J. BEAUDRY.

UMBRELLA.

APPLICATION FILED MAY 18, 1908.

923,130.

Patented June 1, 1909.

Fig. 1.

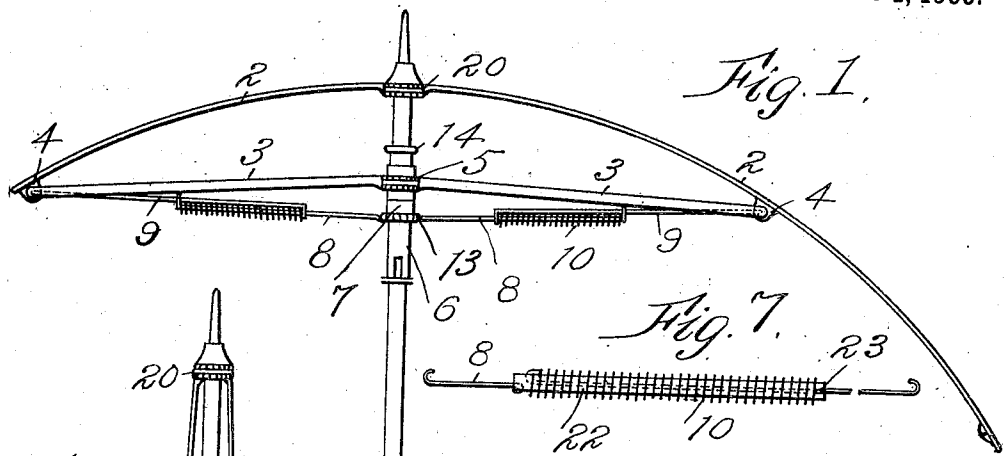


Fig. 7.

Fig. 8.

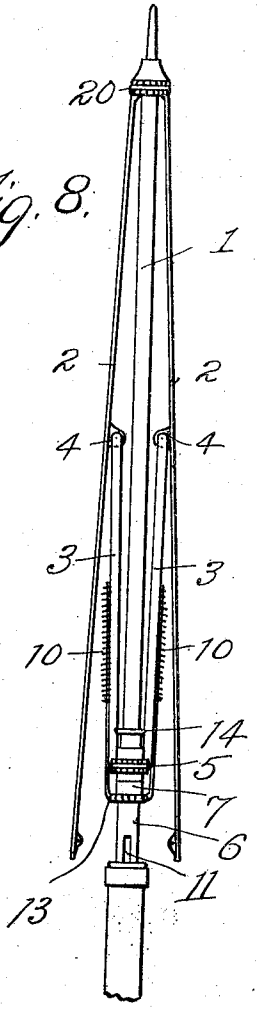


Fig. 2.

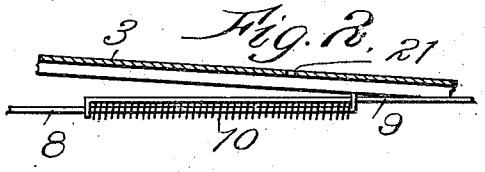


Fig. 4.

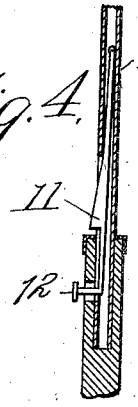


Fig. 3.

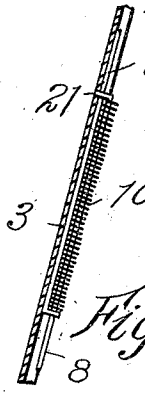


Fig. 5.

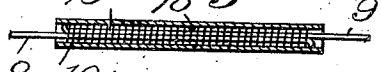
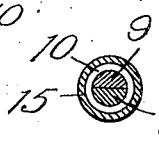


Fig. 6.



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UMBRELLA.

No. 923,130. Specification of Letters Patent. Patented June 1, 1909.

