C. A. HART.

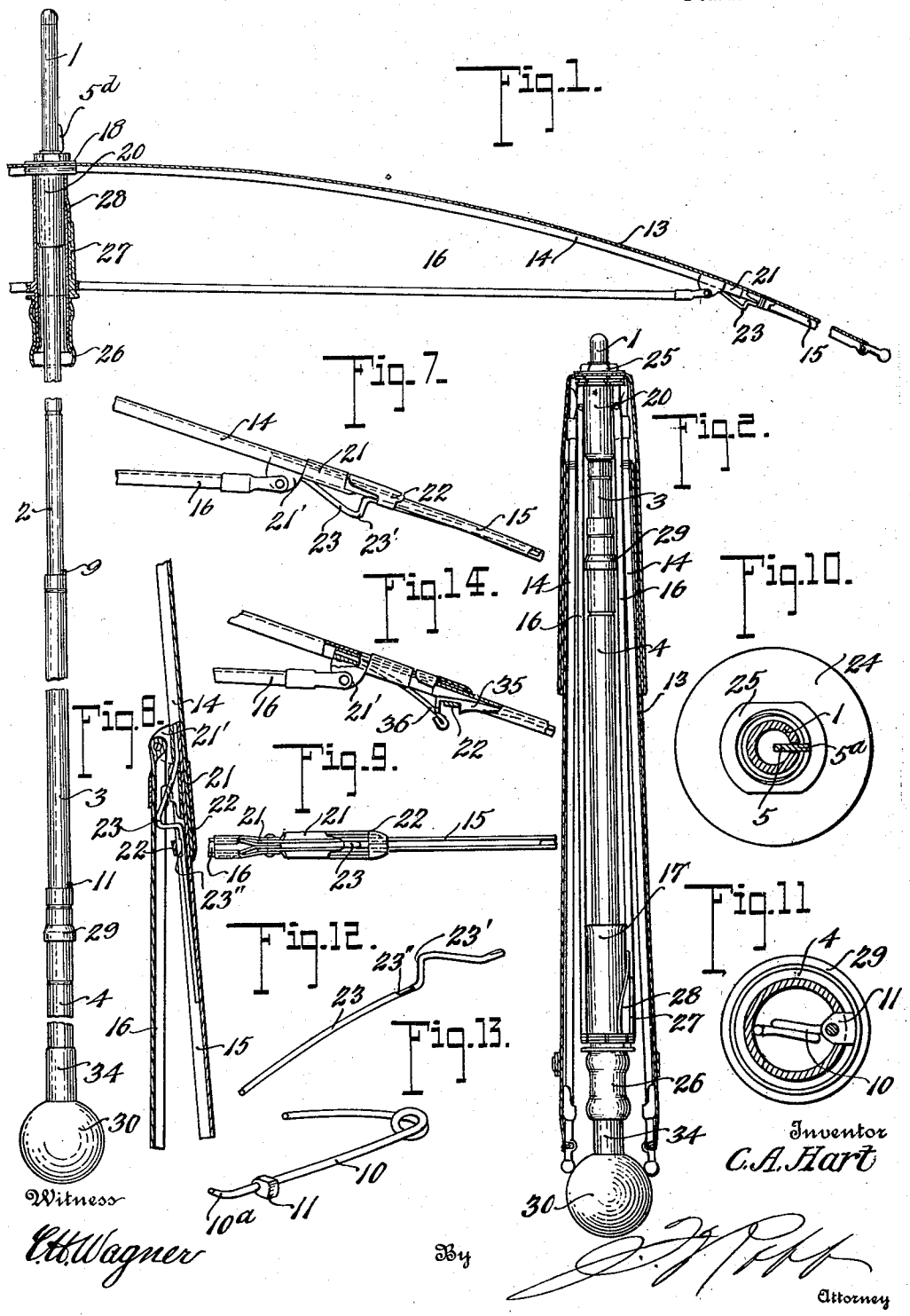
FOLDING UMBRELLA.

APPLICATION FILED OCT. 2, 1915.

