Dec. 15, 1959 V. MILITANO 2,917,060

ONE-HAND OPENING AND CLOSING UMBRELLAS

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Fig. 1.

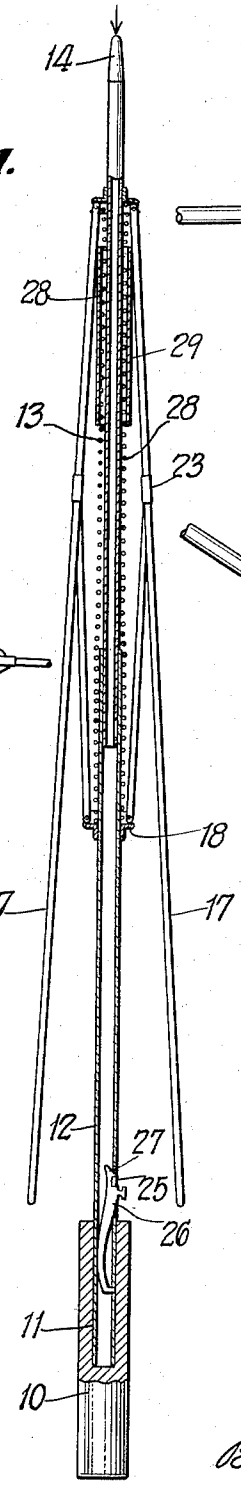


Fig. 2.

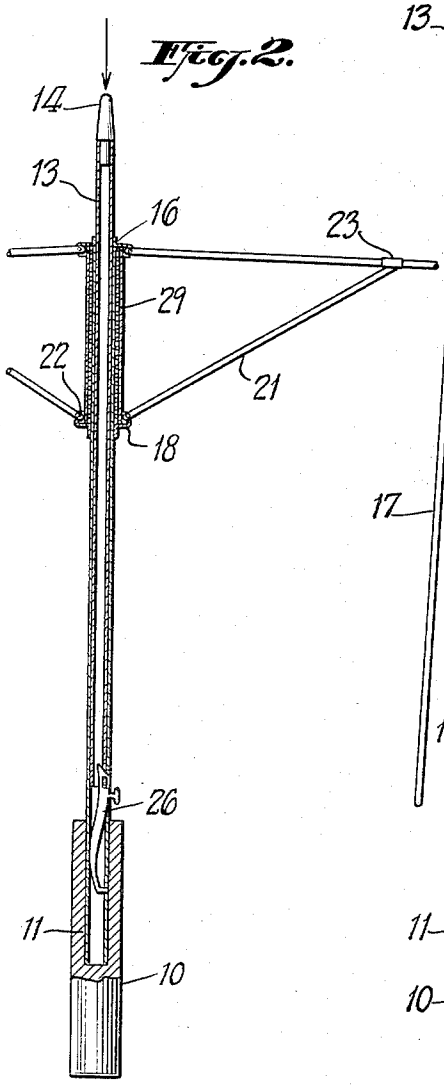
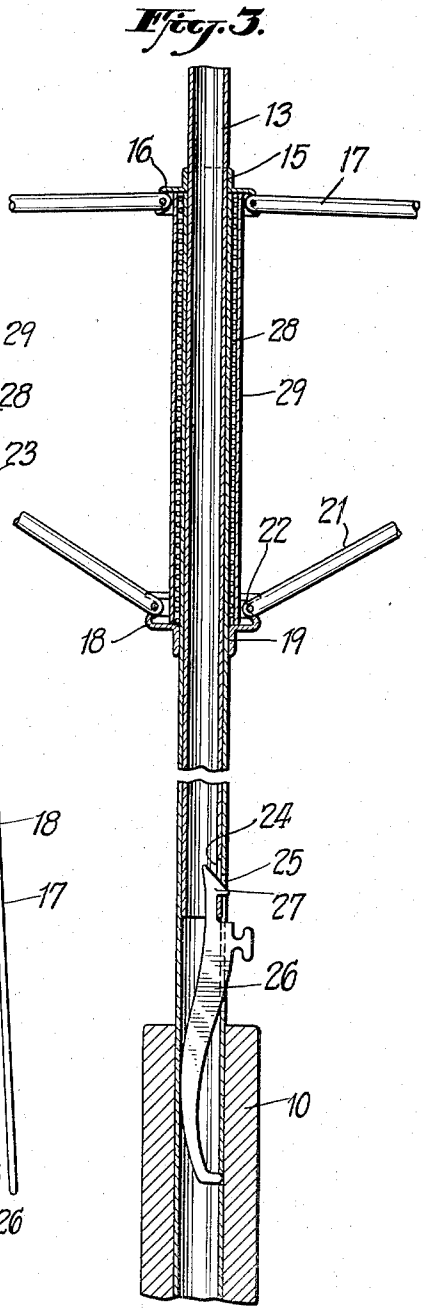


Fig. 3.



