No. 885,602. PATENTED APR. 21, 1908.

W. J. GEIB.

FOLDABLE UMBRELLA.

APPLICATION FILED APR. 26, 1907.

3 SHEETS—SHEET 1.

Fig. 2.

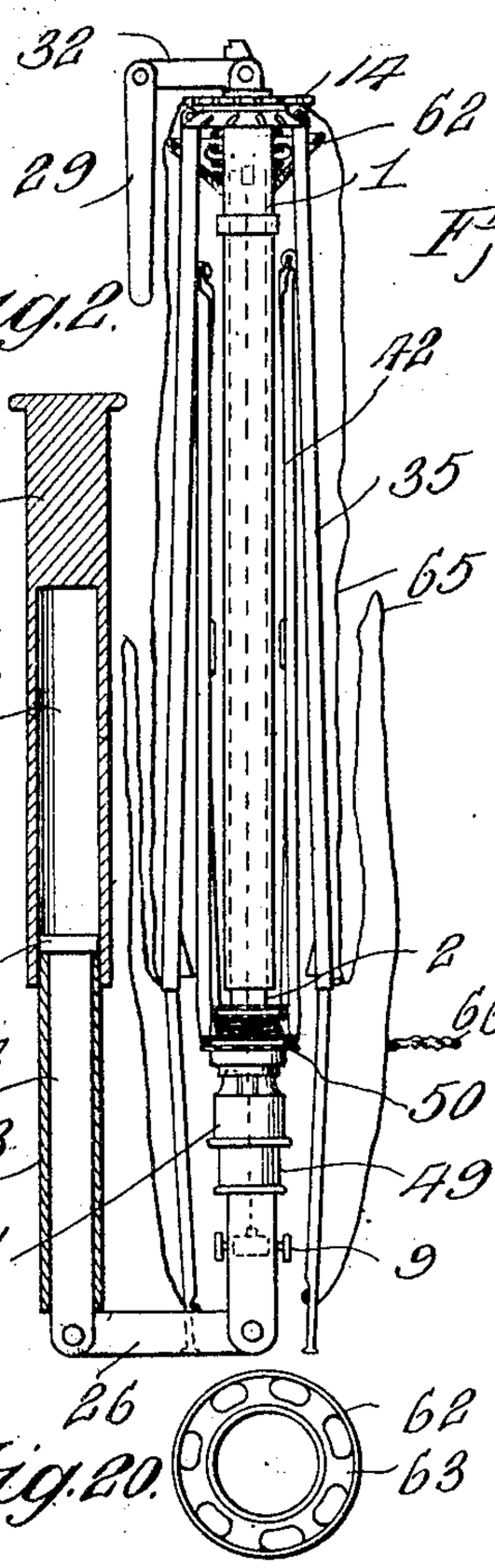

Fig. 1.

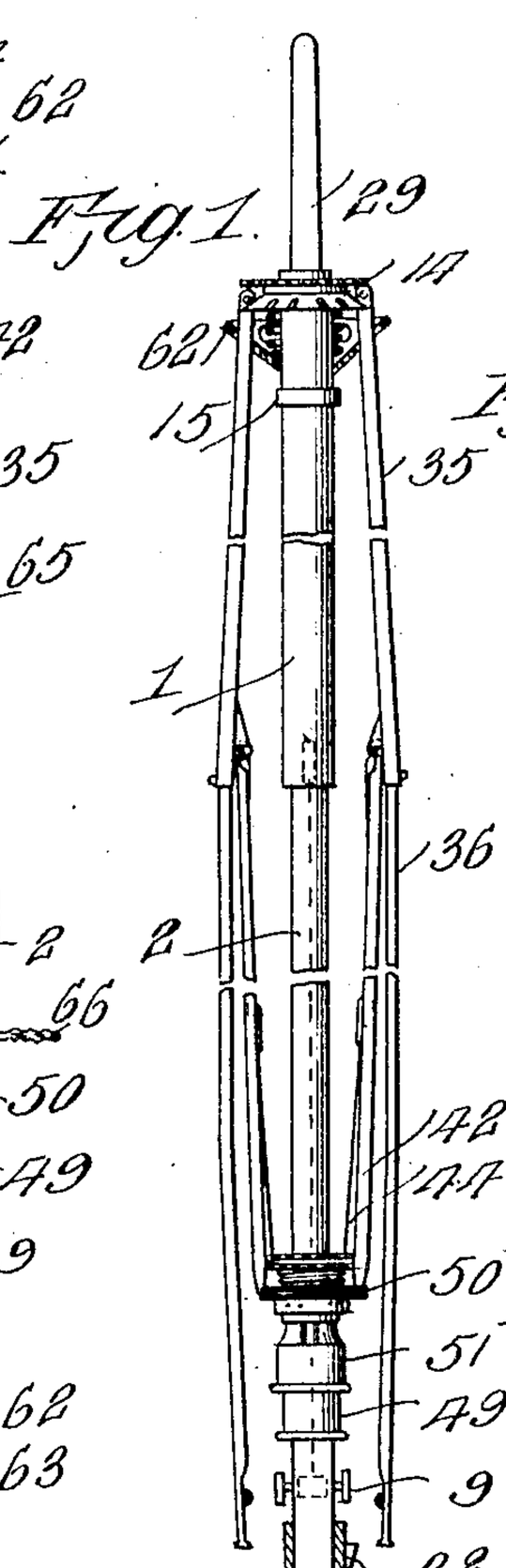

Fig. 16.

