April 5, 1932. E. E. FREY 1,852,513

UMBRELLA FRAME

Filed Nov. 14, 1928

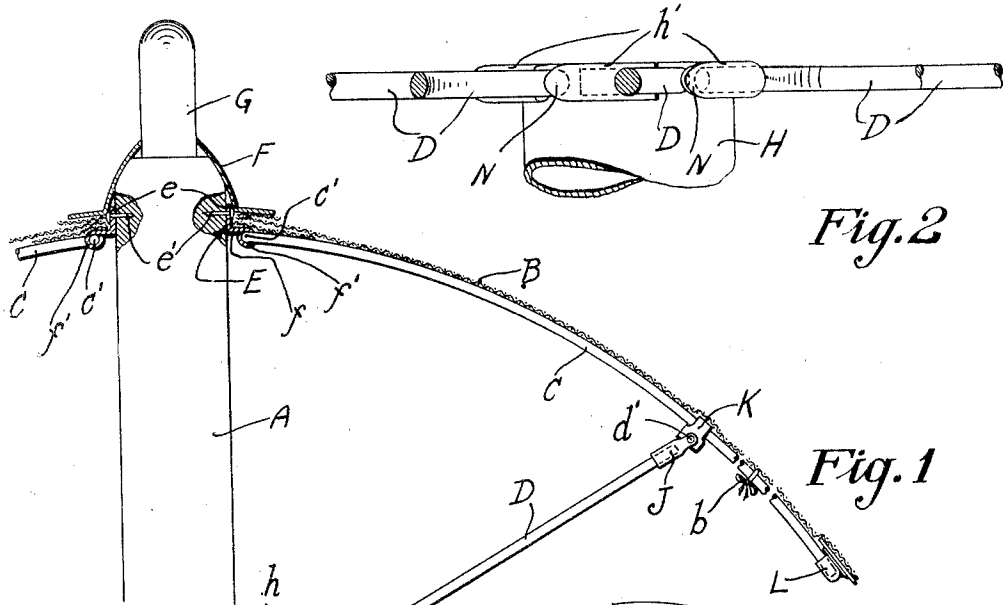

Fig. 2

Fig. 1

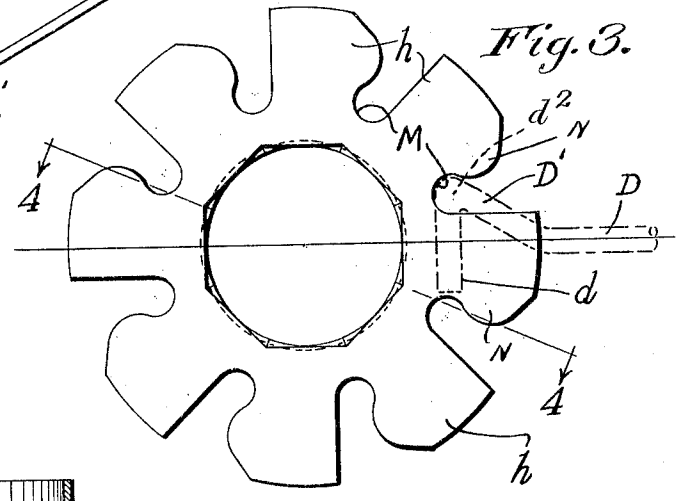

Fig. 3.

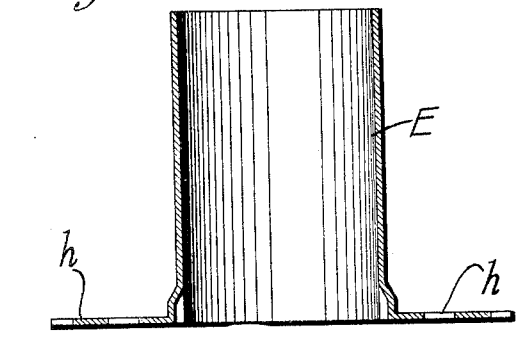

Fig. 4.

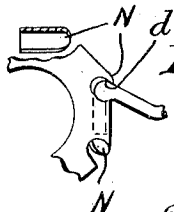

Fig. 5.

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UNITED STATES PATENT OFFICE

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UMBRELLA FRAME

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This invention relates to and has for an object the provision of an improved frame, generally applicable to umbrellas, but particularly useful in connection with what are known as "beach umbrellas".

The main object is to provide a durable, strong and rigid structure which will withstand ordinary strains of usage as well as wind strains.

To this end it is a subsidiary object to provide means for pivotally attaching the upper ends of the ribs to the center pole and the inner ends of the rib braces to the center pole in such a manner that the ribs will be at all times substantially supported in radial planes and free from wabbling and unsteadiness, which is usually attendant upon the ribs of other well known types of umbrellas.

