(No Model.) 2 Sheets—Sheet 1.

A. BEAUCHAMP.

FOLDING UMBRELLA.

No. 562,507. Patented June 23, 1896.

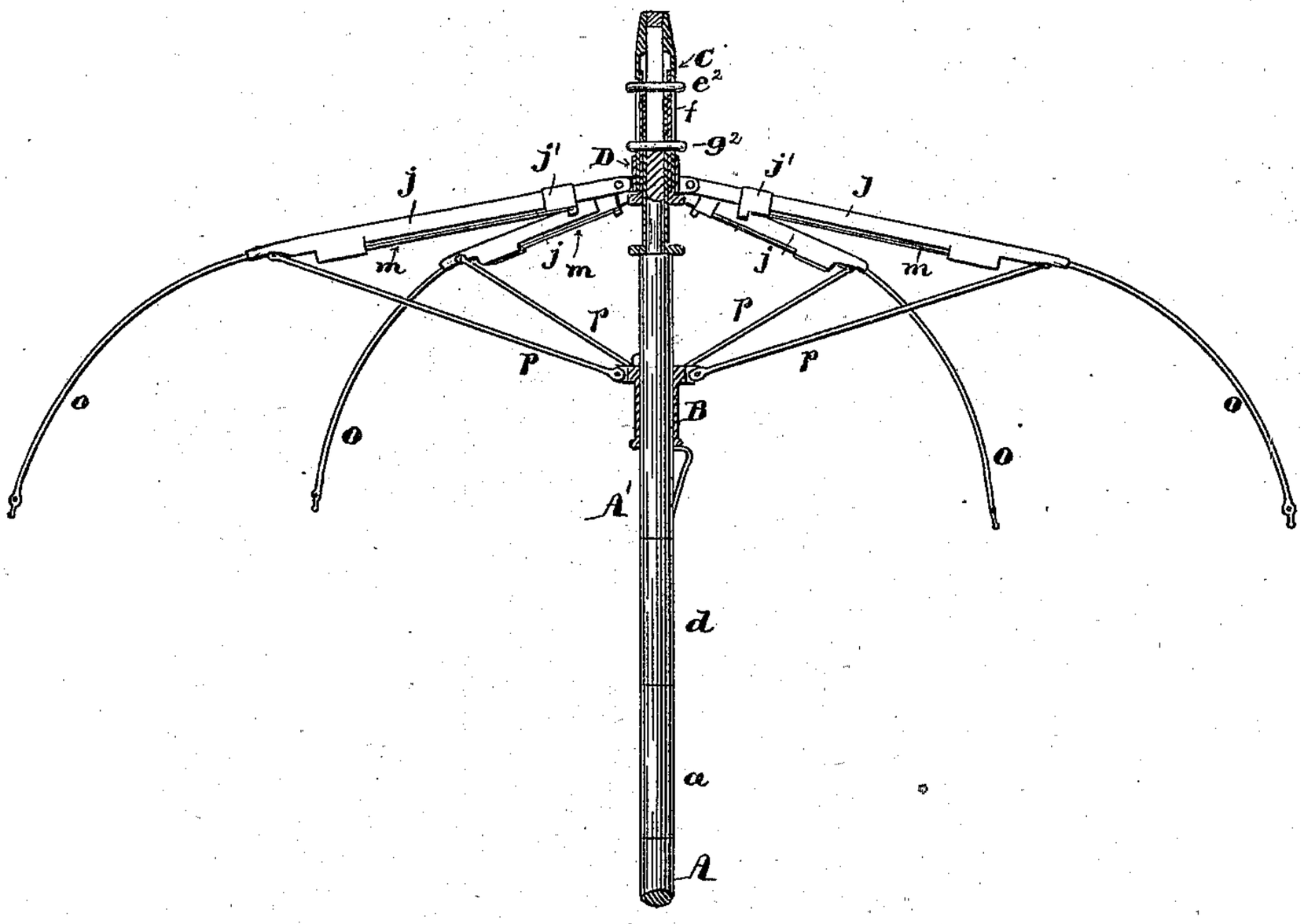

Fig. 1.

