

R. G. WHITLOCK.  
FOLDING UMBRELLA.  
APPLICATION FILED NOV. 8, 1907.

911,636.

Patented Feb. 9, 1909.

3 SHEETS—SHEET 1.

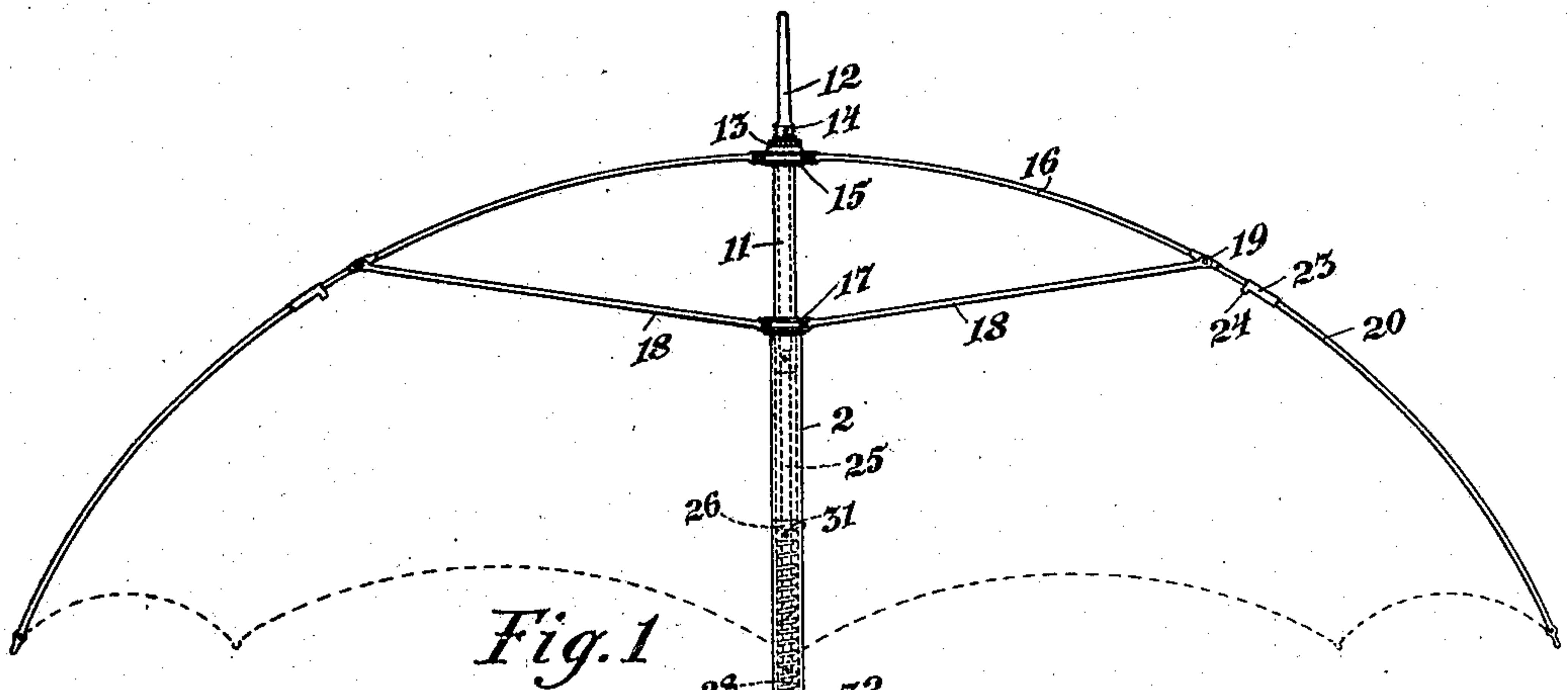


Fig. 1

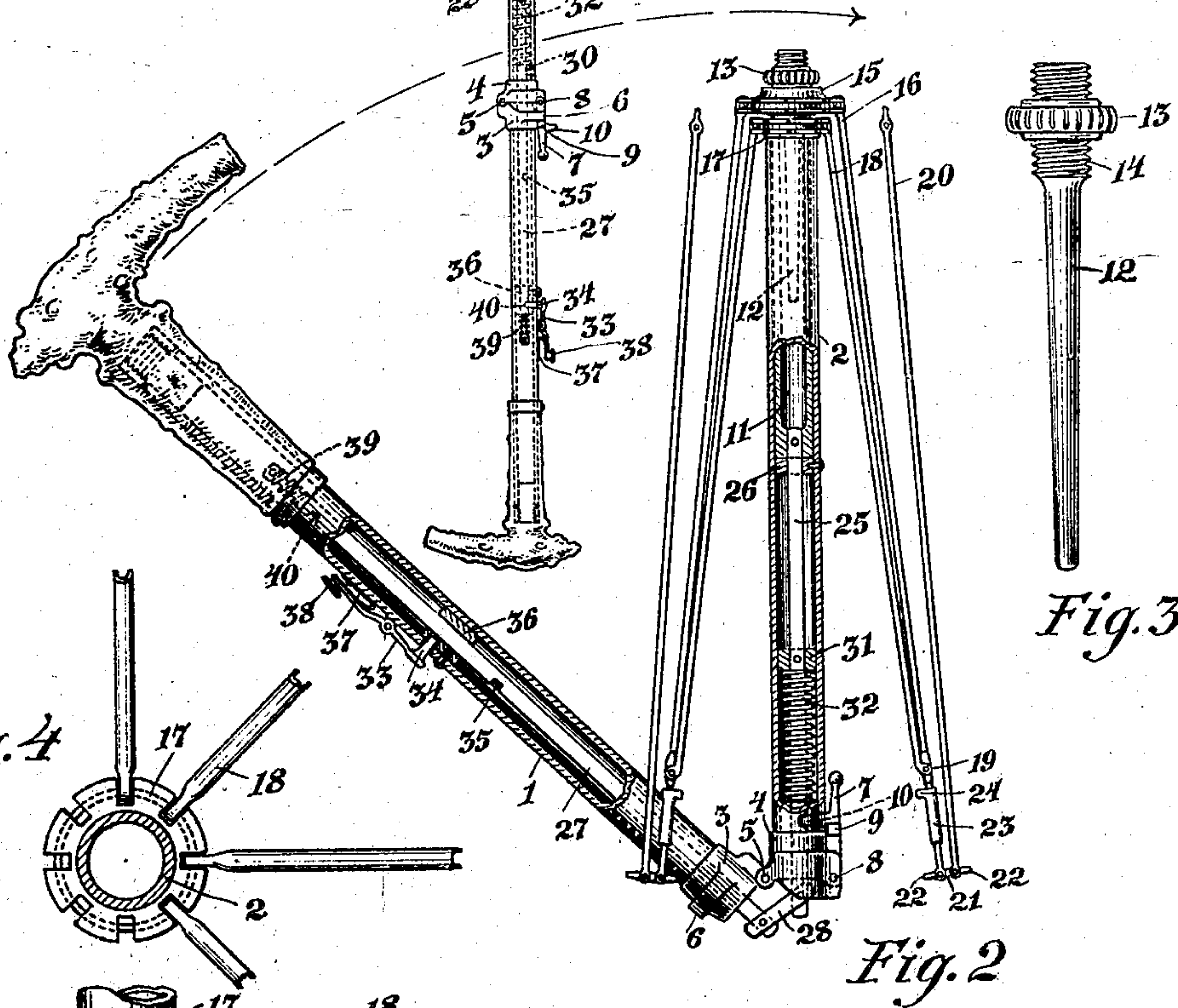


