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(54) IMPROVEMENTS IN COLLAPSIBLE UMBRELLAS

(71) We, KORTENBACH & RAUH KOMMANDITGELLSCHAFT, of Weyer Strasse 2177, 5650 Solingen-Weyer, Germany, a German Company,

do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a collapsible umbrella generaly rectangular in shape transverse to the stick when closed with a stick telescoping in at least two places and ribs which are in at least two parts and telescope and/or fold at at least two points.

Umbrellas of this kind are already known. In these the ribs attached to the notch are linked to a runner by stretchers. Sometimes there is an auxiliary runner with auxiliary stretchers linked to the stretchers. The notch runner and possible auxiliary runner are of an elongated shape so that the umbrella lies flat when closed.

The aim of the invention is to simplify the assembly of such an umbrella and simultaneously to provide an umbrella which is particularly short and flat when closed, so that overall a cheaper and more practical umbrella is produced.

According to this invention there is provided a collapsible umbrella generally rectangular in shape transverse to the stick when closed with the stick telescoping in at least two places and ribs which are in at least two parts and telescope and/or fold, in which the ribs are attached to a notch and are linked by stretchers to a runner and the notch and runner are generally rectangular in shape transverse to the stick and wherein the inner ends of the ribs and stretchers are linked to the notch and runner respectively by pins which are inserted into transverse bores and one or more longitudinally arranged bores in the notch and runner, the pins in the transverse bores serving to secure the pin or pins in the longitudinally arranged bore or bores.

Instead of providing one or two pins for the long sides there can be two short pins. Alternatively, instead of the two longitudinal pins there can be two pins lying on either side of the hole for the stick on the longitudinal centre line of the notch, runner or auxiliary runner. The pins lying parallel to the longitudinal centre line are prevented from slipping out by the transverse pins running across at the short sides.

To fix either the notch or a stick or the runner carrying the ends of stretchers to a sleeve on the stick, it is proposed that the pins lying parallel to the longitudinal centre line should be allowed to project into a hole for the stick in the notch, runner or auxiliary runner. Due to this the pins serve not only to attach the ribs or stretchers but simultaneously as a releasable fastener for other parts. In the simplest construction at least one of the two pins lying on the longitudinal centre line projects into the hole in the notch, runner or auxiliary runner. To fix the notch to the stick it is also possible to replace the two pins with one pin on the longitudinal centre line of the notch so that this pin also passes through the stick.

If, for example, it is intended to have a guide bush to fix the part of the runner taking the stretchers, at least one of the two pins running parallel to the longitudinal centre line over the whole length can pass through the edge of the hole and tangentially thereto. To prevent the runner rotating on the stick, it is finally proposed that the parts of the pins projecting into the hole for the stick should be guided in axial recesses in the stick.

The proposals in the invention result in a collapsible umbrella which is flat when closed for which the individual parts are especially simple, and consequently cheap to manufacture, and which can be assembled quickly in a simple manner.

The invention will now be described with reference to the accompanying drawings, which illustrate the invention but in no restrictive sense.

Figure 1 shows a side view of one half of an open umbrella,

Figure 2 shows a plan view of the opened umbrella, and

Figures 3 to 12 show cross-sectional views through embodiments of the notch, runner or auxiliary runner with different arrangements of the pins.

One form of embodiment of a notch is shown in Figures 3 to 5 and a modified form of the notch is shown in Figures 6 to 9. Similarly a modification of the runner shown in Figures 10 and 11 is shown in Figure 12.

The umbrella has a stick 1 with a notch 2 at its upper end. Attached to this notch there are in this embodiment two-piece ribs 5 which support the umbrella cover 8. The ribs are attached by stretchers 6 to a runner 3 which is guided on the stick 1. In the embodiment shown in Figures 1 and 2 there is also an auxiliary runner 4 with auxiliary stretchers 7 jointed to the stretchers 6.