1,215,369.

Patented Feb. 13, 1917.

2 SHEETS—SHEET 1.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

C. A. HART.

FOLDING UMBRELLA.

APPLICATION FILED OCT. 2, 1915.

1,215,369.

Patented Feb. 13, 1917.

2 SHEETS—SHEET 2.

Fig. 3.

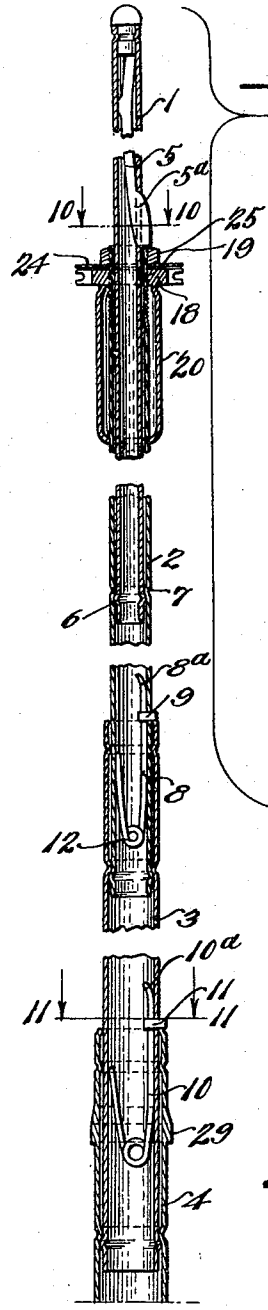


Fig. 6.

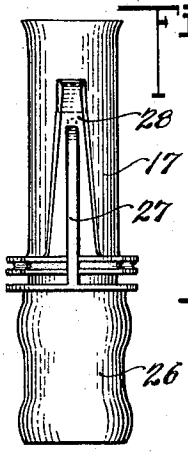


Fig. 5.

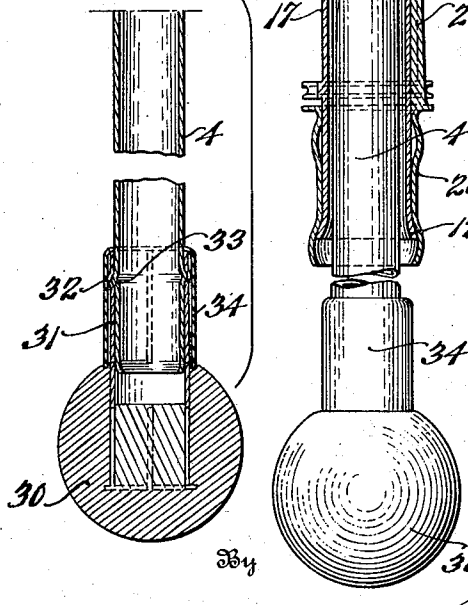
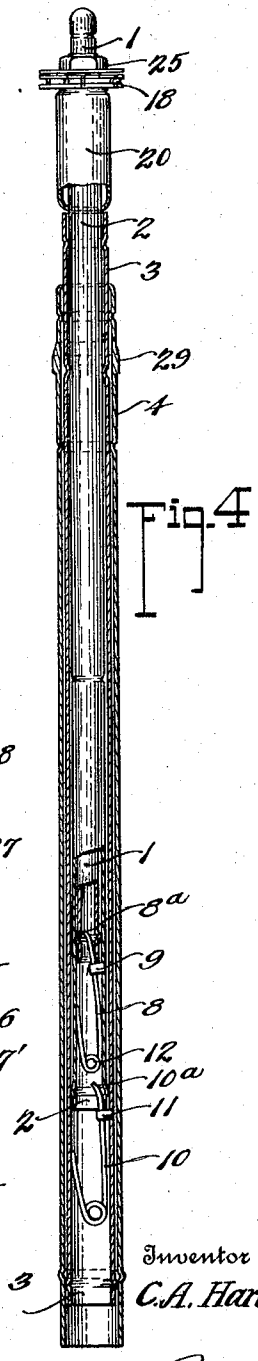


Fig. 4



Witness
Ett. Wagner.

