No. 897,096. PATENTED AUG. 25, 1908.

J. E. HANNON.

FOLDABLE UMBRELLA.

APPLICATION FILED MAY 21, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

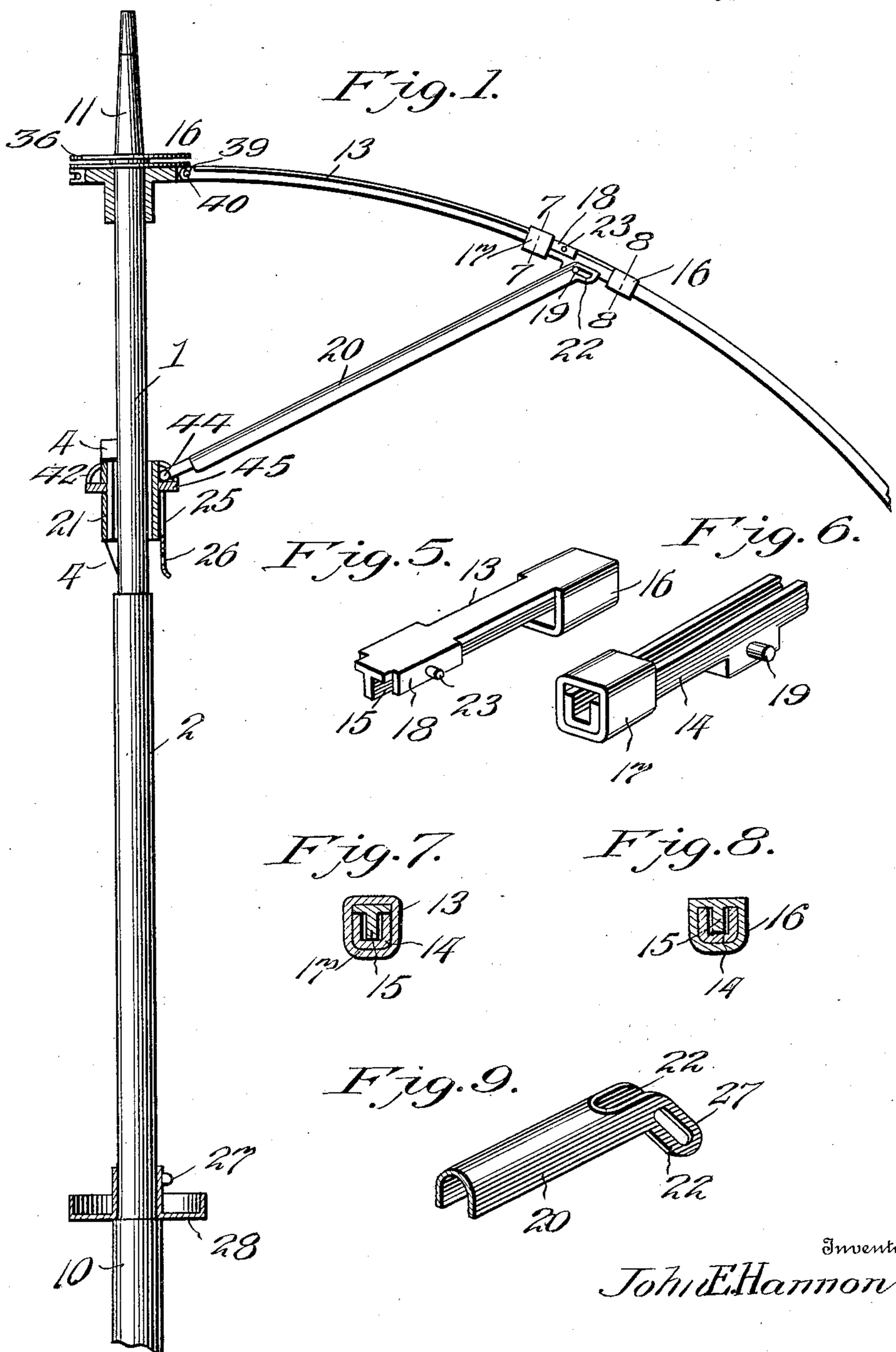


Fig. 5.




Fig. 6.




Fig. 7.




Fig. 8.




Fig. 9.




Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

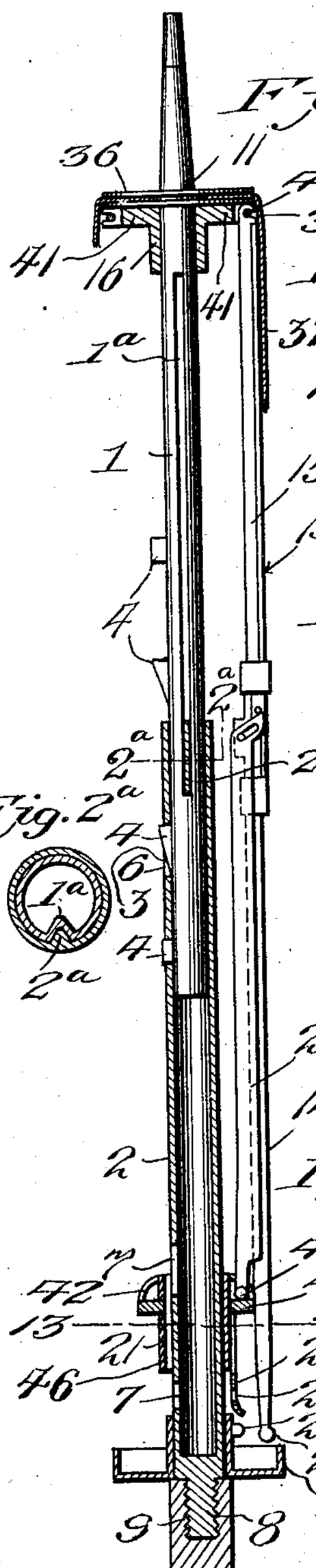



Fig. 11.

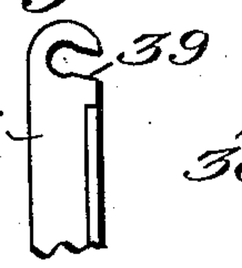



Fig. 10.

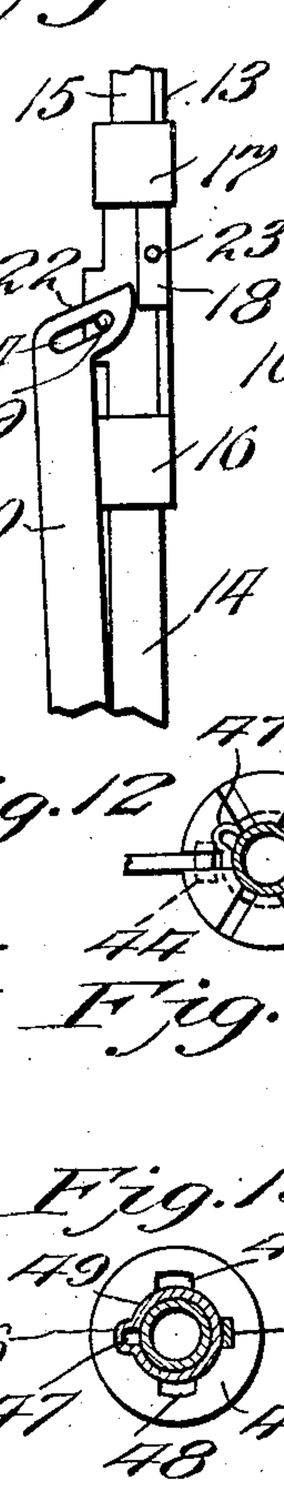



Fig. 12.

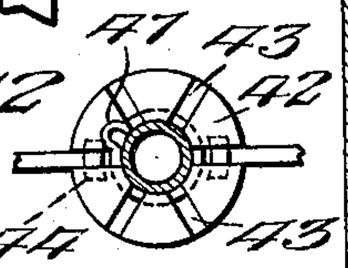



Fig. 4.

Fig. 13.




Fig. 5.

Fig. 3.a

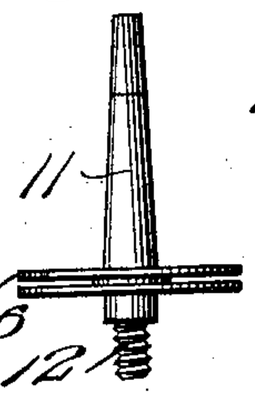



Fig. 3.b

Fig. 3.