As can be seen from Figure 2, the notch 2 is generally rectangular in shape transverse to the stick and symmetrical about a longitudinal centre line L. The ends of the ribs 5 are arranged symmetrically with respect to a transverse axis Q of the notch 2. This elongated shape and symmetry with respect to the longitudinal centre line L and transverse axis Q also holds for the runner 3 with stretchers 6 and the auxiliary runner 4 with auxiliary stretchers 7. This arrangement means that when the umbrella is opened there are no twisting forces on the umbrella cover 8.

Figures 3 to 12 show various possible constructions for the notch 2 runner 3 or auxiliary runner 4 and for the mode of attachment of the ribs 5, stretchers 6 or auxiliary stretchers 7 to the respective holder. Although different constructions are illustrated for the notch 2 and ribs 5, they also apply to the runner 3 with stretchers 6 or the auxiliary runner 4 with auxiliary stretchers 7.

In the first construction in Figure 3 is depicted the stick 1 to which the notch 2 is fixed. The notch 2 is generally rectangular transverse to the stick and symmetrical with respect to the longitudinal centre line L and transverse axis Q. At each of the short sides of the notch 2 there are two ribs 5 both jointed to a pin 9*a* in a transverse bore. The four ribs 5 arranged at the two long side are linked in pairs to the longitudinal pins 9*b* each running on one side parallel to the longitudinal centre line L in a longitudinal bore. These longitudinal pins 9*b* run outiside the hole 1*a* provided in the notch 2 to guide the stick 1. In accordance with the two embodiments shown in Figures 4 and 5, one or both of the longitudinal pins 9*b* can respectively be replaced by two short pins 9*c* so that each of these pins holds one rib 5 on the long side.

In the fourth embodiment shown in Figure 6 instead of the two longitudinal pins 9*b* there are two pins 9*d* arranged on either side of the hole 1*a* for the stick 1 along the longitudinal centre line L of the notch 2. Thus each of these pins 9*d* links to the notch 2 those ribs 5 on the long sides which lie on one side of the transverse axis Q. The ribs 5 at each short side are attached as before to the pin 9*a* which simultaneously prevents the respective pin 9*d* from slipping out. The embodiments in Figures 7 and 8 illustrate furthermore that it is possible to fix the notch 2 to the stick 1 with one or both of the pins 9*d*. Alternatively this can be achieved by having instead of the two pins 9*d* a continuous pin 9*e* along the longitudinal centre line L for all the ribs 5 at the long sides, as shown in Figure 9.

Figure 10 depicts a runner 3 whereby the part carrying the ends of the stretchers 6 is joined to a bush 3*a*. The hole 1*a* in the runner 3 for the stick 1 thus corresponds to a bore in the bush 3*a*. To fix the bush 3*a* to the runner 3 one pin 9*b* running over the whole length of the runner 3 parallel to the longitudinal centre line L is arranged in such a way that it passes through part of the bush 3*a* so as to intersect it. The bush 3*a* is fixed to the runner 3 in this way or additional security is provided. Obviously both longitudinal pins 9*b* could be used to fix the bush 3*a*, as shown in Figure 11. The same method can be used to fix the bush of an auxiliary runner.

The last embodiment depicted in Figure 12 shows that in the case of a runner 3 (or auxiliary runner) the ends of the pins 9*d* lying on the longitudinal centre line L can be used to prevent rotation of the runner 3 on the stick 1. For this purpose the ends of the pins 9*d* project into axial recesses 1*b* in the stick 1, thus guiding the runner 3 and preventing it from rotating.

WHAT WE CLAIM IS:—

1. A collapsible umbrella generally rectangular in shape transverse to the stick when closed with the stick telescoping in at least two places and ribs which are in at least two parts and telescope and/or fold, in which the ribs are attached to a notch and are linked by stretchers to a runner and the notch and runner are generally rectangular in shape transverse to the stick and wherein the inner ends of the ribs and stretchers are linked to the notch and runner respectively by pins which are inserted into transverse bores and one or more

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Figure 1 shows a side view of one half of an open umbrella,

Figure 2 shows a plan view of the opened umbrella, and

Figures 3 to 12 show cross-sectional views through embodiments of the notch, runner or auxiliary runner with different arrangements of the pins.

