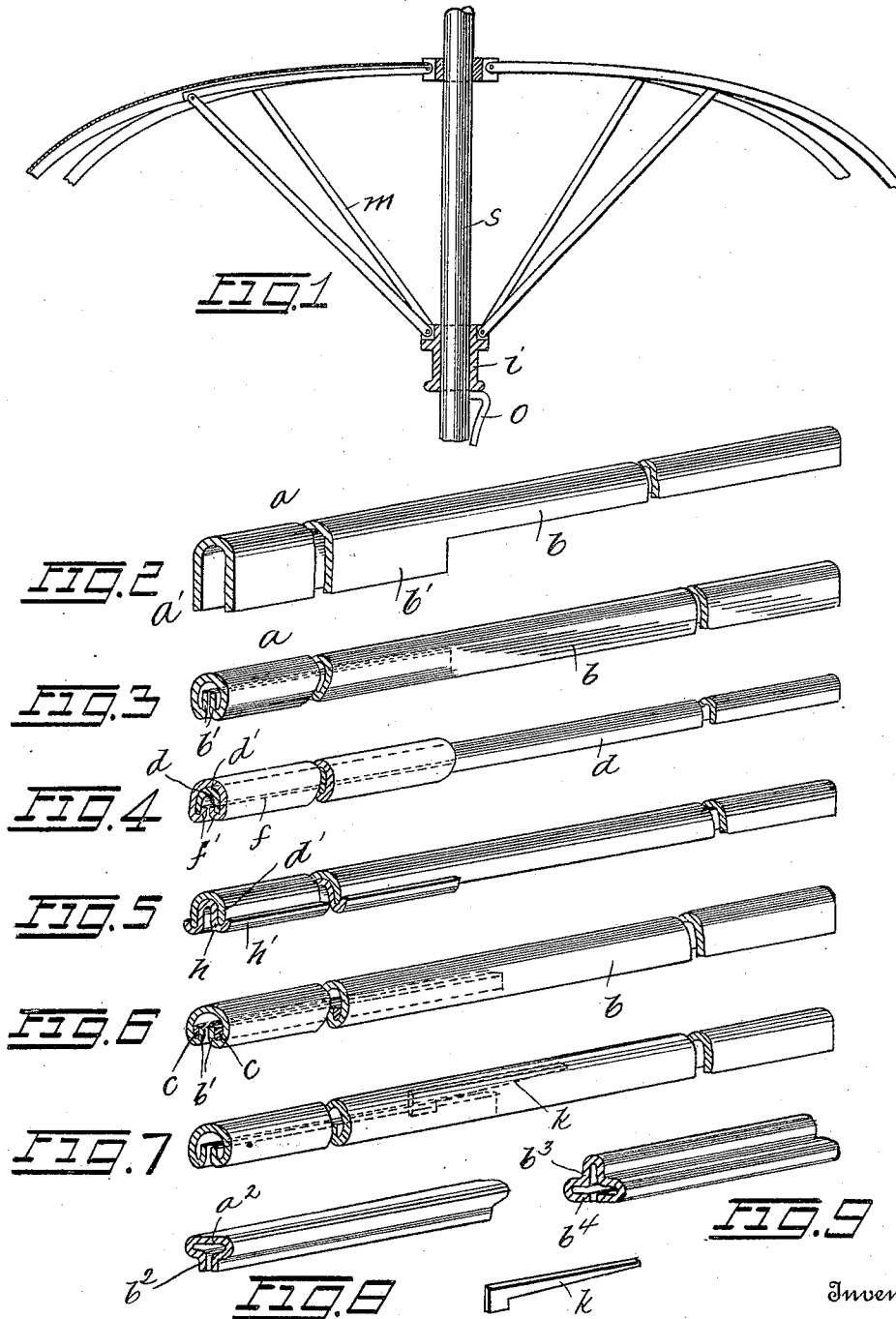


A. FRIEDLAENDER.
 UMBRELLA AND THE LIKE.
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Patented Dec. 14, 1909.



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UMBRELLA AND THE LIKE.

943,068.