Fig. 2

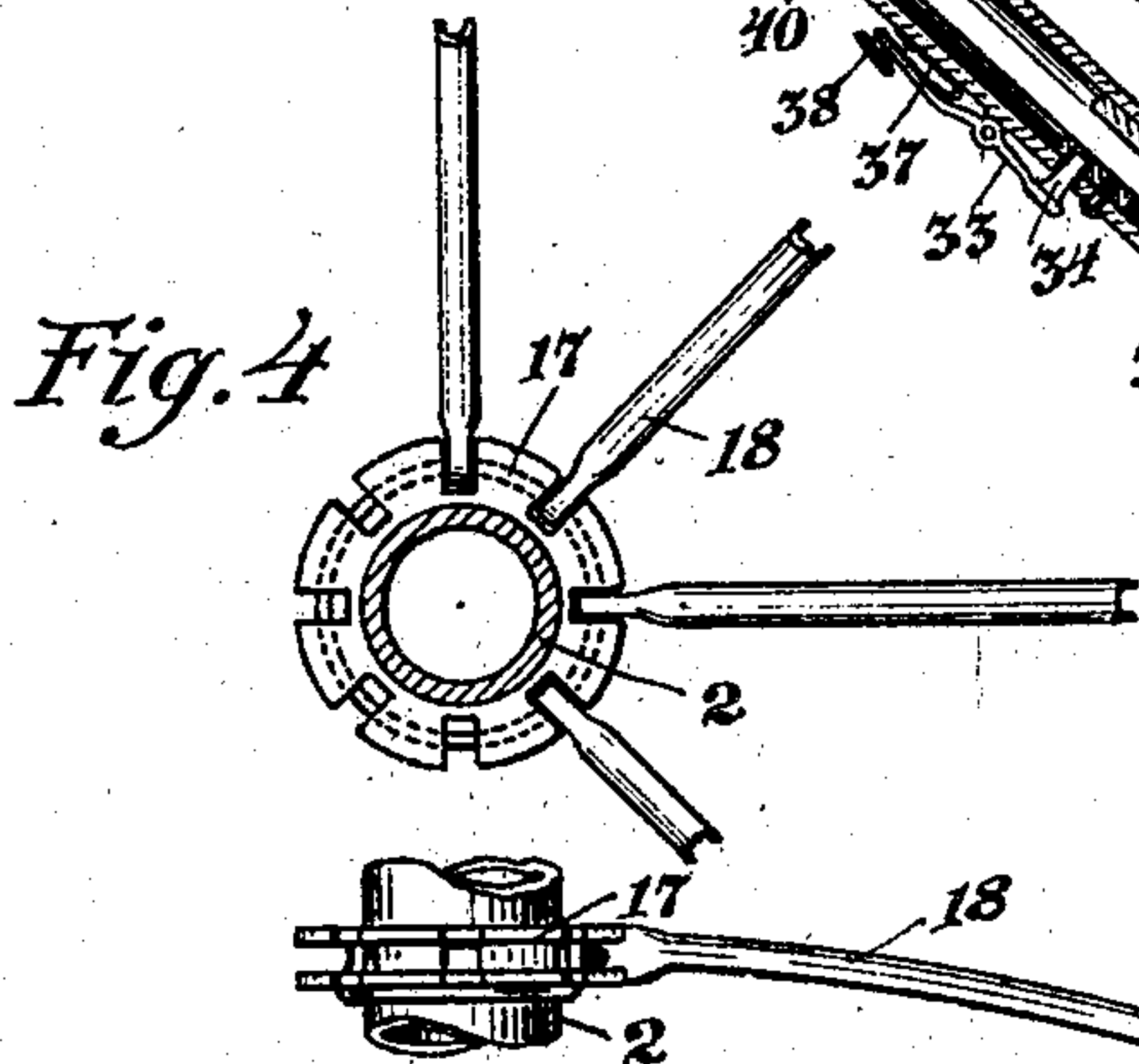
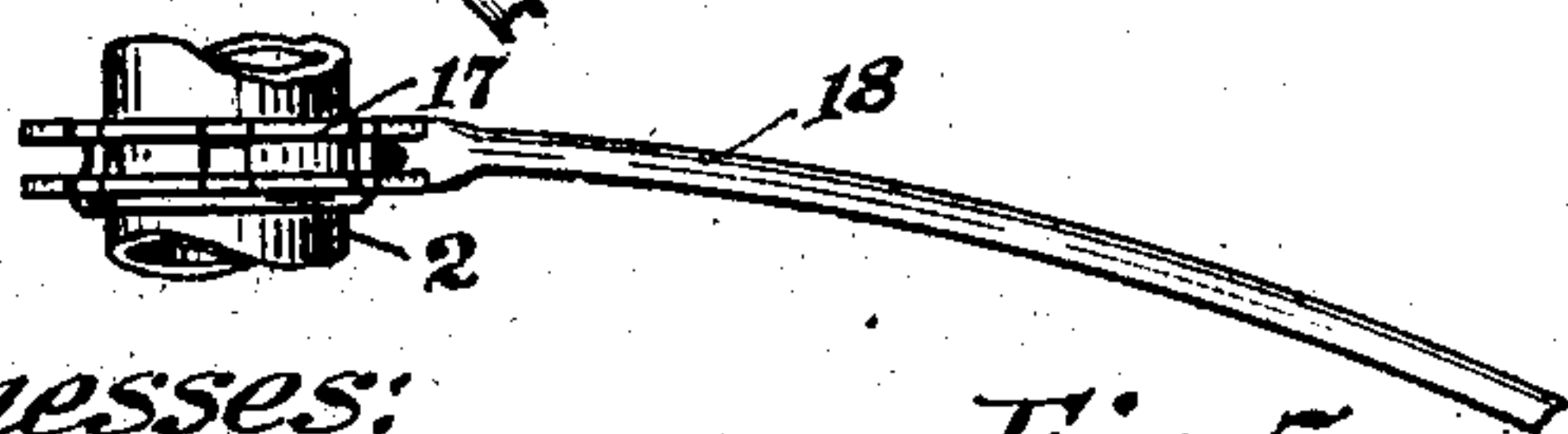


