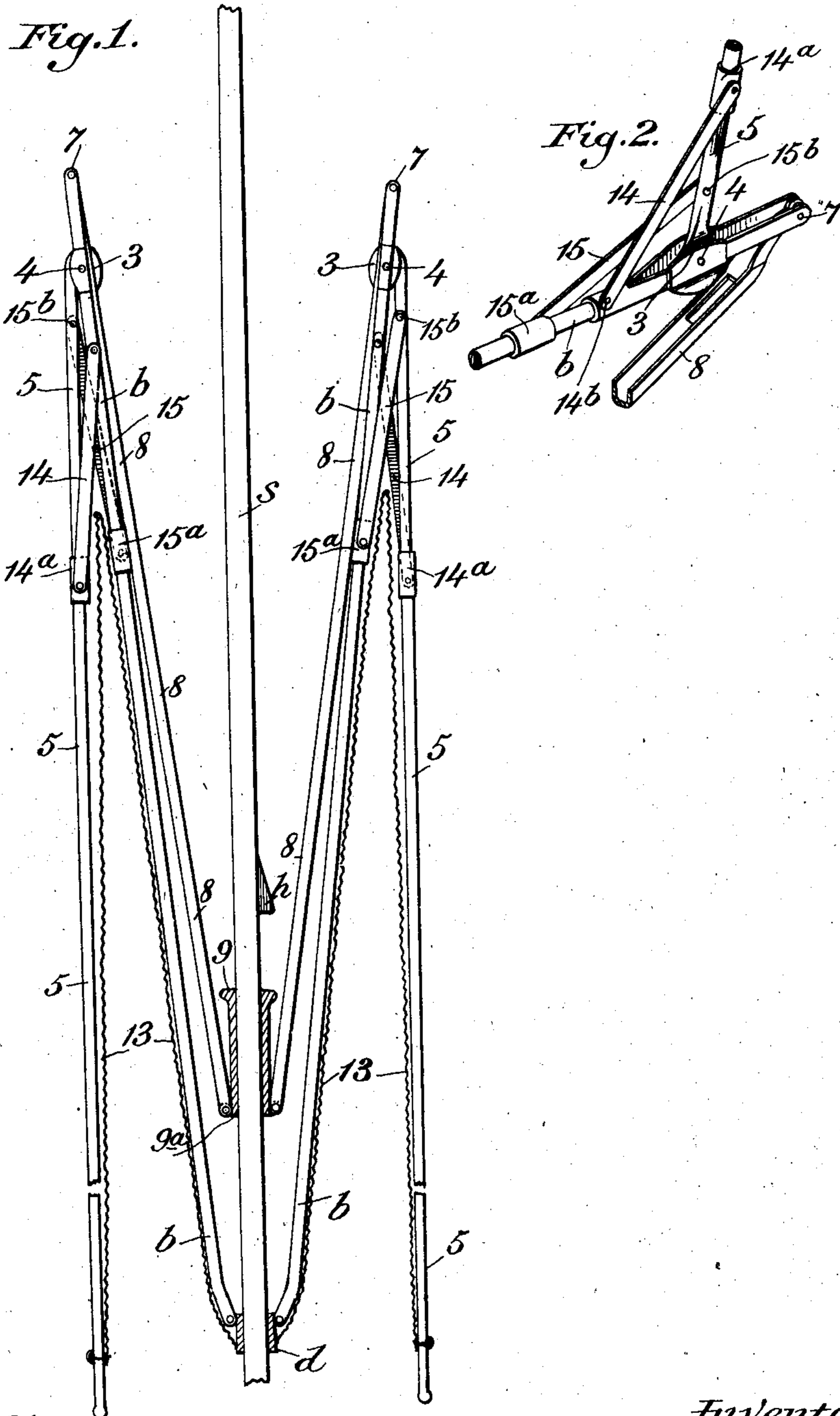


No. 834,861.

PATENTED OCT. 30, 1906.

M. B. ZUBER.
UMBRELLA FRAME.

APPLICATION FILED JULY 24, 1905.



Witnesses:

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UNITED STATES PATENT OFFICE.

MARTIN B. ZUBER, OF CAPAC, MICHIGAN.

UMBRELLA-FRAME.

No. 834,861.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed July 24, 1905. Serial No. 271,043.

To all whom it may concern:

Be it known that I, MARTIN B. ZUBER, a citizen of the United States, residing at Capac, county of St. Clair, State of Michigan, have invented a certain new and useful Improvement in Umbrella-Frames; 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 umbrella-frames, and has for its object a frame or system of ribs which can be quickly and easily folded into a comparatively small space without injury to the material constituting the cover.

In the drawings, Figure 1 is an elevation, partly in section, of the frame and cover when the operation of closing it is still incomplete. Fig. 2 is a detail view of the rib connections and bracing means.