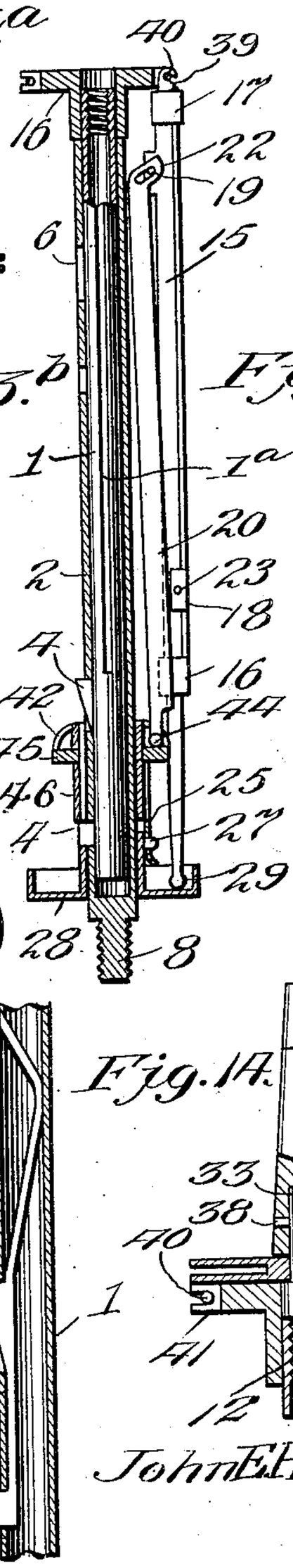
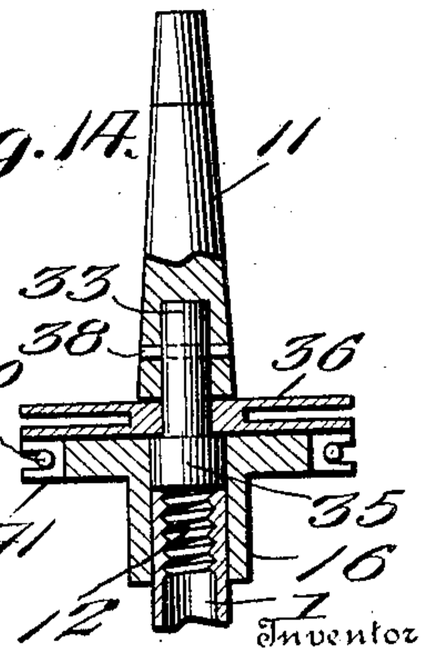



Fig. 14.

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3 SHEETS—SHEET 3.

Fig. 15.

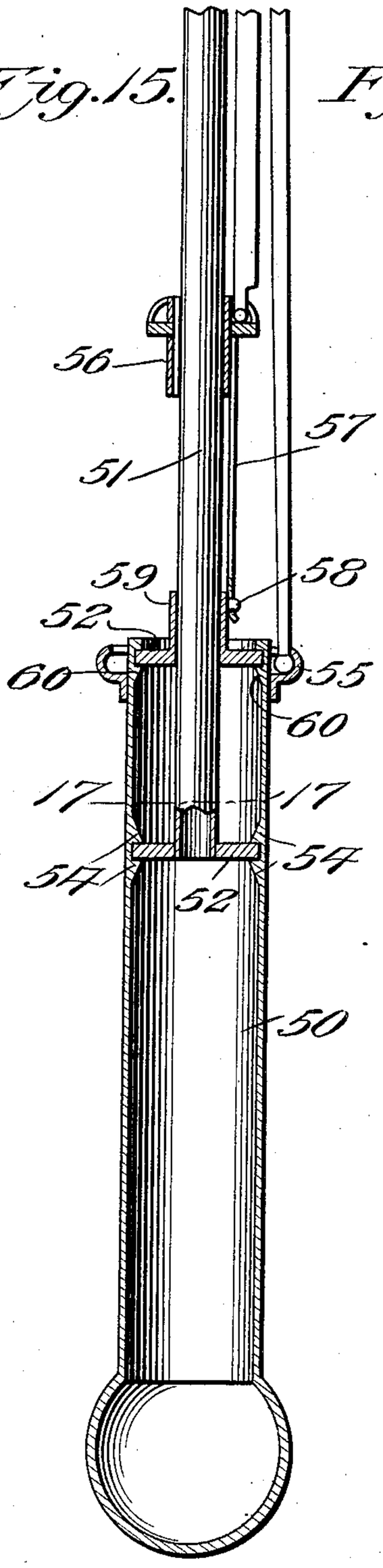



Fig. 16.