Fig. 3



Witnesses:  
*[Signature]*  
Frank Palmar

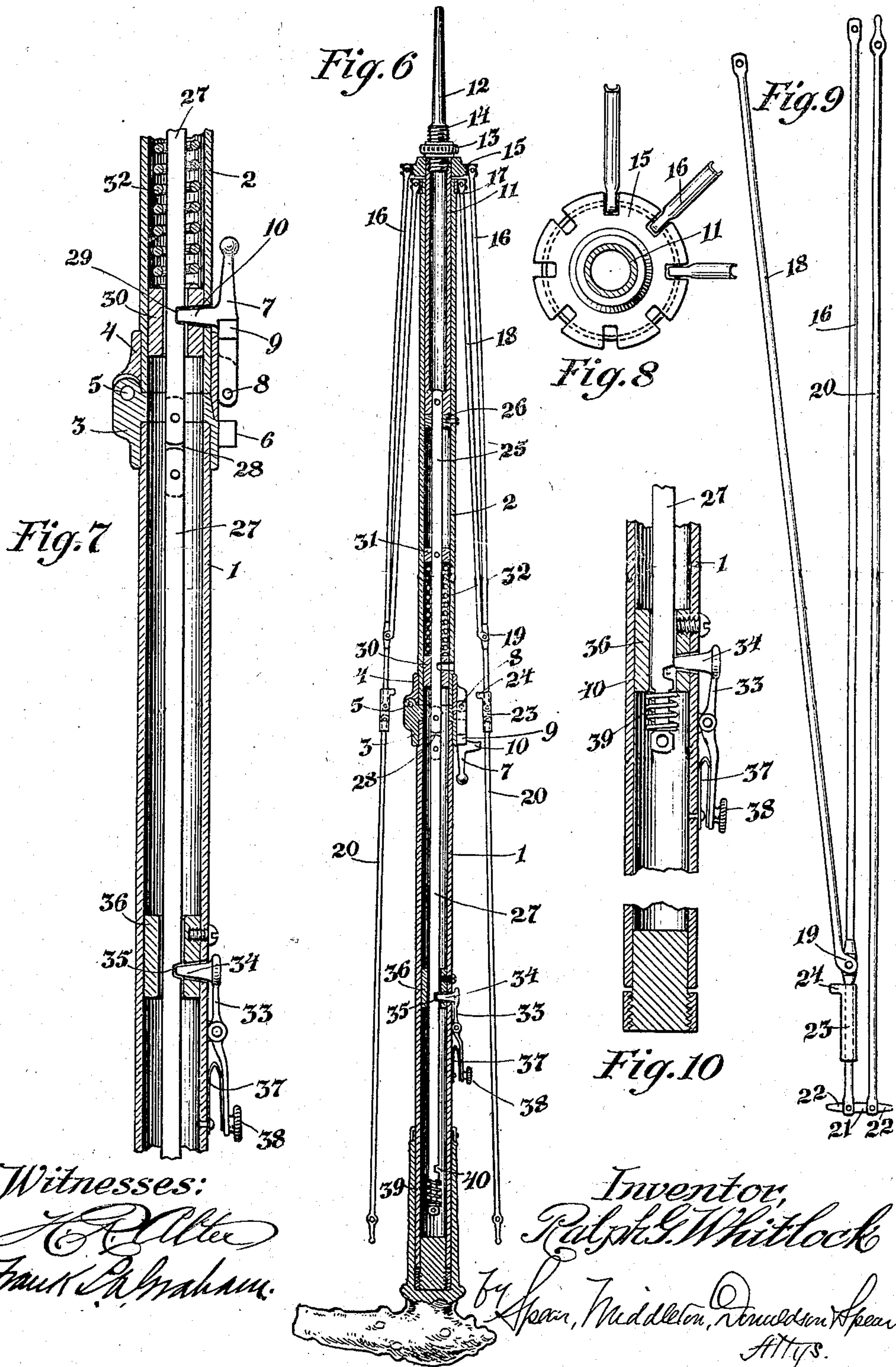
Inventor,  
*Ralph G. Whitlock*  
By *[Signature]*  
Special Middleman, Donaldson & Sons  
Atty's.

