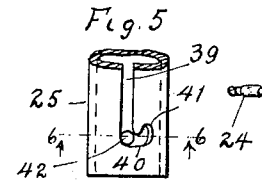
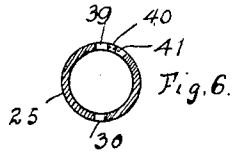
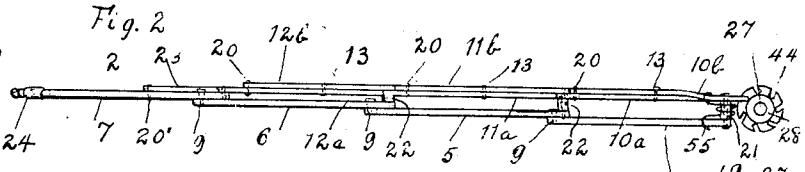
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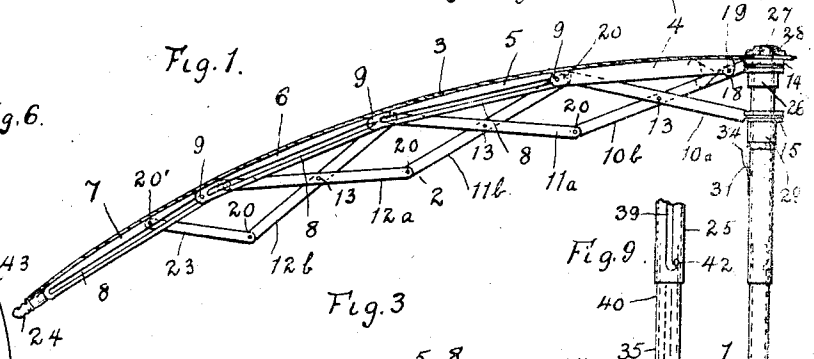
FOLDING UMBRELLA

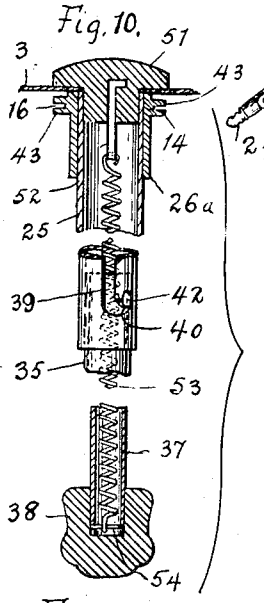
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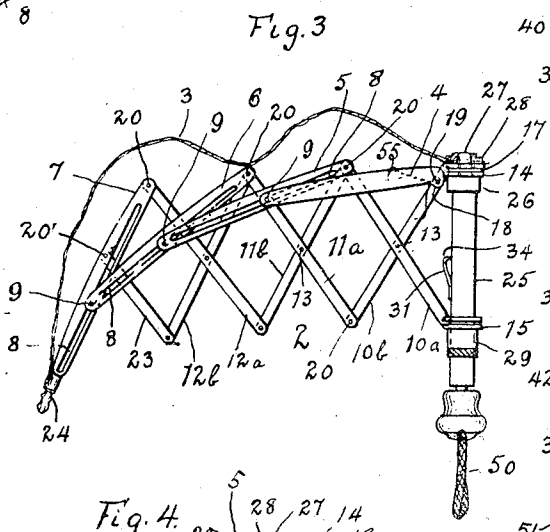


