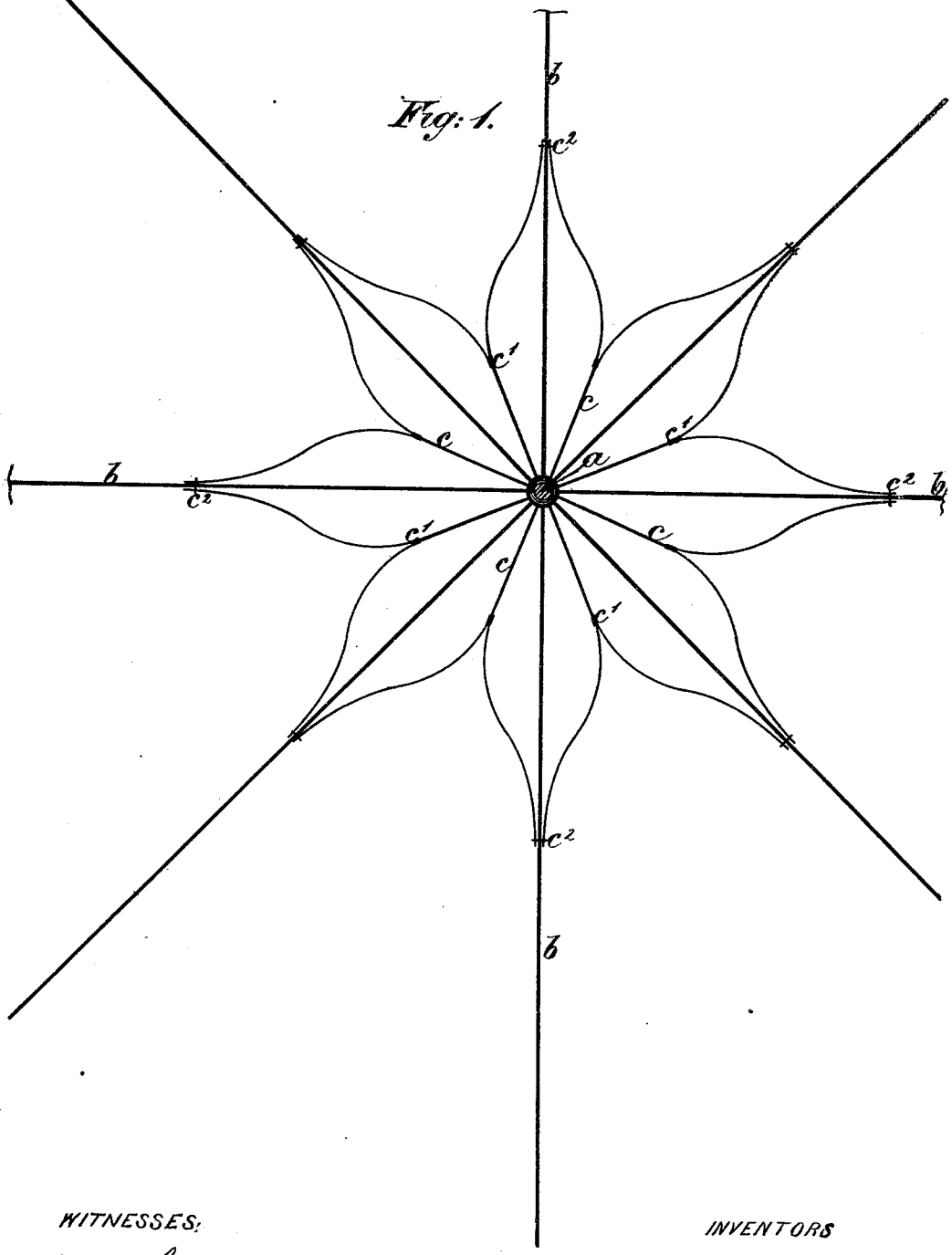
2 Sheets—Sheet 1.

J. HAYWARD & W. HOYLAND.

UMBRELLA.

