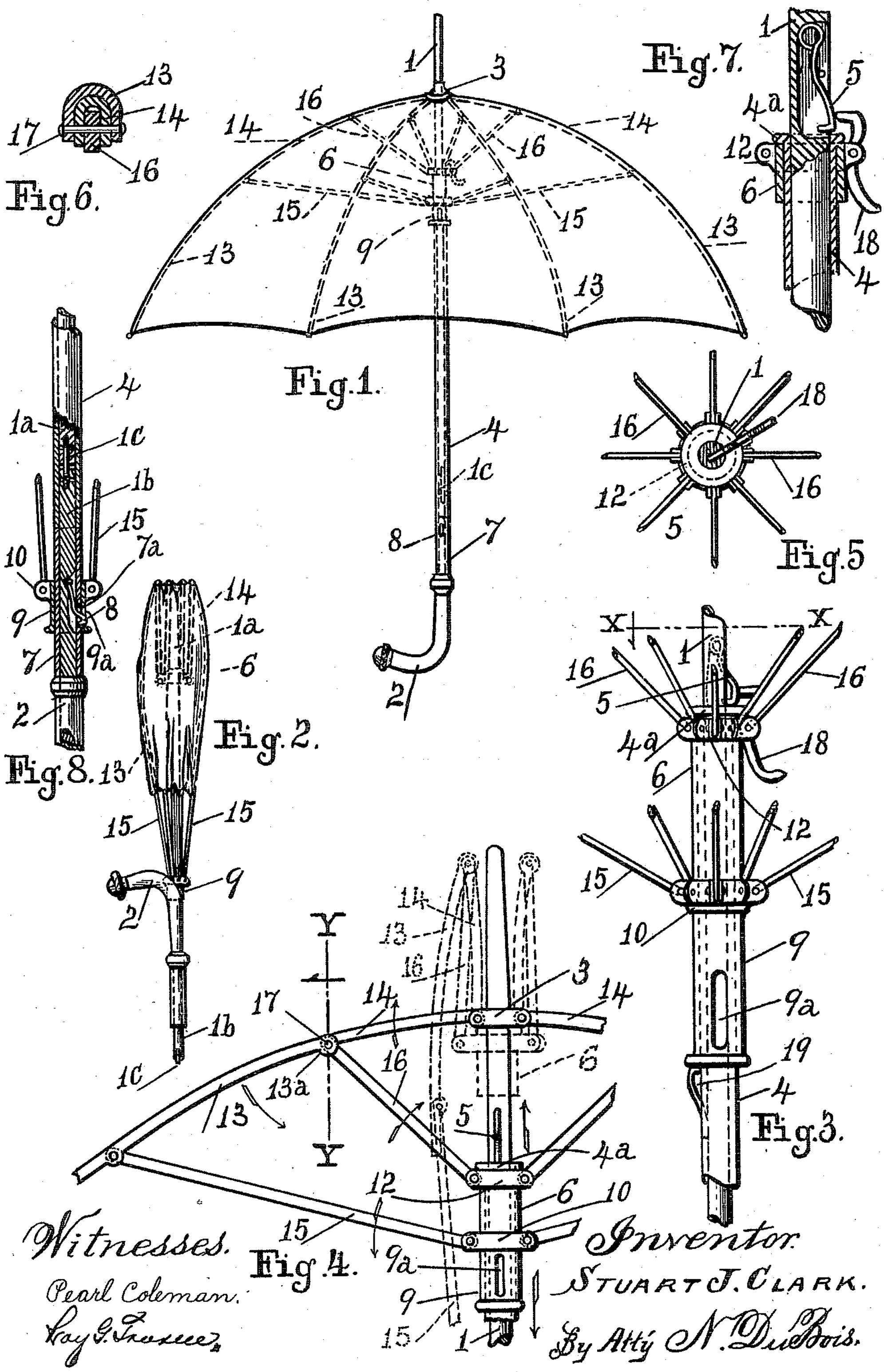
S. J. CLARK.

FOLDING UMBRELLA.

APPLICATION FILED APR. 12, 1910.

973,406. Patented Oct. 18, 1910.



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FOLDING UMBRELLA.

973,406. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed April 12, 1910. Serial No. 555,036.

To all whom it may concern:

Be it known that I, STUART J. CLARK, a citizen of the United States, residing at Auburn, in the county of Sangamon and State of Illinois, have invented new and useful Improvements in Folding Umbrellas, of which the following is such a full, clear, and exact description as will enable others skilled in the art to make and use my said invention.

The general purpose of the invention is to provide an umbrella adapted to be folded to occupy short space for convenience in packing in a trunk or hand bag.

More specific purposes of the invention are to provide a hinge handle and means for giving rigidity to the handle when extended; to provide jointed bows of such construction that the turning of the joints will not cut the cover; to provide in connection with the jointed bows primary braces adapted to support the bows when they are extended, and secondary braces connected to raise the upper member of each jointed bow during the operation of folding the umbrella; and to provide a latch holding the secondary braces against upward movement, and means for releasing said latch.

With these ends in view my invention consists in the novel features of construction and combinations of parts shown in the annexed drawing to which reference is hereby made, and in which similar reference numerals and characters designate like parts in the several views.