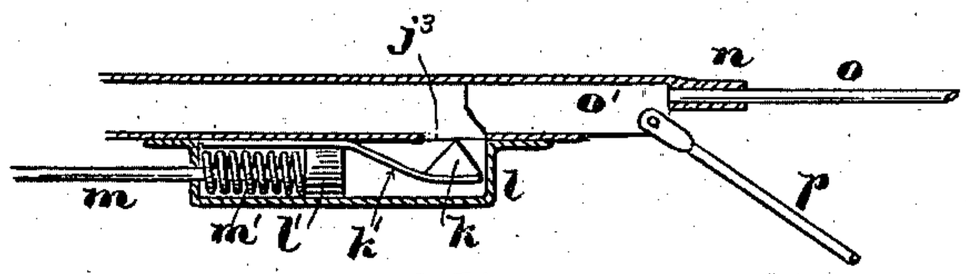

Fig. 4.

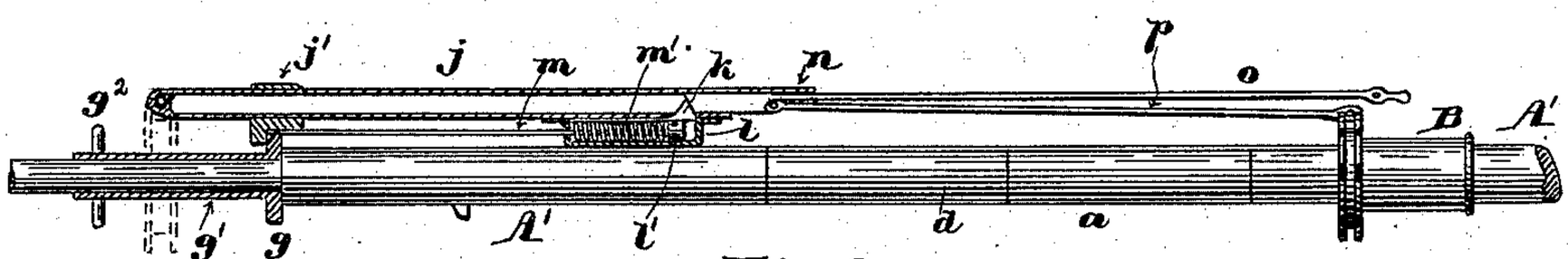

Fig. 2.

