

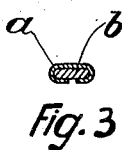
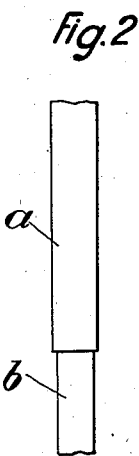
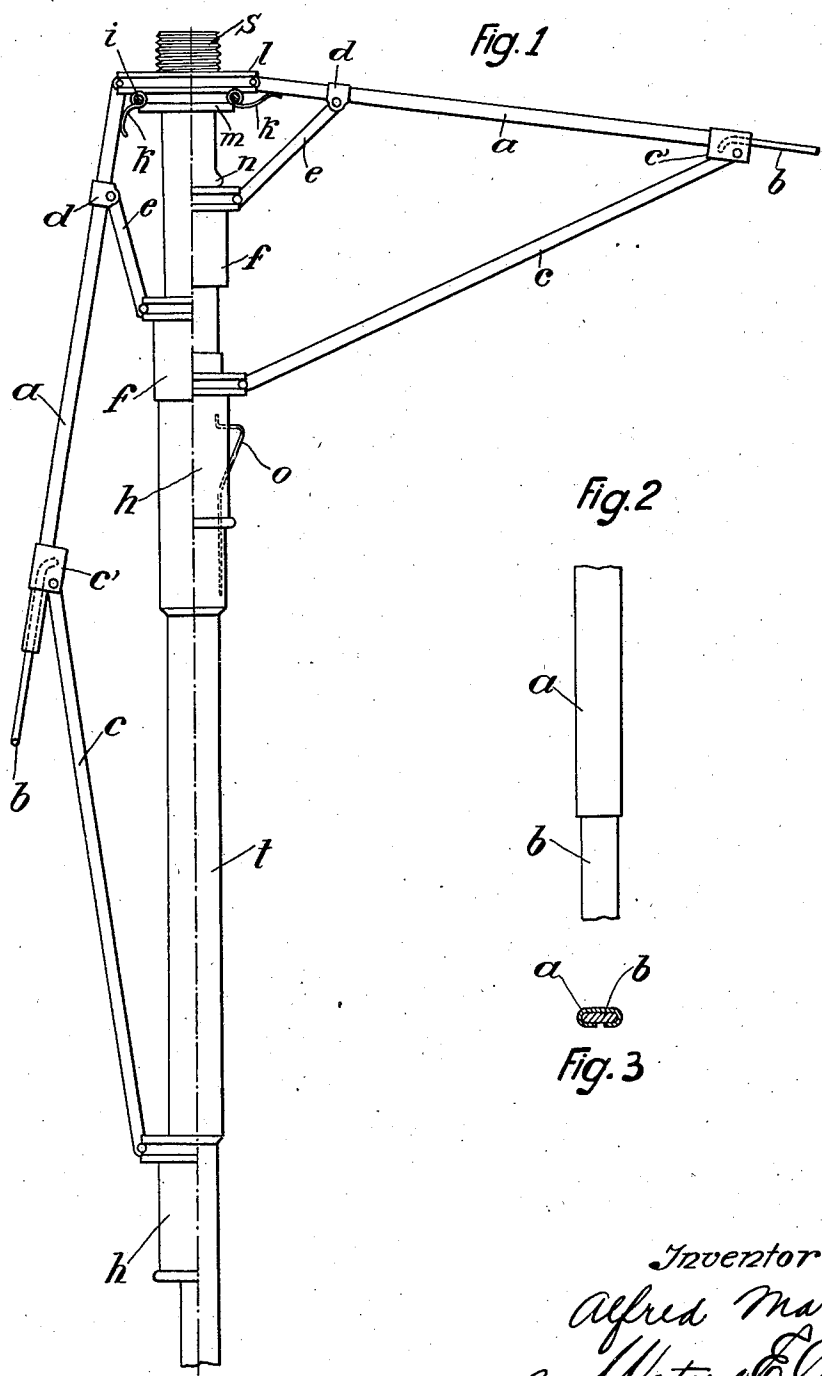
Sept. 19, 1939.

