

(No Model.)

2 Sheets—Sheet 1.

G. A. LINKE.
UMBRELLA.

No. 420,690.

Patented Feb. 4, 1890.

Fig. 1.

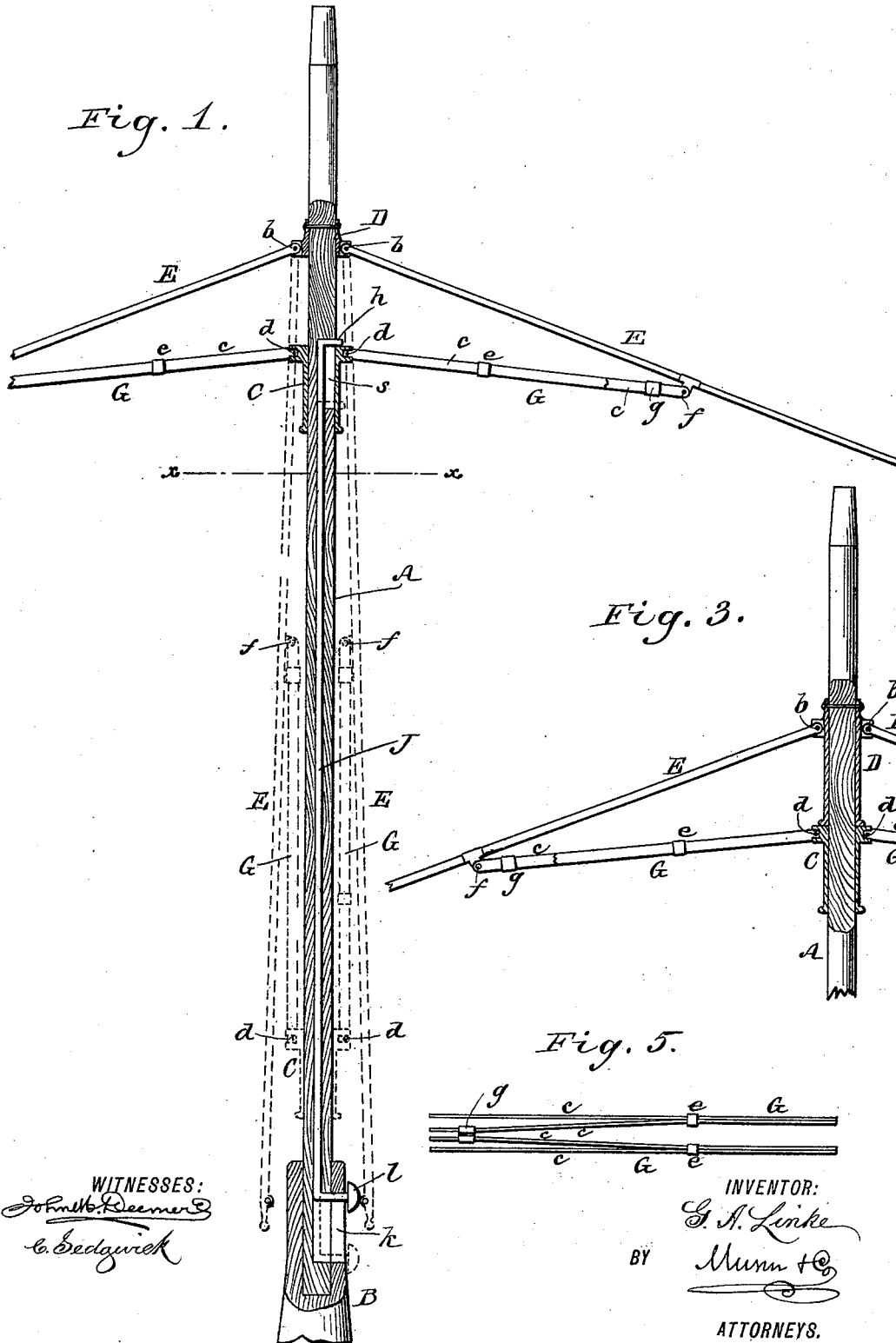


Fig. 3.