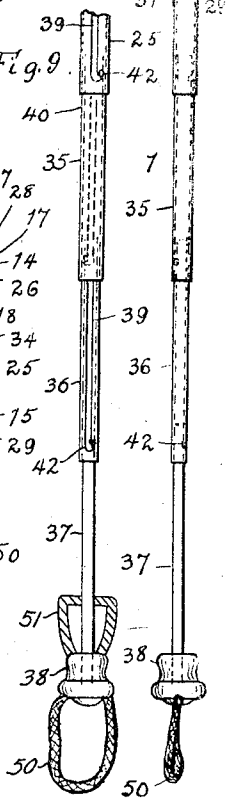


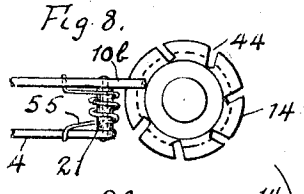


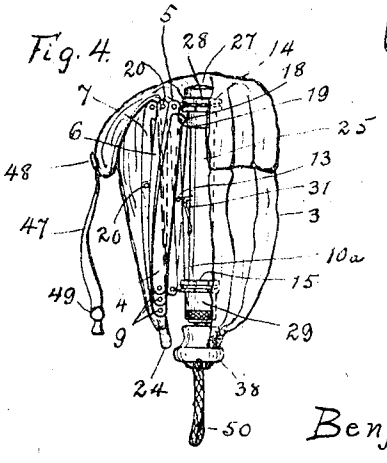


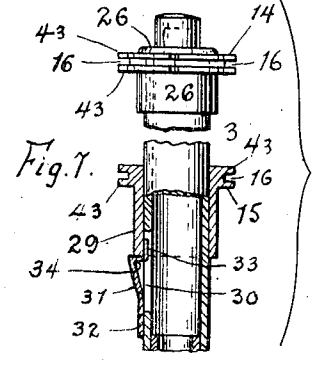












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FOLDING UMBRELLA

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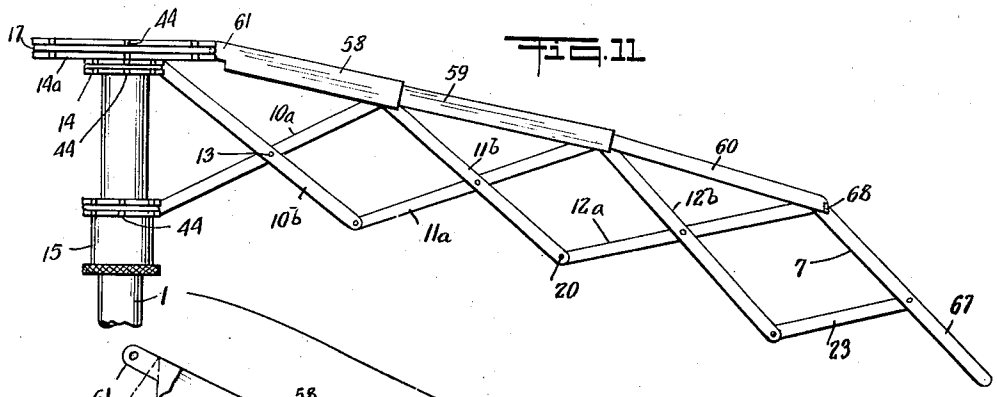
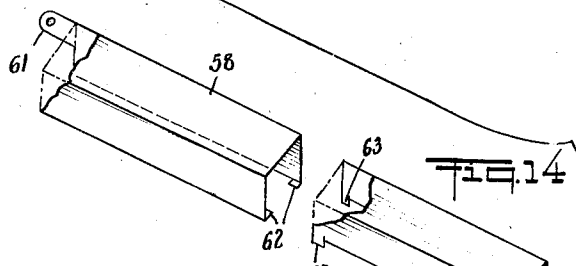


