

(No Model.)

J. H. SPRAGUE.
UMBRELLA FRAME.

No. 429,783.

Patented June 10, 1890.

Fig. 1.

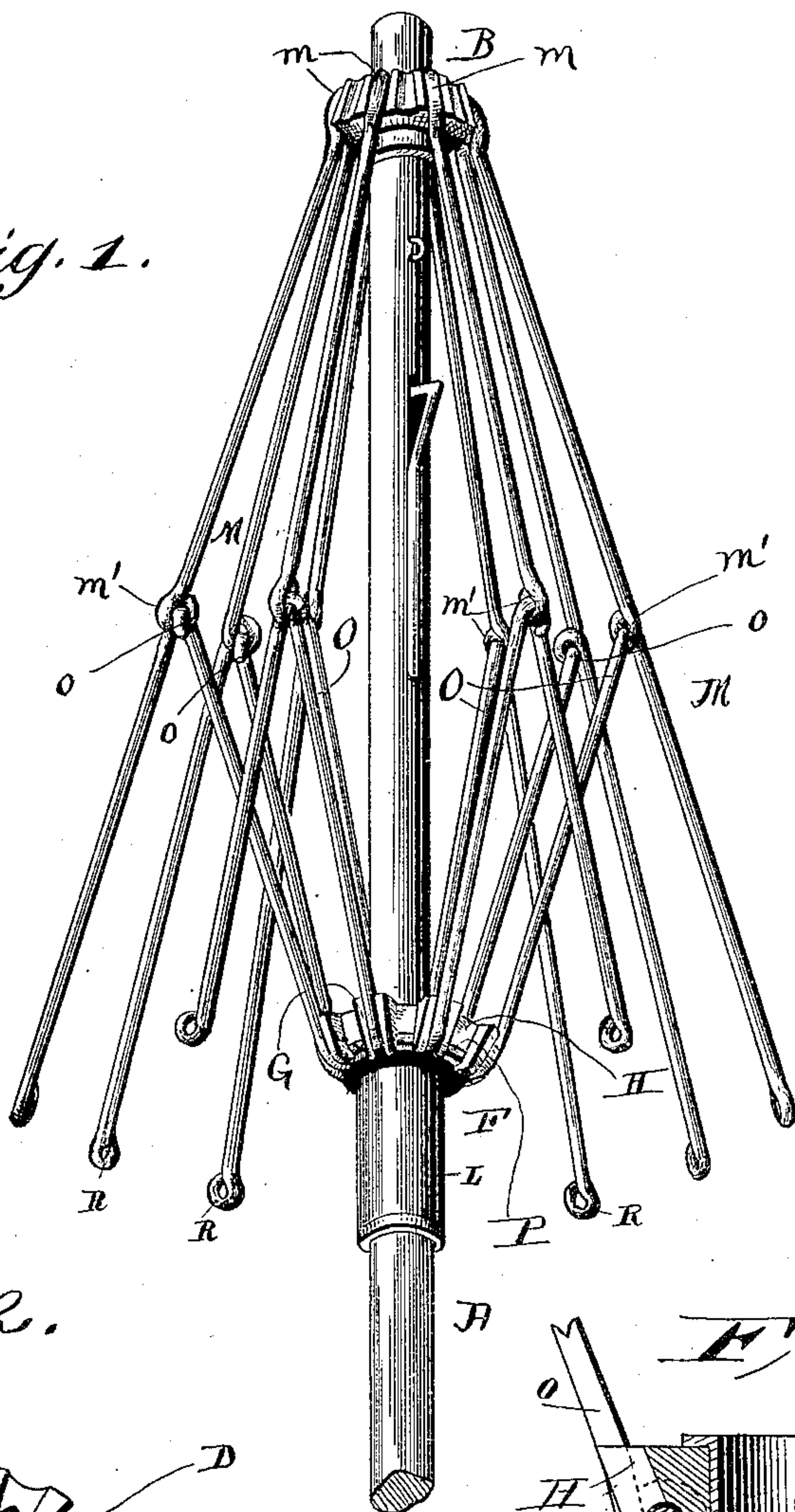


Fig. 2.

