, rigidity and structural simplicity.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

FIGURE 1 is an isometric view of a receptacle constructed in accordance with the invention;

FIGURE 2 is a sectional view taken along line 2—2 in FIGURE 1;

FIGURE 3 is a sectional view taken along line 3—3 in FIGURE 1;

FIGURE 4 is an enlarged detail view showing the connection between the bottom of the receptacle on one hand and the front and rear walls on the other;

FIGURE 5 is an enlarged detail view showing the connection between the key frame on one hand and the two side walls of the receptacle on the other;

FIGURE 6 is a sectional view taken along line 6—6 of FIGURE 1, and

FIGURE 7 is an exploded isometric view of the receptacle.

Referring more particularly to the drawings, the numeral 10 designates broadly my improved receptacle which is composed of two trapezoidal side walls 11, a rectangular bottom 12, a rectangular front wall 13, a rectangular back wall 14, a rectangular key frame or bracket 15, and a rectangular cover 16.

The proximate faces of side walls 11 each has secured thereto a horizontally disposed bracket 19 by suitable means such as spot welds 20. Brackets 19 have their respective upper edge portions spaced from the side wall faces so as to provide horizontally disposed and substantially U-shaped grooves 21, said grooves being adapted to telescopically receive downwardly extending flanges 12a of bottom 12.

The bottom 12 has upwardly extending flanges 12b which telescopically fit into inverted U-shaped grooves 22 formed between the respective lower edge portions of brackets 23 and the wall faces to which the brackets are attached. The upper edge portions of brackets 23 are secured respectively to the proximate faces of the front wall 13 and back wall 14 by spot welds 24 or the like. The proximate faces of the front and back walls 13 and 14 respectively, also have brackets 26 secured thereto by suitable means such as spot welds 27. The upper edge portions of brackets 26 are spaced from the respective proximate faces of the front and back walls to thereby provide grooves 28 for telescopically receiving the vertical flanges 15a of key bracket 15.

Similarly, the proximate faces of side walls 11 have brackets 30 respectively secured thereto by spot welds 31 or the like, and these brackets are positioned horizontally at the same elevation as that of brackets 26. The upper edge portions of brackets 30 are spaced from the respective proximate side wall faces to provide substantially U-shaped horizontal grooves 32 for telescopically receiving vertical flanges 15b of bracket 15.

It can be observed from the drawings and the above detailed description that the constituent members of the receptacle form an interconnecting series in which each member or group of members are detachably and in position by an adjacent succeeding member or group of members so that, upon removal of a key member of the series, each succeeding member or group of members of the series can be successively detached in a predetermined order. More specifically, the first of the series in the order of assembly comprises a pair of side walls 11, 11; the second of the series, a bottom member 12; the third of the series, a second pair of side wall members 13, 14; and the fourth of the series, the key or frame member 15.

The bottom portions of first members 11, 11 are releasably connected to the second member 12 by a first fastening means including vertical flanges 12a, 12a which telescopically fit in grooves 21, 21; the second member 12 is releasably connected to the third members 13, 14 of the series by a second fastening means including vertical flanges 12b, 12b which telescopically fit in grooves 22, 22; and the third members 13, 14 of the series are releasably connected to the fourth member 15 of the series by a third fastening means including vertical grooves 15a, 15a which telescopically fit in grooves 28, 28.

The fourth member 15 of the series is also releasably connected to the upper portions of first members 11, 11 by a fourth fastening means including flanges 15b, 15b which telescopically fit in grooves 32, 32.

In assembled position, the first telescopic fastening means 12a, 12a, 21, 21 is held in locked position by the bottom 12 and the second telescopic fastening means 12b, 12b, 22, 22; and the second telescopic fastening means 12b, 12b, 22, 22, in turn, is held in locked position by the second pair of side walls 13, 14 and the third telescopic fastening means 15a, 15a, 28, 28. The third telescopic fastening means 15a, 15a, 28, 28 and the fourth telescopic fastening means 15b, 15b, 32, 32 are releasable simultaneously at the beginning of a dismantling of the receptacle.

Dismantling of the receptacle must be effected in the reverse order of its assembly, by first removing member 15, then the first pair of side walls 13, 14, and then the bottom 12. Thus, the key member 15 is lifted to unlock the third fastening means 15a, 15a, 28, 28 during which the second pair of side walls 13, 14 are lifted. Then the bottom member 15 may be lifted to unlock the first fastening means 12a, 12a, 21, 21 and to complete the dismantling operation.

It will be noted that the lifting of key member 15
during the first dismantling step, also releases the fourth fastening means 15b, 15b, 32, 32 which serves solely as a lateral support for the upper portions of the first pair of side walls 11, 11. Therefore, the release of the fourth fastening means will not change the upright positions of side walls 11, 11 which then support the bottom and other walls.

In FIGURES 1-6 of the drawings, the four side walls and bottom are shown in assembled position, in which position the above-mentioned telescopic fastening means are completed, that is, the flanges 12a, 12b, 15a and 15b are completely inserted in grooves 21, 22, 28 and 32 respectively. When dismantling the receptacle, these contracted telescopic fastening means are extended vertically and separated as shown in FIGURE 7.

It can further be observed from the description above and from FIGURE 7 of the drawings that the tongue and groove fastening means or connections 12a, 21 and 15b, 32 lie in planes parallel with their associated side walls 11, 11 and that tongue and groove fastening means or connections 12b, 22 and 15b, 32 lie in planes parallel to their associated side walls 13 and 14. Since each side wall 11, 11, 13 and 14 and each of its respective fastening means lie in vertical planes as shown, the plane of each fastening means will therefore be parallel to a vertical axis parallel to the planes of the other fastening means or connections.

