C. C. HOLE.

UMBRELLA.

APPLICATION FILED JULY 28, 1914.

1,145,310.

Patented July 6, 1915.

2 SHEETS—SHEET 1.

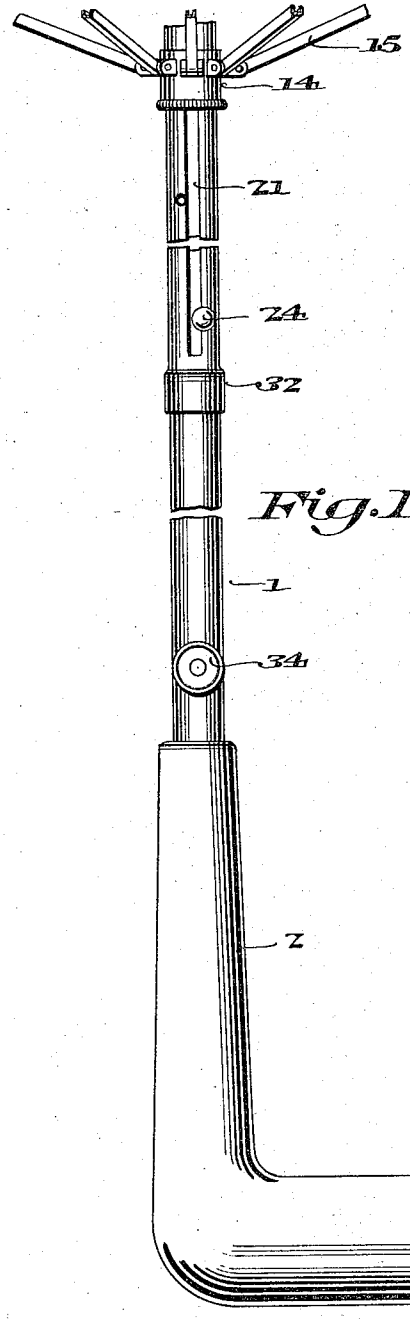


Fig. 1.

Fig. 4.

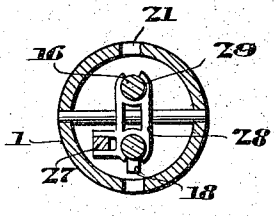
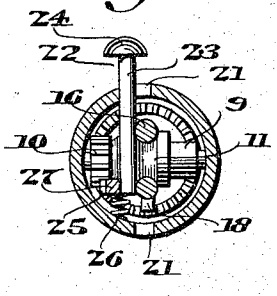


Fig. 5.



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Witnesses

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2 SHEETS—SHEET 2.

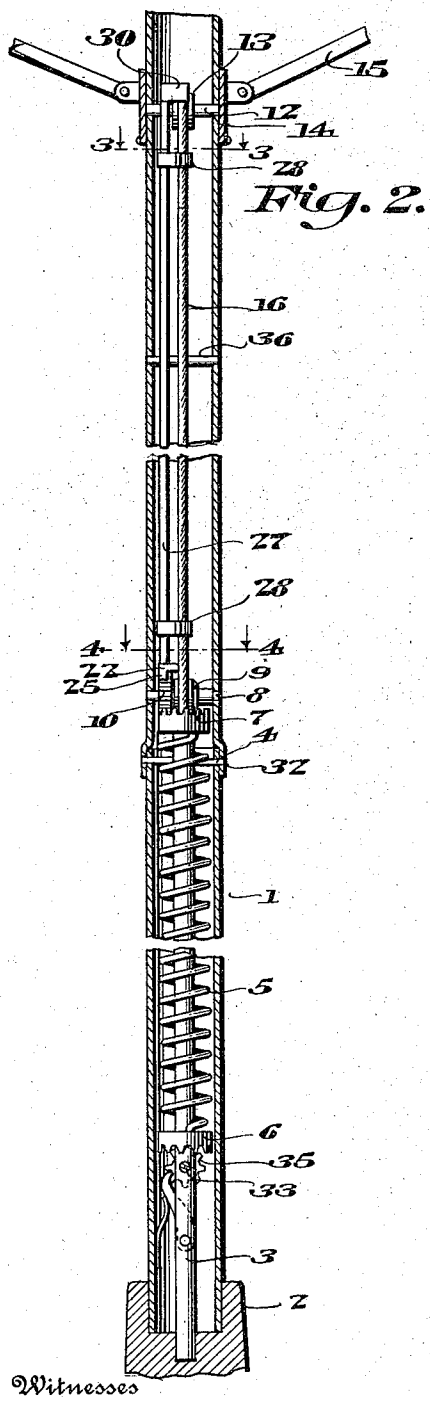


Fig. 2.