One form of embodiment of a notch is shown in Figures 3 to 5 and a modified form of the notch is shown in Figures 6 to 9. Similarly a modification of the runner shown in Figures 10 and 11 is shown in Figure 12.

The umbrella has a stick 1 with a notch 2 at its upper end. Attached to this notch there are in this embodiment two-piece ribs 5 which support the umbrella cover 8. The ribs are attached by stretchers 6 to a runner 3 which is guided on the stick 1. In the embodiment shown in Figures 1 and 2 there is also an auxiliary runner 4 with auxiliary stretchers 7 jointed to the stretchers 6.

As can be seen from Figure 2, the notch 2 is generally rectangular in shape transverse to the stick and symmetrical about a longitudinal centre line L. The ends of the ribs 5 are arranged symmetrically with respect to a transverse axis Q of the notch 2. This elongated shape and symmetry with respect to the longitudinal centre line L and transverse axis Q also holds for the runner 3 with stretchers 6 and the auxiliary runner 4 with auxiliary stretchers 7. This arrangement means that when the umbrella is opened there are no twisting forces on the umbrella cover 8.

Figures 3 to 12 show various possible constructions for the notch 2 runner 3 or auxiliary runner 4 and for the mode of attachment of the ribs 5, stretchers 6 or auxiliary stretchers 7 to the respective holder. Although different constructions are illustrated for the notch 2 and ribs 5, they also apply to the runner 3 with stretchers 6 or the auxiliary runner 4 with auxiliary stretchers 7.

In the first construction in Figure 3 is depicted the stick 1 to which the notch 2 is fixed. The notch 2 is generally rectangular transverse to the stick and symmetrical with respect to the longitudinal centre line L and transverse axis Q. At each of the short sides of the notch 2 there are two ribs 5 both jointed to a pin 9*a* in a transverse bore. The four ribs 5 arranged at the two long side are linked in pairs to the longitudinal pins 9*b* each running on one side parallel to the longitudinal centre line L in a longitudinal bore. These longitudinal pins 9*b* run outiside the hole 1*a* provided in the notch 2 to guide the stick 1. In accordance with the two embodiments shown in Figures 4 and 5, one or both of the longitudinal pins 9*b* can respectively be replaced by two short pins 9*c* so that each of these pins holds one rib 5 on the long side.

In the fourth embodiment shown in Figure 6 instead of the two longitudinal pins 9*b* there are two pins 9*d* arranged on either side of the hole 1*a* for the stick 1 along the longitudinal centre line L of the notch 2. Thus each of these pins 9*d* links to the notch 2 those ribs 5 on the long sides which lie on one side of the transverse axis Q. The ribs 5 at each short side are attached as before to the pin 9*a* which simultaneously prevents the respective pin 9*d* from slipping out. The embodiments in Figures 7 and 8 illustrate furthermore that it is possible to fix the notch 2 to the stick 1 with one or both of the pins 9*d*. Alternatively this can be achieved by having instead of the two pins 9*d* a continuous pin 9*e* along the longitudinal centre line L for all the ribs 5 at the long sides, as shown in Figure 9.

Figure 10 depicts a runner 3 whereby the part carrying the ends of the stretchers 6 is joined to a bush 3*a*. The hole 1*a* in the runner 3 for the stick 1 thus corresponds to a bore in the bush 3*a*. To fix the bush 3*a* to the runner 3 one pin 9*b* running over the whole length of the runner 3 parallel to the longitudinal centre line L is arranged in such a way that it passes through part of the bush 3*a* so as to intersect it. The bush 3*a* is fixed to the runner 3 in this way or additional security is provided. Obviously both longitudinal pins 9*b* could be used to fix the bush 3*a*, as shown in Figure 11. The same method can be used to fix the bush of an auxiliary runner.

