No. 888,363. PATENTED MAY 19, 1908.

C. STONE.

FOLDING UMBRELLA.

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Fig. 1.

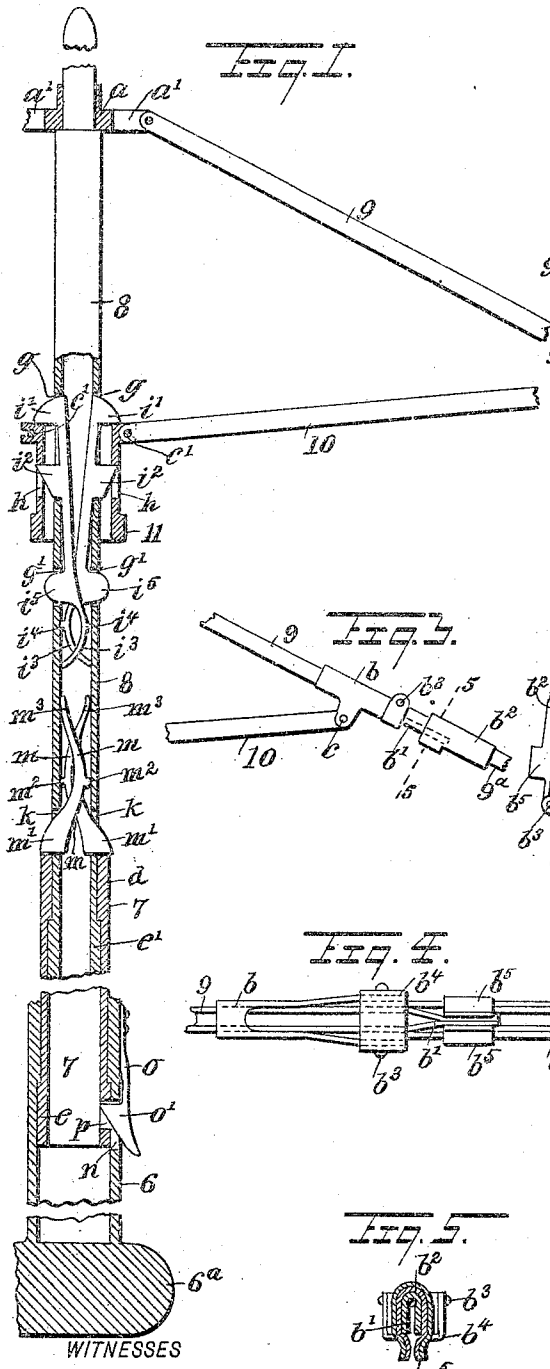


Fig. 2.

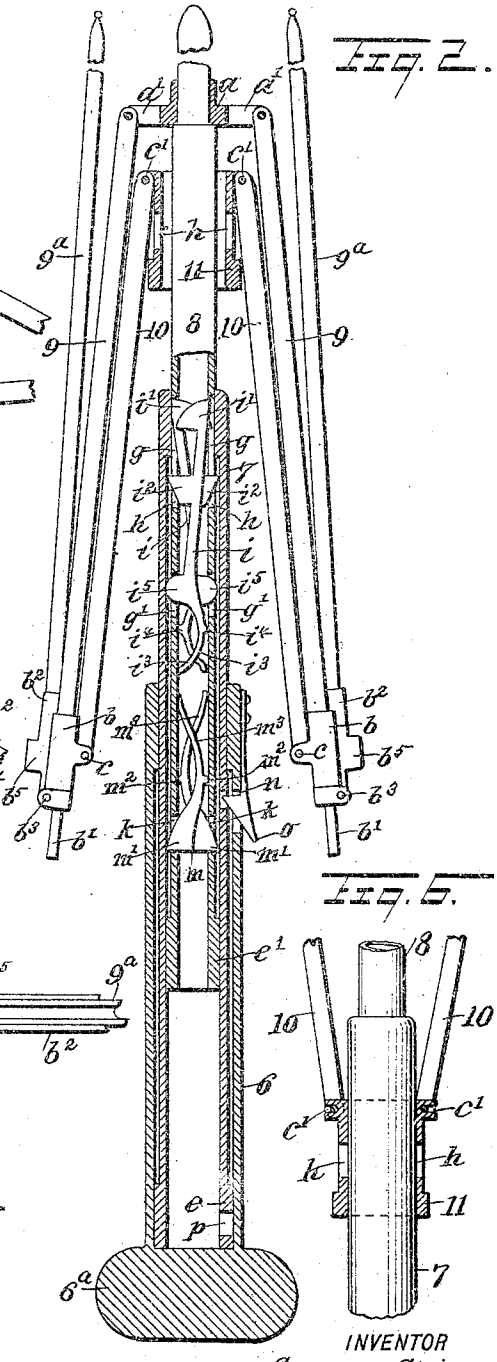


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



WITNESSES

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CARSON STONE, OF BATTLE CREEK, IOWA.