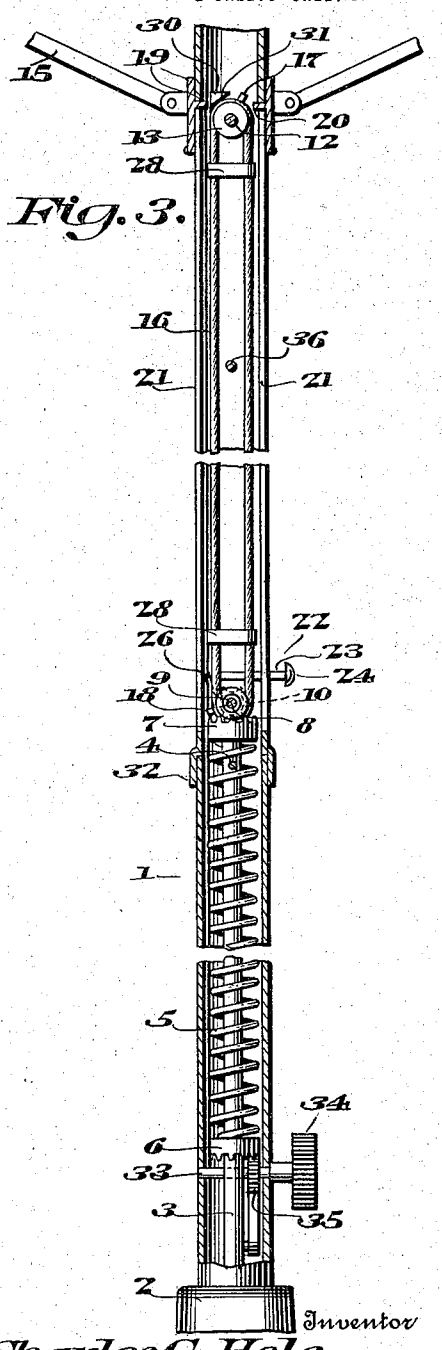


Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES C. HOLE, OF FREMONT, NEBRASKA, ASSIGNOR OF ONE-HALF TO RICHARD W. SHIVERS, OF SCRIBNER, NEBRASKA.

UMBRELLA.

1,145,310. Specification of Letters Patent. Patented July 6, 1915.

Application filed July 28, 1914. Serial No. 853,675.

To all whom it may concern:

Be it known that I, CHARLES C. HOLE, a citizen of the United States, residing at Freemont, in the county of Dodge and State of Nebraska, have invented new and useful Improvements in Umbrellas, of which the following is a specification.

The invention relates to an improvement in umbrellas, being particularly directed to the self-opening and closing umbrella, and to the provision of means whereby the umbrella is automatically opened and closed at the will of the user.

The main object of the present invention is the provision of an umbrella and operating means therefor, positively actuated in both directions, means being constructed with a view to both positively opening and closing the umbrella and so controlled as to perform these operations only at the will of the user.

The invention in the preferred form of details will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation, showing the improved umbrella, the cover being omitted. Fig. 2 is a vertical central section through the umbrella rod, showing the interior mechanism. Fig. 3 is a section similar to that of Fig. 2, taken at right angles thereto. Fig. 4 is a section on line 3—3 of Fig. 2. Fig. 5 is a section on line 4—4 of Fig. 2.

Referring particularly to the accompanying drawings, the improved umbrella structure includes a rod 1 of the usual hollow form, connected at one end to the handle 2. In the lower portion of the rod is arranged a shaft 3, the lower end being preferably fixed in the handle 2 and the upper end by a transverse brace pin 4 extending through the rod 1. Encircling the shaft 3 is a coil spring 5, the lower end being secured to a pinion 6 rotatably mounted on the shaft and the upper end to the pinion 7 rotatably mounted on the shaft at the upper end thereof. Mounted on the shaft or pin 8 fixed transverse the rod 1 immediately above the pinion 7 is an operating member 9, terminally formed to provide pinions 10 adapted to register and coöperate with the pinion 7 and centrally formed with a channel 11. In the upper portion of the rod 1 is arranged a shaft 12, fixed in the rod 1 and having mounted thereon a grooved roller 13.

The usual runner 14 is provided to which stretchers 15 are connected, and the roller 13 is arranged at the upper limit of movement of the runner, while the member 9 is positioned at the lower limit of movement thereof.

