April 4, 1950 P. DE SAMELSON 2,503,032

POWER BOOSTER FOR RAISING LARGE TYPE UMBRELLAS

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Fig. 1

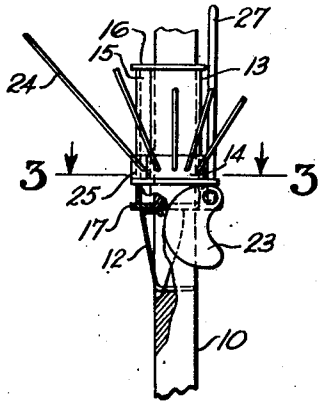


Fig. 2

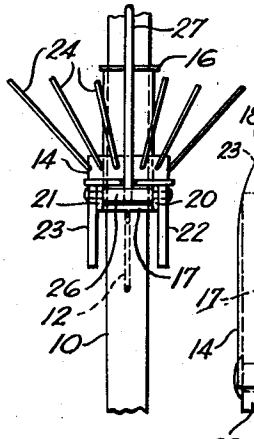
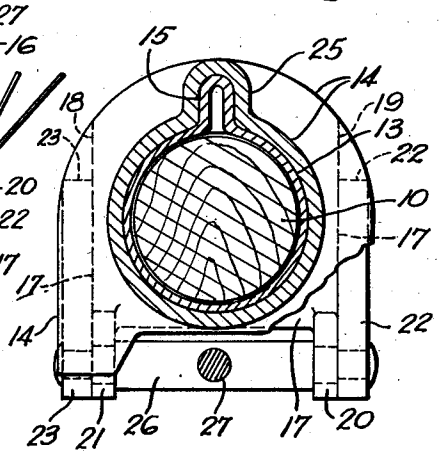