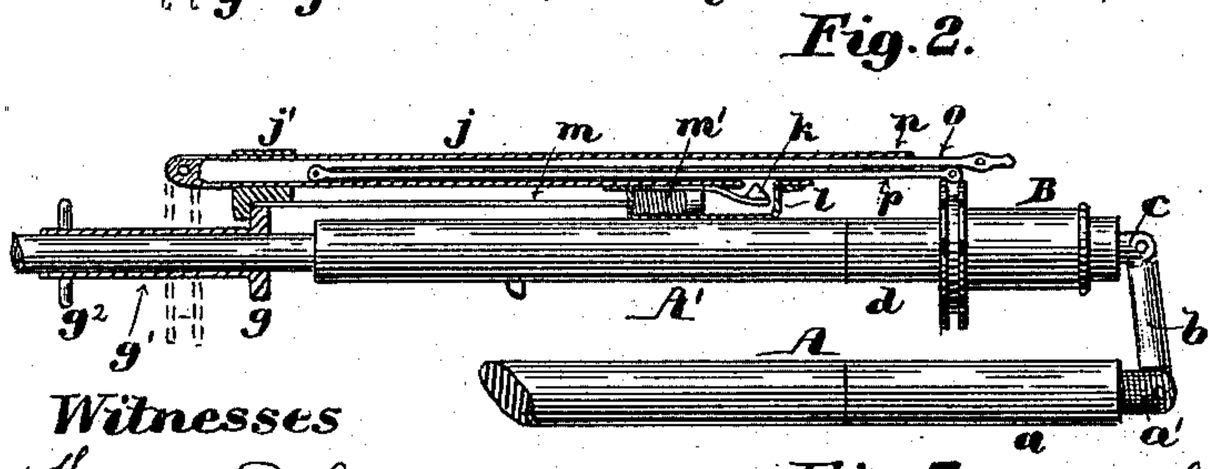

Fig. 3.

Witnesses
Walter E. Lombard.
H. Theodore Fletcher

Inventor:
Aimé Beauchamp
by N. C. Lombard
Attorney.

(No Model.)

2 Sheets—Sheet 2.

A. BEAUCHAMP.

FOLDING UMBRELLA.

No. 562,507. Patented June 23, 1896.

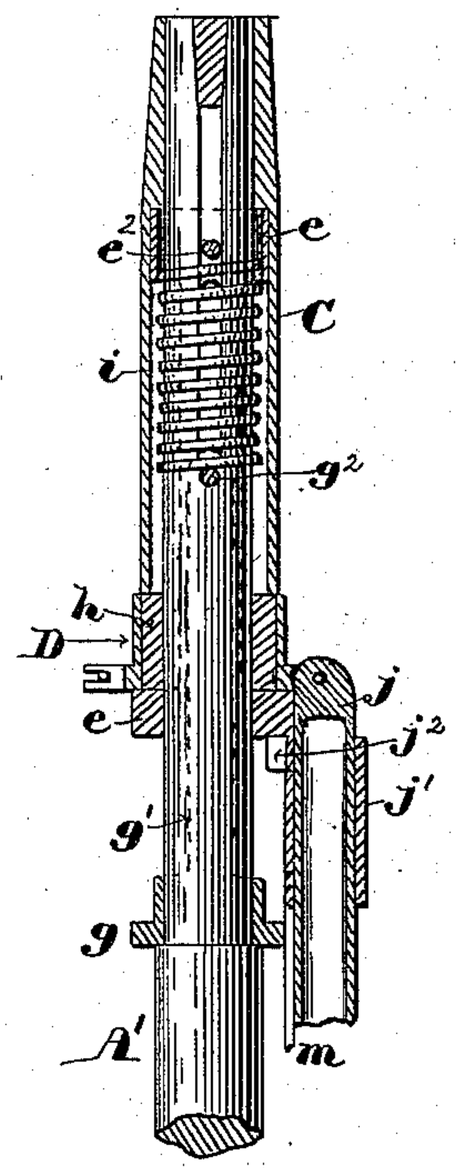

Fig. 5.

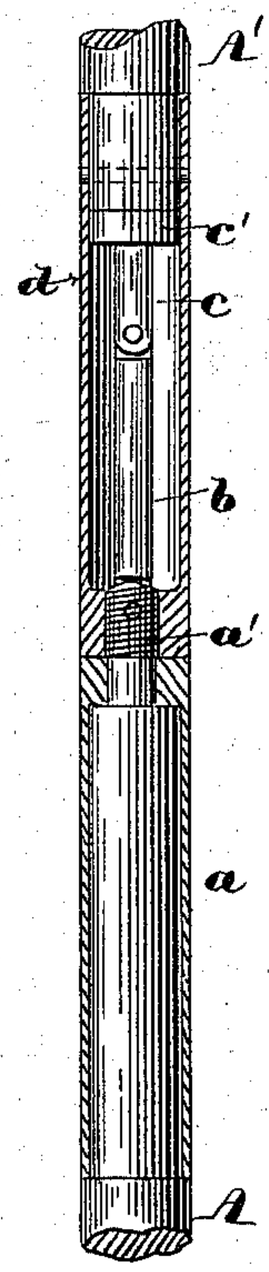

Fig. 6.