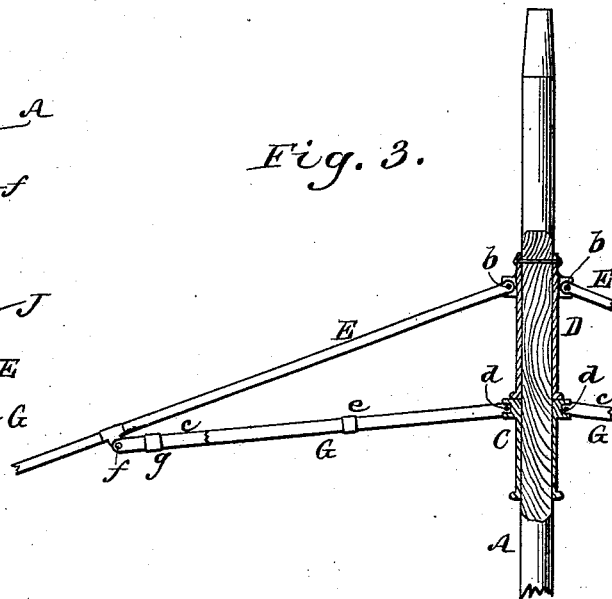
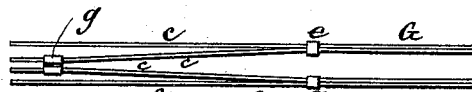


Fig. 5.



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ATTORNEYS.

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Fig. 2.

