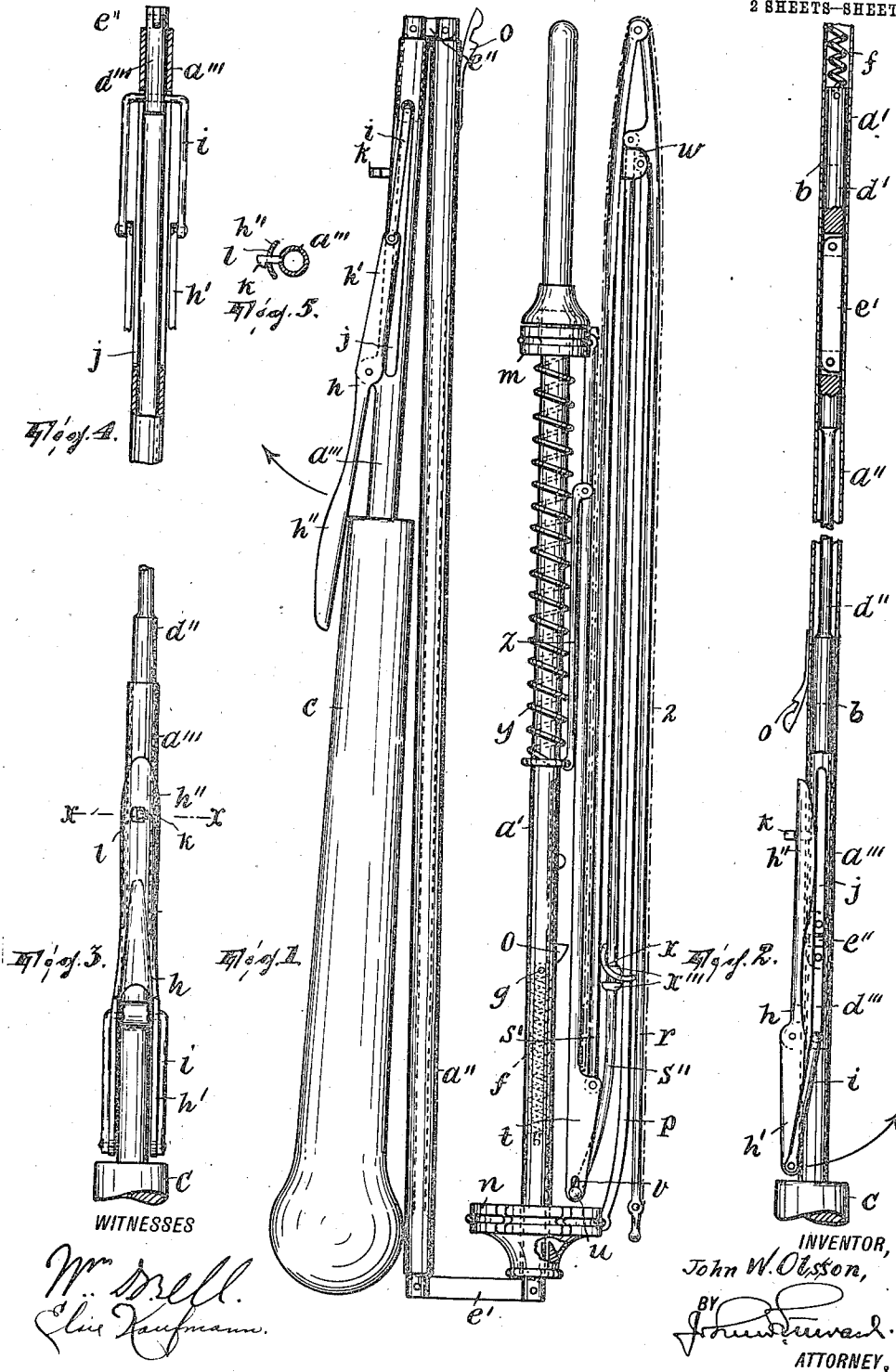


J. W. OLSSON.
FOLDING UMBRELLA.
APPLICATION FILED MAY 2, 1912.

1,063,378.