Inventor
C. A. Hart

By J. F. Robb
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES A. HART, OF FINDLAY, OHIO.

FOLDING UMBRELLA.

1,215,369. Specification of Letters Patent. Patented Feb. 13, 1917.

Application filed October 2, 1915. Serial No. 53,797.

To all whom it may concern:

Be it known that I, CHARLES A. HART, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented certain new and useful Improvements in Folding Umbrellas, of which the following is a specification.

This invention has relation to what are commonly known in the art as collapsible or folding umbrellas, and particularly to the type of such umbrellas wherein a collapsing telescopic stick structure is employed together with a cover structure in which the usual stretchers are utilized to coöperate with sectional ribs likewise capable of telescoping in the folding operation.

Among the several objects of the improvements of this invention are the following:

First, to provide an umbrella of the class described in which the stick is a unit structure and the cover structure including the cover proper, ribs, stretchers and runner is a separate unit structure, whereby ready detachment of said parts may be accomplished so that the umbrella stick may be used as a walking stick with no umbrella function.

Second, to so construct the cover unit structure as to provide for peculiar movement of the runner on the stick so that the said runner may assume the position near the upper notch carrying the ribs and the strain upon the stretchers is produced in an outward and downward direction in reference to the ribs, such positioning of the runner automatically holding the same in place and avoiding the need for providing a runner catch at the upper end of the stick, the operation of which often causes pinching of fingers as well as having other disadvantages well known.

Third, the connection of the stretchers with the sections of the ribs such that when the runner is automatically maintained in its adjusted position in which the cover is raised, the direction of pressure or strain produced on the ribs by the stretchers will cause the outer sections of the ribs to be positively held at their outermost limits of movements, the stretchers in this respect cooperating with certain locking catches provided in this invention, and commonly used in similar umbrella rib structures.

Fourth, the peculiar attachment of the upper notch to the stick in such a way as to afford an adjustment of said notch and the ribs connected therewith and to insure a proper coöperation of a suitable runner catch carried by the runner with a stop provided at the lower end of the stick, such cooperation holding the umbrella in its down position in the customary manner.

Fifth, the provision of peculiar locking catches carried by the telescopic sections of the stick whereby said sections are held in extended positions.

Sixth, the provision of a novel form of runner including an operating member, the movement of which is adapted to release the runner catch engaging the stop at the lower end portion of the stick.

Seventh, the provision of a peculiar form of detachable handle at the lower end of the stick, the same being so constructed as to facilitate quick removal and displacement so that different forms of handles, such as used for ladies' and gentlemen's umbrellas may be employed alternatively according to a whim or preference.

Eighth, the general mounting of the unit cover structure upon the stick and formation of the stick sections that the cover may rotate upon the stick when struck by way of an accident or likewise, the result being often to prevent the tearing of the cover or other damage thereto.

In addition to the foregoing objects, it is contemplated to devise features of detail construction included in said objects all with a view to simplifying the problem of manufacture of collapsible umbrellas to the end of enabling the production of such umbrellas at a minimum of cost and embodying a minimum degree of complicacy of construction, the latter being the customary defect of such umbrellas as have heretofore been put before the trade.

In the accompanying drawings,

Figure 1 is a fragmentary view of the complete umbrella, embodying the invention, in upraised condition, the cover and runner features of the umbrella being illustrated in section.

Fig. 2 is a similar view, complete, however, showing the umbrella collapsed as when not in use.

Fig. 3 is a sectional view of the umbrella stick made substantially of the size for actual use, the sections of the stick being broken away and the lower end portion of

the handle separated from the main portion of the stick to facilitate purposes of illustration.

Fig. 4 is a sectional view substantially in full size, like Fig. 3, illustrating the stick alone, and the handle being omitted and parts broken away at intervals.

Fig. 5 is a sectional view bringing out more clearly the runner construction.

Fig. 6 is a view in elevation of the runner construction.

Fig. 7 is a detail view of the rib locking catch device, as when the ribs are extended.

