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(54) Improved furniture hinges.

(57) A furniture hinge (10) comprises a wing (11) and a housing (15) connected to each other by articulation arms (13, 14). The housing (15) comprises a substantially cylindrical side wall (24) provided with openings (21, 22) for avoiding interferences with one pivot end (25) of a lower articulation arm (13) in the housing. The openings (21, 22) define an upper support wall region (23) between them for supporting the lower articulated arm (13) when the hinge is in the open position. The wall region (23) has an enlarged base and advantageously the bending of its side walls (26, 27) substantially follows a profile given by the intersection of the wall (24) with an imaginary cylinder substantially coaxial with the pivot axis between the lower arm (13) and the housing (15).

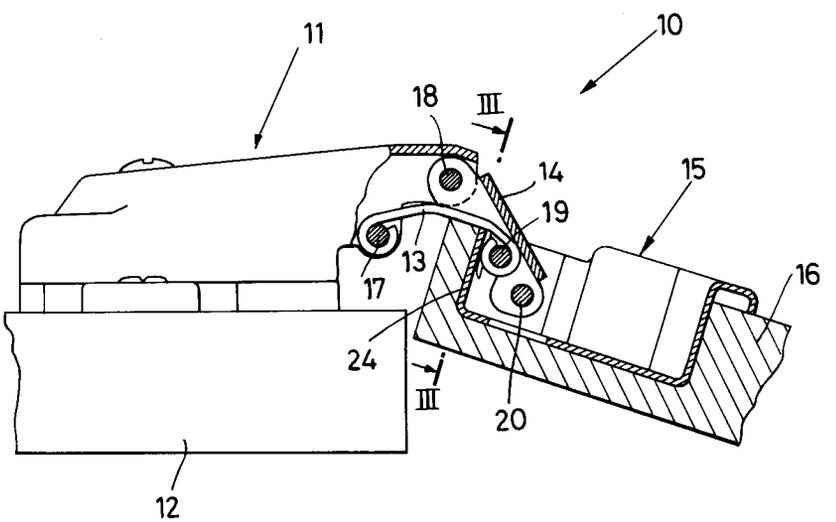

Fig.1

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One of the aspects requiring more care in the technique for manufacturing furniture hinges is the structure sturdiness. In fact, in their maximum opening position furniture hinges are stressed by a great effort caused by the long arm due to the door and obviously this effort must be borne without yieldings over a great number of operations.

A particularly critical element of a hinge as regards its sturdiness is the stamped plate housing connecting the hinge system to the door. In fact this housing supports an articulation pin which is arranged very close to one of its side walls which in turn is very close to the door edge. It is therefore frequent that in such a position breakages and deformations of the housing take place, which brings about the breaking of the adjacent door edge.

The situation is further complicated by the necessity of supplying the housing wall with stress relief openings in order to avoid interferences between said housing and the articulation, which further weakens the structure. In the known art, these stress relief openings are usually embodied by two rectangular cuts in the housing wall, so that the remaining wall portion between said cuts forms a tab the upper end of which constitutes a support for the lower arm of the articulation when the hinge is in the open position.

Although this solution involves undeniable advantages by virtue of the support supplied to said arm, it is also true that the efforts discharged by said arm on the housing are rather high and, by acting just close to the stress relief openings, breakages and deformations are very likely to occur. An increase in the thickness and quality of the material used would however raise the cost of the hinges as above described in an unacceptable manner.

The general object of the invention is to obviate the aforesaid drawbacks by providing a hinge having a housing offering less chances of being subjected to breakage and deformation while at the same time affording an improved support to an articulation arm without involving an unacceptable increase in the production cost.

The above object has been achieved, in accordance with the invention, by providing a furniture door hinge of the type comprising a wing to be fastened to the piece of furniture and a housing to be embedded into the door and fastened thereto, which are connected by articulated arms pivotally mounted thereto, the housing comprising a substantially cylindrical side wall close to the wing, said wall exhibiting openings in order to avoid interferences in the housing, close to the cylindrical wall, with one pivot end of a lower articulated arm, said openings defining a wall region between them which by its upper edge forms a support for said lower articulated arm when it is in the open hinge position, characterized in that the wall region between the openings widens out as it departs from its upper support edge.

The innovatory principles of the invention and its advantages as compared to the known art will be more apparent from the detailed description given hereinafter by way of non-limiting example of a possible embodiment applying said principles, reference being made to the accompanying drawings, in which:

- Fig. 1 is a schematic side elevation view partly in section of a hinge in accordance with the invention;
- Fig. 2 is a partial plan view of the hinge shown in Fig. 1;
- Fig. 3 is a view taken along line III-III in Fig. 1.

Referring to the drawings, as shown in Fig. 1, a hinge generally denoted by reference numeral 10, comprises a wing base 11 fastened to a wall 12 of a piece of furniture and supporting, by means of arms 13 and 14, a partly embedded housing 15 close to the edge of a door 16.

Arms 13 and 14 are pivotally mounted to the base by means of pins 17 and 18 and to the housing by means of pins 19 and 20, respectively.

As already said, for kinematic reasons in hinges of the concerned type the position of the end 25 of the lower arm 13 wrapped around the pin 19 must be located so close to one 24 of the housing walls (formed with a cylindrical bending) near the wing that such a wall must be provided with stress relief openings at least at two end positions 21, 22 so as to avoid interferences. The portion 23 included between the two stress relief openings defines a region or tab 23 the upper edge of which constitutes a support for the arm 13 when the hinge is in the open position.

