

No. 832,355.

PATENTED OCT. 2, 1906.

M. B. ZUBER.
FOLDING UMBRELLA.
APPLICATION FILED JULY 24, 1905.

2 SHEETS—SHEET 1.

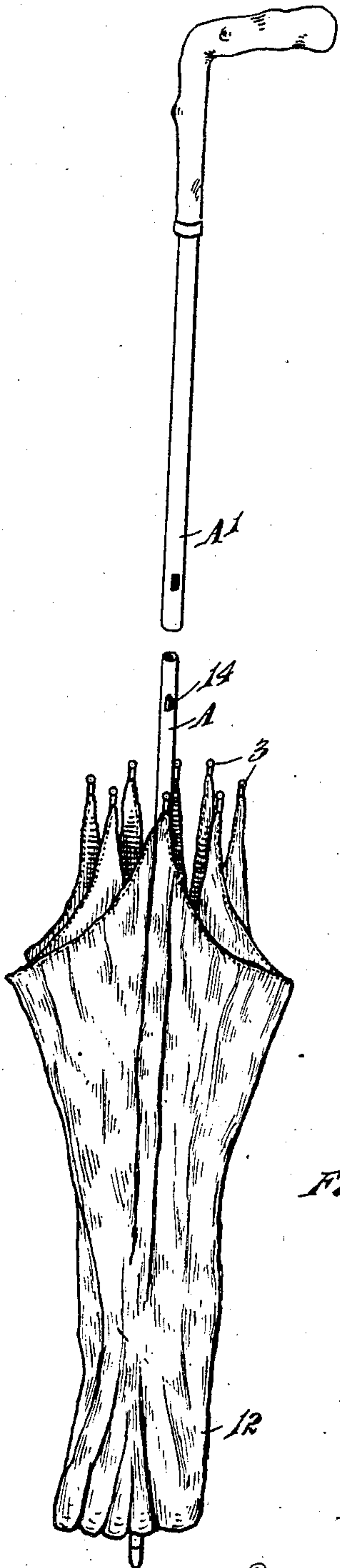


Fig. 1.

WITNESSES

T. Massey
C. F. Day

INVENTOR

Martin B. Zuber

By

Parker & Burton, Attorneys.

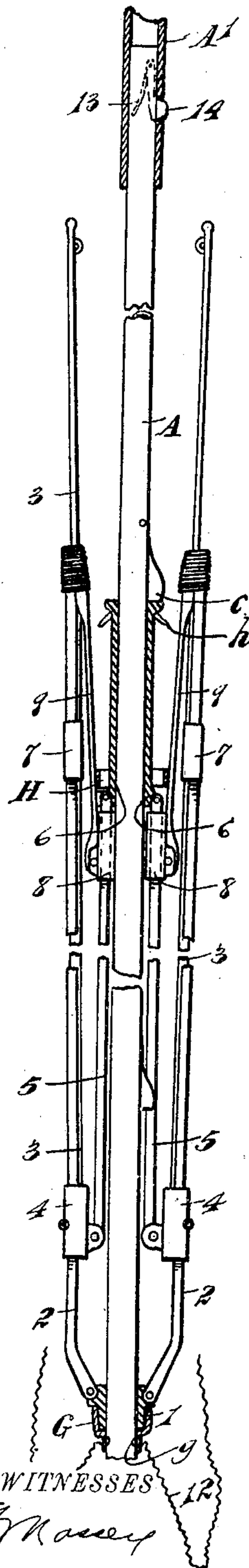
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2 SHEETS—SHEET 2.



WITNESSES
T. H. Macey
C. F. Day

Fig. 2.