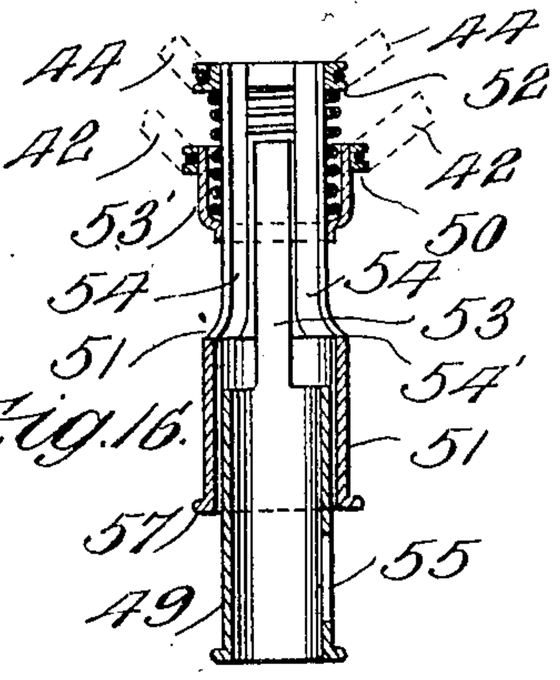

Fig. 17.

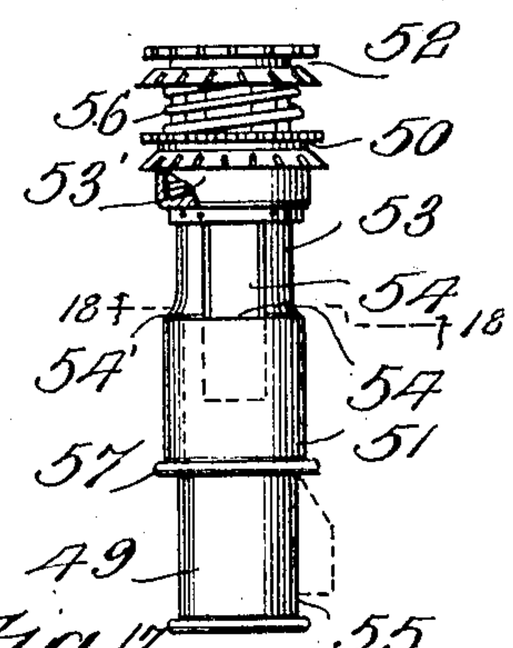

Fig. 18

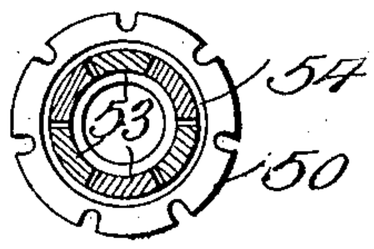

Fig. 19.

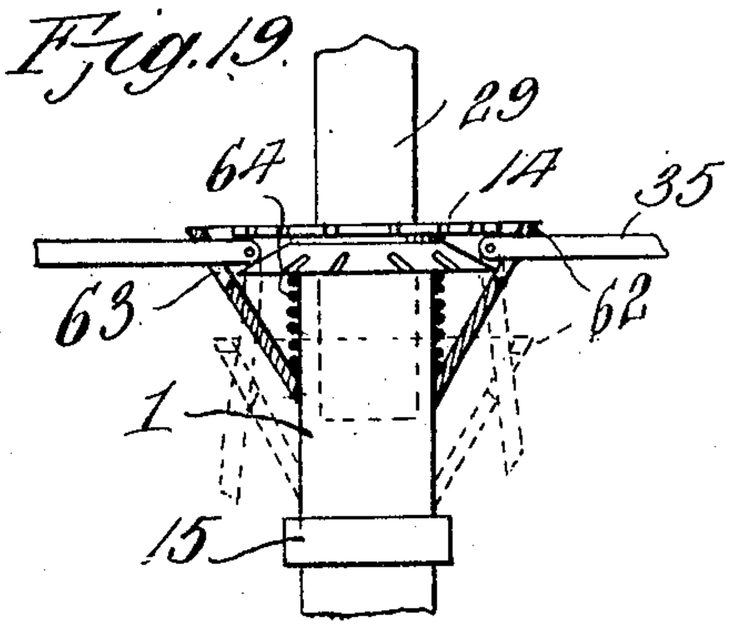

Fig. 20.

Witnesses

R. C. Claflin

C. Bradway

Inventor

Warren J. Geib,

By Victor J. Evans

Attorney

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3 SHEETS—SHEET 2.