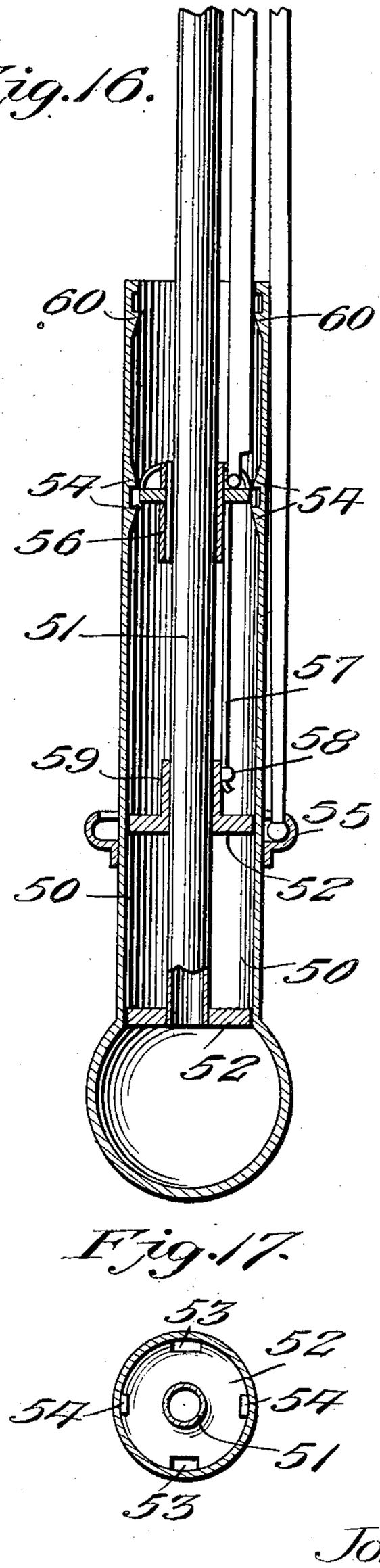
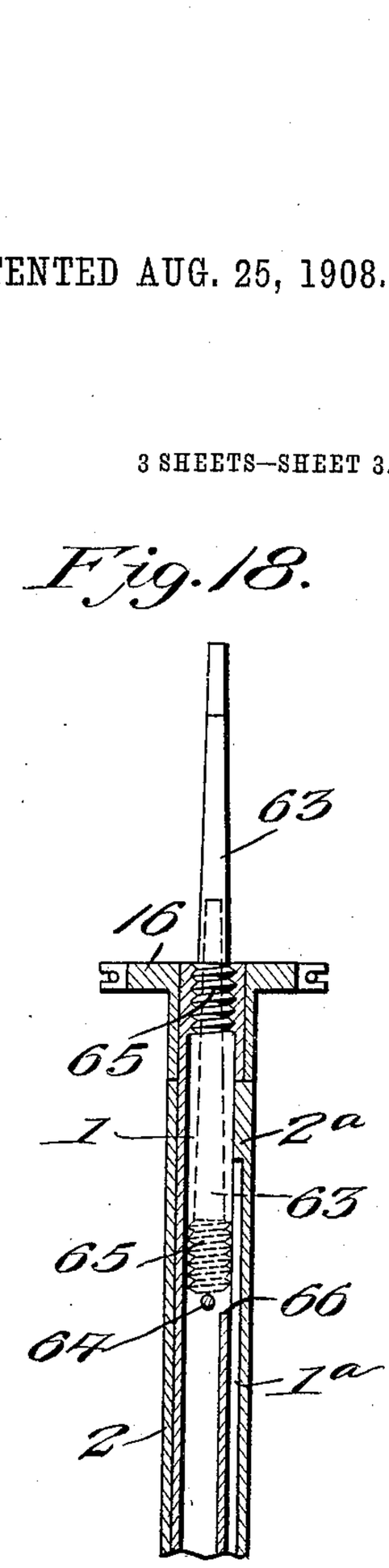



Fig. 17.




Fig. 18.




Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN E. HANNON, OF MAYNARD, MASSACHUSETTS.

## FOLDABLE UMBRELLA.

No. 897,096. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed May 21, 1907. Serial No. 374,921.

*To all whom it may concern:*

Be it known that I, JOHN E. HANNON, a citizen of the United States, residing at Maynard, in the county of Middlesex and State of Massachusetts, 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 in which the handle rod and ribs are composed of collapsible sections, whereby the umbrella can be folded into a compact space when not in use so as to be conveniently carried in the pocket or packed into a valise, suit case or trunk during traveling.

The invention has for one of its objects to improve and simplify the construction of umbrellas of this class so as to be composed of few parts, comparatively easy and inexpensive to manufacture, and capable of being readily folded and unfolded.

A further object is the provision of a central rod composed of telescoping sections and sectional ribs that are adapted to be collapsed or extended simultaneously with the contracting and lengthening of the handle rod.

Another object is the employment of a rib composed of sections that are arranged to be collapsed or extended through the medium of the usual brace rod for opening and closing the umbrella, a suitable locking device being provided at the joint between the rib and brace rod for preventing the sections of the rib from collapsing during the opening and closing movement of the umbrella.

A still further object is the provision of a catch for holding the runner to which the brace rods are hinged in such a position that the locking devices at the brace rod joints are held open so that the rib sections can be collapsed, the runner being connected with the ring or cap that engages the ball tips or the ribs, whereby the cap holds the runner in the proper position for permitting the ribs to be collapsed or extended.

A further object is the employment of a movable handle and tip on the central rod of the umbrella which will permit of the proportions of the latter to be considerably reduced when it is desired to fold the umbrella for packing in a grip or the like.

