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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO UMBRELLAS

(71) We, BREMSHEY & Co., a German Kommomditgesellschat of 5—7 Ahrstrasse, Solingen-Ohligs, Germany, do hereby declare

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

This invention relates to a frame for a shortenable umbrella of the so called "flat" type having a substantially rectangular cross-sectional shape, when folded or collapsed, and having a stick with a slider and handle. The slider has outwardly extending wings, to which rib-supporting struts are pivoted, and a sleeve which enters a socket in the handle when the umbrella is collapsed.

Known constructions of umbrellas of this type do not afford adequate certainty that, when such an umbrella is collapsed, the free umbrella rib ends will not enter the socket in the handle reserved only for the entry of the slider sleeve. Quite apart from the resultant repeated interference with operation, the umbrella covering attached to the rib ends can suffer considerably. Thus if the rib ends become caught between the socket walls and the slider, the resulting jamming often prevents the umbrella from being raised again once it has been collapsed. This fact has hitherto also prevented a slider locking catch from being disposed in the slider sleeve, as for instance in conventional umbrellas, since this would inevitably increase the size of the socket even further, and this would be even more disadvantageous, having regard to the above. In a construction of the type specified, therefore, the locking means has had to be disposed inside the umbrella stick but this causes a certain amount of unwarranted expense, particularly as the stick must be constructed telescopically.

It is an object of the present invention to provide a shortenable umbrella frame of the type specified, which, even though the locking means are disposed in the slider sleeve, closes and shortens very satisfactorily, and it is virtually impossible for the rib ends extending beyond the slider to enter the socket in the handle, while the handle more particularly has a shape advantageous for the automatic ordering of the ribs in groups.

According to the present invention, a frame for a shortenable flat umbrella having a substantially rectangular cross sectional shape when closed comprises a telescopic stick having at its lower end a handle, of elongate cross section transverse to the stick axis provided with an upwardly open socket of substantially elliptical cross section arranged symmetrically around the stick, and a slider which has a pair of wings diametrically opposed across the stick axis and carrying rib supporting struts, the slider having below the wings a sleeve portion which surrounds the stick and is provided beneath one of the wings with a locking catch formation projecting radially with respect to the stick axis, the arrangement being such that when the umbrella is closed and shortened the slider sleeve enters the socket in the handle whereupon the side of the slider sleeve at which the locking catch formation is provided substantially fills the corresponding part of the cross section of the socket to prevent relative rotation between the slider and handle and the opposite part of the socket the cross section of which is not completely filled being covered by one of the slider wings to avoid the danger of the tips of any of the ribs entering that part of the socket.

Preferably, the elliptical socket is formed between two opposed wider side walls and two opposed narrower side walls, the wider side walls extending upwards in the direction of the stick axis beyond the narrower side walls so that, in the closed and shortened condition of the frame, parts of the slider wings lie between the projecting portions of the wider side walls.

The invention thus provides an umbrella frame which operates very reliably. More particularly, the umbrella ribs are virtually prevented from getting caught in the socket in

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the handle when the umbrella is closed and shortened, although the socket receives a slider sleeve which also has a projecting formation for the slider locking catch. This is because the sleeve can enter the socket in a way which substantially fills part of it. If the wider side walls of the socket, which are longer than its narrower side walls, are convexly curved on their outsides, there is the advantage that the ribs are deflected into two groups. If the wider side walls of the socket extend beyond the narrower side walls there is produced a large and convenient shape of handle; the space between the projecting portions of the wider side walls receiving parts of the slider wings, thus ensuring a further reduction in length. When entry into the final telescoped position occurs, the preferably inwardly and downwardly converging inner surfaces of the free ends of the wider side walls of the socket lead the slider into the socket.

