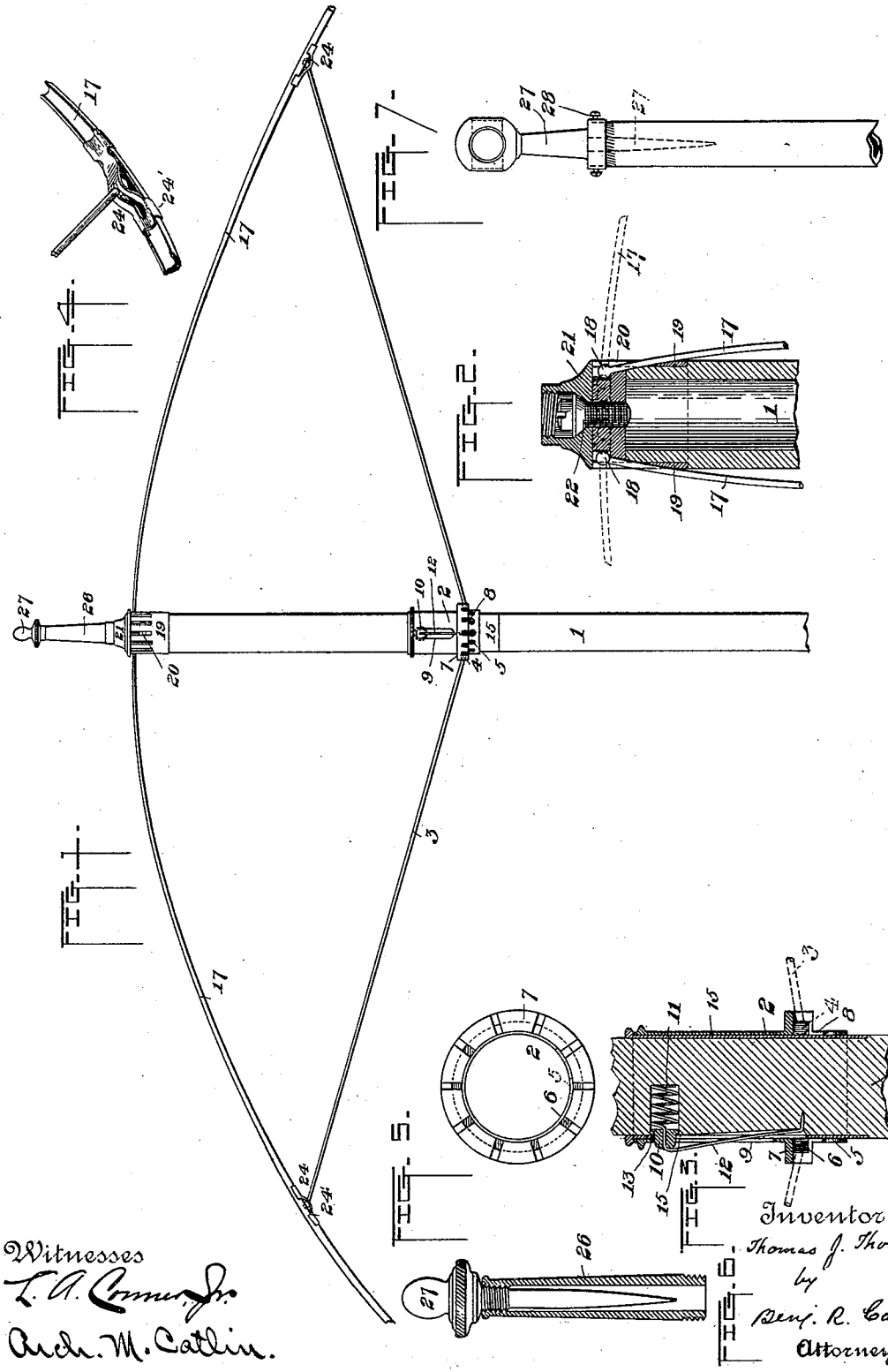
(No Model.)

T. J. THORP.

UMBRELLA.

No. 449,716. Patented Apr. 7, 1891.



Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS J. THORP, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-THIRD TO JOHN M. RICE, OF SAME PLACE.

UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 449,716, dated April 7, 1891.

Application filed July 5, 1890. Serial No. 357,812. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. THORP, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Umbrellas; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to springs, ribs, braces, and other parts, and to combinations of these, and its object is to increase the strength and durability of the same, and to facilitate their repair when broken or worn, and, in general, to promote economy and efficiency in umbrellas; and it consists in the matters hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is an elevation of an umbrella, the staff being partially broken away and a part of the ribs and braces removed. Figs. 2 and 3 are partial longitudinal sections of the staff. Fig. 4 is a perspective of sections of a rib and a brace showing their connection. Fig. 5 is a bottom plan of the brace-holding thimble. Fig. 6 is a section of the upper part of the staff, and Fig. 7 an elevation of a modified form thereof.

Numeral 1 denotes the stick or staff of an umbrella, the lower or handle part being broken away. This staff can be made of any suitable material, though a metal tube is preferred.

2 indicates a sleeve in which are secured the braces 3. These are provided with enlarged heads 4, which, before the sleeve or ferrule is placed on the staff, are each entered through a hole 5 and passed up into an inner groove 6 within a collar or flange 7, that forms a part of the sleeve. When this sleeve is thereupon slipped upon the staff, which fits it, the heads 4 are prevented from passing out of the holes 5, and the braces are held in the collar.

8 indicates slots cut from the holes 5 through the lower wall of the collar and to the aforesaid groove. By this construction it is provided that the ribs are held securely by their heads against endwise movement, while each can freely move about forty-five degrees in a plane coincident with the axis of the staff.

