

Feb. 7, 1956

C. C. AVERILL

2,733,828

COLLAPSIBLE STACKING RECEPTACLE

Filed Oct. 13, 1952

3 Sheets-Sheet 1

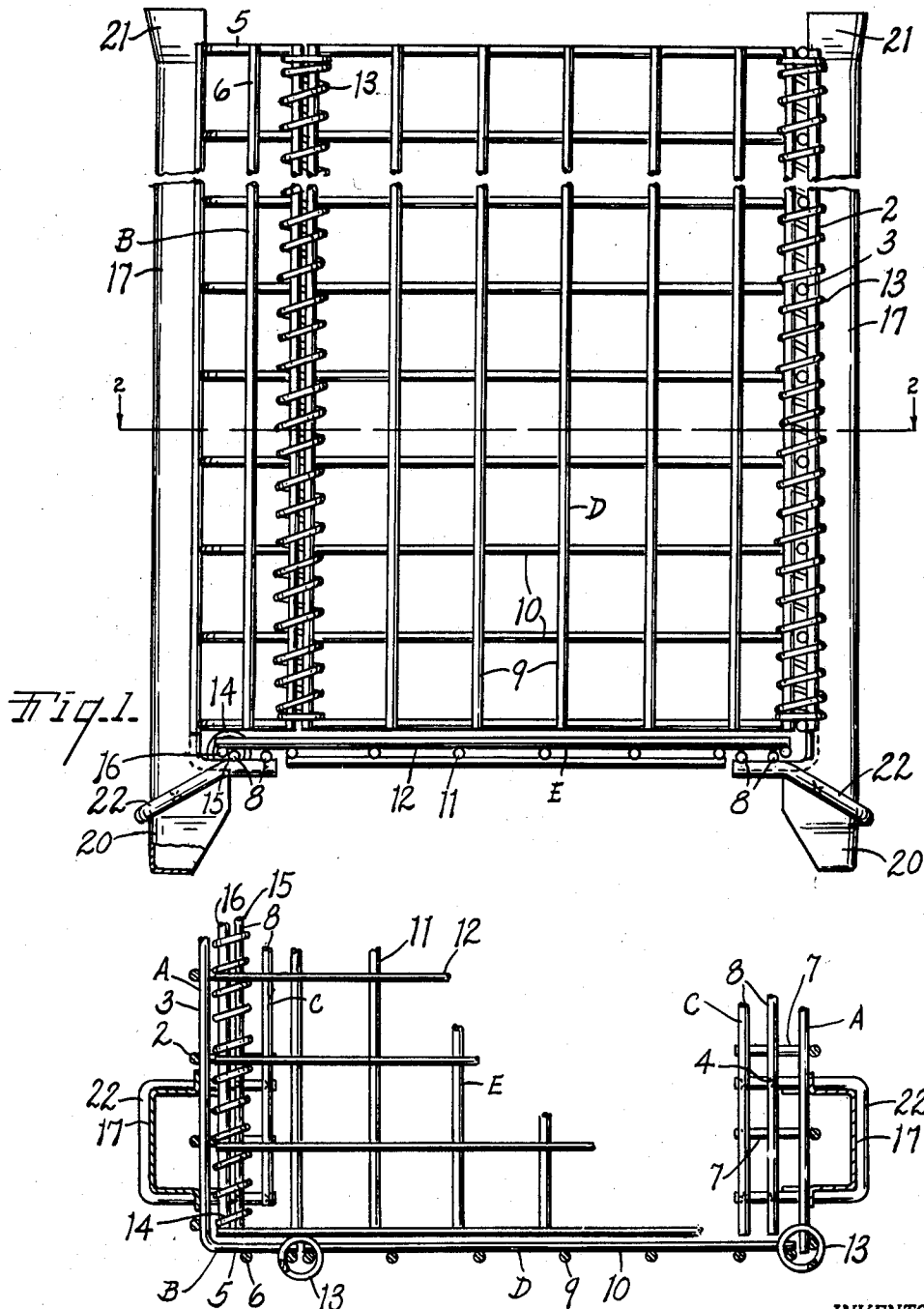


Fig. 2.

