J. KRUPSKI.

FOLDING UMBRELLA.

APPLICATION FILED NOV. 11, 1916.

1,255,182. Patented Feb. 5, 1918.

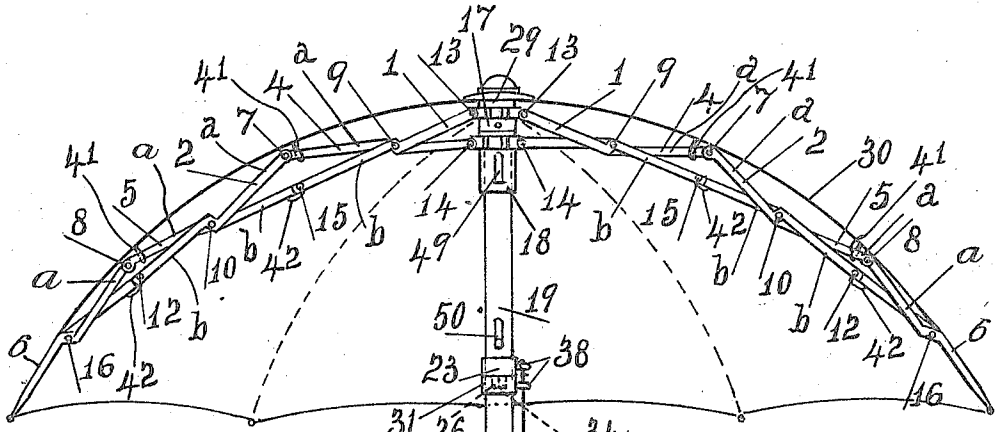


FIG. 1.

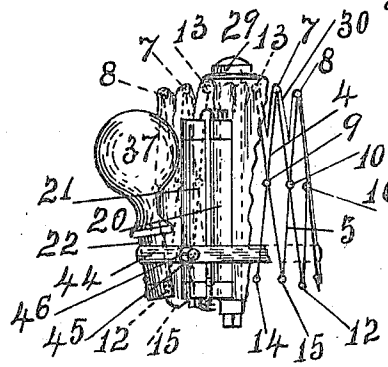


FIG. 3.

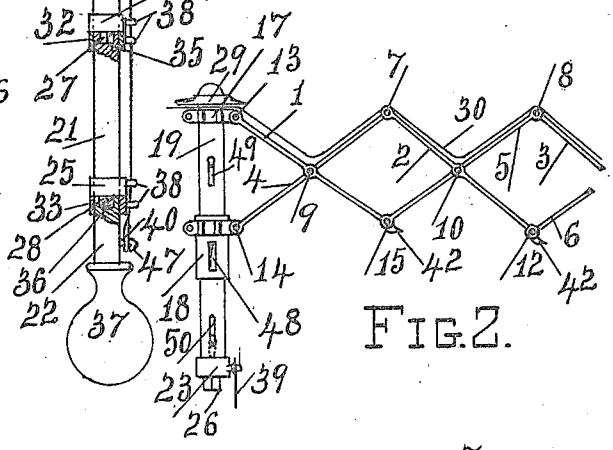


FIG. 2.

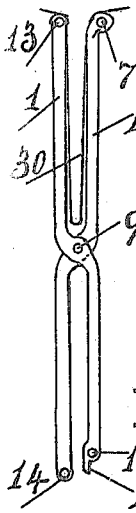


FIG. 5.

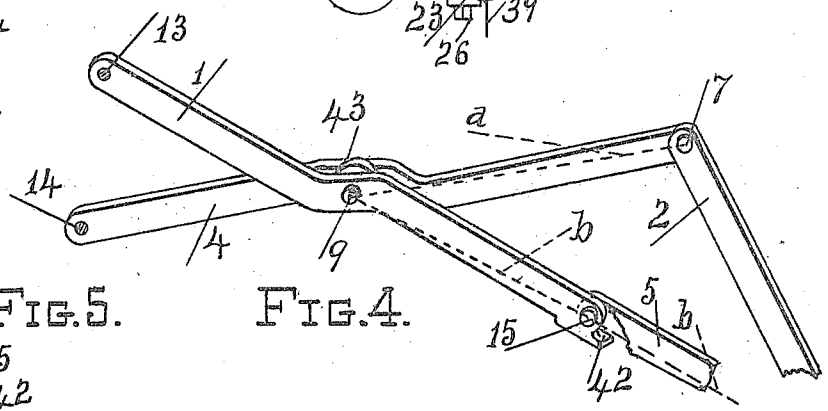


FIG. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN KRUPSKI, OF SPRINGFIELD, ILLINOIS.