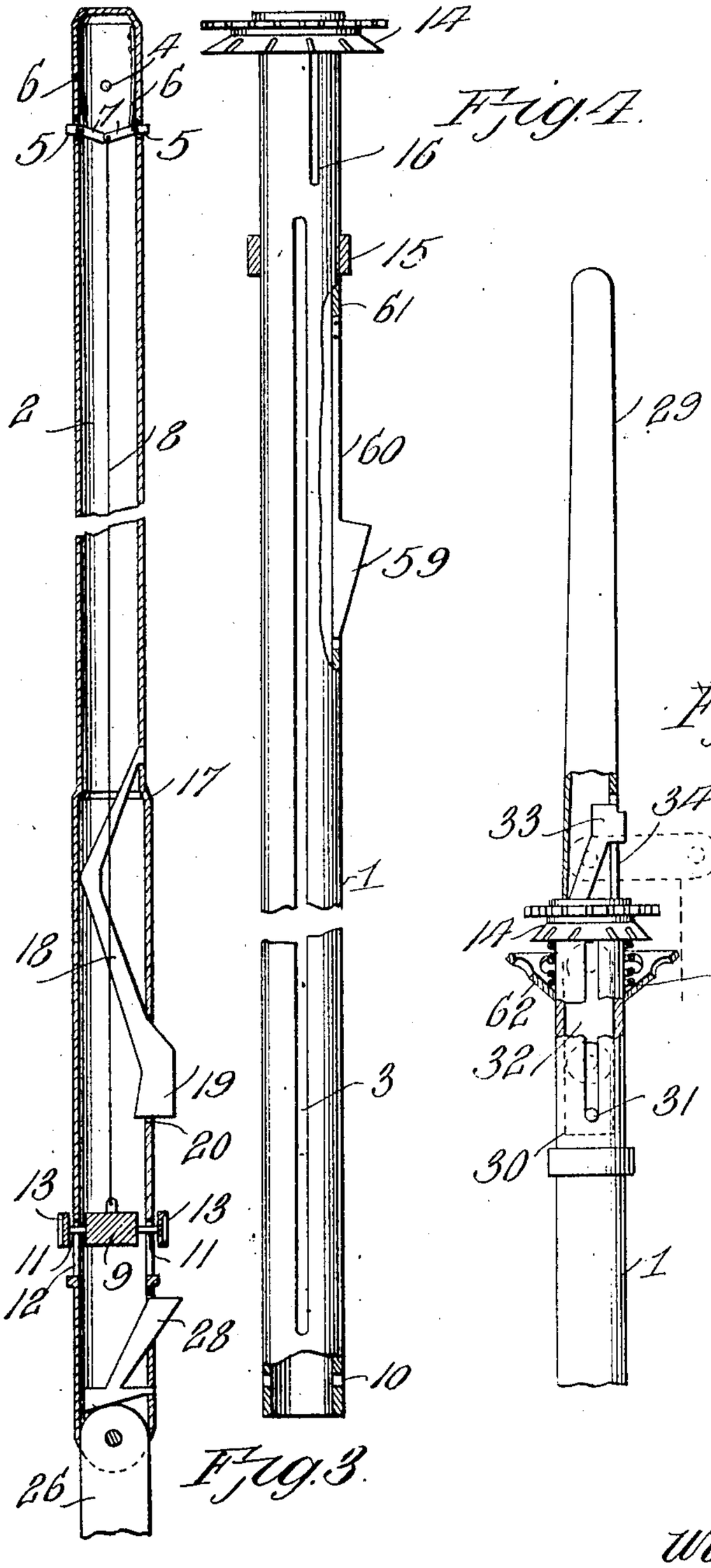

Fig. 4.

Fig. 3.

Fig. 2.

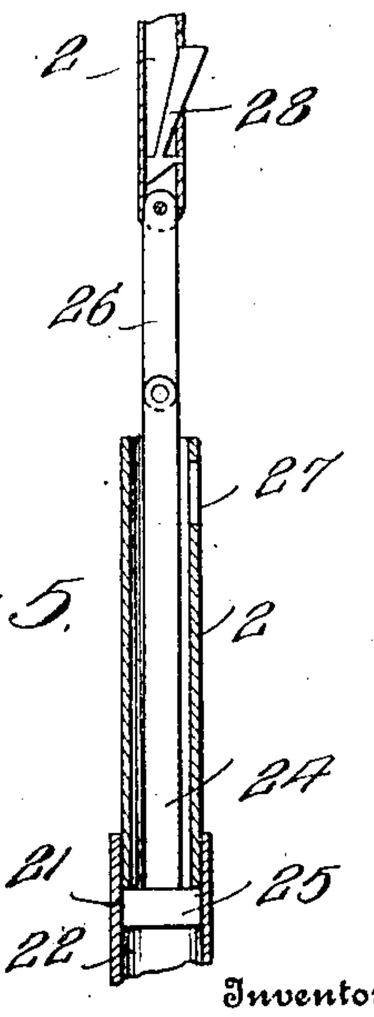

Fig. 5.

Witnesses

R. C. Claflin

C. Bradway.

Inventor

Warren J. Geib,

By Victor J. Evans

Attorney

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3 SHEETS—SHEET 3.

