

March 11, 1924.

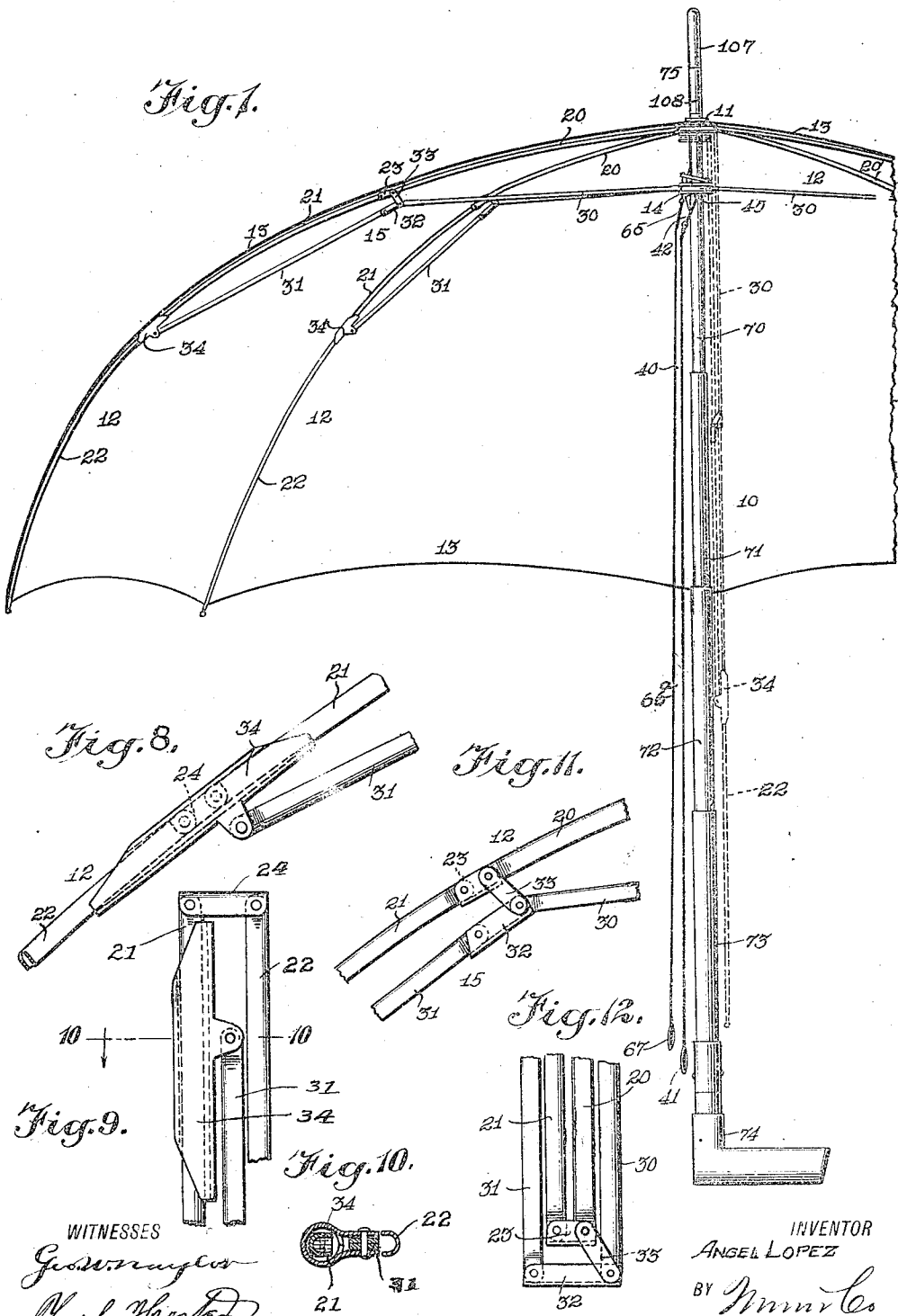
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A. LOPEZ

