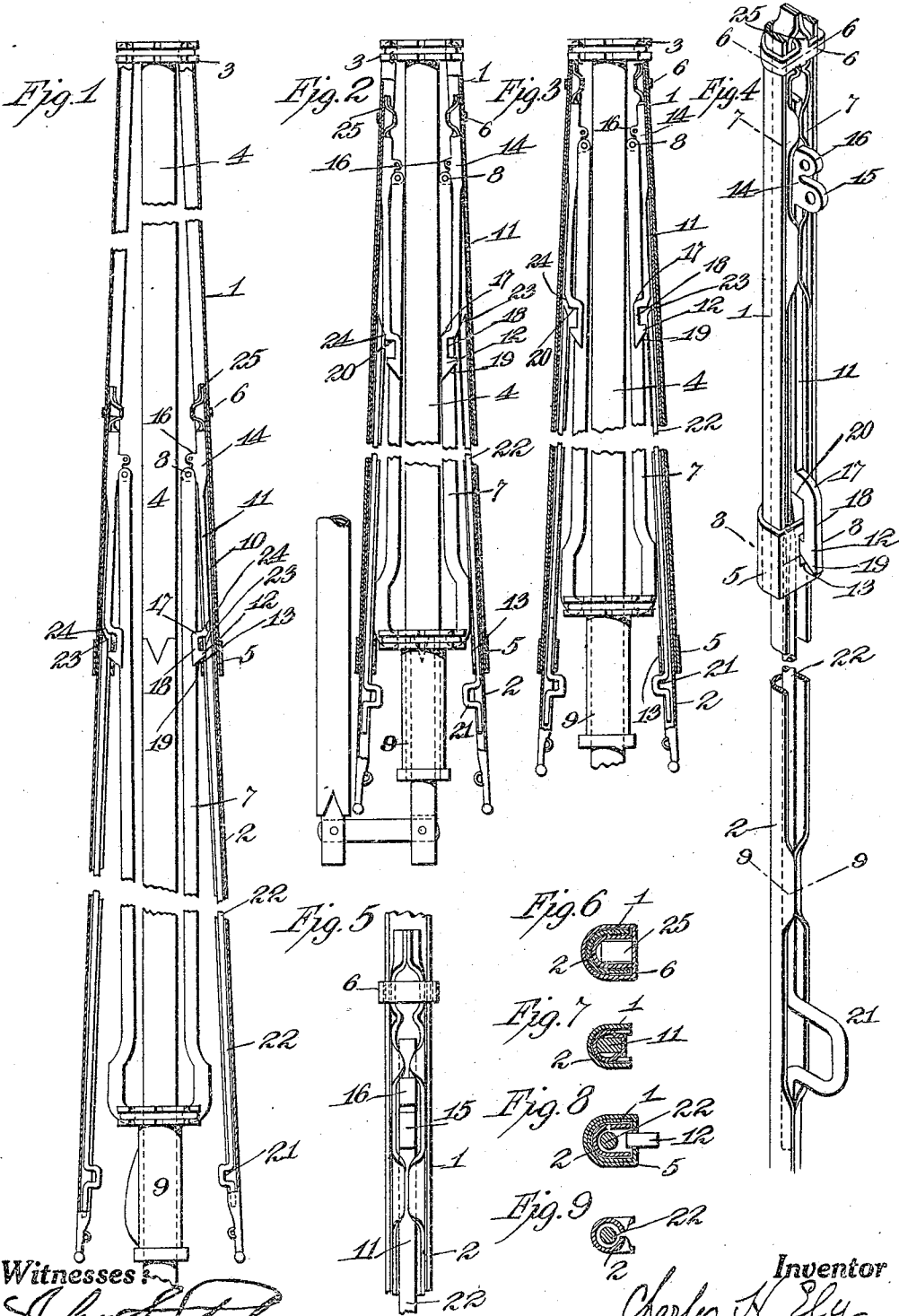


949,759.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses:
John S. Smith
Wm. J. Casey

