April 13, 1948. A. P. PFEIL 2,439,752

UMBRELLA

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Fig. 1.

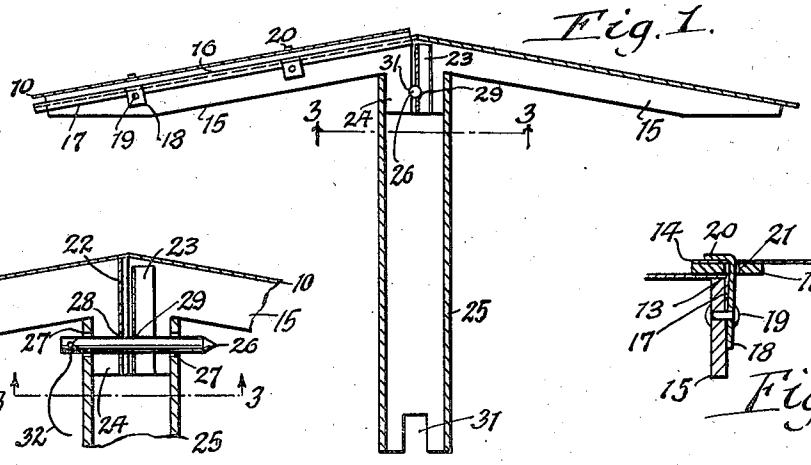


Fig. 4.

Fig. 5.

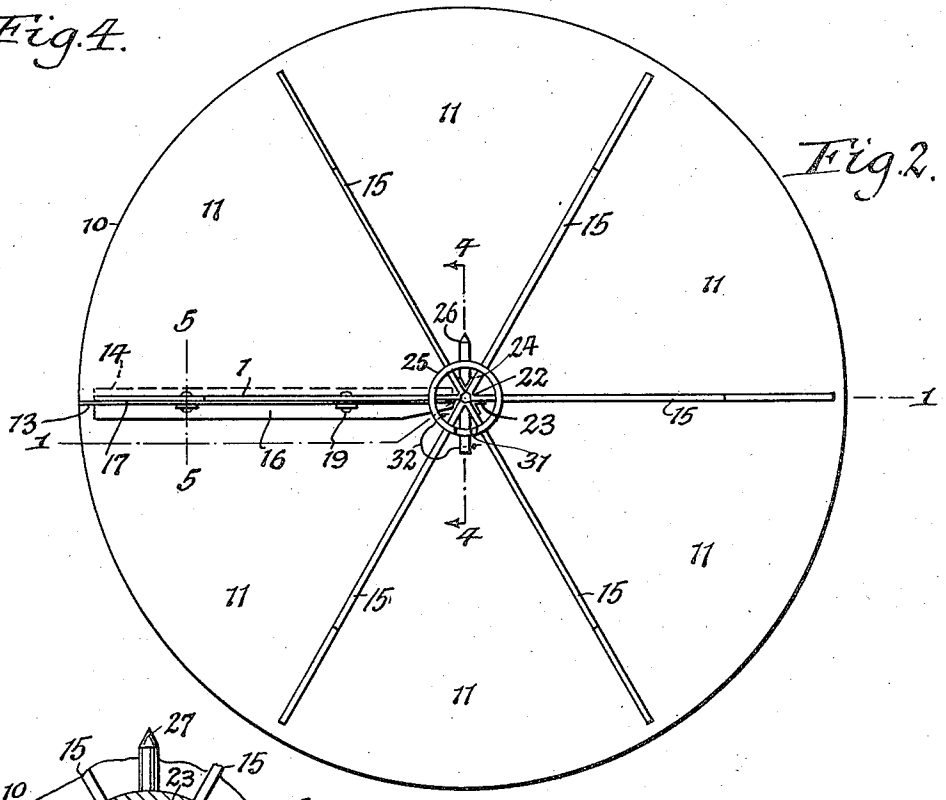


Fig. 2.

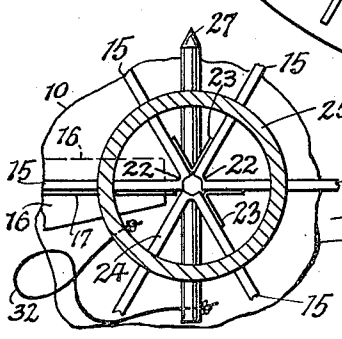


Fig. 3.

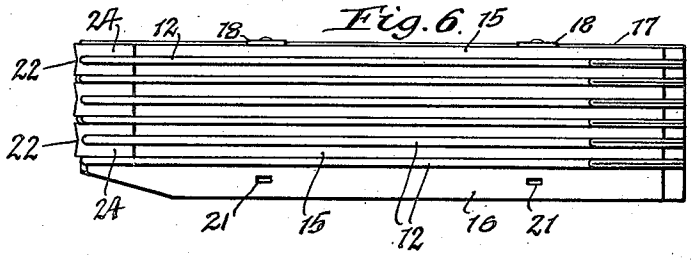
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Fig. 6.