No. 181,072. Patented Aug. 15, 1876.

Fig: 1.



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2 Sheets—Sheet 2.

J. HAYWARD & W. HOYLAND.

UMBRELLA.

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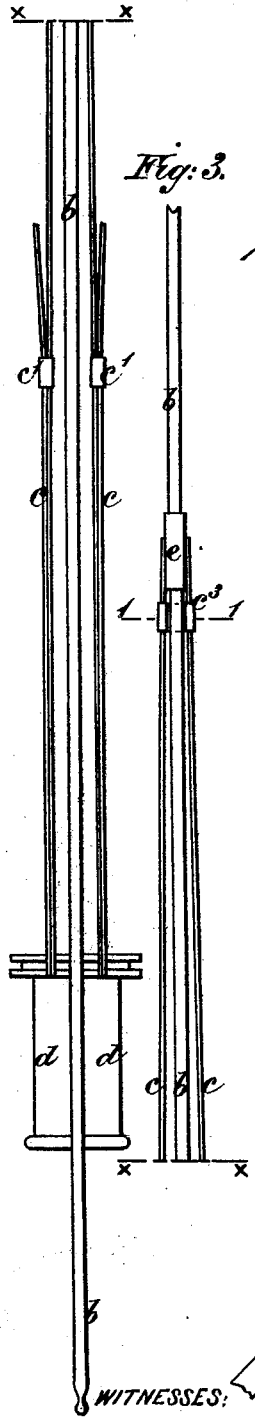


Fig: 3.

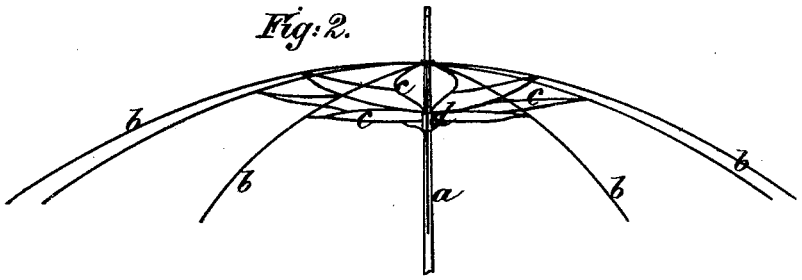
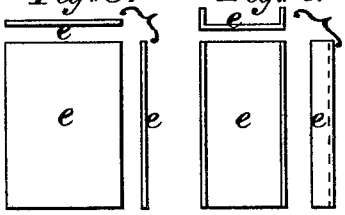
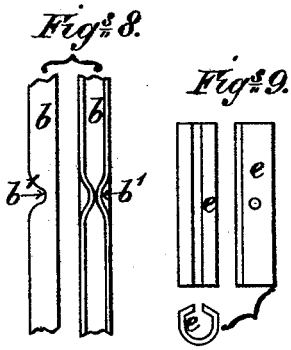


Fig: 2.

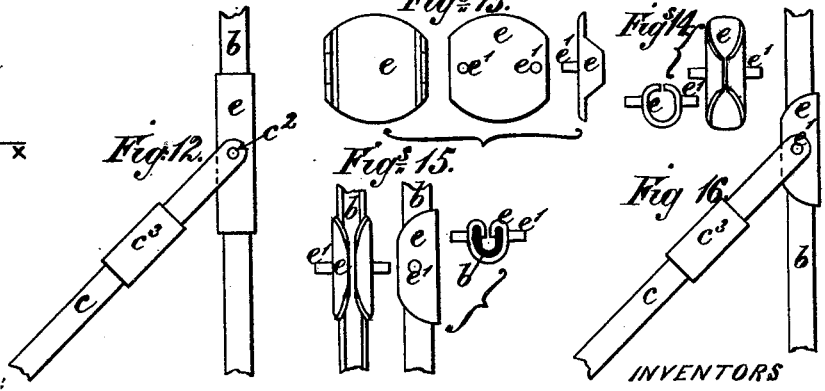
Fig: 4.