Patented June 3, 1913.

2 SHEETS-SHEET 1.

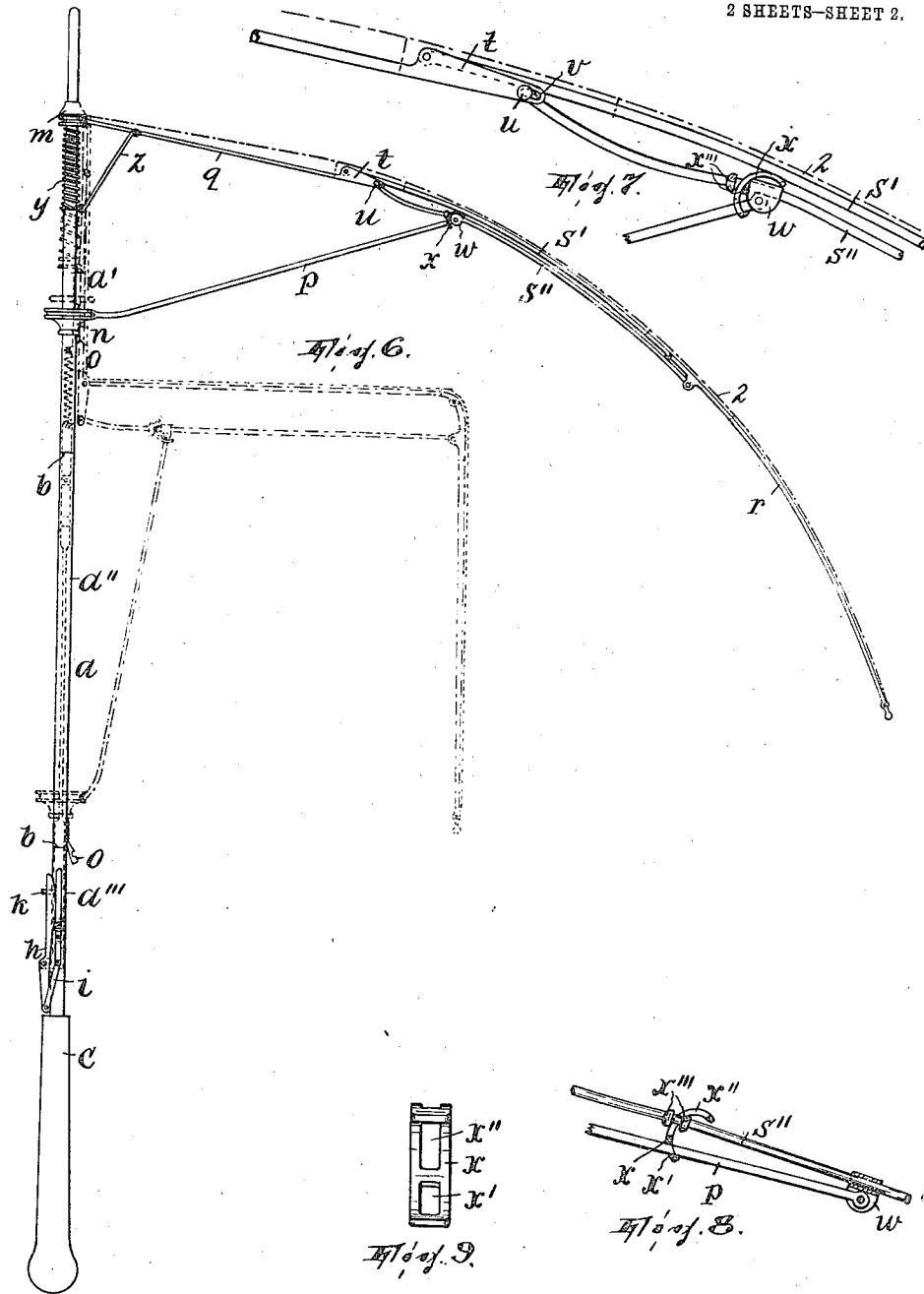


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WITNESSES

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JOHN W. OLSSON, OF NEWPORT NEWS, VIRGINIA.