A belt 16 connects the member 9 and the roller 13. The belt is of the endless type and carries what I term an operating lug 17 and with a release lug 18 at practically the opposite point on the belt. The runner 14 is formed with inwardly extending lugs 19 and 20 arranged at diametrically opposite points and preferably at opposite ends of such runner, the lugs operating through slots 21 formed at diametrically opposite points in the rod 1 and being of such length as to be disposed in the path of the lug 17 on the belt.

For manually controlling the operation of the device, I provide a push element 22 operating through an opening in the rod 1, said element including a stem 23, terminating in the operating head 24 and formed at the opposite end to provide a dog 25 adapted to engage one of the pinions 10 of the member 9. A spring 26 is arranged between the push member and the rod to normally operate to force said member into coöperation with the pinion, that is in locking position to hold the pinion against movement. A locking rod 27 extends vertically within the rod 1, being guided in movement by guide elements 28 fixed to the rod and formed with openings 29, through which the belt sections pass, so that the rod is maintained in effective relation with the belt at all times. The lower end of the rod normally rests upon the dog 25 when the latter is in locking relation to the pinion, so that when the dog is pushed laterally to disengage it from such coöperation, the rod drops in rear of the same and prevents the dog from again engaging the pinion. The upper end of the rod terminates slightly above the roller 12 and is formed with an offset projection 30 having an inclined face 31 on the lower side, said projection overlying the belt.

The rod 1 is preferably made in sections, as illustrated at 32, the lowermost section

joining the intermediate section at about the upper end of the shaft 3, so that the parts may be readily separated when necessary for repair or renewal. The spring 5 is wound through the medium of the shaft 33 projecting through the rod 1 and carrying beyond said rod a thumb wheel 34, and provided within the rod with a pinion 35 in mesh with the pinion 6, to which lower end of the spring is secured. Brace pins 36 extend transversely of the rod 1 at appropriate points throughout the length thereof to brace and hold the latter against distortion under strain.

In operation, assuming the spring to be under tension, the push member 22 in locking coöperation with the pinion 10, and the runner at its lowermost position, that is the umbrella closed, when it is desired to elevate the umbrella the member 22 is pushed inwardly, disconnecting it from the pinion. The rod 27 drops in rear of the dog to lock the parts in such position, whereupon the gears may be rotated by the spring, as obvious, to move the belt. This causes the dog 17 to engage the adjacent dog 19 of the runner and carry the same upwardly. The movement is continued until the runner is in its uppermost position, at which point the lug 17, due to its travel around the roller 13, rides from beneath the lug 19. A slightly farther movement of the lug 17 causes the same to ride beneath the projection 30, in contact with the face 31, elevating the locking rod and releasing the dog to permit the automatic return of the latter to locking engagement and stopping operation. When it is desired to lower the umbrella the operation is practically identical, except that in this instance, the lug 17 is moving downwardly and through engagement with the lug 20 on the runner will force the latter to its lowermost position. The movement of the parts in this direction continues until the lug 18 on the belt has engaged and tripped the locking rod, whereupon the parts again remain at rest.

What is claimed is:—

1. An umbrella including a hollow rod, an endless belt arranged within the rod, a runner slidably mounted on the rod, means carried by the belt and runner for coöperation in the movement of the belt to actuate the runner in both directions, and an actuating mechanism for the belt.

2. An umbrella including a hollow rod, an endless belt arranged within the rod, a runner slidably mounted on the rod, means carried by the belt and runner for coöperation in the movement of the belt to actuate the runner in both directions, an actuating mechanism for the belt, and means for controlling the actuating mechanism.

3. An umbrella including a hollow rod, an endless belt arranged within the rod, a runner slidably mounted on the rod, means carried by the belt and runner for coöperation in the movement of the belt to actuate the runner in both directions, an actuating mechanism for the belt, means for controlling the actuating mechanism, and means for locking the control means in inoperative position during predetermined movement of the belt.

4. An umbrella including a hollow rod, an endless belt arranged within the rod, a runner slidably mounted on the rod, means carried by the belt and runner for coöperation in the movement of the belt to actuate the runner in both directions, an actuating mechanism for the belt, means for controlling the actuating mechanism, means for locking the control means in inoperative position during predetermined movement of the belt, and means for automatically releasing the locking means at a predetermined point in the path of movement of the belt.

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

CHARLES C. HOLE.

Witnesses:
FRED VOLPP,
W. G. HENATSCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."