An additional object is to provide simple and novel joints between the brace rods and runner on the handle rod, and between the ribs and fixed ring on the upper end of the handle rod whereby the ribs and rods can be readily taken out when broken and new ones substituted, without taking the umbrella fully apart.

The invention has for a further object to provide a removable tip for the handle rod and a swiveled ring on the top to which the covering of the umbrella is attached, the covering serving to permanently hold the tips so as not to become lost, when the umbrella is folded for backing.

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 certain of the embodiments of the invention, Figure 1 is a fragmentary view of the umbrella showing the handle rod and one of the ribs in open position. Fig. 2 is a similar view showing the rib in closed position. Fig. 2[a] is a transverse section on line *a*—*a*, Fig. 2. Fig. 3 is a fragmentary sectional view of the umbrella showing the parts in folded position and the handle and tip detached. Fig. 3[a] is a side view of the handle rod tip. Fig. 3[b] is a detail view of the handle. Fig. 4 is a sectional view of a portion of the upper member of the handle rod showing one of the spring catches. Figs. 5 and 6 are perspective views of the slidably connected ends of the upper and lower rib sections respectively drawn on an enlarged scale. Figs. 7 and 8 are transverse sections taken respectively, on lines 7—7 and 8—8, Fig. 1. Fig. 9 is a perspective view of the upper end of one of the brace rods. Fig. 10 is an enlarged side view of the joint between a brace rod and its rib showing the locking device for preventing the sections of the ribs from collapsing during the opening and closing of the umbrella. Fig. 11 is a detail view of the upper end of one of the ribs. Fig. 12 is a detail view of the joint construction between the brace rods and runner on the handle rod. Fig. 13 is a transverse section on line 13—13, Fig. 2. Fig. 14 is an enlarged sectional view of the connection between the handle rod and tip. Fig. 15 is a longitudinal sectional view of a modified form of handle shown in normal position. Fig. 16 is a similar view showing the handle telescoped on the handle rod. Fig. 17 is a transverse section on line 17—17, Fig. 15. Fig. 18 is a longitudinal section of the upper

ends of the telescoped members of the handle rod showing a modified form of tip.

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

Referring to the drawing, 1 and 2 designate the upper and lower sections respectively, of the handle rod that are preferably made of hollow rods of aluminum or other light and strong metal, the upper section being of smaller diameter so as to telescope in the lower section. The upper section 1 is provided with a longitudinal groove $1^a$, as shown in Figs. 2 and $2^a$, which is preferably formed by depressing the metal and into which extends a rib or projection $2^a$ on the lower section that serves as a feather for permitting relative longitudinal movement, while preventing rotation of one section with respect to the other. The groove terminates short of the lower end of the upper section and the projection is adapted to engage the lower end of the groove and thus prevent the handle section from being pulled apart.

In the upper section are spring catches, one of which is clearly shown in Fig. 4. Each catch, designated generally by 3, has spaced projections 4 that extend through slots 5 in the section 1, the lower catch being adapted to engage in slots 6 adjacent the upper end of the section 2 when the umbrella is unfolded and in slots 7 at the bottom of the section when the umbrella is folded, as shown respectively in Figs. 2 and 3. The upper catch is for the purpose of receiving between its projections 4 the brace rod sleeve or runner, whereby the umbrella is held open and prevented from turning inside out. The lower catch 3 is so arranged that when the projection $2^a$ engages the bottom end of the groove $1^a$, as in the operation of unfolding the umbrella, the catch will spring into the slots 6 and thus automatically lock the handle rod sections in their normally extended position.

On the lower section 2 at its bottom end is a threaded stud 8 that engages in a tapped opening 9 in the inner end of the handle 10, as clearly shown in Figs. 2 and $3^b$. On the upper end of the section 1 is a top 11 provided with a threaded stud 12 that screws into the said section of the handle. When the umbrella is to be folded, the handle and tip thereof are detached as shown in Fig. 3, so that the total length of the umbrella is slightly greater than one of the rod sections.

Each rib of the umbrella is composed of two parts 13 and 14, the former being of T-shaped cross section and the latter of U-shaped cross section, so as to fit snugly along the longitudinal web 15 of the section 13. The upper sections of the ribs are hingedly connected with a stationary collar 16 on the central rod of the umbrella. The rib sections, which are constructed of suitably resilient metal, are slidably connected by means of collars 16 and 17 on the overlapping extremities of the upper and lower sections respectively. Suitably spaced on the collar 16 are stops 18 with which the collar 17 engages when the lower rib section is fully extended, as shown in Figs. 1 and 2. Adjacent the inner end of the section 14 are oppositely extending pintles 19 to which the brace rod 20 are hingedly connected in any suitable manner. When the umbrella is opened, the brace rods 20 operate to hold the sections 14 of the ribs fully extended so that the collars 17 bear on the stops 18. The opening and closing of the umbrella is accomplished in the usual manner by sliding the runner 21 along the handle rod.