Fig. 3



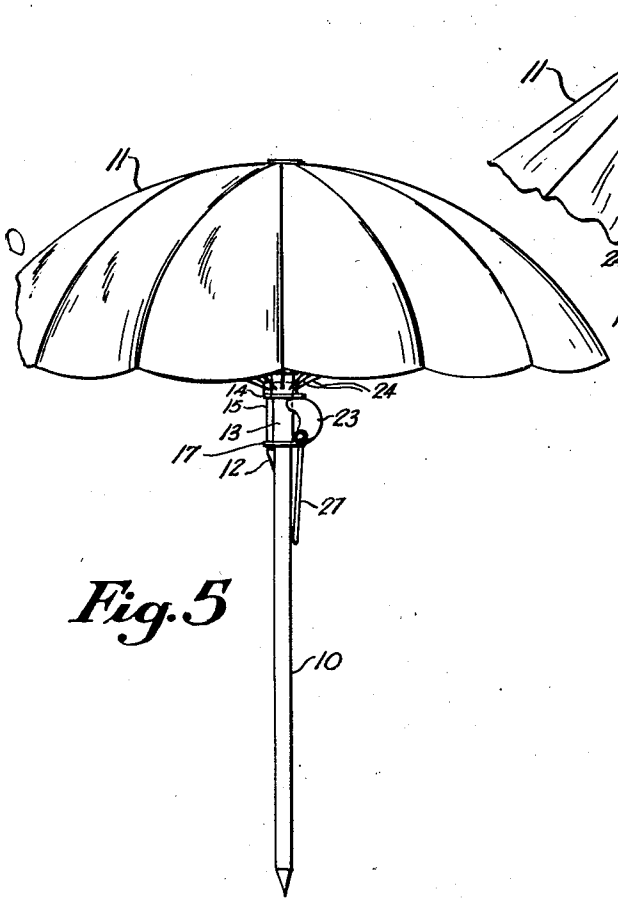


Fig. 5

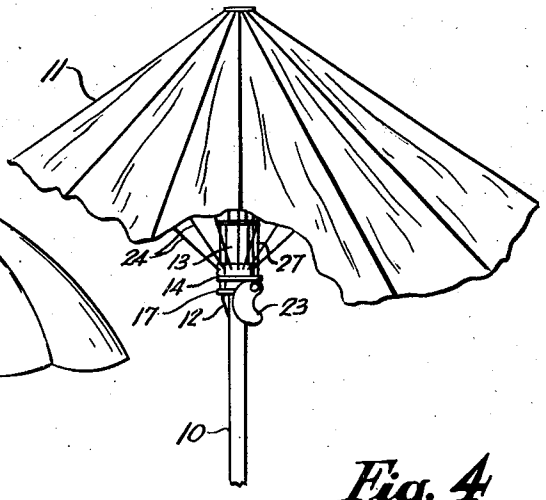


Fig. 4

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POWER BOOSTER FOR RAISING LARGE TYPE UMBRELLAS

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Fig. 6

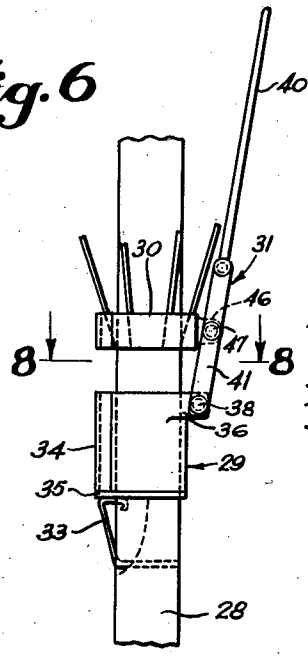
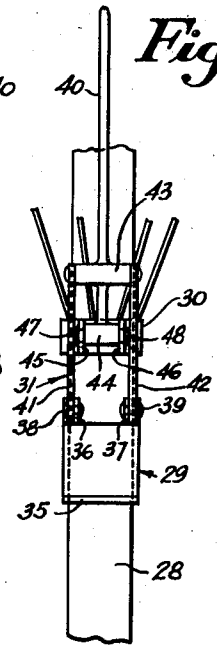


Fig. 7



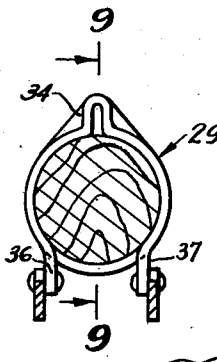


Fig. 8

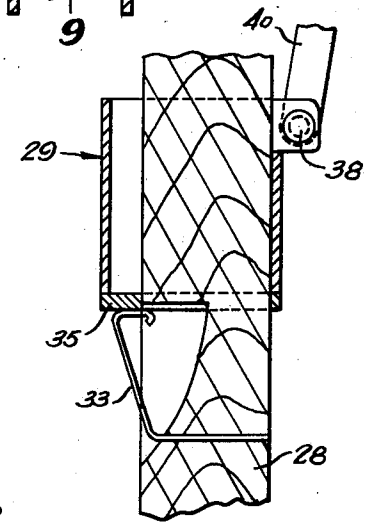


Fig. 9

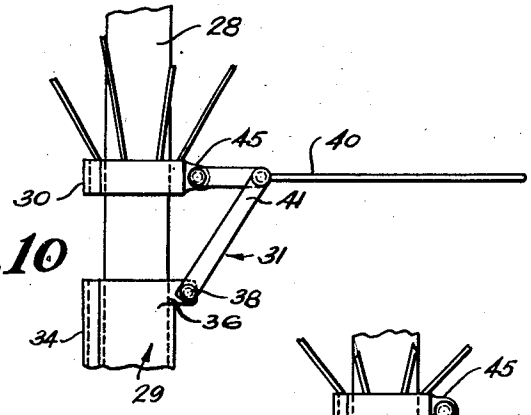


Fig. 10

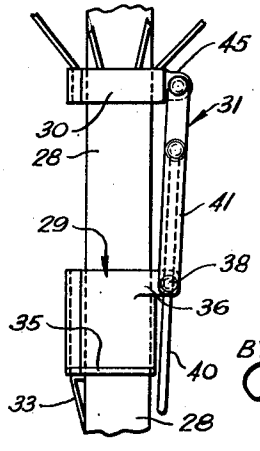


Fig. 11

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POWER BOOSTER FOR RAISING LARGE TYPE UMBRELLAS

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Application December 17, 1948, Serial No. 65,805