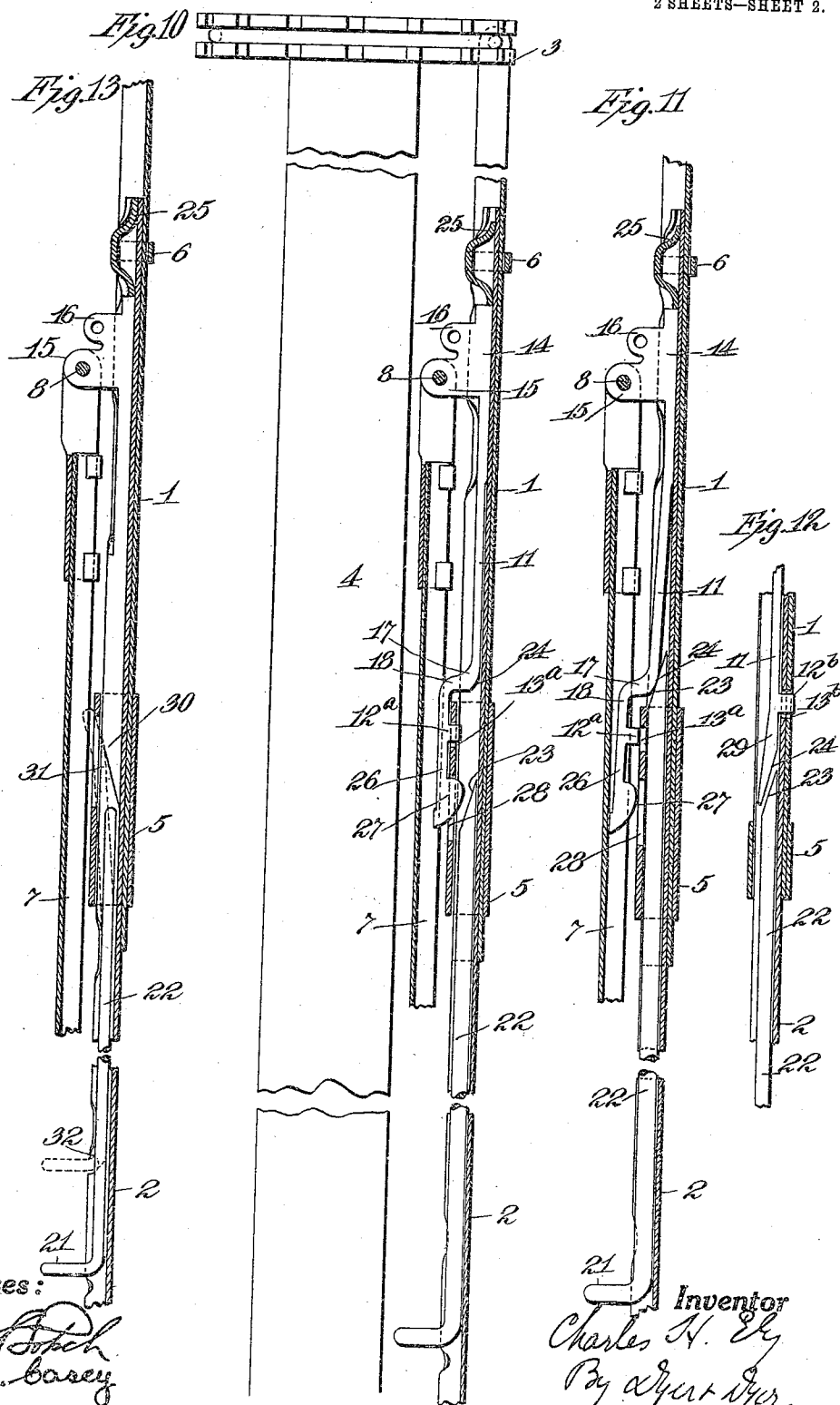
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949,759.

C. H. ELY.
FOLDING UMBRELLA.
APPLICATION FILED MAY 10, 1909.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES H. ELY, OF EAST ORANGE, NEW JERSEY.

FOLDING UMBRELLA.