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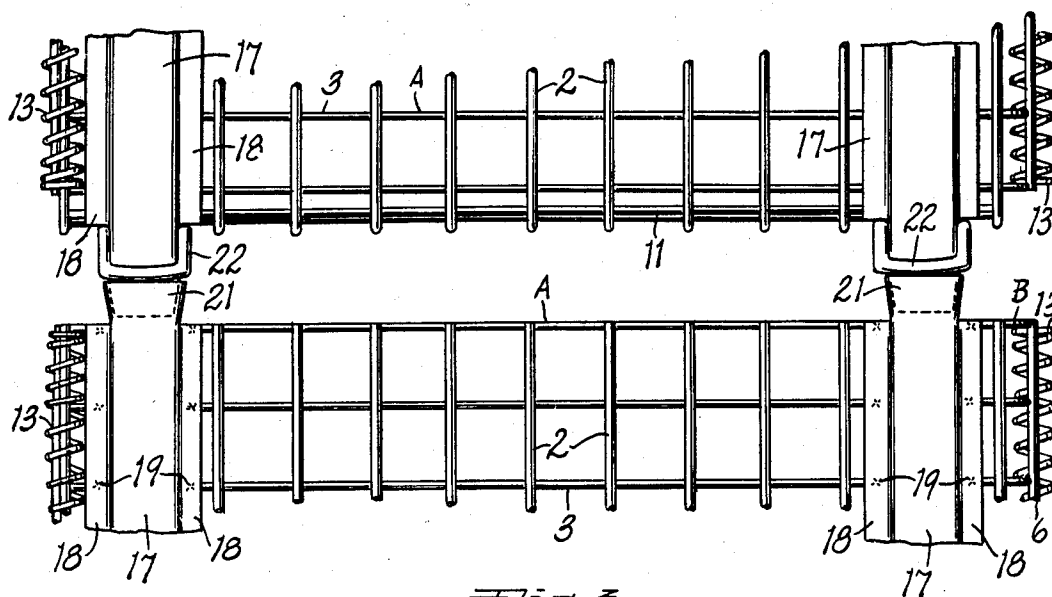


Fig. 3.

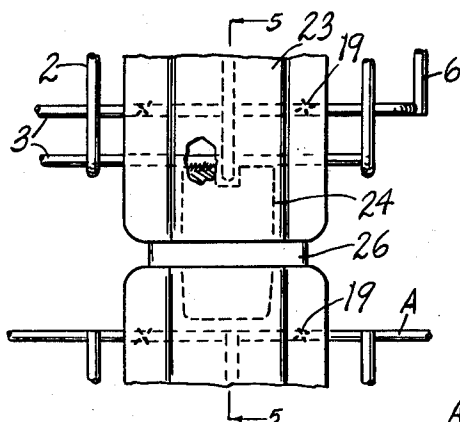


Fig. 4-

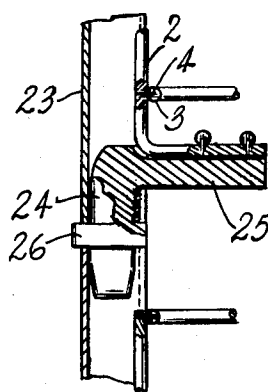


Fig. 5.

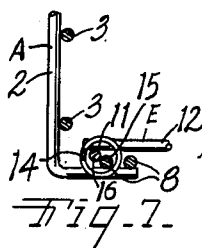


Fig. 7

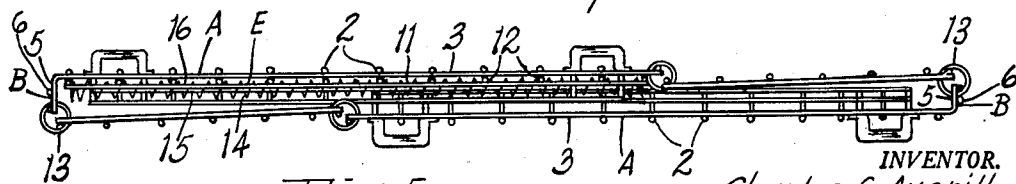


Fig. 6.

