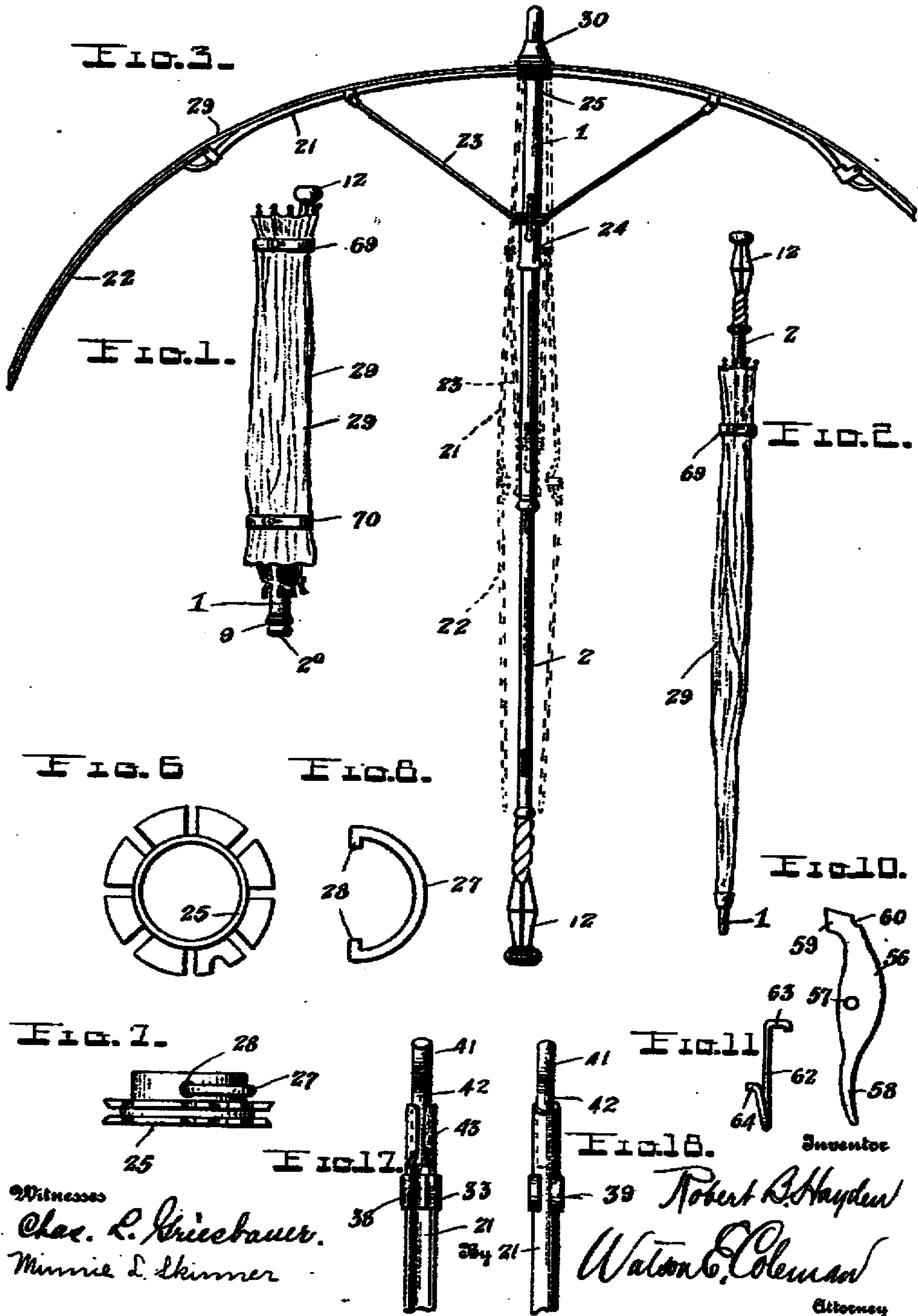


907,231.

R. B. HAYDEN.
FOLDING UMBRELLA.
APPLICATION FILED MAR. 12, 1908.

Patented Dec. 22, 1908.
3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

FIG. 3.