949,759.

Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed May 10, 1909. Serial No. 495,133.

To all whom it may concern:

Be it known that I, CHARLES H. ELY, a citizen of the United States of America, residing in the city of East Orange, county of Essex, State of New Jersey, have invented a certain new and useful Folding Umbrella, of which the following is a specification.

This invention relates to folding umbrellas of the type in which the ribs are made of a plurality of telescoping sections.

The objects I have in view are to provide a simple and effective lock for the sections and to produce a rib which will be strong and durable. These and further objects will appear from the following specification and accompanying drawings, considered together or separately.

In the drawings: Figure 1 is a sectional view of a portion of an umbrella frame embodying my invention, with the sections of the ribs extended and locked. Fig. 2 is a similar view with the ribs telescoped and unlocked. Fig. 3 is a similar view but with the sections in position to be locked when extended. Fig. 4 is a perspective view of the operative parts of a rib. Fig. 5 is a front view of a portion of the same. Figs. 6, 7, 8 and 9 are sections on the lines 6—6, 7—7, 8—8 and 9—9, respectively, of Fig. 4. Fig. 10 is an enlarged detail view, showing the rib sections locked. Fig. 11 is a similar view showing the rib sections unlocked. Fig. 12 is a modification; and Fig. 13 is another modification.

In all of the views like parts are designated by the same reference characters.

In the drawings each rib is shown as comprising an upper section 1 and a tip section 2. These sections are best made of what is termed in the art "paragon design"; that is to say,—they are made of sheet metal formed of substantially U cross section. The upper section 1 is pivoted to the crown 3 of the usual type, and in the usual manner. The crown 3 is carried by the staff 4, which is made to be foldable in any well known manner. The tip section 2 is of smaller cross section than the upper section 1 and is arranged so as to telescope within it. When the rib is distended, the two sections overlap a sufficient extent to make a rigid connection. When the umbrella is collapsed the tip section slides in place within the upper section.

One object of the present invention is to produce an efficient device for preventing

collapsing of the umbrella, and at the same time to make such device easily disengage when it is desired to collapse the umbrella.

For the purpose of connecting the two sections together, suitable bands are provided which are carried by one section and surround the other. In the drawings a lower band 5 and an upper band 6 are illustrated. The lower band 5 is secured to the upper section 1 at or adjacent to its free or lower extremity. The upper band 6 is secured to the tip section 2 at or adjacent to its inner or upper extremity. The upper band 6 surrounds the upper section 1 and slides upon the same as the rib is extended or collapsed. The lower band 5 remains stationary,—the tip section 2 lying within it. These two bands provide a rigid splice for the two sections of the rib when the rib is distended (as shown in Fig. 1). The two bands are sufficiently far apart to produce an overlapping joint of adequate strength.

The stretcher 7 is secured by a pivot 8 to the tip section 2 and moves with it. This stretcher is operated in the manner usual to all umbrellas, its lower end being pivoted to the sleeve 9 in the usual manner, such sleeve being of the usual type. The stretcher is, as usual in non-folding umbrellas, rigid, in the sense of being non-telescoping and non-collapsible. The two sections of the rib are of substantially the same length and the stretcher is also approximately this length (although somewhat shorter) so that when the rib is telescoped, the three parts nest together within the same longitudinal space.

For the purpose of holding the rib sections in position, I employ a latch. This latch has a member which is carried by the tip section and has another member which passes through an opening in the upper rib section, such opening being brought in line with the latch member when the rib is extended. The latch is adapted to be disengaged by a device actuatable from the free end of the tip section. According to this invention, I provide a latch for each rib and provide a disengaging device for each latch. The latch is so arranged that it will positively and securely engage when the rib sections are distended, thus making a rigid distensible structure. The details of the latch are as follows: It comprises a movable bar spring member 11. This movable member carries a finger 12. The latch is carried by one section of the rib and the finger 12 is