FOLDING UMBRELLA.

1,255,182. Specification of Letters Patent. Patented Feb. 5, 1918.

Application filed November 11, 1916. Serial No. 130,748.

To all whom it may concern:

Be it known that I, JOHN KRUPSKI, a subject of Nicholas II, Czar of all the Russias, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Folding Umbrella, of which the following is a specification.

My invention relates to umbrellas of the kind which may be folded in small compass to be conveniently carried in a pocket or in a suit case.

The purposes of the invention are to provide truss-like spreaders free from sliding parts; to provide a sectional staff of improved construction; and to provide other new and useful features of construction; all to be hereinafter described and finally recited in the claims.

Figure 1 is a diagrammatic sectional view of the extended umbrella. Fig. 2 is a partial diagrammatic view of the partially extended umbrella; Fig. 3 is a diagrammatic view of the folded umbrella, partly in section; Fig. 4 is an enlarged detail of one pair of spreader-rods and Fig. 5 is a side elevation of a pair of folded spreader rods and shows part of the cover folded between the upper members of the rods. The same reference numbers and letters designate the same parts in the different views.

The staff is preferably of wood, for the sake of lightness, and comprises four sections numbered 19, 20, 21 and 22 respectively.

A grooved ring 29 is fixed near the upper end of the section 19, and the central part of the cover 30 is securely tied in the groove of the ring. A notched ring 17 is also secured on the section 19 adjacent to the ring 29.

Ferrules 23, 24 and 25, having tenons 26, 27 and 28, are secured at the lower ends of the sections 19, 20 and 21 respectively, and ferrules 31, 32 and 33, having sockets 34, 35 and 36, adapted to accommodate the respective tenons, are fixed at the upper ends of the respective sections 20, 21 and 22.

A handle 37 is secured at the lower end of the section 22.

Eyes 38 are fixed on the respective ferrules 23, 24, 25, 31, 32 and 33. A hook 47 is fixed on the staff-section 22 at a suitable distance below the lowest eye 38. A cord 39 is tied in the uppermost eye 38 and extends downward through all the other eyes and has at its lower end a ring 40 which will engage on the hook 47 when the cord is drawn taut, to hold the staff-sections together. To separate the staff-sections the ring 40 will be disengaged from the hook 47 and the sections will be successively slid downward on the cord to withdraw the tenons from the sockets, and the ring will keep the sections in due order on the cord, so that they may be easily connected again.

A notched runner 18 is adapted to slide on the section 19, and has a suitable slot (not shown) adapted to accommodate the spring catch 49 on the section 19 to keep the umbrella closed.

Each spreader consists of a series of rods having toggle-joint connections with each other, one end of one rod being pivotally connected with the stationary notched ring 17 and one end of another rod being pivotally connected with the notched runner 18, as will now be described.

Rods 1 are connected with the ring 17 by pivots 13. Rods 4 are connected with the runner 18 by pivots 14. The central parts of the rods 1 and 4 are connected by pivots 9. Rods 2 are connected with the rods 4 by pivots 7. Rods 5 are connected with the rods 1 by pivots 15. The rods 2 and 5 are connected by pivots 10. The rods 5 and the members *a* of the rods 6 are connected by pivots 8. The rods 6 are connected with the members *b* of the rods 2 by pivots 16. The cover 3 is connected with the rods 4 and 5 by thread loops 41 which are adapted to slide on the rods. An elastic band 44 and a button 45 are sewed on the cover. A ring 46 is at the free end of the band. When the umbrella is folded and the band is placed around the folded cover and the assembled staff-sections, the ring will be hooked on the button and the band will clasp and hold together the folded umbrella and the assembled staff-sections, as shown in Fig. 3. The rods are preferably of flat spring steel and are as light as can be used without impairing the rigidity of the structures. The joints 7, 9, 13, 14 and 15 are shown in enlarged detail in Fig. 4.