Fig. 11



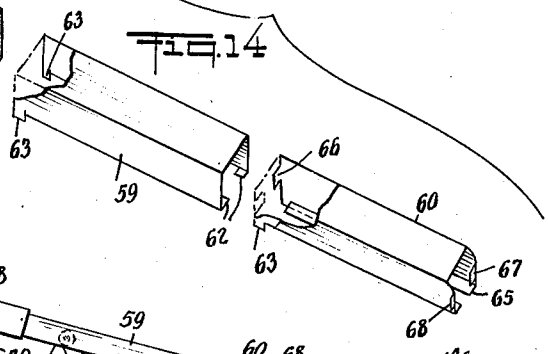
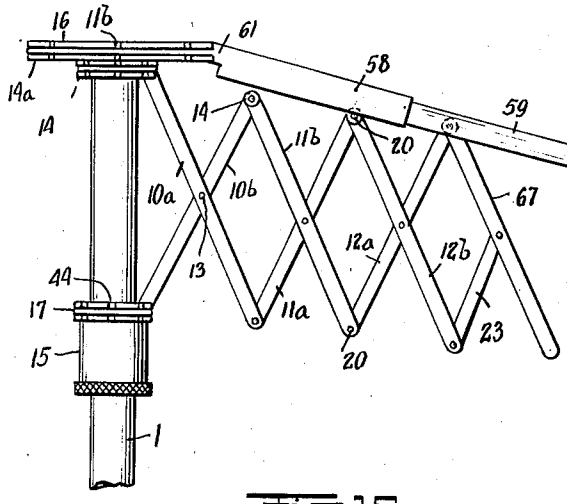


Fig. 14

Fig. 12



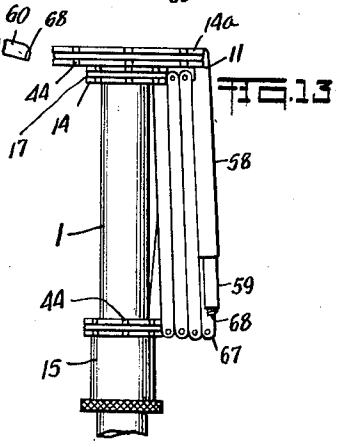
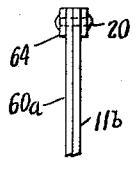


Fig. 13

Fig. 15



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UNITED STATES PATENT OFFICE

2,334,330

FOLDING UMBRELLA

Benjamin Janowsky, New York, N. Y.

Application April 3, 1941, Serial No. 386,578

16 Claims. (Cl. 135—26)

My invention relates to an improved folding umbrella or parasol; designed to occupy a comparatively small amount of space so that it can very conveniently be packed and carried about when not in use.

An object of the invention is to make the device with both ribs and handle constructed of relatively small movable parts to enable the entire article to be folded and contracted within a relatively moderate compass, and permit the owner to put it away in a trunk or bag, or a pocket in his clothing, or to carry it in his hand; and to be distended at will to spread and stretch the top in the proper manner when needed for protection against the weather.

A further object of the invention is to form the handle for the umbrella out of a number of telescoping sections to allow it to be readily shortened or drawn out to its full length as may be required.

Still another object is to provide collapsible ribs for the umbrella or parasol such that they can be extended to spread the top without forcing the cloth into protuberances, and give instead a smooth and even surface.

An additional object is to provide a folding umbrella that can be easily manipulated, with the parts thereof few in number, accessible and certain in operation, and the entire assembly capable of production at low cost, so that it can be put on the market and sold at a price within reach of the popular purse.

It is also an object of this invention to provide a rib that can easily be distended when the umbrella is raised, and shortened when the umbrella is lowered; and comprising members having telescopic engagement with one another, adapted to impart a smooth upper edge to the rib. The cloth cover of the umbrella, when spread out by the ribs, will therefore be smooth and even; with no projection anywhere upon its outer surface.

These and other objects of the invention are fully set forth in the ensuing description, and accompanying drawings, which illustrate preferred forms of my folding umbrella. However, I do not wish to limit myself to the exact structures disclosed herein; but I reserve the right to change the shape, size and arrangement of the constituent parts of the device without going beyond the principle of the invention, or exceeding the scope of same.

