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(71) Applicant: **Wava Oosterhout
4902 VR Oosterhout (NL)**

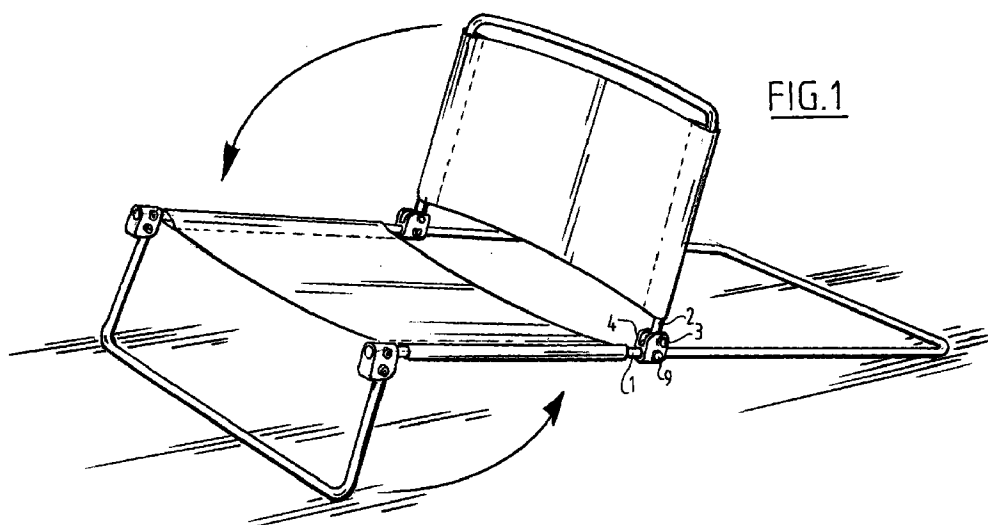
(72) Inventor: **van Opdorp, Antonius
5103 MS Dongen (NL)**

(74) Representative:
**Hoorweg, Petrus Nicolaas et al
Arnold & Siedsma,
Advocaten en Octrooigemachtigden,
Sweelinckplein 1
2517 GK Den Haag (NL)**

(54) Safety hinge

(57) A device for allowing two legs, such as two tubes of a deck chair, to hinge safely relative to one another, consisting of a housing on which the one leg is fixedly arranged and a hinge shaft round which the other leg is hingedly arranged, wherein the other leg comprises two extreme positions, wherein the housing comprises two walls extending parallel to the one leg and having an interspace roughly equal to the thickness of the other leg, the hinge shaft extends transversely through the walls, a connecting surface extends between the walls coaxially round the hinge shaft to

form a space opening to the outside, wherein the end of the other leg protruding into this space extends as far as the connecting surface, and a stop for the other leg is arranged recessed into the housing between the walls and at a distance from the hinge shaft, wherein the distance between the stop surface and the fixed leg is minimally the safety distance, such that in folded-down position the legs run roughly parallel without there being a danger of limbs, fingers, being trapped.



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Description

The invention relates to a device for allowing two legs such as two tubes of a deck chair to hinge safely relative to one another, consisting of a housing on which the one leg is fixedly arranged and a hinge shaft round which the other leg is hingedly arranged, wherein this leg comprises two extreme positions.

Such a device is used for instance for folding down the legs of a seat such as a deck chair. There is a danger herein of serious injury to inter alia the hands, when the legs collapse under the weight of a person. This injury can consist of bruising of the hand and even, when fingers are placed very close to or in such a device, of cutting or severing of fingers.

The object of the present invention is to provide a device of the above described type, wherein the above stated drawbacks are obviated.

This object is achieved in accordance with the characterizing measures of claim 1, with a device which is distinguished in that the housing comprises two walls extending parallel to the one leg and having an interspace roughly equal to the thickness of the other leg, in that the hinge shaft extends transversely through the walls, a connecting surface extends between the walls coaxially round the hinge shaft to form a space opening to the outside, wherein the end of the other leg protruding into this space extends as far as the connecting surface, and in that a stop for the other leg is arranged recessed into the housing between the walls and at a distance from the hinge shaft, wherein the distance between the stop surface and the fixed leg is minimally the safety distance, such that in folded-down position the legs run roughly parallel. The advantage of a device according to the invention is that due to the stop the legs are practically parallel to each other in the folded-down state and are at a mutual safety distance such that hands are not trapped therebetween.

Another advantage of a device according to the invention is that when the hinge is carried into folded-down position body parts such as fingers placed into the hinge are pushed out of the hinge without any injury due to the arcuate surface and the end surface of a leg end running closely therealong.

A finger for instance is further prevented as well as possible from being placed on the recessed stop surface, thereby reducing the risk of injury.