Figs. 5. Figs. 6. Fig: 7.



Figs. 8. Figs. 9. Figs. 10. Figs. 11.



Figs. 12. Figs. 13. Fig. 14. Figs. 15. Fig 16.

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UNITED STATES PATENT OFFICE.

JOSEPH HAYWARD, OF STOCKSBRIDGE, NEAR SHEFFIELD, AND WILLIAM HOYLAND, OF HUNSHELF, NEAR SHEFFIELD, ENGLAND.

IMPROVEMENT IN UMBRELLAS.

Specification forming part of Letters Patent No. **181,072**, dated August 15, 1876; application filed June 16, 1876.

To all whom it may concern:

Be it known that we, JOSEPH HAYWARD, of Stocksbridge, near Sheffield, and WILLIAM HOYLAND, of Hunshelf, near Sheffield, in the county of York, England, have invented new and useful Improvements in Umbrellas and Parasols, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention has for its object improvements in umbrellas and parasols.

The frame of an umbrella or parasol is ordinarily constructed with ribs jointed at one end to the top notch or joint-ring fixed upon the stick and stretchers, each jointed at one end of the runner or ring, which slides upon the stick, and at the other to one of the ribs.

Now, it is to the construction and arrangement of the stretchers that our invention more especially applies. We form the stretchers double, or each with two blades or limbs, which are held close to each other, where they are inserted into the notch in the runner. These two blades or limbs are not jointed to the same rib, but they diverge to the right and left. Each rib thus receives the right blade or limb of one stretcher and the left blade or limb of the next adjacent stretcher.

To prevent strain to the joints, the blades or limbs of the stretchers are coupled together by clips applied near their ends.

By this construction, when the umbrella or parasol is closed, the ribs are caused to lie between the blades or limbs of the stretchers and between the joints which connect the stretchers with the runners.

Recesses may be formed in the runner, between the stretcher-joints, to allow the ribs to lie as closely as may be to the stick. In order, also, that the stretchers and ribs, where they are jointed to one another, may lie, as nearly as may be, side by side, and so reduce to a minimum the depth of the joint, an indent or hollow is formed across the ribs where the joint bit or git is applied to them, in order to allow the rivet or pin of the joint to come as close as may be to the center of the rib.

In the drawings hereunto annexed we have shown various views of the frame of an umbrella formed in the manner above described.

Figure 1 is a plan view of the frame when open; Fig. 2, a perspective view of the same. Fig. 3 shows a full-size view of a portion of one of the ribs with its double stretcher and the runner in the position assumed when the umbrella is closed. Fig. 4 shows a section taken through the line 1 1, Fig. 3. Figs. 5, 6, 7, 8, 9, 10, 11, and 12 show one way in which we form the joint by which the stretchers are jointed to the ribs. Figs. 13 to 16 show a modification of this joint.

In Figs. 1, 2, and 3, *a* is the stick of the umbrella. *b b* are the ribs, jointed in the ordinary manner to the top notch. *c c* are the double stretchers. *d* is the runner. As the drawings show, each stretcher is formed of two blades. Where the stretchers meet the runner the two blades lie side by side, and are jointed to the runner in the same way that the ordinary stretchers are now jointed to it. At an intermediate point of their length they are also coupled together by a small metal band, c^1, which embraces them. The blades then diverge, and are jointed one to the rib on their right hand and the other to the rib on the left hand, as shown at Figs. 1 and 3. Each rib has thus a blade on each side of it, and the two blades are secured to the rib by a rivet, c^2. To prevent strain upon the joint the two blades, near their ends, are coupled together by a clip of sheet metal, c^3, as shown at Fig. 3, and in the section, Fig. 4, taken through this clip. By tying together the two blades in this manner they are prevented from approaching or moving away from one another.

Although we prefer to form the stretchers of two separate blades throughout the whole of their length, as above described, this is not essential, as they might be made solid between the point c' and the runner.

In order that the stretcher-blades and rib may lie side by side, we form the joint bit or git upon the rib in the manner illustrated at Figs. 5 to 12.