The members *a* of the rods 4, 2, 5 and 6 are somewhat longer than the members *b* of the rods 1, 5 and 2 in order that, in each spreader, the connected terminals of the members *a* of the rods 4 and 2 and the connected terminals of the members *a* of the

rods 5 and 6 may contact with and support the extended cover 30. In each of the spreaders the pivots 15 and the adjacent stops 42, together constitute buggy-top-joints between the members *b* of the rods 1 and 5; and the pivots 12 and the adjacent stops 42 together constitute the similar buggy-top-joints of the rods 2. The rods 1 and 5 united by the buggy-top-joints 15, 42, together constitute first chordal rods, chordal to the curve of the cover; and the rods 2 which have members *b* united by the buggy-top-joints, 12—42, constitute second continuous rods chordal to the curve of the cover.

The chordal rods 1—5 and 2 stiffen the spreaders and prevent collapse of the members *a* of the rods 2—4, and the members *a* of the rods 5—6; thereby avoiding sagging of the cover, so that the rods will pass each other without interference while the umbrella is being folded and while it is being extended. The rods 1, 4, etc., are separated by thin washers 43.

To open and expand the umbrella the catch 50 will be pressed inward to release the runner 18, and the runner will be slid upward on the staff-section 19 until the catch 49 enters the slot 48 and holds the runner in its raised position. The upward movement of the runner will cause direct radial extension of the spreaders from the staff to fully expand and support the cover; and reverse movement of the runner will effect direct radial retraction of the spreaders toward the staff to close the umbrella.

To fold the umbrella the ring 40 will be removed from the hook 47 and the staff-sections 22, 21 and 20 will be disconnected from the section 19 and the runner 18 will be slid downward on the section 19 to cause retraction of the spreaders and to collapse and fold the cover 30; the detached sections will be assembled on the outside of the cover and the elastic band will then be placed around the cover and the staff-sections and the button 45 will be inserted through the ring to secure the band to keep all the parts together in a compact bundle substantially as shown in Fig. 3.

It is to be noted here that the toggle-jointed spreaders capable of direct radial extension outwardly from the staff to expand the cover, and capable of direct radial retraction toward the staff to collapse and fold the cover are of great practical utility because the construction disclosed admits of folding the umbrella at one movement to form a short and compact bundle.

For convenient recital in the claims, I hereby designate as "radial rods" the rods radial to and pivotally connected with the runners 14; as "first chordal rods," the rods pivotally connected with the notched ring 17 and having buggy-top-joints 15—42 adapted to break downwardly; and as "second chordal rods," the rods pivotally connected with the outer terminals of the radial rods and having buggy-top-joints 12—42, adapted to break downwardly.

I do not restrict my claims to the precise details of construction shown and described, inasmuch as it is obvious that minor structural details may be varied without departure from my invention.

Having fully described by invention, what I claim as new and desire to secure by Letters Patent is:

1. In a folding umbrella, the combination of a staff; a ring stationary on the staff; a runner adapted to slide on the staff; radial rods pivotally connected with the runner; first chordal rods pivotally connected with the ring and the respective radial rods and having buggy-top-joints adapted to break downwardly; and second chordal rods pivotally connected with the outer terminals of the respective radial rods, and pivotally connected with the respective first chordal rods and having buggy-top-joints adapted to break downwardly.

2. In a folding umbrella, the combination of a sectional staff comprising a cover-section, intermediate-sections and a handle-section adapted to inter-lock with each other; a stationary eye on the cover-section; a stationary eye and a hook on the handle-section; stationary eyes respectively adjacent to the respective terminals of the intermediate-sections; a cord secured to the eye of the cover-section and extending through the eyes of all the other sections; and a ring on said cord adapted to engage the hook of the handle-section to keep the cord taut to hold the sections together, and also adapted to prevent the sections, when separated, from slipping off the cord.

In witness whereof I have hereunto signed my name at Springfield, Illinois, this 8th day of November, 1916.

JOHN KRUPSKI.

Witnesses:
W. S. TROXELL,
S. ALLYNN TROXELL,

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