One example of an umbrella incorporating a frame constructed in accordance with the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of the umbrella in a case;

Figure 2 is a front of the end of the umbrella of Figure 1 adjacent the handle;

Figure 3 is a part sectioned view corresponding to Figure 2, the umbrella covering having been omitted to show more clearly the shape of the handle;

Figure 4 is a plan of the handle of Figure 3;

Figure 5 is a side elevation of the handle of Figure 3;

Figure 6 is a vertical section through the handle of Figure 3, showing clearly the attachment of the umbrella stick;

Figure 7 is a section taken on the line VII—VII in Figure 4; and,

Figure 8 shows the umbrella of Figures 1 to 7 raised.

The illustrated umbrella has a stick 1 comprising three telescopic tubular members 2, 3, 4 of circular cross-section. The extended position are secured by catches 5. The tubular member 2 has the largest diameter and extending in the tubular member 2 is the tubular member 3 of smaller diameter, the tubular member 4, which preferably takes the form of a short retractable tube and extends inside the tubular member 3, having the smallest diameter.

At its top end, the stick 1 bears a crown 6, which has a substantially rectangular cross-section, corresponding to the general cross-section of the closed umbrella. Telescopic umbrella ribs 9, of identical length, are articulated in the zone of the diametrically opposite narrow edges 7, 8 (Figure 8) of the crown 6.

When the umbrella is raised, the ribs 9 are supported by struts 10, pivotally connected to the ribs 9 at points 11. The ends of the supporting struts 10 adjacent to the umbrella stick are carried on a slider 12.

The slider 12 also conforms in overall cross-section to the cross-sectional shape of the closed umbrella. An essential component of the slider is a sleeve 12′. When viewed in cross-section, the sleeve 12′ has a shape which fits into a circumellipse (c.f. the position shown in chain-dot lines in Figure 4), the sleeve 12′ preferably being octagonal. Extension portion 12″ of the sleeve on the left-hand side produces longer lateral edges 13′ than those 13 on the right hand side in Figure 4. The extension 12″ is used for the provision of a channel 14 for a slider locking catch 15. This is in accordance with out copending application No. 54305/69. (Serial No. 1199834.)

Above the sleeve 12′, the slider 12 has diametrically opposed wings 16, 17 which extend transversely to the stick beyond the general sleeve cross-section and which form the articulation points for the supporting struts 10.

In the closed and shortened state of the umbrella, the slider sleeve 12′ enters, and substantially completely fills the cross-section of one half of a socket 18 in the handle 19. The inner surface 18′ of the socket 18 is rounded out concavely and elliptically in transverse cross-section.

Since its wall thickness tapers slightly upwards, the walls of the socket 18, comprising the diametrically opposite narrower walls 20 and wider walls 21, have a convexly curved shape in section. With regard to the outer surface the periphery is many sided, when viewed in cross-section, wide surfaces 22 having a slight arching which extends as far as an end 23 of the handle. This many-sided periphery, while forming corner edges at the junctions of the surfaces which are at an angle to one another, also produces a favourable rigidity for small wall thicknesses. As can be seen more particularly in Figure 5, the wider walls 21 of the socket 18 project away from the handle base beyond the narrower walls 20. The inner surfaces 24 of the projecting portions of the wider walls diverge in the direction of their free ends and are rounded. As a result storage recesses 25 are provided for parts of the slider wings 16, 17 which recesses allow a considerable decrease in the length of the umbrella when closed and shortened. Consequently, when the ribs 9 are folded in order it is impossible for the rib ends 9′ to enter the socket 18, since even the right-hand part of the socket, as seen in Figure 4, is not directly filled by the slider sleeve 12′ is covered by the wing 16 moulded on to the slider 12. As shown in Figures 3 and 4, the ribs 9, bunched in groups of four, bear against the wing end faces 16′, 17′. The lateral surfaces 16″, 17″ are narrow enough to enable

the ribs 9 to be accommodated outwards of the faces 16', 17', without exceeding in the outward direction the shape of the handle which helps to determine the rectangular cross-sectional shape of the umbrella. If a rib 9 bears against the wide partial surface 22, the inclination of the surface to the wing 16 or 17 deflects the rib in the direction of the narrow surfaces 16'' or 17'' of the wing. The latter effect is assisted by a retaining band 26, Figure 2, as conventionally provided with umbrellas, and/or a case 27 adapted in cross-section to the cross-sectional shape of the umbrella (Figure 1). The case 27 is the subject of our copending applications Nos. 9841/69 and 9843/69. (Serial Nos. 1219375 and 1219377.)

