

E. CHARAGEAT.
UMBRELLAS.

No. 190,551.

Patented May 8, 1877.

Fig. 23.



Fig. 24.

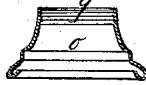


Fig. 25.

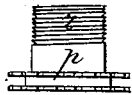


Fig. 26.

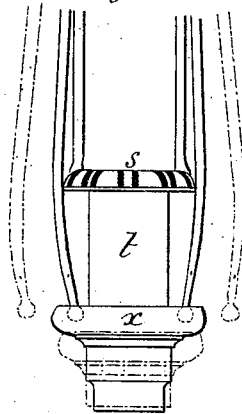


Fig. 27.



Fig. 28.

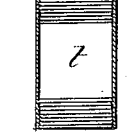


Fig. 29.



Fig. 30.

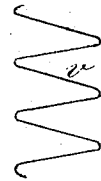


Fig. 31.

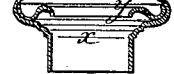


Fig. 15.

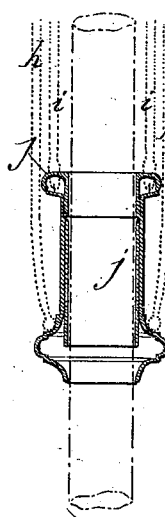


Fig. 16.



Fig. 32.

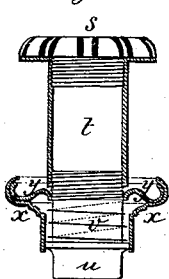


Fig. 33.



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Witnesses
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UNITED STATES PATENT OFFICE

EMILE CHARAGEAT, OF PARIS, FRANCE.

IMPROVEMENT IN UMBRELLAS.

Specification forming part of Letters Patent No. 190,551, dated May 8, 1877; application filed October 2, 1876.

To all whom it may concern:

Be it known that I, EMILE CHARAGEAT, of Paris, France, have invented a new and useful Improvement in Umbrellas, of which the following is a specification:

It is well known that in the different kinds of frames of umbrellas, sun-shades, and the like, as heretofore constructed, springs have been employed for retaining the frames in an open or closed position. These springs, of steel wire, suitably bent, are lodged in slots cut longitudinally in the handle, one at the lower part and one at the upper. But these slots have the serious disadvantage of weakening the handle precisely where the resistance is necessary, in consequence of which the handle is very often broken at the least shock or gust of wind, and that at the point where the slots are. The improved frame, which is the subject of this application, obviates these defects in the most effectual manner by totally dispensing with, not only these springs in the handle, and consequently their slots which were obliged to be used with them, but all devices hitherto employed for this purpose, such as hinged pieces, hooks, rings or runners of all kinds.

My improvement is founded essentially upon a special joint for the stretchers and ribs, in combination with a concentric metal sheath, which is jointed to the ribs at the place where the stretchers are jointed. I will now describe in detail the construction and operation of this improved frame, reference being had to the drawings hereto annexed.

Figures 1 and 2 are front and side views of the thin-stamped metal plate *a* for the purpose of finally covering the joint as with a concentric metal sheath. Figs. 3 and 4 are side views of the same piece after being subjected to the process of stamping, which gives it the desired shape. When the piece *a* is adjusted saddlewise upon the ribs of the umbrella the two faces cover laterally the joint of the stretchers and protect the silk. Fig. 8 shows the stretchers lying in the midway channel of the ribs, which is bitubular. The holes *b b* are destined for the reception of the locks hooks *d*, formed on the spring *e*, (shown in Figs. 5 and 6,) which effects the concentric jointing of

the ribs and stretchers. This spring *e*, which is of tempered steel, has thus over preceding arrangements of propelling springs an undoubted superiority, from the durability and certainty of action. The tongue *f*, formed midway of its length, engages in a notch formed on the ribs, and has free play during the action of the spring, its object being to prevent the bending of the spring to the right or left.

The hole *g* serves for the jointing of the stretchers. Fig. 7 shows the parts in position with the external sheath *a* removed. Figs. 9 and 10 are drawings on a larger scale, illustrating the operation of the joint of this frame. The heads of the stretchers *i* act as cams or eccentrics against the ribs *h* in such wise that the action of the springs *e* will hold the umbrella in an open or closed position.

Thus, as shown in Fig. 7, so long as the stretcher *i* remains in a lower position than the indicated horizontal one, it is drawn by the rib *h* in the direction of the arrow in the horizontal direction—that is, when in a horizontal position the spring is in a normal condition, and exerts no force either to close the umbrella or keep it open. As soon as the stretcher has passed this middle point it is drawn toward the rib in the contrary upper direction, as indicated by broken lines.

Fig. 11 shows, on a small scale, the complete umbrella-frame, in which the stretchers are arched for a portion of their length, (the dimensions being given in Fig. 11,) and calculated in such manner that the umbrella will not be completely open except when the runner *J* (the detail of which is shown in Figs. 15 and 16) and the stretchers *i* are in the same horizontal line—that is to say, at the end of the travel of the runner which is employed for opening. In this extreme position, the resistance produced by the tension of the covering acting with great force on the stretchers and runner, the result is that as soon as the center of resistance is passed the runner is forced in an opposite direction to that which it opposed to the hand in the action of opening the umbrella. In this way, instead of a spring a simple stop-pin is used, situated in the usual place, without

altering the ordinary condition, and without altering the distance between the runner and the nut. It will be understood that in closing the umbrella it will suffice to pull gently on the runner, which is soon at liberty, and will again act for the purpose of keeping the umbrella closed by its own pressure and that of the sheath-spring above described. The compressing-spring *c* automatically completes the absolute closing.