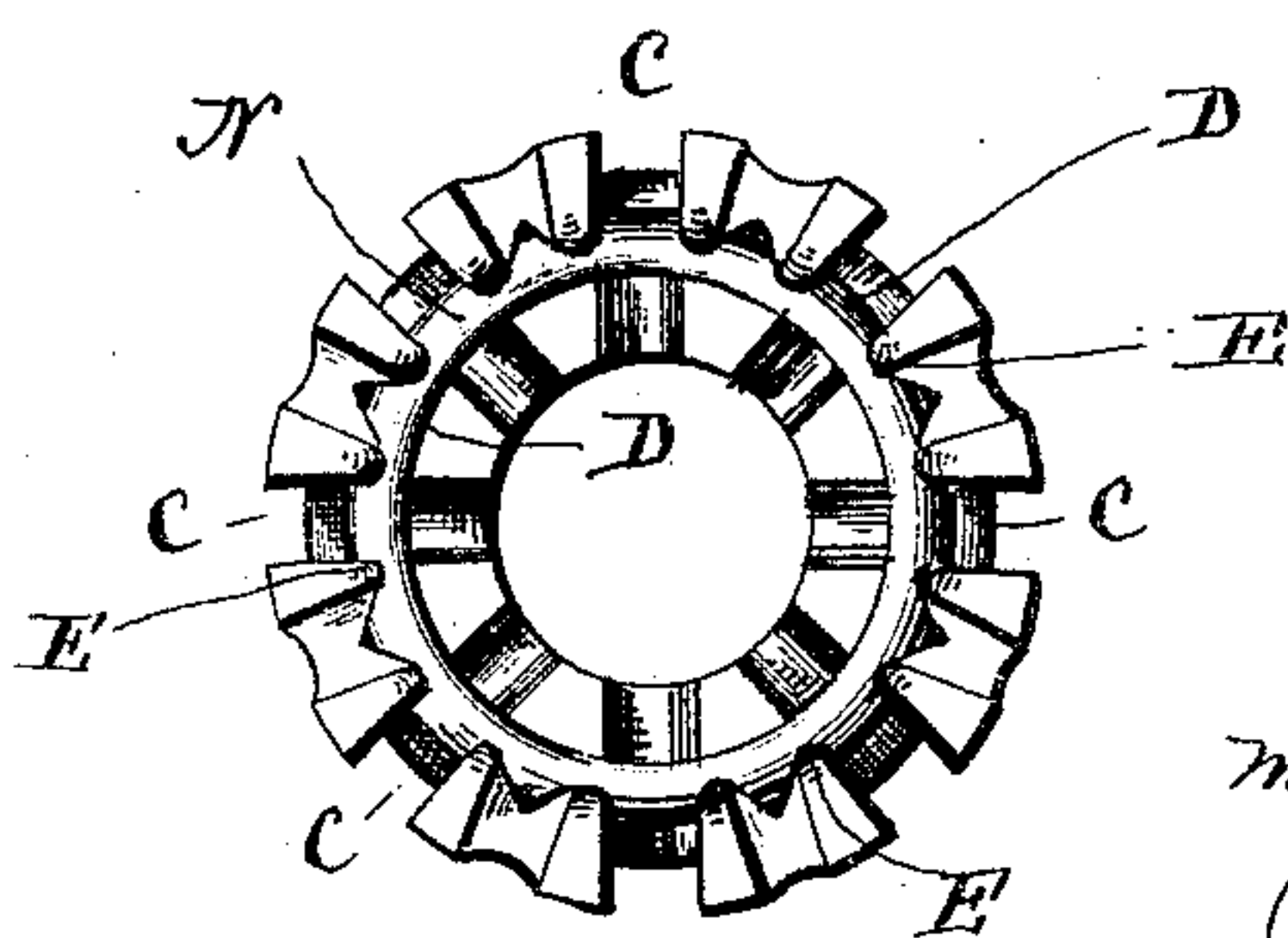


Fig. 3.