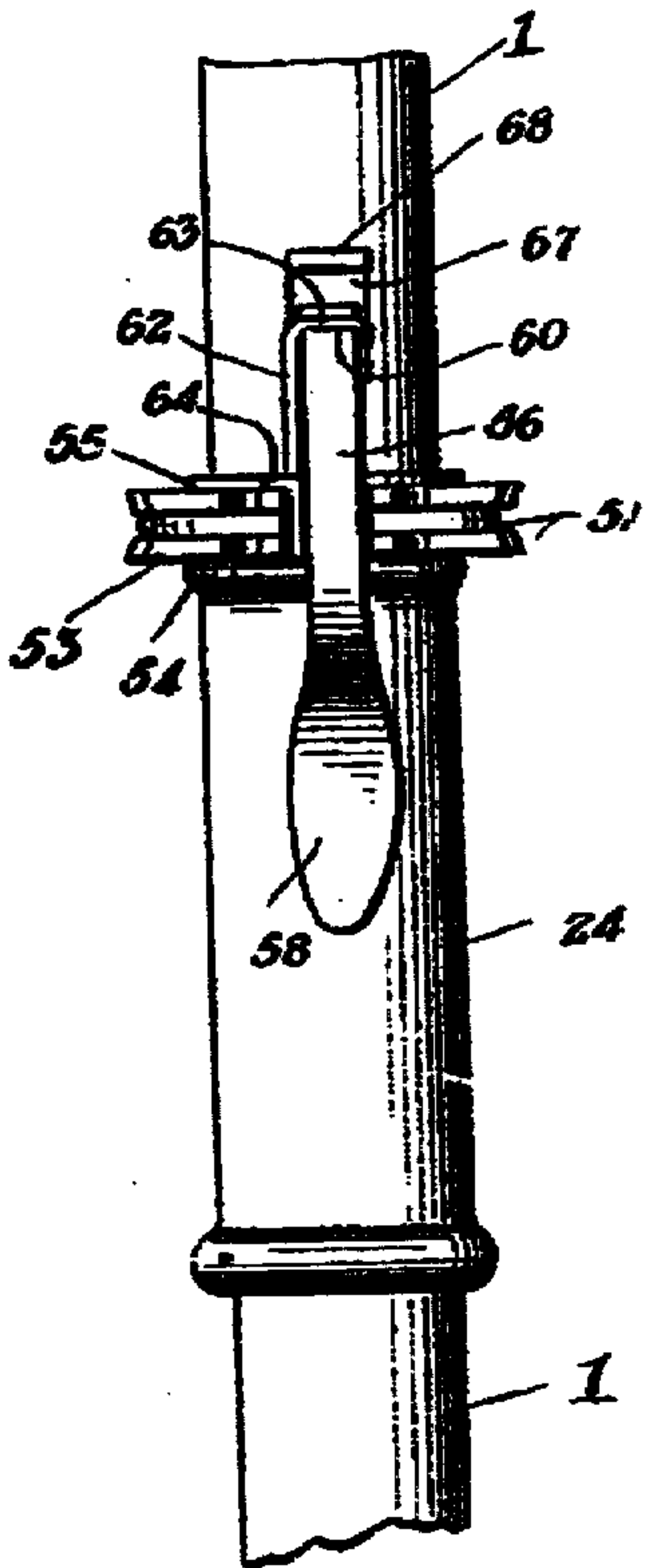


FIG. 4.

