(No Model.)

E. KLEBER.

SELF OPENING OR CLOSING UMBRELLA.

No. 604,495. Patented May 24, 1898.

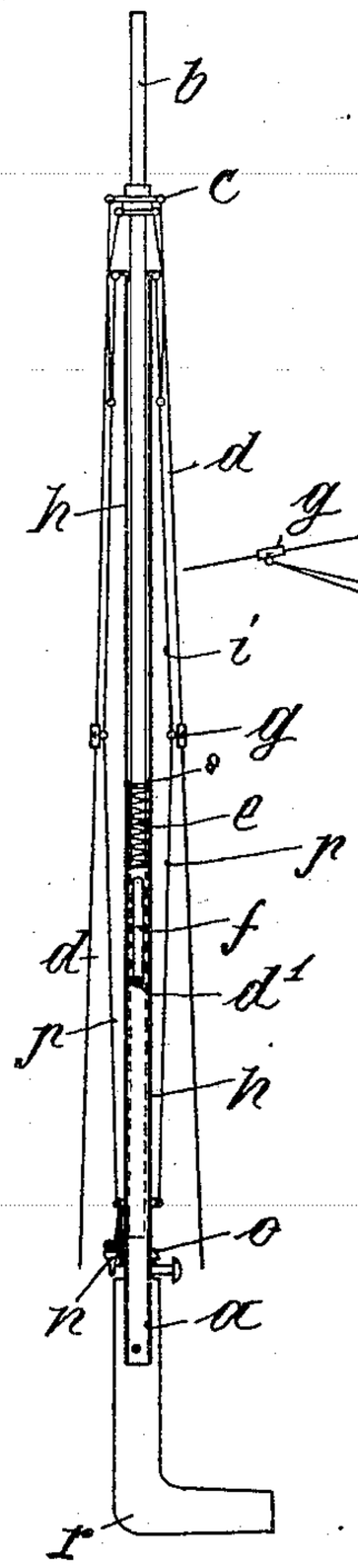

Fig. 1.

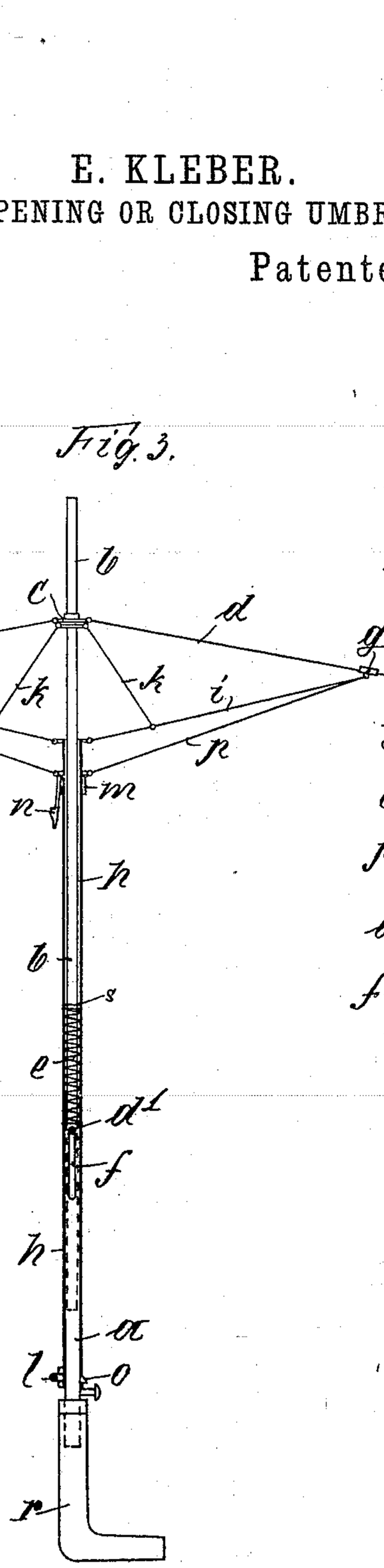

Fig. 3.