adapted to engage within an opening 13 formed in the other section. In the embodiment illustrated in Figs. 1 to 11 inclusive, the latch is carried by the tip section 2. While the opening 13 lies within the lower band 5 this is carried by the upper section 1. The movable member 11 I prefer to make of spring metal so that the finger 12 will be forced into the opening 13. One way of making a movable member is to make it of sheet metal with an enlargement 14 at the upper end. This enlargement lies within the tip section 2, and is secured therein by pinching the material against the enlargement, (as shown in Fig. 4). For the purpose of providing for a support for the pivot 8, I provide an ear 15 on this enlargement. Above the ear is a smaller ear or eye 16, forming a means of attachment for the fabric. The portion of the movable member 11 below the enlargement 14 is reduced so as to constitute a spring. This spring carries the finger 12. According to one embodiment of my invention, the lower end of the movable member 11 is offset at 17, so as to produce a depending portion 18, such depending portion carrying the finger 12. The length of the offset 17 is such that the depending portion 18 will lie beyond the plane of the lower band 5, permitting—when the rib is distended—the band to slide under the depending portion 18, allowing the finger 12 to enter the opening 13. The lower side of the finger 12 is beveled, forming a cam 19. This cam is adapted to be engaged by the upper edge of the lower band 5 when the rib is being extended,—thus raising the latch and permitting the finger 12 to slide along the band until it reaches the opening 13, whereupon the elasticity of the spring portion of the latch will cause the finger to enter the opening. The inner face of the offset 17 forms a shoulder 20. This shoulder, by engagement with the upper edge of the lower band, produces a stop and prevents the further distention of the rib sections.

For the purpose of disengaging the latch to permit the collapsing of the rib sections, I provide a device which includes a finger piece 21 located at or near the tip of the rib so that it can be manipulated while the umbrella is wholly closed and the ribs lie against the staff. This finger piece 21 is carried by a wire or rod 22, such wire or rod lying within the hollow of the tip section. The upper end of the wire or rod is beveled, forming a cam 23. This cam is adapted to engage with the beveled surface, forming a cam 24 on the moving member 11 of the latch. The wire or rod 22 is held in place so as to be freely slidable by pinching the walls of the section inward at intervals, so as to inclose the wire or rod. The finger piece 21 may be (as shown in the drawings) formed by bending a loop in the wire or rod.

It is obvious that the finger piece may be made in different ways,—for instance as shown in Figs. 10, 11 and 13, the finger piece being bent outwardly, perpendicular to the rod.

The operation of the device, so far as described, is as follows: The umbrella, when the ribs are distended, is opened and closed in the usual manner. To collapse it, the latches on all of the ribs are disengaged. To do this it is necessary to slide upward the finger piece 21 on each rib. This will cause the cams 23 and 24 to engage, lifting the finger 12 from the opening 13. The ribs can then be simultaneously collapsed by sliding upward the sleeve 9, through the agency of the stretchers 7, whose upper ends being pivoted to the tip sections will slide the latter within the upper sections, assuming the position shown in Fig. 2. The staff may then be folded. Any form of umbrella staff may be employed,—that illustrated being the same as that covered in Patent No. 838,092 issued December 11th, 1906 to Charles H. Ely, James W. Danser and Henry I. Schanck. To distend the ribs, it is necessary to first disengage the cams 23 and 24 by sliding the finger piece 21 toward the tips of the ribs. This may be done manually by separately actuating each finger piece. I prefer the same, however, to be done automatically. This I attain by the following structure: I locate the finger piece 21 in such relation to the rest of the sections that, when the ribs are completely collapsed, this finger piece will come in engagement with the lower edge of the lower band 5. Fig. 2 shows the parts in a position where the rib sections nearly collapse. The cams 23 and 24 are in engagement and the latches are swung inward with the finger piece entirely out of the plane of the inner face of the lower bands, which contain the openings 13. By sliding up the sleeve 9, to completely collapse the rib sections, the finger pieces 21 will come into engagement with the lower edges of the lower bands 5 (as shown in Fig. 3), the tip sections continuing to be moved through the agency of the sleeve and stretchers, while the rods 22—having their movement arrested by the engagement of the finger pieces 21 with the lower edges of the lower bands 5—it is obvious that the cams 23 and 24 will be disengaged. The latches through the elasticity of their movable members 11 will be moved inward to the position shown in Fig. 3. If the umbrella now be distended and ready for use, by movement of the sleeve 9 it is apparent that, when the latches reach the lower bands the cams 19 will engage with the upper edge of the lower bands. By continuing the distention of the parts these cams will ride up on the upper edges of the bands, causing the free ends of the fingers 12 to engage the inner faces of

the bands until such fingers drop into the openings 13. When in this position, the ribs will be distended and firmly located in position.