Fig. 8 is a similar view to Fig. 7, as when the ribs are in the positions assumed thereby when the cover of the umbrella is lowered.

Fig. 9 is a bottom view of the parts shown in Fig. 7.

Fig. 10 is a cross section on the line 10—10 of Fig. 3.

Fig. 11 is a cross section on the line 11—11 of Fig. 3.

Fig. 12 is a detail view of the preferred form of rib locking spring.

Fig. 13 is a detail view of one of the locking catches for the telescopic sections of the stick.

Fig. 14 is a view similar to Fig. 7, showing a modified form of rib locking catch.

The stick structure.

As seen best in Figs. 1, 3 and 4, the stick is composed of the sections 1, 2, 3 and 4. The section 1 telescopes in the section 2, the section 2 in the section 3, and the section 3 in the section 4. The stick sections are adapted to be held in extended positions by the uppermost catch 5 which consists of a plate wedged in the top section 1, said plate having the catch portion 5^a extending through a slot in said section and leaning over the upper end of the section 2. The extension movement of the section 1 in the section 2 is limited by abutment of a pressed out annular rib 6 at the lower end of the section 1 engaging a pressed in annular rib 7 upon the section 2, and similar means are utilized for the sections 3 and 4 to limit the extension movements of the latter. To hold the section 2 locked in extended position in relation to the section 3, said section 2 has the spring catch 8 therein formed with the nib 9 passing through an opening in the section 2 and adapted to engage the upper end of the section 3. A similar spring catch 10 and nib 11 are used and coöperate in a similar way intermediate the sections 3 and 4. The catches 8 and 10 being alike, one only is described, the same being a feature of the invention. This catch is made from a length of spring wire bent upon itself to form the spring loop 12, the ends of the wire being compressed in the space within the section of the stick in which it is mounted and the spring action tending to force nib 9 out to engage an adjacent section and to maintain it in the opening of the section through which it passes so that liability of accidental displacement of the catch is avoided, though said catch may be quickly removed by forcing its nib 9 sufficiently inward to permit of a suitable tool withdrawing the whole catch from the hollow section carrying the same.

To collapse the stick, it is only requisite to press the catch portion 5^a of the member 5 inward whereupon the section 1 may be forced into the section 2. The lower end of the section 1 is then capable of engaging the inwardly curved actuating end 8^a of the catch 8 whereby said end is forced inward until the nib 9 is disengaged from the section 3 whereupon movement of the section 2 into the section 3 may be produced. Thereupon the lower inner end of the section 2 will engage the actuating end 10^a of the catch 10 and disengage the nib 11 of the catch in the same manner as before described in respect to catch 8, so that the section 3 may then be forced into the section 4 by way of continuance of the telescopic collapsing operation of the stick. The parts will then have assumed the position shown in Fig. 4, the extended positions being illustrated in Fig. 3.

The cover structure.

As previously intimated, the cover structure is a unit composed of the cover 13 of cloth as usual, the ribs 14 having the outer collapsing sections 15, the stretchers 16, the runner 17, and the notch 18. The notch 18 is internally threaded (see Fig. 3) so as to screw upon the threads formed on the upper end of the stick section 2, as seen at 19 in Fig. 3. The notch is formed with a tubular extension 20 over which the upper tubular portion of the runner 7 is adapted to engage and fit with a fair degree of snugness. Each stretcher 16 is pivoted to the ears of a loop 21 folded around the rib 14 and said rib 14 is formed with a loop 22 folded around the coacting section 15 of said rib, which section 15 is rigidly connected with the first-named loop 21. A spring catch 23 is rigidly attached at its upper end to the member 21 between the sides of the ears 21′. The other end of the catch 23 passes through the loop 22 as seen in Fig. 7 and is formed with the shoulder 23′ and the notch 23″ seen best in Fig. 12. The notch 23″ of the catch 23 is adapted to engage the loop 22 of the rib 14 and since the catch 23 is virtually carried by the section 15 of said rib, the catch 23 is adapted to lock the ribs in their extended positions. When, however, the umbrella is down, the shoulder portion of the notch 23″ of the catch 23 is adapted to engage the stretcher and by abnormal pressure forcing the ribs toward the

