H. S. FROST.

Umbrella Tip-Cup.

No. 199,196. Patented Jan. 15, 1878.

Fig. 1.

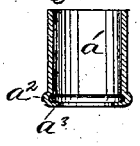


Fig. 2.

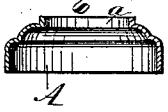


Fig. 3.

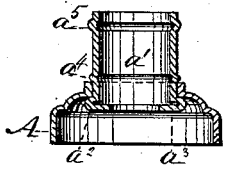


Fig. 4.

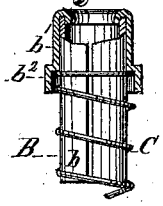


Fig. 5.

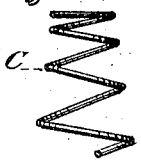


Fig. 6.

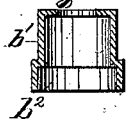


Fig. 7.

Fig. 8.

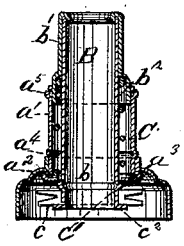


Fig. 9.

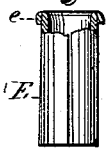


Fig. 10.

Fig. 11.

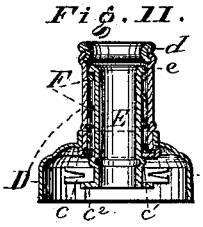
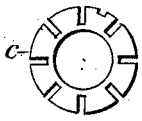


Fig. 12.



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ATTYS.

UNITED STATES PATENT OFFICE.

HENRY S. FROST, OF WATERTOWN, CONNECTICUT.

IMPROVEMENT IN UMBRELLA-TIP CUPS.

Specification forming part of Letters Patent No. **199,196**, dated January 15, 1878; application filed April 24, 1877.

To all whom it may concern:

Be it known that I, HENRY S. FROST, of Watertown, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Cup-Runners for Umbrellas; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to that class of runners for umbrellas and parasols which are provided with spring tip-cups; and it consists in certain peculiarities of construction, fully described hereinafter, by means of which a very strong and perfect runner is produced at a reasonable cost.

In the drawings, Figure 1 represents a central vertical section of the cup-tube; Fig. 2, a similar view of the tip-cup; Fig. 3, a similar view of these two parts united together; Fig. 4, a side elevation of the cylinder and spring with the cap in section; Fig. 5, a view of the spring detached; Fig. 6, a sectional elevation of the cap detached; Fig. 7, a side elevation of the cylinder detached; Fig. 8, a central vertical section of the complete runner; and Figs. 9, 10, 11, and 12, various views of a modified form.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

A, Figs. 2 and 3, represents the tip-cup, constructed of any proper material and suitable size, which is drawn in the usual manner, and pierced to form the central opening *a*, as shown.

a^1, Figs. 1 and 3, represents the cup-tube, of suitable diameter and length, which is provided at one end with a bead, a^2, and a horizontal annular flange, a^3, as shown. These two parts are strongly united together by forcing the tube a^1 through the central opening of the barrel until the bead a^2 of the former comes in contact with the inner circumference of the latter, and then knurling the tube above the upper line of the barrel, to form a bead, a^4, as shown in Fig. 3. By this means the metal of the tube is expanded beyond the bearing portion of the barrel, above and below, as shown, and the two are thus united to form practically a single piece, of great strength and rigidity, it being impossible to separate the parts again without upsetting or fracturing the metal.

a^5, Fig. 3, represents a bead, which may be formed upon the upper end of the tube, for the purpose of giving it the proper finish and strength.

B, Fig. 4, represents the runner proper, consisting of a cylinder, *b*, Figs. 4 and 7, of any proper material, which is of such diameter as to snugly fit the opening inclosed by the annular flange a^3 of the cup-tube, and is provided at its upper end with a cylindrical cap or sleeve, b^1, Figs. 4 and 6, having an annular enlargement, b^2, forming a cap or recess, as shown. This cap may be strongly united to the cylinder in any proper manner, but is preferably secured thereto in the manner described in my patent of October 19, 1875, No. 168,892.

C, Fig. 5, represents a spiral spring adapted to surround the cylinder *b*, which is wound smaller at one end, in order that it may lie close to the cylinder and fit into the recess b^2.

The runner-cylinder is united to the cup by passing its unfinished end through the latter, and placing thereon the head *c*, Fig. 8, which is strongly secured in place by a knurled bead and flange, c^1 c^2, on each side, as shown. When thus united the cup is permitted to move freely within certain limits in a longitudinal direction, but at the same time is strongly secured against entire separation.

A modification of my invention (shown in Fig. 11) will now be described.

D represents the cup barrel and tube, constructed in a similar manner to that previously described.

d represents a reducing-ring, suitably secured to the end of the cup-tube, as shown, by means of which the proper size of opening is obtained to fit the stick.

E represents the runner-cylinder, having a ring, *e*, secured thereto in any proper manner, but preferably as described in my patent of October 19, 1875, before referred to. F represents the spring, as before described.

The manner of securing the cylinder in place is the same as has been before described.

The special operation of these various parts will be readily understood.

The cylinder and cup are loosely fastened together, in such manner that complete separation cannot take place, while movement is permitted freely in a longitudinal direction. By means of the intermediate spring, one end of which presses against the enlargement b^2 of the cylinder, and the other against the annular flange a^3 of the cup-tube, the parts are held in their proper normal position, excepting when purposely moved therefrom.

The general operation of this runner does not differ materially from others of its class; but it has certain special advantages, arising from its construction, which will now be described.

By making the cup barrel and tube separately they may be drawn at one operation without annealing. These are united together, as before described, without soldering, to form a single piece, of great strength and rigidity. The runner parts are strongly united together, and it is so secured in its place that its disengagement or separation is practically impossible.

By making the cylinder with a cap-piece of finished metal, the body, which is inclosed in the cup, may be made of inferior or cheaper stock. By making, also, the finished end of the runner less in diameter than that of the cup-tube, it follows that the former does not come in contact with the latter when one moves relatively to the other, and hence it is not liable to be scratched or abraded by friction. The parts which receive the strain in action are practically solid portions of the main parts, and hence are not likely to be broken. No drawing or soldering is required, and hence the cost of production is reduced.

The runner as a whole is simple in construction, strong and durable in service, and economical in cost of production.

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

1. In combination with a sliding cup-tube, a cylinder, having a finished cap of reduced diameter, adapted to slide within the cup-tube without rubbing, as described.

2. In combination with the cup-tube, having the beads a^2 and flange a^3 formed of a solid portion thereof, the cylinder having the enlargement b^2 and the intermediate spring, substantially as described.

3. In an umbrella-tip cup, the spring C, made smaller at one end, as and for the purpose described.

4. The runner described, having the cup with flange, the cylinder with enlargement or cap, and head held by knurls, and the tapering spring, as described.

This specification signed and witnessed this 4th day of April, 1876.

HENRY S. FROST.

Witnesses:

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