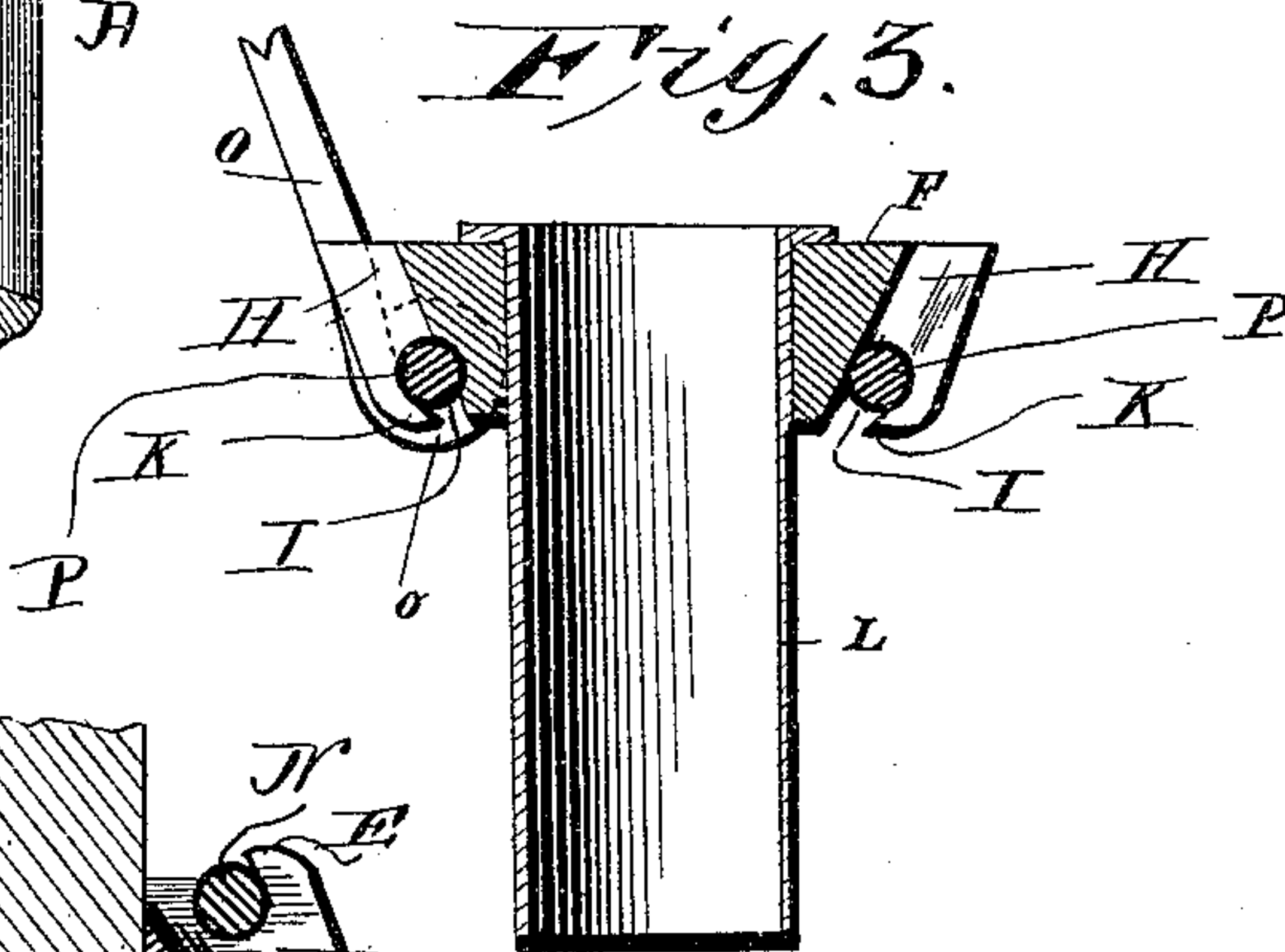
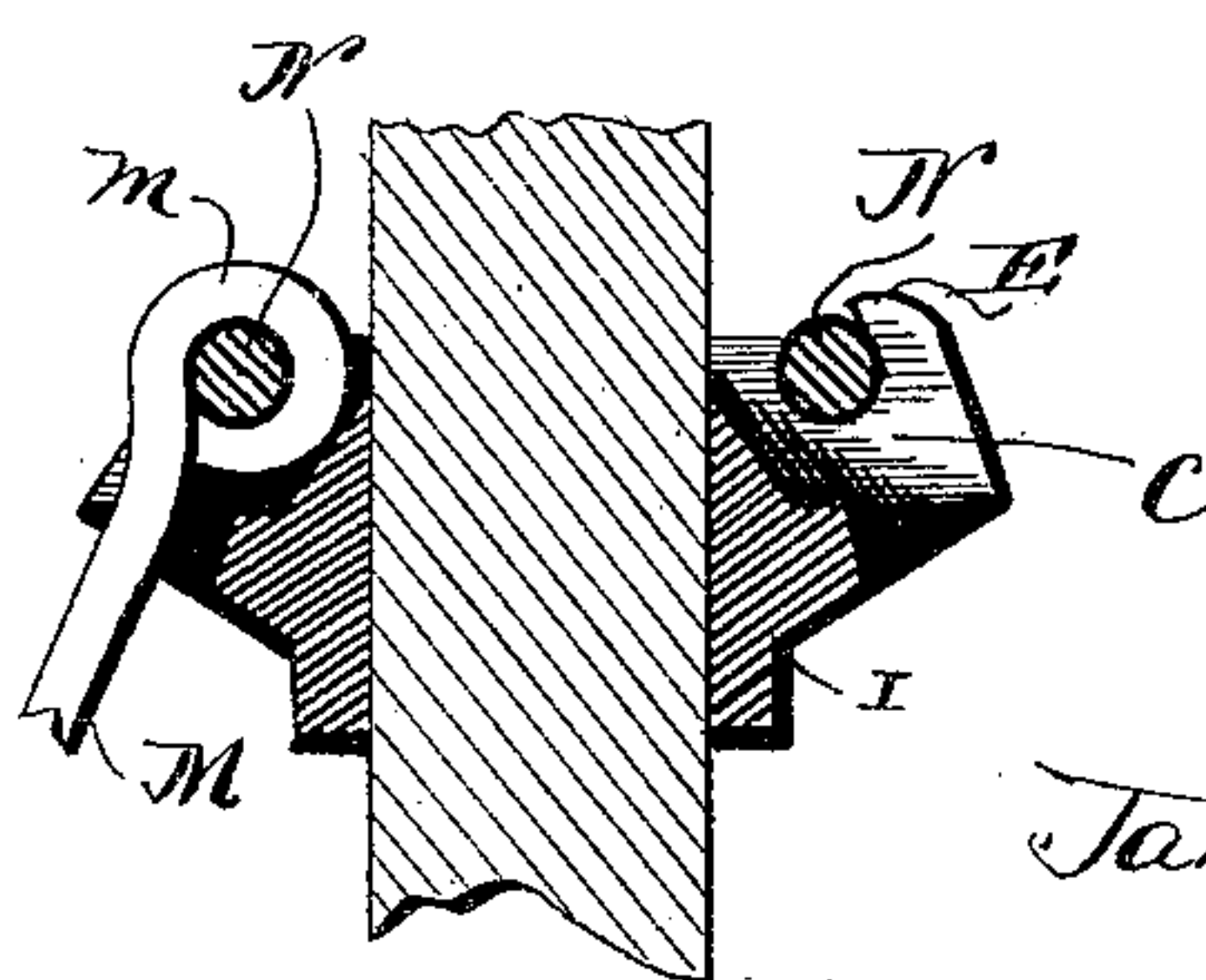