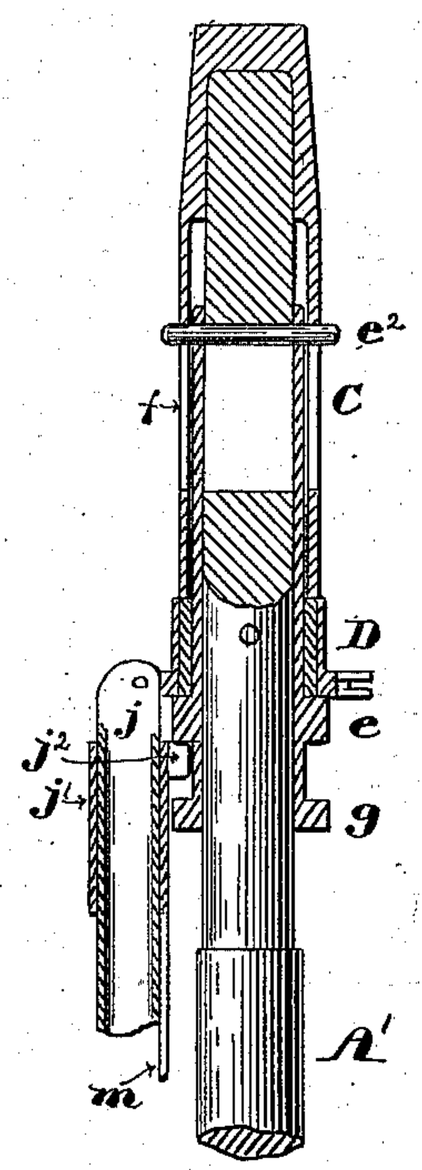

Fig. 15.

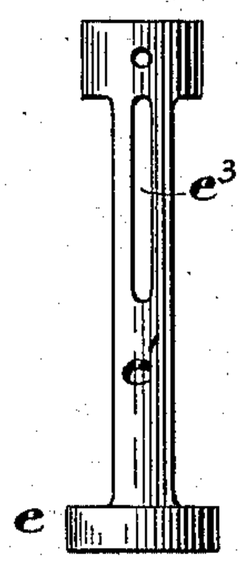

Fig. 8.

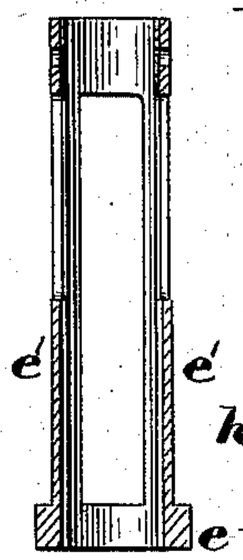

Fig. 9.

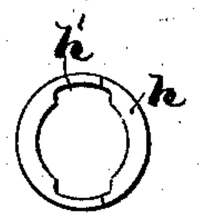

Fig. 13

Fig. 14

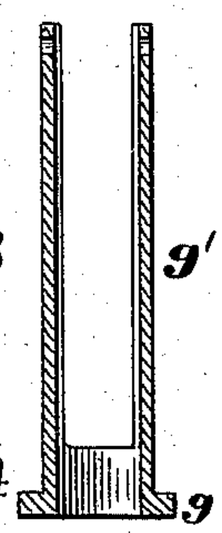

Fig. 12.

Fig. 11

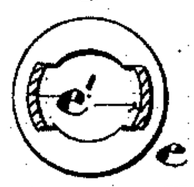

Fig. 7.

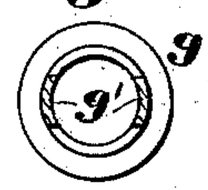

Fig. 10.

Witnesses:

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A. Theodore Fletcher.

Inventor:

Aimé Beauchamp

by N. C. Lombard

Attorney.

