

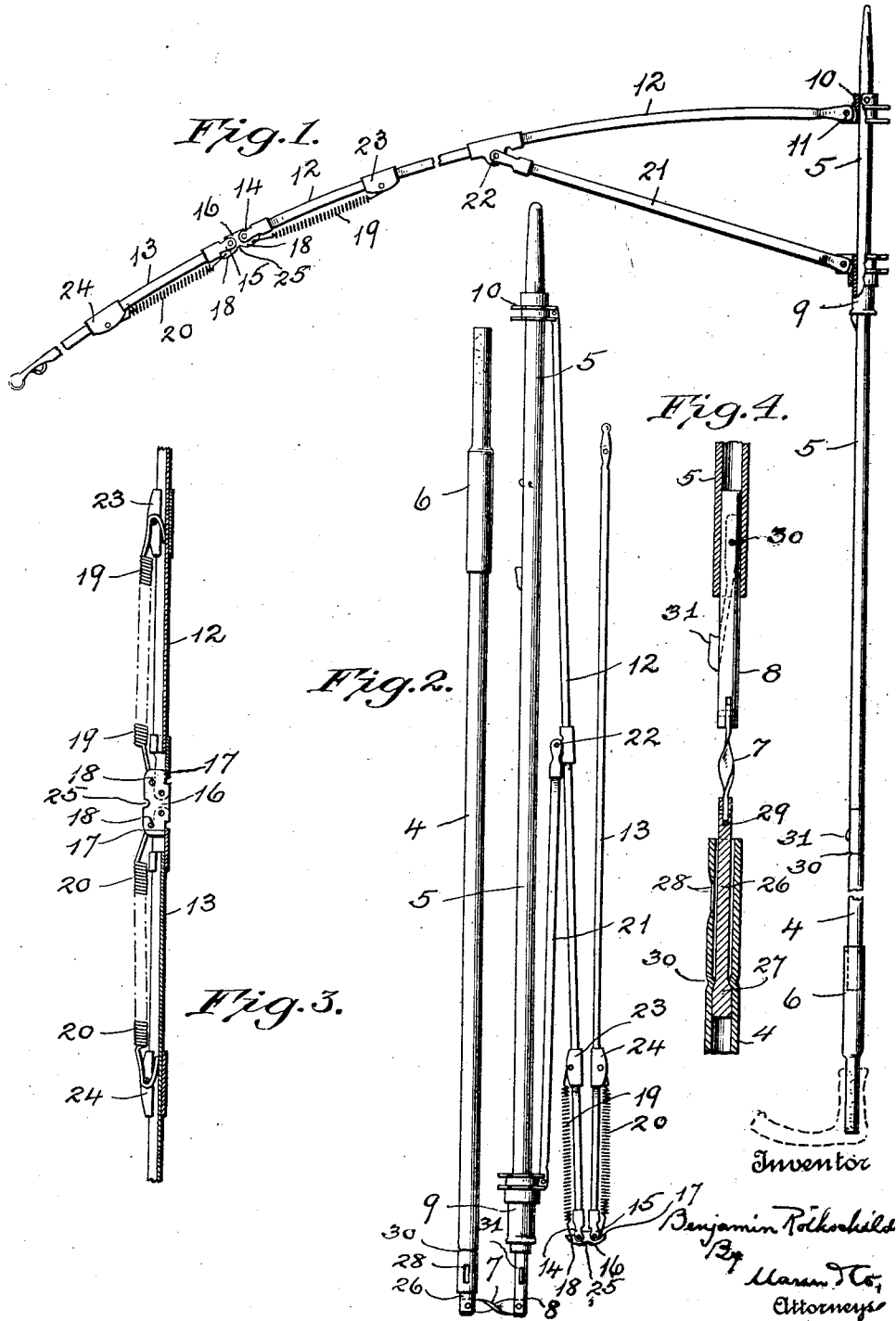
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UMBRELLA

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UNITED STATES PATENT OFFICE.

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UMBRELLA.

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To all whom it may concern:

Be it known that I, BENJAMIN ROTHSCHILD, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Umbrellas, of which the following is a specification.

