April 6, 1943.

D. J. BUTTS

2,315,933

COLLAPSIBLE FRAME

Filed Jan. 2, 1942

2 Sheets-Sheet 1

Fig. 1.

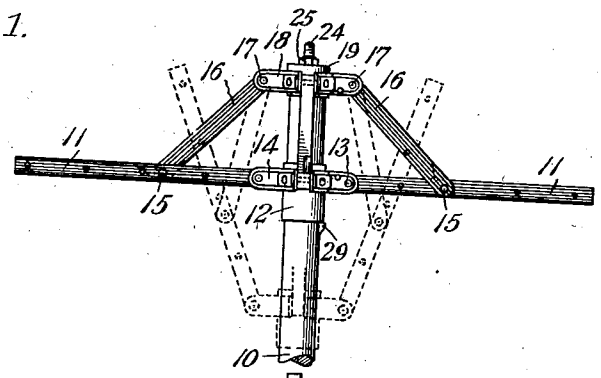


Fig. 2.

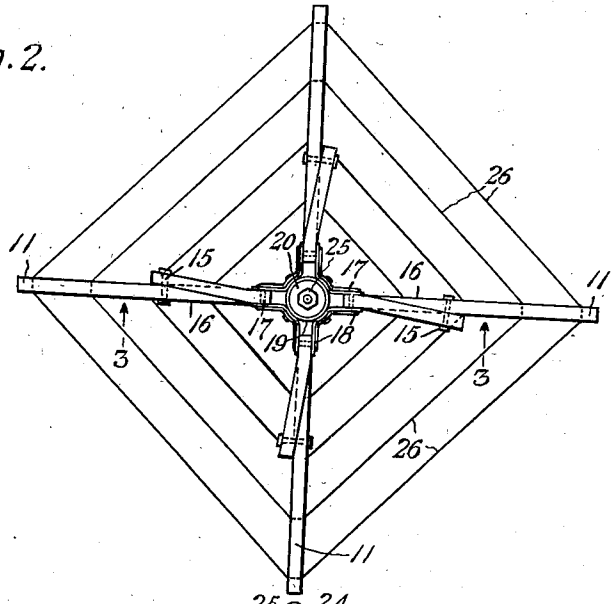
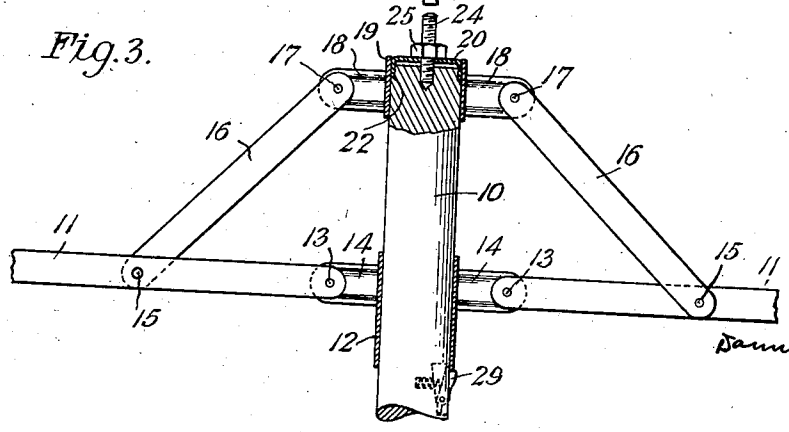


Fig. 3.



Inventor

Dannie Jay Butts

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Fig. 4.

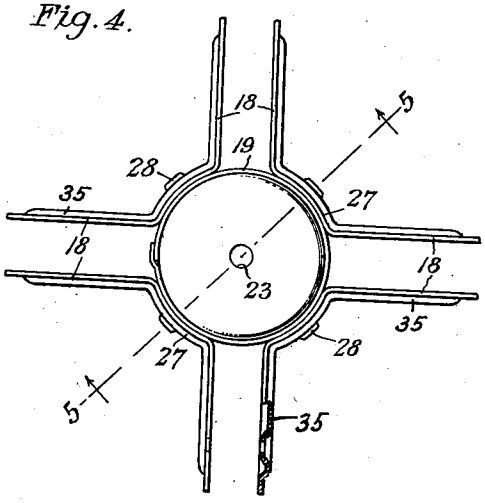


Fig. 6.