In order to prevent the rib sections from collapsing during the opening of the umbrella or while the latter is closed, a locking device is provided at each joint between the ribs and brace rods. This locking device comprising laterally extending parallel and inclined ears 22 on the brace rod 20, which latter is of U-shaped cross-section as shown in Fig. 9, and coöperating with the ears are pins 23 on the stops 18 so as to prevent the rib sections from collapsing, as shown in Fig. 2. The ears 22 thus form catches or locks and they are provided with longitudinal slots 24 for receiving the pintles 19 of the lower rib section, the slots serving to permit the brace rod to be moved out of the path of the pins or stops 23, as shown in Fig. 10, for enabling the rib sections to be collapsed. As long as the parts are in the position shown in Fig. 2, an inward pressure on the lower rib section 14 is resisted by the ears or catches 22 engaging the projections 23 so that the parts are locked together, it being understood that the catches 22 of the brace rod under this condition, operate as if they were fixed parts of the lower rib section on which it is pivoted.

To release the locking devices so that the rib sections can be telescoped, it is necessary to move the brace rod to the position shown in Fig. 10, and hold them in such position during the folding of the umbrella. For this purpose, the runner 21 has a spring catch 25 that has an aperture 26 for hooking over a projection 27 on the rib clamping ring or cap 28 that is slidably mounted on the lower member of the handle rod. This clamping ring or cap is adapted to engage the ball tips of the umbrella ribs so as to hold the latter in the usual manner, and also is employed to serve as an abutment to which the runner is attached by the catch 25. To unlock the brace rods, the ring 28 is first moved inwardly into engagement with the ball tips 29 of the ribs and then the runner 21 is slid outwardly toward the handle until the cap 25 snaps over the projection 27, as shown in Fig. 3. The member 28 cannot move inwardly on account of its engagement with the tips 29 of the ribs and, therefore, the

brace rods will be in the position shown in Fig. 10. By next releasing the catch 3 at the lower end of the upper rod section of the handle, the umbrella can be folded, as for instance, by placing the tip 11 on the floor and pressing downwardly in the handle 10. By this operation, the handle rod and ribs will telescope to the position shown in Fig. 3, and the projections 4 of the lower catch 3 will engage in the lower slots 7 and thus lock the parts collapsed. The handle and tip can then be unscrewed and wrapped together with the body part of the umbrella. To unfold the umbrella, the tip and handle may first be applied and then the lower catch 3 pressed inwardly to permit the handle rod sections to be extended. The ribs which are extended simultaneously with the handle rod sections, are next locked together by releasing the catch 25 to permit the runner to be moved upwardly so that the stop portions 22 of the brace rods will pass under the stops or projections 23. The umbrella can then be opened and closed in the usual manner.

In order to insure against loss of the tip 11 when the same is taken off the handle rod, as in folding the umbrella, it may be advantageous to have it permanently attached to the cloth covering of the umbrella. To this end, the threaded stud 12 is separate from the tip and is formed on a bolt shaped member, whose shank 33 enters a socket 34 of the tip, as shown in Fig. 14, and between the lower end of the tip and the head 35 of the member is a ring 36 of any suitable shape to which the covering, as shown at 37, can be secured, as shown in Fig. 2. The tip 11 is secured to the shank 33 by a pin 38 so that by turning the tip, the stud 12 can be screwed into the handle rod, or removed therefrom. The ring 36 serves to hold the tip attached to the covering when the tip is removed from the handle rod, and tip can be bound down again the side of the umbrella. The cover can be secured to the ribs in any approved manner so that it is deemed unnecessary to describe and illustrate this feature.

The connections between the ribs and handle rod, and between the brace rods and runner are especially designed to facilitate the renewal of a brace rod or rib or both, in case of breakage, without requiring all the ribs or brace rod to be disconnected as is usual. As shown in Figs. 2 and 11, the top ends of the upper rib sections 15 are each provided with a slot 39 extending inwardly from the top side and somewhat enlarged at its inner end so as to increase its hold on the fastening wire 40 that is arranged in the usual manner in the fixed ring 16. When the umbrella is open as in Fig. 1, the tension of the ribs tends to throw the top ends outwardly so that the ribs will be held on the fastening wire 40, and when the umbrella is closed, as in Fig. 2, the ribs are prevented from becoming detached from the fastening wire, both by the ring 36 and inner walls of the notches 41 of the member 16. To remove a rib, it is merely necessary to draw its top end downwardly when the umbrella is open and thus pass the wire out of the slot.