UNITED STATES PATENT OFFICE.

AIMÉ BEAUCHAMP, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ARMAND MIGNAULT, OF SAME PLACE.

FOLDING UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 562,507, dated June 23, 1896.

Application filed September 24, 1895. Serial No. 563,478. (No model.)

To all whom it may concern:

Be it known that I, AIMÉ BEAUCHAMP, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Folding Umbrellas, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to folding umbrellas, is an improvement upon the invention described in the Letters Patent No. 485,905, granted to me on the 8th day of November, 1892, and it consists in certain novel features of construction, arrangement, and combination of parts which will be readily understood by reference to the description of the accompanying drawings and to the claims hereto appended, and in which my invention is clearly pointed out.

Figure 1 of the drawings is a sectional elevation of an umbrella-frame embodying my invention with the cover removed. Fig. 2 is a sectional elevation of the stick, the runners, one of the ribs, and its stretcher in extended position but closed upon the stick. Fig. 3 is a similar view of the same parts in folded or contracted position. Fig. 4 is a longitudinal section of a portion of the outer end of one of the tubular sections of a rib, with a portion of the inner end of an outer section of a rib and a portion of its stretcher in elevation. Fig. 5 is a sectional elevation of a portion of the inner end of one of the tubular rib-sections, a portion of the stick, the tip-casing, and the devices for operating the locking mechanism for securing the outer rib-sections in extended positions. Fig. 6 is a sectional elevation of the central portion of the jointed stick and illustrates the manner of coupling the two parts together. Figs. 7, 8, and 9 are respectively a sectional plan, an elevation, and a longitudinal section of the locking-stirrup. Figs. 10, 11, and 12 are similar views of the unlocking-stirrup. Figs. 13 and 14 are respectively a plan and an elevation of the stirrup-guiding ring. Fig. 15 is a section similar to Fig. 5, but illustrating a modification in which the locking and unlocking stirrups are made in one piece.

In the drawings, A and A′ represent the two parts of the stick connected together as follows: The section A has fitted to its inner end the metal ferrule *a*, having secured therein or formed in one piece therewith the exteriorly-threaded shank *a′*, the outer end of which is slotted and has pivoted thereto one end the link *b*, the opposite end of which is in like manner pivoted to the outer end of the stem *c*, having on its inner end a head or piston *c′*, fitted to and revoluble and movable endwise in the cylinder *d*, secured by one end to the section A′ of the stick and provided at its outer end with the inwardly-projecting flange or collar *d′*, in which is formed a bearing for the stem *c*.

The exterior diameters of the ferrule *a* and the cylinder *d* correspond to the diameter of the stick A A,′ so that the runner B may be moved freely over the same.

The upper or outer end of the stick-section A′ is slotted longitudinally for about two inches, more or less, from its end and has fitted thereon so as to be movable endwise thereof the locking-stirrup ring *e*, provided with the upwardly-projecting arms *e′ e′*, in the upper ends of which is set the pin e^2, which passes through the slot in the stick-section A′ and projects at each end through slots *f*, cut through the tip-casing C to a sufficient distance to serve as a means of moving said stirrup-ring longitudinally of said stick for the purpose hereinafter explained. A similar stirrup-ring *g* is fitted to said stick below the ring *e*, and is in like manner provided with the two upwardly-projecting arms *g′ g′*, in the upper ends of which is set the pin g^2, which extends transversely through the slot in the stick, through slots e^3 in the arms *e′ e′* of the stirrup *e*, and through the slots *f* in the tip-casing C, as shown. The arms *g′ g′* are arranged inside of the arms *e′ e′* or between said arms *e′ e′* and the stick-section A′, and both pairs of arms are guided in their movements endwise of the stick by guideways *h′* in the ring *h*, made in two parts, and inclosed within the rib-attaching ring or top notch D.

