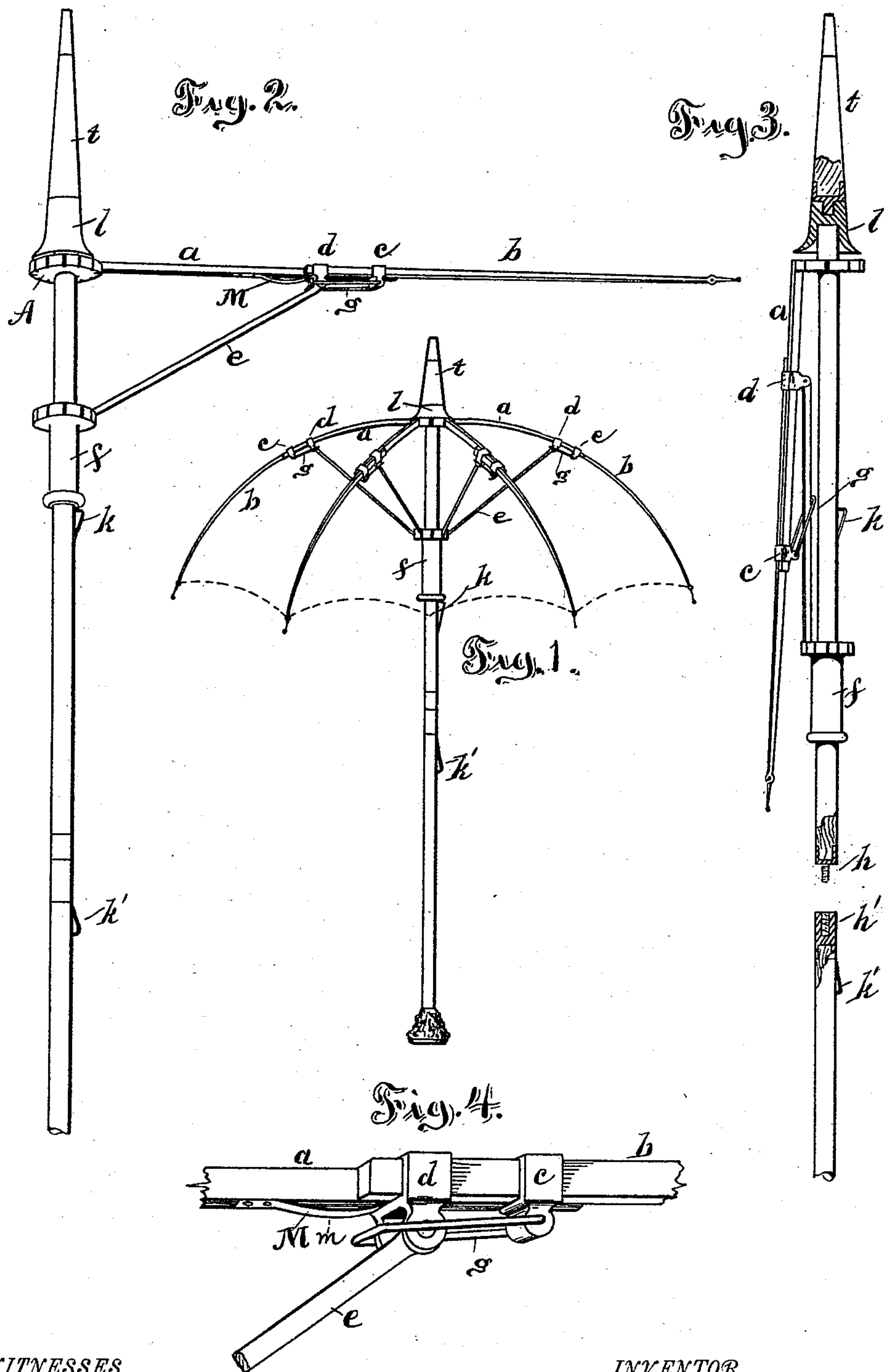


(No Model.)

R. E. JOHNSTON.
FOLDING UMBRELLA.

No. 497,578.

Patented May 16, 1893.



WITNESSES
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UNITED STATES PATENT OFFICE.

ROBERT E. JOHNSTON, OF DETROIT, MICHIGAN.

FOLDING UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 497,578, dated May 16, 1893.

Application filed June 18, 1892. Serial No. 437,148. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. JOHNSTON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Umbrellas; and I 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, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to umbrellas, and has for its object an improved construction by means of which the cloth supporting ribs and the handle may be shortened and the entire umbrella folded up into a much smaller and more compact shape than in the ordinary form.

