(No Model.)

D. CARPENTER.

FOLDING UMBRELLA.

No. 577,234. Patented Feb. 16, 1897.

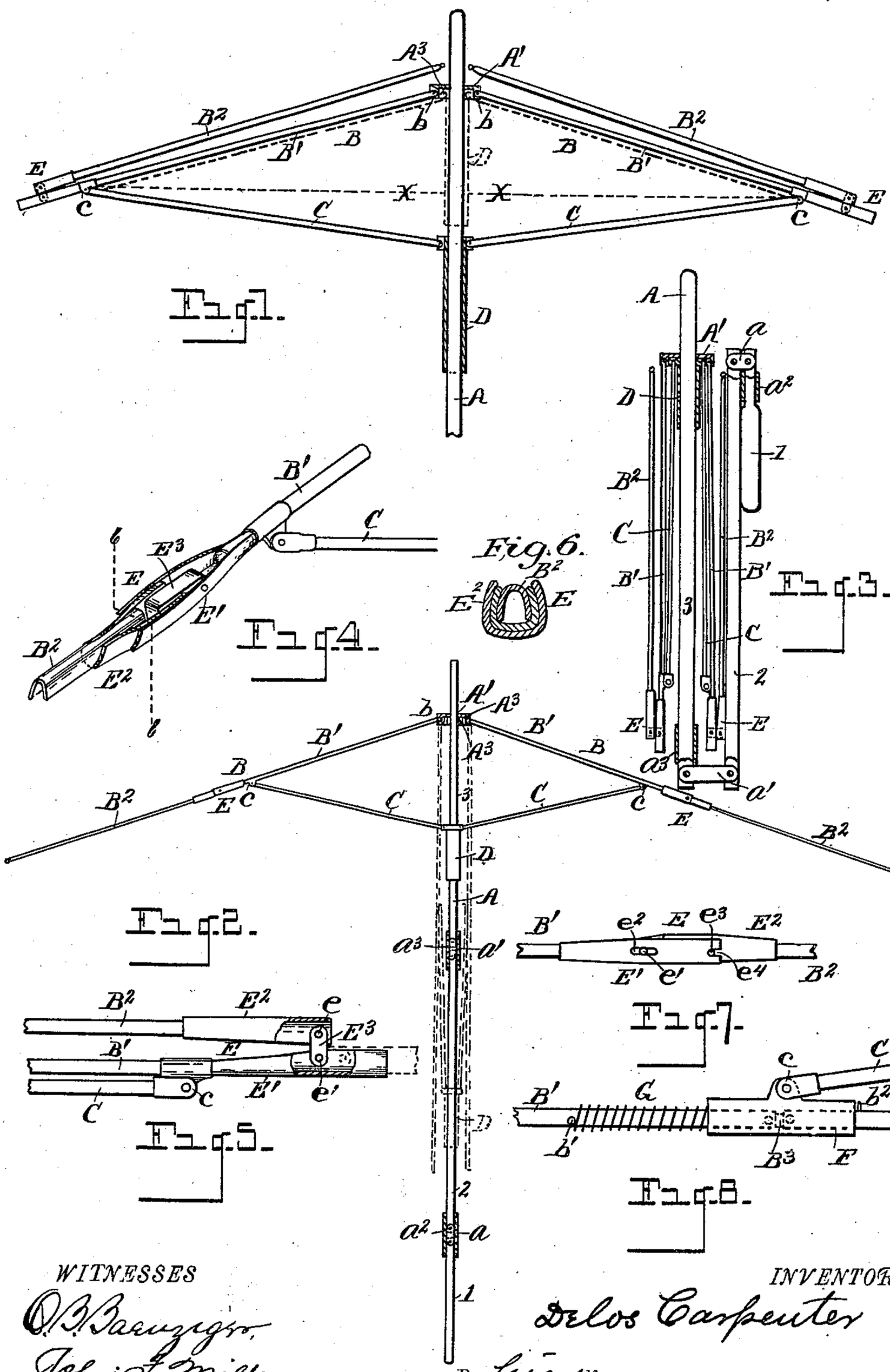

Fig. 1.

Fig. 4.

Fig. 6.

Fig. 3.

Fig. 2.

Fig. 5.

Fig. 7.

Fig. 8.

WITNESSES

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FOLDING UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 577,234, dated February 16, 1897.

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To all whom it may concern:

Be it known that I, DELOS CARPENTER, a citizen of the United States, residing at Orion, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Folding Umbrellas; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object a folding umbrella of novel construction and of superior utility, which may be readily folded up into compact form, and which may be readily unfolded when desired for use, the umbrella when unfolded in readiness for use being firm and strong and of neat appearance. The desirability of such an umbrella, especially for convenience in traveling, is well understood.

To these ends my invention consists of the construction, combination, and arrangement of devices and appliances hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the frame, the handle being broken off and the cloth covering being removed, the ribs being shown in folded position. Fig. 2 is a vertical section, showing the ribs in full lines in expanded position and folded down alongside the handle in dotted lines. Fig. 3 is a view of the umbrella frame and handle in folded and closed position. Fig. 4 is a detail view in perspective of one of the joints connecting the portions B′ and B² of the ribs, the ribs being in expanded position. Fig. 5 is a view of the same in side elevation and longitudinal section, said portions of the ribs being folded. Fig. 6 is a cross-section on the line 6 6, Fig. 4. Fig. 7 is a detail view showing a modified form of a joint, and Fig. 8 is an additional detail view showing another modification of said joint.

