March 24, 1970 L. R. ACKERMAN ET AL 3,502,291

COLLAPSIBLE FRAME

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FIG. 1

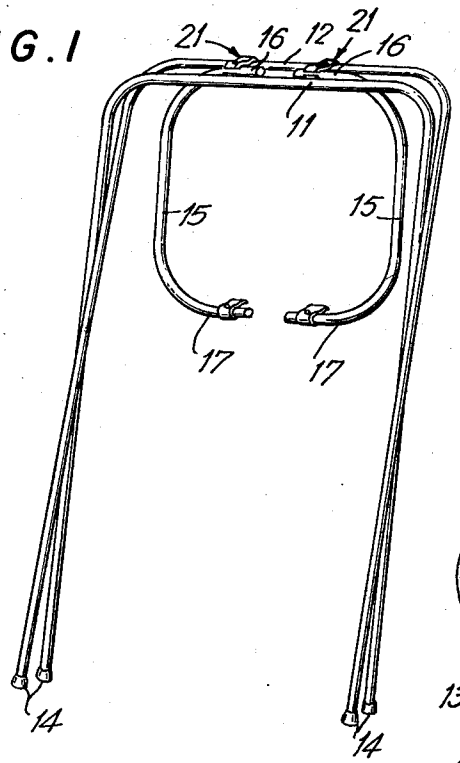
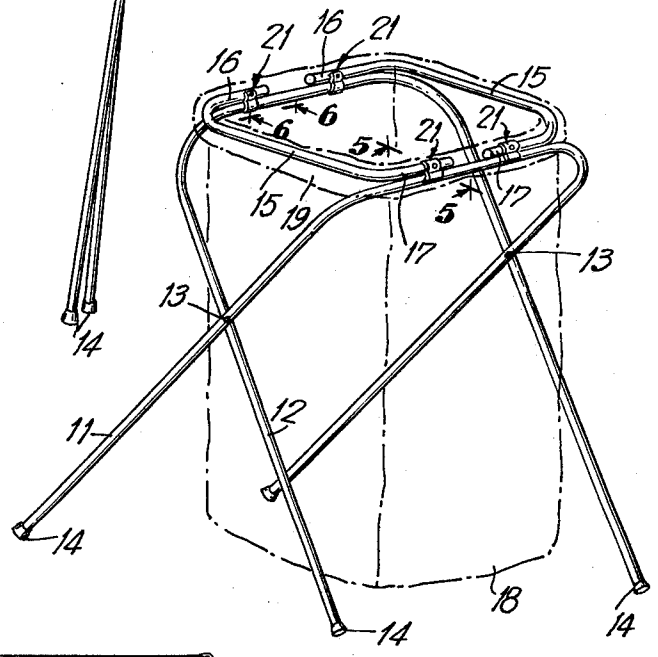