An embodiment according to the invention comprises a housing with slightly yielding parts which protrude toward each other on the walls, whereby the hinge can be fixed in the two extreme positions and only be taken out of these positions with some difficulty, since the protruding parts must be bent slightly apart.

A further embodiment according to the invention comprises stop surfaces complementary to the peripheral surface. The surface pressure on the stop surface is hereby reduced. This is particularly advantageous in the case of a plastic housing, where too high a pressure

deforms the stop surface and there is still the danger of injury through being trapped.

A further embodiment comprises a surface which runs at an incline outward on the stop arranged in recessed position between the walls. A body part situated in the area of this stop will be pushed outward by the inclining surface when the pivoting leg is folded down.

A further embodiment having a tube as pivoting leg comprises a tube wall which is set radially inward on the tube end. A light construction is hereby obtained and the tube end has a strength such that it can easily transmit the forces acting on the pivoting leg onto the stop surface.

These aspects will be further elucidated with reference to the drawings of a preferred embodiment.

Fig. 1 shows a perspective view of a deck chair in which the preferred embodiment is applied.

Fig. 2 shows a partly cross-sectional perspective view of a preferred embodiment according to the invention in the erected position.

Fig. 3 shows a partly cross-sectional perspective view of a preferred embodiment according to the invention in folded-down situation.

Shown in fig. 1 is a deck chair with tubular frame, in which the back rest and the front leg can be folded down. Devices according to the invention are provided to cause pivoting of this back rest and front leg. A preferred embodiment of the device according to the invention is further described hereinbelow.

A preferred embodiment according to the invention comprises a housing in which a leg 1 embodied as a tube is arranged fixedly by means of a pin 9 and in which a pivotable leg 2, likewise embodied as tube, is arranged hingedly by means of a pin 3 arranged between two parallel walls 4 (see fig. 2).

In erected position, as shown in fig. 2, the end of tube 2 lies against a complementarily formed contact surface 8. The tube hereby lies against the whole contact surface, whereby the surface pressure is minimal.

The pivoting tube 2 is held in this position by inward protruding parts 7 arranged on walls 4. The tube can be taken out of this position only when sufficient force is exerted on the tube, whereby the housing bends outward at the position of the protruding parts.

When pivoting tube 2 is carried from the one position to the other position, the tube end runs closely along the surface 5 running coaxially to hinge shaft 3. Any object or body part situated in the space in the housing above the curved surface 5 is hereby pressed out of this space by the tube end, thereby preventing injury.

In the folded-down position (see fig. 3) tube 2 is likewise held by the inward protruding parts 7 arranged on walls 4. Tube 2 lies on the stop surface 6, wherein the distance between stop surface 6 and fixed leg 1 is the safety distance. In this folded-down position the distance between both legs 1, 2 is at least equal to the

safety distance, so that no injury can be caused to for instance hands. Stop surface 6 is herein complementary to the peripheral surface of the tube.

According to the invention the stop 6 for the folded-down position is arranged recessed in the housing between the walls. According to a preferred embodiment the stop 6 is further provided with a surface 10 sloping to the outside in order to press body parts situated in the region above stop 6 outward without injury when leg 2 is folded down.

Another preferred embodiment according to the invention is constructed from a metal, wherein the one leg 1 is welded to the housing.

Claims

1. Device for allowing two legs, such as two tubes of a deck chair, to hinge safely relative to one another, consisting of a housing on which the one leg is fixedly arranged and a hinge shaft round which the other leg is hingedly arranged, wherein the other leg comprises two extreme positions, **characterized in that** the housing comprises two walls extending parallel to the one leg and having an interspace roughly equal to the thickness of the other leg, that the hinge shaft extends transversely through the walls, that a connecting surface extends between the walls coaxially round the hinge shaft to form a space opening to the outside, wherein the end of the other leg protruding into this space extends as far as the connecting surface, and that a stop for the other leg is arranged recessed into the housing between the walls and at a distance from the hinge shaft, wherein the distance between the stop surface and the fixed leg is minimally the safety distance, such that in folded-down position the legs run roughly parallel.
2. Device as claimed in claim 1, **characterized in that** the housing comprises one or more inward protruding parts on at least one wall for locking the pivoting leg in one or both extreme positions.
3. Device as claimed in claim 1 or 2, **characterized in that** the stop surfaces are complementary to the peripheral surface of the pivoting leg end.
4. Device as claimed in any of the foregoing claims, **characterized in that** the stop for the folded-down position is provided with a surface sloping to the outside.
5. Device as claimed in any of the foregoing claims, wherein the pivoting leg is a tube, **characterized in that** the tube end has a tube wall which is set radially inward.
6. Device as claimed in any of the foregoing claims,

characterized in that the housing is constructed from a type of plastic, such as 70% polyamide 6/6 reinforced with glass fibre.