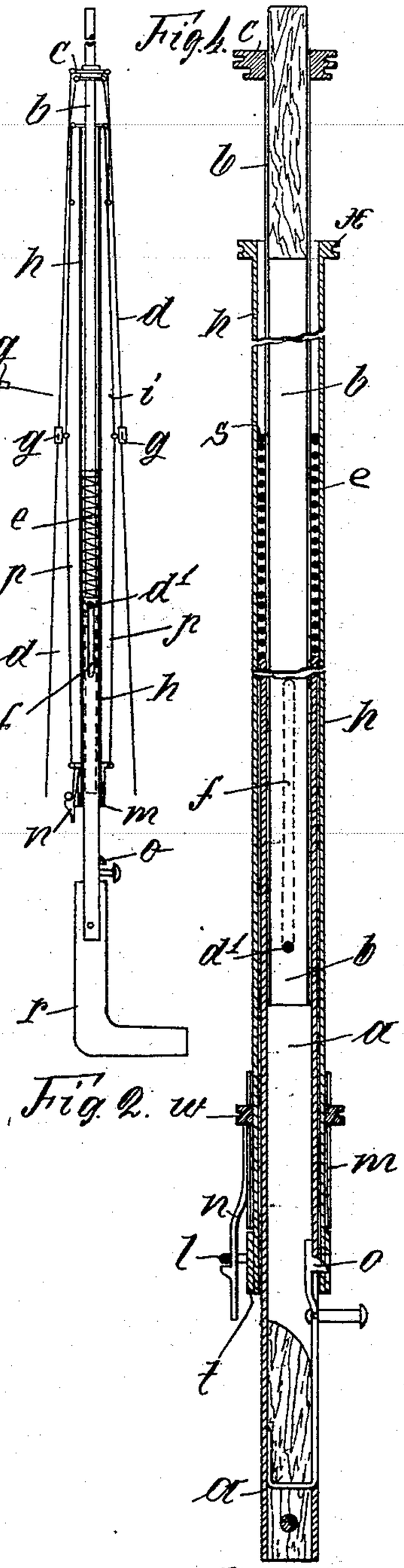

Fig. 2.

Witnesses:
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by
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UNITED STATES PATENT OFFICE.

EMIL KLEBER, OF BERLIN, GERMANY, ASSIGNOR TO EDMUND SCHERFF AND GUSTAV ROSCHER, OF SAME PLACE.

SELF OPENING OR CLOSING UMBRELLA.

SPECIFICATION forming part of Letters Patent No. 604,495, dated May 24, 1898.

Application filed June 24, 1896. Serial No. 596,753. (No model.) Patented in Germany December 6, 1894, No. 85,351.

To all whom it may concern:

Be it known that I, EMIL KLEBER, a subject of the King of Prussia, German Emperor, and a resident of Berlin, Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Self-Opening and Self-Closing Umbrellas, (for which a patent has been obtained in Germany, No. 85,351, dated December 6, 1894,) of which the following is an exact specification.

This invention refers to umbrellas of that kind in which the opening and closing occur in an automatic way; and my improvements in umbrellas of said kind relate to certain combinations and arrangements of parts, as are all more fully described hereinafter.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters refer to similar parts, and in which—

Figure 1 is a longitudinal section through my improved umbrella. Fig. 2 is a similar section, the parts being in another position. Fig. 3 shows the umbrella opened; and Fig. 4 shows the tubes forming the body of the umbrella without the cloth-supporting and other rods, said tubes and their adjacent parts being drawn on a larger scale and some portions of them being broken out in order to reduce the length of the figure.

The handle *r*, Figs. 1 to 3, of the umbrella is fixed to a tube *a*, Figs. 1 to 4, the length of which is about two-fifths of the whole length of the umbrella. Said tube *a* is provided at its free end with a slot *f*, through which takes a pin *d'*, that is fixed to a tube *b*. The tube *b*, or, more precisely, a portion thereof, is thus situated within the tube *a* and may be displaced within said tube for a distance corresponding to the length of the slot *f* aforementioned. The tube *b* is furnished with a collar *s*, Fig. 4, situated above the tube *a*. The spring *e*, encompassing the tube *b* and arranged between said collar *s* and the free end of the tube *a*, tends constantly to move the tube *b* out of the tube *a*. This is, however, normally hindered by means that are hereinafter fully described. The upper or other end of the tube *b* carries the top notch *c* for the cloth-supporting ribs *d*, Fig. 3, and carries, moreover, braces *k*, that are connected to a set of auxiliary stretchers *i*, Fig. 3. The latter are hinged at one end to small slides *g*, arranged displaceably upon the ribs *d*, and are hinged at their other ends to the upper end of a tube *h*, that encompasses the tubes *b* and *a*. The other end of the tube *h* is provided with an aperture through which takes a catch *o*, Fig. 4, attached to the tube *a*. Said other end of the tube *h* is strengthened by an auxiliary ring *t*, that is fixed to said tube and carries an ear *l*. Through this ear takes a catch *n*, that is fixed to a runner *m*. The latter is furnished with a notched disk *w*, Fig. 4. A similar disk H is secured to the upper end of the tube *h*. The auxiliary stretchers *i*, above mentioned, are held by said disk H, and other stretchers *p* are held by the disk *w* of the runner *m*. The other ends of said stretchers *p* are hinged to the small slides *g*, above mentioned.