## FOLDING UMBRELLA.

No. 888,363. Specification of Letters Patent. Patented May 19, 1908.

Application filed August 13, 1907. Serial No. 388,281.

*To all whom it may concern:*

Be it known that I, CARSON STONE, a citizen of the United States, and a resident of Battle Creek, in the county of Ida and State of Iowa, have invented a new and Improved Folding Umbrella, of which the following is a full, clear, and exact description.

This invention relates to a type of umbrella that is adapted for shortening and close folding, so as to enable the convenient packing or carrying of the same.

The purpose of my invention is to provide novel details of construction for an umbrella of the type indicated, which will facilitate the folding of the ribs, will hold them secured when extended, will reliably hold the frame in opened adjustment, afford three telescoping sections for the umbrella frame stick, and afford means for releasably holding these stick sections extended or telescopically contracted.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a partly sectional side view of an umbrella frame, broken away and shortened, details of the invention being shown in the sectional stick as adjusted for holding a rib and stretcher rod elevated; Fig. 2 is a partly sectional broken side view of an umbrella frame showing novel details in folded adjustment; Fig. 3 is a side view of a portion of a rib at the joint between its foldable sections, said sections appearing extended, and an end portion of a stretcher rod hinged by one end on a section of the rib; Fig. 4 is a reversed plan view of details shown in Fig. 3; Fig. 5 is a transverse sectional view substantially on the line 5—5 in Fig. 3, and Fig. 6 is a sectional side view of a runner sleeve which is slidable on the umbrella stick.

The stick that supports other structural details of the umbrella, consists of three sections 6, 7, and 8. The lower section 6, having a preferred style of handle $6^a$ thereon, receives the intermediate section 7 that slidably fits therein, and in the section 7 the upper stick section 8 is neatly but slidably fitted. The stick sections are formed of tubular metal having such diameters and thickness in their walls as will afford the strength and rigidity necessary for resisting bendable strains, and are so relatively proportioned as to length that they will afford a convenient stick when they are extended for service.

A notched ring *a* is secured upon the upper section 8 near its upper extremity, the radial notches or slots *a'* therein receiving the upper ends of the frame ribs, that are pivoted therein in the usual manner. The frame ribs are of similar construction, and each consists of two parts 9, $9^a$, having nearly equal length. The upper rib member 9 is provided with a hinge joint leaf *b* that is in the form of an open U-shaped tube, one end thereof embracing and being rigidly secured upon the rib member 9 near its normally lower end, the extreme end of the rib 9 being flattened and projecting beyond the end of the joint leaf *b* forming a latch limb *b'*, this detail appearing plainly in Figs. 3 and 4. This latch limb *b'* may however be formed by extending the lower end of the joint leaf *b*, and flattening the same. The corresponding lower member $9^a$ of each two part rib, is furnished with a hollow mating hinge leaf $b^2$ that is rigidly secured upon the adjacent end portion of the member $9^a$ and is pivoted at its upper end as at $b^3$ upon the hinge leaf *b*, above the latch limb *b'*, the side members of the leaf *b* at the end portion embracing the side members of the leaf $b^2$, where they are hinged together, as best shown in Figs. 4 and 5, and a clip band $b^4$ that embraces the hollow hinge leaf *b* is clamped thereon by the pivot $b^3$ and strengthens the hinge joint against torsional strains. Upon the lower rib member $9^a$ near the hinge joint $b^3$ an essentially U-shaped resilient clip band or clasp $b^5$ is formed or secured on the hinge leaf $b^2$, and between the adjacent end portions or jaws of said resilient clasp that approach each other, the latch limb *b'* will enter and be removably clamped, when the rib members 9, $9^a$ are extended for support of a suitable fibrous cover.

As shown in the drawing the rib members are of the usual U-shaped or channeled form, and the jaws of the clasp extend at the channeled side of the rib member, so that the flattened end of the latch limb which overlaps the end of the rib member carrying the clasp can pass between the jaws of the clasp and engage the channel of said rib member.