On the drawings:

Figure 1 shows in side elevation the construction of a rib employed in an umbrella or parasol according to my invention, with the handle attached;

Figure 2 is a top plan of said rib extended;

Figure 3 shows the same rib partly collapsed;

Figure 4 is an outside view partly in section showing the umbrella or parasol completely folded;

Figure 5 shows a detail of the handle;

Figure 6 is a section on line 6—6 of Figure 5;

Figure 7 is a side view of parts for securing the ribs to the handle, with the lower end of this view in section;

Figure 8 shows in top plan one of said parts;

Figure 9 is a side view of the handle;

Figure 10 is a sectional view of a modification of said handle with enclosed spring;

Figure 11 is a view of a different form of rib according to my invention, fully extended;

Figure 12 shows this rib partly collapsed;

Figure 13 shows this rib fully collapsed;

Figure 14 shows the members comprised in said rib to make the upper edge smooth and even; and

Figure 15 presents a detail.

The same characters of reference indicate the same parts throughout.

The parasol or umbrella includes a telescoping handle 1 with collapsible ribs 2 united thereto; and a top of silk or any other material. Preferably material adapted to shed water will be used. When the umbrella is to be opened, the ribs are caused to extend out radially from the handle to spread the top; and when the umbrella or parasol is to be folded up, the ribs are shortened by moving their parts, which are pinned together, and drawing same in towards the handle; which comprises telescoping sections movable one into the other to give the like result. The ribs 2 are of special design, and when distended, they spread the top 3 evenly, so that it is smooth and does not differ in outside appearance from the conventional umbrella. This effect is obtained by fashioning the ribs, as fully described below, in such wise that the upper edge of each rib, when distended, presents a smooth convex curved line, without projections or humps of any kind to render it unattractive to the eye.

Each rib comprises a number of bars or sections, the innermost bar 4, being connected to the handle 1. These bars are shown as four in number, indicated by the numerals 5, 6 and 7, the last being at the outer end of the rib. Passing from the handle to the circumference of the top 3, each bar has pin-and-slot connection with the next outer one. The bars 5, 6 and 7 have longitudinal slots 8, and the numeral 9 indicates pins for joining the outer ends of the bars 4, 5 and 6 to the slots in the bars 5, 6 and 7 respectively. These pins engage the slots; and when the rib is extended, the outer ends of the bars 4, 5 and 6 will be joined respectively to the inner ends of the bars 5, 6 and 7. The top of the bars 4, 5, 6 and 7 are curved; and when they spread the top 3, the ribs slope downward to the required extent.

Figures 1 and 2 show the rib in its extended position, with the bars 4, 5, 6 and 7 in alinement;

while Figure 3 shows the rib with its parts in the position they assume when the rib is being spread out or folded up. The bars are actuated by links connected to work upon the principle of the lazy tongs. These links are disposed in pairs, shown at 10*a*—10*b*, 11*a*—11*b*, and 12*a*—12*b*; the links of each pair being joined together near the center by pivot pin 13. The upper extremity of the handle 1 has a fixed collar 14, and associated therewith is a similar collar 15, mounted to slide on the handle 1. The upper end of the link 10*b* is united to the collar 14, and the lower end of the link 10*a* is pivotally united to the collar 15. Each collar has a groove therein, as shown at 16, and in the groove is a band or wire 17, that passes through apertures in the ends of the links 10*a*—10*b* so that the links are pivotally attached to the collars, 14 and 15. The innermost bar 4 has a perforated lug 18 on its lower edge adjacent its inner end, and the link 10*b* is pivotally secured by a pin 19 to this lug near the point where the link is joined to the collar 14 on the handle 1.