At 9 is a slot in sleeve 2, which receives the pin or stud 10, secured in the staff and pressed outwardly by a spring 11. This pin is conveniently made cap-shaped, and is perforated to permit the passage through it of the spring 12, which spring at one end is secured in the staff, and at the other is formed into a coil located beneath the cap within a recess in the staff, and below the cap in such recess the intermediate part of the spring passing through the cap, as shown. It is immaterial whether the coil be in the cap or below it, so long as it presses it outwardly. The cap is made movable radially in said recess, being prevented from coming entirely out by a stop—such as the flange 13—which is made larger than the opening in the ferrule 15, through which opening the body of the pin is normally pressed by the aforesaid coil. The wire of this coil is passed through the cap or pin 10 and extended into the slot 9, formed in the brace-supporting sleeve. The upper end of the stud or pin is considerably larger than the wire of the spring in cross-section, and is shaped or rounded on its outer or upper end to facilitate the passage of the sleeve over it when the latter is moved on the staff to open or close the umbrella. This construction secures the advantages incident to two prior forms by combining the coil-spring and pin with the straight spring of usual form. The latter presents an inclined plane to the ascending sleeve and facilitates its movement. The pin presents a broad surface for the application of a finger to depress the same when desired, and the coil supplements the force of the straight spring, which in the usual construction is not made sufficiently efficient and certain.

It will be understood that two spring-pins are or may be provided, one to hold the umbrella open and the other to keep it closed. Stud 10 is preferably made of a diameter equal to the width of the slot 9, whereby it prevents the partial rotation of the sleeve upon the staff. The ferrule 15 is not indispensable, though it is preferable, and particularly in case the staff is made of wood.

The umbrella bows or ribs are denoted by 17. These are conveniently formed of semi-cyclindrical or trough-shaped pieces of steel, whose upper ends are each provided with a head 18, held within a slotted ferrule 19. The slots 20, formed in the upper end of this ring or ferrule, and the necks of the ribs are dropped into said slots, the heads themselves being held within the ring in suitable recesses in the staff. A cap 21, secured upon the top of the staff by a screw 22, holds the ribs in their slots. This cap also holds the umbrella-cover between itself and the ring 19. The slots 20 in ring 19 permit movement of the ribs in radial planes. Disks of any suitable material may be interposed between the cap 21 and the umbrella-cover and also between the cover and the ferrule or ring 19.

The braces are detachably secured to the ribs by clips 24. These clips are slotted to permit the braces to pass through them, the latter being provided with enlarged heads, whereby their accidental withdrawal is prevented. The clips can be bent so as to receive the heads, and then compressed to prevent their escape, and they are bent and fastened upon the ribs, substantially as illustrated, space being left between the clip and rib and within the groove or hollow in the latter for the necessary movement of the head. The slots in the clips are sufficiently long to permit the ribs to be closed upon the staff.

Clips of the character described and shown, made, preferably, of sheet metal, can readily be applied to or released from the ribs by suitably bending lips or extensions 24′ down upon the ribs.

In prior constructions either the clips or the braces, or both, have been riveted; but the rivets are very liable to rust, and when either a rivet, clip, or brace needs repairing it is more difficult to renew the parts than in the case of my clip, which dispenses with the rivet and requires simply to be compressed about the enlarged head of the brace, its lips 24′ being then bent upon the ribs, as indicated. The umbrella can therefore be more easily repaired than in constructions wherein the clips are permanently fastened, as by rivets or similar means.

The cap 21 is conveniently secured to the staff by a screw 22. This cap both holds the ribs and cover in place, and it effectually protects the latter at a point where it is very liable to be worn or injured. The base of the cap can be made as large as desired for the purpose of this protection. It may be noted that the screw 22 is securely covered and protected against accidental displacement.

26 is an extension of the staff adapted to be screwed into the cap, and 27 is an ornamental finial which screws into said section. It may conveniently be formed as a screw-driver for use in repairing the umbrella.

In Fig. 7 is illustrated a modification, according to which the cap, staff-extension, and finial are all combined in one piece 27, which can be secured upon the main body of the staff in any suitable manner—as, for example, by screws 28. It might also be provided with a screw 16 and screws 28 omitted, if desired, and screw 16 could in such case also be fashioned into a screw-driver.

It will be noted that a screw-driver is the only implement necessary to take apart or put together the umbrella-frame above described. Each rib and brace can be treated as a single part; but if it is desired to separate the rib and brace it can be effected by simply bending the clips, as stated, by the use of ordinary tools.

The inconvenience resulting in the ordinary construction from stringing the ribs or braces on a binding-wire, which, owing to its small size, is very liable to break and is particularly liable to be weakened by rusting, is avoided, as also is the weakening effect of perforating these parts near their ends.

The preferred forms of my devices have been set forth; but some of the details can be varied by mechanical skill without departing from the invention so long as substantially the same principles of operation and construction are maintained.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. In an umbrella, the combination of the ribs U-shaped in cross-section, and the braces having heads, with the slotted clips having lips 24′, bent about the ribs and having the edges of their slots closed about the braces above the heads, whereby the latter are fastened and the heads held in the hollow of the ribs, substantially as set forth.

2. In an umbrella, the staff, the straight spring secured at one end to the staff and inclined thereto, a movable stud or pin located in a recess in the staff and threaded upon the said spring at a downward bend near its upper end, and a spring-coil forming a continuation thereof and normally pressing the stud outwardly, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS J. THORP.

Witnesses:
THOMAS ARMSTRONG,
JOHN M. RICE.