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To all whom it may concern:

Be it known that I, ADOLF FRIEDLAENDER, a subject of the Emperor of Austria-Hungary, and residing at Elbestrasse 53, Frankfort-on-the-Main, in the German Empire, have invented certain new and useful Improvements in and Relating to Umbrellas and the Like, of which the following is a specification.

It is known to reinforce the ribs of umbrellas in the parts next to the crown so as to obtain a good convexity for the cover of the umbrella. The stays or stretchers, however, are hinged to the ribs beyond the reinforced part of the same, thus not only is the advantage gained by the good convexity of the roof, frequently neutralized, but also the free inside space under the umbrella is restricted.

The subject of this invention is an umbrella having reinforced or strengthened ribs, which overcomes the above mentioned disadvantages by hinging the stretchers or stays to the ribs within their reinforced or strengthened parts. Thus not only, is the greatest possible amount of free inside space obtained and owing to the degree of convexity of the umbrella rain is prevented from blowing in from the sides, but also at the same time an increased security against the turning inside out of the umbrella through wind is obtained.

In the accompanying drawings, Figure 1 is a cross section through the frame of an open umbrella. Figs. 2 to 9 are sectional perspective views of the reinforced ribs of the umbrella shown in Fig. 1 and modifications thereof, and, Fig. 10 is a perspective view of a reinforcing member hereinafter described.

The stretchers or stays, *m*, are to be moved in the usual manner up and down the stick, *s*, by means of the runner, *z*, and to be fixed by means of the retaining spring, *o*, are hinged to that portion of the ribs, *a*, which has an increased moment of resistance. The increase of the moment of resistance is effected by reinforcing the well known U or horse shoe section of the rib. This reinforcement is produced by beading or turning over the legs or flanges which were originally longer at these places. Such a rib has been illustrated in Figs. 2, 3, and 4. The same consists of a sheet metal strip, *a*, or the like, which in the portion, *a'*, is made wide. This strip is bent over in such a man-

ner that a rib having a U-shaped section is produced the legs or flanges, *b'*, of which are longer than the legs, *b*, see Figs. 3 and 4. Further these longer flanges or legs, *b'*, are turned over inside so that although the ribs have a perfectly smooth exterior they possess in a portion of their length a greater moment of resistance than their remainder.

The moment of resistance is increased by arranging bar-shaped insertions *c* consisting of steel or the like in the beaded or turned over portion of each leg, Fig. 6. If, however, the advantage of a smooth exterior is abandoned, the reinforcement may be produced by joining together two parts having various moments of resistance but uniform sections. For instance in the form of construction illustrated in Fig. 4 a reinforcement is produced by means of a cover, *f*, which has the same section as the rib, *d*. The legs, *f'*, of the cover are clipped to the legs, *d'*, of the rib *d*. Instead of covering the rib with material of a slight moment of resistance, alteration in the moment of resistance may also be produced by an insertion having the same cross section such a rib being illustrated in Fig. 5. In this instance the reinforcement consists of an insertion, *h*, having a U-shaped section, the flanges or legs, *h'*, of which overlap the flanges, *d'*, of the rib on the outside and are bound together with or clipped to the same.

It is not necessary that the rib has a trough-shaped cross-section, the same may also be bent in such a manner that the substantially T-shaped cross-section shown in Figs. 8 and 9 results, the legs *b*² being bent in such a manner that they run partially in parallel with the leg *a*², Fig. 8. In the cross-section shown in Fig. 9 the legs *b*³ are also bent in in the first place, are then, however, bent once more so as to have a doubled over portion *b*⁴.

In order to avoid, when the umbrella is opened and owing to the tension of the cloth covering the occurrence of a breakage at the spot where the alteration in the moment of resistance occurs, the rib is so constructed that this transition is effected gradually. The gradual transition may for instance be produced by arranging a flexible elastic insertion between the parts having different moments of resistance, *e. g.*, Fig. 7 shows an umbrella rib of the form illustrated in Fig. 3 in which the point of transition between the two moments of resistance is

bridged over by an elastic spring, *h*. The part of this spring, Fig. 10, lying between the flanges or legs, *b'*, is flattened and is held fast by pressing together these legs, while
 5 its longer part lying between the legs, *b*, is somewhat cylindrical, and rests against the bridge of this part. When the umbrella is opened the ribs bend through the cloth of the cover and as the inserted spring, *h*, has
 10 also to bend, the convexity at this spot is very gentle. It is therefore possible to form the ribs, constructed in accordance with this invention, pointed at about their reinforced part so that their degree or resistance is al-
 15 tered, as the material from which the ribs of the umbrella are made does not permit of this.