A. MARX
UMBRELLA

2,173,305

Filed July 2, 1938

2 Sheets-Sheet 1



Inventor
Alfred Marx
By Watson Coleman.

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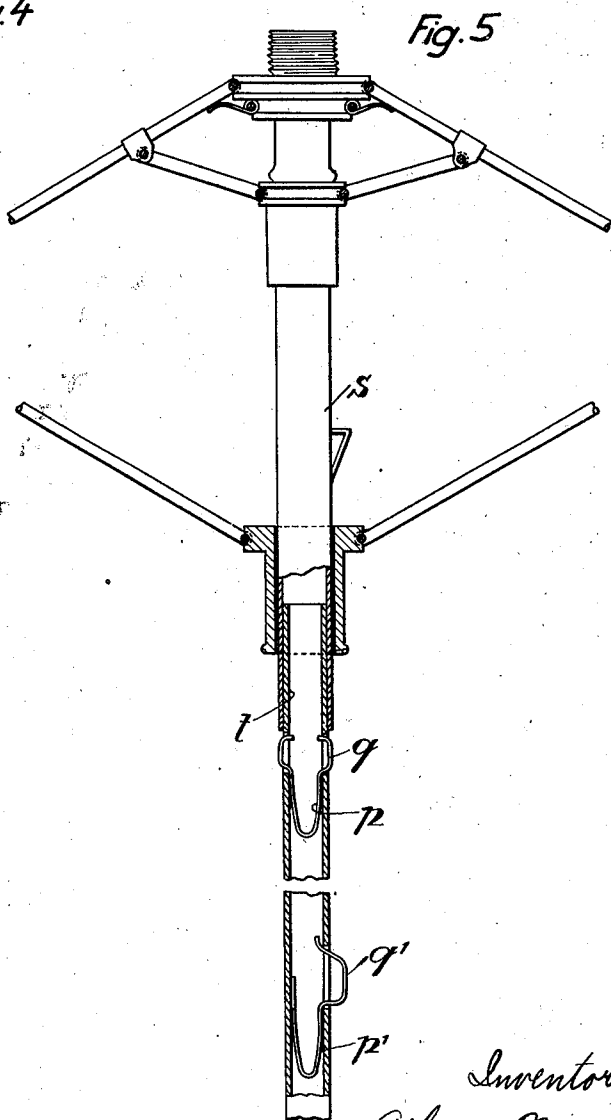
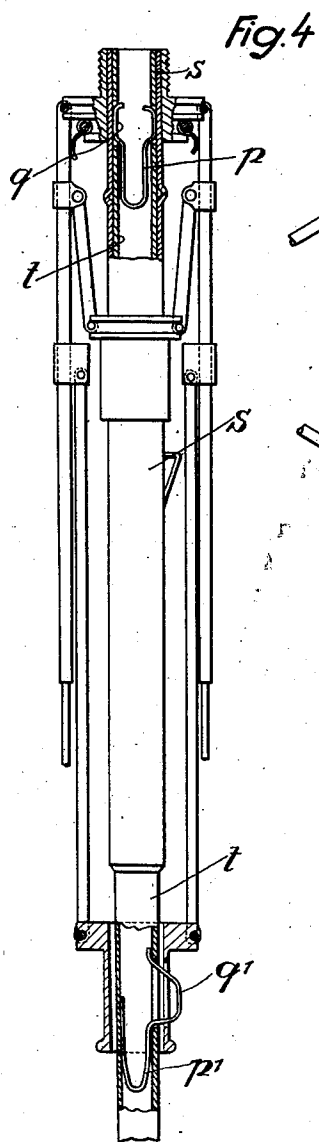
A. MARX

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2 Sheets-Sheet 2



Inventor
Alfred Marx,
By Watson & Coleman

UNITED STATES PATENT OFFICE

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UMBRELLA

Alfred Marx, Cologne-on-the-Rhine, Germany

Application July 2, 1938, Serial No. 217,264
In Germany December 15, 1937

3 Claims. (Cl. 135-22)

This invention relates to umbrellas of the kind having a shortenable frame, and more particularly to umbrellas having a frame of that kind in which the parts of the stick and the ribs are slidable in telescopic fashion one within the other.