FOLDING UMBRELLA

Filed Nov. 1, 1920

2 Sheets-Sheet 1



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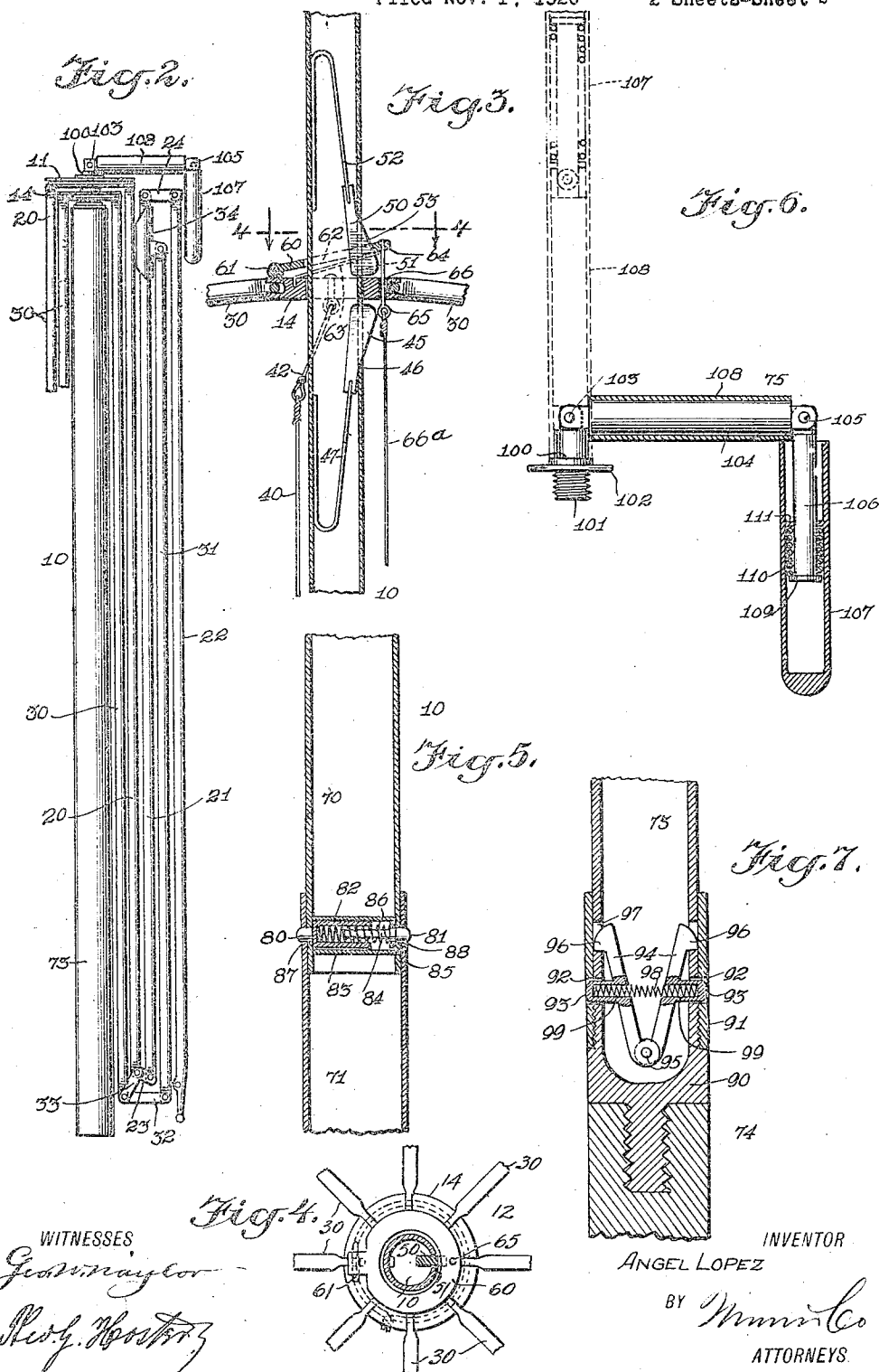
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE.

ANGEL LOPEZ, OF BROOKLYN, NEW YORK.

FOLDING UMBRELLA.

Application filed November 1, 1920. Serial No. 421,115.

To all whom it may concern:

Be it known that I, ANGEL LOPEZ, a subject of the King of Spain, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Folding Umbrella, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved folding umbrella arranged to permit the user to readily open or close the umbrella and to fold the same into a small bundle, handy to carry about.

Another object is to provide a folding umbrella which is exceedingly strong and durable when in open position.

With these and other objects in view the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the umbrella with the parts in extended position and the covering shown thereon.