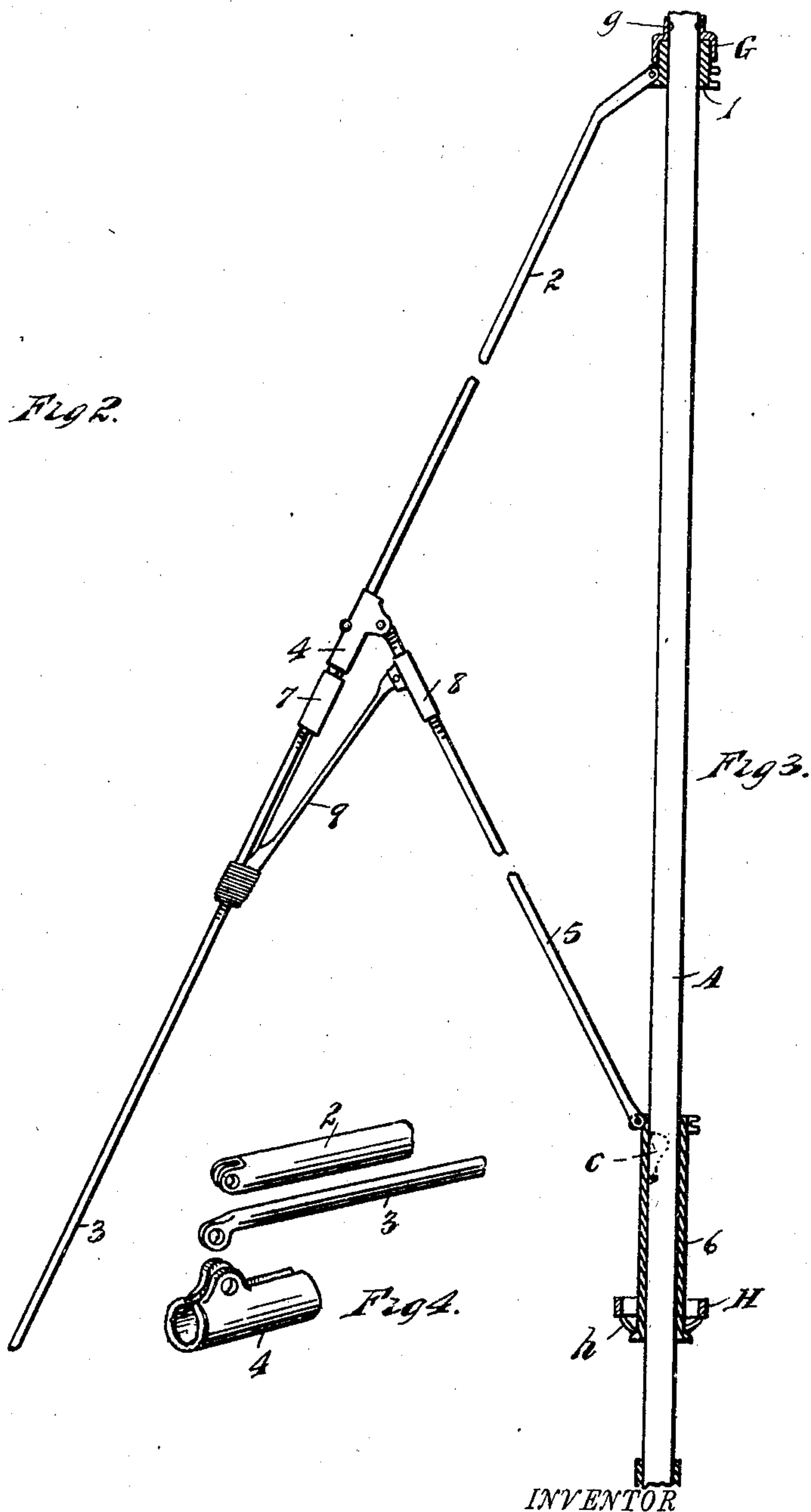


Fig. 3.

