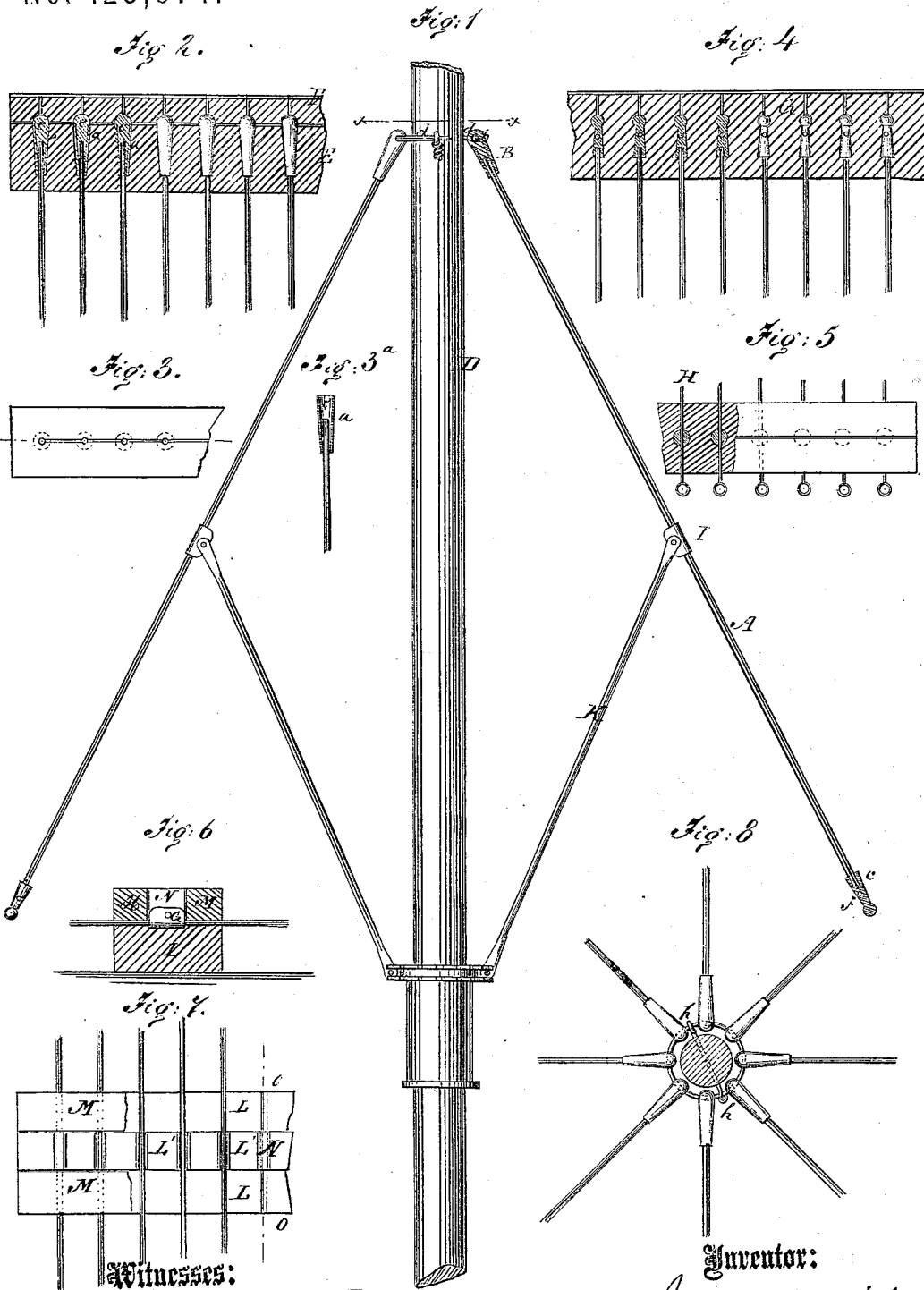


JOHN McAULIFFE.
 Manufacture of Umbrellas.

No. 125,974.

Patented April 23, 1872.



Witnesses:
Chas Nida
Alex T. Roberts

Inventor:
J. Mc Auliffe
 PER *Munn & Co.*
 Attorneys.

UNITED STATES PATENT OFFICE.

JOHN MCAULIFFE, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF UMBRELLAS.

Specification forming part of Letters Patent No. 125,974, dated April 23, 1872.

Specification describing a new and useful Improvement in the Manufacture of Umbrellas and Parasols, invented by JOHN MCAULIFFE, of the city, county, and State of New York.