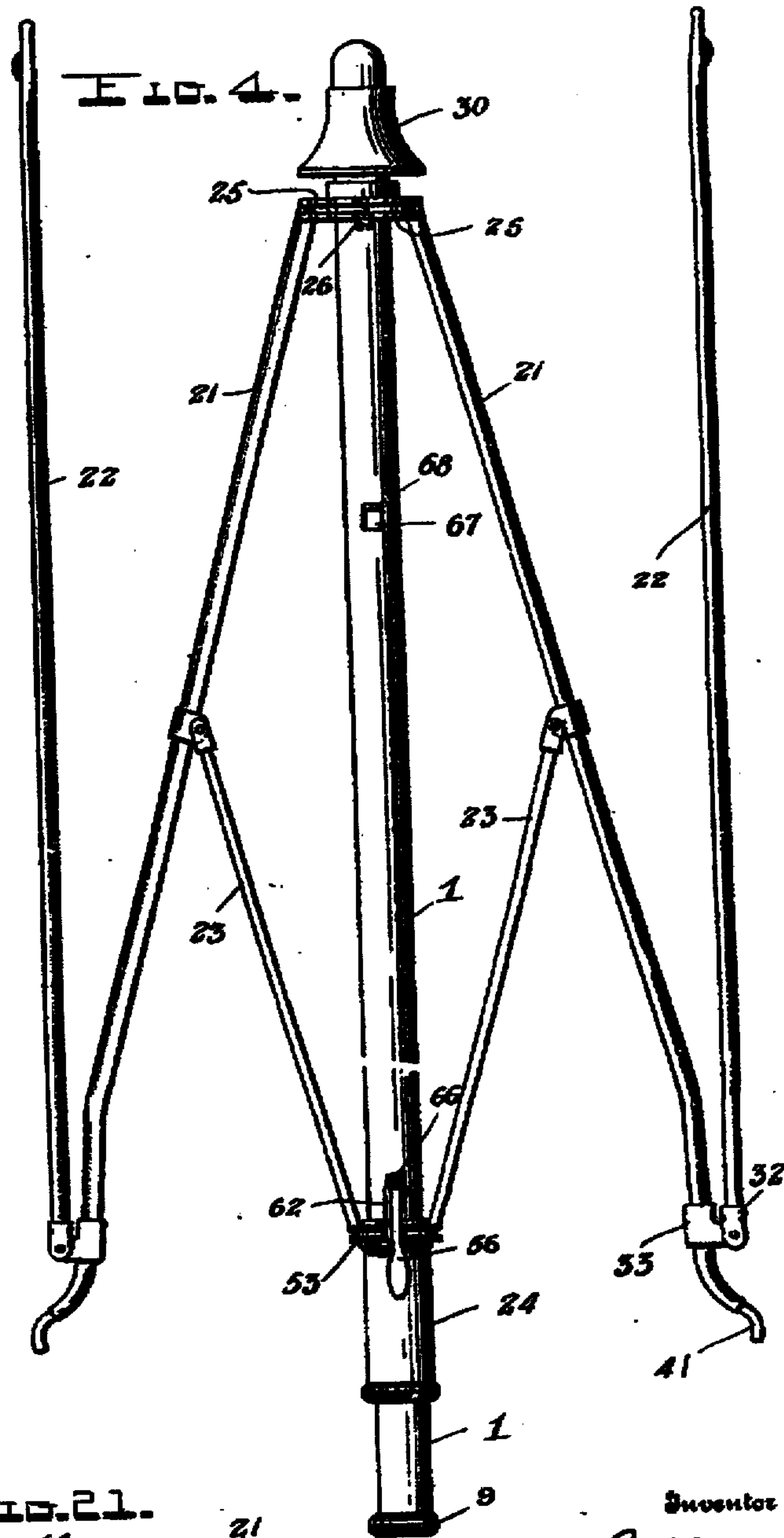


FIG. 22.