The pivot pins which connect the pairs of links together at their ends are indicated at 20. The links 10*a* and 10*b* are connected by two such pivot pins to the adjacent ends of the links 11*b* and 11*a* respectively; and the opposite ends of the links 11*a* and 11*b* are similarly joined to the inner ends of the last or outermost pair of links 12*b* and 12*a*. Also the pin 20 which unites the upper ends of the links 10*a* and 11*b* to each other engages the inner end of the bar 5; and the pin 20 which joins the links 11*a* and 12*b* connects with the inner end of the bar 6. Similarly the end of the link 12*a* which is not joined to the link 11*b* is pivoted by a pin 20 to the inner end of the bar 7. The pin 19 is relatively long and may carry a spacing sleeve 21 on it between the bar 4 and the link 10*b*, and the pins 20 which pivotally connect the upper ends of the links with the bars 5, 6 and 7 bear shorter spacing sleeves 22. A short link 23 is pivotally pinned at 20 to the lower end of the link 12*b* and to the outermost bar 7 at the proper distance from the inner end of this bar where it is joined to the link 12*a*. The pin 20 last mentioned does not interfere with the movement of the pin 9 of the bar 6 in the slot 8 of the bar 7.

With this arrangement of parts, one has only to move the collar 15 towards the collar 14 to distend the links and carry the bars 4, 5 and 6 and 7 into alinement, as illustrated in Figures 1 and 2; or in the opposite direction to bring the rib into collapsed position as in Figure 4. When the ribs are extended, the outward movement of the links swings the bars 5, 6 and 7 outward and upward, carrying with them the bar 4 away from the handle 1 as illustrated in Figure 3. When the rib is fully distended, the top 3 is spread out and stretched evenly with no humps or protuberances on its upper surface, and the top 3 is as smooth as in an umbrella of the usual construction. The top may be fastened at its center to the upper end of the handle 1, and at its circumference to the tops 24 on the outer bars 7; and if desired, at one or more points to the inner ends of the bars 5, 6 and 7. The fully closed position of the parasol or umbrella and its ribs is indicated in Figure 4.

The handle comprises an upper tubular section 25, the end of which bears a cap 26 which is integral with the fixed collar 14. This cap has a tip 27 which passes through an aperture in the top 3, and an ornamental cap-ring or button 28 may be affixed to the tip to grip the top between it and the collar 14, thus anchoring the top at its center. At 29 in a sleeve bearing the slidable collar 15 on the section 25. This section has a slot 30, in which is a catch 31. The catch is fixed at one end 32 to the outside of the section at one end of the slot 30, and its other end 33 is free, but is disposed with the adjacent end of the slot 30. Thus the free end of the catch can move in and out of the slot 30. Between the ends, the catch has a shoulder 34 which projects out from the slot 30. When the collar 15 is pushed towards the collar 14, to distend the umbrella, the collar 15 passes the shoulder 34, and the catch yields until the shoulder gets beneath the collar 15, when it springs out and the shoulder 34 then prevents the collar 15 from moving downward. Hence the umbrella is held in distended position. The remaining telescoping sections of the handle are shown at 35, 36 and 37, all being tubular, and the last bearing a knob 38. These sections can all be telescoped into one another, the section 37 first moving into the section 36, and both these sections into the section 35, and all three into the upper and largest section 25. The three sections 25, 35 and 36 also have elongated slots 39. These longitudinal slots in the sections of the handle are all offset at 40 with a recess 41 in the offset part, and the inner ends of the sections 35, 36 and 37 are equipped with studs 42, so that they can not be pulled apart. When the handle is extended, the sections are drawn out till the studs of each comes into registry with the offset part of the slot of the adjacent section and then each section is turned to make its studs enter the offset end 40 of the slot and forced into the recess 41 thereof. Then the handle will support the top 3 and all of the ribs 1. To collapse and shorten the handle, each section is pulled out slightly to disengage its stud from the recess 41, and then turned to carry the stud into line with the length of the slots 39. The sections can then be pushed into one another as above set forth.

The collars 14 and 15 have flanges 43 forming the sides of the grooves 16 therein, and these flanges have cuts or recesses 44 to receive the inner ends of the links 10*a* and 10*b* of the ribs, these recesses being not radial in direction, but slightly diagonal.

