

The present invention relates to a hinge without a rigid articulation axis.

It is already known to provide such hinges by means of the strap, of which the edges are spaced apart by a considerable width, along the edges, this width being fully embedded in a plastics material. This presupposes that the hinge is previously manufactured and delivered in order to be ready to be fitted.

Furthermore, systems of assembly or connection of two panels inter se are known which are constituted by a flexible connecting element connecting over the entire length of the adjacent elements which are to be connected (see DE-A 2 901 371). However, as this type of connection does not permit of precise positioning of one panel in relation to the other and which does not therefore eliminate the risk of clearance, it cannot constitute a hinge between two panels intended to co-operate inter se in an opening-closing system with no other relative movement than a rotation about an axis.

Well, the present invention obviates these disadvantages and relates to a hinge which has no rigid articulation axis of the type which comprises a strap as a means of connection between the pieces which are to be fixed on the elements to be assembled, and comprising two cylindrical edges, each of these edges being intended to co-operate with at least one groove provided in at least one part of a double portion which forms a jaw and rigid with each of the elements to be assembled, a middle strip of this strap being of minimal width to allow free rotation of these elements in relation to one another, characterised in that at least one of the



members comprises a curved member intended to act on the said median strip and create a fold zone providing an imaginary axis of rotation which is coincident with the axis of longitudinal symmetry of the overall assembly.

5 According to further characteristic features listed in the dependent Claims:

- the members comprising the curved means forming an assembly having an alternating arrangement of these members;
- the two parts of the double member forming a jaw belong
10 to the said hinge itself and are removable;
- a part of the assembly forming a jaw is a removable constituent element, the other part belonging to the element which is to be assembled on which the said hinge element is fixed;
- 15 - the strap is of a flexible and/or elastic material chosen from among the materials of the leather, imitation leather, woven or non-woven textile, natural or synthetic fibre types, and of which part or all may be elastic and similar materials;
- 20 - the cylindrical edges are constitutes by small compact rolled edges either of the same material as that of the strap or of a different material, these rolled edges being in any case more rigid than the strap itself;
- the cylindrical edges are tubular, of a material which
25 is identical to or different from that of the strap, the interior of each tube being occupied by a rod of any rigid material such as a metallic rod, a natural or synthetic seal or the like.

(21)

Further details and advantages of the invention will become more clearly evident from the ensuing description, which relates to the appended drawings, in which:

Fig. 1 is a perspective view of a strap used for producing
5 a hinge according to the invention, and
Figs. 2 to 5 are end and sectional views of a possible
embodiment of a hinge according to the invention,
respectively in four different positions, viz.:
opening angle 0°; opening angle 45°; opening angle
10 90° and opening angle 180°.

With reference to these drawings, the strap applied for the provision of a hinge according to the invention is essentially constituted by a strip 1 of an appropriate flexible and/or elastic material of a width which may vary from about
15 1 cm to about 10 cm or more (according to the size of the hinge to be produced). Each edge of this strip is constituted by a compact or tubular rolled edge 2-2a obtained by any appropriate means forming an integral part of the said strap or folded over. However this may, the said rolled edges are
20 more rigid than the strap itself. In the case of tubular rolled edges, these serve as sheaths for rods or seals 3-3a of any appropriate material such as metallic rods or natural or synthetic seals.

On the basis of such a particular strap, it is possible
25 in the following way to produce a hinge according to the invention (see Figs. 2 to 5):

The edges 2-2a are inserted and gripped in some way as a sandwich between two members which form jaws such as 4a-4b,

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4c-4d, each of these members comprising a groove 5a-5b, 5c-5d respectively, along with appropriate means which make it possible to maintain each jaw assembly in a closed position on either side and along the said rolled edge. Such jaw assemblies may be produced in such a way as to be dismountable or not, the details of construction being within the scope of any man skilled in the art. These jaw assemblies are designed in such a way that at the time of assembly of the hinge, there remains between them a median zone of minimal width "b" to allow their free clearance and easy rotation in respect of one another about an imaginary axis represented by the axis of symmetry "x-y" of the assembly. For better operation and in order to avoid sudden folds in the strap in this median zone, there is provided on at least one of the jaw assemblies a curved member (such as 6) which is directed towards the median zone of the strap and which rests thereon in such a way as to provide a single fold which merges with the said imaginary axis. Made in this way, a hinge may be fixed mechanically by any suitable means and through the intermediary of assemblies mounted on the edges, on the elements which are to be assembled.

In the form of embodiment which is shown by way of illustration in the appended drawings, the rolled edges 2-2a are tubular and serve as sheaths for rigid rods 3-3a and the members 4b and 4d of each jaw form an integral part of each element to be assembled (A-B), although for the fitment of a hinge according to the invention, it is sufficient to provide respective grooves 5b-5d on these elements and the means

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(such as the screw y) of fitting the rolled edges 3-3a. In this case also, each member 4a-4c comprises its curved member 6; to avoid these two members being positioned opposite each other, which would affect appropriate functioning of the hinge, it is possible advantageously to have them in an alternating arrangement.

Examination of Figs. 2 to 5 shows that a hinge according to the invention permits of an opening of an angle ranging from 0° (Fig. 2) to 180° (Fig. 5), Figs. 3 and 4 respectively illustrating the intermediate openings (45° and 90°),

As can be seen, the hinge according to the invention is easily produced and easily fitted, all the constituent parts being demountable and interchangeable.

Patent claims

1. Hinge without a rigid articulation axis of the type comprising a strap (1) serving as linking means between members to be fixed on the objects to be hinged together and comprising two cylindrical edges (2-2a) each adapted to cooperate with at least one groove (5a, 5b, 5c or 5d) formed in at least one part (4a, 4b, 4c or 4d) of a two-part member forming a jaw and fixed to each of the objects (A-B) to be hinged together, a median strip on said strap being of the minimum width (6) to enable free rotation of said objects relative to each other, characterised in that at least one of said parts (4a or 4c) comprise a curved element (C) adapted to be operative on the median strip of width (b) and to create a fold area producing an imaginary axis of rotation

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coincident with the longitudinal axis of symmetry of the assembly (X-X).

2. Hinge according to Claim 1, characterised in that each of the parts (4a-4c) has a respective curved element (6),
5 the finished assembly featuring an alternating arrangement of these elements.

3. Hinge according to Claim 1 or Claim 2, characterised in that the two parts (4a-4b or 4c-4d) of the two-part jaw-forming member form part of said hinge itself and are
10 removable.

4. Hinge according to any one of Claims 1 to 3, characterised in that one part (4a and/or 4c) of the jaw-forming member is a removable component part the other part (4b and/or 4d) forming part of the object to be hinged (A and/or
15 B) to which said hinge member is fixed.

5. Hinge according to any one of Claims 1 to 4, characterised in that the strap is of a flexible and/or elastic material selected from leather, artificial leather, textiles, woven and non-woven fabrics of natural or man-made fibres
20 of which some or all may be elastic and analogous materials.

6. Hinge according to any one of Claims 1 to 5, characterised in that the cylindrical edges consist of compact small springs either of the same material as the strap or of a different material, these springs being in all cases more
25 rigid than the strap itself.

7. Hinge according to any one of Claims 1 to 6, characterised in that the cylindrical edges are tubular, of exactly the same material as the strap or a different



material, the interior of each tube being occupied by a rod (3-3a) of any rigid material such as a metal rod, natural or man-made cane or the like.

Four sheets of drawings