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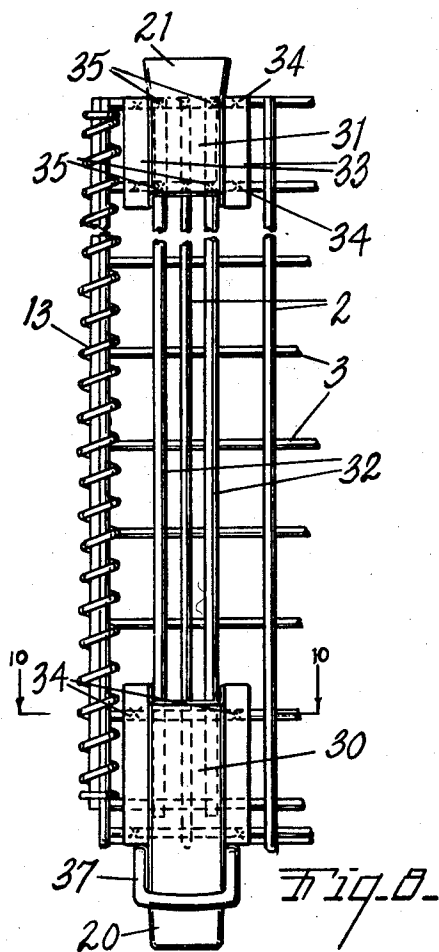
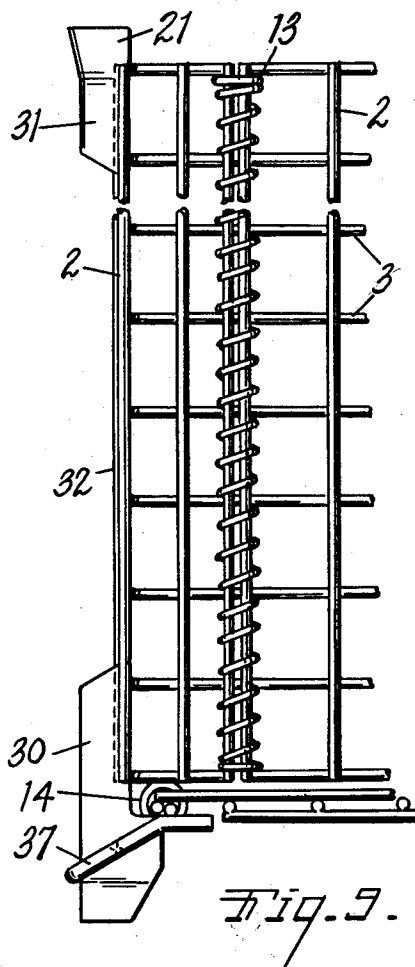
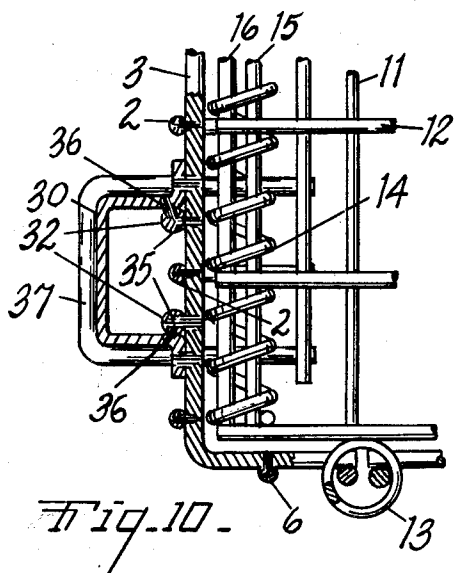
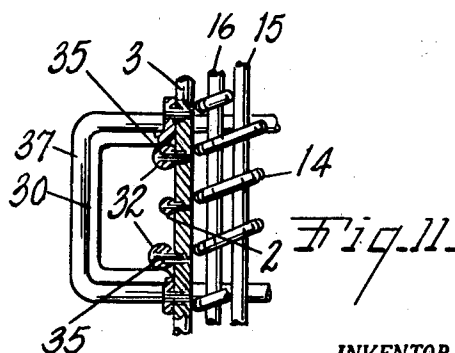
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COLLAPSIBLE STACKING RECEPTACLE

Filed Oct. 13, 1952

3 Sheets-Sheet 3



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2,733,828

COLLAPSIBLE STACKING RECEPTACLE

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Application October 13, 1952, Serial No. 314,552

14 Claims. (Cl. 220-6)

This invention relates to improvements in collapsible stacking receptacle.