The top 3 has a tie band 47 fast to a button 48 on the top 3 at one end, and having a ring 49 at the other end. When the umbrella is folded as in Figure 4, the cloth of the top is made smooth as possible, and then the band 47 can be passed around the umbrella and the ring 49 slipped over the button 48 to hold the band in encircling position. The umbrella can then easily be slipped into a suitable cover. The loop 50 may be attached to the knob 38 on the handle if desired.

I may also provide the knob 38 with a flange or rim to envelop the ends of the sections 25, 35 and 36, if these protrude to any extent beyond the sleeve 29, in the position shown in Figure 4.

The umbrella thus consists of relatively few parts, and is quite simple in construction and easy to manipulate when it is either to be folded or opened. When entirely collapsed it can be packed in a trunk, valise or ordinary hand bag, or put away in the owner's pocket. To make it ready for use is the work of a moment, as all that one needs to do is to draw out the sections of the handle and then slip the collar 15 up over the catch 31 to extend the ribs and spread the top 3. When spread and stretched, the top is quite smooth on its upper surface, with no projections which might otherwise give the um-

brella an unsightly appearance. At the same time, the umbrella can be easily manufactured and sold at a reasonable price.

The collar 15, is of course shaped so that it can be slipped freely past the catch 31 and may be grooved inside for this purpose. Slots 44 in the collars 14 and 15 are offset just enough to make the ribs extend in a nearly radial direction from the handle 1.

The location of the pins 13 in the links is such that these pins are slightly farther from the pins 20 joining them to the bars 4, 5, 6 and 7 than to the pins 20 at the opposite ends of the links. Hence the ribs curve downward when distended.

In Figure 10 the handle is shown with a tension spring 53 inside. The collar 14 is fixed to a sleeve 26a, closed by a cap 51 or button to which is attached a cast-in anchor 52 in the section 25. To this anchor is affixed one end of the spring 53, joined at its opposite end to a pin 54 in the knob 38, at the end of the section 37. The spring thus extends from end to end of the handle. It is light and of many turns, so that it does not interfere with the telescoping of the sections 25, 35, 36 and 37. When the sections are distended the spring stretches and serves to pull back and hold the pins 42 in the notches 41, to grip the handle at full length.

Around the sleeve 21 is wrapped a spring 55, engaging at its ends the links 10a and 10b, and tending normally to distend the rib. These springs 21 make the opening of the umbrella easier when the collar 15 is pushed towards the collar 14.

The construction of the ribs permits the umbrella to be in different sizes without increasing the number of different parts. That is, the links 10a, 10b, 11a, 11b, 12a and 12b are all of the same size; and for a larger umbrella with longer ribs, more links are included, and another slotted bar may be added. Hence a large number of parts of different sizes are not needed, as they would be if the links were of different lengths. Of course the number of links can be varied to alter the length of the rib and the number of sections in the handle can likewise be changed.

In the rib presented in Figs. 11 to 15 inclusive, the links 10a, 10b, 11a, 11b, 12a and 12b are arranged and connected as before; being united to the rod 1 by the fixed collar 14 and slidable collar 15; but the slotted bars or sections 4, 5, 6 and 7 are replaced by the parts 58, 59, 60 and 67; the last-named being like the other links and pinned at its upper end to the upper end of the link 12a, and pivotally connected at its midpoint by the short link 23 to the lower end of the link 12b. The parts or bars 58, 59 and 60 are slidably connected together and are anchored to the rod 1 by a fixed collar or rounded element 14a, like the collar 14, but larger, and on top of the latter.

The members or sections 58, 59 and 60, in conjunction with the outermost link 67, give each rib a continuous top or upper edge. In Figure 14 these members or bars are shown as square in cross section; but they may be wholly or partly rounded, or otherwise shaped in cross section; and they are of such thickness that they telescope one within another in the reverse of the order named. Each bar 58 has a perforated projection 61 for attachment to the collar or element 14a, which has a groove 16 in its rim and recesses 44 at as many places as there are to be ribs, to receive the lugs or projections 61. A wire 17 passing through the lugs 61 and lying in the groove, with its ends united, keeps all the lugs 61 connected with the element 14a, and in the same way as ribs 10a and 10b are connected to the elements or collars 14 and 15.