9 Claims. (Cl. 135—20)

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This invention relates to umbrellas and more particularly to a power booster designed to complete the raising of an umbrella of the beach or garden type from a partially open position to the fully open position.

In the past, the large beach or garden type umbrella has been troublesome at the last stage of raising due to the physical effort required in establishing the required tension on the ribs and covering.

It is the object of this invention to provide a device that will materially reduce the physical effort required in raising large type umbrellas.

A further object is to minimize the hazards to which the manipulator of a large type umbrella is subjected when releasing the spring catch supporting the umbrella covering in the raised position.

Another object is to provide a device that will aid in maintaining the buried end of the umbrella staff in the sand or earth during the raising operation.

Other objects of the instant invention will become apparent in the course of the following specification.

In the accomplishment of these objectives, the staff, ribs, and collapsible covering are used in the conventional manner. However, the known spring catch rather than being in a position on the staff that will maintain the covering under tension is moved further toward the free end of the staff so that it supports the covering in a partially open position and in the accomplishment of which but slight physical effort is required. To complete the raising, the staff is equipped with a slidable sleeve in one embodiment of the invention and on which an especially designed rib collar is slidable. The sleeve is further so designed that as the covering is moved to the open position, the upper part of the sleeve will pass over the spring catch to a point where the base is supported thereby. Two pivotally mounted cams on the base of the sleeve which are operated by a handle coact with the collar so that in the final raising stage only slight physical effort is needed to place the covering under tension. In the second embodiment of the invention, the cams are replaced by bar levers so pivoted on the rib collar and a slidable base that the need for the previously mentioned sleeve is obviated and the hazards of physical injury even further reduced.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing

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showing by way of example a preferred embodiment of the inventive idea.

In the drawings:

Figures 1 through 5 show the cam power booster or first embodiment and in which Figure 1 is a front elevational view of the power booster constructed in accordance with the principles of this invention.

Figure 2 is a side elevational view of the power booster shown in Figure 1.

Figure 3 is a plan view along the line 3—3 of Figure 1.

Figure 4 is a view of the umbrella partially opened with the cam operated power booster in the non-operative position.

Figure 5 is a view of the umbrella fully opened after the cam operated power booster has been moved to the operative position.

Figures 6 through 11 show the bar lever power booster or second embodiment and in which Figure 6 is a front elevational view of the bar lever power booster constructed in accordance with the principles of this invention.

Figure 7 is a side elevational view of the booster shown in Figure 6.

Figure 8 is a plan view along the line 8—8 of Figure 6 but on an enlarged scale.

Figure 9 is a sectional view along the line 9—9 of Figure 8 and even further enlarged.

Figure 10 is a view of the rib collar and slidable base after the bar lever power booster has raised the same to the partially open position.

Figure 11 is a view of the rib collar and slidable base after the bar lever power booster has raised the rib collar to the fully open position of the umbrella.

Referring now in greater detail to the cam power booster or first embodiment shown in Figures 1 through 5 and in which like reference numerals indicate like parts, reference numeral 10 indicates the staff, 11 (Figs. 4 and 5) the collapsible covering, 12 the spring catch, 13 the sleeve, and 14 the rib collar.

The staff 10 is the known pole, one end of which is adapted to be inserted in the sand or ground and the opposite end of which supports the collapsible covering 11 in a known manner.

At a point on the staff 10 where the covering 11 would not be under tension if raised by the subsequently described collar 14, the known spring catch 12 is inserted in the usual manner.