FOLDING UMBRELLA.

1,063,378.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed May 2, 1912. Serial No. 694,616.

To all whom it may concern:

Be it known that I, JOHN W. OLSSON, United States citizen, residing at Newport News, in the county of Warwick and State of Virginia, have invented certain new and useful Improvements in Folding Umbrellas, of which the following is a specification.

My present invention has for its object to provide an umbrella, parasol or the like which can be folded into relatively small compass and which at the same time will be as simple and inexpensive as possible in construction, will not differ in appearance materially from an ordinary umbrella, and may be manipulated with ease and facility in the folding or unfolding as well as in the closing or opening thereof.

I have fully illustrated the invention in the accompanying drawings, wherein,

Figure 1 is a side elevation of an umbrella constructed in accordance with this invention, the parts appearing in their folded position and only one rib structure being shown; Fig. 2 is a side elevation of the staff, extended, certain parts appearing in section; Fig. 3 shows the handle-end portion of the staff, extended; Fig. 4 is a partly sectional fragmentary view of that part of the staff which includes the device for locking the staff in the extended position, said device appearing in the position it occupies when the staff is folded; Fig. 5 is a sectional view on line $x-x$ of Fig. 3; Fig. 6 shows the staff and one rib structure in the open position of the umbrella, the dotted outline of said structure indicating the manner in which the folding thereof takes place; Fig. 7 shows in side elevation that part of said rib structure to which the stretcher is attached; Fig. 8 is a detail illustrating the relation of the rib mechanism and stretcher when folded; and Fig. 9 shows a detail of a part appearing in Figs. 7 and 8.

The staff a includes the tubular sections a' , a'' and a''' which, when the staff is extended, abut together end to end, as at b b in Fig. 2; the lower section a''' may carry the handle c . The staff is provided with means, part of which is inclosed therein, for securing its sections rigidly in their extended position, the inclosed part thereof being jointed so as to allow the sections to assume that relative position which constitutes the folded condition of the staff, thus: A folded shaft, including an upper section d' , an intermediate section d'' , and a lower

section d''' , the sections d' and d'' being connected by the link e' and the sections d'' and d''' being connected by the link e'' so as to allow the folding of said shaft, is fitted into the sections of the staff a . The section d' is attached to a spiral spring f inclosed within the upper section a' of the staff and fixed to a pin g therein; when the section a'' of the staff abuts the upper section a' thereof, it will be obvious that section d' prevents folding of the parts on the link e' , but that such folding may occur as soon as the section a'' has been slid downwardly on the shaft far enough to uncover the link. The section a''' of the handle, the same as the section a'' , may slide longitudinally of the shaft; when it abuts the lower end of section a'' , it will be obvious that the lower end portion of section d'' of the staff prevents the folding of the parts on link e'' , although such folding may occur upon section a''' being slid downwardly sufficiently to uncover said link e'' . In short, so long as section a''' of the staff covers the lower joint (e'') in the shaft and section a'' the upper joint (e') the shaft remains extended; but when said sections a''' and a'' are slid downwardly sufficiently so that they respectively uncover these joints, the shaft may be folded.

The sections a''' and a'' are held upwardly, a''' against a'' and a'' against a' by means, now to be described, having support on the lower shaft section a''' , such means preserving a certain tension, by virtue of the spring f , which increases considerably the stability of the staff, whose sections, it will be observed, have square-cut butting contact with each other at the points b b : Fulcrumed on the section a''' is a lever h having its end h' forked and connected to the section d''' of the shaft by a link i which plays in a slot j in section a''' ; the other end of the lever h forms a handle h'' which in the position shown in Figs. 2 and 3 fits around the section a''' , being part cylindrical for that purpose. To hold the lever in the position mentioned a hook k projects from section a''' , passing through the hole l in the lever (Fig. 5) and engaging the same; by springing the end h'' of the lever to one side it may be made to clear this hook. The lever in this position is acting, through the link and the shaft, to hold the spring f under tension, sections a' , a'' and a''' of the staff being held abut-