Fig. 6

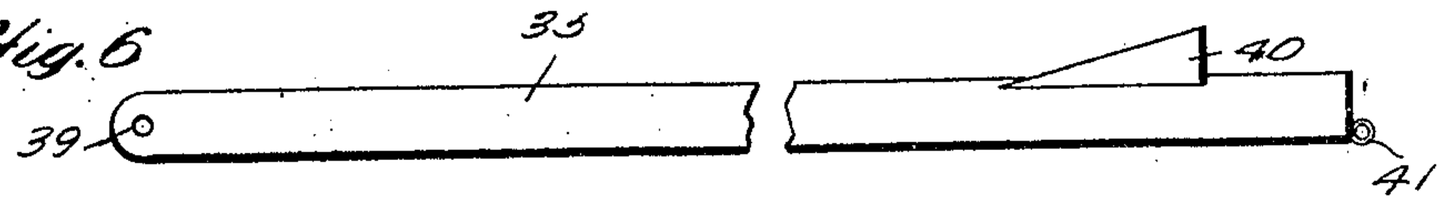


Fig. 7

Fig. 8

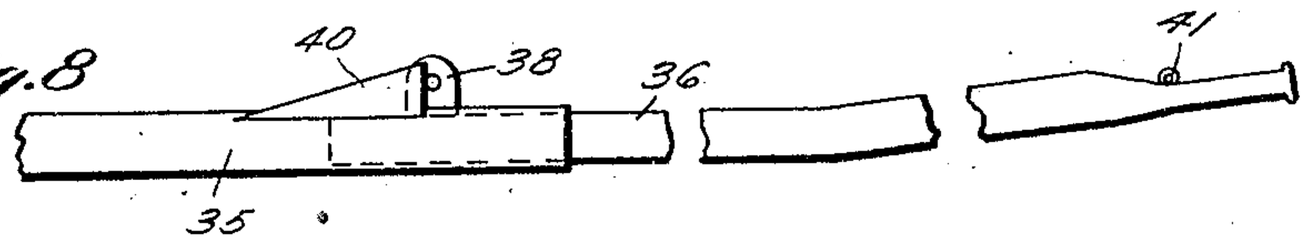


Fig. 9

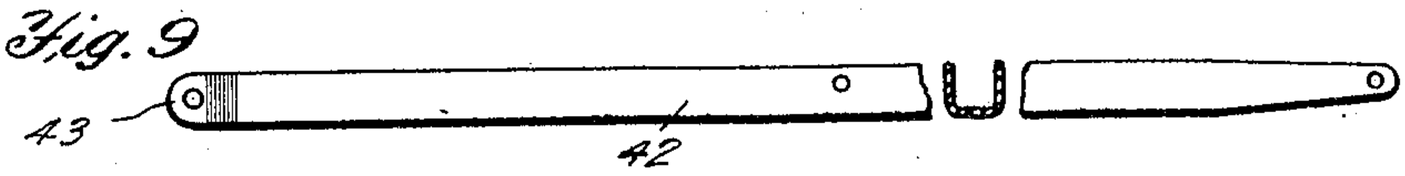


Fig. 10

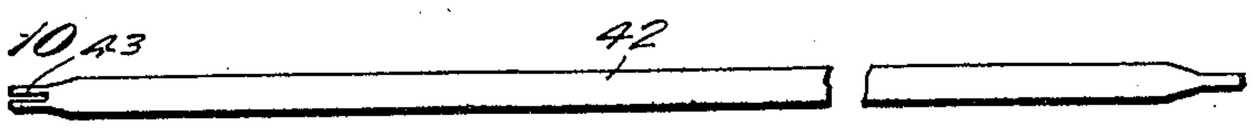


Fig. 11

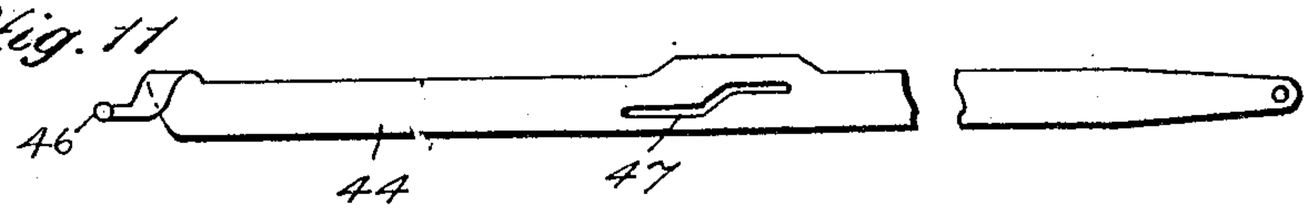


Fig. 12

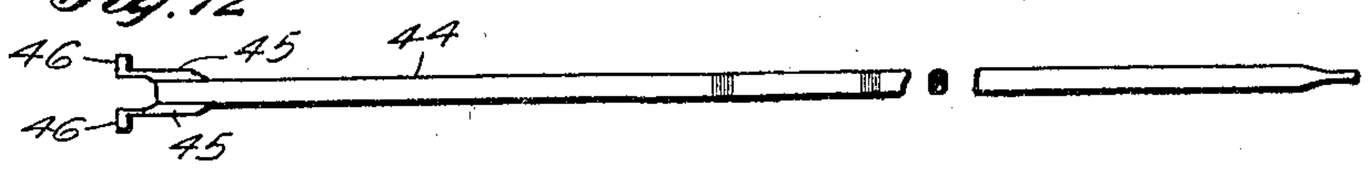


Fig. 13

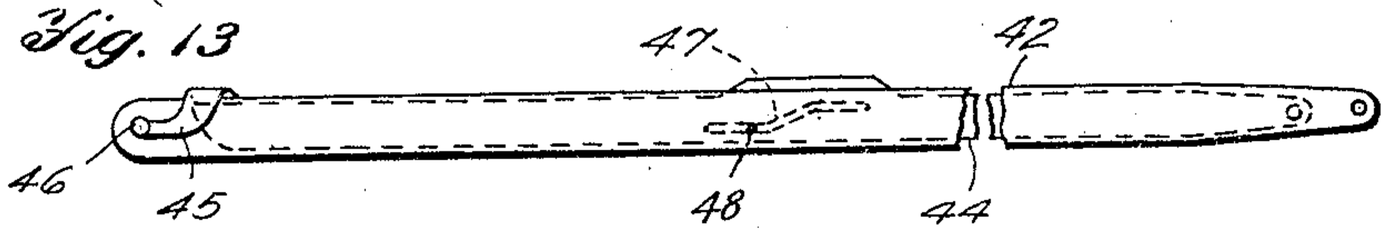


Fig. 14

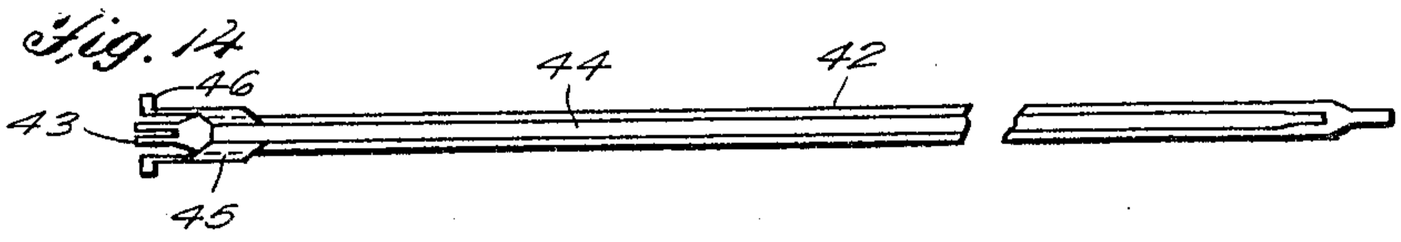
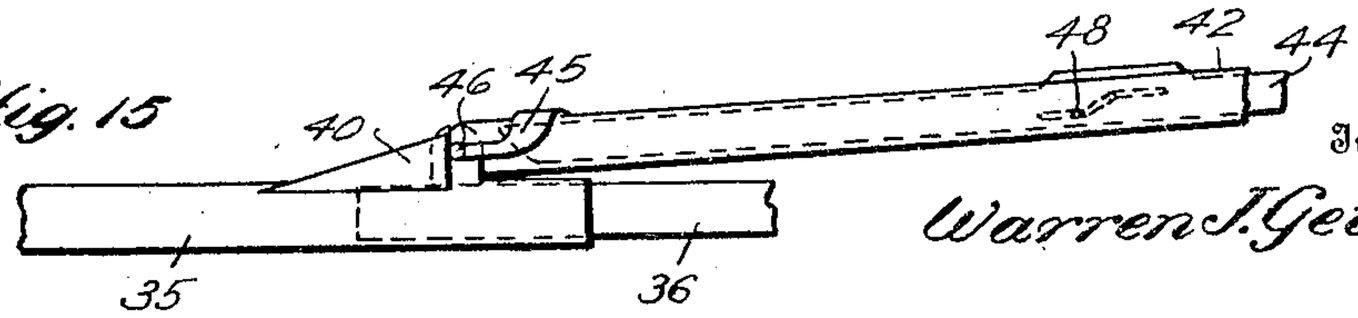


Fig. 15



Witnesses

R. C. Claflin

C. Bradway

Inventor

Warren J. Geib

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

WARREN J. GEIB, OF BOONEVILLE, MISSISSIPPI.

FOLDABLE UMBRELLA.

No. 885,602. Specification of Letters Patent. Patented April 21, 1908.

Application filed April 26, 1907. Serial No. 370,468.

To all whom it may concern:

Be it known that I, WARREN J. GEIB, a citizen of the United States, residing at Booneville, in the county of Prentiss and State of Mississippi, have invented new and useful Improvements in Foldable Umbrellas, of which the following is a specification.

This invention relates to an umbrella of that type which is adapted to open and close in the usual manner for ordinary use, and which is capable of being folded into a compact space so that it can be conveniently carried in the hand when not in use, or packed in a trunk or grip.

The invention has for one of its objects to improve and simplify the construction and operation of devices of this character so as to be comparatively easy and inexpensive to manufacture, readily manipulated, and thoroughly reliable and efficient in use.

A further object of the invention is the provision of an umbrella having a handle rod of telescoping sections, a foldable handle at one end of the rod, and a foldable tip at the other.

A further object is to provide a plurality of ribs each composed of telescoping sections and provided with brace rods for holding the ribs in open position and locking rods for preventing the sections of the ribs from telescoping when the umbrella is opened.