Figure 2 is an enlarged side elevation of the same with the parts in folded position and the covering omitted;

Figure 3 is an enlarged longitudinal sectional view of a portion of the stick, the runner, the braces connected therewith and the locking and stopping devices for the runner;

Figure 4 is a transverse sectional view of the same on the line 4—4 of Figure 3;

Figure 5 is an enlarged longitudinal sectional view of the locking device for locking adjacent telescoping sections of the stick in extended position;

Figure 6 is a similar view of the sectional point on the outer end of the stick, the parts being shown in folded position;

Figure 7 is an enlarged sectional view of the locking device for locking the removable handle to the stick;

Figure 8 is an enlarged side elevation of the brace and the locking connection for the outer sections of a rib, the parts being shown in extended position;

Figure 9 is a similar view of the same with the parts shown in folded position; 55

Figure 10 is a cross section of the same on the line 10—10 of Figure 9;

Figure 11 is an enlarged side elevation of the link connection between the sectional brace and the inner sections of a rib, the parts being in an extended position; and 60

Figure 12 is a similar view of the same with the parts in folded position.

The umbrella in its general construction comprises a sectional stick 10, a crown 11, 65 ribs 12 radiating from the crown 11 and over which extends a covering 13, the ribs 12 being moved into open or closed position by the use of a runner 14 and braces 15, of which the runner 14 slides on the stick 10 and each brace 15 connects with a corresponding rib 12, as hereinafter more fully explained.

Each rib 12 is formed of three sections 20, 21 and 22, of which the innermost rib section 20 is pivotally connected at its inner end to the crown 11 and the outer end of this rib section 20 is connected by a link 23 with the middle rib section 21 which is pivotally connected by a link 24 with the outer rib section 22. It will be noticed that by this arrangement the rib sections 20, 21 and 22 can swing into extended position, as shown in Figure 1, or into folded position, as illustrated in Figure 2. 85

Each brace 15 is made in two sections 30, 31, of which the inner section 30 is pivotally connected at its inner end with the runner 14 and its outer end is pivotally connected by a link 32 with the outer brace section 31, and a link 33 connects the link 32 with the link 23 of the corresponding rib 12. The outer end of the brace section 31 is pivotally connected with a slide 34 mounted to slide on the rib sections 21 and 22 to enclose the link 24 and thus hold the latter locked in alinement with the rib sections 21 and 22 at the time the umbrella rib is in extended position, as will be readily understood by reference to Figures 1 and 8. 100

When the parts are moved into folded position on moving the runner 14 outward on the stick 10 then the slide 34 moves out of engagement with the rib section 22 and the link 24 and correspondingly slides along the middle rib section 21 thus allowing the 105

outer rib section 22 to swing downward and fold onto the brace section 31, as will be readily understood by reference to Figure 9. The link 23 has a rule or knuckle-joint connection with the corresponding rib sections 20, 21, and the link 32 has a similar connection with the brace sections 30 and 31 to hold the said parts in extended position and prevent folding thereof in an inward direction but to allow folding in an upward direction. When the umbrella is closed or folded, the runner 14 is in uppermost position adjacent the crown 11, as indicated in dotted lines in Figure 1. When it is desired to open the umbrella, the runner 14 is moved downward on the stick 10, and for this purpose use is made of a pull cord 40 provided at its lower end with a handle 41 and at its upper end with a bridle or yoke 42 pivotally connected with the under side of the runner 14 and straddling the upper portion of the stick. The handle 41 is in close proximity to the lower end of the stick 10 and hence the user of the umbrella can readily exert a downward pull on the handle 41 to slide the runner 14 downward on the stick. The downward movement of the runner 14 is limited by a stop 45 extending through a slot 46 formed in the stick 10, and the said stop 45 is attached to the free end of a U-shaped spring 47 arranged within the stick 10 and secured to the inner side thereof, as will be readily understood by reference to Figure 3. The runner 14 when reaching the end of its downward movement by abutting against the stop 45 is locked in place by a locking catch 50 projecting through a slot 51 formed in the stick 10 and the said catch 50 is attached to the free end of a U-shaped spring 52 arranged within the stick and fastened to the inner surface thereof. The catch 50 is provided with a beveled outer side 53 engaged by the runner in its downward movement to press the catch inward and allow the runner 14 to pass, and when the runner 14 reaches the stop 45 it has passed the catch 50 and the latter now swings outward and engages the top of the runner 14 to hold the same against return or upward movement (see Figure 3). In order to unlock the runner 14 it is necessary to swing the catch 50 inward, and for this purpose use is made of a releasing device in the form of a releasing lever 60 pivoted at 61 on the top of the runner 14 and having a central aperture 62 through which passes the stick 10. The releasing lever 60 is normally held in uppermost position by a spring 63 attached to the runner 14 to engage the outer free end 64 of the releasing lever with the inclined or beveled edge 53 of the catch 50 a distance above the lower end of the said catch. The free end 64 is connected with a link 65 extending downward and passing through an