ting end for end against each other. When the lever is released and swung on its fulcrum in the direction of the arrow in Fig. 2 such tension is first released and the lever
 5 now having a purchase on the link i it slides section a''' downwardly to clear the joint in the shaft at link e'' and leave the section a'' free to be moved down by hand to clear the joint at link e' (Fig. 4). This construction gives, in the extended condition of the
 10 staff, a very substantial and rigid relation of the parts, while it permits the folding and unfolding operations to be performed with great facility and convenience. The link e' is preferably made somewhat longer
 15 than the link e'' to allow sufficient room for the rib mechanism.

m denotes the crown, fixed on the staff in the usual manner, and n the runner arranged to slide on the staff and to be held
 20 in either of its limits of motion by one of the spring catches o . A series of stretchers p are pivoted to the runner in the usual manner.

The rib structures are formed as follows: Each rib structure comprises four sections, an inner section q which is pivoted at its inner end to the crown in the usual manner, an outer section r and two intermediate
 30 sections s' and s'' pivotally connecting the sections q and r thus: The inner end of the section s' is pivoted to section q at a point removed from the outer end thereof and to section r at its inner extremity, whereas the section s'' is pivoted to the outer extremity
 35 of section q and to section r at a point removed from the end thereof, forming, thus, a parallel link arrangement. The free end portion of section q may be formed as an elongated outwardly open socket t in
 40 which the adjoining portion of the section s' may be housed when the rib structure is extended (Fig. 7); in the free end of this socket the pivot for the inner end of section s'' is located, the pin u forming the
 45 pivot being preferably movable in slots v in the sides of the socket which allow a slight play of the parts at this point, easing their folding operation. In order to clear
 50 the socket t in the folded position, the adjoining end of section s'' may be curved inwardly slightly, as seen in Figs. 6 and 7.

A slide w is arranged on each section s'' , and to this is pivotally connected the free
 55 end of the corresponding stretcher p . The stretcher penetrates an eye x' of a curved yoke x having a slot x'' which is penetrated by the section s'' . This yoke has no function except during the operation of
 60 folding or unfolding. It is confined between shoulders a''' on section s'' , articulating in the line of its curve when the umbrella is opened or closed. Coiled about the staff and secured to the crown is a
 65 spiral spring y and pivotally connecting the

lower end of this spring and the section q of the rib structure is a link z . When the umbrella is closed the operation is resisted somewhat by this spring which, by tending to maintain the sections q in the open position, at this time thus preserves the rib
 70 structure against possible buckling at the joints in the socket t , properly incidental only to the folding operation.

The opening and closing operations of the improved umbrella are identical to that of the ordinary umbrella, the runner being simply released and raised or lowered. In folding (the umbrella being closed), the rib sections q are held closed or contracted
 75 by the hand or otherwise and the runner released and moved upwardly on the shaft, the rib structures buckling in the manner indicated by the dotted lines in Fig. 6. Such buckling may continue until the sections r lie against the sections s' and s''
 80 and the latter against the sections q , as will be obvious. During the operation of folding the ribs, no appreciable movement of the slides w outwardly on the rib sections s'' takes place, but once this operation is
 85 completed said slides move outwardly on the rib sections s'' , the stretchers sliding through the eyes of the yokes x and thus allowing the runner to be advanced up to the position shown in Fig. 1 where the stretchers have their lower ends substantially coincident with those of the sections
 90 q , s' , s'' and r . The staff may then be folded in the way already set forth. In unfolding, the staff is first extended. The runner is then drawn down on the staff until it reaches the lower spring catch o , during which operation the slides w are first brought to the inner extremities of the sections s'' of the ribs and then the ribs unfolded or extended, operations just the reverse of those involved in the folding. It will be understood that the line 2 in Figs. 1, 6 and 7 indicates the usual fabric
 95 cover.