The last embodiment depicted in Figure 12 shows that in the case of a runner 3 (or auxiliary runner) the ends of the pins 9*d* lying on the longitudinal centre line L can be used to prevent rotation of the runner 3 on the stick 1. For this purpose the ends of the pins 9*d* project into axial recesses 1*b* in the stick 1, thus guiding the runner 3 and preventing it from rotating.

WHAT WE CLAIM IS:—

1. A collapsible umbrella generally rectangular in shape transverse to the stick when closed with the stick telescoping in at least two places and ribs which are in at least two parts and telescope and/or fold, in which the ribs are attached to a notch and are linked by stretchers to a runner and the notch and runner are generally rectangular in shape transverse to the stick and wherein the inner ends of the ribs and stretchers are linked to the notch and runner respectively by pins which are inserted into transverse bores and one or more

longitudinally arranged bores in the notch and runner, the pins in the transverse bores serving to secure the pin or pins in the longitudinally arranged bore or bores.

2. An umbrella as claimed in claim 1, including an auxiliary runner with auxiliary stretchers, the said auxiliary runner being of similar shape to the notch or runner and having similar trasnverse and longitudinal bores and pins and wherein the inner ends of the auxiliary stretchers are linked to each of the short and long sides of the auxiliary runner by pins.

3. An umbrella as claimed in claim 1 wherein the or each longitudinal pin may extend substantially wholly along the length of the notch or runner.

4. An umbrella as claimed in claim 2, wherein the or each longitudinal pin may extend substantially wholly along the length of the auxiliary runner.

5. An umbrella as claimed in claim 1, comprising two longitudinal pins lying on either side of a hole for the stick in the notch or runner and along the longitudinal centre line of the notch or runner.

6. An umbrella as claimed in claim 2, comprising two longitudinal pins lying on either side of a hole for the stick and along the longitudinal centre line of the auxiliary runner.

7. An umbrella as claimed in claim 1, comprising pins lying parallel to the longitudinal centre line of the notch or runner which are fixed by the pins running transversely of the notch or runner.

8. An umbrella as claimed in claim 2, comprising pins lying parallel to the longitudinal centre line of the auxiliary runner which are fixed by pins running transversely of the auxiliary runner.

9. An umbrella as claimed in claim 7, wherein the pins lying parallel to the longitudinal centre line or tangential to or intersect a hole for the stick in the notch or runner.

10. An umbrella as claimed in claim 8, wherein the pins lying parallel to the longitudinal centre line are tangential to or intersect a hole for the stick provided in the auxiliary runner.

11. An umbrella as claimed in claim 5 wherein at least one of the pins lying along the longitudinal centre line projects into the hole for the stick in the notch or runner.

12. An umbrella as claimed in claim 6 wherein a least one of the pins lying along the longitudinal centre line of the auxiliary runner projects into the hole for the stick in the auxiliary runner.

13. An umbrella as claimed in claim 1 comprising a single pin lying along and extending along the longitudinal centre line of the notch or runner.

14. An umbrella as claimed in claim 2, comprising a single pin lying along and extending along the longitudinal centre line of the auxiliary runner.

15. An umbrella as claimed in claim 1, comprising two pins parallel and on either side of the longitudinal centre line of the notch or runner and wherein one of the pins is arranged tangential to the periphery of a hole for the stick in the notch or runner.

16. An umbrella as claimed in claim 2, comprising two pins lying parallel to and on either side of the longitudinal centre line of the auxiliary runner and wherein one of the pins is arranged tangential to the periphery of a hole for the stick in the auxiliary runner.

17. An umbrella as claimed in claim 11 or 12 wherein the stick is provided with recesses for receiving pins projecting into the hole for the stick.

18. An umbrella substantially as herein described with reference to the accompanying drawings.

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