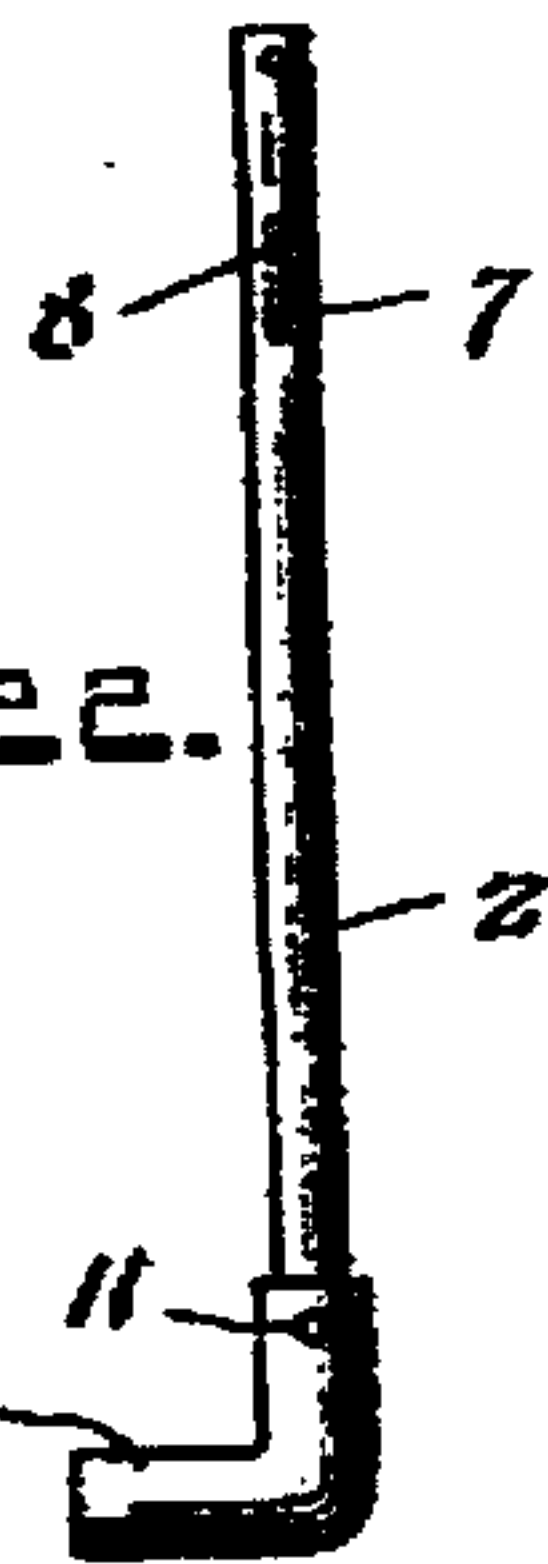


FIG. 21.



Witnesses

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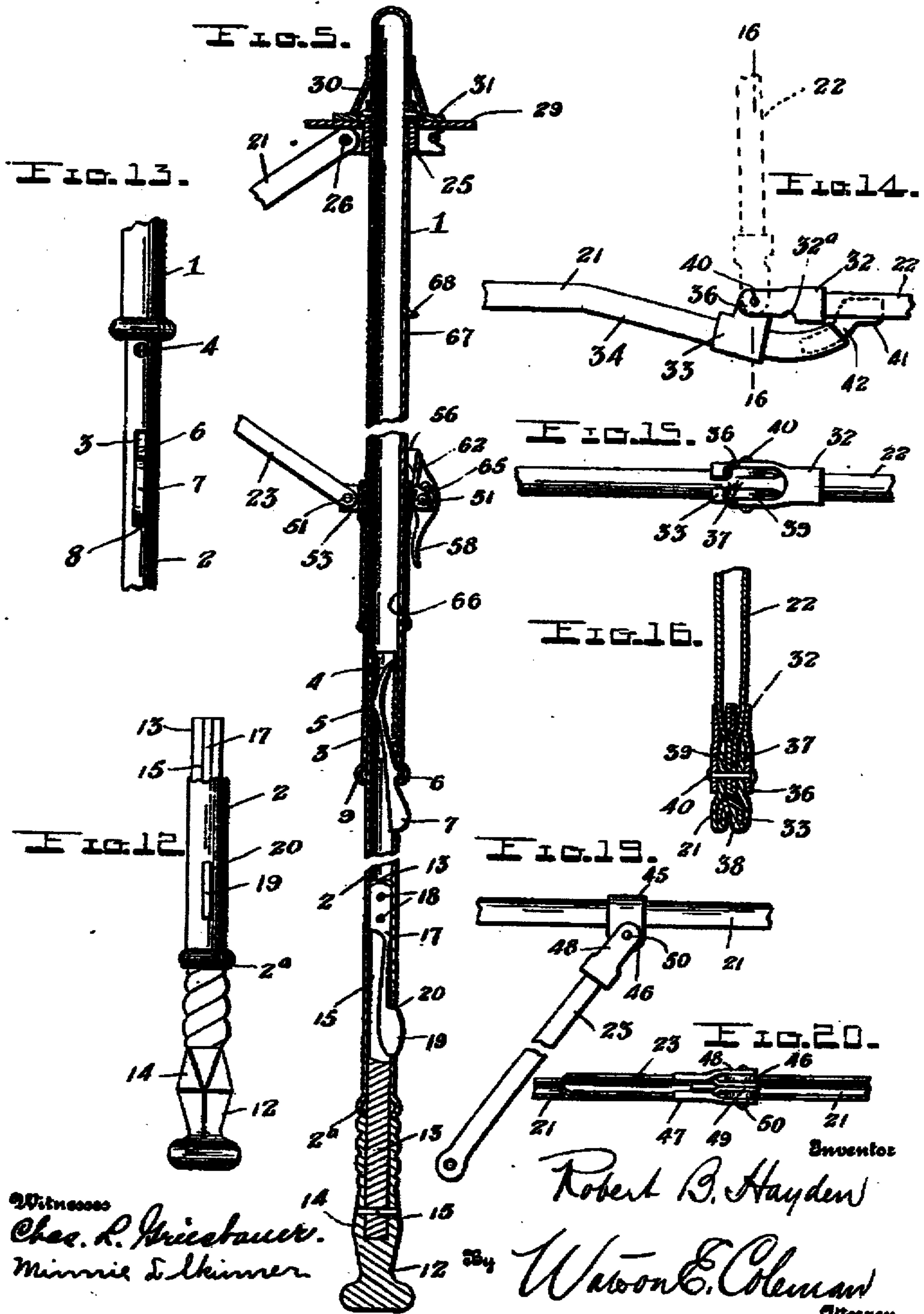
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8 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

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FOLDING UMBRELLA.