stretchers. When the parts have assumed the positions shown in Fig. 8 the catches 23 will have their notches 23'' disengaged from the loops 22. Then upon disengagement of the catch 5ª of the outermost section 1 of the stick, it is possible to collapse the stick and simultaneously collapse the cover structure by merely forcing the section 1 of the stick toward the handle, the rib sections 15 sliding in the ribs 14 in such action. This operation is generally the same as that produced in collapsible umbrellas heretofore proposed.

The connection of the notch 18 with the stick is adjustable by means of the threads 19 previously referred to, and the advantage of this connection is that it permits of ready detachment of the notch from the stick, which detachment is made somewhat more effective by the provision of a washer 24 and detachable nut 25 just above said notch as seen in Fig. 3. The detachment of the notch, as suggested, permits of quick removal of the entire cover structure as a unit in which unit is included the cover cloth, the ribs, the stretchers, and the runners 17 with which the inner ends of the stretchers are connected.

The runner 17 is best seen in Figs. 3 and 5 and is provided with an actuating member 26 in the form of a sleeve slidable on the lower portion of said runner. The sleeve 26 has a cam 27 projecting upwardly therefrom and operating in a slot formed in a locking catch 28 carried by the upper portion of the runner. At its upper end the cam 27 is beveled to slide between the catch 28 and the lowermost section 4 of the stick so that by pressing upward on the actuating member or sleeve 26 the catch 28 will be pressed outward slightly to disengage it from the stop 29 at the lower end of the stick with which stop the catch 28 coöperates to hold the umbrella down in the same manner as it is common in all umbrellas for the runner to engage a runner catch near the handle of the stick. Owing to the peculiar camming action of the part 27 in respect to the catch 28, the normal tendency of the catch 28 to spring inward toward the stick holds the actuating sleeve 26 at the lower limit of its movement and returns it to such position after upward pressure thereon to disengage the catch 28 from the stop 29. Downward movement of the sleeve 26 on the runner 17 is limited by swaging outward the lower extremity of the runner to form an annular projection 17'.

To facilitate the removal of the handle of the stick especially for the purposes of interchanging handles so that purchasers may have any desired shape of handle with a selected umbrella, the detachable connection between the handle and stick is used as shown in Fig. 3. The handle 30 itself is formed with a split sleeve 31 provided with an internal annular groove 32, said sleeve being adapted to be slipped over the lower section of the stick, which has a slight annular projection 33 so that an interlocking action between the groove 32 and the projection 33 is afforded. The handle is locked from displacement on the stick by a locking sleeve 34 of a size sufficient to enable it to be moved downwardly on the stick over the split sleeve 31 pressing said sleeve into proper engagement with the section 4 of the stick in an obvious manner.

A modified form of catch for the sectional ribs is shown in Fig. 14. In this instance, the catch 35 is notched to engage the lower loop 22 of the rib 14 to hold the rib sections locked in extended positions substantially in the manner previously described. An actuating member 36 in the form of a piece of spring wire is attached to the member 21 intermediate the ears 21' and extends to a point in which it engages a notch in the lateral free extremity of the catch 35. In the rib collapsing operation, therefore, the stretchers 16 will engage the loop-shaped extremity of the actuating members 36 and by pressing thereagainst will force the catches 35 outward sufficiently to disengage the notched portions of the catches from the loop 22 and permit of collapsing the ribs in the customary manner.

All of the various parts of the umbrella, as above set forth, are especially constructed with a view to simplicity, cheapness of manufacture, ease of assemblage, and other requisite advantages from a commercial viewpoint.