In connection with the invention, certain details of the upper band 6 are important. This upper band is best made of sheet metal and is secured, as already described, to the tip section, sliding with it along the upper section. For the purpose of holding the band in position it is provided with a tongue 25, such tongue entering the hollow of the rib section. This is shown in Figs. 4 and 6. By pinching in the walls of the section above and below the tongue (Fig. 4), the latter will be held in position and with it the upper band 6.

The lower band 5 may be made of D section, the inner face being the flat side and containing the opening 13. This band may be soldered or otherwise secured at or adjacent to the outer end of the upper rib section.

My invention may be modified in many ways. As shown in Figs. 10 and 11, the latch is provided with an additional cam. The finger 12^a is of rectangular shape,—that is to say, the cam 19 is omitted. Beyond the depending portion 18 is a second depending portion 26. This depending portion 26 is a continuing portion of the depending portion 18 and carries at its free extremity a cam 27. This cam 27 is adapted to enter an opening 28, formed in the lower band 5. The cam is of the shape shown, both edges being beveled, the outer edge being inclined well within the inner edge,—that is more toward the crown of the umbrella. This cam 27, when the latch is closed, (as shown in Fig. 10), extends well in. In operation the cam 23 on the rod 22 will engage first with the cam 27. This will move the latch outward, partially disengaging the finger 12^a in the opening 13^a. The further movement of the rod 22 will engage the cam 23 and the cam 24, as before, entirely disengaging the latch. By this arrangement a somewhat stronger device is produced than that illustrated in the preceding modification, in that the finger 12^a may have parallel sides and act as a bolt, locking the two sections together and preventing outward, as well as inward movement. Another advantage is that the strength of the spring portion of the latch may be increased, the latch being disengaged by the cumulative action of the cams 23 and 27 and 23 and 24. A further advantage is that the cam 27, to some extent, acts as a retaining finger.

Another modification of the invention employs a latch which engages with an opening in one of the rib sections instead of in the band. As shown in Fig. 12, the latch carries a finger 12^b which passes through an opening 13^b in the upper section 1. This

latch has a depending portion 29, which carries the cam 24, engageable by the cam 23 on the rod 22. An opening has to be made in the section which carries the latch to permit the finger 12^b to pass through and engage with the opening 13^b.

Another modification of my invention employs a latch which is combined directly with the rod or wire 22. This rod or wire (illustrated in Fig. 13) is formed preferably of flexible metal. Its upper end is rounded, as shown, and is adapted to be engaged against a cam 30. This cam 30 is carried by the tip section in which the rod or wire is carried. The inner end of the rod or wire by engagement with the cam 30, when the rod or wire is slid toward the crown, will ride up upon the cam and pass through an opening 31 formed in the lower band 5. This wire, engaging with the sides of the opening, will lock the lower band and, therefore, secure the two sections of the rib together. According to this modification of the invention, the latch is actuated by moving the finger piece 21 toward the crown of the umbrella and is disengaged by moving it in the opposite direction. It is controlled by the direction of movement of the finger piece as with the other embodiments of the invention. For the purpose of locking the latch in position in the modification shown in Fig. 13, a notch 32 may be provided in the tip section at a suitable point, so that the finger piece 21 may be caused to engage within the notch when the rod or wire is in the position to lock the two sections of the rib together. This notch 32 may be used in connection with other elements of the invention if so desired.