Figs. 5 show a piece of thin sheet iron or steel, *e*, to be applied around the rib where

the joint-bit is to be formed. The side edges of this strip of metal are first bent up by suitable dies, in the manner shown at Fig. 6. Two holes are then punched or drilled in it, as shown at Fig. 7.

Figs. 8 show a portion of a trough-rib, where the joint-bit is to be formed upon it. On either side of the rib an indentation, b', is made where the pin or rivet of the joint has to pass.

The strip of metal shown at Fig. 7 is, by suitable dies, bent into the form shown at Figs. 9. It is then slipped onto the rib and the holes formed in the plate are brought opposite to the indent in the rib. Afterward, a pin is passed through these holes to hold the bent-over strip of metal in its place, and the strip *e* is, by other dies, closed firmly onto the rib, as shown at Figs. 10. To further secure it to the rib, and to compensate for the rib being weakened to make way for the rivet, the edges of the strip are afterward, by other dies, bent inward into the trough of the rib, as shown at Figs. 11. The stretcher ends are secured to the bit *e* by a pin passed through them and through the hole in the bit, the ends of the pin being afterward riveted over. A stretcher end so jointed to one of the middle bits is shown at Fig. 12.

By constructing the joint or middle bit in the manner above described, the pin or rivet of the joint may be brought down to the center of the rib, so that the ribs and the blades of the stretchers may lie side by side.

We would state that we are aware that it has before been proposed to cut a nick across the opposite sides of the trough rib of an umbrella, for the pin of the stretcher-joint to lie in; we do not, therefore, make any claim to forming a nick in the ribs at this point; but, by closing the side edges of the strip *e* over the trough of the rib, and bending them inward into this trough, as above described, we are enabled not only to bring the pin of the joint near to the central line of the rib, but at the same time we strengthen the rib, so that the rib is not weakened at this point.

Figs. 13 to 16 show another way of forming the joint between the stretchers and ribs to effect the same object. In this case we form the plate *e* with projecting tabs or pins e', projecting outward from it to form the pin of the joint, in place of employing a separate pin passing across from one side of the rib to the other. The plate *e* is, as in the joint above described, secured to the rib by turning over its sides into the interior of the trough of the rib.

Figs. 13 show the plate or bit *e* formed with two pins, e', projecting from one of its sides, and with its side edges bent over on the opposite side. Figs. 14 show the bit *e* bent over so as to slide onto the rib. Figs. 15 represent the bit secured to a trough-rib by bending inward the side edges of the bit, as shown. Figs. 16 show a stretcher end jointed to one of the bits, the ends of the tabs or pins *e* being riveted over to retain the limbs of the stretcher.

We would state that the ways above described of forming the middle bit or joint for connecting the ribs of umbrellas and parasols to their stretchers is applicable not only to umbrellas and parasols formed, as hereinbefore described, with stretchers, each having two blades or limbs, but also to umbrellas and parasols in which each rib has but one stretcher jointed to it.

Having thus described the nature of our invention, and the manner of performing the same, we would have it understood that we claim—

1. The frames of umbrellas and parasols, constructed substantially in the manner hereinbefore described, each stretcher being formed with two blades or limbs, which are jointed, one to the rib on its right hand, and the other to the rib on its left hand.

2. The combination, substantially as hereinbefore set forth, of the double stretchers, the ribs upon the opposite sides of each of which the respectively adjacent limbs of two stretchers are jointed, and the clips by which said limbs are coupled together near their ends, whereby they are held in proper position, and strain on the joints between them and the ribs lessened.

3. The combination of the trough-shaped ribs, the middle bits or joints fitting around the ribs and having their edges bent inward into the troughs of the ribs, and the pivots or pins projecting from the sides of the bits, substantially in the central lines of the ribs, by which pins the stretchers are jointed to the ribs, these members being constructed and operating substantially as hereinbefore set forth, whereby the ribs are strengthened and the ribs and stretchers, when folded, lie side by side, as described.

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