No. 907,231.

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To all whom it may concern:

Be it known that I, ROBERT B. HAYDEN, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Folding Umbrellas, of which the following is a specification, reference being had to the accompanying drawings.

10 My invention relates to improvements in folding umbrellas and parasols; and its object is to simplify and improve the construction and operation of articles of this character and to provide one which will be very compact, rigid, strong, durable, and convenient and easy to operate.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists of the novel features of construction and the combination and arrangement of devices hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

25 Figure 1 is a side elevation of my improved umbrella in its folded position; Fig. 2 is a similar view of it in its closed position showing the umbrella adapted for use as a walking stick; Fig. 3 is a view, partly in elevation and partly in section, of the umbrella in its open position, the dotted lines indicating the portions of the frame in its closed position; Fig. 4 is an enlarged detail view of a portion of the frame illustrating the manner in which its members fold; Fig. 5 is an enlarged detail longitudinal section through the staff and the parts carried by it; Figs. 6 and 7 are top and side views of the notched head or crown at the upper end of the staff; Fig. 8 is a detail view of the fastening for said crown; Fig. 9 is an enlarged side elevation of the sliding sleeve or runner and a portion of the staff; Fig. 10 is a detail view of the catch or dog for said runner; Fig. 11 is a detail view of the spring for said catch; Fig. 12 is a side elevation of the removable handle and a portion of the lower section of the staff; Fig. 13 is a detail side elevation of portions of the two sections of the staff, showing the spring catch for locking said sections in an extended position; Fig. 14 is a side elevation of the joint uniting the two sections of one of the ribs; Fig. 15 is a plan view of the parts shown in Fig. 14;

Fig. 16 is a detail transverse section on the plane indicated by the line 16—16 in Fig. 14, the outer brace section being swung up to the dotted line position shown in Fig. 14; Figs. 17 and 18 are detail views of the end of the inner section of one of the ribs; Figs. 19 and 20 are detail views of the joint between one of the ribs and its brace; Fig. 21 is a view showing the manner in which the inner sections of the ribs are reinforced; and Fig. 22 is a detail view of the lower staff section, showing a fixed handle thereon.

My improved folding umbrella comprises a telescopic staff or rod composed, preferably, of upper and lower tubular sections 1, 2. The lower section is adapted to slide into the upper section and when extended is locked by a spring catch 3, shown more clearly in Figs. 5 and 13. Said catch is in the form of a spring plate arranged within the section 2 and has formed, adjacent to one end, a projection or nib 4 and an offset portion 5. The latter engages the interior of the section 2 and the projection 4 enters an aperture in said section 2 so that the catch is retained in said section. The free end of the catch is formed with a nib 6 and a finger piece 7, which portions are adapted to spring through a slot 8 formed in the section 2. The nib 6 is adapted to enter an annular groove 9 formed in the lower end of the section 1, preferably, by crimping said end, as shown. When the rib 6 enters the groove 9 the two sections will be locked in their extended position and when the finger piece 7 is pressed into the section 2 the nib 6 leaves the groove 9, thereby unlocking said sections and permitting the lower one to telescope into the upper one. The lower section 2 can rotate in the upper section 1 and the provision of the annular groove or seat 9 in the latter insures the locking of the two sections when the lower section is pulled out of the upper one.

The lower staff section 2 is adapted to carry a handle which may be of any suitable form and construction and either permanently or detachably mounted. In Fig. 22 I have shown the section 2 provided with a handle 10 of angular form fixed to said section by a rivet 11; and in the remaining figures of the drawings I have shown a straight ornamental handle 12 detachably mounted in the section 2. As more clearly

shown in Figs. 5 and 12, the handle 12 consists of a solid or tubular shank 13 adapted to enter the lower end of the section 2 and having upon one of its ends an ornamental head 14 which may be straight, angular, or of other form, and which may be formed integral with the stem or shank 13 or secured thereto by a rivet 15 or other suitable fastening means. In the inner end of the stem or shank 13 is formed a longitudinal slot 15 to receive a spring catch 17 having a large end which is fixed in the slot 15 by rivets 18. The free end of the catch 17, which latter is in the form of a spring plate, is formed with a finger piece 19 adapted to project through an opening or slot 20 formed in the handle section 2 and to thereby lock the handle in said section. When the finger piece 19 is pressed inwardly the stem or shank 13 may be pulled out of the section 2 to detach the handle 12 from the staff, and when said stem or shank is inserted in the lower end of the section 2 until the inner portion of the head 14 engages the extremity of said section, and said stem or shank is rotated to move the finger piece 19 into alignment with the slot 20, said finger piece will spring into the latter and lock the handle to the staff. The lower end of the section 2 is preferably crimped, as shown at 2^a, to form a finger piece by means of which said section may be drawn out of the upper section when the handle 12 is not attached.