In accordance with the provisions of the patent statutes I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative and that the invention can be carried out in other ways.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a folding umbrella, the combination of a rib composed of two telescoping sections, a lock locking the sections together when extended, a rod carried by the outer or trip section and movable thereon for actuating the lock and a rigid stretcher pivoted to the inner end of the outer rib section, the two rib sections and the stretcher being approximately the same length, substantially as set forth.

2. In a folding umbrella, the combination of a rib composed of two telescoping sections, a spring latch locking the sections together when extended, a rod carried by the outer or tip section and movable thereon

to release the spring latch and a rigid stretcher pivoted to the inner end of the outer rib section, the two rib sections and the stretcher being approximately the same length, substantially as set forth.

3. In a folding umbrella, the combination of a rib composed of two telescoping sections, a spring latch carried by the outer or tip rib section at its inner end, a keeper, with which the spring latch engages when the rib sections are extended, carried by the inner rib section at its outer end, a rod carried by the outer rib section and movable thereon to release the spring latch and a rigid stretcher pivoted to the inner end of the outer rib section, the two rib sections and the stretcher being approximately the same length, substantially as set forth.

4. In a folding umbrella, a rib composed of two telescoping sections, in combination with a spring latch locking the sections when extended, means for disengaging the spring latch and holding it in the disengaging position, and means actuated by the telescoping of the sections for resetting the latch, substantially as set forth.

5. In a folding umbrella, a rib composed of two telescoping sections, in combination with a spring latch locking the sections when extended, a rod carried by the lower rib section for disengaging the spring latch and holding it in the disengaging position, and means actuated by the telescoping of the sections for moving the rod so as to reset the latch, substantially as set forth.

6. In a folding umbrella, the combination of a rib composed of two telescoping sections, a spring latch locking the sections together when extended, a rod carried by the outer or tip rib section and sliding inwardly thereon to disengage the spring latch and hold it in the disengaging position and a projection on the rod which strikes the outer end of the inner rib section when the sections are telescoped so as to move the rod outwardly and release the spring latch, substantially as set forth.

7. In a folding umbrella, the combination of a rib composed of two telescoping sections, a spring latch carried by the outer or tip rib section at its inner end, a keeper,

with which the spring latch engages when the rib sections are extended, carried by the inner rib section at its outer end, a rod carried by the outer rib section and sliding inwardly thereon to disengage the spring latch and hold it in the disengaging position and a projection on the rod which strikes the outer end of the inner rib section when the sections are telescoped so as to move the rod outwardly and release the spring latch, substantially as set forth.

8. In a folding umbrella, the combination with two telescoping rib sections, of a keeper carried by the inner rib section, a spring bar latch, carried by the outer section, having a head engaging the keeper and provided back of the head with a cam surface, and a sliding rod carried by the outer section and provided with a cam end which engages the cam surface of the latch to disengage the latch from the keeper and hold it in the disengaging position, substantially as set forth.

9. In a folding umbrella, the combination with two telescoping rib sections, of a keeper carried by the inner rib section, a spring bar latch, carried by the outer section, having a double pointed engaging head and a cam surface back of the head and a sliding rod carried by the outer section and provided with a cam end which engages the cam surface of the latch, substantially as set forth.

10. In a folding umbrella, the combination with two telescoping rib sections, of U-shape cross-section, of a keeper carried by the inner rib section at its outer end and extending across the open side of the rib, a spring bar latch engaging said keeper when the rib sections are extended, such bar latch being secured in the outer rib section at its inner end by the pinching of the sides of the rib upon the fixed base of the latch, and a stretcher pivoted to the fixed base of the latch, substantially as set forth.

This specification signed and witnessed this fifth day of May, 1909.

CHARLES H. ELY.

Witnesses:

LEONARD H. DYER,
JOHN L. LOTSCH.

It is hereby certified that in Letters Patent No. 949,759, granted February 22, 1910, upon the application of Charles H. Ely, of East Orange, New Jersey, for an improvement in "Folding Umbrellas," an error appears in the printed specification requiring correction as follows: Page 3, line 120, the word "trip" should read *tip*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of March, A. D., 1910.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.