Figure 1 is an elevation of the extended umbrella; Fig. 2 is an elevation of the folded umbrella; Fig. 3 is an enlarged detail of the sleeve, braces, the spring latch at the upper end of the sleeve and the means for operating the latch; Fig. 4 is an enlarged detail of the set of bows and braces and shows in dotted lines the changed position of the parts when the umbrella is folded; Fig. 5 is a transverse section on the line X. X. of Fig. 3; Fig. 6 is an enlarged vertical section on the line Y. Y. of Fig. 4; Fig. 7 is an enlarged detail of the spring latch and the means for operating same; and Fig. 8 is an enlarged detail of the hinge connection of the staff-members to the latch for holding the umbrella when it is closed.

The staff 1 is preferably an iron rod. The handle 2 is secured at the lower end of the staff and the ring 3 is secured near the upper end of the staff. The bows have a hinge connection with the ring 3.

An upper tube 4 surrounds and is slidable on the staff 1 and has at its upper end a collar 4^a, engaged by the latch 5 to normally prevent upward sliding of the tube on the stem. The latch 5 also controls upward sliding of the sleeve 6 on the staff, as hereinafter described.

The upper sleeve 6 surrounds and is slidable on the tube 4. A relatively short tube 7 is stationary on the staff, adjacent to the handle 2, and the lower end of the tube 4 abuts against the upper end of the tube 7 when the umbrella is raised. The tubes 4 and 7 are both of the same caliber, so that there is no break in the continuity of the tube surrounding the central staff 1, and the sleeve 9 will slide smoothly on both tubes. The tube 7 has a slot 7^a accommodating the latch 8 which engages the corresponding slot 9^a in the sleeve 9 to prevent upward movement of the sleeve 9 on the tube 4 when the umbrella is closed. The staff 1 comprises an upper member 1^a, and a lower member 1^b. A link 1^c has a hinge connection with the staff-members 1^a and 1^b.

When the umbrella is extended the tube 4 surrounds the adjacent ends of the staff-members 1^a and 1^b and connects them rigidly. A spring latch 19 mounted on the tube 4 engaging the lower end of the sleeve 9, serves to support the sleeve with its upper end abutting against the lower end of the sleeve 6, when the umbrella is extended.

In order to fold the umbrella the tube 4 will be slid upward on the staff to uncover the hinge connection 1^c, and the handle 2 may then be turned upward to the position shown in Fig. 2.

Each bow comprises two members, 13 and 14 having a hinge connection with each other. The bow-members 13 and 14 are trough shaped and the member 14 fits within the member 13, as clearly shown in Fig. 6. One end of each upper bow-member has a hinge connection with the ring 3, and a hinge connection with the corresponding lower bow-member 13.

Relatively short braces 16 are pivotally connected with the ring 12 and are also connected with the bow-members 13 and 14 by pins 17. The upper ends of the bow-members 13 and the lower ends of the members 14 are rounded, as shown at 13^a, so that

when the members turn on the pivot 17 there will always be smooth surfaces contacting with the fabric covering the umbrella so that there will not be danger of pinching, tearing, or breaking the fabric at the places where the joints rub the fabric. Relatively long braces 15 connect the bow-members 13 with the ring 10.

A lever 18 is pivotally mounted on the sleeve 6, and has at its upper end a member contacting with the spring latch 5, in such manner that when the lower end of the lever is pushed upward the upper end of the lever will press the spring 5 inward, so that the tube 4 may be slid upward on the staff, and when the tube is again slid downward to uncover the latch, the latch will spring outward and engage on the collar 4^a to prevent accidental upward sliding of the tube on the staff. The latch 5 has sufficient springiness to normally keep the lever 18 in the position shown in Fig. 3.

To fold the umbrella the procedure will be as follows: The user will press with his thumb against the lower end of the lever 18 and move the lever upward until the upper end of the lever depresses the latch 5. He will then depress the latch 19 to release the sleeve 9 and will slide the sleeve 6 upward to the position indicated by dotted lines in Fig. 4, and will then slide the sleeve 9 downward to the position shown in Fig. 2, and will then turn the handle upward to occupy the position shown in Fig. 2, until the bows and braces occupy the position shown in dotted lines in Fig. 4. The upward movement of the sleeve 6 will cause the tube 4 to move upward sufficiently to uncover the hinge connection 1^c, to permit the handle 2 to be turned upward. To unfold the umbrella the procedure will be reversed.

When the umbrella is extended the tube 4, the sleeve 9, the staff-members 1^a and 1^b, and the hinge connection 1^c will be in the relation shown in Fig. 8, and by depressing the latch 8 the umbrella may be raised so that it will be supported in its raised position by the latch 19, and upon depressing the latch 19 the umbrella may be lowered.

By reason of the construction shown and described the umbrella when not folded may be raised or lowered in the usual manner without disturbing the means adapted to fold the umbrella as described.

By reason of the tubes 4 and 7 of even caliber covering the parts of the rods 1^a and 1^b which are below the sleeve 6, the entire staff comprising the tube and the rods within the tube is smooth and does not differ in external appearance from the ordinary staffs of umbrellas, and the tube 4 stiffens the entire staff.

Another feature of this invention is that the rounded hinge connection of the bow-members obviate the cutting of the cover, which has been a serious objection to folding umbrellas as heretofore constructed.

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

The combination of a staff, a tube slidable on the staff, a latch mounted on the staff and controlling upward sliding of said tube, an upper sleeve and a lower sleeve slidable on said tube, a latch mounted on said tube and supporting said lower and upper sleeves, and a lever mounted on one of said sleeves and acting on the free end of the latch to depress the latch mounted on said staff to permit upward movement of the tube and the upper sleeve mounted thereon.

In witness whereof I have hereunto signed my name at Auburn, Illinois, this 21st day of January 1910.

STUART J. CLARK.

Witnesses:
A. A. HARNEY,
J. W. WATSON.