A still further object is the employment of a simple locking means for holding the sections of the handle rod locked open.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a longitudinal view partly in section of the umbrella with the foldable parts in open position and the ribs closed, the silk or cloth cover of the umbrella being removed. Fig. 2 is a similar view showing the umbrella completely folded. Fig. 3 is a longitudinal section of the lower member or section of the handle rod. Fig. 4 is a side elevation partly in section of the upper member or section of the handle rod. Fig. 5 is a detail sectional view of the foldable connection between the handle proper and handle rod. Figs. 6 and 7 are two different views of one of the top sections of a rib. Fig. 8 is a fragmentary side elevation of the two rib sections assembled. Figs. 9 and 10 are two different views of one of the brace rods for the ribs. Figs. 11 and 12 are two different views of one of the locking rods for the ribs. Figs. 13 and 14 are similar views of a locking and a brace rod assembled. Fig. 15 is a fragmentary side elevation of the rib sections in extended position and the locking brace rods in normal position. Figs. 16 and 17 are detail views of the locking sleeves for the brace and locking rods. Fig. 18 is a section on line 18—18, Fig. 17. Fig. 19 is a detail view of the upper end of the handle rod and adjacent parts showing the hinged connections between the ribs and collar. Fig. 20 is a plan view of the retaining ring or member engaging the upper ends of the ribs. Fig. 21 is a detail sectional view, showing the flexible connection between the handle rod and tip.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, 1 designates the upper tubular metal section of the handle rod into which is adapted to telescope the lower metal tubular section 2, the upper section having a longitudinal slot 3 in which engages a pin 4 on the upper end of the section 2, as shown in Figs. 3 and 4, whereby the two sections are permanently connected. In the upper end of the section 2 are diametrically arranged locking bolts 5 that are attached to the free ends of the individual leaf springs 6 suitably anchored within the section and arranged to normally hold the bolts in extended position, and connected with the bolts is a pair of toggle links 7 that are adapted to be collapsed by a flexible element 8 such as a wire extending downwardly through the hollow of the section 2 to a slidable finger-piece or actuator 9 for the purpose of drawing the bolts inwardly to unlocked position. These bolts are adapted to engage in openings 10 at the lower end of the section 1, as shown in Fig. 4, and the finger-piece 9 is confined within the section 2 at its lower end close to the handle end of the rod, and is provided with oppositely extending pins 11 extending through slots 12 and formed with grips 13 whereby the finger-piece can be taken between the thumb and first finger of one hand. The ends of the slots 12 limit the movement of the finger-piece 9 and serve to retain the latter in position. On the upper end of the top section 1 is a stationary notched ring 14

of ordinary construction to which the upper sections of the ribs are hinged, and spaced a suitable distance below the ring is a fixed collar 15 that serves to limit the outward movement of the sleeve to which the brace rods of the ribs are attached during the outward or opening movement of the umbrella, and between the ring and collar 15 is a short longitudinal slot 16, the function of which will be hereinafter explained. The lower portion of the section 2 is of larger diameter than the upper portion so that an annular shoulder 17 is formed against which the bottom end of the section 1 strikes to limit the inward telescoping movement of the section 2, and within the latter section at this point is a spring 18 suitably anchored therein and having one end formed into a latch 19 that moves back and forth throught a slot 20 in the section 2 that serves to hold the sleeve of the brace rods in position when the umbrella is closed, as will hereinafter more fully appear.

The handle 21 of the umbrella, as shown in Figs. 1, 2, and 5, has a longitudinal socket at its inner end, and rigidly secured therein is a tubular member or housing 23 for the parts flexibly connecting the handle rod and handle together. These parts comprise a longitudinally movable element or shaft 24 having a head 25 that is adapted to engage the inner end of the cylindrical housing 23 when the handle is pulled to the limit of its outward movement, thus preventing the handle from detaching, and between the inner end of the element 24 and bottom end of the handle rod section 2 is a link 26 hingedly connected respectively with the element and rod section. When the parts are in normal position, as shown in Fig. 1, the casing 23 surrounds the link 26 and adjacent parts of the attached members so as to prevent the joints from collapsing, but when the handle is pulled outwardly, the casing moves clear of the lowermost joint so that the link 26 can be folded laterally to permit the handle to assume the position shown in Fig. 2.

In the casing 23 is a slot 27 in which is adapted to engage a spring latch 28 fixed on the lower end of the rod section 2, as shown in Fig. 5, when the parts are in the position shown in Fig. 1, thus locking the handle in fixed position. By pressing the latch 28 inwardly, the handle can be pulled outwardly to the position shown in Fig. 5 for folding the same. The tip 29, of the upper end of the handle rod, is attached to the latter by a flexible connection of substantially the same construction, and by reference to Figs. 1, 2 and 21, it will be seen that the parts of this flexible connection comprise a movable follower or member 30 arranged in the top end of the rod section 1, and secured therein by a pin 31 engaging in the slot 16, Figs. 4 and 21, and between the tip 29 and member 30 is a link 32 which, when in the full line position shown in Fig. 21, and which, when pulled outwardly, can be swung laterally to permit the tip to be folded, as shown in Fig. 2, it being preferable to fold the tip of the same side as the handle of the umbrella, to reduce the size. Arranged in the upper end of the section 1 is a latch 33 that engages in a slot 34 of the tip to hold the latter from moving longitudinally and lock the parts in fixed position. By pressing this latch inwardly, the tip and attached parts can be withdrawn to clear the link 32 from the section 1 of the handle rod for enabling the parts to be folded, as described.