It is not at all necessary to produce convexity by means of inserting a spring.
 20 Other means may be employed for this purpose, the only thing being that the abrupt transition must be replaced by a gentle arching or convexity. In every other respect the arrangement of the insertion and the shape
 25 of the same must be adapted to the particular cross section of the ribs.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

30 1. A new article of manufacture comprising in combination an umbrella rib trough shaped in cross section, a part of such trough being doubled upon itself to form a reinforcement and a stretcher pivoted to such
 35 doubled over portion the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

2. A new article of manufacture comprising
 40 in combination an umbrella rib trough shaped in cross section, a part of such trough being doubled upon itself, a bar inserted between the overlapping surfaces to form a reinforcement and a stretcher pivoted to the
 45 reinforced portion the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

3. A new article of manufacture comprising
 50 in combination an umbrella rib trough shaped in cross section, a part of such trough being doubled upon itself, bars inserted between the overlapping surfaces to form a reinforcement and a stretcher pivoted to the
 55 reinforced portion the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

4. An improved umbrella frame, comprising
 60 in combination; a center support, a plurality of ribs pivoted to said support, a reinforcement extending over a part of each rib a runner slidably mounted on the center support and a plurality of stretchers each
 65 pivoted at one end to the reinforced part of

a rib and pivoted at the other end to the runner the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

5. An integral umbrella rib formed of a blank which at the upper portion of the rib is wider than at the lower portion thereof, said blank being bent to trough like shape to thereby form a rib having deeper walls
 75 along the upper portion of its length than at the lower portion of its length, and a stretcher pivoted between the deepest portions of said walls the wide portion of the rib extending continuously from the upper
 80 end thereof to the point at which the stretcher is attached to the rib.

6. An integral umbrella rib formed of a blank which at the upper portion of the rib is wider than at the lower portion thereof, 85 said blank being bent to trough like shape to thereby form a rib having deeper walls along the upper portion of its length than at the lower portion of its length, and a stretcher pivoted between the deepest por- 90 tions of said walls, the lower edges of the deepest portion of said walls being bent upon themselves to form a reinforcing portion the wide portion of the rib extending continuously from the upper end thereof to the 95 point at which the stretcher is attached to the rib.

7. An integral umbrella rib formed of a blank which at the upper portion of the rib is wider than at the lower portion thereof, 100 said blank being bent to trough like shape to thereby form a rib having deeper walls along the upper portion of its length than at the lower portion of its length, a stretcher pivoted between the deepest portions of said 105 walls, the lower edges of the deepest portion of said walls being bent upon themselves to form a reinforcing portion, and reinforcing bars located between the overlapping portions of said lower edges the wide portion of 110 the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

8. An integral umbrella rib formed of a blank, which at the upper portion of the 115 rib, is wider than at the lower portion thereof, said blank being bent to trough-like shape to thereby form a rib having deeper walls along the upper portion of its length than at the lower portion of its length, a 120 stretcher pivoted between the deepest portions of said walls, the lower edges of the deepest portion of said walls being bent upon themselves to form a reinforcing portion, and a reinforcing member clipped into 125 engagement with said rib the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

9. An umbrella rib formed of a blank 130

which at the upper portion of the rib is wider than at the lower portion thereof, said blank being bent to U-shape and the extremities of said U-shape portion being bent 5 upon themselves the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib.

10 10. An umbrella rib formed of a blank which at the upper portion of the rib is wider than at the lower portion thereof, said blank being bent to U-shape, the extremities of said U-shape portion being bent

upon themselves, and a reinforcing member held in position by said last named bent portions the wide portion of the rib extending continuously from the upper end thereof to the point at which the stretcher is attached to the rib. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 20

ADOLF FRIEDLAENDER.

Witnesses:

JEAN GRUND,
CARL GRUND.