It is the object of the invention to improve generally on umbrellas of this description, and to provide an umbrella which is particularly reliable in its action and will not tend to overtilt in windy weather.

A further object of the invention is to provide an umbrella which is of particularly light weight and is cheap to manufacture.

In the accomplishment of these and other objects and advantages which will become apparent as the description proceeds the invention comprises the combination of parts, features and elements described in the following and set forth in the appended claims.

The main or outer members of the ribs, which are pivotally connected to the crown of the umbrella, comprise hollow members which are elliptical or oval in cross-section and are furnished with a longitudinal throughgoing guide slot on the under side. This form corresponds to the likewise elliptical or oval cross-sectional form of massive, well-fitting inner rib members adapted to slide in the said outer members, so that these inner members will be properly and reliably guided in the outer members without the necessity for special guide rings.

At the same time an overtilting of the ribs is prevented by the provision in each case of a short link, which on the one hand is firmly connected to the top end of the rib near its pivotal connection to the crown and on the other hand is pivotally connected to an auxiliary runner sliding on the upper part of the stick below the crown.

To facilitate the opening of the umbrella there is provided a device additional to the usual actuating means. This device comprises a short flat spring provided below each rib and secured to the crown of the umbrella, these springs upon the opening of the umbrella acting on the ribs to move them in the requisite direction.

An additional feature of the invention resides in the provision of a novel type of locking spring in conjunction with the tubular stick of an umbrella having a shortenable frame. This differs from the actuating springs composed of brass or the like hitherto used for the purpose in question by the fact that it is not only extremely simple to fit but can also be readily exchanged in the event of damage without necessitating particular skill or dexterity, quite apart from the fact that it is also

very simple to produce. Its ready exchangeability is a feature of particular note, inasmuch as in the event of damage to the usual type of spring it is necessary to seek the aid of a skilled man. The inconvenience of this will be readily appreciated, particularly with consideration to the fact that, for example in small localities, a skilled man is not always immediately available.

The actuating spring according to the invention comprises a U-shaped wire member of resilient material, the free ends of which bulge outwards in the upper portion, so that they can be readily compressed and again spring apart in the slots provided for the same in the tubular stick. The two bulges produce a form approximately corresponding to the form of a lyre.

The invention is illustrated by way of example in the accompanying drawings, in which

Fig. 1 is a diagrammatical illustration of an umbrella frame according to the invention in the opened and closed positions.

Figs. 2 and 3 are a plan and cross-section respectively of the outer and inner members of a rib.

Figs. 4 and 5 are longitudinal sections through the stick of the umbrella showing upper and lower actuating springs according to the invention in different positions.

The crown *l* situated at the upper end of the stick *s* has radial recesses adapted to accommodate the ribs in the conventional manner. These ribs comprise the outer members *a* and the inner members *b*. The outer members, which are hollow, are elliptical or oval in cross-section and have a guide slot on the under side, this slot being produced subsequently or being allowed to remain at the outset upon the production of the member. The inner members are massive and also have an elliptical or oval cross-section adapted to fit within the outer members. The inner ends of the inner members are connected, in each case by means of a guide shoe *c'*, which fits over the outer member, to the one end of the stay *c*, which when the umbrella is opened and closed slides in the guide slot in the outer member *a*, the other end of the stay *c* being pivoted to the main runner *h*. Each outer member in the vicinity of its inner end, at *d*, is connected by means of a short link *e* to the auxiliary runner *f*, which is slidable on the upper part *s* of the stick and the movement of which is limited by a suitable tubular abutment *n* or the like below the crown.

