

**1,176,952.**

The drawing consists of several figures illustrating the construction of a folding umbrella:

- Fig. 1.** A perspective view of the open umbrella. It shows a central shaft labeled *A*, a curved rib labeled *B*, and a canopy labeled *C*. The shaft has a handle at the bottom and a cap at the top. The rib is connected to the shaft at a point labeled *a*. The canopy is supported by the rib and the shaft. The canopy is divided into sections labeled *b* and *b'*. The rib is labeled *D* and *D'*. The canopy is labeled *a<sup>1</sup>* and *a<sup>2</sup>*.
- Fig. 2.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.
- Fig. 3.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.
- Fig. 4.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.
- Fig. 5.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.
- Fig. 6.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.
- Fig. 7.** A side view of the closed umbrella, showing the shaft and the handle. The handle is labeled *b* and *b'*. The shaft is labeled *a* and *a'*. The handle is connected to the shaft at a point labeled *c*. The handle is also labeled *d* and *d'*.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## UMBRELLA-RIB CONSTRUCTION.

1,176,952.

Specification of Letters Patent.

Patented Mar. 28, 1916.

Application filed January 19, 1915. Serial No. 3,027.

*To all whom it may concern:*

Be it known that I, PETER FRANTZ, a citizen of the United States of America, and resident of Sterling, Whiteside county, Illinois, (residence address 309 Ninth avenue,) have invented a certain new and useful Improvement in Umbrella-Rib Constructions, of which the following is a specification.

My invention relates to folding or collapsible umbrellas of that kind in which the ribs are each composed of two sections which in effect telescope one within the other to thereby reduce the length of the ribs when the umbrella is folded. In this way, and by folding or telescoping the stick of the umbrella, as well as the ribs thereof, the umbrella can be so reduced in size that it may be placed in a suit case or satchel, or even in the coat pocket of the user. As stated, however, my invention relates to the mechanism or means for telescoping the ribs when the umbrella is folded.

More, especially, as will hereinafter more fully appear, my invention relates to the means for automatically locking and unlocking the telescoping sections of the ribs when the umbrella is raised and lowered.

The objects of my invention are to provide an improved construction and arrangement having means for locking the ribs in extended condition, even when not quite fully extended, thereby to prevent objectionable results in the manipulation of the umbrella, and involving devices which engage the braces of the umbrella, when the latter is lowered, for the purpose of automatically unlocking the telescoping sections of the ribs, thereby rendering it possible to unlock the ribs from their variable extended positions by simply lowering the umbrella.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and reliability of an umbrella rib locking mechanism or arrangement of this particular character.

To these and other useful ends my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings Figure 1 is a side elevation of an umbrella frame having telescoping ribs involving the principles of my invention, certain portions being broken away or omitted for convenience of

illustration. Fig. 2 is an enlarged side elevation of one of the rib joints of said umbrella. Fig. 3 is a view similar to Fig. 2, on a larger scale, showing certain portions in vertical longitudinal section. Fig. 4 is a view of the underside of the parts shown in Fig. 3. Fig. 5 is a view similar to Fig. 3, showing the mechanism in unlocking position. Fig. 6 is an enlarged section on line 6—6 in Fig. 3. Fig. 7 is an enlarged section on line 7—7 in Fig. 3.

As thus illustrated, my invention comprises an umbrella stick A having a telescoping construction of any suitable character; a top notch *a* and a lower notch or runner *a*<sup>1</sup> which encircle said stick; telescoping ribs B connected at their upper ends in any suitable manner with the said top notch; and braces C connected between the lower notch *a*<sup>1</sup> and said ribs.