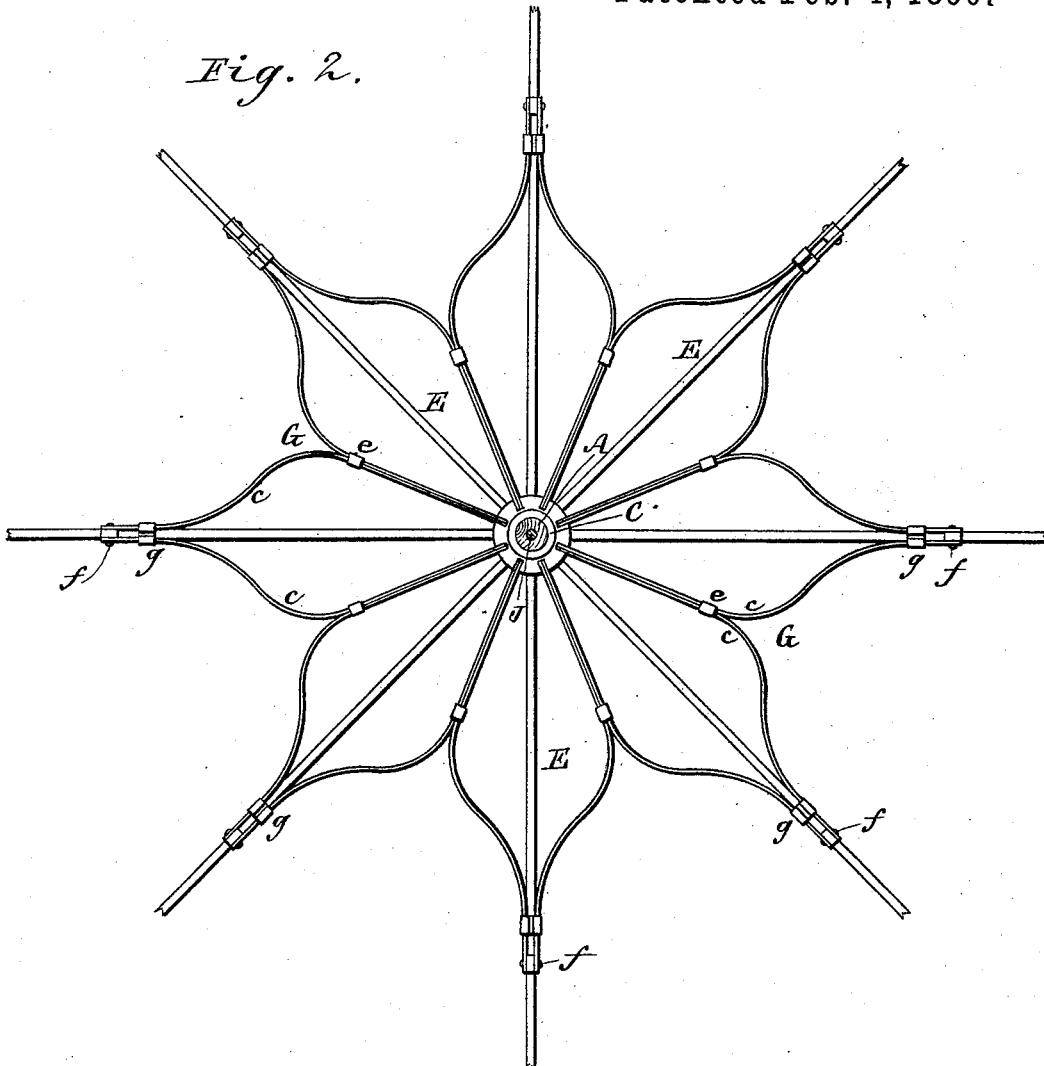
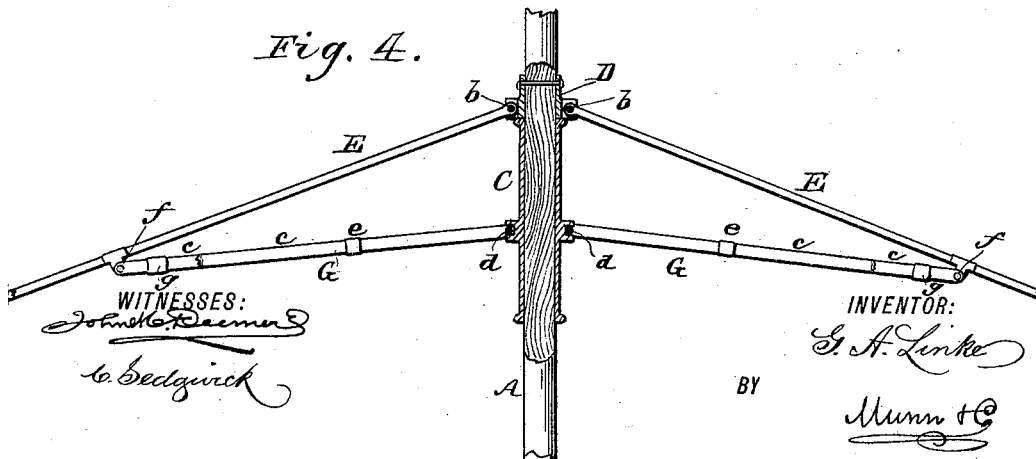


Fig. 4.



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UNITED STATES PATENT OFFICE.

GUSTAV A. LINKE, OF BROOKLYN, NEW YORK.

UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 420,690, dated February 4, 1890.

Application filed May 23, 1889. Serial No. 311,846. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV A. LINKE, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Umbrellas, of which the following is a full, clear, and exact description.

This invention relates to "umbrellas," in which term is included parasols that are provided with what are known as "French stretchers." These stretchers consist of independent springs secured at their one end to the runner and braced together in pairs for a certain portion of their length and connected at their opposite end with adjacent ribs of the umbrella, whereby when the runner is released or started for lowering the umbrella said stretchers, by their spring construction, operate to close the umbrella and to keep it closed without the aid of other or special devices for the purpose; but these stretchers as heretofore applied in an umbrella-frame exerted no tendency to hold the umbrella open, but invariably have had the contrary effect, so that a special spring or other fastening was necessary to hold the runner when raised to keep the umbrella distended, which fastening had to be released before the spring-stretchers were free to close the umbrella. With a different kind of stretcher umbrellas have been made which would automatically hold themselves open; but these stretchers have had no tendency to close the umbrella or to hold it closed.

My invention has for its object the production of an umbrella which, by the aid of the spring-stretchers I have described, shall not only be self-closing and hold itself closed, but which shall automatically hold itself open when distended without the aid of any special fastening requiring to be released when it is desired to lower the umbrella.