aperture 66 formed in the runner 14. The lower end of the link 65 is connected with a pull cord 66^a extending downwardly and terminating in a handle 67 adapted to be engaged by the user of the umbrella to exert a downward pull on the pull cord 66^a with a view to swinging the releasing lever 60 downward and thereby forcing the locking catch 50 inward out of engagement with the runner 14 to unlock the latter and allow the runner to move upward on the stick 10. When the user releases the handle 67 then the spring 63 returns the releasing lever 60 to uppermost position thus allowing the catch 50 to swing outward into the path of the runner 14 to again lock the latter on the next downward movement of the said runner.

It is understood that when the runner 14 is pulled downward by the user manipulating the pull cord 40 as above explained then the braces 15 swing the ribs 12 into open position with the braces under tension when the umbrella is completely open. By reference to Figure 1 it will be noticed that when the runner 14 is in lowermost position the inner brace sections 30 are slightly inclined downwardly and as the braces are under tension when the umbrella is open it is evident that the runner 14 slides upward on the stick 10 as soon as the runner is released by the catch 50, as above explained. When the runner 14 is moved downward the slide 34 of each brace is moved over the corresponding link 24 and the outer rib section 22 and at the same time the link 33 of each brace moves the rib sections 20 and 21 into extended position, and when the runner 14 has reached the end of its downward movement the rib sections 20, 21 and 22 are in extended position and are securely held therein by the braces 15. When the runner 14 is released and moves upward the brace sections 30 of the braces 15 exert a downward pull by the links 33 on the links 23 to swing the ribs 12 into closed position and at the same time the brace section 31 slides the slide 34 upward on the rib section 21 thus disengaging the outer rib section 22 and the link 24. Thus when the umbrella is in closed position and it is desired to fold the umbrella then it is only necessary for the user to take hold of the middle rib section 21 and swing the same upward into folded position on the rib section 20, it being understood that during this upward swinging movement given to the middle rib section 21 the outer rib section 22 drops of its own accord into folded position, as will be readily understood by reference to Figure 2. It will also be noticed that on folding the rib section 21 as described the brace section 31 is swung upward into folded position relative to the brace section 30. Thus the several sections

of the ribs and braces fold to form a small, short bundle.

The stick 10 is formed of telescoping sections 70, 71, 72 and 73, a handle section 74 and an end or a point section 75 extending beyond the crown 11. The telescoping sections 70, 71, 72 and 73 are held in extended position by spring-pressed locking pins 80, 81 (see Figure 5), of which the locking pin 80 is mounted on the hollow shank 82 fitted to slide in a bearing 83 attached to the smaller section at the lower end thereof. The other pin 81 is provided with a shank 84 extending into the shank 82, and the shank 84 is provided with a collar 85 on which abuts one end of a spring 86 seated in the shank 82 of the locking pin 80. By the arrangement described the two pins 80 and 81 are pressed outward and adapted to engage apertures 87, 88 formed in the upper portion of the larger stick section. It will be noticed that on the user pressing the pins 80 and 81 inwardly, the sections are unlocked and can be telescoped. When it is desired to extend the sections it is only necessary to pull the same apart so that the pins 80 and 81 snap into the corresponding apertures 87 and 88 to lock the sections in extended position. The handle section 74 (see Figure 7) is provided with a shank 90 having a ferrule 91 adapted to slip on to the lower end of the section 73. The ferrule 91 is provided with apertures 92 disposed diametrically opposite each other and adapted to be engaged by locking pins 93 formed on levers 94 pivotally connected with each other at 95. The levers 94 are provided at their free ends with catches or hooks 96 adapted to engage apertures 97 formed on the lower end of the stick section 73 within the ferrule 91. A spring 98 presses the levers 94 apart, the ends of the spring being seated in recesses 99 formed in the locking pins 93. It will be noticed that the catches 96 in engagement with the apertures 97 lock the handle section 74 to the stick section 73, and when it is desired to disconnect the handle section 74 from the stick section 73 then the operator presses the pins 93 inward towards each other thus causing the levers 94 to swing inwardly thereby moving the catches 96 out of engagement with the apertures 97. The ferrule 91 is now unlocked from the stick section 73 to allow of pulling it off of the lower end of the stick section 73.