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To all whom it may concern:

Be it known that I, JOSEPH BEAUDRY, a subject of the King of England, and a resident of Montreal, Dominion of Canada, have invented certain new and useful Improvements in Umbrellas, of which the following is a full and clear specification, illustrated in the accompanying drawings.

My invention relates in particular to automatically opening umbrellas which will operate upon releasing the catch near the handle, and to means for pivoting radially extending umbrella members.

In the accompanying drawings which illustrate these particular features of my invention, Figure 1 is a side view of the opened umbrella frame. Fig. 2 is a detail view of a part of a stretcher and the mechanism for opening the umbrella in the relative position, as shown in Fig. 1 in a larger scale. Fig. 3 is a detail view of the same elements shown in Fig. 2 in their relative position when the umbrella is closed. Fig. 4 is a view of the catch seen from the direction of the arrow in Fig. 1. Fig. 5 is a modification of the means for opening the umbrella. Fig. 6 is a cross section thereof shown in larger scale. Fig. 7 is a modification of the manner in which the compression spring may be mounted. Fig. 8 is a side view of the closed umbrella.

In Fig. 1, 1 is the umbrella stick, 2 are the ribs and 3 the stretchers pivoted at 4 to the ribs 2, and at 5 to the runner 6 mounted on the stick 1. At a suitable distance below the pivot point 5 of stretchers 3, which distance will vary according to the size of the umbrella, is fixed to runner 6 a sleeve 7. To this sleeve are suitably pivoted rods 8, one for each stretcher and in line therewith, which rods extend a suitable distance toward pivot points 4 of the stretchers 3 and are turned up at their free ends, as shown in Fig. 1. In or near to pivot points 4 of the stretchers are pivoted a corresponding number of rods 9 which extend a suitable distance toward sleeve 7, and which correspondingly turn down at their free ends, as shown in Figs. 1 and 2, each rod 8 passing through the turned down end of its corresponding rod 9 and each rod 9 passing through the turned up end of its corresponding rod 8. Between the turned ends or shoulders of two corresponding rods 8 and 9 is disposed a compression spring 10 of suitable size and length to hold rods 8 and 9 stretched, under suitable tension, when the umbrella is open as shown in Figs. 1 and 2.

When the umbrella is closed as shown in Fig. 8 so that the runner 6 is engaged by catch 11, it will be seen that owing to the distance at which stretchers 3 and rods 8 are pivoted to runner 6, the distance between pivot points 13 of rods 8 and the corresponding pivot points 4 of rod 9 will grow as runner 6 approaches catch 11, so that thereby spring 10, bearing against the turned up portions of rods 8 and 9, will be compressed. Such compression will take place so long as the pivot points of stretchers 3 and rods 8 on runner 6 are distant from each other as described above. The proper distance of these two pivot points may be obviously easily chosen according to the size of the umbrella, by every one skilled in the art so as to render the device most effective. When the catch 11 is released by pressing the button 12, the spring 10 of each pair of rods 8 and 9 will exert its tendency to shorten the distance between the pivoted points 13 and 4, which will cause runner 6 to fly up and open the umbrella. A stop 14 is pivoted on stick 1 which is disposed close enough to the pivot point 20 of ribs 2 so that stretchers 3, forming a toggle joint, will tend to keep the umbrella open under the tension of ribs 2.

In order to reduce the size of the umbrella when closed, the stretchers may be channel shaped, as shown in Figs. 2 and 3, so that the turned over ends of rods 8 and 9 and spring 10 will be located in the channel of their corresponding stretchers when the umbrella is closed, as shown in Fig. 3, and the turned over end of rod 8 will rest within the perforation 21 of stretcher 3.