S represents the stem of the umbrella, near whose lower end is secured a collar *d*, to which are pivoted circumferentially thereof and of the stem the ends of ribs *b*. Pivotally attached to each of these near its outer end is a supplemental rib 5, which terminates at the point of pivoting in a flattened disk 3, which resembles a small coin. The edges of this disk are dulled or rounded to prevent injury to the cover on coming in contact therewith. Its center is pierced for the engagement therethrough of pivot-pin 4, which connects it with the forked ends of main rib *b*, between which it engages.

Along that portion of the stem between the collar *d* and the handle slidably engages the sleeve 9. To a flange 9^a of this sleeve are pivoted the inner ends of braces 8, which extend therefrom to the extreme outer end of the supplemental ribs 5, within whose forked ends they engage and to which they are pivoted, as at 7.

With an ordinary-sized umbrella the distance between the pivot-pins 4 and 7 should be between one-half and three-quarters of an inch.

When the umbrella is fully closed, the supplemental ribs 5 lie more closely to the ribs *b* than is shown in the partly-open position in Fig. 1 and the sleeve 9 is somewhat nearer the collar *d*. When it is desired to raise the umbrella, the sleeve 9 is drawn toward the handle end of the stem. This forces out-

wardly the ends of the braces 8, which soon reach a position of perpendicularity with reference to the stem S. The outward pressure upon the free end of the rib *b*, exerted by the brace 8, forces the rib *b* and the supplemental rib 5 away from their position of parallelism with respect to the stem S and to each other, this motion of the rib 5 being largely due, after the initial actuation derived from the movement of the brace 8, to the action of gravitation, which causes it to swing outward. By the time that the brace 8, which is shown in both figures as forming an acute angle with the rib *b*, to whose outer end it is pivoted at 7, has by the movement of its inner end up the stem been swung to a perpendicular position with respect to the rib *b* the angle between the rib *b* and the supplemental rib 5 is nearly, if not quite, a right angle. This movement of the sleeve up the stem is continued a little further in order to enlarge the angle between the rib *b* and the brace 8 to more than ninety degrees. The sleeve 9 is now moved toward the collar *d* once more, and as the pressure now exerted by the brace 8 on the point of union of the ribs *b* and the supplemental ribs 5 is substantially at right angles to their now common direction the only effect of this pressure is to bow them outwardly somewhat, giving them the convexity of the raised umbrella. When the sleeve 9 is slipped over a suitable catch *h*, the entire frame is thus locked in position and ready for use. In closing the umbrella the sequence of the movements just described is reversed.

All danger of damage to or even creasing of the cover 13 when the umbrella is folded up is removed by the use of the guard-strips 14 and 15 around the junction of the rib *b* and the supplemental rib 5. One of these strips, as 14, is pivotally attached at one end to the sleeve 14^a, which slidably engages around the rib 5, while its other end is pivotally attached to the supplemental rib *b* at 14^b. The other of these strips 15 is pivoted at the point 15^b on the supplemental rib 5, and its other end is pivoted to the sleeve 15^a on rib *b*. When the umbrella is closed and that angle between the rib *b* and the supplemental rib 5 which is bridged by the strips 14 and 15 is narrowed, it closes up like an adjustable lattice, and the narrower the angle the higher up and away from the vertex do these guard-pieces slide, pushing the adja-

cent portion of the cover 13 with them. When the umbrella is opened and these ribs form a continuation the one of the other, these guard-pieces fit on each side of the rib
5 entirely out of the way and yet are a really valuable aid in securing rigidity of the frame as a whole.

What I claim is—

1. In a folding umbrella, the combination
10 of a stem provided with a collar, of a plurality of ribs pivotally connected therewith, supplemental ribs pivotally attached to said first-mentioned ribs and adapted to form a
15 continuation thereof, a plurality of brace members pivoted to the free ends of said first-mentioned ribs beyond the point of pivoting of said supplemental ribs, a sleeve member engaging about said stem and to
20 which the inner ends of said brace members are attached, means for locking said sleeve member in position along the stem, and guard members connected to the ribs of each class near their point of pivoting, adapted
25 to prevent access thereto as the angle formed by them when in folded position is diminished in degree, and to serve as strengthening

members when the ribs are extended, substantially as described.

2. In a folding umbrella, in combination with a stem, and brace members having one
30 end slidably connected therewith, a plurality of rib members each pivotally attached to said stem near one end thereof, an extension portion pivotally attached to each of said rib members, said brace members being
35 pivotally attached to said rib members at their free ends and beyond the point of pivoting of said extension portions, and guard-pieces slidably attached to each rib and its extension portion adapted to engage the
40 fabric constituting the cover and force the same away from the point of pivoting of each rib and its extension portion as the angle between these parts is diminished in size
45 when the umbrella is folded, substantially as described.

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

MARTIN B. ZUBER.

Witnesses:

LOTTA LEE HAYTON,
WILLIAM M. SWAN.