A spring *i* surrounds the stick-section A′ between the pins e^2 and g^2, the tension of which tends to force said pins apart and thus move the stirrup-ring *e* upward and the stirrup-ring *g* downward.

A series of tubular rib-sections *j* are pivoted by one end to the top notch D in a well-known manner, on the inner end of each of which is fitted so as to be movable endwise thereof a sleeve *j'*, provided on its inner side with inwardly-projecting lug j^2, which, when the ribs are closed against the stick, will project into the annular space between the stirrup-rings *e* and *g* in positions to be acted upon thereby to move said sleeves up or down upon said tubular rib-sections for a purpose to be presently described. Each of said tubular rib-sections *j* has formed in its inner side near its outer end a slot j^3, through which a V-shaped lug *k*, formed upon or secured to the movable end of the spring *k'*, projects, when said spring is compressed, the opposite end of said spring being secured to the inner wall of the tubular rib-section *j*, and so formed and arranged that, normally, the V-shaped lug *k* will be withdrawn from said slot j^3.

The spring *k'* is inclosed in a supplementary chamber *l*, secured to the inner side of said rib-section *j*, which chamber also has fitted therein so as to be movable endwise thereof the piston *l'*, which is secured to one end of a rod *m*, the opposite end of which is securely attached to the sleeve *j'*, so as to be movable therewith, said rod *m* having fitted thereon, between the piston *l'* and the inner end wall of the supplementary chamber *l*, a spring *m'*, the tension of which tends to move said piston *l'*, the rod *m*, and the sleeve *j'* toward the outer end of the tubular rib-section *j*, which outward movement of the piston *l'* forces the V-shaped lug *k* through the slot j^3 and causes it to project into the interior of the tubular rib-section *j*.

The tension of the spring *m'* will hold the piston *l'* in its extreme outward position until retracted by force, which is done by moving the stirrup-ring *g* upward after the umbrella has been closed, when the tension of the springs *k'* will cause the lugs *k* to be retracted from the interior of the tubular rib-sections, so that the outer rib-sections may be moved endwise into the tubular rib-sections, the friction of the stirrup-rings being sufficient to prevent said piston *l'* being moved outward or toward the outer end of the tubular rib-sections by said springs *m'* until the stirrup-ring *g* is again moved downward.

The inner wall of the tubular rib-section *j* at its extreme outer end and outside of the supplementary chamber *l* is cut away for about seven-eighths of an inch, more or less, and in the outer portion of said cut-away part of said rib is secured a bearing *n* to which is fitted so as to be made movable endwise therein the outer rib-section *o*, made of solid steel wire and having secured to its inner end, inside of the bearing *n*, the block *o'*, constructed and arranged to nearly fit the interior of the tube of the rib-section *j*, in which it is movable endwise, and has pivoted thereto one end of the brace *p*, the opposite end of which is pivoted to the flange of the runner B, as shown.

The cover of the umbrella (not shown) is secured to the tip of the stick in the usual manner and to the outer ends of the tubular rib-sections and to the outer ends of the wire rib-sections *o* in the usual manner.

The operation of my invention is as follows: The two sections of the stick being screwed together and the ribs extended to their full length and closed against the stick, if the stirrup-ring *e* be moved toward the handle end of the stick, it will engage the lugs j^2 and move all of the sleeves *j'*, the rods *m*, and the pistons *l'* toward the outer ends of the tubular rib-sections *j*, thereby compressing the springs *k'* and causing the V-shaped lugs *k* to project into the interior of said tubular rib-sections in position to prevent the blocks *o'* and the outer rib-sections *o* being moved into said tubular rib-sections, in which condition the umbrella may be spread, as shown in Fig. 1.