Each rib of the umbrella is composed of telescoping upper and lower members or sections 35 and 36 shown in Figs. 6 and 7, detached from the umbrella. The upper section 35 is hollow for receiving the section 36 and has a longitudinal slot 37 for receiving the lug 38 on the section 36, as shown in Fig. 8. One end of the section 35 is provided with an aperture 39 for receiving the wire for hingedly connecting the umbrella ribs, to the notched collar 14 of the handle section 1 in the usual manner, and at the opposite end are outwardly extending stops or lugs 40. The section 36, which is of U-shaped cross-section is considerably more flexible than the upper section of the ribs so as to permit the umbrella to open to the proper shape and hold the silk or other covering taut. On the lower extremities of the rib sections are eyelets 41 for enabling the silk covering to be stitched to the ribs, the covering being secured to the handle rod in the usual manner at its periphery and on a circle at a point intermediate the center and periphery of the covering. The brace rods 42, Figs. 9 and 10, are of U-shaped cross-section and each, at its inner end, has apertured ears 43 that engage over the apertured lug 38 of its respective rib and are hinged thereto, the opposite end of the brace rod being hingedly connected with the slidable sleeve that moves back and forth on the handle rod during the opening and closing of the umbrella. Arranged to enter the hollow part of the brace rod is a locking rod 44 shown more clearly in Figs. 11 and 12, which is bifurcated at 45 and provided with oppositely extending lugs 46 that are adapted to engage the stops 40 of the adjacent upper rib section 35, as shown clearly in Fig. 15. At about the middle of the locking rod 44 is a longitudinal slot 47 that has its ends offset so as to act as a cam, and through this slot extends a pin 48 secured to the adjacent rod so that longitudinal movement of the locking rod will be accompanied by a lateral movement caused by the slot and pin connection for throwing the lugs 46 out of or into engagement with the stops 44 during the folding and unfolding of the umbrella.

The lower ends of the brace rods 42, as

shown in Figs. 1 and 2, are hingedly connected with a sleeve 49 that is provided with a grooved and notched ring 50, as best shown in Figs. 16 and 17 for the reception of the wire for attaching the rods to the sleeve, as is the usual custom. The lower ends of the locking rods are hingedly connected with a sleeve 51 that has a similar annularly grooved and notched ring 52 for receiving the wire to which the locking rods are attached. By reference to Figs. 16 to 18, it will be observed that the sleeve 51 is slidably mounted on the sleeve 49, the latter sleeve being provided with three spaced longitudinal arms 53 at its upper end that are disposed between correspondingly spaced arms 54 on the sleeve 51, and the latter arms are bent inwardly at 54′ so that both sets of arms will be disposed in a common circle, as clearly shown in Fig. 18. Secured to the arms 53 is a cup-shaped sleeve 53′ to which the ring 50 is secured, and in this sleeve 53′ is a helical compression spring 56 whose upper end bears on the ring 52 that is secured to the upper extremities of the arms 54. The spring 56 urges the sleeve 51 upwardly and maintains the lugs 46 positively in engagement with the stops 40 during the opening and closing of the umbrella. The sleeve 49 has a longitudinal slot 55 for engaging the latch 19.

In order to open the umbrella, the latch 19 is pressed inwardly so as to unlatch the sleeve 49 in the usual manner and permit the sleeves 49 and 51, to move as a unitary structure toward the tip end of the handle rod and as soon as the slot 55 of the sleeve 49 registers with the latch 59, Fig. 4, the latter will spring into the slot and lock the parts of the umbrella in open position. The latch 59 is formed on a spring 60 disposed in a slot 61 of the handle rod section 1, the spring being so arranged as to permit the bottom section 2 of the handle rod to freely telescope into the upper section. To close the umbrella, the latch 59 is disengaged and the sleeves 49 and 51 moved outwardly toward the handle so as to be engaged by the latch 19. It will thus be seen that the opening and closing of the umbrella is performed in the same manner common to ordinary umbrellas.

In order to prevent the ribs of the umbrella from swinging to open position during the folding operation, a ring 62 is slidably mounted on the upper section 1 of the umbrella rod and confined between the ring 14 and collar 15, as shown in Fig. 19, the ring 62 being provided with apertures 63, as shown in Fig. 20, which receive the upper ends of the ribs 35. Between the rings 14 and 62 is a helical spring 64 that urges the ring 62 away from the ring 14, and thus maintains the ribs of the umbrella in the dotted line position during the operation of folding or collapsing the umbrella.

To effect the collapsing or folding, the sleeve 51 is gripped at the bead 57 by the thumb and fingers of one hand and pulled outwardly toward the handle of the umbrella while the said handle is held in the other hand. This movement of the sleeve pulls the locking rods 44 longitudinally so that the pins 48 engaging in the slots 47 of the brace rod cause the upper ends of the locking rods to move laterally to throw the lugs 46 out of the path of the stops 40. While the sleeve 51 is held in this position, the catch 19 is depressed and both sleeves 49 and 51 move together along the handle rod in a direction toward the tip of the latter, thereby shifting the ribs and attached parts from the position shown in Fig. 1 to that shown in Fig. 2. After thus telescoping the ribs, the fingerpiece 9 is drawn toward the handle so as to release the locking bolt 5 from the openings 10 to permit the rod sections to be telescoped by pushing inwardly on the two sections. The tip and handle can then be folded in the manner already described. When the umbrella is completely folded, as shown in Fig. 2, the covering collapses, as indicated at 65. The covering may be provided with a tape 66 having a clasp-like glove fastener for holding the ribs and covering folded together in the usual manner. A suitable casing may be provided for receiving the folded umbrella so that it can be conveniently carried or packed away.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired, as are within the scope of the claims.

Having thus described the invention, what I claim is;—

1. In a foldable umbrella, the combination of a handle rod hollow at one end, a tip provided with a slot, a link, a slidable member permanently retained in the hollow of the rod, a hinge between the member and link, a hinge between the link and tip, the link being of such length as to permit the tip to be folded back parallel with the handle rod, and a spring latch in the handle rod adapted to extend into the tip and engage the slot thereof for holding the tip in extended position.