Suppose the umbrella be closed, Fig. 1, the spring *e* is in a strained state and is prevented from moving the tube *b* outward—*i. e.*, from opening the umbrella by the catch *n* taking through and behind the ear *l* of the ring *t* or of the tube *h*, respectively. The latter is hindered from moving along the tube *a* by the catch *o*. If, however, the catch *n* is released, the runner *m* will glide along the tube *h* under the pressure of the spring *e* in that the force of the latter is transmitted to said runner *m* by the braces *k* and the stretchers *i* and *p*. In consequence of the parts *i* and *p* being allowed to rise also the cloth-supporting ribs *d* rise, and the umbrella is thus opened.

There are no special means for keeping the umbrella in its open position, in that the spring *e*, after having effected its opening, is not yet fully released. There remains in said spring as much force as is requisite for making the opened umbrella able to withstand the pressure of even a strong wind. This is a particular feature of my invention in that in all other constructions that are known to me the spring is fully released by opening the umbrella, and special means are requisite for keeping the umbrella in its opened state.

Before describing the manner of closing the umbrella I wish to call attention to the fact that in order to bring the parts *d*, *k*, *i*, and *p* back into their former relative position it is

not necessary to move said parts in exactly the reverse way; but the same result may be obtained by moving the auxiliary stretchers *i* around their points of connection with the braces *k*. This may be attained by uncoupling the tube *h* from the tube *a* by releasing the catch *o* and then letting the tube *h* glide along the tube *a* in the direction to the top notch *c* of the tube *b*. It should be borne in mind that the connection of the stretchers *p* and the auxiliary stretchers *i* with the cloth-supporting ribs *d* is effected by means of the slides *g*, and it should further be borne in mind that the ribs *d* and the stretchers *p* tend to turn the auxiliary stretchers *i* around the points of connection of said auxiliary stretchers with the braces *k*. The weight of the tube *h* is not sufficient to withstand the counteracting weight of the ribs *d* and the stretchers *p* and of the longer arms of the auxiliary stretchers *i*, together with the slides *g* and the cloth. If, therefore, the tube *h* is uncoupled from the tube *a*, the umbrella is instantly closed and all the parts assume the position shown in Fig. 2. On the closing of the umbrella the catch *n* is automatically taken into and behind the ear *l*, so as practically to couple the tube *b* to the tube *h*, and both these tubes are then displaced along the tube *a* in the direction to the handle, so as to compress or strain the spring *e*, and all the parts are finally fixed in position by the catch *o* coupling the tube *h* to the tube *a*. The umbrella is now fit for being used in the same way as before described.

Having thus fully described the nature of this invention, what I desire to secure by Letters Patent of the United States is—

In a self-opening and self-closing umbrella or parasol having a tube *a*, another tube *b*, arranged to slide within the former tube *a;* a third tube *h*, arranged upon the tube *a;* a catch *o* adapted to couple the tube *h* to the tube *a*, and a spring *e* adapted to move the tube *b* out of the tube *a*, the combination of auxiliary stretchers *i* hinged to the tube *h* and connected displaceably with the ribs *d;* the braces *k* hinged to the auxiliary stretchers *i*, as well as the tube *b;* the runner *m* arranged displaceably upon the tube *h;* the stretchers *p* hinged to said slide as well as to the auxiliary stretchers *i;* and the catch *n* secured to the runner *m*, and adapted to fix the latter in its normal position, all operating in the manner and for the purpose as described.

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

EMIL KLEBER.

Witnesses:
CHARLES H. DAY,
W. HAUPT.