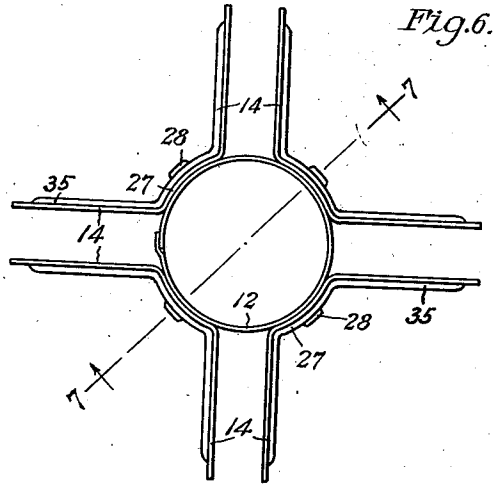


Fig. 5.

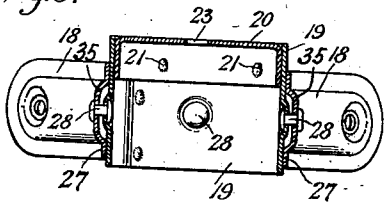


Fig. 7.

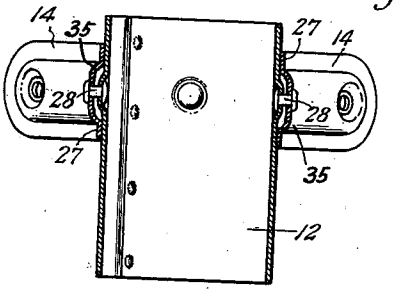


Fig. 8.

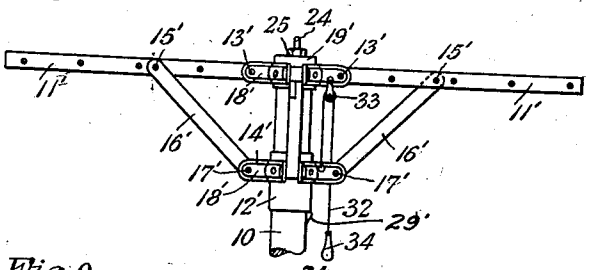
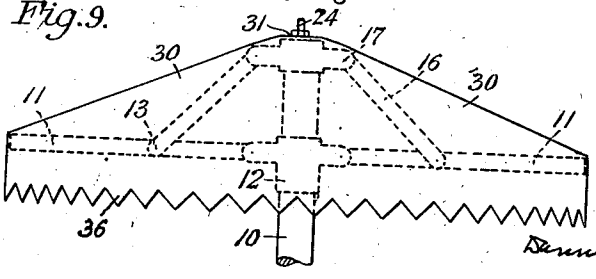


Fig. 9.



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Patented Apr. 6, 1943 2,315,933

UNITED STATES PATENT OFFICE

2,315,933

COLLAPSIBLE FRAME

Dannie Jay Butts, Alhambra, Calif.; Ethel L. Butts, executrix of said Dannie Jay Butts, deceased, assignor to Ethel L. Butts, Alhambra, Calif.

Application January 2, 1942, Serial No. 425,389

1 Claim. (Cl. 211—171)

The invention relates to improvements in collapsible frames of a more or less general utility and particularly to "umbrella" types thereof, primarily designed for clothes drying but suitable for the all-purpose, in and out-of-doors, needs of the average household.

An object of the invention resides in the provision of a frame of the kind mentioned, that is of simple but durable construction, attractive in appearance, comparatively inexpensive to manufacture, and capable of being easily erected in a position of use and knocked down or collapsed into a compact state, when not needed, for convenience and ease in storage or transportation from one place of use to another.

Another object of the invention is to provide a general utility frame of a design that it can be cheaply made to various sizes and capacities to meet any and all demands and which may be readily and easily converted into a beach umbrella or lawn sunshade by the simple expedient of applying a detachable covering to the top side of the frame in its erected position of use.