The ribs are composed of inner and outer hinged sections 21, 22 and they are supported and operated by braces 23 which have their lower ends pivoted to a sliding sleeve or runner 24 on the upper staff section 1 and their upper ends pivoted to the inner rib sections at points intermediate the ends of the latter. The inner rib sections 21 are pivoted in a notched head or crown 25 in the usual manner, that is, by passing a wire 26 through apertures in said sections 21 and through an annular groove formed in the outer edge of the head 25 so as to intersect radial notches that receive the apertured ends of said sections 21. The head 25 is secured in position, a suitable distance from the upper end of the section 1, by providing the semi-circular fastener 27, shown more clearly in Fig. 8. This fastener has its ends bent inwardly to provide short pins 28 which enter aligning apertures in the section 1 and the extended upper end of the head 25. The pins 28 are of such length that their inner ends terminate flush with the inner face of the section 1 so that the section 2 may slide past them and telescope into the section 1 the full length of the latter. Instead of employing the semi-circular fastener 27 I may use simply short pins or rivets. The covering 29 of the umbrella is secured to the head 25 by a metal cap or sleeve 30 which telescopes the section 1 and

covers the projecting upper end of said head and the fastener 27. A washer 31 of leather is interposed between the sleeve 30 and the covering, as clearly shown in Fig. 5. The covering is also attached to the extremities of the ribs and to the outer portions of the inner rib sections 21, as presently explained.

The inner and outer sections 21, 22 of the ribs are constructed of the usual wires of U-shape in cross section and they are hingedly connected, as more clearly shown in Figs. 14, 15, and 16 of the drawings. This hinge connection or joint consists of a reinforcing and hinge member 32 secured upon the inner end of the outer section 22 and a reinforcing and hinge member 33 secured upon the longitudinally curved outer end 34 of the inner section 21. The member 32 is in the form of a metal plate having an inner portion bent around and secured to the section 22, a short distance from the end of the latter, and spaced pivot ears 36 which project from the inner portion of the member 32. The end of the section 22 which carries the flange piece or member 32 is brought together to form an ear 37 which is centrally disposed between the ears 36, as clearly shown in Fig. 16. The other member of the hinge 33 is in the form of a metal plate or strip, the central portion 38 of which is bent into and secured in the under face of the inner section 21 and the ends of which project upwardly in spaced parallel relation to provide apertured ears 39 adapted to enter between the ears 36, 37 to receive the pivot pin 40, as clearly shown in Fig. 16. While the pivot ears 36, 37, 39 are preferably formed upon separate reinforcing plates suitably secured to the rib sections, it will be understood that they may be otherwise constructed. The plate or member 33 is secured approximately midway the curved or offset end 34 of the inner rib section 21 so as to so dispose the pivot 40 that when the outer rib section is swung to its open position, shown in full lines in Fig. 14, the two sections are in longitudinal alignment and the joint has no portions projecting above the upper edge or surface of the rib to wear or injure the umbrella covering 29. The bent or offset portion 34 of the inner rib section is also adapted to provide a locking device to hold the rib sections in their open or extended position; and to accomplish the latter, said portion 34 is provided at its extremity with a head 41 adapted to be sprung into the channeled under face of the outer rib section 22, as clearly shown in Fig. 14. Said head or enlargement 41 is preferably of cylindrical form and arranged angularly upon one end of a curved rod 42 which is secured in the curved end 34 of the inner section 21 by bending the flanges of the latter around the same, as clearly shown at 43 in Fig. 17. The inner rib sections 21 have the braces 23 connected to them at points inter-

mediate their ends, and in order to strengthen them, I preferably secure in their channeled under faces reinforcing rods 44, as shown in Fig. 21. Said rib section may, however, be reinforced or strengthened in any other suitable manner. For the purpose of enabling the covering 29 to be effectively attached to the inner ends of the outer rib sections, said hinge members 32 are formed with notches 32^a to receive the fastening thread.