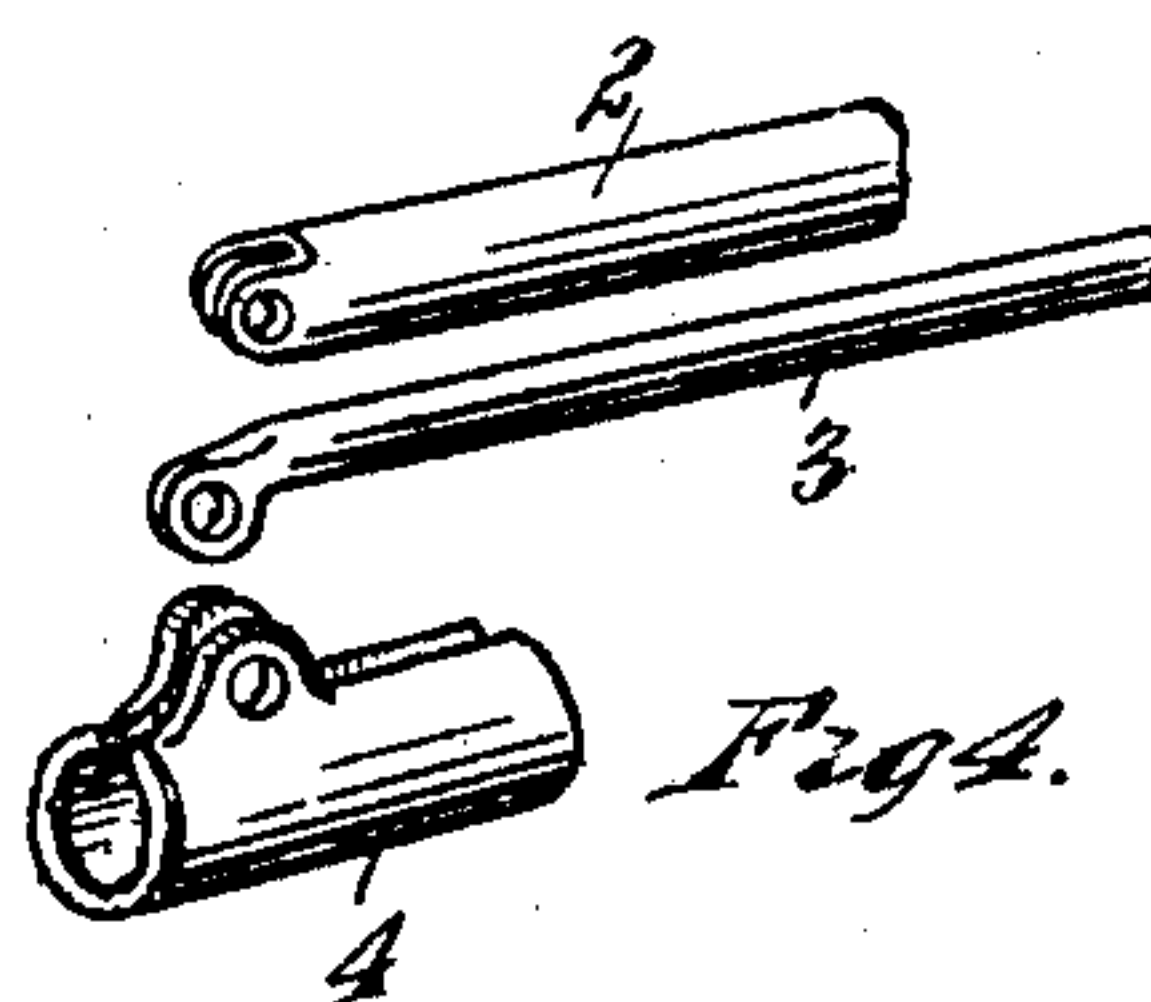


Fig. 4.

INVENTOR
Martin B. Zuber
By
Parker and Burton Attorneys.

UNITED STATES PATENT OFFICE.

MARTIN B. ZUBER, OF CAPAC, MICHIGAN.

FOLDING UMBRELLA.

No. 832,355.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed July 24, 1905. Serial No. 271,044.

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 Folding 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 folding umbrellas.

It has for its object an improved arrangement of parts adapted to be folded so as to occupy somewhat less than half the lengthwise space of an ordinary umbrella without materially increasing the circumference or bulk of the package which it forms when thus folded over that of an ordinary umbrella.

In the drawings, Figure 1 is a perspective of an umbrella when closed and ready for the cover to be neatly wrapped around the stem. Fig. 2 is an elevation, partly in section, of the frame and operative parts in the same position as is shown in Fig. 1. Fig. 3 is an enlarged elevation of the stem and one rib, showing the working of the ribs and connecting-braces. Fig. 4 is a detail view of those portions of the ribs and braces adapted to be pivotally joined in the completed article.

A indicates the stem of the umbrella, the upper or handle portion A' being adapted to be slid over the lower portion, as hereinafter explained. At the usual distance from the outer end of the stem is a collar 1, to which are pivoted at regular intervals around the stem the ends of the ribs 2. As shown in Figs. 2 and 3, these are not in one piece for a length equal to the radial length of the umbrella; but the pivoted portions 2 are hollowed or trough-shaped, somewhat resembling a channel-bar, well known in the iron trade. Within the recessed portion of each rib and longitudinally thereof engages an extension portion 3, preferably of steel wire, whose inner end is fastened to a sleeve 4, which engages around the troughed rib 2. It is drawn within or pushed from the troughed rib according to the direction given the sleeve 4, which in turn is pivotally connected to one end of a bracing-rib 5, by means of pressure upon which the sleeve 4 is moved. The other end of this bracing-rib is pivoted to sleeve 6, which slides along the

stem A, as hereinafter explained. The end of supplemental rib 3 is connected to the perforated portion of the sleeve 4 either by means of a short link of wire or by bending the perforated end of the supplemental rib 3 sufficiently to extend from the inner portion of the sleeve to a position of coincidence with the perforated flanges of the sleeve 4. Both of these parts are illustrated in enlarged detail in Fig. 4.