The point 75 comprises an attaching member 100 having a threaded portion 101 screwing centrally into the crown 11. A collar 102 is formed on the attaching member 100 and is seated on the top of the crown 11. The upper end of the attaching member 100 is connected by a pivot 103 with a rod 104 pivotally connected at 105 with a rod 106 extending into an outer point shell or tubular member 107 adapted to form a

continuation of a shell or tubular member 108 and fitting onto the rod 104. The end of the rod 106 is provided with a collar 109 against which abuts a spring 110 held in the point shell or tubular member 107 and resting on a partition 111 formed in the said shell. When the parts are in extended position, as shown in Figure 1, then the lower end of the shell or tubular member 108 fits on to the attaching member 100 and the shell or tubular member 107 is held on the top of the shell 108 and fits on to the upper end of the rod 104, it being understood that the several parts are held locked in this position by the action of the spring 110 interposed between the rod 106 and the outer shell or tubular member 107. When it is desired to fold the point, the outer shell or tubular member 107 is pulled outward against the tension of the spring 110 to disconnect the shell or tubular member 107 from the rod 104 and thus allow of swinging the shell 107 with the rod 106 into angular relation to the rod 104 and the shell or tubular member 108, which latter can now be slipped outward on the rod 104 to disconnect it from the attaching member 100 and to allow of swinging it into an angular position relative to the attaching member 100.

From the foregoing it will be seen that by the arrangement described the ribs and braces can be readily folded to take up comparatively little room, and the sections of the stick can be telescoped one within the other, and the handle section 74 can be removed from the section 73 while the point 75 can be folded into the angular position shown in Figures 2 and 6 to reduce the length of the bundle to a minimum.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a folding umbrella, a stick, a crown held thereon, ribs pivoted on the crown and each made of an inner section, an outer section and a middle section, links connecting the sections with each other, a runner slidable on the stick, braces each made of an inner and outer section, the inner section being pivoted on the runner, a link connecting the sections of the brace with each other, a link connecting the brace link with the link connecting the inner and middle sections of the rib with each other, and a slide connected with the outer end of a brace and adapted to slide over the link connecting the middle and outer rib sections with each other.

2. In a folding umbrella, a stick, a crown attached thereto, ribs each made in articulated sections, of which the innermost section is pivoted on the said crown, links connecting the rib sections with each other, a runner slidable on the stick and located adjacent the said crown at the time the umbrella is closed and folded, braces for the

ribs and each made in two sections, the inner section being pivotally connected with the said runner, a link connecting the brace sections with each other, a link connecting the brace link with the link of the innermost rib sections, and a slide on each rib and adapted to enclose the link of the outermost rib sections, the outer end of the brace being pivotally connected with the corresponding slide.

3. In a folding umbrella, a stick, a crown attached thereto, ribs each made in articulated sections, of which the innermost section is pivoted on the said crown, links connecting the rib sections with each other, a runner slidable on the stick and located adjacent the said crown at the time the umbrella is closed and folded, braces for the ribs and each made in sections, the innermost section being pivotally connected with the said runner, a link connecting the brace sections with each other, a link connecting the brace link with the link connecting the innermost and the intermediate rib sections, a slide on each rib and adapted to enclose the link connecting the outermost and the intermediate rib sections, the outer end of the brace being pivotally connected with the corresponding slide, a pull string on the said runner for pulling the same into extended position, a locking device mounted on the stick and adapted to engage the said runner at the time the latter is in extended position,

and a releasing device connected with the said locking device to release the latter relative to the runner.

4. In a folding umbrella, a stick, a crown attached thereto, ribs each made in articulated sections of which the innermost section is pivoted on the said crown, links connecting the rib sections with each other, a runner slidable on the stick and located adjacent the said crown at the time the umbrella is closed and folded, braces for the ribs and each made in sections, the innermost section being pivotally connected with the said runner, a link connecting the brace sections with each other, a link connecting the brace link with the link connecting the innermost and the intermediate rib sections, a slide on each rib and adapted to enclose the link connecting the outermost and the intermediate rib sections, the outer end of the brace being pivotally connected with the corresponding slide, a pull string on the said runner for pulling the same into extended position, a locking device mounted on the stick and adapted to engage the said runner at the time the runner is in extended position, a releasing device to release the latter relative to the runner, and a spring mounted stop held on the stick and projecting into the path of the said runner to limit the down sliding movement of the runner.

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