It will be seen that the clamped engagement of the limb *b'* by the clip band $b^5$, at a distance from the pivot $b^3$, co-acts with the

clip band $b^6$ to stiffen the connection between the two members 9, $9^a$ of each rib, and relieves the pivots $b^3$ from lateral or torsional strains. A number of stretcher rods 10, equal with that of the ribs is provided, and each rod is hinged at its normally lower end, between the side walls of a respective U-shaped hinge leaf $b$, as indicated at $c$, in Fig. 2, these walls being projected so as to form ears, and thus permit the stretcher rods to fold toward and near corresponding upper rib sections 9, while the lower rib sections $9^a$ are adapted for receiving folded adjustment close to mating rib sections 9, as represented in Fig. 2.

Upon the upper stick section 8, a runner sleeve 11 is slidably mounted, having radial ears formed on its upper end, whereon the upper ends of the stretcher rods 10 are respectively pivoted, as at $c'$ in Figs. 1 and 2, and the bore of said sleeve is of a diameter that permits it to slide down on the section 7 when this is desired.

To adapt the tubular sections 6, 7, 8 of the three-part stick for a slidable engagement one within the other, and to reduce the friction to a minimum, the interior diameters of the sections 6 and 7 are increased a proper degree from their lower ends to near their upper ends, leaving collars $d$ and $e$ intact at their upper and lower end sections respectively, a collar $e'$ being formed on the lower end of the section 8, said collars bearing loosely upon the exterior surface of the tubular section 8, the interior surface of the section 7 and the interior surface of the section 6 respectively, and having a length that prevents wabbling of the stick sections upon each other.

In the tubular wall of the upper stick section 8, at a suitable distance from the notched flange or ring $a$, two opposite longitudinal slots $g$, $g$ are formed, and similar but shorter slots $h$, $h$ are formed in the runner sleeve 11. In the stick section 8 two latch dogs $i$, $i$ are located, these dogs each consisting of a resilient metallic strip, having a hook $i'$ formed on its upper end, said hooks being positioned opposite the slots $g$, $g$, near the upper ends thereof and normally projecting through said slots. Below the hooks $i'$, and equally spaced upon the latch dogs, two similar lugs $i^2$ are formed, said lugs projecting respectively through the slots $g$, $g$ when free to do so and, as shown, said lugs slope inwardly and downwardly on their side edges. The lower portions of the latch dogs $i$, $i$, that lap upon each other, are reduced in thickness and curved laterally in opposite directions, forming bow springs $i^3$. There is a lateral toe $i^4$ formed on each bow spring $i^3$, which has contact with the inner surface of the stick section 8, the free lower ends of said springs also impinging upon the tubular wall specified. In two opposite slots $g'$ in the stick section 8 below the lugs $i^2$, two ears $i^5$ project that are formed respectively on the latch dogs $i$ above the toes $i^4$, the lugs $i^5$ having their edges convexed. It will be noted that the contact of each spring $i^3$ at two points on the interior side wall of the stick section 8, will cause the hooks $i'$ and lugs $i^2$ to project through the slots $g$, $g$ and by pressure applied upon the ears $i^5$ may be retracted or drawn inwardly through said slots.

From the construction and arrangement of parts as hereinbefore described, it will be evident that if the rib sections 9, $9^a$, have been folded into the positions shown in Fig. 2, the runner sleeve 11 will be positioned above the hooks $i'$, this adjustment being permitted if the ears $i^5$ are pressed inward, either manually or by an inforced contact of the upper edge of the runner sleeve upon the convexed edges of said ears. Now if the rib sections $9^a$ are rocked into alinement with their mating sections 9, and the latter are simultaneously elevated so as to stretch a cover on the extended ribs (not shown), the sleeve 11 will be slid down, and when the stretcher rods 10 are radially disposed on the runner sleeve, as shown for one rod in Fig. 1, the hooks $i'$ will automatically project out through the slots $g$, $g$, above the upper edge of the runner sleeve 11, and the lugs $i^2$ will likewise project through the slots $h$, $h$, in the runner sleeve, thus locking the latter in a stationary position and holding the umbrella frame in an expanded condition.