With these and other objects of equal importance in view, the invention resides in the certain new and useful combination, construction and arrangement of parts as will be hereinafter more fully described, set forth in the appended claim, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of a preferred embodiment of the invention, showing the frame parts in both extended and partially collapsed positions;

Figure 2 is a top plan view of the improved frame in its erected state, with the detachable covering removed;

Figure 3 is an enlarged, fragmentary, vertical section through the frame and the upper portion of the standard, the section being taken on the line 3—3 of Figure 2;

Figure 4 is an enlarged top plan view of the upper frame supporting hub per se;

Figure 5 is a vertical section taken on the line 5—5 of Figure 4;

Figure 6 is a view similar to that of Figure 4, but of the lower frame supporting hub per se;

Figure 7 is a view similar to that of Figure 5, but taken on the line 7—7 of Figure 6;

Figure 8 is a view similar to that of Figure 1, but showing a slightly modified or reversed arrangement of certain of the frame parts; and;

Figure 9 is another side elevation of one of the frame forms and showing the detachable covering applied thereto to adapt the frame to use as a beach umbrella or lawn sunshade.

Referring to the drawings, wherein like characters of reference denote corresponding parts throughout the several views, the preferred embodiment of the invention is depicted in Figures 1 to 7, and 9, and, as shown, is generally comprised in a post or standard 10 and a collapsible or foldable frame rotatably mounted on its upper end. This post or standard 10 is preferably made of a suitable length of wooden stock, circular in cross-section, and is to be supported in vertical position by having its lower end inserted into the ground or other suitable sustaining media, so as to support the frame at a desired height above the sustaining media.

The frame proper, sometimes called "reel," is made up of a plurality of bars 11, preferably of wood and four in number, extending radially in equidistantly spaced relation from an annular hub or sleeve 12 which is rotatably and slidably mounted upon an intermediate part of the post or standard 10. The inner ends of the bars 11 are pivoted, as at 13, to and between pairs of ears 14 carried on the outer side of the hub or sleeve 12 for the purpose. Intermediate their ends, the bars 11 are pivoted, as at 15, to one of the ends of complemental brace bars 16 which, in turn, are pivoted at their other ends, as at 17, to and between pairs of ears 18 carried on the outer side of an annular collar 19. The sleeve 12, hereinafter called the lower hub, and the collar 19 are both formed of suitable lengths of a metal tubing of uniform diameters to loosely fit the standard 10. The collar 19 has its upper end telescoped over the side wall of a metal cap 20, being secured to it by spot welding, as at 21, to form a unitary upper hub structure for rotary seating engagement over the top of the standard 10.

In order to seat the upper hub structure, formed by the parts 19—20, for the desired rotary movement thereon, the upper end of the standard 10 is reduced in diameter, as at 22, for seating engagement therewith of the hub part 20, so that the lower edge of the side wall of the latter has bearing on the shoulder formed at the base of the reduced portion 22. The end wall of the hub part 20 is centrally apertured, as at 23, to engage over the projecting end of a stud 24 fixed in the top end of the standard 10; the stud end being screw threaded to receive a nut 25 to retain the upper hub against accidental displacement during extension and collapsing movements of the frame occasioned by manipulative sliding movements of the lower hub 12 on the standard.

The frame bars 11 are provided with several equidistantly spaced apertures for the threading through the same, from one bar to the others, of a corresponding number of cord or rope lengths 26, from which articles of wearing apparel or the like may be suspended for drying. The ears 14 and 18, of the lower and upper hubs, respectively, are preferably formed by the angled ends of lengths of a metal strip which have their intermediate portions 27 curved for close fit with the

outer sides of the hub parts 12 and 19, to which they are secured, as at 28, by rivets, spot welding or the like.

To place the frame in its operative condition, from its normally collapsed or folded state, the lower hub 12 is grasped by the hand and pushed upwardly on the standard 10 until the frame bars 11 extend radially outward in a plane parallel to the aforesaid supporting media. When the frame bars 11 are horizontally disposed, the cords or ropes 26 are stretched taut sufficiently to support articles of wearing apparel or the like suspended therefrom, without appreciable sagging. The frame is retained in its operative state by means of a suitable latching device arranged to cooperate with the lower hub 12 to that end, and, as shown in Figure 3, said latching means may be in the form of a spring tensioned detent 29 mounted within a recess provided in the standard 10. When it is desired to collapse or retract the frame, the detent 29 will be depressed inwardly of the recess against the tension of its spring and is over-ridden by the lower hub 12 in its downward movement. By rotating the frame on the standard 10, access to all sections of it may be readily had from any given position about it, to facilitate its loading and unloading when employed as a drying rack.