The joint or hinge connection between the rib section 21 and its brace 23, as clearly shown, is similar to the joint shown in Fig. 16. Said hinge connection comprises a hinge plate 45 bent around and secured to the section 21 and formed with spaced apertured ears 46; and it also comprises a plate or hinge member 47 bent around and secured to the brace 23 and having spaced ears 48 to receive the ears 46, the extremity of the brace 23 being shaped to form a centrally disposed ear 49. A pivot pin 50 is passed through the ears 46, 48, 49 to unite said parts.

The inner or lower ends of the braces 23 are apertured to receive a pivot wire 51 arranged in an annular groove 52 formed in the outer edge of a notched head or crown 53 which is secured upon the upper end of the runner 24 by crimping the latter above and below said head, as shown at 54, 55. The runner sleeve 24 is adapted to be locked in either of its two positions by a spring actuated pivoted catch or dog 56. The latter, as clearly shown in Fig. 10, has a pivot aperture 57 intermediate its ends, a finger piece 58 at one end, and a projection 59 at its other end, the latter end also having upon its outer face a transverse notch or seat 60.

The dog 56 is arranged in a radial notch formed in the head 53 at a point between two of the notches which receive the braces and it is pivoted in said notch by the wire 51 which passes through the aperture 57. Said dog is actuated by a spring 62 which is in the form of a loop or coil arranged in the notch or slot in the head 54 and retained therein by the ring 51. One arm of the spring 62 is bent, as shown at 63, to engage the seat 60 in the dog or catch and its other end 64 is shaped to engage a seat or recess 65 formed in the top of the head 54. The end 59 of the dog or catch is adapted to enter lower and upper slots or openings 66, 67 formed in the upper staff section 1. When the runner is moved downwardly the braces 23 draw the ribs close to and parallel with the staff and when the dog enters the opening 66 the parts will be locked in such position. When the runner is moved upwardly to open the umbrella the engagement of the dog with the upper opening 67 locks said parts in such position. In order to limit the upward movement of the runner the opening 67 is formed by slitting the section

1 and bending outwardly from the same a stop lip 68, as shown in Fig. 5.

Upon the inner face of the covering I attach two straps 69, 70 similar to the straps used upon umbrellas for holding their coverings wrapped. Each of said straps has one of its ends attached and its other end provided with a ring or hole to engage a button also secured upon the inner face of the covering.

In operation, assuming the umbrella to be in its folded position shown in Fig. 1, when it is desired to open the same for use, the straps 69, 70 are loosened, the handle 13 is removed from the upper end of the bundle and inserted in the lower end of the staff section 2 and turned until the catch 19 enters the opening 20 in said section and locks the handle therein. The handle is then pulled outwardly until the nib 6 upon the spring catch 3 enters the groove 9 in the upper staff section 1 and locks the two staff sections extended. The staff is then raised to a vertical position so that the outer rib sections 22 with the covering attached will drop outwardly and downwardly. The finger piece 53 of the catch 56 is then depressed to free the latter from the lower opening 66 and the runner sleeve 24 is then moved upwardly on the staff until said catch engages the upper opening 67. As the runner moves upwardly the braces 23 will open the frame to the full line position shown in Fig. 3. When the outer rib sections swing to their open positions the heads 41 upon their inner ends will spring into the channeled portions of the inner rib sections, thereby locking said sections extended. When it is desired to close the umbrella the catch 56 is released and the runner moved downwardly on the staff so that the braces 23 pull the ribs inwardly parallel with the staff. When the frame is in this position the covering is secured by means of the strap 69 which, while it is upon the inner face of the covering adjacent to its outer end, is brought to the outside of the covering by turning down the portion of the latter to which the strap is secured. Said strap is passed around the free ends of the ribs, as shown in Fig. 2, to hold the umbrella in its closed position so that it can be used as a walking stick. When it is desired to fold the umbrella to provide the compact bundle shown in Fig. 1, the above described operation is reversed and after the outer rib sections have been folded up against the inner sections the two straps 69, 70 are passed around the covering and secured, as shown in Fig. 1, the handle 12 being inserted in the upper end of the bundle.

From the foregoing it will be seen that my improved umbrella is simple, strong, durable, and comparatively inexpensive in construction and that it may be conveniently

and easily set up for use or folded to a compact bundle.