The opposite ends of the handle bottom are formed with slots 28 for the attachment of a carrying loop 29 the ends of which can each have a thickened portion in the form of a clamped-on metal plate 30 having claws if required. Shoulders 31 form extension stops for the carrying loop 29.

Through the centre of the socket 18 extends a pin 32 made of the same material as the handle 19 and moulded thereon. A bush 33 concentric with the pin 32 is produced concurrently by injection moulding or is simply inserted after moulding. The tubular portion 4 of the stick 1 is inserted into an annular space between the pin 32 and the bush 33. The tubular member 4 has longitudinally and inwardly extending ribs which enter positively matching grooves 34 in the pin 32. The outer diameter of the bush 33 substantially corresponds to the inner diameter of the axial cavity of the slider sleeve 12' so that the slider 12 engages over the bush 33. A retaining pin 35 extends through the bush 33, the tubular member 4, the pin 32 and the socket walls.

Extending above the slider 12 is an auxiliary slider 36 with which auxiliary struts 37 engage. To this end, the auxiliary slider 36 has diametrically opposed wings 38, 39. The auxiliary struts 37 extend to and strengthen the supporting struts 10.

The umbrella is closed and shortened from the Figure 8 configuration in the usual way, that is by releasing the main slider catch 15 and drawing the main slider 12 along the stick towards the handle. As a result the ribs 9 and struts 10 and 37 fold down parallel to the stick 1. The umbrella is then shortened by pressing the handle 19 and rib tips 9' towards the crown 6 whereupon the stick 1 and ribs 9 shorten telescopically. The canopy is wrapped around the ribs and stick and the umbrella is read for insertion into its case 27.

WHAT WE CLAIM IS:

1. A frame for a shortenable flat umbrella having a substantially rectangular cross sectional shape when closed, the frame comprising a telescopic stick having at its lower end a handle, of elongate cross section transverse to the stick axis provided with an upwardly open socket of substantially elliptical cross section arranged symmetrically around the stick, and a slider which has a pair of wings diametrically opposed across the stick axis and carrying rib supporting struts, the slider having below the wings a sleeve portion which surrounds the stick and is provided beneath one of the wings with a locking catch formation projecting radially with respect to the stick axis, the arrangement being such that when the umbrella is closed and shortened the slider sleeve enters the socket in the handle whereupon the slide of the slider sleeve at which the locking catch formation is provided substantially fills the corresponding part of the cross section of the socket to prevent relative rotation between the slider and handle and the opposite part of the socket the cross section of which is not completely filled being covered by one of the slider wings to avoid the danger of the tips of any of the ribs entering that part of the socket.

2. A frame according to claim 1, wherein the elliptical socket is formed between two opposed wider side walls and two opposed narrower side walls, the wider side walls extending upwards in the direction of the stick axis beyond the narrower side walls so that, in the closed and shortened condition of the frame, parts of the slider wings lie between the projecting portions of the wider side walls.

3. A frame according to claim 1, substantially as described with reference to the accompanying drawings.

4. A flat umbrella incorporating a frame in accordance with any one of the preceeding claims.

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2. A frame according to claim 1, wherein the elliptical socket is formed between two opposed wider side walls and two opposed narrower side walls, the wider side walls extending upwards in the direction of the stick axis beyond the narrower side walls so that, in the closed and shortened condition of the frame, parts of the slider wings lie between the projecting portions of the wider side walls.

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