Instead of turning the ends of rods 8 and 9 over and having one rod guided in the turned over end of its corresponding rod, as shown in Figs. 2 and 3, I may also employ to the same advantage the construction shown in Figs. 5 and 6. As may be seen from Fig. 5 the overlapping portions of rods 8 and 9 are located in a tube 15 which forms the guide for the free ends, the rods being provided at their ends with heads or shoulders. Both of these rod portions are disposed within spring 10 which acts by bearing with its ends against the rod heads in the same manner upon rods 8 and 9 as described before. In this case I prefer to use half round rods as shown in the cross

section in Fig. 6, to utilize all available space within the spring to the best advantage. Furthermore, by using half round rods the overlapping rod ends located within the spring are sufficiently guided by the rather stiff spring, so that the tube may be entirely omitted. In order to prevent tube 15 from shifting from its symmetrical position relatively to the rod ends, it may be suitably fastened to spring 10, for instance by a drop of solder 16.

I may also mount the compression spring 10 in the manner as shown in Fig. 7. In this modification rod 9 is fastened at its free end to the rib as described above while it is located substantially with its whole length within a channel bar 22, which in turn is located within spring 10. One end of the spring abuts against the turned over end or shoulder 23 of channel bar 22, while the other end of the spring is engaged by the hook shaped end of rod 9 located within the channel bar. Rod 8, which is pivoted at one end at 13, is hooked to the free end of channel bar 22. Thus it will be seen spring 10 will oppose the lengthening of the combination shown in Fig. 7, and have the same effect on the umbrella structure as the means previously described for this purpose.

What I claim is—

1. In an umbrella the combination with the stick, ribs attached to said stick, stretchers and a runner adapted to slide on said stick, said stretchers pivoted at one end to said ribs and at the other end to said runner, a series of rods pivoted at one end to said ribs near the pivot point of said stretchers, a corresponding series of rods pivoted at one end to said runner at a distance from the pivot points of said stretchers in the direction of the umbrella handle, the corresponding rods of said two series overlapping each other and having their other ends provided with shoulders, and a compression spring on each of said pairs of rods bearing with its ends upon said shoulders, said spring tending to shorten the distance between the pivot points of each rod pair to open the umbrella.

2. In an umbrella the combination with the stick, ribs attached to said stick, stretchers and a runner adapted to slide on said stick, said stretchers pivoted at one end to said ribs and at the other end to said runner, a series of rods pivoted at one end to said ribs near the pivot point of said stretchers, a corresponding series of said rods pivoted at one end to said runner at a distance from the pivot points of said stretchers in the direction of the umbrella handle, the corresponding rods of said two series overlapping each other and having their other ends provided with shoulders, a tube of suitable length adapted to receive and guide said rod ends, and a compression spring on each of said pairs of rods bearing with its ends upon said shoulders, said spring tending to shorten the distance between the pivot points of each rod pair to open the umbrella.

3. In an umbrella the combination with the stick, ribs attached to said stick, stretchers and a runner adapted to slide on said stick, said stretchers pivoted at one end to said ribs and at the other end to said runner, a series of radially extending members of variable length, pivoted at their outer ends to said ribs near the pivot point of said stretchers, and at their inner ends to said runner at a distance from the pivot points of said stretchers in the direction of the umbrella handle, and a compression spring suitably disposed on each of said variable members, tending to shorten the length of its member.

4. In an umbrella the combination with the stick, ribs attached to said stick, stretchers and a runner adapted to slide on said stick, said stretchers pivoted at one end to said ribs and at the other end to said runner, a compression spring for each stretcher operatively connected therewith, and radially extending members pivoted at their inner ends to said runner at a distance from the pivot points of said stretchers in the direction of the umbrella handle, and operatively connected at their outer ends to said stretchers and adapted to cause the compression of said springs when the umbrella is closed, said springs tending to open the umbrella.

5. In an umbrella the combination with the stick, ribs attached to said stick, stretchers and a runner adapted to slide on said stick, said stretchers pivoted at one end to said ribs and at the other end to said runner, a compression spring for each stretcher having its inner end at a fixed distance from the pivot point of its stretcher on the rib, a radially extending member for each stretcher pivoted at its inner end to said runner at a distance from the pivot point of its stretcher in the direction of the umbrella handle, and having its outer end operatively connected with the outer end of said spring, said radially extending members tending to compress their springs when the umbrella is closed.

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