Each rib is composed of an upper solid or cylindric section *b* and a lower section *b*<sup>1</sup> which is channel shaped in cross section. The section *b*<sup>1</sup> is provided with a joint body or sleeve D which is made of sheet metal and secured to said section in any suitable manner, being tubular for a portion of the length thereof at D<sup>1</sup> and formed to embrace and provide a guide for the upper section of the rib. The said upper section is provided on its under surface with ratchet teeth *d*, and the said body D is provided, below the rib, with a pivoted dog *d*<sup>1</sup> for engaging said teeth. The said dog has a rear end portion *d*<sup>2</sup> which is engaged by a spring *d*<sup>3</sup> which is secured at its other end to the body D and which serves to yieldingly hold the ratchet dog *d*<sup>1</sup> in operative and yielding engagement with said teeth. It will be seen that this dog *d*<sup>1</sup> is pivoted at *d*<sup>4</sup> between the ears *d*<sup>5</sup> on the underside of the body D; and with this arrangement, and when the outer rib section *b*<sup>1</sup> is pulled outward, the dog *d*<sup>1</sup> travels over the teeth *d* until the stop *d*<sup>6</sup> on the end of the section *b* engages the shoulder *d*<sup>7</sup> on the sheet metal joint body. It will be seen, however, that the teeth *d* are sufficiently numerous to enable the dog *d*<sup>1</sup> to co-operate therewith and thus lock the ribs in extended condition even when the said stop and shoulder are not quite together—that is to say, even though the outer section of the rib is not pulled outward to the full extent of the movement which is necessary

to entirely extend the rib. Thus the ribs are always all locked in extended position, and the fact that one or more thereof may have failed to reach their extreme or fully extended position will not result in any difficulty or objectionable action afterward during the further manipulation of the umbrella. When the rib is telescoped, the section  $b$  slides in the channel of the section  $b^1$ , and thus the rib is adapted to be shortened by about one-half of its length.

The braces C are each connected at their outer ends to the pivots  $d^4$  of the ribs. For this purpose, the end portion of each brace is bifurcated to embrace the ears  $d^5$ , as shown in Fig. 7, whereby these pivots  $d^4$  serve a double purpose, as they are common to the locking dogs  $d^1$  and said braces. Also, this serves to insure better coöperation between the ratchet-dog and the brace, and tends to keep them in operative relation to each other. Each sleeve D has a slot  $d^8$  between the said ears  $d^5$ , and each of these slots contains one of the dogs  $d^1$ . Each brace, it will be seen, is channel shaped in cross section, the groove or channel thereof being located on the upper side of the brace, whereby said braces are adapted to fold close to and parallel with the ribs in the manner shown in Fig. 5, thereby automatically disengaging the dogs  $d^1$  from the ratchet teeth. This, it will be seen, is because the braces engage the portions  $d^2$  of said dogs, when the umbrella is lowered, each brace thereby acting as a lever to automatically disengage its allotted dog from the ratchet teeth. In this way the ribs are all unlocked from their extended positions, and these positions can be of a variable nature, within the limits of the rows of teeth, without affecting the desired mode of operation.

The ribs D, it will be understood, are flexible, and in Fig. 1 they are shown with the curvature which they will necessarily have when provided with the usual cover. In Figs. 2 and 3 the ribs are assumed to be flexed, but in Fig. 5 the rib is shown straight and in the condition which it assumes when the umbrella is lowered.

With the foregoing construction, it will be seen that no special manipulation of the ribs is necessary in order to unlock them from their extended positions when the umbrella is lowered, and when it is desired to telescope the ribs for the purpose of reducing the umbrella to such a short length that it can be placed in a suit case or satchel, or even in the pocket of an overcoat. The lowering of the umbrella, by sliding the runner  $a^1$  downward, serves automatically to unlock the ribs in the manner described. This is so regardless of whether the ribs are all fully extended, for even those which may not have been quite fully extended are

unlocked. Then all of the ribs, as well as the stick of the umbrella, can be telescoped to reduce the umbrella to the desired length.

