

(No Model.)

C. W. HARRIS.
UMBRELLA.

No. 404,039.

Patented May 28, 1889.

Fig. 1

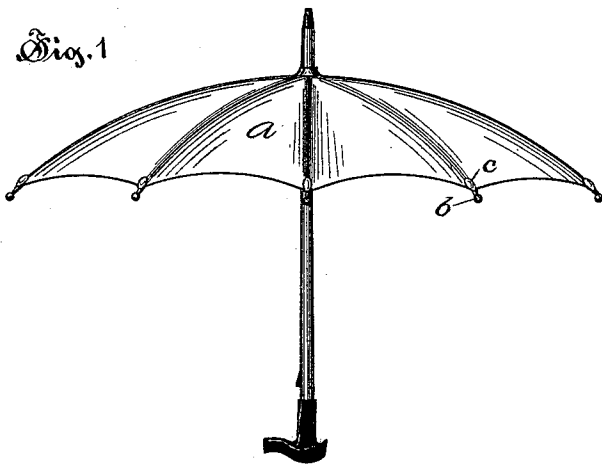


Fig. 2

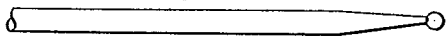


Fig. 4



Fig. 3

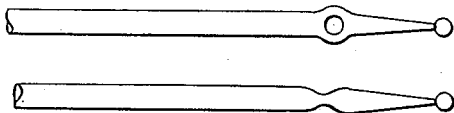


Fig. 5

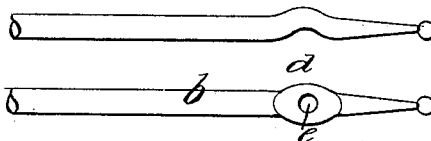


Fig. 6

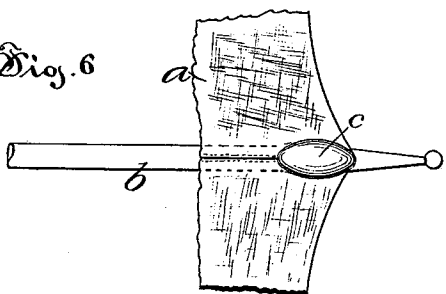


Fig. 7



Witnesses:

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Inventor,

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UNITED STATES PATENT OFFICE.

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UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 404,039, dated May 28, 1889.

Application filed October 6, 1888. Serial No. 287,367. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HARRIS, of Hartford, Connecticut, have invented certain new and useful Improvements in Umbrellas, of which the following is a specification.

My improvement relates to umbrellas, sunshades, and parasols; and the object is to construct such an article so that the cover is securely and firmly attached to the ends of the ribs and will neither unfasten by the rotting away of the fastenings nor tear small holes in itself near the fastening when the cover is stretched, which fastening is ornamental and cheap.

Referring to the accompanying drawings, Figure 1 is a side view of an umbrella embodying my improvement. Fig. 2 is a side view, on an enlarged scale, of the end of the old form of rib before the final operation of swaging and punching the fastening-loop. Fig. 3 are side and plan views of the end of the old form of rib when completed. Fig. 4 is a side view of the rib used with my improvement before the final operation of swaging and punching. Fig. 5 are side and plan views of the same when completed. Fig. 6 is a plan view of a small section of an umbrella near the end of a rib. Fig. 7 is a view in vertical section of the same.

In the drawings, the letter *a* denotes the cover of the umbrella, which may be of any ordinary material; and *b*, the ribs, of which there are the usual number, opened and closed by any ordinary means, to the ends of which the cover is secured by the fastenings *c*.

The ribs *b* used with my improvement are made larger in diameter near their outer ends, as at *d*, and then are swaged in dies and swelled out sidewise and form a large oval bearing-surface on the top of the rib, which is then perforated vertically, as at *e*. This gives strength to the rib and sufficient metal around the perforation to prevent the steel from cracking when the fastening is headed over to secure it in place; also forms a large surface upon which the head of the fastening may set to hold the cover and prevent the fibers from separating and tearing away. The fastening *c* is made of comparatively soft metal with a large oblong head, the under side of which is

made to conform closely to the top of the swelled part of the rib, and the shank is of a size and length that will project through the vertical perforation *e*.

In the old form of umbrella the ribs have been made of steel wire of uniform shape in cross-section throughout their length, either round or $\cap$ -shaped, and have been compressed near their outer ends, and through this compressed portion a hole was made to receive the thread which secured the cover to the ribs. This hole had to have round and smooth edges, or it cut the thread and released the cover in a short time. It is a difficult operation to make such a hole smooth, and if it did not cut the stitching the thread would in a short time rot and break away.

My improvement holds the cover close to the rib without stitching, in such a manner that the cloth cover cannot tear away.

By making the head of the fastener oblong, the longer diameter running lengthwise of the rib, the ends of the head may be compressed down upon the swelled and rounded portion of the rib and firmly bite the cloth of the cover between the head and rib on a curve, which will hold the cloth from tearing away, as the edges of the head are some distance in the direction of the greatest strain from the place where the shank passes through and separates the fibers of the material used as the covering. This also permits the hole to be made through the cover some distance from the edge of the cloth and have the head project out far enough to reach the edge of the cover and hold down the end of the seam.

It is obvious, of course, that the fastening can be made to hold the cover between the large oval and swelled surface of the top of the rib and its head more tightly than if the top of the rib were flat. When the fastenings are used to secure a cover to a frame the ribs of which are $\cap$ -shaped, such ribs are first swaged to make the rib more nearly flat upon the top and then punched where the fastening is to be applied, and in securing it in place a small piece of metal or burr is set into the hollow of the rib, and over this the shank of the fastener is headed.

The top of the fastenings may be plated or

otherwise suitably ornamented, which adds much to the appearance of the umbrella, at the same time being cheap and durable.

I claim as my improvement—

- 5 1. As a new article of manufacture, an umbrella consisting of a stick, a frame the ribs of which are swelled near their ends and perforated at the swelled part, and a cover at-
10 tached to the frame by metallic fastenings, each consisting of an enlarged head and a solid shank, which shank passes through the opening in the rib and is headed over on the side opposite from the enlarged head to cause
15 the head to hold the cover close to the top of the swelled part of the rib, substantially as specified.

2. As a new article of manufacture, an um-

rella consisting of a stick, a frame the ribs of which are swelled near their end and perforated at their swelled part, and a cover at- 20
tached to the frame by metallic fastenings with oblong heads, their longer diameter being in the direction of the length of the ribs, the shanks of the fastenings passing through the perforations and headed over on the un- 25
der side to cause the oblong heads to bite the cover between the fastenings and the swelled upper face of the rib, substantially as specified, and for the purpose set forth.

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Witnesses:

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HARRY R. WILLIAMS.