FIG. 2



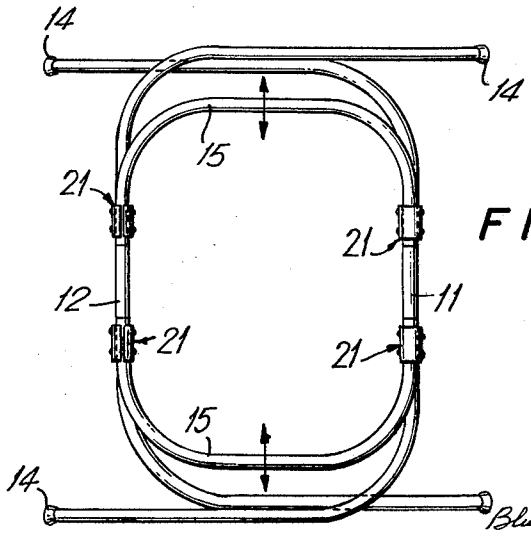


FIG. 3

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FIG. 4

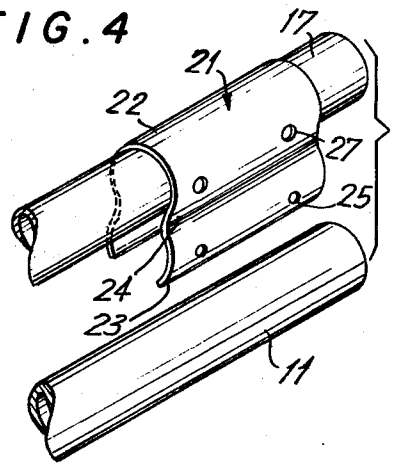


FIG. 5

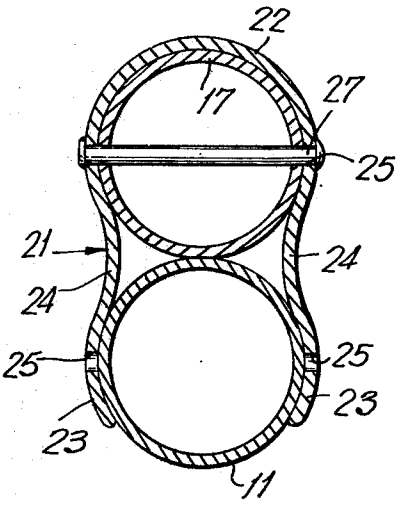


FIG. 6

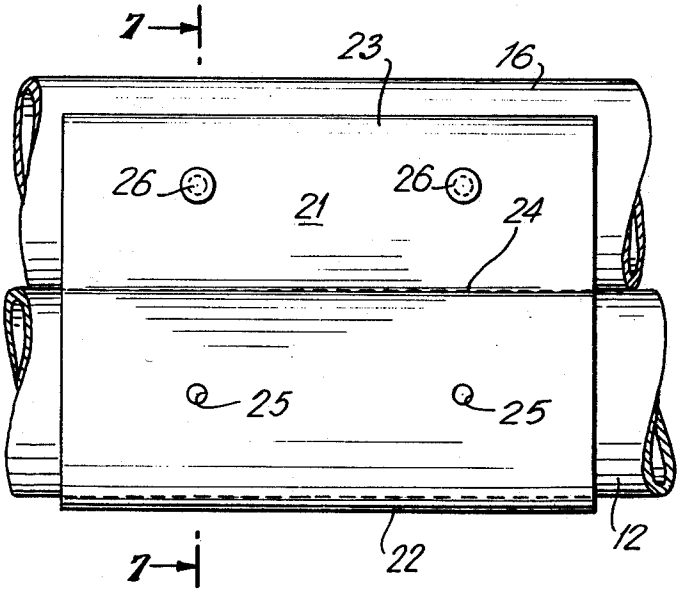
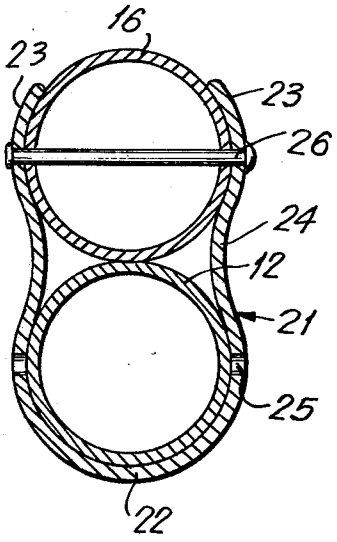


FIG. 7



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COLLAPSIBLE FRAME

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U.S. Cl. 248—97 8 Claims

ABSTRACT OF THE DISCLOSURE

A frame which is collapsible for compact storage and which opens to receive and support disposable bags. The frame adjusts for receiving and supporting disposable bags of various sizes.

BACKGROUND OF THE INVENTION

This invention relates generally to a collapsible frame which, when open, is adapted to support a disposable bag. Disposable bags, particularly plastic bags, have become popular for home and industrial use for receiving waste material. Around the home, such bags, which are quite inexpensive, the used to receive leaves, grass clippings, weeds, waste paper, garbage, etc. When the bag is filled, it can be readily closed with a twist tie and the bag with its contents can be carted away. The plastic bags have greatly simplified the problem of the handling and disposal of waste materials since the bags are light weight but strong and store very compactly prior to use.

Due to the nature of the bags, the bags are not self-supporting and a means must be provided for holding the bag in open position while in use. Bags designed for yard use are quite large and, to make effective use of them, must be held substantially fully open and should preferably be supported by means that will permit the bags to be held both vertically and horizontally.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a frame is provided which is of light weight construction and which can be folded for compact storage when not in use. The frame is easily set up for supporting a bag and is adjustable for different size bags. When set up, the frame relatively rigid so that the bag may be supported both vertically and horizontally. With the improved frame construction of the instant invention, the frame can be adapted for use as a table or bench, with other uses also possible.

Accordingly, it is an object of this invention to provide a collapsible frame of improved construction.