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ONE-HAND OPENING AND CLOSING UMBRELLAS

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3 Claims. (Cl. 135—22)

This invention relates to umbrellas involving telescopic tubes, which umbrella can be opened by pressing down on the ferrule or tip end of the umbrella to cause the tubes to telescope and can be closed by moving the tubes apart. Such umbrellas are hereinafter referred to as one-hand opening and closing umbrellas. This term is considered apt because the umbrella while the handle is held in one hand can be pressed down, say with the tip engaging a walk or other surface and thus opened. It can be closed by the user holding it in one hand and releasing the spring catch, whereupon, as hereinafter more fully described, the umbrella closes automatically.

One-hand opening and closing umbrellas are well known. They are disclosed, for example, in United States Patents 594,135 of November 23, 1897, and 601,096 of March 22, 1898. As heretofore made, they have involved special parts, such as special ribs or stretchers, special design of tubes, etc., which add to the cost of the umbrella.

It is among the objects of the present invention to provide a one-hand opener and closer umbrella made up of standard parts which is, therefore, more economical to make.

Other objects and advantages of this invention will be apparent from the following detailed description thereof, in which, for the sake of clarity of description, the parts of the umbrella are described with the umbrella held upright, i.e., the relative position the parts occupy with the handle held by the user and the umbrella cover or canopy above the head of the user. It will be understood that in the specification and claims, where reference is made to upper and lower members, this refers to the relative position of such members when the umbrella is in the aforesaid upright position.

In the accompanying drawing, forming a part of this specification and showing, for purposes of exemplification, a preferred form of this invention, without limiting the claimed invention to such illustrative instance—

Figure 1 is an elevational view, partly in section, of an umbrella frame embodying this invention, in closed position;

Figure 2 is a fragmentary (ribs and stretchers are broken away) elevational view of the umbrella frame of Figure 1 in open position; and

Figure 3 is a fragmentary vertical section, partly in elevation, on an enlarged scale as compared with the scale of Figures 1 and 2, of the umbrella in the open position.

10 indicates an umbrella handle of any well known type to which is suitably fastened one end **11** of lower tube **12**. Telescoped within lower tube **12** is one end of the upper tube **13**, the other end of which may be provided with a suitable ferrule or tip **14**.

Pinned to upper tube **13** as at **15** near the upper end thereof is an upper notch **16** to which is pivoted the ribs **17** of any conventional type. A lower notch **18** is fixed to the lower tube **12** as at **19** near the upper end thereof.

The lower notch **18** may be pinned, welded or otherwise fastened to the wall of lower tube **12** so as not to interfere with telescopic movement between the two tubes **12** and **13**. Stretchers **21**, of any well known type, have one end pivoted to notch **18** as at **22** and the other end pivoted to laps **23** secured to the ribs **17**.

Disposed at the lower end of tube **13** is a slot **24**. Desirably this slot extends about 180° of the circumference of the tube **13**. A locking opening or slot **25** is disposed in tube **12** just above the handle **10**. A spring catch **26** is provided with a locking hook **27** which when slot **24** is aligned with slot **25** passes through the aligned slots as shown in Figures 2 and 3 to lock the umbrella in open position. By having slot **24** extend about 180° of the circumference of tube **13**, alignment of slots **24** and **25** is insured when the umbrella frame is opened. The upper and lower notches **16** and **18** and the ribs and stretchers fastened thereto prevent relative turning movement between tubes **13** and **12**, such that the slot **24**, when the umbrella is opened, will not align with slot **25**, i.e., with this construction the slots **24** and **25** must align when the umbrella is open.