The bars 58, 59 and 60 are channel-shaped on their lower faces, so that the adjacent pinned ends of the links 10b and 11b, 11a and 12b, 12a and 67 can be received therein. The bar 58 has lugs 62 at its outer end, projecting towards each other from the lower edges of the sides; and the bar 59 has lugs 63 at its adjacent end, projecting downward from its sides; so that, when the bar 59 is inside the bar 58, the outward movement of the bar 59 will be arrested by said lugs before the bars can come apart. A similar arrangement of lugs 62 and 63 at the outer and inner ends respectively of the bars 59 and 60 prevents full separation of these two, when the bar 60 is farthest from the rod 1.

The hinged ends of the ribs 10a and 11b, 11a and 12b, 12a and 67, adjacent these bars, have washers 64, held against the outside of the links by the pivot pins 20; and the thickness of the links and washers is such that these ends can enter and withdraw from the bars 58 and 59 through the open lower faces of same. The remaining bar 60, however, has internal ribs 65 extending along the lower edges; far enough apart to allow movement of the ends of two links along this bar between the ribs, but close enough to engage the washers 64 thereon and prevent withdrawal. The pinned ends of the links 12a and 67 are inserted into this bar through one extremity thereof; and lugs 66 and 67 at the two extremities are then bent inward, so that said ends will be slidably retained in said bar by these lugs and ribs 65.

At its outer end, the bar 60 has a small projection 68 to engage the bar 59, when it is pushed into the latter; so that these two bars can be moved together into the bar 58.

With the ribs collapsed as in Figure 13, the umbrella can be raised by pushing the collar 15 towards the part 14. The outward movement of the links causes the connected ends of the links 12a and 67 in the bar 60 to swing the three bars, now telescoped together, away from the rod 1. When the bars are actuated to a sufficient extent, the same ends of these two links slide forward in the bar 60, between the ribs 65, strike the projection 67, and begin to pull the bars out. This pulling out continues as the lugs 63 and 62 on the bars 59 and 60 engage each other; and is terminated when the lugs 63 on the bar 59 strike against the lugs 62 on the bar 58. As the bars are extended, the adjacent ends of the links 11a and 12b, 10b and 11b enter the grooves in the bars 58 and 59; and in full operative position, the bars 58, 59 and 60 come into alinement and impart a smooth upper edge to each rib. This edge is continued by the rib 67, which is set at a slight angle, so that the hem or rim of the cloth cover (not shown), which is secured to the upper edge of the ribs, will drop slightly; giving the umbrella a better appearance.

To lower the umbrella, the collar 15 is pulled away from the elements 14 and 14a. The link parts are then collapsed. As the united ends of the links 12a and 67 slide into the bar 60, they eventually hit the projection 66 and impel this bar into the bar 59. When the projection 68 strikes the outer end of the bar 59, the latter is

forced into the bar **58**. At the final stage of folding, the united ends of the links **10***b* and **11***b*, **11***a* and **12***b* may be disengaged entirely from the bars, as shown in Figure 12; and the rib is completely collapsed, with the link **67** snugly housed in the outer bar **60**. When the ribs are expanded again, the said ends of the four links, with the washers **64**, easily enter the bars **58** and **59**, as soon as the member **60** moves out far enough; and the whole upper edge of the rib is thus capped and lined by the members **58**, **59** and **60**, when they reach the positions indicated on Figure 11. All the ribs of the umbrella of course act in opening and closing in the same way as the one here described.

The invention thus embraces only a few and easily made parts and can be quickly assembled. The operation is certain, and the finished device is not liable to get out of order.

