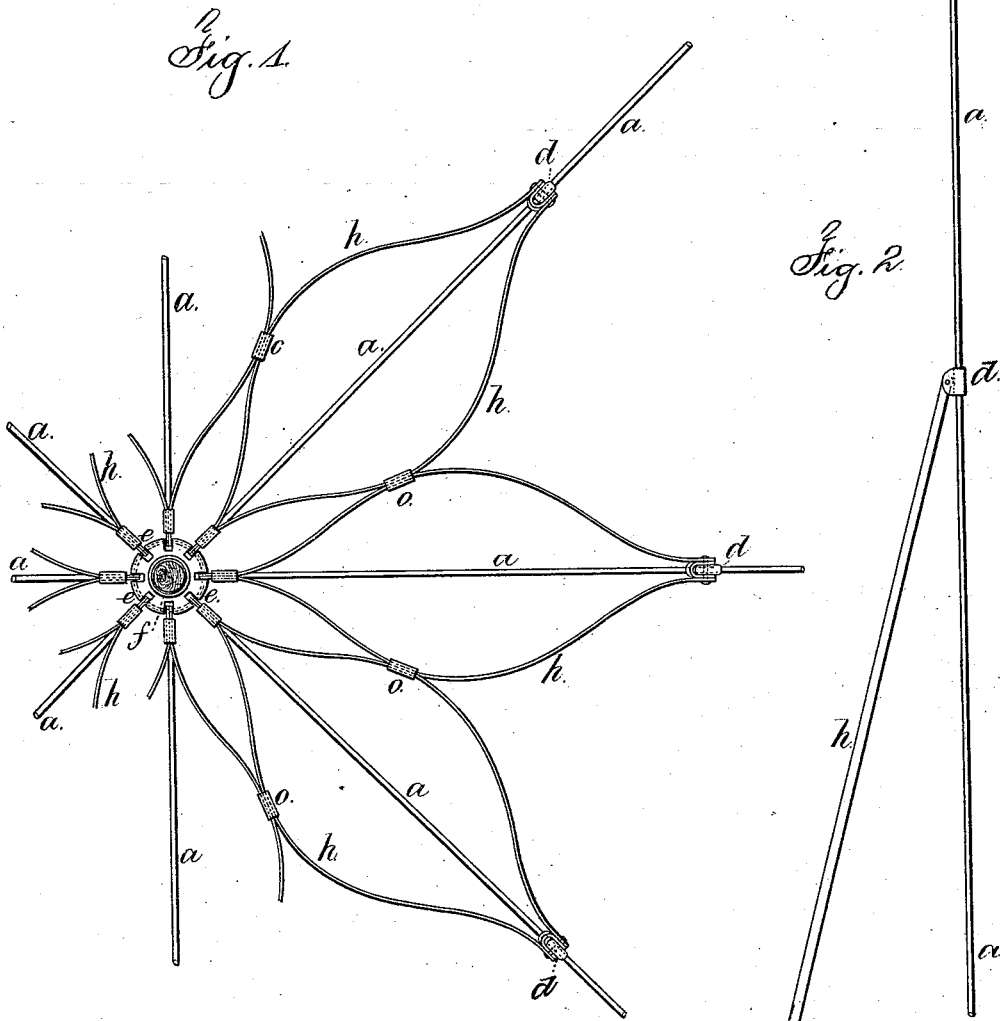


T. W. BALL.
UMBRELLA FRAME.

No. 187,081.

Patented Feb. 6, 1877.



Witnesses,

Char. A. Smith
Harold Serrell

Inventor,

Thomas W. Ball.
per Lemuel W. Serrell
att'y.

UNITED STATES PATENT OFFICE

THOMAS W. BALL, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO WINTER & BALL, OF SAME PLACE.

IMPROVEMENT IN UMBRELLA-FRAMES.

Specification forming part of Letters Patent No. 187,081, dated February 6, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that I, THOMAS W. BALL, of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Frames for Umbrellas and Parasols, of which the following is a specification:

Umbrella-ribs have usually been jointed near the middle to one end of a stretcher, the other end of which is jointed to a runner upon the stick. This character of frame is not braced against a rotary movement of the runner and stretchers within the ribs. In some instances spring-stretchers have been employed that extend from the runner to the opposite parts of two adjacent ribs.

My invention consists in a two-part spring stretcher connected at one end to the rib, and at the other end to the runner, so that instead of the stretcher being rigid it is free to yield more or less in stretching the cover tightly, and one spring of one stretcher may be connected to the next spring of the next stretcher, so that the frame, when opened, presents a circular range of diverging curved springs, bracing each other between the ribs and the runner, and not only stretching the cover but preventing a partial revolving movement of the ribs and stretchers upon the runner and stick, thus insuring greater strength in the frame without increasing its weight, and the spring-stretchers serve to keep the ribs up toward the handle when the umbrella is closed, so that a tip-cup or spring-catch can be dispensed with, if desired.

In the drawing, Figure 1 is an inverted plan of part of the frame as open, and Fig. 2 is a side view of one of the ribs and stretchers.

The ribs *a* are united at one end to the crown-piece in any usual or desired manner. The outer ends of the ribs *a* are provided with tips *c*, and at *d* is a bit or lap upon the rib for the

joint at the outer end of the stretcher *h*. The runner *f* is of any desired or usual construction. It receives at *e* the ends of the stretchers *h*.

The stretchers, instead of being of one solid rigid bar or rod, as usual, are each made of two springs, formed, by preference, of flat wire; but they may be of round wire flattened at the joints, and it is preferable to make each stretcher of one piece of spring-wire, bent in the middle, and pierced to receive the runner wire or rivet of the joint, so that the stretcher can be connected at one end to the runner and at the other end to the rib either by a lap around the rib or in any other convenient manner. In this manner each stretcher *h* becomes a spring, and it will bow out laterally by pressure upon the ends, and yield if the cover is tight, and hence act to tighten the cover at all times when the umbrella is spread; but it is preferable to unite the springs of one stretcher with those of the adjacent stretchers by clips *o* put around the two springs, at about one-third the distance from the runner to the rib, whereby the stretchers form a series of compound curves, and thereby not only act as braces, but as springs to distend the umbrella-cover and properly stretch the same.

I claim as my invention—

In an umbrella or parasol frame, the spring-stretchers, each of which is made of a double spring-wire, perforated and connected at one end to one rib, and at the other end to the runner, the parts being combined and arranged substantially as set forth.

Signed by me this 29th day of November, A. D. 1876.

THOS. W. BALL.

Witnesses:

CHARLES BOLTWOOD,
HENRY WINTER.