The runner 21 is provided with a flange 42 at its upper end that is curved backwardly so as to overhang the runner as shown in Figs. 2 and 12, and this flange has radial slots 43 for receiving the lower ends of the brace rods 20, which ends have oppositely extending lugs 44 that engage the underside of the flange. Under the flange is a keeper or washer-like member 45 for holding the brace rods connected with the runner, and this keeper is removably held in place against the flange by the top end of the catch 25 on one side of the runner and a crease or bulge 46 in the latter at the opposite side. This crease is provided to permit the runner to pass over the projections 4 of the spring catch 3, and the flange 42 has a notch 47 in line with the crease for the same purpose. As shown in Fig. 13, the keeper 45 has diametrically arranged notches 48 in the edge of its opening 49 and when the notches are out of register with the crease 46 and catch 25, as shown, the keeper is in locked position. In case a brace rod is broken, it can be taken out by first turning the keeper so that its notches will register with the said crease and catch and it is permitted to drop. The desired brace rod can be then pulled downwardly and outwardly from the curved flange of the runner. This operation is also necessary in order to remove a rib. In replacing a new rib, the upper end will have to be attached to the fastening wire of the member 16 before the brace rod is attached to the runner.

In the modification shown in Figs. 15 to 17, the handle 50 is a tubular body that is arranged to telescope on the central rod of the umbrella and is permanently attached thereto. On the lower rod section 51 is a head 52 having diametrical notches 53 as clearly shown in Fig. 17 that are adapted to register with projections 54 arranged on the inner surface of the handle to engage on opposite sides of the head when the parts are in normal position. By turning the handle to to cause the projections 54 to register with the notches 53, the handle can be pushed inwardly on the rod 51 from the position shown in Fig. 11 to that of Fig. 12, which latter shows the handle almost telescoped. Instead of the clamping ring or cap 55 being mounted on the handle rod, as was the case in the construction hereinbefore described, it is arranged to slide on the aluminum or other handle 50, as shown. The runner 56 has a spring catch 57 which engages a projection 58 on a sleeve 59 slidably mounted on the rod 51 and disposed within the handle 50. The sleeve 59 is normally held from longitu-

dinal movement by the internal projection 60 on the handle which, by turning the handle, are adapted to be brought into register with notches in the slide 59, such as those shown in the head 52, so that the head 52, sleeve 59 and runner 56, can pass into the handle as the latter is telescoped on the rod 51.

Fig. 18 shows a modified form of tip for the handle rod and this tip 63 is adapted to drop into the bore of the upper handle rod section 1, which latter is provided with a pin 64 forming a stop on which the tip rests, as shown by dotted lines, the tip extending a sufficient distance out of the handle rod to permit of its being easily grasped. The tip can be locked in normal position in any suitable manner, as for instance by means of a screw thread 65. It will be observed that the internal crease forming the guide groove $1^a$ is cut away at 66 so as to permit the tip to enter the handle rod.

From the foregoing description, taken in connection with the accompanying drawing, 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 device which I now consider to be the best embodiment thereof, I desire to have it understood that the device 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. A foldable umbrella comprising a handle rod capable of being lengthened and shortened, ribs hingedly connected with the handle rod and composed of collapsible sections, a runner on the handle rod, brace rods hingedly connected with the runner, means connecting the brace rods with the outer sections of the ribs, and locking devices between the rod and ribs for preventing telescoping of the latter during the opening and closing of the umbrella, said locking devices comprising means carried by the brace rods, and separate means on the inner sections of the ribs normally disposed in coöperative relation with the first-mentioned means, the brace rods being mounted for longitudinal movement for releasing the locking devices to telescope the rib sections.

2. A foldable umbrella comprising an extensible and contractible handle rod, ribs composed of slidably connected inner and outer sections, means hingedly connecting the inner sections to the handle rod, a runner on the handle rod, brace rods detachably and hingedly connected with the runner, joints between the brace rods and outer rib sections and designed to permit the brace rods to have a limited movement independently of the said sections, and locking devices between the brace rods and inner sections and designed to depend upon the said longitudinal movement of the brace rods to permit the ribs to telescope.

3. A foldable umbrella comprising a contractible and extensible handle rod, ribs composed of inner and outer sections, hinges between the inner sections and handle rods, a runner on the handle rod, brace rods hingedly connected with the runner, slot and pin connections between the brace rods and outer sections of the ribs for permitting the brace rods to have a limited movement independently of the said sections, devices on the outer ends of the inner rib sections, and means on the brace rods normally disposed in coöperative relation with the said devices to prevent telescoping of the rib sections and movable out of coöperative relation with the said devices for permitting the rib sections to be collapsed.