This invention relates to improvements in umbrellas and has particular reference to an umbrella that may be raised and lowered as in any umbrella; which may be folded to substantially one-half its normal length; the folding of which may be effected without detaching either the ferrule or handle end; which may be readily operated and which when in the folded condition will be self-unfolding. The invention of the present application is a direct modification of and an improvement on the structure set forth in a companion application executed and filed by me on even dates herewith.

With the above and other objects in view, the accompanying drawing illustrates the invention, wherein,—

Fig. 1 shows the skeleton frame of an umbrella embodying the features of the invention,—the cover being omitted and the rod materially shortened at the handle-end.

Fig. 2 illustrates the folded rod and one of the folded ribs attached thereto and shows that the folding reduces the structure to substantially one-half its normal length.

Fig. 3 shows an enlarged longitudinal sectional detail through the joint that connects the two rib parts, and

Fig. 4 shows an enlarged sectional detail through the rotatably and pivotally-connected rod-sections.

Referring to the drawing the numerals 4 and 5 designate the two rod parts,—the part 4 being provided with a sleeve 6 to which the handle (shown in broken lines in Fig. 1,) may be attached. The opposite end of this handle-part contains a short stem 26 which latter has an enlargement 27 at its inner end which is located within the end of the tubular rod-part 4, as clearly shown in Fig. 4 of the drawing. This short stem is held in the tubular rod-part by means of an annular indentation 30 that is made in the rod which indentation forms a contracted portion on the interior of the rod above the enlargement 27 of the stem and limits the outward movement of the latter. The stem 26 is therefore free to rotate in the

tubular rod-part 4 and may also move longitudinally in said rod-part, but cannot be withdrawn therefrom because of the head and the indentation.

A vertical slot 28 is provided in the rod-part 4 between the indentation and the end thereof for a purpose presently to be explained.

The outer end of the stem 26 is provided with a cross-slot 29 and one end of a short link 7 fits in this slot and is pivotally retained therein. The other end of the short link 7 is pivotally connected to a short stem 8 that projects from the end of the other rod-part 5 so that the link 7 pivotally connects the two stems.

The short stem 8 is rigidly secured in the end of the rod-part 5 by means of a cross-pin 30 and this pin also serves to retain a spring pawl 31 which is carried by the stem 8 and which will enter the tubular end of the rod 4 when the two rods are joined and spring outwardly into the slot 28 whereby to lock the rod-parts together.

The upper rod-part 5 forms the slide part for the runner 9, and it is to be noted that said runner never passes below the lower end of said upper rod-part even when in its lowermost position, which is when the umbrella is in either of its two folded positions.

At the extreme upper end, the rod-part 5 has the usual grooved collar 10, in which the pivot-ends 11 of the ribs are retained in the well-known manner.

The ribs are formed in two sections 12 and 13 respectively,—the section 12 being the main section, and having its end 11 pivoted at the grooved collar, and the sections 13 being the free end section which is the foldable section of the rib.

The rib sections 12 and 13 have bifurcated or slotted ears 14 and 15 at their adjacent ends, and a flat link plate 16 is interposed between the ends of the two rib-sections, and each section is independently pivoted to the interposed link.

The ends of these link-plates project under the concave side of the rib-sections and each end thereof has a flat end-portion which forms a stop shoulder 17 and prevents the rib-section 13 from swinging inwardly with respect to the rib-section 12, to which it is pivotally connected.

Each link-plate has an eye 18 at each end thereof which eyes are located at the inner

or concave side of the two rib-sections, or at the under side of the ribs, and each link also has a notch 25 at its under side for a purpose that will be explained.

5 A coiled spring 19 has one end securely attached to a clip plate 23 on the main rib-section 12 and its other end is connected to the eye 18 on the link plate nearest to said main rib-sections 12. This spring 19 is al-
10 ways under tension and constantly pulls on said link plate.

Another coiled spring 20, has one end securely attached to a clip plate 24 on the fold-
15 able rib-section 13 while its other end is connected to the other eye 18 of the link-plate.