R. G. WHITLOCK.  
FOLDING UMBRELLA.  
APPLICATION FILED NOV. 8, 1907.

911,636.

Patented Feb. 9, 1909.

3 SHEETS—SHEET 2.



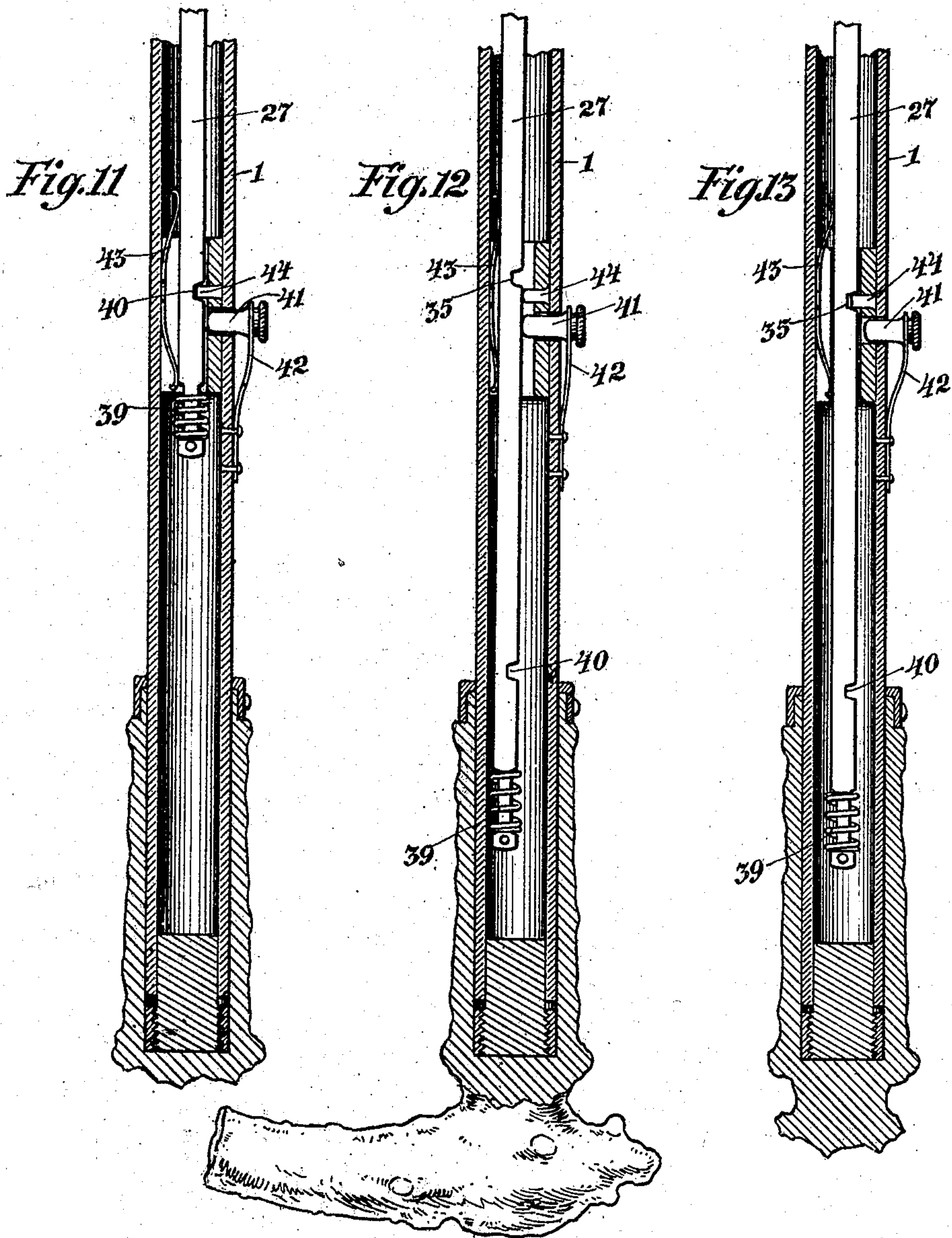


R. G. WHITLOCK.  
FOLDING UMBRELLA.  
APPLICATION FILED NOV. 8, 1907.

911,636.