Fig. 4.



Witnesses

Wm. H. Owen

C. E. Doyle

Inventor
James H. Sprague

By *his* Attorneys

Chas. Snow & Co.

UNITED STATES PATENT OFFICE.

JAMES H. SPRAGUE, OF NORWALK, OHIO.

UMBRELLA-FRAME.

SPECIFICATION forming part of Letters Patent No. 429,783, dated June 10, 1890.

Application filed October 9, 1888. Serial No. 287,613. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. SPRAGUE, a citizen of the United States, residing at Norwalk, in the county of Huron and State of Ohio, have invented new and useful Improvements in Umbrella-Frames, of which the following is a specification.

The object of this invention is to provide a simple, cheap, and durable umbrella-frame wherein the entire strength of the materials employed therein is utilized; and it consists in a certain novel construction and combination of devices fully set forth hereinafter in connection with the accompanying drawings, and specifically pointed out in the appended claim.

In the drawings, Figure 1 is a perspective view of an umbrella-frame embodying my improvements. Fig. 2 is a detail view of the stationary hub. Fig. 3 is a central sectional view of the movable hub and sliding sleeve. Fig. 4 is a detail sectional view of the stick and the upper stationary hub, showing one of the ribs fitting in place.

Referring by letter to the drawings, A designates the stick of the umbrella, to which near its upper end is attached the stationary hub B, which consists of a circular malleable casting provided with a series of radial grooves or channels C C. These grooves or channels are intersected at their upper ends by the annular groove D, which is formed in the upper side of the casting, and E E are vertical points arranged in a peripheral series around the groove D at the upper ends of the grooves or channels C C.