To accomplish the desired result, it will be seen that the series of ratchet-teeth  $d$  must be of substantial length, and must extend far enough along the rib section  $b$  to insure considerable latitude of variation in the locking of the two sections in extended position. In other words, two or three small teeth or notches disposed quite close together would not overcome the difficulty, and would be practically the equivalent of one large notch, so far as preventing breakage is concerned. In accordance with the invention, however, a series of ratchet-teeth with comparatively wide notches between them extends a considerable distance along the upper side of the rib-section, so that if a ratchet-dog does not move far enough, or slips out from behind a tooth and starts to move back under the tension or pull of the cloth of the umbrella-top, it will be practically sure to be caught and held by a tooth farther along in the row or series of teeth. Furthermore, it will be seen that the pivoting of the ratchet-dog  $d^1$  in the end of the brace C, in the manner shown and described, not only simplifies the construction and reduces the cost of manufacture thereof, but serves also to render the construction at this point stronger and more reliable in operation, as the said ratchet-dog is maintained by the pivot in operative relation to the brace at all times, even though the construction be subjected to considerable strain. Hence, the telescoping-rib and locking-mechanism therefor are less liable to get out of order in the hands of the user.

What I claim as my invention is:—

1. An umbrella-rib-construction comprising upper and lower telescoping sections forming the rib, a pivotal support for the upper section, a sleeve on the lower section to form a guide for the upper section, a stop on the end of the upper section to engage the end of said sleeve and thereby limit the extension of the rib, a transverse pivot on the under side of said sleeve, a ratchet-dog on said pivot, means on said upper section to engage said dog, a brace connected by said pivot with said sleeve, and a spring on said sleeve to engage and control said dog, said brace engaging said rear end of the dog when the umbrella is closed, thereby to disengage said dog from said means preliminary to telescoping the rib, and the other end of said dog extending toward said pivotal support to drag on the upper section when the rib is extended.

2. An umbrella-rib-construction comprising upper and lower telescoping sections forming the rib, a pivotal support for the upper section, a sleeve on the lower section to form a guide for the upper section, a

stop on the end of the upper section to en-  
 gage the end of said sleeve and thereby  
 limit the extension of the rib, a transverse  
 pivot on the under side of said sleeve, a  
 ratchet-dog on said pivot, means on said  
 5 upper section to engage said dog, a brace  
 connected by said pivot with said sleeve, and  
 a spring on said sleeve to engage and control  
 said dog, said brace engaging said rear end  
 10 of the dog when the umbrella is closed,  
 thereby to disengage said dog from said  
 means preliminary to telescoping the rib,  
 and the other end of said dog extending to-  
 ward said pivotal support to drag on the  
 15 upper section when the rib is extended, said  
 means consisting of a series of ratchet-teeth  
 from any one of which said brace is opera-  
 tive to disengage said ratchet-dog.

3. An umbrella-rib-construction compris-  
 20 ing upper and lower telescoping sections  
 forming the rib, a pivotal support for the  
 upper section, a sleeve on the lower section  
 to form a guide for the upper section, a  
 stop on the end of the upper section to en-

gage the end of said sleeve and thereby limit 25  
 the extension of the rib, a transverse pivot  
 on the under side of said sleeve, a ratchet-  
 dog on said pivot, means on said upper sec-  
 tion to engage said dog, a brace connected  
 by said pivot with said sleeve, and a spring 30  
 on said sleeve to engage and control said  
 dog, said brace engaging said rear end of the  
 dog when the umbrella is closed, thereby to  
 disengage said dog from said means pre-  
 liminary to telescoping the rib, and the other 35  
 end of said dog extending toward said piv-  
 otal support to drag on the upper section  
 when the rib is extended, said sleeve having  
 a longitudinal slot for said ratchet-dog,  
 with ears at each side of said slot for said 40  
 pivot, and said brace being bifurcated to  
 embrace said ears.

Signed by me at Sterling, Illinois, this  
 9th day of January, 1915.

PETER FRANTZ.

Witnesses:

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 HARRY F. WERLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
 Washington, D. C."