Having thus described my invention what I claim is:

- 5 1. In a folding umbrella, the combination of a rib composed of two resilient channeled metal sections of U-shape in cross section, one having an offset end, a hinge connection between the latter and the other section, and
10 a head secured in the channeled offset end of the one section and adapted to spring into the other section and to be frictionally retained therein to hold the two sections in alinement, substantially as described.
- 15 2. In a folding umbrella, the combination of a staff composed of telescopic sections, a catch for holding said sections extended, channeled ribs composed of inner and outer
20 hingedly connected sections, the inner sections being pivoted to the staff and the outer sections being adapted to fold upwardly upon the inner sections, heads carried by the outer ends of the inner sections and adapted to enter the channels in the outer rib sections
25 to limit the opening movement of said sections and retain the same in extended positions, a runner slidable upon the staff, a catch for securing said runner in an adjusted position and braces pivoted to the runner and to
30 the inner rib sections.
3. In a folding umbrella, the combination of a rib composed of two U-shaped or channeled sections of resilient metal, one having the offset end 34, the bent rod 42 secured in
35 said end and having the head 41 adapted to spring into the other section and to be frictionally retained between the flanges of the latter to hold the sections in alinement, the hinge member 38 consisting of a strip of
40 metal bent upon itself at its center and inserted in the channel of said offset end of one of the sections, the ends of said strip being bent around the sides of said section to provide spaced apertured ears, the other
45 section having its flanges at one end brought together to provide an apertured ear to enter between the first mentioned ears, a second hinge member upon the last mentioned section having a body portion bent around said
50 section and spaced apertured ears to receive the first mentioned ears between them, and a pivot pin passing through the aligned apertures in said ears.
4. In a folding umbrella, the combination
55 of a rib having two resilient channeled sections hingedly connected, one having its end offset, and the rod 42 inserted in said offset end and secured therein and formed with the head 41 to spring into the other section and
60 frictionally retain the two sections in alinement.
5. In an umbrella, the combination of a staff having openings or seats therein, a runner sleeve slidable upon the staff, a head
65 upon the sleeve formed with radial notches

and an annular groove intersecting said notches, one of the radial notches being larger than the others and having to one side at the top of said head a depression or seat, apertured braces arranged in certain of
70 said notches, a dog arranged in the large notch and having a pivot aperture intermediate its ends, one end of the dog being provided with a finger piece and its other end
75 with a projection to enter the openings or seats in said staff, the last mentioned end of the spring being also provided with a depression or seat, a loop spring arranged in said large notch to one side of the dog and
80 having the offset end 64 to engage the depression or seat in the top of the head and the offset end 63 to engage the depression or seat in the end of the dog, and a pivot wire passed through the groove in the head, the apertures
85 in the braces, the pivot aperture in the dog and the loop of the spring to fasten the braces, dog and spring to said head, substantially as described.

6. In an umbrella, the combination of a tubular staff having a keeper opening there-
90 in, the stop projection 68 at one end of said opening formed by bending a portion of the staff outwardly, a runner sleeve slidable upon the staff and a spring pressed dog pivoted upon the runner and adapted to engage
95 said stop projection and enter the opening in said staff.

7. In an umbrella, the combination of an extensible staff having telescoping tubular sections, the outer section having at one end
100 the annular keeper groove or channel 9 formed by crimping said end, the other section of the staff having a slot or opening and a seat, the spring 3 arranged in the first mentioned section and having the projection
105 5 and one of its ends 4 arranged in said seat, the free end of said spring being adapted to project through the opening or slot in said section and provided with the finger piece 7 and the projection 6 to engage the crimped
110 groove or channel 9 in the other section.

8. In a folding umbrella, the combination of a foldable frame, a covering for the same adapted to fold with said frame, the fasten-
115 ing strap 69 secured to the inner face of the covering adjacent to its edges and the fastening strap 70 secured to the inner face of the covering adjacent to its center, both of said straps being adapted to be passed around
120 the covering and the frame when the umbrella is folded, and the strap 69 being adapted to be passed around the same when the umbrella is closed for use as a walking stick, substantially as set forth.

9. In a folding umbrella, the combination
125 of a staff having an upper tubular section and a lower section adapted to slide within the upper one, a notched head arranged upon the upper section adjacent to its end, said head and staff being formed with alined
130

apertures, a fastening wire having its ends bent to provide pins to project into said aligned apertures, the inner end of said pins terminating flush with the inner face of the tubular upper staff section, whereby the lower section may pass said pins and telescope into the upper section the full extent of the same, foldable sectional ribs pivoted in said notched head, a runner slidable upon

the staff and braces connecting the runner 10 and the ribs.

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

ROBERT B. HAYDEN.

Witnesses:

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