Two longitudinal slots $k$ are formed oppositely in the upper section 8 of the stick, a distance below the slots $g'$, these slots receiving widened lower ends $m'$ of two crossed and lapped spring dogs $m$. The construction of the dogs $m$ is somewhat similar to that afforded the resilient lower portions of the latch dogs $i$, they having arcuate form, and each above their crossing point having a toe $m^2$ projected which impinges upon the inner surface of the stick section 8. The spring dogs $m$ at their diverged upper ends $m^3$, impinge upon the tubular wall of the stick member 8, and the resilience of the arcuate members on the dogs $m$ serves to automatically project their lower ends $m'$ outward. The slots $k$ are located near the lower end of the stick section 8, and the spring dogs $m$ are positioned so that the widened lower ends $m'$ or ears thereof which are normally projected out of these slots, will have contact with the upper end of the middle section 7 of the stick when the latter is fully extended for service, as is indicated in Fig. 1.

A longitudinal slot $n$ is formed in the lower section 6 of the three part stick near its upper end, which receives the hook nose $o'$ on a latch hook $o$, this hook nose passing into a lateral slot $p$, in the lower end of the middle section 7 of the stick, and as represented in Fig. 1 the engagement of the ears $m'$ with the upper end of the middle stick

section 7, and the hooked engagement of the hook nose $o'$ within the slot $p$, will lock the stick sections 6 and 7 upon each other in extended condition. It will be seen that the lower sections 6 and 7 of the stick may be extended at will, and either before or after said extension the umbrella ribs and stretcher rods may be elevated so as to stretch a fibrous cover of the usual style upon the ribs, for service.

When an umbrella having the improvements is to be folded, assuming that its frame has been elevated, the ears $i^5$ are pressed upon by pushing the middle section and attached lower section upward, the ears $m'$ having been manually pressed inward to permit such a sliding movement of the stick sections specified. The upper end of the middle section 7, when impinged upon the convexed edges of the ears $i^5$ will press them inward, and the stick section 7 will ride over said ears and also over the lugs $i^2$ and hooks $i'$, these projections having been retracted by pressure on the ears $i^5$. It will be seen that the runner sleeve 11 having thus been released from the latch hooks $i'$ and lugs $i^2$, may be freely slid upward until the stretcher rods 10 are completely folded toward the stick. The folding of the umbrella frame and cover thereon may now be completed by pressing the lower members $9^a$ of the ribs upward, thus releasing their clasped engagement with the latch limbs $b'$ on the upper sections 9. The nose $o'$ on the latch hook $o$ may enter a perforation in the wall of the middle section 7 when the frame of the umbrella and sections of the stick are completely folded, which will hold the latter from extension until the hook nose $o'$ is released by an outward pull thereon.

It will be obvious that when the umbrella has been folded, as represented in Fig. 2, the stick sections 6 and 7 may together be slid upward until the section 7 passes into and through the runner sleeve 11, which will shorten the stick so that the umbrella may be readily packed in a suit-case or small trunk. If the stick sections are extended and it is desired to fold the umbrella frame while they are so adjusted, this can be readily effected by pressing the ears $i^5$ inward, thus releasing the runner sleeve 11 from its locked attachment upon the stick section 8, whereupon the sleeve may be slid down over said stick section and also over the middle stick section 7 far enough to close the umbrella frame and fold the cover thereon, this adjustment being indicated in Fig. 6.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with a tubular umbrella stick formed in telescoping sections, and a runner sleeve slidable on two of said sections, of a spring latch dog in the upper section having lateral spaced projections on its upper portion that engage the runner sleeve and hold it stationary on said upper section, the said dog being reduced in thickness at its lower portion, and curved laterally forming a bow spring, a lateral toe on each bow spring having contact with the inner surface of said upper section of the stick, the free lower end of said spring also engaging the inner surface of the stick, and an ear on the latch dog above the said toe and projecting through a slot in said upper stick section.

2. The combination with a tubular umbrella stick formed in three telescoping sections, and a runner sleeve slidable on the upper and middle sections, of a spring latch dog in the upper section having lateral spaced projections at its upper portion that work in slots in said stick section for engagement with the sleeve at two points, and an ear on said latch dog projecting through a slot in the section for depressing the spring dog and thus releasing the runner sleeve, the free lower end of said spring latch dog engaging the inner surface of said upper section.

3. The combination with a tubular umbrella stick formed in three telescoping sections, and a longitudinally-slotted runner sleeve slidable on the upper and middle sections thereof, of a spring latch dog located in the upper section of the stick, having a lateral hook on its upper end, a lug spaced from the hook, and an ear below the lug, the hook engaging the upper end of the runner sleeve, the lug entering the slot therein for holding said sleeve stationary, and the ear projecting through a slot in the upper stick section below the runner sleeve.