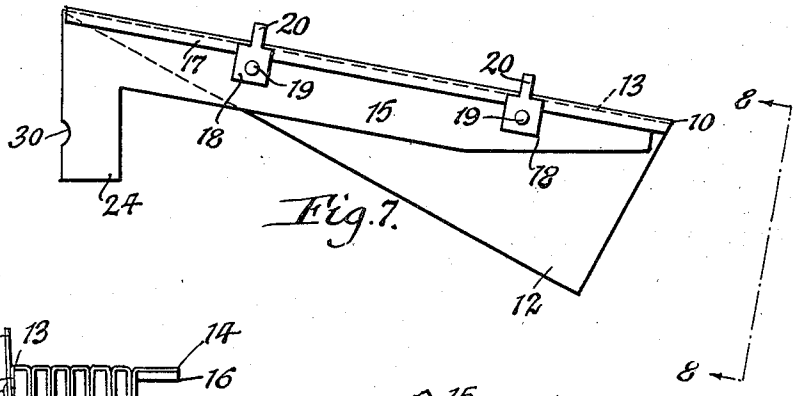


Fig. 7.

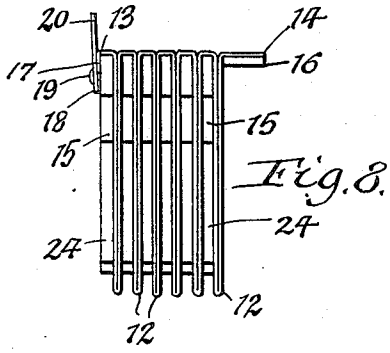


Fig. 8.

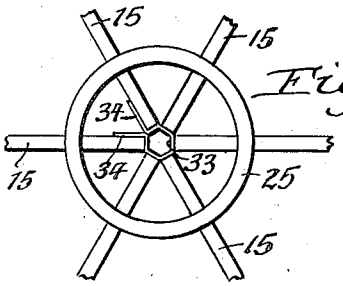
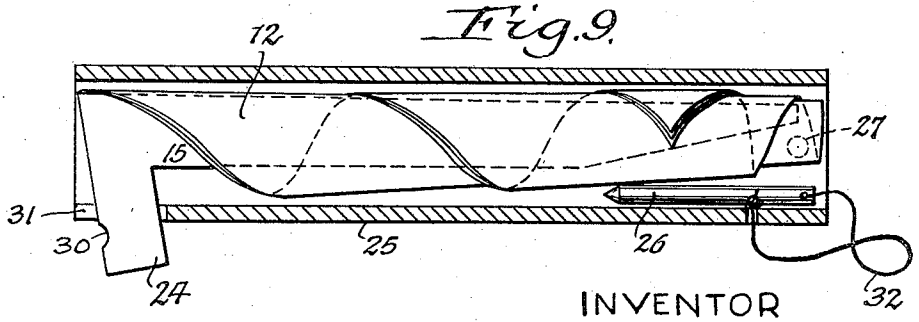


Fig. 10.

Fig. 9.



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UMBRELLA

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Application June 10, 1946, Serial No. 675,700

6 Claims. (Cl. 135—20)

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This invention relates to an umbrella and more particularly to an umbrella which is intended for use in an emergency and capable of giving a substantial amount of protection for a reasonable amount of time against rain, snow storm and sunshine.

It is the object of this invention to provide an umbrella of this character which can be manufactured at relatively low cost so that the same can be discarded after being used comparatively few times without entailing appreciable loss, and which can be readily disassembled and compactly folded into the form of a relatively small package that can be easily transported or carried in the pocket of a garment or the like and also unfolded and assembled with ease and facility for practical use.

In the accompanying drawings:

Fig. 1 is a vertical section of an umbrella embodying this invention and showing the same unfolded and assembled ready for use.

Fig. 2 is a bottom plan view of the same.

Fig. 3 is a fragmentary horizontal section, on an enlarged scale, taken on line 3—3, Figs. 1 and 4.

Figs. 4 and 5 are fragmentary vertical sections, on an enlarged scale taken on the corresponding numbered lines in Fig. 2.

Fig. 6 is a bottom plan view of the canopy, ribs and associated part of the umbrella in a folded position preparatory to being assembled with the handle and other parts of the umbrella, to form a compact package or bundle for easy transportation and convenient stowage.

Fig. 7 is a side elevation of the bundle of umbrella elements shown in Fig. 6.

Fig. 8 is an elevational view, on an enlarged scale, taken from the outer end thereof, on line 8—8, Fig. 7.