To this end the invention consists in a special combination and arrangement of the French spring-stretchers with the ribs of an umbrella-frame and with a stop applied to or controlling the upward movement of the runner, whereby when the runner is fully raised the points of connection of the stretchers with the lower notch or runner will be above the points of connection of said stretchers with

the ribs, thereby carrying the stretchers beyond their culminating plane and so automatically holding the umbrella distended, and so that upon only starting the runner down to bring the stretchers below their culminating plane—that is, their points of attachment to the ribs above their points of attachment to the runner—said stretchers will close the umbrella and hold it closed; and the invention comprises, in connection with this combination, a hollow stick or staff for the umbrella, with a rod running up through it constructed to form a starting pull-down for the runner capable of operation from the handle of the umbrella, and which may also form a stop to the runner when raised, substantially as hereinafter shown and described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents by full lines a partial-sectional elevation of the frame and main portions of an umbrella with my invention in one of its forms applied and showing the frame as distended, but as without its cover, said view also showing by dotted lines the position of the parts when the frame is closed. Fig. 2 is an inverted horizontal section or plan view upon the line xx in Fig. 1. Figs. 3 and 4 are partial-sectional elevations of the upper portions of the umbrella in part in illustration of certain modifications of the stop which controls the stretchers in their distended condition to automatically hold the umbrella open; and Fig. 5 is a longitudinal view of two of the stretchers when closed.

Referring, in the first instance, to Figs. 1, 2, and 5 of the drawings, A indicates the umbrella-stick, which may be made hollow, for a purpose that will be hereinafter described; B, the handle in part; C, the runner, and D the top notch.

E are the ribs, attached, as usual, as by pivots b , to the top notch D, and G are the French stretchers, each of which is composed of independent springs $c c$, in pairs attached at their inner ends, as by pivots d , to the notch of the runner C and tied together for a certain portion of their length, as by clips e , but connected at their outer or opposite ends, as

by pivots *f*, with the next adjacent rib E—that is, the one spring of each pair with one rib and the other spring of the same pair with the next rib, subject to an open clip-connection *g* of the two springs near their pivots *f*. This is a well-known form of spring-stretcher, which has before been used to close the umbrella on releasing the runner when raised from its spring-catch and to hold the umbrella closed; but said stretchers have heretofore been attached higher up the ribs, and the stop controlling the upward movement of the runner has always been disposed so that the pivoted connection of the stretchers to the runner has been below their pivoted connection with the ribs when the umbrella is fully open; hence the necessity of a spring-catch to hold the runner raised, and which on being released causes the spring-stretchers to automatically close the umbrella.

I dispense with a spring-catch or any other special fastening for holding the runner up when fully raised and make the spring-stretcher frame or stretchers *G* to hold the runner up when fully raised, as well as to perform their customary function of closing the umbrella and holding it closed. This I do by a special arrangement relatively to each other of the spring-stretchers, the ribs of the frame, and the stop which limits the upward movement of the runner. Thus I connect the stretchers *G* by their pivots *f* at a point lower than usual to the ribs *E*, and so arrange the stop which limits the upward movement of the runner *C* that when said runner is fully raised the pivots *d*, connecting the inner ends of the stretchers with the notch of the runner, will be carried above the level of the pivots *f*, which connect the outer ends of the stretchers with the ribs, as shown by full lines in Fig. 1. This will cause the spring-stretchers *G* to pass their culminating plane, and thus automatically hold the runner up and the umbrella open or expanded, the cover of the umbrella aiding, as usual, to hold the ribs in place, and when it is necessary to automatically close the umbrella and to hold it closed all that is necessary is to start the runner slightly down, so that the spring-stretchers will pass a little below or to the reverse side of their culminating plane, when said spring-stretchers will immediately act to close the umbrella-frame. In this way or by these means all independent spring catches or fastenings, both for holding the umbrella open and closed, may be dispensed with and the spring-stretchers themselves be made to perform both duties. To attain this double result for the spring-stretchers *G*—that is, of both holding and closing the umbrella closed and of holding the umbrella open—it is necessary to attach said stretchers farther down the ribs and to make them longer than when a similar type of spring-stretchers is simply used to close the umbrella and to hold it closed, and also neces-