The main objects of this invention are:

First, to provide a collapsible stacking receptacle which may be quite compactly collapsed and at the same time is strong and rigid when erected and stacked with other receptacles of like structure.

Second, to provide a collapsible stacking receptacle which may be formed mainly of wire or light rod and is capable of sustaining relatively heavy loads.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary end elevational view of a structure embodying my invention.

Fig. 2 is a fragmentary view in horizontal section on a line corresponding to 2-2 of Fig. 1.

Fig. 3 is a fragmentary side elevational view illustrating a pair of the receptacles in stacked relation.

Fig. 4 is a fragmentary side elevational view showing a pair of stacked receptacles of modified form or embodiment of my invention.

Fig. 5 is a fragmentary view partially in vertical section on a line corresponding to 5-5 of Fig. 4.

Fig. 6 is a top view of the receptacle in collapsed position.

Fig. 7 is a fragmentary view in vertical section on a line corresponding to line 7-7 of Fig. 2.

Fig. 8 is a fragmentary side elevational view of another embodiment of my invention.

Fig. 9 is a fragmentary end elevational view thereof.

Fig. 10 is an enlarged fragmentary horizontal section on a line corresponding to 10-10 of Fig. 8.

Fig. 11 is a fragmentary view partially in horizontal section showing a slight modification of the embodiments of Figs. 8, 9 and 10.

In the embodiment of my invention illustrated the side walls generally designated A-A are formed of vertical series of spaced parallel slats 2 and a horizontal series of spaced parallel slats 3 disposed in crossed relation and welded together at their crossing points, the welds being indicated at 4, see Fig. 5.

The horizontal slats 3 have laterally turned end portions or extensions 5 at their diagonally opposite ends, there being a plurality of vertical slats 6 secured to these laterally turned ends and coacting therewith to constitute end wall members generally designated B-B integral with the side walls.

The lower ends of the vertical slats of the side walls have intumed extensions 7 connected by a plurality of horizontal slats 8 disposed on the upper side thereof and fixedly secured thereto by welding as indicated at 4. These parts constitute bottom support members, generally designated C-C. The end walls, generally designated D-D are formed of vertical slats 9 and horizontal slats

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10 disposed in crossed relation and fixedly secured thereto at their crossing points.

The bottom, designated generally E-E, is formed of longitudinal slats 11 and transverse slats 12 fixedly connected at their crossing points. The end walls are hingedly or swingably connected at one vertical edge to the adjacent vertical end wall members and at their other vertical edge to the adjacent edge of the other side wall. This hinging or swinging connection is desirably helically coiled hinge members 13 which are spiralled about the adjacent vertical slats as illustrated.

The bottom is hingedly connected to one of the bottom support members by means of a similar helically coiled hinge member 14 which is spiralled around a longitudinal slat 15 of the support member and the outer longitudinal slat 16 at one edge of the bottom. This connection permits the bottom being swung to erected supported relation on the bottom support member as is best shown in Fig. 1 or swung to a collapsed position against the inner side of the side wall to which it is hingedly connected as is shown in Fig. 6. When the bottom is collapsed it permits the side and end walls being collapsed upon each other as is shown in Fig. 6. The providing of the side walls A with the end wall member portions B enables the parts being folded into substantial parallel relation as is shown in Fig. 6.

The receptacles of my invention are designed for use in stacking one receptacle upon another as is illustrated in Figs. 3, 4 and 5. To reinforce the walls and to carry the stacking load I provide uprights 17 desirably formed of sheet stock formed into channel section. These uprights are of inwardly facing channel section and have laterally turned flanges 18 which are welded at 19 to horizontal slats 3 of the side members. The lower ends 20 of the uprights project below the lower edges of the side walls and the bottom and constitute legs and stacking lugs.

The lower portions of the stacking lugs are desirably tapered as indicated in the drawing to facilitate engagement with the flared socket portion 21 of the uprights which project above the upper edges of the walls.

U-shaped stop members 22 are disposed in embracing relation to the uprights and welded thereto as indicated with the ends of the arms disposed below and welded to the longitudinal slats of the bottom support members. With this arrangement the receptacles may be stacked as is indicated in Fig. 3. The load of the upper receptacle being carried by the uprights of the lower receptacles. This permits the use of relatively light stock for the receptacle walls and bottom. The receptacles may be handled by lifting trucks.