It will thus be seen that the two coiled springs 19 and 20 constantly pull in oppo-
20 site directions on the link plates 16 and that the pull of the springs on the sections is such as to keep the section 13 drawn inwardly or toward the rod.

Each of the main rib-sections 12, is pivotally connected to a stretcher-bar 21 and it
25 will be noted that these stretcher-bars have their pivot-points 22, located about midway between the two ends of the main section 12 and that the stretcher-bar 21 is not only of less length than the main rib section 12 but
30 is practically but one-half the length of that section.

As the stretcher-bars 21 are quite short, it follows that the stroke of the runner 9 on
35 the rod part 5 is also quite short and therefore the link-bar 7 and its connection to the rod part 4 may be located well up the rod above the head of the user of the umbrella, all of which aids in making it feasible to
40 fold the ribs and the rod substantially about midway between their upper and lower ends.

It is obvious that the cover, which is not shown, will be stretched over the convex side
45 of the ribs and secured thereto in any of the well-known ways.

In securing the cover in place, I not only
50 attach the same around the collar 10 and at the tips of the ribs, but I loop a stitch about the link-plates 16, passing the same through the notch 25 and also through the cover so as to tack the cover to each link where the
55 folding of the ribs takes place.

After the umbrella is lowered in the usual way by drawing the runner 9 down on the
60 rod-part 5, the free end-portions 13 of the ribs may be turned back by swinging the top ends of the ribs upwardly toward the grooved collar 10, and the rod-part 4, may then be turned up inside, all as shown in Fig. 2 of the drawing.

The turning up of the foldable rib-sections
65 13, will cause the springs 20 and 19 to stretch, but when thus turned, the ends may be secured by a band or the usual strap on the umbrella, so as to hold the sections in the folded condition.

Upon releasing these sections 13, they will

automatically spring back to their normal positions and leave the umbrella in merely the normal lowered or collapsed condition.

The loose and rotatable connection be-
70 tween the stem 26 and the handle-part 4 of the rod is very desirable in that it permits the handle-ends of the rod to be rotated about the stem with respect to the other rod-
75 part 5. This rotation is very desirable because a large percentage of umbrellas have crooked or curved handles and when the rod of such an umbrella is folded the fact that the handle-end can be rotated enables the
80 handle to be turned so that it can receive the tip in the crook of the handle and thus reduce the size of the folded-together parts at the registering tip and handle-ends.

Another advantage arising from the fact that the handle-end of the rod may be ro-
85 tated, is that the link 7 is pivotally engaged in end-slots of the two stems 26 and 8 and after the two rod-parts have been separated, as shown in Fig. 4 of the drawing and it is desired to fold the two rod-ends so as to
90 cause them to lie side-by-side, the stems 26 and 8, because of their end slots, will permit the link 7, to move only in a direction parallel with those end slots and it is not an infrequent thing for the link 7 to become
95 bent or broken. By having the stem 26 rotatably mounted in the rod-part 4 (which is the handle-end), as the latter is swung with respect to the link it will rotate on the stem
100 26 and during this rotation the joint between the stem and link will shift sufficiently to enable the slot 29 to assume a position in a plane parallel with the strain applied to the rod-part 4 so that the folding of the one
105 rod-part with respect to the other will be accomplished with ease and twisting or bending the link is practically impossible.

Having described my invention, I claim,—

An umbrella rib composed of sections, shoulder members applied to the ends of the
110 sections and having intermediate stop portions projecting beyond the ends of the sections, a link plate pivoted to the shoulder members at points beyond the end edges of the stop portions thereof, said plate being
115 broader transversely than the transverse breadth of the sections and provided at its ends and at one side edge with recesses adjusted to receive the stop portions and whereby the intervening edge portion of the plate may aline with the outer surfaces of
120 the stop portions when the rib sections are alined with each other, and springs connected at one end with the plate at points beyond the end edges of the intermediate stop
125 portions of the shoulder members and connected at their other ends with the rib sections at points spaced from the ends thereof.

In testimony whereof I affix my signature.

BENJAMIN ROTHSCILD,