Fig. 9 is a longitudinal sectional view of the several parts of the umbrella in an unfolded and compactly assembled position ready for storing or carrying about when not in use.

Fig. 10 is a fragmentary horizontal section, similar to Fig. 3 showing a modification of the means for pivotally connecting the inner ends of the several ribs with each other.

In the following description similar numerals indicate like parts in the several views of the drawings:

In general this umbrella comprises a canopy capable of being folded into a compact bundle and also unfolded for use, a plurality of ribs for supporting the canopy, and a handle whereby the canopy and ribs are supported by hand when

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in use and which also serves as a case in which the canopy and ribs are enclosed in a folded condition when the umbrella is not in use.

The canopy is preferably constructed of a circular sheet 10 of thin material such as cloth, paper or the like of sufficient strength to withstand destruction by ordinary rain, wind or the like and capable of being spread or unfolded into the form of a plurality of sectors 11 arranged in an annular row around the center of the umbrella for use as a covering, as shown in Figs. 1 and 2 and also capable of being folded to form a plurality of pleats or loops 12 which are arranged side by side to form a compact group, when not in use, as shown in Figs. 6, 7 and 8. Each of these loops is formed from one of these sectors by folding the latter on a radial line midway between its opposite radial sides so that the pleat or loop hangs downwardly, as shown in Figs. 7 and 8.

In order to permit the sectors of the canopy sheet to be thus folded individually and collected as a group in which the several loops are arranged side by side, the circular canopy is provided with a radial slit extending from its axis to its periphery and thereby form two radial edges on the canopy which for convenience will be referred to as the inner and outer radial joint edges 13, 14 of the canopy which are adapted to be joined when unfolding the canopy into circular form for use and separated when the canopy is folded for storage or bundling.

The canopy is supported by a plurality of ribs 15 of thin cardboard or the like, preferably six in number which are arranged equidistant around the underside of the canopy and each connected at its upper edge to the underside of the canopy by an adhesive or other suitable means. The several ribs are so arranged that the same are in line with the radial sides of the several canopy sectors. All of the ribs, except one, are arranged intermediate of the radial joint edges of the canopy, and this one is additionally connected with the inner radial joint edge 13 of the canopy by providing this edge of the canopy with a vertical radial flap or flange 17 which projects downwardly from the canopy into engagement with the front side of the respective end rib 15 as shown in Fig. 5, and is secured thereto by an adhesive or otherwise. At its outer radial joint edge 14 the canopy is provided on its underside with a radial coupling strip 16, as shown in Figs. 1, 2, 3, 5 and 8 which is secured thereto by cement or otherwise.

The canopy is held in its spread out or un-

folded position by lapping the coupling strip 17 at the outer radial joint edge 14 of the canopy over inner radial joint edge 13 and connecting this coupling strip with the adjacent endmost rib 15 with this coupling strip and the respective radial edge of the canopy by one or more fastening clips each of which has a body 18 secured by a rivet 19 to the outer side of the respective rib and provided with a tongue 20 which projects upwardly through a slit 21 in the coupling strip and the canopy and is bent downwardly against the upper side of the canopy, as best shown in Fig. 5.

When it is desired to fold the canopy and ribs so the sectors form loops or pleats which are arranged parallel with each other and the ribs are also arranged parallel adjacent to the border lines between adjacent canopy loops, this can be done by first straightening the tongue 20 of each clip and withdrawing the same from the respective slit 21 in the coupling strip.

Although the ribs may be secured individually to the underside of the canopy it is preferable to form these ribs in pairs and connect the inner ends of the ribs of each pair by a thin web 22 so as to form a hinge whereby the members of each pair of ribs may turn laterally relatively to one another for the purpose of spreading the ribs out into circumferentially spaced relation, as shown in Figs. 2 and 3, or folded into parallel relation, as shown in Fig. 6.

In order to permit the ribs to be thus folded and unfolded relative to each other and reliably retain them in their proper position relative to one another and also relative to the axis of the canopy, one of the ribs of each pair is connected at its inner end by a hinge with the inner end of a rib of an adjacent pair of ribs, as shown at 23 in Figs. 1, 2, 3 and 4, these hinges preferably consisting of flexible material such as paper, cloth and the like which is cemented to the ribs.

Supporting means are provided for conveniently supporting the canopy and associated parts while the latter are unfolded for use, these supporting means being preferably constructed as follows:

The numeral 24 represents a vertical supporting shank projecting downwardly from the inner end of each rib and preferably formed integrally therewith. When the canopy and ribs are unfolded into an operative position the several shanks of the ribs together form a cluster in which the shanks radiate from the center of the canopy and in effect produce a downwardly projecting hub. This hub is slipped downwardly into the upper end of a tube 25 of cardboard or the like, so that the latter forms a handle whereby the umbrella may be conveniently carried in the hand when the same is used for sheltering from the weather.