In the embodiment shown in Figs. 4 and 5 the uprights 23 corresponding to the uprights 17 are also of channel section. The stacking lugs 24 are formed of separate pieces and provided with inwardly projecting arms 25 which are welded to the undersides of the bottom support members as shown in Fig. 5. The lugs are provided with collar like stops 26 otherwise the structure is substantially the same as in the embodiment of Figs. 1 to 3 inclusive.

In the embodiment shown in Figs. 8, 9, 10 and 11 the wall structure is the same as that described. In this embodiment the combined upright, stacking lugs and socket members, which are of one piece in the embodiment of Figs. 1 to 3 inclusive, are made up of three elements namely, the combined leg and stacking member 30, the socket member 31 and the rod like upright connecting members 32. The members 30 and 31 in this embodiment are both of inwardly facing channel section and are provided with laterally turned flanges 33 on their arms which are fixedly secured as by spot welding 34 to a plurality of the horizontal slats of the walls.

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The rod like elements 32 are disposed with their ends within the members 30 and 31 and are fixedly secured to a plurality of the horizontal slats, as is indicated at 35, desirably by spot welding. The members 32 are also desirably welded to the combined lug and leg members and to the socket members as indicated at 36 of Fig. 10. The members 30 are secured to project below the walls while the members 31 are secured to project above the walls and are outwardly flared as in the embodiments of Figs. 1 to 3 inclusive.

In the embodiment shown in Fig. 11 the upright elements 32 are not welded to the members 30 and 31 but are fixedly secured thereto through the connection of the members 30 and 31 to the horizontal slats to which the members 32 are also secured. This provides a fixed connection and avoids the necessity of the welds 36.

The embodiment of Figs. 8 to 11 inclusive is somewhat more economical in parts than that of Figs. 1 to 3 and of Figs. 4 and 5, and further clearance is provided at the sides of the receptacle walls to which the uprights are secured which is of advantage in handling where the receptacles are stacked side by side. The U-shaped stops 37 embrace the members 30 and are secured thereto in the same relation as the stops 22 of Figs. 1 to 3.

I have not attempted to illustrate or describe other embodiments of my invention as it is believed that this description will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats and constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls and the other vertical edge of each end wall being swingably connected to the adjacent vertical edge of the side walls by helically coiled hinge members spirally embracing adjacent vertical slats, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when erected to supportably overlap said bottom support members, said bottom being connected to one longitudinal slat of one bottom support member by a helically coiled hinge member spirally embracing said slat and one of the longitudinal slats of the adjacent bottom support member, said bottom being foldable upwardly against the inner side of the side wall to which it is so connected.

2. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats and constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls and the other vertical edge of each end wall being swingably connected to the adjacent vertical edge of the side walls, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when

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erected to supportably overlap said bottom support members, said bottom being swingably connected to one bottom support member to rest upon the other when erected, said bottom being foldable upwardly against the inner side of the side wall to which it is so connected.

3. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats and constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls and the other vertical edge of each end wall being swingably connected to the adjacent vertical edge of the side walls, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when erected to supportably overlap said bottom members, said bottom being swingably connected to one bottom support member to rest upon the other when erected, said bottom being foldable upwardly against the inner side of said side wall to which it is so connected, uprights of inwardly facing channel section disposed adjacent the ends of the side walls and secured to a plurality of horizontal slats thereof with the lower ends of the uprights projecting below the bottom and constituting legs and stacking lugs and their upper ends extending above the upper edges of the walls to constitute sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the lugs of a like superimposed receptacle and U-shaped stop members disposed to embrace said uprights adjacent to but in spaced relation to the lower ends thereof, the arms of the said stop members being secured to the under sides of horizontal slats of said bottom support members.

4. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats and constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls and the other vertical edges thereof being swingably connected to the adjacent vertical edges of the side walls, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when erected to supportably overlap said bottom members, said bottom being swingably connected to one bottom support member to rest upon the other when erected, said bottom being foldable upwardly against the inner side of the side wall to which it is so connected, uprights of inwardly facing channel section disposed adjacent the ends of the side walls and secured to a plurality of horizontal slats thereof with the lower ends of the uprights projecting below the bottom and constituting legs and stacking lugs and their upper ends extending above the upper edges of the walls to constitute sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the lugs of a like superimposed receptacle.