To convert the dryer frame thus provided into a beach umbrella or lawn sun-shade, a detachable covering 30 is provided and it can be made from any suitable flexible sheet material, preferably an all-weather sun-proof fabric, and to the general shape of the frame in top plan, so that its edge will engage over the outer ends of the frame bars 11. Suitable fastenings (not shown) may be provided to positvely secure the covering edge to the frame bar ends, if required. An eyelet 31 is provided in the center of the covering 30 for engagement over the stud 24, beneath the nut 25. To apply the covering 30, it will be placed over the frame, with the eyelet 31 engaged over the stud 24 prior to the raising of the standard 10 to the vertical and before the frame is extended. With the standard emplaced and the frame extended, the edge of the covering is then drawn downward over the ends of the frame bars 11 until the covering is stretched taut.

In the modification of the collapsible frame shown in Figure 8, the relative positions of the frame bars and the brace bars therefor are reversed. Here, the frame bars 11' are pivoted, as at 13', to the ears 18' on the upper hub part 19', and the brace bars 16', as at 15', to the frame bars 11' and, as at 17', to the ears 14' of the lower hub 12'. Otherwise, from both structural and operative viewpoints, the two forms of frames are identical, except that, in lieu of the direct manipulation of the lower hub 12', for extending and collapsing the frame, an actuator for the same is provided to facilitate its axial movements. This actuator is comprised in a length of strong cord or the like 32 leading upwardly from a point of securement to one of the ears 14' on the lower hub 12' to and over a pulley 33 which is carried by an ear 18' on the upper hub part 19'. The free end of the cord 32 suspends from the pulley 33 and is provided with a hand grip 34 to facilitate its manipulation. With the standard 10' emplaced in a vertical position of use, a pull on the cord 32 at the hand grip 34 will lift the lower hub axially of the standard and cause the frame bars 11' to be extended radially outward from the latter, the lifting motion of the lower hub being transmitted to the frame bars through the brace bars 16'. Upon release of cord 32, the frame will be prevented from collapsing by the engagement of the lower edge of the lower hub with a detent, corresponding to the detent 29 (Figure 3), to be likewise provided on the standard 10'. To collapse the frame, the detent 29' will be depressed and thereafter be over-ridden by the lower hub 12' in its downward movement on the standard.

By making the hubs 12 and 19, 20, and the ears 14 and 18 from sheet metal of a proper gauge, the manufacture and assembly of the same is facilitated and the labor and material costs are reduced to a minimum. As shown, the metal strips, from which the ears 14 and 18 are formed, are preferably made rigid by means of reinforcements 35 which are of elongated concavo-convex form and extend longitudinally of the strips between the ends thereof. With this form of reinforcement, the inner ends of the rivets 28, securing the strips to the hubs, readily countersink themselves in the walls of the latter, as is best shown in Figures 5 and 7.

The covering 30 for the frame or reel may be finished off to an added degree of attractiveness by having its edge provided with a flounce or fringe 36, substantially as shown.

Having thus fully described my invention, it is to be understood that variations in details of construction and arrangement of parts can be resorted to by those skilled in the art, without departing from the spirit of the invention or its scope as claimed.

What is claimed is:

In a device of the class described, a standard of circular cross-section, an upper hub of tubular sheet metal closed at its upper end rotatably seated on the top end of the standard, a lower hub also of tubular sheet metal slidably mounted on the standard below the upper hub, elongated sheet metal straps secured at their centers to and in spaced relation about said hubs and having their opposite ends angularly bent to project radially of the hubs, the adjacent ends of the straps being disposed in closely spaced relation to form pairs of parallel ears, frame members having one end of each pivotally engaged with a pair of the ears on one of said hubs, brace members having one end of each pivotally engaged with a pair of the ears on the other of said hubs and the other end with a frame member at an intermediate point thereon, an outwardly depressed portion formed longitudinally of each of said straps and extending into the bent ends thereof to reinforce the same, said frame and brace members being normally collapsed relatively to the standard and adapted to be extended radially of the latter upon movement of the lower hub relatively to the upper hub, said lower hub being elongated below the straps thereon to provide a hand engaging portion to facilitate its manipulation, and means carried by the standard to hold the lower hub when it is moved to frame member extending position, said lower hub being rotatable with the upper hub when the frame members are moved about the standard.

DANNIE JAY BUTTS.