I carry out my invention as follows:

In the drawings, A represents an umbrella-handle made in multiple sections, three, numbered 1 2 3, being shown in Fig. 2, said sections constructed to be disjointed or folded in any desired manner.

I do not confine myself to any particular method of constructing the handle to permit the umbrella being folded, as this may be done in any suitable manner. As shown, the handle is formed with joints *a a′*, and provided with runners a^2 and a^3 to slip over the joints when the handle is in expanded position.

The ribs B of the umbrella are each formed of two parts B′ and B² jointedly connected at their adjacent ends in a manner hereinafter described, so that the lower portion B² may be folded upward and outward over and alongside the upper portion B′. The upper ends of the portions B′ of the ribs are jointedly connected with a top notch A′ upon the handle in the usual manner, as at *b*.

C denotes the brace-rods, united at their inner ends to a runner D upon the handle and at their outer ends with the upper portions B′ of the ribs in a customary manner, as indicated at *c*.

The top notch A′ is preferably constructed with a chamber A^3 at its lower end, wherein the upper end of the runner D may be received in the operation of the device to permit the braces being thrown sufficiently upward to permit the folding and unfolding of the ribs and to permit the braces C being folded upward and inward alongside the folded ribs.

A prominent feature of my invention is to connect the adjacent ends of the ribs so that the outer ends thereof may be folded outwardly and upwardly over and alongside the corresponding upper portion of the rib. To effect such a jointed connection, I have shown in the drawings, and more specifically in detail in Figs. 4 to 6, a joint E, consisting of arms E′ and E², secured to the parts B′ and B² of the ribs, respectively. The two arms are united by an intermediate link E^3, jointedly connected with each of said arms, as indicated at *e e′*, the link serving to permit the lower portion of the rib to fold upward over the covering of the umbrella.

I have shown the arm E′ of the joint channeled to receive the arm E² when the entire rib is in expanded position. The sides of this channeled arm I construct with a spring-tension sufficient to firmly clasp the arm B² when sprung thereinto, and so hold the jointed connection in place, preventing the liability of

the parts becoming inadvertently disjointed; also preventing the parts working loose and insecure. The same results may be secured by constructing the arm B′ with an elongated slot e^2, in which the pivot-pin at e' may be engaged, as shown in Fig. 7, and by providing the arm E^2 with a pin e^3 to slip into a recess e^4 on the end of the arm E′. The same results may also be secured by means of the construction shown in Fig. 8, in which the parts B′ B^2 of the rib are connected by a link B^3, jointedly connected thereto, a runner F being provided to slip over the link and the adjacent ends of the rib portions B′ B^2. In this case the brace C is connected to said runner, as shown, and the parts B′ B^2 of the rib are provided with stops b' b^2 to limit the movement of the runner, a spring G serving to hold the runner F in position over the joint, yet permitting the runner to be slipped away, so that the outer end of the rib may be folded in the manner described.

By shortening the braces I may dispense with the necessity of forming the top notch A′ with the chamber A^3.

I have indicated in Figs. 1, 2, and 3 how the runner D may be slipped up adjacent to the top notch A′. It will be perceived that intermediate the top notch and the normal position of the runner, when the umbrella is expanded, the runner, to be slid upward from said normal position, must pass the center (indicated by the line x x, Fig. 1) and that the said runner is permitted to pass said center to fold the umbrella in compact form. (Shown in Fig. 3.) This construction in an umbrella, where the runner D is required and permitted to slide past said center, is believed to be entirely novel and is one which enables me to fold my umbrella in a very close compass, substantially one-half the length of an ordinary umbrella, so that a twenty-eight-inch umbrella, for example, can be folded into a package substantially fourteen inches in length, and others in proportion.

Having described the various combinations, constructions, and arrangements of parts of the device, I will now describe the method of operation to fold and unfold the umbrella so constructed.

It will be seen that the outer portions B^2 of the ribs can be folded over whenever the runner D is slipped out of its normal expanded position, either above the center x x or below its normal position.

When the umbrella-ribs are in expanded position and it is desired to fold the device into the form shown in Fig. 3, the runner D is slipped either upward past the center x x or below said normal position, when the end portions B^2 of the ribs may be folded over, outward, and upward, the covering folding in between the upper and lower portions of the ribs. The brace-rods fold up by slipping the runner D up adjacent to the top notch A′. The handle will also be folded, as shown, or its parts detached accordingly. When it is desired to expand the umbrella from the folded form shown in Fig. 3, the lower ends of the ribs are folded down longitudinally of the upper portions, the runner D either being in position above the said center or being slipped down below its normal position when the umbrella is expanded for use.

What I claim as my invention is—

1. In a folding umbrella, the combination of ribs formed of upper and lower portions B′, B^2, channeled arms, the one arranged to overlap the other, connecting the adjacent ends of said ribs, a link having a jointed connection with said arms, means to hold the arms in expanded position, and braces arranged to fold upward, for the purpose described.

2. In a folding umbrella, the combination of ribs formed of upper and lower portions B′, B^2, arms E′, E^2 secured to the adjacent ends of said ribs, and a link connecting said arms, one of said arms channeled and arranged to overlap the other arm and formed with side walls having a spring-tension to receive and hold the other arm in place when said portions of the rib are expanded, for the purpose set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

DELOS CARPENTER.

Witnesses:
N. S. WRIGHT,
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