If it is desired to fold the umbrella into a shorter compass, for transportation, the umbrella is closed, in the usual way, to bring the ribs and braces into substantially parallel positions, relative to the stick, the stirrup-ring *g* is moved upward carrying therewith the sleeves *j'*, the rods *m*, and pistons *l'*, thereby releasing the springs *k'* from the compressing actions of the pistons *l'*, when the lugs *k* will be withdrawn from the interior of the tubular rib-sections *j*, when if the operator will grasp the umbrella with his left hand around the inner or tubular rib-sections, and with the right hand around the outer end portions of the outer rib-sections and about the runner B, the outer rib-sections and the stretchers *p* may be slid into the tubular rib-sections for the greater portions of their lengths, when the handle-section of the stick may be unscrewed and drawn outward a short distance, to withdraw the link *b* from the cylinder *d*, when it may be folded into the position shown in Fig. 3.

If the umbrella is folded, as above described, and it is desired to prepare it for use, the handle-section of the stick is brought into axial line with the other section of said stick, is moved toward said other section to slide the link *b* into the cylinder *d* till the screw-shank *a'* engages the threaded socket in the end of the cylinder *d*, when the handle-section is revolved to screw said shank into said cylinder. The outer rib-sections and the braces are then withdrawn from the tubular rib-sections, and the stirrup-ring *e* is again moved downward, as before described, to lock said outer rib-sections against being moved inward, when the umbrella may be spread as before.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an umbrella the combination with the stick or handle and a suitable runner mounted thereon, a series of ribs each made in two

parts, the inner section of which is a tube open only at its outer end, and the outer section of which is constructed and arranged to be slid telescopically into said tubular section, and a series of stretchers each of which is pivoted at one end to a movable runner on said stick and at its other end to the inner end of said outer rib-section at a point within the circle of the bore of said tubular rib-section, and adapted to be telescopically slid with said outer rib-section into and inclosed by said tubular rib-section to shorten the umbrella when closed.

2. In an umbrella the combination a tubular rib-section pivoted at one end to a flanged ring secured to the stick and provided near its other end with a supplementary chamber and an opening from said chamber to the interior of said tube, and with a bearing for the outer rib-section; an outer solid rib-section fitted to and movable endwise in the bearing in the outer end, said tubular rib-section and having secured to its inner end a block to fit and slide in said tubular section, a spring secured to said tubular rib-section and inclosed within said supplementary chamber and provided on its free end with a V-shaped lug adapted to be projected into the interior of said tubular rib-section and serve as a stop to the inward movement of said outer rib-section when extended and means for forcing said lug into said tubular rib-section.

3. The combination, in an umbrella, of the stick A, A′; the flanged ring D; the tubular rib-section j provided with the opening j^3 and the bearing n; the supplementary chamber l covering said opening j^3; the spring k' provided with the V-shaped lug k and inclosed within said chamber l; the piston l' fitted to and movable endwise in said chamber l; the sleeve j' provided with the lug j^2 and fitted upon and movable endwise of said tubular rib-section the rod m, connecting said piston l', and said sleeve j'; the outer rib-section o provided with block o'; a stirrup-ring to engage the lug j^2 and means for operating said ring from a point above the pivotal connection of the tubular rib-section to the stick.

4. In a folding umbrella the combination of the jointed stick-sections A and A′; the top notch D fixed upon the stick-section A′; the telescopic rib-sections pivoted to said top notch; the supplementary chamber l attached to the outer end of the rib-section j; the spring-actuated lug k mounted in said chamber and normally projecting into the interior of the tubular rib-section j; the piston l' in said chamber l; the sleeve j' mounted upon and movable endwise of the rib-section j and provided with the lug j^2; the rod m connecting said piston and sleeve; the spring m' surrounding said rod and acting upon said piston; the stirrup-rings e and g mounted upon and movable endwise of the stick-section A′; the pins e^2 and g^2 set respectively in the stirrup-shanks e' and g'; and the spring i surrounding said stick-section A′ between said pins substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 18th day of September, A. D. 1895.

AIMÉ BEAUCHAMP.

Witnesses:
N. C. LOMBARD,
GEORGE H. BROWN.