In Fig. 12 is shown another arrangement of the cam or eccentric at the end of the stretchers, for producing, in combination with the sheath-spring, a double closing and opening action—that is, in this case the stretcher is drawn to the right or to the left, as in the previous case, but on the other hand its closed position is limited by the abutment of the cam at the head of the stretcher against the rib, for if there is a tendency for the rib to be drawn nearer to the cross-rib there is a repelling action of the spring produced, which will again separate the rib from the stretcher. I have shown in Figs. 13 and 14 two several sections, which are easily given to the ribs *h*¹ to serve as coverings to the seam *k* of the umbrella-cover, and for facilitating the joining on the stretchers *i*¹, which are of similar section. I would remark, moreover, that the tubular section of my stretchers, combined with plain solid or hollow steel ribs, allows of a very superior light frame. For the application of my invention to so-called "paragon" frames, I use the arrangement shown in Figs. 17 and 18, in which case the spring *c* is not used and the rib *h* will itself act as a spring. The joint-pin *a*² of the stretcher *i* is received in the sheath-piece *a*, and this is held on the rib *h* by two clasps, *a'*, said piece *a* being slightly bent to allow of the necessary play of the rib. When the rib *h* is solid, as seen in Fig. 19, the piece *a* is held by the clasps *a'* *a'*, arranged on the upper and lower end of the said piece. These frames are very advantageous, inasmuch as they prevent any lateral derangement of the ribs and cross-ribs, and at the same time make use of my improved spring arrangement.

In Figs. 20, 21, and 22, I have shown an improved combination for the simple mounting of the stretchers on the ribs. In this arrangement the sheath *m* (shown enlarged in Fig. 22) carries on the lower side two clasps, *n*, which are set on the two edges of the ribs. In this manner I allow the rib full liberty, as regards the head of the stretcher, while it allows of this latter being received in the channel of the rib, which prevents any lateral derangement. The two parts which constitute the sheath for the play of the stretcher are of double thickness, to increase its strength and insure regular working.

With a runner furnished with a movable ring and concentric pressure-spring, which bears strongly against the joint-heads of the inner ends of the stretchers, I am able to ob-

tain a closing effect similar to that which I obtain from the ribs as above described. In this case the effect of the spring, instead of being produced above on a rib, is below on a runner, which is simply a transposition of the mechanical effect.

Fig. 23 shows a special arrangement of the ribs for the application of my improvement to a cupped runner, with or without spring. In this arrangement the rib *h* is curved toward the end from the point where it is jointed to the stretcher, and extending for about one centimeter and a half from the other end of the stretcher. This construction of the rib is designed particularly for application to my cupped runner—that is, it automatically effects the spring of the end of the ribs beyond the runner without the use of the propelling spring or cam or projection, which, in previous arrangements, prevent the inconvenience of the ribs falling away from the stick when the umbrella is shut. The broken lines show that when the rib *h* is brought against the stretcher *i* there will be no tendency of the ribs to fall outward. The end of the rib *h* is itself slightly bent at *h'*, to draw the points toward the stick after having passed above the jointing-nut of the stretchers.

Figs. 24 and 25 show, respectively, a central section and side view of a cap, *o*, and double nut *p*, which I join together by means of screw-threads *q* *r*, and which are secured through the handle, either with a stop-pin or a stud, as usual. Fig. 26 is a side view of the cupped runner which I employ, by preference, with my improved frame, and it consists of a fixed nut, *s*, Fig. 27, shown above a socket-sleeve, *t*, Fig. 28, which is shown above another socket, *u*, with a shoulder, *u'*, Fig. 29. The spring *v*, Fig. 30, is placed around the socket *u*, when the cup proper *x*, Fig. 31, will cover it in between the shoulder *u'* and the opposite shoulder *y*. Fig. 32 represents in central section the cupped runner complete. The play of the cup is thus restricted between the shoulder at the base of the spring *v* and the abutment of the other shoulder *y* on the other end of the sleeve *t*. In Fig. 26 the broken lines represent the cup of the runner and ribs in their open position. When the cupped runner is employed without a spring, the two sockets *t* and *u* are formed in one, and the play of the cup of the runner is then limited by two bands suitably placed on this socket. Fig. 33 shows a modification which I may employ for the jointing *h*² of the stretchers *i* to the fixed nut *s*.

I claim—

1. The umbrella-frame, consisting of the ribs jointed to the cammed or eccentric headed stretchers, in combination with the metal sheaths, arranged as described, for automatically retaining the umbrella in an open or closed position, substantially as set forth.

2. The concentric metal sheath and the opening and closing spring, combined and arranged to operate substantially as set forth.

3. In an umbrella-frame, composed of a series of ribs, *h*¹, of the form described, in transverse section, the arrangement of said ribs with the open side outward, and so as to receive the seams of the covering, substantially as described.

4. The combination of the fixed nut *s*, sock-

et-sleeve *t*, socket *u*, constructed with the shoulder *u*¹, spring *v*, cup *x*, and shoulder *y*, substantially as described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

E. CHARAGEAT.

Witnesses:

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ALBERT COHEN.