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5. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls, and the other vertical edges thereof being swingably connected to the adjacent vertical edges of the side walls by helically coiled hinge members spirally embracing adjacent vertical slats, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when erected to supportedly overlap said bottom support members, said bottom being connected to one longitudinal slat of one bottom support member by a helically coiled hinge member spirally embracing said slat and one of the longitudinal slats of the adjacent bottom support member, said bottom being foldable upwardly against the inner side of the side member to which it is so attached and uprights disposed adjacent the ends of the side walls and secured to a plurality of horizontal slats thereof and provided with stacking lugs at their lower ends and their upper ends extending above the upper edges of the walls to receive the stacking lugs of a like superimposed receptacle.

6. In a collapsible stacking receptacle the combination of side walls comprising vertical and horizontal slats fixedly connected at their crossing points, the horizontal slats of the side walls having laterally turned end extensions at diagonally opposite ends thereof connected by a plurality of the vertical slats constituting end wall members integral with the side walls, the lower ends of the vertical slats of the side walls having inturned extensions connected by horizontal slats and constituting bottom support members, end walls comprising vertical and horizontal slats fixedly connected at their crossing points, one vertical edge of each end wall being swingably connected to the adjacent vertical edge of said end wall members of said side walls, and the other vertical edges thereof being swingably connected to the adjacent vertical edges of the side walls, a bottom comprising crossed longitudinal and transverse slats fixedly connected at their crossing points and adapted when erected to supportedly overlap said bottom support members, said bottom being connected to one longitudinal slat of one bottom support member, said bottom being foldable upwardly against the inner side of the side member to which it is so attached and uprights disposed adjacent the ends of the side walls and secured to a plurality of horizontal slats thereof and provided with stacking lugs at their lower ends and their upper ends extending above the upper edges of the walls to receive the stacking lugs of a like superimposed receptacle.

7. In a collapsible stacking receptacle the combination of side walls having laterally turned end portions at diagonally opposite ends thereof constituting end wall members integral with the side walls, the side walls also having inturned portions at the bottoms thereof constituting a bottom support member, end walls hingedly connected at one vertical edge to the adjacent vertical edge of said end wall members of said side walls and the other vertical edges thereof being connected to the adjacent vertical edges of the side walls, a bottom adapted when erected to supportedly overlap said bottom support members and being connected to one of them and being foldable upwardly against the inner side of the side wall to which it is so attached, and uprights of inwardly facing channel section secured on the outer sides

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of the side walls adjacent the ends thereof with the lower ends of the uprights projecting below the bottom and constituting feet and stacking lugs and their upper ends extending above the upper edges of the walls and constituting sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the stacking lugs of a like superimposed receptacle.

8. A stacking receptacle having pairs of opposed vertical walls, the walls being hingedly connected to each other to permit collapsing of the receptacle, a first set of members lapped upon the vertical sides of said walls and secured thereto and projecting below the walls to provide stacking and leg members, a second set of members lapped upon the vertical sides of said walls and secured thereto adjacent the upper edges of the walls to provide stacking members, the members of the first set being vertically aligned with the members of the second set, one of the sets of members having vertically extending channel-like guideways whereby the stacking members adjacent the upper edges of one receptacle telescopically engage the stacking and leg members of a like superimposed receptacle, each member of the first and second sets of members being fixedly secured to one wall only between the hinged connections of said wall to adjacent walls at the ends thereof to permit collapsing of the walls, a bottom for the receptacle, and means for supporting the bottom adjacent the lower edges of the walls and in a plane approximately at right angles to the walls when the walls are in erected position, said means including means which permit displacement of the bottom relative to said walls and from said plane to permit collapsing of the side walls.