The movable hub F consists of a circular malleable casting fitting around the stick and provided with a series of radial grooves or channels G G, between which are arranged the intermediate recesses H H, and the said grooves or channels are intersected at their lower ends by the annular groove I, which is formed in the lower side of the hub. This hub is also provided on its lower side with the peripheral series of downwardly - extending points K, which are arranged at the lower ends of the grooves or channels G G. The sleeve L, which slides on the stick of the umbrella, extends at its upper end through the center of the movable hub and is swaged outward at its extremity to hold it in position in the hub.

The ribs M M are preferably formed of round wire and are bent at their inner ends to form the integral eyes *m m*, and these eyes are engaged with a wire ring N, after which the ring is placed in the annular groove D in the upper side of the stationary hub. The points E E are now bent inward over the ring to secure the latter in the groove. The said ribs are bent at their central points to form loops *m' m'*, in which are engaged the integral eyes *o o* on the outer ends of the braces O O, and the eyes *o' o'* on the inner ends of the said braces are engaged with a ring P, which is placed in the annular groove in the lower side of the movable hub and locked therein by bending the flexible points K K inward. The eyes on the outer and inner ends of the braces are formed, as in the case of the ribs, by bending the wire, and it will be seen that the joint between the outer ends of the braces and the ribs is universal, thereby preventing the same from being strained when the umbrella is subjected to strain.

The grooves or channels in the hubs are of such a size that the ribs and braces fit snugly therein, thereby giving lateral strength to the said members, and any lateral strain thereon does not fall on the rings forming the pivots of the ribs and braces, but on the sides of the grooves or channels.

It will be observed from the above description of the improved umbrella-frame that all cutting of the braces and ribs (on which members the greater part of the strain falls) is avoided, and therefore the strength of the said members remains unimpaired. The eyes, which are employed as substitutes for the apertures or perforations in the ordinary practice, are received in grooves or channels formed in castings, and therefore the surface afforded by the said eyes prevents the ribs and braces from being strained or twisted out of position. Further, the loops at the centers of the ribs are on their inner or lower sides, and therefore do not interfere with the covering of the umbrella, and this connection entirely obviates the necessity of rivets or similar securing devices.

When the frame is folded, the ribs are received at their lower ends in the intermediate recesses H H, and therefore are arranged flush with the surface of the movable hub.

In constructing the frame it will be seen that all the parts are made separate, and when completed are connected in the proper form by placing the rings in the grooves and bending the flexible points inward, as before described. The outer ends of the ribs are provided with integral rings or eyes R R, which are formed by bending the ends of the ribs, and when the cover is applied to the umbrella its points may be inserted through the said rings or eyes to thereby form a stronger attachment to the frame.

In the present practice a thread is passed through a small perforation in the end of the rib; but this construction is a disadvantage, from the fact that the rib is weakened by the perforation, and the thread which is used to secure the cover is liable to break and release the same.

In constructing the casting I make it of malleable brass or iron.

It will be seen that the connection between the ribs and braces and the hubs forms a vertical joint for the inner ends of the ribs and braces, while the connection between the outer ends of the braces and the ribs provides a universal joint. Now it is necessary that the inner ends of the ribs should only have a vertical movement, for the reason that the universal connection between the ribs and the braces furnishes too great a tendency for lateral movement, which tendency can only be

counteracted by means of the vertical joint between the ribs and braces and the hubs, and also by seating the inner ends of the ribs and braces in grooves or channels of the hubs.

Having thus described my invention, I claim—

In an umbrella-frame, the combination, with the stick, of the stationary hub I, provided with a series of slanting radial grooves or channels, the ribs M, provided at their inner ends with eyes fitting in the said grooves or channels, the ring N, locked in place by malleable projections on the hub and engaging the eyes of the ribs, the said ribs being provided at intermediate points with loops m' , the movable hub F, sliding on the stick and provided with radial grooves or channels, the braces O, provided at their outer ends with eyes interlocked with the loops m' of the ribs and at their inner ends with eyes fitting in the grooves or channels of the sliding hub F, and the ring P on the said hub, engaging the eyes at the inner ends of the braces and locked in place by malleable projections on the hub, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES H. SPRAGUE.

Witnesses:

STEPHEN M. YOUNG,
H. W. PATRICK.