Another object is to provide a structure of the character described in which a top notch or ring is stationarily held near the upper end of the center pole and is formed of sheet metal with substantially elongated bearings for receiving the inner ends of the ribs which are transversely bent so as to pivot in said bearings.

An object also is to provide an elongated movable sleeve on the center pole having bearings similar to those on the ferrule for receiving and pivotally supporting the inner ends of the rib braces.

Other objects may appear as the description progresses.

In the accompanying drawings,

Fig. 1 is a fragmentary enlarged sectional elevation of an umbrella of the beach type embodying my improvements.

Fig. 2 is a fragmentary elevation of the movable sleeve and rib braces pivoted thereto.

Fig. 3 is a top plan view of the movable sleeve with the brace bearing portions extended flatwise prior to forming the same into bearings.

Fig. 4 is a sectional elevation of the same on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary plan view of the movable sleeve showing the bent ends of the braces mounted in the sleeve bearings and held therein.

My improved structure embodies the usual central pole A, preferably formed of wood, with the circular fabric covering B which is adapted to be supported at a plurality of points on a series of radially disposed ribs C, C etc. Said ribs are individually braced by means of rods D, D etc. The upper end of the pole A carries a fixed top notch E suitably attached to the pole and arranged to pivotally support the inner ends C′, C′ etc. of the ribs C, C etc. Usually a ferrule F is attached to the end of the pole for holding the fabric B in contact with the notch E, and a pin G may be employed on the upper end of the pole, as shown, tho this is not material.

The notch E has a cylindrical portion *e* tightly fitting the periphery of the pole A and attached thereto by means of nails or screws, as at *e′*. A plurality of radially and outwardly extended portions *f*, *f* etc. are formed on the notch E and are bent downwardly and upwardly to form elongated bearings *f′*, *f′* etc. Said bearings are thus tangentially disposed relative to a circle touching the axes of the hinge portions C′, C′ etc. of the ribs C, C etc. Said hinge portions C′ of the ribs are bent at right angles to the ribs and are of sufficient length and the ribs are of sufficient size and strength so as to substantially prevent any lateral movement of the ribs or displacement of the ribs from their operating positions under the fabric B. It is customary to attach the ribs at certain points to the fabric B by means of ties, as at *b*, or otherwise.

Substantially below the top notch E I provide an elongated sleeve H which has its upper end formed similarly to the lower portion of the notch E in that it has a plurality of outwardly extended radially disposed portions *h*, *h* etc. formed at right angles to the body of the sleeve and bent into loops, as at *h′*, to form elongated bearings for pivotally receiving the right angularly bent hinge portions *d* of the braces D.

The sleeve H is adapted to be locked when the fabric B is extended for use by the usual spring latch I, which engages the lower edge *i* of the sleeve H. The outer ends of the braces D carry hinge members J which pivotally connect at points *d′* with fittings K friction-

ally held in positions on the ribs C. Thus, as the sleeve H is moved upwardly and downwardly on the pole A the ribs C and the fabric B will be extended and contracted by reason of the pivotal connections C′, *d* and *d*′.

Suitable fittings, as at L, may be attached to the ends of the ribs C and to the edge of the fabric B for connecting the fabric and ribs. As shown in Fig. 3, both the top notch E and the sleeve H are formed in the same manner as to the form and position of the bearing portions *f* and *h* respectively.

Preferably the ribs C and the braces D are so formed at their inner ends that the right angular portions *c*′ and *d* respectively thereof are extended for substantially equal distances on opposite sides of the axes of the bodies of such members, as shown in broken lines of Fig. 3. To this end the portions C′ and *d* of the ribs and braces are bent at right angles to and are connected with the bodies of said members by diametrically formed portions D′. Also the portions *f* and *h* of the top notch E and the sleeve H are undercut at their roots, as at M, M etc. to receive the joints d^2 between the portions *d* and D′ and the portions C′ and D′ so that when the portions *f* and *h* are formed into the loops *f*′ and *h*′ respectively the ribs C and the braces D will be held in their respective bearings against removal by the engagement of the end extensions N of the loops *f*′ and *h*′ with said joints (see Figs. 2 and 3).

The advantages of the type of construction shown and described herein will readily appear to those skilled in the art of umbrella manufacturing, and such a structure is equally adapted for use in large umbrellas.

What I claim is:

In an umbrella frame, a supporting fixture formed of a piece of sheet metal comprising a cylindrical skirt adapted to engage the periphery of an umbrella standard, and a flange formed with a plurality of radially extending portions with bulges at one side thereof bent into loops extending transversely thereof in the form of hinge bearings, and rods bent transversely at their inner ends and turnably fitted in said loops, the bulges of said hinge bearings engaging the bent portions of the rods respectively in adjacent bearings to prevent withdrawal of the bent ends of said rods from said bearings.

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