At the crown itself there are provided below each rib *a* short flat springs *k*, which press the ribs upwards when the umbrella is opened. The

parts *s* and *t* of the stick possess the usual locking means *o* for their adjustment and that of the runners.

The operation is substantially the known one; that is to say, by suitable movement of the main runner *h* and the parts of the stick the ribs are tensioned or caused to relax, i. e., are moved apart or together. Having regard to the cross-sectional form of the rib members *a*, *b* in conjunction with the link connection *e* avoiding the greater length of lever as described it will be apparent that in this way there is not only obtained a reliable guiding of the ribs in every case together with a proper adjustment of the same, but there is also prevented an overtilting of the ribs in stormy weather. The construction of the frame is considerably simplified by the elimination of special auxiliary stays and guide portions, this in turn resulting in reduced cost and a comparatively substantial saving in weight. The omission of double-jointed connections results in a more simple and reliable opening and closing of the frame, as connections are done away with which are otherwise frequently the cause of a canting of the link rods.

Owing to the embodiment of the flat springs *k* and their attachment by means of a wire ring *i* to a disc *m*, which is situated below the crown *l* and is preferably integral therewith and which also has a smaller diameter than the crown *l*, there is obtained on the one hand a greater durability of the springs *k*, whilst on the other hand the members *a* are enabled to fit more snugly against the stick.

As shown in Figs. 4 and 5, there are provided in the tubular stick *t* two locking springs which comprise the lower U-shaped portion *p* or *p*¹ and the upper bulge *q* or *q*¹. These bulging upper portions, which are approximately of lyre-like form, engage in appertaining slots in the stick *t* and can be readily pressed together or again move apart when the pressure thereon is released. As shown by the sectional portion of Fig. 4, both springs can be readily introduced into the tubular stick *t* from the upper end *s* and then moved along the stick to the point of location of their respective slots in the stick. The springs, therefore, in the event of damage can be readily replaced without necessity for taking the stick apart.

These locking springs can equally well be employed for tubular sticks of other design in umbrellas having a shortenable frame.

What I claim as new and desire to secure by Letters Patent is:

1. In an umbrella having a stick, a shortenable frame comprising a radially slotted crown located at the upper end of the said stick, ribs comprising hollow outer members pivoted at one end in the radial slots in the said crown and having a longitudinal slot along the under side, inner members having a cross-sectional form corresponding to that of the said outer members and adapted to slide in the said outer members, a main runner adapted to slide on the said stick for opening and closing the umbrella, stays connected at one end to said runner, means slidably connecting the other ends of said stays to said inner members, said means being joined to the inner members through the longitudinal slots of the outer members, an auxiliary runner adapted to slide on the upper portion of the said stick below the said crown, and short links connecting each of the said outer members to the said auxiliary runner adjacent the pivoted ends of the outer members.

2. In an umbrella as claimed in claim 1, flat springs secured to the said crown and bearing against each of the said outer members to lift the ribs in the upward direction upon the opening of the umbrella.

3. In an umbrella having a stick, a shortenable frame comprising, a radially slotted crown located at the upper end of the said stick, ribs pivoted at one end in the radial slots in the said crown, a main runner adapted to slide on the said stick for opening and closing the umbrella, stays connecting the said runner to the said ribs, an auxiliary runner adapted to slide on the upper portion of the said stick below the said crown, short links connecting each of the said ribs to the said auxiliary runner adjacent to their pivoted ends, a disc disposed against the underside of said crown and having a smaller diameter than the said crown, and flat springs secured to the said disc and each bearing against one of the said ribs to lift the said ribs in the upward direction upon the opening of the umbrella.

ALFRED MARX.