When it is desired to raise the umbrella, the sleeve 6 is drawn along the stem A toward the handle end until the entire length of the extension-ribs 3 have been withdrawn from the unpivoted ends of the troughed ribs 2 and the sleeves 4 abut against the annular pieces 7 near the outer end of ribs 2. During this operation the sleeve 8 has slid along the bracing-rib 5 from a position close to the point where this rib is pivoted to the sleeve 6 to the other end of this bracing-rib, where it engages against the pivot connection with the sleeve 4. A leaf-spring 9 is fastened to the outer end of each troughed rib 2 and is pivotally connected to this sleeve 8. When the umbrella has been fully raised, it serves to brace and stiffen the frame. Upon the completion of this operation the springs 9 tend to force outwardly the free ends of the lengthened ribs, which are now of the radial length of the umbrella. The spring 9 is rigidly fixed to the recessed rib 2 by means of the binding of wire shown in Figs. 2 and 3. This makes it normally angular to the rib, and it must be put under strain, as shown in Fig. 3, to bring it nearly parallel with either the recessed rib 2 or the supplemental rib 3. The sleeve 6 is now pushed downward toward the collar 1 and the outer ends of the bracing-ribs 5 forced outward, thus resulting in the swing of the ribs to still greater angularity with the stem A. When the sleeve 6 passes over the snap-catch c, the frame is locked in fully-opened position.

Closely over the collar 1 engages the ring G, which is held from slipping by a projecting claw which engages in the slot g in the stem A. The extreme center portion of the cover 12 is attached to this ring, which thus forms the attaching means therefor to the stem of the umbrella. The cover is attached to the extreme outer end of the extension portions 3 of the ribs and to the sleeves 4. When the umbrella is closed, that portion which when the umbrella is open extends from the ring G to the outer end of the recessed rib 2, which

is then the position of the sleeve 4, to the center bags loosely around the portion of the stem below the collar 1, its sustaining-points being the circle of sleeve-pieces 4 and the ring G, which cannot slip past the collar 1 for the reasons already explained. This baggy portion is designed to be neatly wrapped around that portion of the stem which it thus surrounds. The ring H is held from slipping too far toward the handle portion by claws *h*, which engage over the flanging edge of the sleeve 6. When it is desired to lower the umbrella and the sleeve 6 and its connected bracing-ribs 5 have been drawn toward the handle end of the stem as far as they will go, the umbrella is then placed with the point on the ground. The ring H promptly falls over the ends of the bracing-ribs 5, and as these are now nearly parallel with the stem it slips over a sufficient portion of their length, so that when the sleeve 6 is forced along the stem toward the collar 1 in the last step of the closing operation and before the position shown in Fig. 2 is reached it prevents any tendency of these bracing-ribs 3 and the extension-ribs to bulge or swing out, and thus defeat the attempt to close the umbrella. The portion A of the handle is designed to slip into the handle portion A'. Pressure upon the spring 13 releases a catch 14 at their point of union when drawn out to full length, and the sleeve 6 is made sufficiently large so that as the part A' slides down upon the part A it can slip over the part A to the sleeve 6, thus resulting in very satisfactory diminution in length of the handle.

What I claim is—

1. In a folding umbrella, in combination with a collapsible stem, a plurality of rib members pivoted at one end thereabout, a corresponding number of supplemental rib-pieces slidably connected therewith, a sleeve-piece slidably engaging about said stem, a plurality of bracing members each pivotally connected at one end to said sleeve-piece and at the other end to the inner end of its corresponding supplemental rib, and a spring

member rigidly attached to the outer end of each rib member and normally at an angle therewith, each of said spring members being slidably connected at its opposite end with its corresponding brace member and being adapted to be compressed to a position of parallelism with respect to said rib-pieces by movement and pressure thereagainst of said bracing members, substantially as described.

2. In a folding umbrella, in combination with a stem, rib members pivoted thereto, supplemental rib members slidably connected therewith and adapted to form extensions thereof, a ring-piece slidably engaging about said stem intermediate the handle portion thereof and that portion to which the rib members are pivoted, brace members each pivotally connected at one end to said ring and at the other end to the inner end of its corresponding supplemental rib member, and a leaf-spring fixed to the free end of the rib members and projecting at an angle thereto and slidably connected at their free ends with the corresponding one of said brace members, substantially as described.

3. In a folding umbrella, in combination with a stem provided with a fixed collar near one end, a slidable ring on said stem intermediate said collar and the handle end, main rib-pieces pivoted at one end to said collar, supplemental rib-pieces slidably connected with said main rib-pieces and adapted to form extensions thereof, brace members each pivoted at one end to said ring and at the other end to the inner terminal of its corresponding supplemental rib, and leaf-springs each having one end slidably connected to a brace member and the other end fixed to the outer end of its corresponding main rib, said spring when not under strain extending therefrom at an angle, 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.