Slidably inserted on the staff 10 is the sleeve 13 along one side of which is the longitudinal extrusion 15 so designed that as the sleeve slides along the staff 10 it will pass over the previously

mentioned catch 12 which normally protrudes under tension from the staff. On the end of the sleeve 13 toward the covering 11 is the flange 16 provided with an opening aligned with the extrusion 15 so that the flange 16 as well as the sleeve 13 will pass over the catch 12. The flange 16 is used to prevent the sleeve from sliding out of the later described collar 14 when free to move along the staff 10.

On the opposite end of the sleeve 13, is the base 17 secured thereto by any suitable means or integrally formed therewith. It will be noted that there is no opening around the periphery of the base 17 aligned with the extrusion 15 so that while the upper portion of the sleeve 13 will pass over the spring catch 12, the bottom of the base 17 after passing thereover will come to rest when free on the catch 12 until released. The base 17 may be made from any suitable substantially flat surface material in which the sides 18 and 19 are in spaced parallel arrangement as most clearly shown in Figure 3 while on the end opposite the catch 12 are two turned up ears 20 and 21 in spaced parallel arrangement and in close proximity to the staff 10 which provide the rotatable supports for the cam members 22 and 23 described infra.

Slidable on the sleeve 13 is the rib collar 14 which pivotally supports the ribs 24 in a known manner. Of course, to be slidable on the sleeve 13, the collar 22 is equipped with a longitudinal extrusion 25 coacting with the extrusion 15 in the sleeve. To prevent the sleeve 13 from slipping out of the collar 14 when free to slide along the staff 10, the previously mentioned flange 16 is made with a greater diameter than the diameter of the collar 14.

The cam members 22 and 23 are located adjacent the sides 18 and 19 of the base 17 and are keyed by any suitable means to a connecting rod 26 which is rotatably inserted through aligned openings in the aforementioned ears 20 and 21. Keyed to the connecting rod 26 is the handle member 27 designed to rotate through some 180° in a line parallel to the center line of the staff 10. The handle member 27 is made of sufficient length to require a minimum amount of physical effort in operating the cams within the limits of the available space. The peripheries of the cams 22 and 23 are in contact with the base of the collar 14 while being rotated by the handle member 27 as shown especially in Figure 2 and are so formed that when moved to the uppermost position the collapsible covering 11 will be in the fully opened position.

The operation is as follows:

Assuming that it is desired to raise a collapsed umbrella of large type in the sand, the free end of the staff 10 is inserted in the sand with the covering 11 in the collapsed or in the partially collapsed position, that is with the bottom of the base 17 of the sleeve 13 supported by the spring catch 12. Generally by swinging the umbrella from side to side with some downwardly exerted force the staff 10 will be sufficiently buried with slight effort. With the collapsible covering 11 in the collapsed position, the sleeve 13 is pushed upwardly until the base 17 thereof is resting on the catch 12. Then, the handle member 27 is rotated downwardly which rotates the cam members 22 and 23 upwardly thereby pushing the slidable collar 14 upwardly until the handle member 27 is at rest along the staff 10. Of course, the handle member 27 could be locked in position alongside the staff 10 if desired. The positioning of the spring catch 12 and the magnitude of the movement of the collar 14 by the cams 22 and 23 is so arranged that the collapsible covering 11 is moved from a slightly collapsed position attained with little physical effort to the fully extended position with but slightly more effort when aided by the leverage action provided. The lowering operation is substantially the reversal of the previous steps but it is to be noted that when the handle member 26 is in the up position, that is with the collapsible covering slightly collapsed, and the tension removed from the covering 11, the manual release of the spring catch 12 to completely lower the umbrella is attained with but slight danger of physical mishap.

Referring now in greater detail to the bar lever power booster or second embodiment shown in Figures 6 through 11, reference numeral 28 indicates the staff, 29 the slidable base, 30 the rib collar, and 31 the bar lever power booster.