9. In a stacking receptacle the combination of a bottom, and side and end walls hingedly connected at their adjacent ends for collapsing, uprights of inwardly facing channel section secured on the outer sides of the side walls adjacent the ends thereof with the lower ends of the uprights projecting below the bottom and constituting feet and stacking lugs and with the upper ends of the uprights extending above the walls and constituting sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the stacking lugs of a like superimposed receptacle, each upright being secured adjacent opposed side edges thereof to one wall and projecting outwardly in channel-like form from said wall between the secured connections of the upright thereof, said bottom being hingedly connected to one of said walls adjacent the lower edge thereof and being swingable upwardly to a position parallel to said wall and to the uprights when the receptacle is in a collapsed position, and stops limiting the telescoping engagement of the lugs with the sockets positioned to transmit the load of the superimposed receptacle to the uprights of the lower receptacle.

10. A stacking receptacle comprising side and end walls hingedly connected to each other, uprights of inwardly facing channel section secured on the outer sides of the walls adjacent the ends thereof with the lower ends of the uprights projecting below the bottom and constituting feet and stacking lugs and with the upper ends of the uprights extending above the walls and constituting sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the stacking lugs of a like superimposed receptacle, each upright being secured to one wall only and projecting outwardly in channel-like form from the wall to which it is connected.

11. A stacking receptacle having opposed side walls hingedly connected to each other and comprising vertical and horizontal slats fixedly connected at their crossing points, and uprights of inwardly facing channel section disposed adjacent the ends of the side walls and each having laterally turned flanges on the edges of their arms

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fixedly secured to a plurality of the horizontal slats of one wall only between the hinged connections of said wall to adjacent walls, the lower ends of the uprights projecting below the walls and constituting legs and stacking lugs and with the upper ends of the uprights extending above the walls and constituting sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the stacking lugs of a like superimposed receptacle.

12. A stacking receptacle having opposed side walls hingedly connected to each other and comprising fixedly connected vertical and horizontal slats, and uprights of inwardly facing channel section disposed adjacent the ends of the side walls and fixedly secured to a plurality of the horizontal slats with the lower ends of the uprights projecting below the walls and constituting stacking lugs and with the upper ends of the uprights extending above the walls and constituting sockets, said sockets having a horizontal sectional dimension greater than the horizontal sectional dimension of the stacking lugs for receiving the stacking lugs of a like superimposed receptacle, and a bottom hinged to one of the side walls adjacent the lower edge thereof and being in supported relation to an opposed side wall adjacent the lower edge thereof when the receptacle is in an erected position and being swingable upwardly against the inner side of the wall to which it is hinged and being disposed approximately parallel to the side walls and uprights when the receptacle is in a collapsed position.

13. A stacking receptacle having side walls hingedly connected to each other and comprising fixedly connected vertical and horizontal slats, stacking lug and leg members, socket members vertically aligned with the stacking lug and leg members, said socket members and said stacking lug and leg members being of inwardly facing channel section and having laterally projecting flanges on their arms fixedly secured to a plurality of the horizontal slats and having the portions thereof intermediate their flanges projecting outwardly in spaced relation from the horizontal slats, the stacking lug and leg members projecting below the walls and the socket members being disposed adjacent to the upper edges of the walls, and

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upright members disposed with their ends within the vertically aligned stacking lug and leg members and socket members and fixedly secured thereto and to horizontal slats of the walls, and a bottom hingedly connected to one of the side walls adjacent the lower edge thereof and in supported relation to an opposed side wall adjacent the lower edge thereof when the receptacle is in erected position, said bottom being swingable to a position approximately parallel to the side walls and stacking lug and leg members when the receptacle is in a collapsed position.

14. A stacking receptacle having side walls hingedly connected to each other and comprising fixedly connected vertical and horizontal slats, stacking lug and leg members, socket members vertically aligned with the stacking lug and leg members, said socket members and said stacking lug and leg members being of inwardly facing channel section and having laterally projecting flanges on their arms fixedly secured to a plurality of the horizontal slats and having the portions thereof intermediate their flanges projecting outwardly in spaced relation from the horizontal slats, the stacking lug and leg members projecting below the walls and the socket members being disposed adjacent to the upper edges of the walls, and a bottom hingedly connected to one of the side walls adjacent the lower edge thereof and in supported relation to an opposed side wall adjacent the lower edge thereof when the receptacle is in erected position, said bottom being swingable to a position approximately parallel to the side walls and stacking lug and leg members when the receptacle is in a collapsed position.

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