The first part of my invention consists in providing soft-metal heads and tips on the ends of the steel ribs, through which to form the holes for fastening the ribs to the staff and the cloth cover to the ribs. The object of this part of the invention is to save the labor of flattening the heads of the ribs and shaping the tips on the lower ends, and punching the holes therein for connecting them to the staff or the collar thereon, and connecting the cover to them, and thus avoid the weakening of them, whereby they are rendered very liable to break, particularly as they are necessarily hardened and tempered to have the requisite elasticity, and also to enable me to temper the wire by drawing it through a fire and a chilling medium continuously from the coil, which I can do before cutting it into the short lengths for the ribs, because I have not to shape any part of it afterward, and the mere cutting of it after being tempered is not prevented thereby. This mode of tempering the ribs is decidedly better than the mode at present in use, because it insures greater uniformity thereof. The said present mode consists in placing a number of the ribs in a tube after the ends are formed and punched, and the indentation made for fastening the lap, then placing the filled tubes in the fire to heat the ribs, and finally plunging them in oil for chilling; and in order to economize time a number of filled tubes are heated together, and others added to the fire as those sufficiently heated are taken out. As the intensity of the heat of the fire varies, and the test of sufficient heat is the color of the hot tubes and ribs, the uniformity of temper, of course, depends upon the skill of the workman, which it is clear must be far less accurate than the heat obtained by drawing the wire through a gas-flame, which can be regulated with absolute certainty, as well as the movement of the wire through it. The second part consists of a novel construction of the heads for the upper ends of the ribs for obtaining the necessary capacity to resist the wear of the fastening-wire, the said heads being made of soft metal to allow of fastening

them on the ribs by solder. The third part of the invention consists of a set of molds of peculiar construction, to be used in soldering the laps to the braces.

Figure 1 is a side elevation of part of the umbrella-staff, some of the ribs and braces, the devices for fastening the ribs to the staff, and the runner for the braces; also a section of the head and tip of one of the ribs. Fig. 2 shows the upper parts of some of the ribs and their heads, some being in side elevation and some in section; it also shows a section of the molds used for finishing the heads and securing them to the ribs. Fig. 3 is a plan view of Fig. 2. Fig. 3^a is a side elevation of part of a rib and a section of the shell of the head as they are arranged previously to placing in the molds, Fig. 2. Fig. 4 is an elevation of the lower parts of some of the ribs with their tips, some of which are in side elevation and some in section; it also shows part of the molds used for casting said tips on the ribs. Fig. 5 is partly a plan view and partly a horizontal section of Fig. 4. Fig. 6 is a section of the molds used for securing the laps to the ribs; it is also a side elevation of part of one of the ribs and its lap. Fig. 7 is partly a plan view and partly a horizontal section of Fig. 6; and Fig. 8 is a horizontal section of Fig. 1 on the line *x x*.

Similar letters of reference indicate corresponding parts.

A represents the ribs, B the heads, and C the tips. These heads consist of a hollow conical shell, *a*, of tin, and a filling, *e*, of solder, the shell being temporarily fitted on the end of the rib with the large end upward, and extending sufficiently above the end of the rib to afford room for the hole *b* for the wire *d*, by which the ribs are fastened to the staff D. When the shell has been adjusted on the rib it is placed in the molds E F and the solder *e* poured in to fill up the hollow space and unite the shell and the rib, the latter being polished or made chemically clean to insure the union of the solder. The molds are capable of receiving a large number to be finished at one pouring. These heads are then drilled for the wire *d*. I use the tin-plate shells *a* instead of making the head wholly of solder, in order to have more durable substance to withstand the wear of the wire *d* than the solder only would afford. The tips C for the

lower ends not being subject to wear—as the holes *f* are only used for the thread by which the cover is fastened—are made wholly of solder, which is cast on in the two-part molds G, cores H being used to form the holes in the casting. For the laps I, by which the braces K are connected to the ribs, I use the U-shaped tin-plates shown, and I secure them by solder poured into the space above the wire, when, after being applied to the wire, they are confined in the molds L M so as to prevent the solder from escaping at the ends, the said molds being heated over gas-flames when the solder is poured in, and afterward allowed to cool. The part L of these molds has an elevated portion, L', between the parts M, with notches N, wide and deep enough for the lap, and they have semicircular grooves O for the wire each side of the lap, and the parts M have corresponding semicircular grooves in their lower sides for the upper part of the wire corresponding to the grooves O; but the sides next to the sides of L' fit tightly thereto, and prevent the escape of the molten metal. The wires are cleaned where they fit in the laps for the solder to unite, and it readily unites with the tin-plate and thereby firmly fastens the laps to the wires; said laps are dressed off after being removed from the molds to remove any surplus metal, and the holes *g* for the brace-pivots are drilled or punched.

In order to dispense with the metal collar commonly used in fastening the ribs to the staff at the upper end, I mount the wire *d*, on which they are strung at the upper end, in the ends of a wire, *h*, passing through the staff, and having an eye in each end, through which said wire *d* passes, and if necessary for keeping said ribs in place I can have washers on wire *d*, between said ribs; or I may have the heads B of such size as to avoid any space between them on the wire.

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

1. The heads B, consisting of tin-plate shells *a*, fitted with and united to the ribs by solder, substantially as specified.

2. The molds L L' M, constructed and arranged as described for confining the laps, ribs, and solder in the process of soldering the laps to the ribs, all substantially as specified.

3. The stretcher A, having its head and tip of soft metal, substantially as and for the purpose described.

The above specification of my invention signed by me this 26th day of February, 1872.

JOHN McAULIFFE.

Witnesses:

GEO. W. MABEE,
T. B. MOSHER.