Having described my invention, what I believe to be new and desire to secure and protect by Letters Patent of the United States is:

1. A folding umbrella comprising an extensible rib having parts having slidable hinged connections and movable into alinement when distended to present a smooth curved edge to engage the underside of the top.

2. A folding umbrella comprising an extensible rib having a plurality of slotted bars movable into line with each other to present a smooth curved convex edge to the underside of the top, when the rib is extended.

3. A folding umbrella comprising an extensible rib having a plurality of slotted bars, with hinged connections through the slotted portions and links connected to the bars and to one another in lazy tongs arrangement to move the bars into alinement when the rib is extended to give the rib a smooth curved upper edge.

4. In a collapsible umbrella including a handle having a fixed collar and a sliding collar thereon, links connected in lazy-tongs arrangement to said collars, a series of bars having a pin-and-slot connection with one another and forming a rib, the links also being pivotally connected to said bars to extend and collapse the rib, and cause the rib when distended to present a smooth curved upper edge.

5. In a folding umbrella including a handle made up of telescoping sections, one of said sections bearing a fixed collar and a sliding collar, extensible and collapsible ribs pivotally attached to said collars, each rib including bars having pin-and-slot engagement with one another, and links arranged in pairs and pivotally joined near their centers, the innermost links being pivotally attached to said collars, said links being all of the same size except the outermost, which is relatively short, said links all being connected at one end thereof to one of said bars and being arranged in lazy-tongs fashion to move said bars into and out of alinement to extend and collapse the ribs, the bars when actuated into alinement presenting a smooth upper edge to each rib.

6. A folding umbrella comprising a handle of telescoping sections having means for engaging each other to prevent collapse when the sections are distended, the sections telescopically engaging one within the other, and a tension spring in the handle to hold said means in operative position.

7. In a folding umbrella having a central rod, a rib attached at one end to said rod, said rib comprising movably united parts to extend and shorten the rib, and telescoping members, one of which is united to said rod, and connected to said parts to be actuated when the rib is extended, into alinement along the upper edge of the rib.

8. In a folding umbrella having a central rod, a rib connected to said rod at one end, said rib comprising links disposed in lazy-tongs arrangement to extend and shorten the rib, and telescoping members, one of which is united to said rod, connected to said links to be actuated when the rib is lengthened, into alinement along the upper edge of the rib.

9. The rib according to claim 7, wherein some of the parts of the rib are movably joined to one of said members.

10. The rib according to claim 8, wherein one of said members is movably attached to some of said links.

11. A folding umbrella having a central rod, a pair of rounded elements fixed thereon, a sliding collar on said rod, and an extensible rib having pivotally united parts and slidably connected members, some of said parts and members being connected at one end to said element and said collar.

12. A folding umbrella having a central rod, a rounded element fixed on said rod, a second rounded element of smaller size fixed on the rod adjacent said first element, a sliding collar on said rod, links in lazy-tongs arrangement connected to said smaller element and said collar, and telescoping members one of which is hinged to the larger element and another engaged by some of said links.

13. A rib for a folding umbrella comprising links in connected relation and telescoping members which, when the rib is distended, act with the outermost link to form therewith the upper edge of the rib.

14. A rib for a folding umbrella connected to a central rod having a sliding collar thereon and comprising links in lazy-tongs relation connected to a fixed part and to said sliding collar, telescoping members having hinged connection with said rod adjacent said part, said members having arresting lugs to prevent separation when extended and being open on their lower faces, the member farthest from the rod when the links are distended having an internal lug at each end, and inturned ribs along its sides to retain the ends of some of said links slidably within same, said member also having an external lug to engage the adjacent member when said members are retracted.

15. A folding umbrella comprising an extensible rib having a plurality of slotted bars movable into line with each other to present a continuous edge to the underside of the top when the rib is extended.

16. A folding umbrella comprising an extensible rib having a plurality of connected slotted bars, with links connected to the bars and to one another in lazy tongs arrangement to move the bars into alinement when the rib is extended to give the rib an upper edge.

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