If desired the neck of the umbrella may be fitted sufficiently tight in the tubular handle that these parts will be held together by friction but it is preferable to employ additional fastening means which positively interlock the same. This is accomplished in accordance with the present invention by means of a coupling or fastening pin 26 which is adapted to pass through openings 27 on opposite sides of the upper part of the tubular handle and also through openings 28 and 29 in one of the webs 22 and one of the hinge strips 23 and through notches 30 in the inner end of some of the ribs as shown in Figs. 1, 2, 3 and 4, and thereby securely fastening the hub and tube together and preventing separation of the same while the umbrella is in use.

The tubular handle is also preferably utilized as a case or container in which the canopy and ribs and parts connected therewith may be conveniently stored ready for use. For this purpose the canopy and ribs and the parts connected therewith are first rolled together about the axis of the umbrella into a compact package and then slipped into the tubular handle from the lower toward the upper end of the same, as shown in Fig. 9. In order to avoid the necessity of making the tubular handle unduly large in diameter the same is only made large enough to receive the canopy and ribs in their entirety but the shanks of the ribs are received by a longitudinal slot or notch 31 in the lower end of the tubular handle when the roller canopy and ribs are slipped into this handle, as shown in this figure.

In order to avoid losing or displacing the coupling pin 26 when the same is not in use the same is permanently connected by a retaining line or string 32 with the upper part of the tubular handle and adapted to be inserted within this part of the handle, as shown in Fig. 9.

When the several parts of the umbrella are thus assembled the same can be easily stowed with other equipment in a traveling bag or in a pocket of clothing and when required for use can be quickly and easily unpacked and erected, thereby rendering the same particularly useful in case of emergency such as unexpected rain or storm such as may be experienced at picnics, football games, racing meets and the like.

If desired the several ribs may be pivotally connected with each other at their inner ends so as to permit of folding and unfolding them circumferentially relatively to each other by the means which are shown in Fig. 10 and which consists of a hinge strip of flexible or pliable material having a body portion 33 cemented to inner edges of the several ribs and provided at its opposite ends with tabs 34 which are similarly fastened to the opposing longitudinal sides of the endmost ribs of the group.

I claim as my invention:

1. An umbrella comprising a canopy of sheet material adapted to be spread into circular form or folded into the form of pleats arranged side by side, and a plurality of ribs connected with the underside of the canopy and adapted to be moved laterally relatively to each other for folding and unfolding the canopy, said ribs being formed in pairs and the inner ends of the members of each pair being connected by a relatively thin web forming a hinge, and the inner ends of ribs of adjacent pairs of ribs being connected by hinge strips of flexible material.

2. An umbrella comprising a foldable canopy, a plurality of ribs supporting said canopy and movable therewith into a position in which they are spaced circumferentially or arranged parallel with one another and each of said ribs being provided with a downwardly projecting shank which together form a hub, a tubular handle adapted to receive said hub, and fastening means for securing said hub in said tubular handle.

3. An umbrella comprising a foldable canopy, a plurality of ribs supporting said canopy and movable therewith into a position in which they are spaced circumferentially or arranged parallel with one another and each of said ribs being provided with a downwardly projecting shank which together form a hub, a tubular handle adapted to receive said hub, and fastening means for securing said hub in said tubular handle including a

pin passing transversely through parts of said hub and handle.

4. An umbrella comprising a foldable canopy, a plurality of ribs supporting said canopy and movable therewith into a position in which they are spaced circumferentially or arranged parallel with one another and each of said ribs being provided with a downwardly projecting shank which together form a hub, and a tubular handle adapted to receive said hub, said canopy and ribs being rollable into the form of a bundle and said tubular handle being adapted to receive said rolled bundle of canopy and ribs and one end of said tubular handle being provided with a longitudinal notch adapted to receive the shanks of said ribs.

5. An umbrella comprising a foldable canopy, a plurality of ribs supporting said canopy and movable therewith into a position in which they are spaced circumferentially or arranged parallel with one another and each of said ribs being provided with a downwardly projecting shank which together form a hub, a tubular handle adapted to receive said hub and a fastening pin adapted to pass through parts of said hub and tubular handle for holding the same together, said pin, canopy, and ribs being detachable from said tubular handle and stowable in the latter.

6. An umbrella comprising a foldable canopy, a plurality of ribs supporting said canopy and movable therewith into a position in which they are spaced circumferentially or arranged parallel with one another and each of said ribs being provided with a downwardly projecting shank which together form a hub, a tubular handle adapted to receive said hub and a fastening pin adapted to pass through parts of said hub and tubular handle for holding the same together, said pin, canopy, and ribs being detachable from said tubular handle and stowable in the latter, and said pin being loosely connected with said tubular handle to prevent loss or displacement of the same.

ARTHUR P. PFEIL.

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