4. A foldable umbrella comprising a handle rod composed of collapsible parts, ribs composed of slidably connected sections, a runner on the handle rod, brace rods connected with the runner, the outer ends of the rods being provided with slots inclined to the length of the rods, pins on the outer rib sections engaging in the slots of the brace rods, and members on the inner sections with which the extremities of the rods directly engage for permitting the rib sections from telescoping, said slots being arranged to permit the extremities of the brace rods to be moved out of engagement with the said members for collapsing the rib sections.

5. A foldable umbrella comprising a handle rod, ribs composed of slidably connected sections, a runner, a single member between each rib and runner, a joint between each member and the outer section of each rib designed to permit the member to be moved longitudinally, and a locking device between each member and inner section and designed to be interlocked by the longitudinal movement of the member to permit the rib to telescope.

6. In a foldable umbrella, the combination of a handle rod composed of collapsible sections, a slidably connected rib sections, a brace rod capable of a limited independent longitudinal movement when the umbrella is closed and having a terminal projection, a slot and pin connection between the projection and the inner end of the outer rib section to provide for the said limited longitudinal movement of the brace rod, and a stop on the inner rib section arranged to be engaged by the terminal projection of the brace rod for preventing telescoping of the rib sections during the opening and closing of the umbrella, and disengaged by the longitudinal movement of the brace rod for permitting the rib sections to be telescoped.

7. In a foldable umbrella, the combination of telescoping rib sections, one being of T-shaped and the other of U-shaped cross section and nested together for sliding movement, collars on the sections for permanently connecting them for sliding movement, a stop coöperating with one of the collars for limiting the outward movement of the sections, a brace rod having spaced ears spanning and hingedly connected with one of the sections and arranged to permit of a limited longitudinal movement of the rod when the umbrella is closed, and devices on one section with and from which the ears are engaged and disengaged by the longitudinal movement of the brace rod for locking and unlocking the rib sections.

8. In a foldable umbrella, the combination of a handle rod, a plurality of collapsible ribs, a member on the handle rod adapted to engage the tips of the ribs, brace rods arranged to have a limited movement independently of the ribs and in a direction toward the grip end of the handle rod for controlling the collapsing of the ribs, a runner on the handle rod to which the brace rods are hingedly connected and separate from said member, and a device for locking the runner and member together to hold the brace rods in position to permit the ribs to collapse.

9. In a foldable umbrella, the combination of a handle rod composed of collapsible sections, ribs composed of collapsible sections, a runner on the handle rod, brace rods connected with the runner, locking devices between the brace rods and ribs for holding the sections of the latter extended while the umbrella is open or closed, and dependent upon movement of the brace rods in a direction toward the grip end of the handle rod for unlocking the rib sections, and means on the handle rod to which the runner is adapted to be attached for holding the brace rods in unlocking position.

10. An umbrella comprising a handle rod having a notched disk on one end, a hollow handle in which the disk fits, internal projections coöperating with the disk to hold the handle in fixed position and adapted to register with the notches of the disk by turning the handle to permit the handle rod to be telescoped, a runner movable in and out of the handle, ribs on the handle rod, brace rods connected with the runner and ribs and arranged to enter the handle, and means on the outside of the handle for engaging the tips of the ribs.

11. In an umbrella the combination of a handle rod internally threaded on the upper end, a tip consisting of an outer section and shouldered inner section having a threaded portion engaging in the handle rod, means connecting the sections together and holding the inner end of the outer section spaced from the shoulder of the inner section, a ring rotatable on the tip and retained between the sections thereof and removable with the tip, and a covering attached to the ring whereby the covering holds the tip permanently attached to the umbrella.

12. In an umbrella, the combination of a handle rod, a tip having a threaded engagement therewith, and means for holding the tip to the umbrella and permitting it to be removable from the rod, said means consisting of a threaded stud pinned to the tip and screwed into the rod and provided with a shoulder spaced from the tip, a ring disposed between the shoulder and tip, and a covering for the umbrella secured to the ring.

13. The combination of a handle rod, a socketed tip, a headed member secured in the socket of the tip and having a threaded engagement with the handle rod, a rotatable ring held from up and down movement between the head of the member and tip, and a covering attached to the ring.

14. In an umbrella, the combination of a handle rod, a top removably connected therewith, a member secured to the tip and coöperating at one end thereof to form an annular groove, means for removably connecting the member with the handle rod by a turning movement, a ring confined in the groove and rotatable therein, a plurality of ribs, and a covering secured to the tips and to the ring and serving to permanently hold the tip attached to the umbrella.

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

JOHN E. HANNON.

Witnesses:

WILLIAM CONNOLLY,

WILLIAM F. MORRISON.