sary, as hereinafter described, to arrange the stop controlling the upward movement of the runner, so that the pivoted connection of the stretcher with the runner will be free to come above their pivoted connection with the ribs when the umbrella is open. When, as in other arrangements, rigid instead of spring stretchers are used and the runner is made capable of thus carrying the pivoted connection of the stretchers above their pivoted connection with the ribs, for the single purpose of holding the umbrella open, then the elastic pressure of the umbrella-cover is depended upon to allow of the runner being pushed up or down past the plane of the connection of the stretchers with the ribs. This throws upon due and injurious strain upon the umbrella cover, which my invention relieves by the elasticity of the spring-stretchers, that operate not only to close and hold the umbrella closed, but also, like the rigid stretchers, to hold it open.

The stop for limiting the upward movement of the runner *D*, so that the pivots will be above the level of the pivots *f* when the umbrella is fully open, may be variously constructed. A convenient means for the purpose, and also for starting the runner down when the spring-stretchers are required to close the umbrella, is shown in Fig. 1. Thus the hollow stick *A* is fitted with a rod *J*, that at its upper end is crooked, or has projection *h*, that passes out through a longitudinal slot *s* in the side of the stick, and further crooked at its lower end to pass through a longitudinal slot *k* in the side of the handle *B*, and is provided with an exterior button or thumb-piece *l*. When in the act of opening the umbrella, the runner pushes the rod *J* by its projection *h* up to its extreme limit. Said rod *J* by its top crook *h* forms a stop to the upward movement of the runner, when the pivots *d* are raised above the level of the pivots *f*, and holds the umbrella open automatically by the spring stretchers *G*, and by afterward moving the rod *J* downward by its thumb-piece *l* from the handle end of the umbrella the crook *h* will start the runner down to provide for the spring-stretchers automatically closing the umbrella, as hereinbefore described.

While the above, however, constitutes a very convenient stop arrangement and a useful means for closing the umbrella, it will be evident that the stop limiting the upward movement of the runner *C*, instead of being made a movable one, might be a fixture on the stick that might then be made solid, and the runner might be started down by direct application of the fingers to it. Thus the top notch *D* might be elongated downward to form the stop to the upward movement of the runner in relation to the pivots *d* and *f*, as hereinbefore described, and as shown in Fig. 3 of the drawings, or the runner *C* might be elongated upward to bear at its upper end against

the fixed top notch D when said runner is fully raised, as shown in Fig. 4 of the drawings.

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

1. As a new article of manufacture, an umbrella provided with elongated spring-stretchers G, constructed substantially as described, 10 a stick or staff, a top notch D, ribs E, pivoted at their inner ends to said top notch, a runner C, having the inner ends of said springs pivoted to them, as at *d*, while their outer ends are pivoted, as at *f*, to the ribs, and a 15 stop applied to arrest the upward motion of the runner on the stick when the inner pivots *d* of the stretchers pass above the plane or level of their outer pivots *f*, whereby said spring-stretchers are made to not only close 20 the umbrella and to hold it closed, but also to automatically hold it open, as set forth.

2. In self-closing umbrellas, the combination, with the hollow stick A and its handle B, having longitudinal slots *s* and *k* in them, the runner C, and top notch D, the ribs E, 25 pivoted to the top notch, the spring-stretchers G, attached at their inner ends, as by pivots *d*, to the runner, and at their outer ends, as by pivots *f*, to the ribs, of the longitudinally-adjustable rod J, adapted for operation 30 from the handle of the umbrella, and provided with an upper lateral projection or runner-stop operating to permit of the pivots *d* passing above the level of the pivots *f*, and as a pull-down for starting the runner to 35 bring the pivots *d* below the pivots *f*, substantially as and for the purposes herein set forth.

GUSTAV A. LINKE.

Witnesses:

CHARLES E. BONNELL,
ARTHUR P. JEANNERET.