4. The combination with a tubular umbrella stick formed in three telescoping sections, and an oppositely and longitudinally slotted runner sleeve slidable on the upper and middle sections thereof, of spring latch dogs lapped and located in the upper stick section, each dog having a latch hook on the upper end, a lug below on the dog, and an ear below the lug thereon, said hook, lug and ear on each dog normally projecting through slots in the upper stick section, each hook on a respective dog engaging the upper edge of the runner sleeve, and the lugs simultaneously entering the opposite slots in said runner sleeve, thus holding the sleeve stationary until released by pressure on the ears.

5. The combination with a tubular umbrella stick formed in three telescoping sections, the upper section having opposite longitudinal slots therein near its lower end, of cross-lapped spring dogs having ears on their lower ends that normally project through the slots into engagement with the upper end of the middle section of the stick, the said spring dogs each having a projecting toe above the ear engaging the inner surface of

the upper section of the stick, the upper end of each spring dog being free and also engaging the inner surface of said section of the stick, and a latch hook on the lower section of the stick, the hook nose of which passes through opposite slots in each stick section, the ears and latch hook co-acting for holding the middle section stationary on the lower section.

6. In a foldable umbrella frame, the combination with an upper rib member having a U-shaped joint leaf on one end, a clip band embracing said joint leaf, and a latch limb extended longitudinally from the hinge leaf, of a mating rib member having a U-shaped hinge leaf on the upper end thereof, pivoted directly to the other hinge leaf, and having a spring clasp thereon, said clasp clamping the latch limb when the rib sections are extended in sequence, the said clip band being clamped in position by the pivot of the hinge joint.

7. The combination with an upper rib section and a lower rib section, of a hinge leaf secured on one of said sections near one end thereof, the free end of said rib section projecting longitudinally beyond the end of the hinge leaf forming a latch limb, a hinge leaf on the mating-end of the other rib section, and hinged directly to the first mentioned hinge leaf, a resilient U-shaped clasp on said hinge leaf having projecting portions that approach each other, the said clasp receiving the latch limb and clamping upon it when the rib sections are extended, a reinforcing clip band embracing the first mentioned hinge leaf at the hinge joint, and a stretcher rod having a hinged connection at one end with the hinge leaf on the upper rib section.

8. In a foldable umbrella frame, the combination with an upper U-shaped rib member, of a hinge leaf one end of which is rigidly secured to the rib member near its lower end, the extreme lower end of said rib member being flattened and forming a latch limb extending longitudinally beyond the end of said hinge leaf, a lower or mating U-shaped rib member having a hinge leaf rigidly secured to its upper end and having side members extending beyond said end of the rib member, the projecting side members of said hinge leaf extending between side members of the first mentioned hinge leaf at the end thereof and being pivoted directly thereto, a spring clasp on said hinge leaf and projecting on the side adjacent to the latch limb when the rib members are extended and adapted to receive and clamp the said latch limb, the latch limb overlapping the end of the other rib member when the members are extended and fitting in the channel thereof, and a clip band embracing the first mentioned hinge leaf at the joint and secured in position by the pivot of the hinge joint.

9. In a foldable umbrella frame, the combination with two rib sections, of a hinge member secured on one of said sections adjacent to one end thereof, the end of said rib section forming a latch limb extending longitudinally beyond the end of the hinge member, a hinge member secured on one end of the other rib section, the end of said hinge member fitting within the end portion of the other hinge member and pivoted thereto, and a U-shaped spring clasp on said hinge member adapted to receive the said latch limb and clamp the same when the rib sections are extended, the latch limb on the first mentioned rib section overlapping the end of the other rib section when the sections are in extended position.

10. In a foldable umbrella frame, the combination with a channeled rib section having a hinge member secured on one end, and a latch limb projecting beyond the end of the hinge member, of a mating channeled rib section having a hinge member on one end thereof pivoted directly to the other hinge member and having a clasp thereon, the said clasp comprising oppositely arranged spring jaws adapted to receive between them the said latch limb when the rib sections are extended, said jaws projecting at the channeled side of the rib section, the space between the jaws leading to the channel of said rib section, the end of the latch limb overlapping the end of the said mating rib section and constructed to engage the channel of said rib section.

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

CARSON STONE.

Witnesses:
J. L. RIEDESEL,
D. H. HEDRICK.