In carrying out this invention, I make each one of the supporting ribs in two pieces, and so unite them with the supporting brace that, when extended and opened in the position of an opened umbrella, they form a continuous rib from the apex to the rim, locked securely together; but when the umbrella is folded down, the parts automatically unlock and may be pushed or slid into compact shape of little more than half the length of the rib employed in the distended umbrella; I also make the handle or staff in two or more parts adapted to be secured together by screw joints or fish-pole joints, and adapted to be separated for convenience of packing into small compass. I attain the results by means of the improvements shown in the drawings, in which—

Figure 1 represents the umbrella frame in its open or distended position, the ribs taking the position they would occupy when subjected to the strain of the attached cloth. Fig. 2 shows the staff with a single rib in a distended or open position, not, however, strained or bent by the cover. Fig. 3 shows the same parts in a closed position, and with the two parts of the rib pushed into their compact form. Fig. 4 is an enlarged detail of the joint.

Each rib is made in two parts, *a* and *b*. The part *a* is secured by the ordinary hinge to the head *A*, the hinge consisting of a wire ring lying in a groove of the head *A*, and passing

through a hole in the end of the rib *a*. To the outer end of the short half rib *a* is secured a perforated guide *c*, and through the perforated guide *c* passes the body part of the half rib *b*. To the inner end of the half rib *b* is secured a perforated guide *d*, through which passes the body of the half rib *a*; the two half ribs *a* and *b* are thus slidingly secured together, and are capable of being extended to a length equal to their combined length, or of being shortened to a length little more than half their combined length. To the sliding guide *d* is hinged the ordinary brace rod *e*, and the brace rod *e* is hinged at its lower end to the runner *f*, in the ordinary way. To the guide *c* is hinged a ring *g* that passes around the brace *e*.

The staff of the umbrella is made in two or more parts, as may be desired, secured together by a screw joint, *h*, *h'*, or by the fish pole joint in place of a screw joint if it be desired.

When it is desired to distend or open the umbrella, the handle or staff pieces are screwed together, and the runner *f* is first drawn downward along the staff until the half rib *b* has been pulled downward along the half rib *a* as far as it will go. The lower ends of the ribs are then thrown slightly outward from the staff, or allowed to fall slightly outward from the staff, and the runner *f* pushed upward until it passes above and is caught by the spring catch *k*. When in this position, the ring *g* assumes a position parallel or nearly parallel with the rib, and extends from the guide *c* to and around the guide *d*, having reached this place by sliding upward and outward along the brace *e* as the umbrella was opened; and when in this position, shown in Fig. 2, the ring *g* securely locks the two parts of the rib in their distended or elongated position, and prevents the strain of the cloth of the umbrella cover from drawing the part *b* inward, holding the cloth fully strained and giving the umbrella the appearance of the ordinary umbrella. The ring *g* acts to lock the parts in their distended position entirely automatically, without the necessity of having any attention given to it. The top, *t*, I secure to the end of the staff above the guard ferrule *l*, by screw joint, similar in form to the screw joint connecting the two parts of the staff. When

the umbrella is closed without shortening it up for packing purposes, the lower catch *k'* holds the ribs in their elongated position, and gives to the umbrella the appearance of the
5 ordinary closed umbrella. On the under side of the half rib *a* is secured a light spring *M*, bent outward at *m*, and the slide *d* passes over this spring as it moves to shorten the rib, or moves outward to give the rib its ex-
10 treme length; in moving out, however, the slide *d* does not pass entirely beyond or off from the spring; the purpose of the spring is to increase the frictional resistance, and prevent a tendency of the parts to slide together
15 when that action is not desired.

What I claim is—

1. In an umbrella, a rib formed of two parts slidingly secured together, a supporting brace connecting the inner end of the outermost of
20 said sliding parts and the runner, and a ring secured to the outer end of the innermost part of said rib and embracing the brace, substantially as and for the purpose described.

2. In an umbrella, a rib formed in two parts
25 slidingly secured together, a supporting brace connecting the inner end of the outermost of

said parts and the runner, a curved spring, secured to the innermost of the said two parts, extending in an outward bending curve, to and engaging under the sliding guide uniting
30 the parts of said rib, whereby a curved part of said spring is adapted to present an obstacle to the free movement of said sliding guide, substantially as and for the purpose specified.

3. In an umbrella, a rib formed of two parts,
35 slidingly secured together, a supporting brace connecting the inner end of the outermost of the said sliding parts and the runner, mechanism for locking the two parts in their extended position, said locking mechanism con-
40 sisting of a swinging part secured to the outermost part of the rib, and engaging the brace, and adapted to be forced into locking position by the movement of the brace in opening the umbrella, substantially as and for the
45 purpose described.

In testimony whereof I sign this specification in the presence of two witnesses.

ROBERT E. JOHNSTON.

Witnesses:

MARION A. REEVE,
FRANCIS CLOUGH.