Another object of the invention is to provide an improved collapsible frame which may be readily fabricated with a minimal number of parts.

A further object of the invention is to provide a collapsible frame which can be adjusted to receive and support plastic bags of different sizes.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a frame constructed

in accordance with the instant invention shown in the collapsed or folded position;

FIG. 2 is a perspective view of the frame when set up and supporting a plastic bag shown in phantom lines;

FIG. 3 is a top plan view of the set up frame of FIG. 2;

FIG. 4 is a partial perspective view of the clip and tube construction of the preferred embodiment;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 2;

FIG. 6 is a partial view looking in the direction of the arrows 6—6 of FIG. 2; and

FIG. 7 is a sectional view taken along line 7—7 of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 through 3, a pair of U-shaped leg members 11 and 12 are pinned together in intermediate the length of the legs thereof by means of suitable pins 13. The leg members may be identical and are preferably formed of hollow aluminum tubing which is relatively strong but light weight. Suitable tips 14 may be attached to the ends of the legs of leg members 11 and 12.

A pair of frame members 15 are adapted to extend across the top of the collapsible frame when in the open, FIG. 2, position. Each frame member has a substantially U-shaped configuration with the leg on one side of each frame member being indicated as 16 and the leg on the opposite side of each frame member being indicated as 17. The legs of the frame members are also preferably formed of tubular aluminum material and overlie the center portions of U-shaped leg members 11 and 12 as shown in FIG. 2. In the set up position shown in FIG. 2, a disposable bag 18 is supported within frame members 15 and leg members 11 and 12 with the top portion 19 of the bag being folded over in order to retain the bag on the frame members. The bag is generally long enough to have the bottom thereof rest on the ground in order to support the substantial weight of debris that may eventually be placed in the bag. Suitable clips (not shown) may be utilized to hold the folded over top portion 19 of the bag onto frame members 15.

The frame members 15 are secured to legs 11 and 12 by means of clips 21 which will now be described. In order to minimize the number of parts required for the fabrication of the collapsible frame, all four clips 21 are identical but are differently utilized as will be seen from FIGS. 4 through 7.

Clip 21 also has the general configuration of an elongated U. The base portion 22 follows an arc of a circle for slightly greater than 180° whose inside diameter is substantially that of the outside diameter of the tubing of leg members 11 and 12 and frame members 15, which all have the same outside diameter. The outer ends 23 of the clip 21 also closely follow an arc based on the outside diameter of the tube of leg members 11 and 12 and frame members 15. The portion of the leg on each side of clip 21 between outer end 23 and base portion 22 curves inwardly as indicated at 24 in FIG. 5. The spacing between intermediate portions 24 is less than the outside diameter of the tubing. The clips are formed of a resilient material, which can be an aluminum extrusion, so that the legs of the clip can be deflected for mounting over the tubing. A plurality of apertures 25 are provided in the clip for securing the clip to the tubing, as will hereinafter be described.

Referring for the moment to FIG. 2, the legs 16 of frame members 15 are fixedly but slideably secured to leg member 12 through clips 21 while the legs 17 of frame members 15 are removably and slideably connected to leg member 11 by clips 21.

FIG. 7 shows the manner of fixedly and slideably connecting leg **16** to leg member **12**. Base portion **22** of clip **21** surrounds leg member **12** and the outer ends **23** of clip **21** surrounds leg **16**. A suitable rivet **26** is secured through selected apertures **25** in the clip and through apertures in leg **16** is fixedly secure outer ends **23** of the clip to leg **16**. In such manner the clip may not be removed but leg **16** and clip **21** may slide with respect to leg member **12**.

The legs **17** of frame members **15** are removably secured to leg member **11** as a result of the reverse orientation of clip **21**. As seen in FIG. 5, base portion **22** is secured over leg **17** and riveted thereto by means of a rivet **27**. The outer ends **23** of clip **21** engage over leg member **11** but are not otherwise secured thereto. Thus, leg **17** and clip **21** may slide with respect to leg member **11** and due to the resiliency of clip **21**, the outer ends **23** of clip **21** may be disconnected from leg member **11** and reconnected thereto as desired, as shown in FIG. 4.

When legs **17** are disconnected from leg member **11**, the frame members may be swung about leg member **12** so as to hang down as shown in FIG. 1 and the leg members **11** and **12** may be pivoted about pins **13** to a compact, collapsed position. In setting up the frame for use, the leg members are spread and the clips **21** secured to legs **17** are snapped into place on leg member **11** to set up the frame as indicated in FIGS. 2 and 3.