The staff 28 is similar to the previously described staff 10 of the first embodiment. The spring catch 33 is similar to the spring catch 12 of the first embodiment and moved, compared with standard present day construction, further toward the free end of the staff as in the first embodiment. The slidable base 29 and the rib collar 30, on the other hand, differ from corresponding elements of the first embodiment in several respects. The slidable base 29 may be formed with an extrusion 34 and a base member 35 with no aligned extrusion in order that the base 29 may be releasably held by the catch 33. On the other hand, the base 29 could be made without the extrusion 34, the essentials of the base 29 being suitable provision for releasably supporting the same by the catch 33 and the provision of two outwardly directed ears 36 and 37 for the pivotal support of part of the bar lever mechanism 31 described infra. The ears 36 and 37 have registered openings for the insertion of the pivot pins 38 and 39, respectively. The rib collar 30 is similar to the rib collar 14 of the first embodiment in respect to an extrusion 32 for slipping over the spring catch 33 but differs therefrom by being provided with the ears 45 and 46 in planes parallel with the planes of the previously mentioned ears 36 and 37 but within the latter planes and provided with registered openings for similar pivot pins 47 and 48, both sets of ears forming the pivotal supports for the later described bar lever mechanism 31.

The bar lever mechanism 31 comprises the handle member 40 and the link members 41 and 42.

The handle member 40 has one cross member 43 and a second cross member 44, the cross member 43 having a greater width than the cross member 44 although other designs could be used. The ends of the second cross member 44 are pivotally secured between the ears 45 and 46 disposed on the rib collar 30 by the pivot pins 47 and 48. The first cross member 43 in turn is pivotally secured between the ends of the links 41 and 42 by any suitable means. The opposite ends of the links 41 and 42 are pivotally secured to the ears 36 and 37 previously mentioned in connection with the movable base 29 by any pivotal mounting means 38 and 39.

The operation of the second embodiment is as follows:

The previously mentioned beneficial features of the first embodiment are present in the second with the additional advantages of cheapness of construction, and greater facility in handling

with less hazard to the hands of the operator. With the handle member 40 of the bar lever booster 31 in the up position as shown in Figure 6, the umbrella covering is only partially open but the movable base 29 is at rest on the catch 33 which provides the basic support for the leverage operations. It should be noted that when the operator has raised the movable base to the position shown in Figure 6, a suitable and convenient grasping means has been provided without interference with any of the other mechanism. Grasping the handle 40 and pulling it downwardly through the position as shown in Figure 10, the rib collar 30 is moved upwardly toward the final goal since the links 41 and 42 are revolving downwardly about the pivot points 38 and 39 until the position shown in Figure 10 is attained and then reverse their direction of movement. At the same time, the second cross member 44 is moving upwardly about the pivot points 47 and 48 and raising the rib collar 30. Continuing the movement of the handle member 40 downwardly, as shown in Figure 11, the rib collar 30 is moved to the designed uppermost position with the link members 41 and 42 again moved inwardly as shown in Figure 11. When collapsing the umbrella, the previously described raising procedure is reversed permitting the collapsing of the covering with but slight effort and a minimum of danger to the person of the operator.

It is apparent that the specific illustrations shown have been given by way of illustration and not by way of limitation and that the structure above described is subject to a wide variation and modification without departing from the scope or intent of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In an umbrella having a staff, a rib collar, ribs, a spring catch disposed on the staff, a movable base member, said spring catch being adapted to releasably support the base member in the partially open position of the ribs, and leverage means between the base member and rib collar and adapted to raise the ribs to the fully open position.

2. An umbrella comprising a staff, a rib collar slidable on the staff, collapsible covering ribs, one end of the ribs being pivoted on the rib collar, a movable base member, a spring catch disposed on the staff and adapted to releasably support the base member in the partially open position of the ribs, and leverage means between the base member and rib collar and adapted to support the rib collar releasably in the fully open position of the ribs.