2. In a foldable umbrella, the combination of a handle rod, a handle provided with a socket, a tubular member secured in the socket and extending from the handle, an element in the socket movable longitudinally therein, a link, a hinged connection between the link and element, a hinged connection

between the link and handle rod, and a spring catch for locking the handle rod to the sleeve, the handle and sleeve being movable longitudinally from the rod to fold backwardly parallel with the latter when the locking device is released.

3. The combination of a rib composed of two telescoping sections, one section having a longitudinal slot, a lug on the other section projecting out of the slot, a stop on the slotted section, a brace rod pivotally connected with the lug, a locking rod slidably mounted on the brace rod, means on the locking rod for engaging the said stop, and means for disengaging said means from the stop by movement of the locking rod independently of the brace rod.

4. In an umbrella, the combination of a handle rod, a fixed ring thereon, ribs hingedly connected with the ring, a member movably mounted on the handle rod and slidably engaging the ribs adjacent their hinged ends for holding the ribs close to the handle rod when the umbrella is closed, and a spring on the handle rod and disposed between the ring and member and designed to press the member away from the ring, said spring being arranged with its ends bearing against the ring and member.

5. In an umbrella, the combination of a handle rod, collapsible ribs connected therewith, brace rods connected with the ribs, locking rods connected with the brace rods, locking devices between the locking rods and ribs, a runner on the handle rod provided with spaced arms, means for hingedly connecting the ribs to the runner, a sleeve slidably mounted on the runner and provided with arms engaging the arms of the runner, means for connecting the locking rods with the sleeve, the arms of the sleeve and runner preventing relative rotation, and a spring arranged between and acting on the runner and sleeve to hold the locking rod in locking position.

6. The combination of a rib composed of slidably connected sections, a stop on one of the sections, a brace rod of U-shaped cross section hingedly connected with the other section, a locking rod proportioned to lie within the hollow of the brace rod, a member on one extremity of the locking rod for engaging the stop, one of the rods being provided with a slot having its ends relatively offset, and a pin on the unslotted rod extending into the slot for disengaging the member of the locking rod from the said stop by longitudinal movement of the locking bar.

7. In an umbrella, the combination of a handle rod composed of tubular telescoping sections having openings adapted to register, bolts in one of the sections, springs on the section having the bolts for holding the latter in locking position and forming the sole means for supporting the bolts, toggle links between the bolts to withdraw the latter from the openings against the tension of the springs, an actuating means on the section having the bolts, and a flexible connection between the means and toggle links.

8. In a foldable umbrella, the combination of a handle rod, a fixed ring thereon, ribs hingedly connected with the ring, a fixed collar on the handle rod spaced inwardly from the ring, a slidable ring having apertures through which the ribs extend and mounted on the handle rod to move between the collar and fixed ring, and a helical spring arranged on the handle rod with one end abutting the fixed ring and the other the slidable ring and tending to urge the latter toward the collar for holding the ribs close to the handle rod.

9. In an umbrella, the combination of a two-part rib, a bracing rod, and a longitudinally and laterally movable locking rod for holding the parts of the rib against relative movement.

10. In an umbrella, the combination of a rib composed of telescoping sections, a handle rod, independently movable devices movably mounted on the rod, a bracing rod between one of the devices and the rib, a longitudinally movable locking rod between the other device and the ribs for preventing the sections of the latter from telescoping, and means between the rods for throwing the locking rod laterally into and out of locking position by the longitudinally movement.

11. In an umbrella, the combination of a hollow rib section, a section movable therein, a bracing rod, a hinged connection between the bracing rib and the movable section, and a locking device exterior to the sections for controlling the relative movement of the rib sections, said device comprising an abutment on one section, and means carried by the bracing rod and movable laterally thereon and away from the abutment to permit the sections to collapse.

12. In an umbrella, the combination of a hollow rib section, a second section movable therein, a brace rod hingedly connected with the second section, a locking rod mounted on the brace rod for independent movement, and an abutment on the first section of the rib with which the locking rod engages for preventing relative movement of the rib sections, said locking rod being locked or unlocked by a combined lateral and longitudinal movement.

13. In an umbrella, the combination of a handle rod, members mounted thereon for independent and simultaneous movement, a spring acting on the members for holding them in normal position, a plurality of telescoping ribs, brace rods between one member and the ribs, laterally and longitudinally movable locking rods between the other member and ribs, a slot and pin connection between each pair of brace and locking rods for throw-

ing the latter into and out of locking position by movement of one of the members.

14. In an umbrella, the combination of a rib composed of telescoping sections, stops arranged on one of the sections, a brace rod hingedly connected with the other section, a locking member movably connected with the brace rod, means on the member for engaging the stops to hold the rib sections extended, a device for engaging and disengaging the means by a combined lateral and longitudinal movement of the member.

15. In an umbrella, the combination of a rib composed of telescoping sections, a stop arranged on one of the sections, a brace rod hingedly connected with the other section, a locking member, a slot and pin connection between the member and brace rod, and means on the extremity of the member arranged to engage the stop for holding the rib sections extended.

In testimony whereof, I affix my signature in presence of two witnesses.

WARREN J. GEIB.

Witnesses:
CHAS. W. MANN,
U. S. BENJAMIN.