Suitable bolts 29 and 29a may be provided as supplementary securing means for eliminating any objectionable play at the top and bottom members 15 and 12 of the series. Bolt 29, when secured in position as shown, will also lock the key member which, in turn, will prevent any of the remaining interlocked members of the series from becoming detached. Bolt 29a serves a somewhat similar function with respect to the connection between members 12, 13, 14 but will not be necessary for the purpose of preventing the latter members from becoming detached unless and until the key member 15 is removed from the closed series.

In order to dismantle the receptacle while resting upon a flat surface, the bolt 29 is first removed to permit the removal of key member 15. Then members 13, 14, member 12, and members 11, 11 may be detached in the order named.

The above-described interlocked series of detachable members provides a rigid connection between the side walls 11, 11 and front and back walls 13 and 14 on one hand, and the horizontally disposed and vertically spaced bottom and key members 12 and 15. The vertical walls 11, 13 and 14 are not otherwise secured to the other.

4. A knockdown receptacle comprising a pair of laterally spaced vertically disposed side walls, a second pair of laterally spaced vertically disposed side walls arranged transversely of said first pair, a quadrilateral bottom arranged transversely of both of said pairs of side walls, a first means for telescopically securing opposite edges of said bottom respectively upon the lower portions of the first pair of side walls, a second means including a telescopic connection between the lower portions of the second pair of side walls and the bottom of the receptacle for releasably locking the first means in secured position, and a third means telescopically secured to the upper portions of the second pair of side walls for releasably locking said second means in secured position, said third means including a rectangular frame having an opening therein for permitting access to the interior of the receptacle and each of said telescopic securing means including a tongue and groove connection, said second and first telescopic means being vertically movable and successively releasable upon release of said third means.

5. A knockdown receptacle comprising a horizontally disposed polygonal bottom, a vertical side wall on each side of said bottom, means for telescopically securing the lower portion of at least one of said walls to an edge of said bottom, a second means including a telescopic connection between the lower portions of the other of said side walls and the other of said bottom edges for releasably locking said first means in secured position, and a third means telescopically connected to the upper portions of said other side walls for releasably locking said second means in secured position, said third means including a rectangular frame having an opening therein for permitting access to the interior of the receptacle and each of said telescopic securing means including a tongue and groove connection, said third, second and first telescopic securing means being vertically movable and successively releasable in the order named.

6. A knockdown receptacle comprising a pair of vertically disposed and laterally spaced side walls, a horizontally disposed quadrilateral bottom, means for releasably fastening the lower portions of said pair of side walls respectively to opposite edges of said bottom, a second pair of vertically disposed and laterally spaced side walls, a second means for releasably locking said first means in fastened position and for releasably fastening the lower portions of the second pair of side walls respectively to the other opposed edges of said bottom, and a third means releasably engageable with the upper portions of said second pair of side walls for releasably locking said second means in fastened position, said third means including a rectangular frame having an opening therein for permitting access to the interior of the receptacle and each of said telescopic tongue and groove connection engageable and disengageable along a plane substantially parallel to an axis parallel to the planes of engagement of the other telescopic connections.

7. A knockdown receptacle comprising a pair of laterally spaced vertical side walls, a second pair of laterally spaced vertical side walls arranged transversely of said first pair, a quadrilateral bottom arranged trans-
versely of both of said pairs of side walls, vertically ex-
tensible telescopic means releasably fastening the lower
portions of said first pair of side walls respectively to
opposite edges of said bottom, a second vertically ex-
tensible telescopic means releasably fastening the lower
portions of said second pair of side walls to the other
opposite edges of said bottom, locking means including
said second fastening means for securing said first tele-
scopic fastening means in contracted position, a third
vertically extensible telescopic means releasably fastening
the upper portions of said first and second pairs of side
walls in fixed relative positions, and a second locking
means including said third fastening means for securing
said second telescopic fastening means in contracted posi-
tion, whereby upon release of said third fastening means
the release of said second and first fastening means may
be successively effected in the order named by said second
and first locking means respectively.

5. A knockdown receptacle comprising a pair of later-
ally spaced vertically disposed side panels, a horizontally
disposed quadrilateral bottom panel having its opposite
edges telescopically mounted in contracted position re-
spectively upon the lower portions of said side panels,
a second pair of laterally spaced vertically disposed side
panels arranged transversely of said first pair, the lower
portions of said second pair of side panels being tele-
scopically mounted in contracted position respectively
upon the other opposite edges of said bottom, and a
second horizontally disposed quadrilateral panel having
its edges telescopically mounted in contracted position
respectively upon the upper portions of said first and
second pairs of side panels, each of said telescopic mounts
being vertically extensible and releasable whereby the re-
ceptacle may be knocked down by successively lifting
said quadrilateral second panel, said second pair of side
panels, and said quadrilateral bottom panel in the order
named.

6. A knockdown receptacle comprising a pair of ver-
tically disposed side panels, a horizontally disposed polyg-

c

c

References Cited in the file of this patent

UNITED STATES PATENTS

744,405 Reno ---------------- Nov. 17, 1903
1,224,234 Taber ----------------- May 1, 1917
1,437,195 Rasmussen ------------ Nov. 28, 1922
1,713,661 Komball ------------- May 21, 1929
2,569,828 Peacock ------------- Oct. 2, 1951
2,966,385 Murphy ------------- Dec. 27, 1960

FOREIGN PATENTS

777,263 Great Britain --------- June 19, 1957