Patented Feb. 9, 1909.

3 SHEETS—SHEET 3.



Witnesses:  
*H. C. Alter*  
*Frank L. Abraham*

Inventor,  
*Ralph G. Whitlock*  
by *L. Spear, Middleton, Duncanson & Spear*  
Attys



# UNITED STATES PATENT OFFICE.

RALPH G. WHITLOCK, OF LOS ANGELES, CALIFORNIA.

## FOLDING UMBRELLA.

No. 911,636.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed November 8, 1907. Serial No. 401,282.

*To all whom it may concern:*

Be it known that I, RALPH G. WHITLOCK, citizen of the United States, residing at Los Angeles, county of Los Angeles, and State of California, have invented certain new and useful Improvements in Folding Umbrellas, of which the following is a specification.

This invention relates to folding umbrellas, and the object of the invention is to provide an umbrella which may be folded into compact form to make a short package about half the length of an ordinary umbrella when folded, enabling it to be readily carried in a small hand satchel if desired.

A further object is to provide means for automatically opening the umbrella when unfolded, the said means being controlled by a manually operated device.

Further advantages of the invention will be brought out in the following description.

Referring to the drawings: Figure 1 is a side elevation of the umbrella when opened ready for use, the top being removed therefrom, but its position indicated by dotted lines, the major portion of the supporting standard being in section. Fig. 2 is an enlarged view showing the umbrella nearly folded. In this view the top has been omitted to clearly reveal the construction. Fig. 3 is a side elevation of the reversible tip in detail. Fig. 4 is a plan view of the rib-supporting ferrule. Fig. 5 is a side elevation of the same. Fig. 6 is a longitudinal sectional view with the top removed, showing the umbrella partially folded. Fig. 7 is an enlarged sectional view showing in detail intermediate portions of the main tubes at their joint and showing the latch mechanisms for controlling the operating rod and locking the joint. Fig. 8 is a plan view of the lower flange to which the braces are pivoted. Fig. 9 is a side elevation, in detail, of a rib as folded, together with its brace. Fig. 10 is a longitudinal sectional view, enlarged, of the lower portion of the main tube, illustrating the latch mechanism for controlling the operating rod, and showing the position of the latter when the umbrella is nearly opened and the operating rod about to be latched upon a slight further movement thereof. Fig. 11 is a longitudinal sectional view of the lower portion of the tube and handle, showing a modified construction of latch for controlling the operating rod,

the latter being shown in the position it has when locked and the umbrella is open. Fig. 12 is a similar view showing the operating rod as having nearly reached its lowest position and about to become locked. Fig. 13 is a view similar to Fig. 12, showing the position of the operating rod after it has been moved into its extreme lowest position and locked.

The main tube of the umbrella consists of a lower section 1 and an upper section 2, the upper end of the lower section 1 being fastened in a socket 3 and the lower end of the upper section 2 being fastened in a socket 4, and the sockets 3 and 4 being hinged together at 5. The socket 3 has a slotted lug 6, and a lever 7 is pivoted at 8 to the upper socket 4 and when swung down is received by the slotted lug 6, the lever 7 being formed with lugs 9 which catch underneath the slotted lugs 6 and thus lock the upper and lower sections together when they are in line. The lever 7 is also provided with a detent 10, the purpose of which will be later described.

A sliding extension is mounted in the upper section 2 and comprises a shift tube 11 in the upper end of which is screwed a tip 12, the latter having a knurled flange 13 and an outer set of threads 14 enabling the tip to be unscrewed from the shift tube 11, reversed, and housed in the upper end of the shift tube 11, as shown in Fig. 2. Attached to the upper end of the shift tube 11 is a notch 15 to which the ribs 16 are pivoted in well known manner, and attached to the upper end of the upper tube section 2 is a flange 17, to which braces 18 are pivoted in well known manner, the outer ends of braces 18 being pivoted at 19 to the ribs 16. Each rib 16 has a lower section 20, and the two sections of each rib, as clearly shown in detail in Fig. 9, are connected with each other by a link 21, the latter being elongated to form tapered ends 22 such that when the two sections of a rib are in alinement with each other and with the link 21, a sleeve 23 may be slipped down over the joint to cover the link and thus hold the two sections of the rib firmly in line. Each sleeve 23 has a projection 24 whereby it may readily be slipped over the joint.