3. In an umbrella having a staff, a collapsible covering, and ribs; a power booster comprising a sleeve slidable on the staff, a rib collar slidable on the sleeve and within the limits of the ends thereof, means pivotally securing one end of the ribs to the rib collar, the opposite ends of the ribs being adapted to support the collapsible covering, a spring catch disposed on the staff and adapted to support the sleeve releasably in the partially open position of the collapsible covering, and leverage means between the rib collar and sleeve and adapted to raise the collapsible covering releasably to the fully open position.

4. In an umbrella having a staff, a collapsible covering, and ribs; a power booster comprising a sleeve slidable on the staff, the sleeve having a longitudinal extrusion on one side, a base on the end of the sleeve opposite the collapsible covering, the opposite end of the sleeve being turned outwardly, a rib collar slidable on the sleeve, one end of the ribs being pivoted to the collar and the opposite end supporting the covering when raised, a spring catch disposed on the staff coacting with the extrusion on the sleeve and adapted to support the base of the sleeve releasably when the covering is in the partially open position, a cam pivotally disposed on the sleeve coacting with the rib collar and adapted to raise the rib collar releasably from the partially open position of the covering when supported by the spring catch to the fully open position.

5. In an umbrella having a staff, a collapsible covering, and ribs; a power booster comprising a sleeve slidable on the staff, the sleeve having a longitudinal protrusion on one side, a rib collar slidable on the sleeve and adapted for the pivotal connection of one end of the ribs, the rib collar having a longitudinal protrusion coacting with the longitudinal protrusion on the sleeve, a flange on the end of the sleeve on the side of the covering, the outside diameter of the flange being greater than the outside diameter of the rib collar and having an opening aligned with the coacting protrusions of the sleeve and rib collar, a base disposed on the opposite end of the sleeve, a spring catch disposed on the staff coacting with the protrusions on the sleeve and the opening in the flange and adapted to support the base of the collar at a point of partial opening of the covering, a cam disposed on either side of the base and adapted to coact with the collar, opposed supports for the cams disposed on the base and substantially on the side opposite the spring catch, the supports having an aligned opening therethrough, a connecting rod for the cams rotatably disposed through the openings, means securing the cams to the connecting rod and adapted to be rotated thereby, and a handle member for the connecting rod and adapted to rotate the same.

6. In an umbrella having a staff, a rib collar, ribs, a movable base member, a spring catch disposed on the staff and adapted to releasably support the base member in the partially open position of the ribs and means between the base member and rib collar and adapted to raise the ribs to the fully open position.

7. In an umbrella having a staff, a rib collar, ribs, a movable base member, a spring catch disposed on the staff and adapted to releasably support the base member in the partially open position of the ribs and power means between the base member and rib collar and adapted to raise the ribs to the fully open position.

8. An umbrella, comprising in combination, a staff, a collapsible covering, ribs supporting said covering, a rib collar supporting said ribs and slidable manually upon said staff to a partially open position of said collapsible covering, a base member, a leverage system connecting said base member and rib collar and moving said rib collar from said partially open position to a fully open position, and a catch upon said staff for maintaining said base member in said partially open position.

9. An umbrella comprising in combination a staff, a collapsible covering, ribs supporting said covering, a rib collar supporting said ribs, a slidable base member coacting with the rib collar and slidably manually therewith upon said shaft to the partially open position of said collapsible cov-

ering, a spring catch disposed in the staff and releasably supporting the slidable base member in the partially open position of the collapsible covering, and a leverage system between the slidable base member and the rib collar and adapted to raise said rib collar from the partial to the fully open position of the collapsible covering, the leverage system comprising a handle member, a first and second cross member disposed at one end of the handle member and protruding on either side thereof, means pivotally securing the ends of the second cross member to the rib collar, link members between the base member and the ends of the first cross member of the handle member, and means pivotally securing the ends of the

link members to the ends of the first cross member and to the base member.

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REFERENCES CITED

The following references are of record in the file of this patent:

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