An important feature of the invention lies in the construction and action of the runner 17 whereby in the raising of the umbrella, said runner is forced toward the upper end of the stick until the tubular extension 20 of the notch 18 is received by the tubular upper end of the runner with slight frictional contact and the movement of the runner limited by direct engagement with the notch. When the raising has been so positioned, the points of connection of the stretchers 16 with the runner will then be elevated sufficiently that the direction of pressure or strain created by the stretchers against the ribs will be produced in an outward and downward direction (see Fig. 1). In other words the runner might be said to pass the dead center point of the connection of the stretchers with the stick, and, therefore, not only does the pressure or strain action of the stretchers properly maintain the cover upraised but it holds the runner in its uppermost position by positive pressure without requiring the use of a runner catch. Furthermore, should any of the catches 23 or 35, as the case may be, fail to become engaged with the members 22, in the operation

of extending the ribs, the tendency of the stretchers 16 will be to force the sections 15 outward to the outer limits of their movements and rectify the inadequacy in the positive locking of the ribs in their extended positions required.

In respect to catch 23, it may be noted that the portion having the notch 23'' is in effect a locking member whereas the upper end portion of the catch is a spring element coöperative with such locking member; likewise the parts 35, 36 are practically a locking member and a spring stretcher engaging member respectively.

Having thus described my invention, what I claim as new is:

1. In an umbrella, the combination of a stick, a cover structure connected with the stick and including stretchers, a runner connected with the stretchers and movable on the stick into a position in which the stretchers exert an outward and downward tension action on the ribs tending to maintain the cover structure in open position, and means on the stick adapted to be received in the runner and to snugly and frictionally engage with the latter to prevent accidental displacement of the runner from its rib tensioning position.

2. In an umbrella, the combination of a stick, an upper notch thereon, ribs connected with said notch, a cover carried by the ribs, stretchers connected with the ribs, a runner connected with the stretchers and movable on the stick to a position wherein the stretchers exert an outward and downward tension action on the ribs, and an upward pressure against the runner whereby the latter is held against downward movement when in position with the cover raised, and whereby the ribs for the cover are maintained in raised position, said notch being formed with a tubular extension, and the runner being adapted in its position with the cover raised to frictionally receive said extension.

3. In a collapsible umbrella, a collapsible stick structure composed of telescoping sections, a catch disposed in one of said sections and consisting of a piece of spring wire bent upon itself to form a spring loop, and spaced side portions bearing outwardly against said section, a nib on one of said side portions of the catch passing through said section thereby interlocking the catch against displacement and adapted to engage an adjacent section to lock the sections in an extended position, and another section telescoping in that carrying the catch and engageable with the free end of one of the side portions of the catch to disengage the nib of the latter from its locking position, said free end of the catch being bent inward to coact with the telescoping section.

4. In a collapsible umbrella, the combination of a stick and a cover structure including inner and outer rib sections of channel metal, locking means for holding said rib sections extended consisting of a spring catch, a stretcher pivotally secured to the inner section and movable therewith and securing the upper portion of the said catch in place, the outer rib section having a loop receiving the inner section above mentioned, said catch being formed with a notch to engage the last mentioned loop so as to lock the rib sections in extended positions, the catch being also formed with an offstanding shoulder intermediate its end portions, and a stretcher connected with the pivot loop of the rib section carrying the catch and adapted to press against the shoulder of the catch to disengage the second mentioned loop from the notch of the catch whereby to permit of relative movement of the sections of the rib, the outermost and innermost portions of the catch being received in the channels of the channel metal comprising the said sections.

5. In an umbrella, the combination of a stick comprising a tip section, a catch carried by the tip section to coöperate with the adjacent portion of the stick to hold the tip section extended, a notch screwed upon the stick adjacent to said tip section, a cover structure comprising ribs connected with said notch, and stretchers, a runner mounted on the stick and attached to the stretchers, and a nut screwed upon the stick aforesaid to engage the notch and removable to permit of detachment of the cover structure as a whole by unscrewing of the nut from the stick and removal thereof along with the runner and other parts of the cover structure, said catch engaging said nut to prevent accidental unscrewing of the nut as well as maintaining the tip in proper relation to the cover structure.

In testimony whereof I affix my signature in presence of a witness.

CHARLES A. HART.

Witness:
H. C. ROBB.

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