It will be seen from Fig. 6 that, when the ribs are closed, the flange 17 will stand close to the flange 15, and that if the shift tube 11 is moved upwardly in the upper section 2,



the upward movement of shift tube 11 will raise flange 15 and exert an upward pull on ribs 16, tending to lift the ribs, and as the ribs raise they will be caused to swing out by the braces 18, the latter being pivoted to flange 17 which is relatively stationary. A reverse or closing movement of the shift tube 11 will move down flange 15 and cause the ribs 16 to swing in toward the standard into position shown in Fig. 6. In the form shown in Figs. 1 to 13 inclusive, this movement is effectuated by an operating rod 25, the upper end of which is secured to the lower end of shift tube 11 and extends through a stop 26, the latter being employed in the upper tube section 2 to limit the inward movement of shift tube 11 and to limit the upward movement of the operating rod 25. The operating rod 25 has a lower section 27 connected thereto by a link 28, as clearly shown in detail in Fig. 7. The upper section of the operating rod 25 has a notch 29 which is engaged by the detent 10 of finger lever 7 before referred to, when the umbrella is to be folded as indicated in Fig. 6. An internal sleeve 30 is arranged near the lower end of the upper tube 2 and a flange 31 is fixed on the upper section of the operating rod 25, there being a compression spring 32 interposed between the internal sleeve 30 and the flange 31.

When the parts are in the position shown in Fig. 6, spring 32 is under compression such that if the operating rod 25, 27, is released, the spring will expand and move the operating rod up in the tubes 1, 2, thereby raising shift tube 11 and lifting ribs 16 into the position shown in Fig. 1. The operating rod is normally prevented from this upwardly spring-impelled movement by means of a pivoted finger lever 33, as clearly shown in Fig. 7, which has a detent 34 engaging in a notch 35 in section 27 of the operating rod, the latter being guided at this point by an internal flange 36 in tube 1. The finger lever 33 is normally held in engagement with notch 35 by a leaf spring 37 and the lever 33 has a button 38 which may be pressed by the thumb to release detent 34 and disengage the operating rod to permit spring 32 to shift the operating rod up to open the umbrella, as before described. In order to cushion the operating rod when it arrives at the limit of this upward movement, the lower end of section 27 of the operating rod is provided with a coil spring 39 which strikes against the internal sleeve 36 and thus prevents shock. The lower end of the section 27 of the operating rod has a notch 40 which is in register with detent 34 when the operating rod is in its raised position, and when it has reached such position the detent 34 snaps into the notch 40 and locks the parts in position shown in Fig. 1 to hold the umbrella open. It will thus be

seen that with the parts in the position shown in Fig. 6, by merely pressing the thumb button 38 the umbrella will automatically open and lock in open position. Fig. 1 shows the umbrella when in this position.

To close the umbrella from position shown in Fig. 1 to that shown in Fig. 6, the umbrella is held with the tip 12 against some stationary thing, as for example, against a wall; by then pushing forward on the handle the upper tube 2 slides over the shift tube and as the flanges 13 and 17 are thus drawn together the ribs are pulled in by braces 18 until the position shown in Fig. 6 is attained.

When in the position shown in Fig. 6, the umbrella may be said to be folded in the sense that an ordinary umbrella is folded. When, however, it is desired to further fold the umbrella into its most compact form, the umbrella having been placed in condition shown in Fig. 6, sleeves 23 are then slipped away from links 21 and rib sections 20 are then folded up parallel with the upper sections as shown in Fig. 9 and Fig. 2, the top of the umbrella being folded on itself and lying between the two sections 16, 20 of the ribs. The lever 7 is then swung into the position shown in Fig. 7 which moves detent 10 into engagement with notch 29, thus locking the operating rod until the umbrella shall again be restored to operating position. This movement of lever 7 unlocks lower socket 3 from the upper socket 4 and permits the lower tube 1 to be swung up into substantial parallelism with the other portions of the umbrella. Fig. 2 indicates this folding action of the lower tube 1 and its attached parts. Fig. 2 shows the parts opened out somewhat to render the illustration clear, but it should be understood that the lower tube 1 and attached parts readily fold into close parallelism with tube 2 and the folded ribs and top thereby placing the umbrella in most compact form. In order to still further reduce the length of the folded umbrella the tip 12 may be unscrewed from the position shown in Fig. 6 and reversed as indicated in Fig. 2. To restore the parts from the position shown in Fig. 2 to the position shown in Fig. 6, the lower tube 1 is swung back and again latched by lever 7, thereby unlocking upper section 25 of the operating rod, but the lower section 27 of the operating rod still remains latched by the detent 34 and ready to be released when it is desired to open the umbrella. The ribs are then folded back and the sleeves 23 slipped over the links 21 and the tip 12 placed with its point outwardmost and the umbrella is again ready for carrying or to be opened by pressing button 38.

