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CITATION LIST

PATENT LITERATURE

[0005]

[PATENT LITERATURE 1] Japanese Patent Kokai Publication No. JP2010-5355 A

[PATENT LITERATURE 2] Japanese Patent Kokai Publication No. JP 2000-139533 A

[PATENT LITERATURE 3] Japanese Patent Kokai Publication No. JP 2007-54105 A

[PATENT LITERATURE 4] WO 2012/023460 A

SUMMARY

TECHNICAL PROBLEM

[0006]

In the case of umbrellas according to either of PATENT LITERATURE 1, 2, it assumes a configuration that right and left rods, (middle rods) independently support the superstructure (part above the lower cylindrical member (lower ring), also called as "upper frame") of the umbrella.

Therefore, there are problems that it is necessary to make the right and left rods thick and to use a firm hinge for the movable part, which result in increase in weight of umbrella itself, and the center of the gravity of the umbrella becomes higher.

[0007]

As for the umbrella of PATENT LITERATURE 3, support stretchers of four in total are arranged and the necessary stiffness is secured by connecting each support stretcher with lower ring and a link, however, the structure is complicated.

As for the umbrellas of PATENT LITERATURE 4, the bottom end of umbrella is at the position of user's chest, thus there is a problem that umbrella swings back and forth if user fastens the belt not so tight.

[0008]

Embodiments of the present invention provide an umbrella which is attachable to the body etc. of user, and can improve the stability of the umbrella and portability during use by a simple configuration.

Solution to Problem

[0009]

According to a first aspect of present invention, there is provided an umbrella including a supporting structure configured by including two support stretchers with one ends being connected to an umbrella body and the other ends being connected each other, at least one stage of an expansion and contraction mechanism of the support stretchers, and lock mechanisms adapted to lock an expansion state of the support stretchers when opening the umbrella, wherein the expansion and contraction mechanism of said support stretchers is configured by at least one stage of an inner member and an outer member adapted to receive the inner member; and said lock mechanism is adapted to hold the inner member exposed from the outer member by engaging a protruding part of the inner member into a hole of the outer member.

[0009a]

According to a second aspect of present invention, there is provided an umbrella including: a supporting structure configured by including two support stretchers with one ends being connected to an umbrella body and the other ends being connected each other, at least one stage of an expansion and contraction mechanism of said support stretchers, and lock mechanisms adapted to lock an expansion state of said support stretchers when opening the umbrella, wherein the expansion and contraction mechanism of said support stretchers is configured by at least one stage of inner member and an outer member adapted to receive said inner

mechanism, and said lock mechanism is configured so as to be locked, when expanding said support stretchers and opening the umbrella, a pair of umbrella-body side of pair of the inner members or pair of the outer members is caused to spread thereby engaging engagement parts of the inner member and the outer member.

[0009b]

According to a third aspect of present invention, there is provided an umbrella including : a supporting structure configured by including two support stretchers with one ends being connected to an umbrella body and the other ends being directly connected each other so as to support said umbrella body by said two support stretchers; at least one stage of an expansion and contraction mechanism of said support stretchers, and lock mechanisms adapted to lock an expansion state of said support stretchers when opening the umbrella.

[0009c]

According to a fourth aspect of present invention, there is provided umbrella including: stretchers with one ends being connected to a rib of an umbrella body and the other ends being connected to a lower ring that moves in accordance to opening and closing of the umbrella; a supporting structure configured by including two support stretchers with one ends being connected to one of the ribs of the umbrella body and the other ends being connected each other, said support stretchers having a groove adapted to guide movement of the stretcher(s) that moves up and downward in accordance with opening and closing of the umbrella; at least one stage of an expansion and contraction mechanisms of said support stretchers; and lock mechanisms adapted to lock an extension state of said support stretchers when opening the umbrella.

Advantageous Effects of Invention

[0010]

According to embodiments of the present invention, the umbrella of a hands-free type having good stability and convenience in use is provided. The reason resides in that it is configured such that, by adopting a truss structure in which the bottom ends of the two support stretchers are connected each other, the support stretchers are made stretchable and contractible to be allowed to stretch at the time of use (open time) of umbrella, and it can be mounted to a body in the form hard to swing back and forth, and the support stretchers contract upon closing the umbrella, whereby it can improve portability property.

Brief Description of Drawings

[0011]

[Fig. 1] FIG. 1 is a front view of an umbrella of a first exemplary embodiment (open state).

[Fig. 2] FIG. 2 is a front view of an umbrella of the first exemplary embodiment (open state).

[Fig. 3] FIG. 3 is a diagram showing a configuration example of an intersection part of a support stretcher of FIG 2