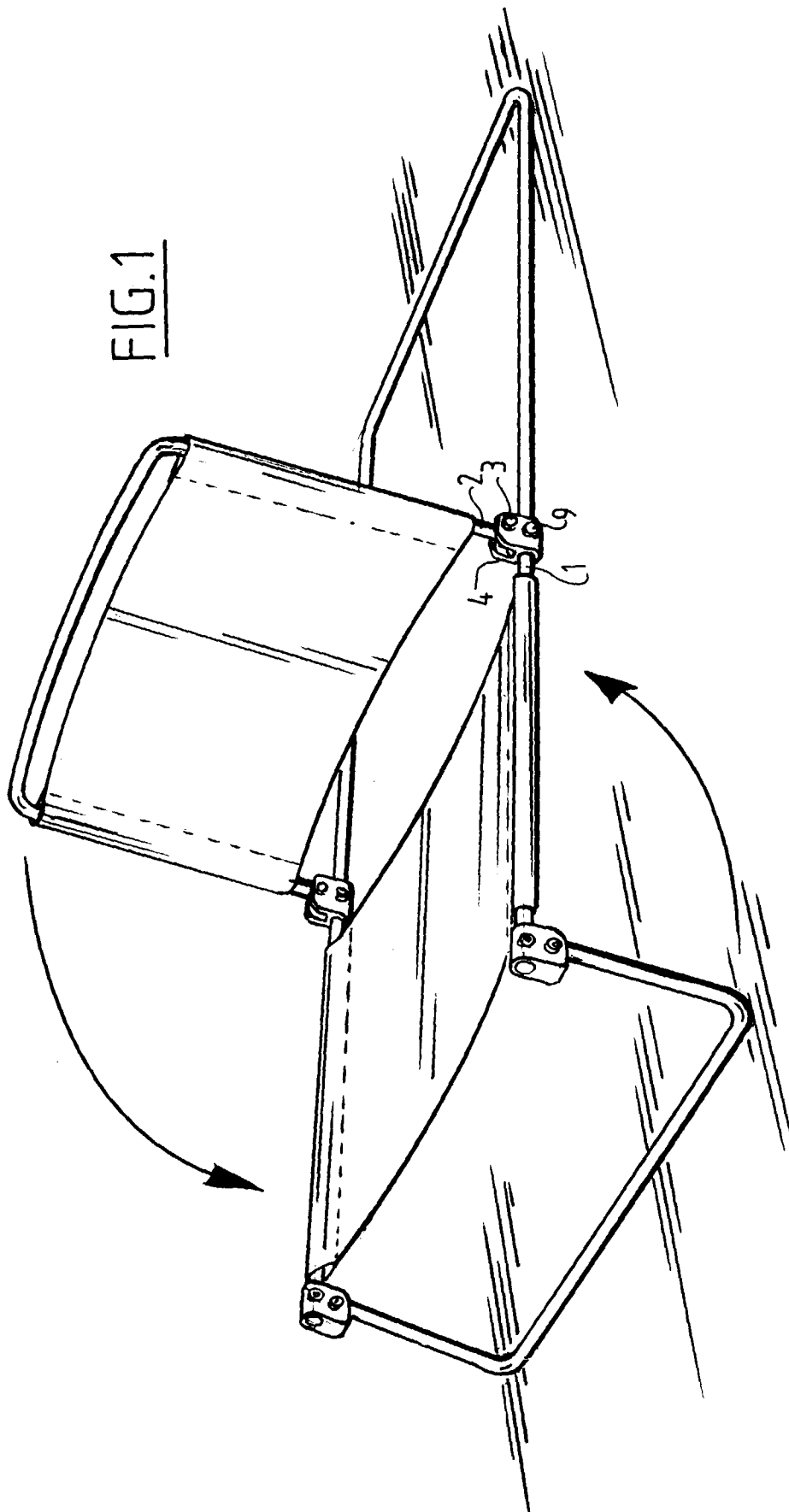


FIG.2

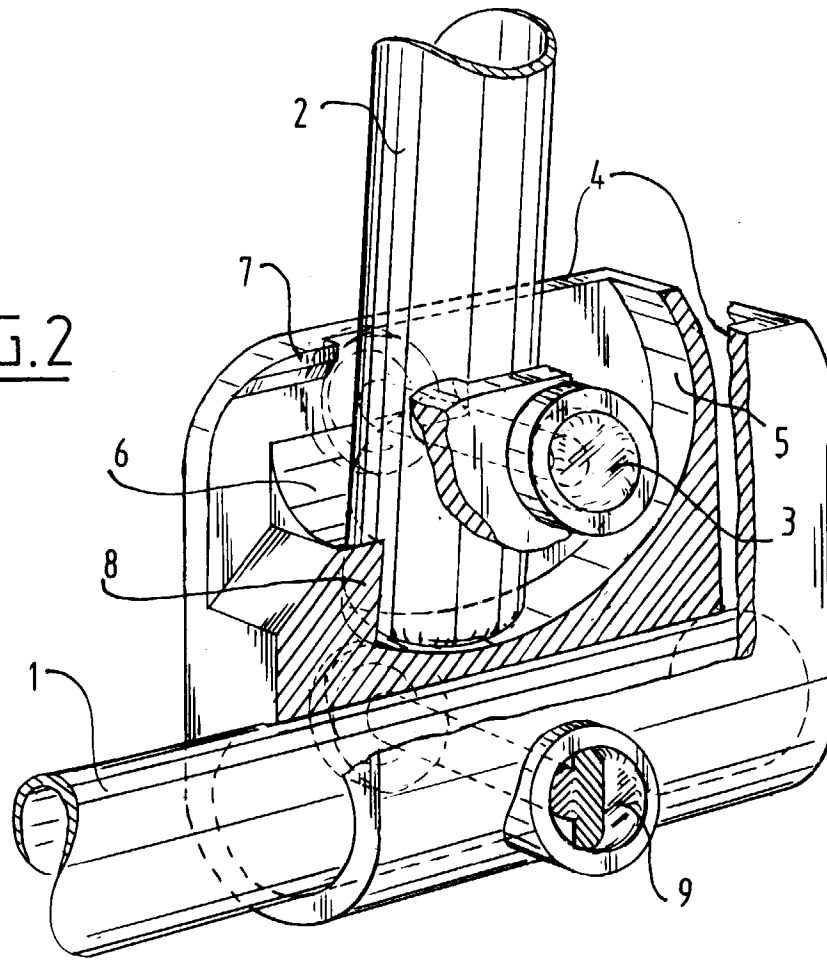
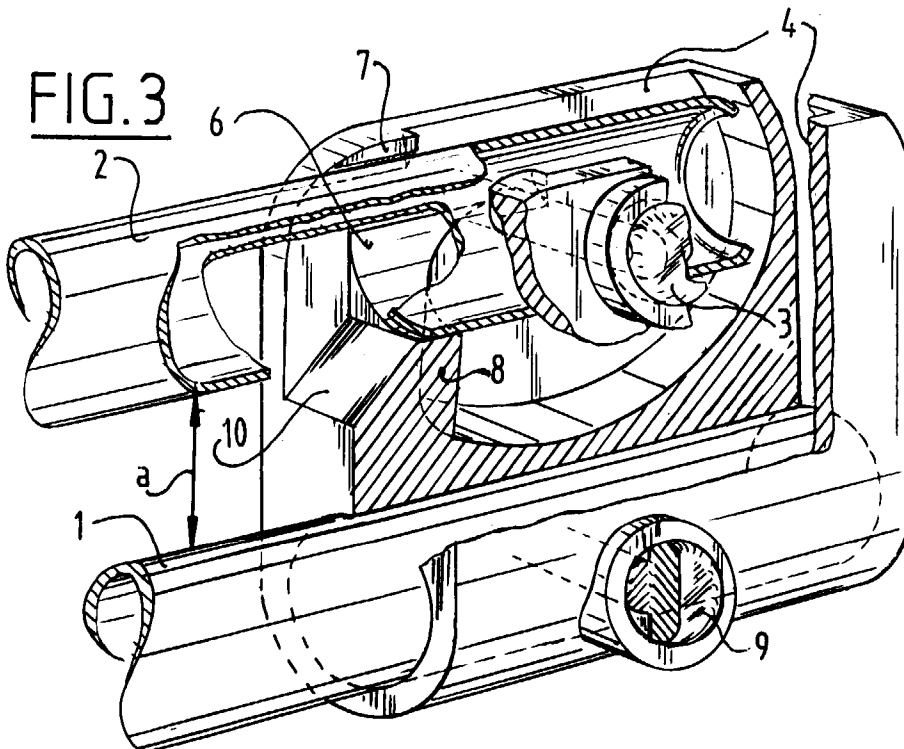


FIG.3





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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 1007

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	FR 1 187 222 A (LAFUMA) 8 September 1959 * the whole document * ---	1	A47C4/44 A47C4/20
A	FR 2 550 927 A (LALLEMAND SA) 1 March 1985 * figures 8,9 * ---	1	
A	GB 644 558 A (LAMOLLE ET AL.) 11 October 1950 * figures 1,2 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 July 1998	Examiner Mysliwetz, W
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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