Figs. 11, 12 and 13 show a modification of the latch 33, which modification consists of



a plunger 41 carried on the end of a flat spring 42, while a bowed flat spring 43 which is secured inside the tube 1 tends to hold the operating rod 27 in engagement with a stationary detent 44. Thus, by pressing in plunger 41, the operating rod 27 is sprung away and released from the detent 44, permitting the sliding movement of the operating rod. Fig. 12 shows the operating rod as just having been released from detent 44 and moved slightly upward. Fig. 13 shows the operating rod when locked in its lowest position, Fig. 11 showing it locked in its upper position.

What I claim is:—

1. In an umbrella, a hollow standard, a shift tube slidable in the upper end thereof, ribs pivotally connected to the shift tube, braces interposed between the ribs and upper end of the standard, an operating rod connected to the shift tube and extending downwardly within the standard, a spring within the standard acting on said rod and tending to move the same upwardly to open the umbrella, a spring pressed pawl carried by the standard having a projection within the standard, said rod having a pair of notches adapted to be engaged by said pawl at the limit of movement of the rod in either direction to lock the umbrella in either its closed or open position.

2. In an umbrella, a hollow standard, a shift tube slidable in the upper end thereof, ribs pivotally connected to the shift tube, braces interposed between the ribs and upper end of the standard, an operating rod connected to the shift tube and extending downwardly within the standard, a spring within the standard acting on said rod and tending to move the same upwardly to open the umbrella, a buffer on the lower end of the rod, and a tubular stop within the standard through which the rod passes and against which said buffer is adapted to act on the opening of the umbrella.

3. A folding umbrella comprising a standard consisting of two hinged tubes, a shift tube slidable in the upper tube, jointed ribs connected to the shift tube, braces connected to the ribs and to the end of the upper hinged tube, an operating rod connected to the shift tube and lying within the hinged tubes, said operating rod being jointed ad-

jacent the joint of the tubes, a spring for impelling the operating rod in one direction, a finger operated detent for detachably holding said operating rod in open and closed positions, a spring buffer on the lower end of the operating rod, and an internal abutment on the lower hinged tube against which the buffer spring is adapted to impinge.

4. A folding umbrella comprising two tubes, a pair of sockets hinged together, the sockets receiving the adjacent ends of the tubes, a lever hinged to one socket and adapted to detachably engage the other socket, a shift tube in the upper tube, jointed ribs connected to the shift tube, braces connected to the jointed ribs and to the end of the upper hinged tube, a jointed operating rod connected to the shift tube, a spring for actuating said operating rod, said lever having a detent adapted to engage a notch in the operating rod to hold the latter when the hinged tubes are folded and leaving the operating rod free when the hinged tubes are in alinement, and a finger operated device for detachably locking the operating rod in either of two positions.

5. A folding umbrella comprising two tubes, a pair of sockets hinged together, the sockets receiving the adjacent ends of the tubes, a lever hinged to one socket and adapted to detachably engage the other socket, a shift tube in the upper tube, jointed ribs connected to the shift tube, braces connected to the jointed ribs and to the end of the upper hinged tube, a jointed operating rod connected to the shift tube, a spring for actuating said operating rod, said lever having a detent adapted to engage a notch in the operating rod to hold the latter when the hinged tubes are folded and leaving the operating rod free when the hinged tubes are in alinement, and a spring controlled finger lever pivoted to the lower hinged tube and having a detent adapted to engage either one or two notches in said operating rod.

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

RALPH G. WHITLOCK.

Witnesses:

PEARL MAKINNEY,  
H. E. MAKINNEY.