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

1. In a staff structure for an umbrella, a plurality of tubular members, and connected means including a spring associated therewith to maintain the adjoining ends of said members in abutting and alined relation to each other, said means also including an operating device for imparting longitudinal pressure to said members and movable relatively to said members to free the same from said pressure.

2. In a staff structure for an umbrella, a plurality of tubular members, and a connected spring-including train of parts associated therewith to maintain the adjoining ends of said members in abutting and alined relation to each other, said train of parts

also including an operating device for imparting longitudinal pressure to said members and movable relatively to the latter to free the same from said pressure.

5 3. In a staff structure for an umbrella, a plurality of tubular members, and a connected spring-including train of parts partially housed in said members and attached at one end to one of the terminal members, 10 said train of parts serving to maintain the adjoining ends of the members in abutting and alined relation to each other, said train also including an operating device connected to the other terminal member for imparting 15 longitudinal pressure to the members, said operating device being movable relatively to the members to free the same from said pressure.

4. In a staff structure for an umbrella, a 20 plurality of tubular members adapted to be alined in abutting relation to each other, and connected means associated therewith to maintain the members in such relation, said means including a spring, a folding shaft 25 connected to said spring and housed within said members, said shaft being movable longitudinally of the members in the alined position thereof to bring its joint portion into and out of coincidence with the abutting 30 ends of said members, and an operating device for imparting longitudinal pressure to said members, said device being movable relatively to said members to free the same from said pressure.

35 5. In a staff structure for an umbrella, upper, intermediate and lower tubular members alined with each other and movable into separated and inter-abutting relation, a shaft inclosed in said members, attached to the 40 upper member and including upper, intermediate and lower sections pivotally jointed together, and means, connected with the lower shaft section and including a fulcrum operating device engaged with the lower 45 tubular member, for exerting upward pressure upon the latter and thereby holding the same against the intermediate member and said intermediate member against the upper member, substantially as described.

50 6. In a staff structure for an umbrella, upper, intermediate and lower tubular members alined with each other and movable into separated and inter-abutting relation, a shaft inclosed in said members, attached to 55 the upper member and including upper, intermediate and lower sections pivotally jointed together, and means, connected with the lower shaft section and including a ful-

crum operating device engaged with the lower tubular member, for exerting upward 60 pressure upon the latter and thereby holding the same against the intermediate member and said intermediate member against the upper member, said upper and lower shaft sections respectively intersecting the meet- 65 ing ends of the upper and intermediate members and the intermediate and lower members when they abut against each other, substantially as described.

7. In combination, the staff, a crown fixed 70 thereon, a runner slidably arranged on the staff, a rib structure pivoted to the crown and including an inner and a relatively outer portion pivotally jointed together, the joint between said portions being adapted to 75 buckle downwardly, a stretcher pivotally connecting the runner with the outer portion of the rib structure at a point between said joint and the outer end of said portion, and yielding means connected to the inner 80 portion of the rib structure and resisting the downward pivotal movement of said inner portion of the rib structure, substantially as described.

8. In combination, the staff, a crown fixed 85 thereon, a runner slidably arranged on the staff, a rib structure pivoted to the crown and including inner and outer sections, and upper and lower intermediate sections pivotally connected to said inner and outer sections in a parallel-link arrangement, a 90 stretcher pivoted at one end to the runner, and a slide movable longitudinally on the lower intermediate section, the outer end of the stretcher being pivoted to the slide, substantially as described. 95

9. In combination, the staff, a crown fixed thereon, a runner slidably arranged on the staff, a rib structure pivoted to the crown and including inner and outer sections, and 100 upper and lower intermediate sections pivotally connected to said inner and outer sections in a parallel-link arrangement, a stretcher pivoted at one end to the runner, a slide movable longitudinally on the lower 105 intermediate section, the outer end of the stretcher being pivoted to the slide, and a yoke attached to said lower intermediate section and freely penetrated by the stretcher, substantially as described. 110

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. OLSSON.

Witnesses:

CHARLES C. MITCHELL,
HENRY W. FRONDT.