A coil spring **28** is positioned between the upper notch **16** and lower notch **18**, bearing on these notches which, as noted, are fixed respectively to the upper tube **13** and lower tube **12**. Desirably a sleeve **29** encloses spring **28** when the umbrella is in open position. This sleeve **29** is of a length equal to the distance between the upper notch **16** and the lower notch **18** as shown in Figure 3, when the umbrella is in open position. Thus, this sleeve **29** completely covers the spring so that it is concealed from view. Where there are no aesthetic objections to exposing the spring **28**, the sleeve **29** may be omitted. Spring **28** may have a preload of the order of 1 to 2 pounds, i.e., in the position shown in Figure 1 spring **28** exerts a force of the order of 1 pound. When compressed in the umbrella open position, it may be under a compress of about 6 pounds.

When the umbrella is in the closed position shown in Figure 1 sleeve **29** simply floats on the spring **28**. The ribs **17** may be covered with a suitable umbrella cover or canopy.

With the umbrella closed as shown in Figure 1, the user by grasping handle **10** and placing tip **14** against any suitable surface, e.g., floor, walk or wall, and exerting a pressure on the handle, causes the tubes **12** and **13** to telescope to the position shown in Figure 2. This compresses spring **28** and causes tube **13** to descend to the point where slots **24**, **25** are aligned and spring catch **26** enters both slots to lock the umbrella in the open position.

When the user desires to close the open umbrella he may readily do so by depressing spring catch **26**. This can be done conveniently while the umbrella is held in one hand; a finger, e.g., thumb of the same hand can be used to depress the spring catch. Movement of the catch causes hook **27** to move out from the aligned slots **24**, **25**, causing the umbrella to close under the influence of spring **28** which effects restoration of the two tubes **13** and **12** to umbrella closed position.

It will be noted that all the parts of the umbrella are of standard type commonly available in umbrella factories. No special parts are required. The umbrella of this invention is, therefore, relatively inexpensive to make, and is efficient in operation, enabling the user to open and close it employing one hand, leaving the other hand free to hold packages, etc.

Since certain changes may be made in the above-described umbrellas and different embodiments of the invention could be made without departing from the scope of this invention, it is intended that all matter contained

in this description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. An umbrella comprising in combination upper and lower telescopic tubes slidable relative to each other from an umbrella closed position in which the said tubes are disposed extended relative to each other, to an umbrella open position in which the said tubes are telescoped relative to each other, said upper tube having at its lower end a locking slot arranged to register with a locking slot in said lower tube when the umbrella is in the open position, a catch on the lower tube movable into the registered slots to lock the umbrella in open position, a handle on said lower tube, said slot in said lower tube being disposed adjacent said handle, an upper notch fixed to the upper tube near the upper end thereof, a lower notch fixed to the lower tube near the upper end thereof, ribs pivotally secured to said upper notch, stretchers having one end pivotally fastened to said ribs and the other end pivotally fastened to said lower notch, and a coil spring surrounding said tubes positioned between, bearing on, and confined by said notches, said coil spring being compressed by said notches when the umbrella is in the open position and held in said compressed condition by said catch engaging the aligned locking slots in the upper and lower tubes, said catch being adapted to be actuated by the hand of the user holding the handle to release said catch and permit movement of the upper tube relative to the lower tube under the action of said spring on said notches to effect closing of said umbrella.

2. An umbrella as defined in claim 1, in which the slot at the lower end of the upper tube extends circumferentially approximately 180° and a floating sleeve houses said spring, said sleeve being of a length approximately equal to the distance between said notches when the umbrella is in the open position, to completely envelope the spring and conceal it from view.

3. An umbrella comprising in combination upper and lower telescopic tubes slidable relative to each other from an umbrella closed position in which the said tubes are disposed extended relative to each other to an umbrella open position in which the said tubes are disposed telescoped relative to each other, said upper tube having at its lower end a locking slot arranged to register with a locking slot in said lower tube when the umbrella is in the open position, a handle on said lower tube, a spring catch on said lower tube positioned just above said handle, and arranged to enter said locking slots in said tubes when said slots are in registry, an upper notch fixed to the upper tube near the upper end thereof, a lower notch fixed to the lower tube near the upper end thereof, ribs pivotally secured to said upper notch, stretchers having one end pivotally fastened to said ribs and the other end pivotally fastened to said lower notch, and a coil spring surrounding said tubes positioned between, bearing on, and confined by said notches, said coil spring being compressed by said notches when the umbrella is in the open position and being held in said compressed condition by said spring catch engaging the aligned locking openings in the upper and lower tubes, said spring catch being adapted to be actuated by the hand of the user holding the handle to release said catch and permit movement of the upper tube relative to the lower tube under the action of said spring to effect closing of said umbrella.

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