Regardless of the orientation of the clips, each frame member can slide with respect to the leg members in order to adjust the effective size of the opening defined by the frame members **15** as indicated by the arrows in FIG. 3 whereby the frame can be adjusted to receive bags of different sizes. By use of the clips **21** in the manner heretofore described, the number of different parts required to fabricate the frame of the preferred construction are substantially reduced. For example, all four clips **21** are identical, the frame members **15** are identical and the U-shaped leg members **11** and **12** are identical. To increase the versatility of the aforesaid frame, clips such as clips **21** can be directly or indirectly mounted to a board or other flat element so that the frame can be used as a table or bench. A board could also be pivoted to the frame members to provide a table having a working surface which can be raised to gain access to a refuse bag mounted within the frame. Such an item would be especially useful at an outdoor barbecue.

The frame as heretofore described is extremely light weight, folds for compact storage and is quickly set up. There are no loose parts to be lost and plastic bags are quickly mounted in and removed from the frame. Furthermore, when a bag is mounted in the frame, the bag is held wide open for receiving rubbish and other materials to be disposed. In the assembled position, the frame may also be placed on its side on the ground so that leaves and grass clippings may be raked directly into the bag.

When the bag becomes filled, the top portion **19** of the bag is unhooked from the frame and closed by the usual twist tie. The light weight frame can then be lifted off the bag thereby eliminating all necessity for lifting the bag.

It will thus be seen that the objects set forth above above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all oft he generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A collapsible frame comprising a pair of substantially U-shaped leg members pivoted, one to the other, intermediate the ends of the leg portions thereof, said U-shaped leg members having spaced base portions in the open position of said frame, a pair of substantially U-shaped frame members adapted to overlie said base portions in the open position of said frame, each said frame members having a first leg and a second leg, first clip means for non-removably and sildeably connecting each said first leg to one of said base portions and second clip means for removably and slideably connecting each said second leg to the other of said base portions.

2. A collapsible frame as claimed in claim **1** wherein each said clip means includes a clip with all said clips being of identical construction.

3. A collapsible frame as claimed in claim **1** wherein each said clip means includes a clip having an open end and a closed end, the clip means non-removably and slideably connecting each said first leg to one of said base portions being secured to said first leg at the open end of said clip, the clip means removably and slideably connecting each said second leg to the other of said base portions being secured to said second leg at the closed end of said clip.

4. A collapsible frame as claimed in claim **3** wherein the open end of said clip is spaced apart at a distance less than the outside dimension of said other base portion and is resiliently spreadable for removably mounting said open end on said other base portion.

5. A collapsible frame comprising a pair of substantially U-shaped cylindrical leg members pivoted, one to the other, intermediate the ends of the leg portions thereof, said U-shaped leg members having spaced base portions in the open position of said frame, a pair of substantially U-shaped cylindrical frame members adapted to overlie said base portions in the open position of said frame, each said frame member having a first leg and a second leg, the outside diameter of said cylindrical frame members being the same as the outside diameter of said cylindrical leg members, first clip means for non-removably and slideably connecting each said first leg to one of said base portions, said first clip means including a pair of clips having an open end and a closed end, said closed end receiving said one of said base portions, said open ends receiving said first legs of said frame members and being fixedly connected thereto, and second clip means for removably and slideably connecting each said second leg to the other of said base portions, said second clip means including a pair of clips having an open end and a closed end, said closed ends receiving said second legs of said frame members and being fixedly connected thereto, said open ends resiliently receiving said other of said base portions and being releasably connected thereto.

6. A collapsible frame as claimed in claim **5** wherein all said clips are of identical construction and include means for selectively connecting said clips to a member proximate the closed end thereof and a means for selectively connecting said clip to a member proximate the open end thereof.

7. A collapsible frame as claimed in claim **5** wherein each said clip has a base portion whose internal configuration lies in the arc of a circle for a distance of greater than 180°, opposed outer ends whose internal surfaces extend along the arc of a circle for a distance of less than 90°, and intermediate portions connecting each of said outer ends to said base portion, the arc on which said base portion and outer ends are formed being of identical diameters.

8. A collapsible frame as claimed in claim **7** wherein the distance between the internal surfaces of said intermediate portions are less than said diameter.

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