As an innovation, the stress relief openings 21 and 22 are shaped in such a way as to provide the centre region 23 with side edges 26 and 27 widening out towards the base.

In particular the side edges 26 and 27 are bent so as to form a decreasing slope as they depart from the upper support edge. It has been found advantageous to make the bending of said side edges in such a way that it may substantially follow a profile given by the intersection of the wall 24 with an imaginary cylinder substantially coaxial with the pivot axis 19 between said lower arm and the housing and the diameter of which is slightly greater than the diameter of the end 25 thereof.

In this manner the achieved result is that of maximizing the material of the central portion giving it a surprisingly high strength also by virtue of its shape provided with curved edges, which strength brings about a greater resistance of the

whole housing. Thus deformations and breakages of the hinge in the housing region are avoided even in case of particularly hard applications such as long and heavy doors.

It is therefore apparent that the intended purposes of improving the mechanical sturdiness features of the hinge without increasing the production cost of the same have been achieved.

Obviously the above description of an embodiment applying the innovative principles of the invention is given by way of example only and therefore must not be considered as a limitation to the scope of the invention herein claimed.

For example the particular wing shape and fastening of the same to the piece of furniture optionally by adopting position adjusting means, as well as the housing shape can be of any type known in the art as any expert technician can easily envisage. Likewise, the proportions and shapes of the articulation arms may be different from the described ones depending on the desired pattern and use intended for the particular hinge.

Claims

1. A hinge (10) for furniture doors of the type comprising a wing (11) to be fastened to the piece of furniture and a housing (15) to be embedded into the door and fastened thereto, which are connected by articulated arms (13, 14) pivotally mounted thereto, the housing comprising a substantially cylindrical side wall (24) close to the wing, said wall exhibiting openings (21, 22) in order to avoid interferences in the housing, close to the cylindrical wall, with one pivot end (25) of a lower articulated arm (13), said openings defining a wall region (23) between them which by its upper edge forms a support for said lower articulated arm when it is in the open hinge position, characterized in that the wall region (23) between the openings widens out as it departs from its upper support edge.

2. A hinge according to claim 1, characterized in that the wall region (23) between the openings widens out in such a way that its curved side edges (26, 27) have a decreasing slope as they depart from the upper support edge.

3. A hinge according to claim 2, characterized in that the bending of the side edges (26, 27) substantially follows a profile given by the intersection of the wall (24) with an imaginary cylinder substantially coaxial with the pivot axis between said lower arm (13) and the housing (15) and the diameter of which is greater than the diameter of the arm pivot end (25).

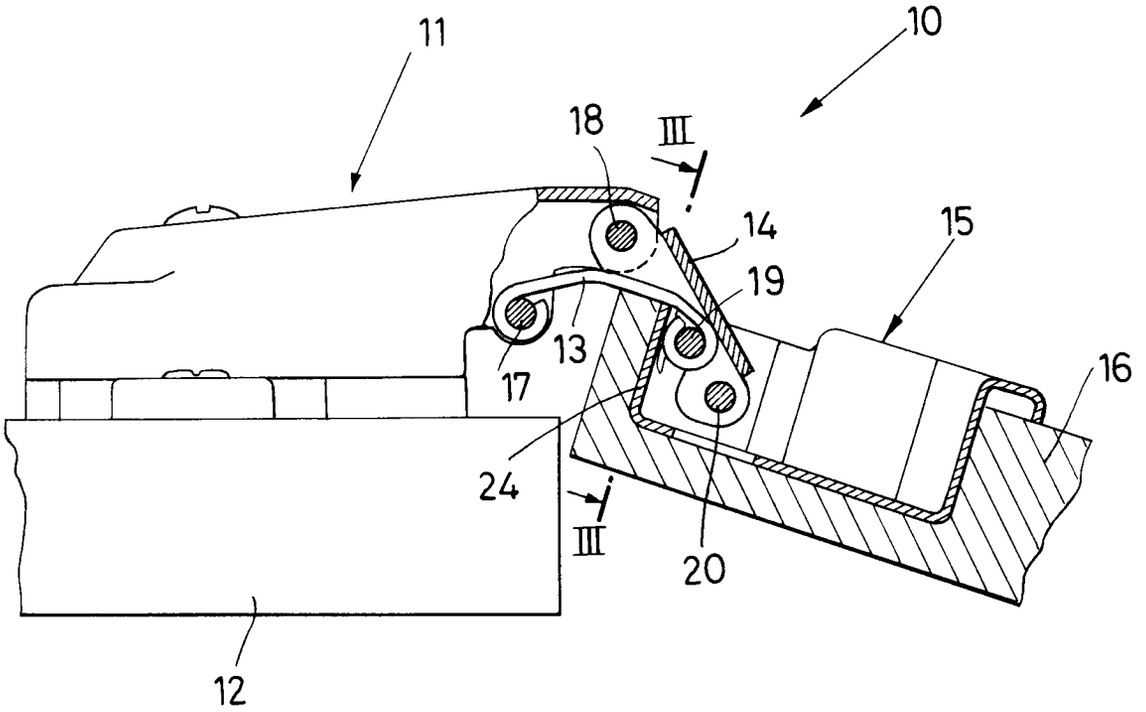

Fig.1

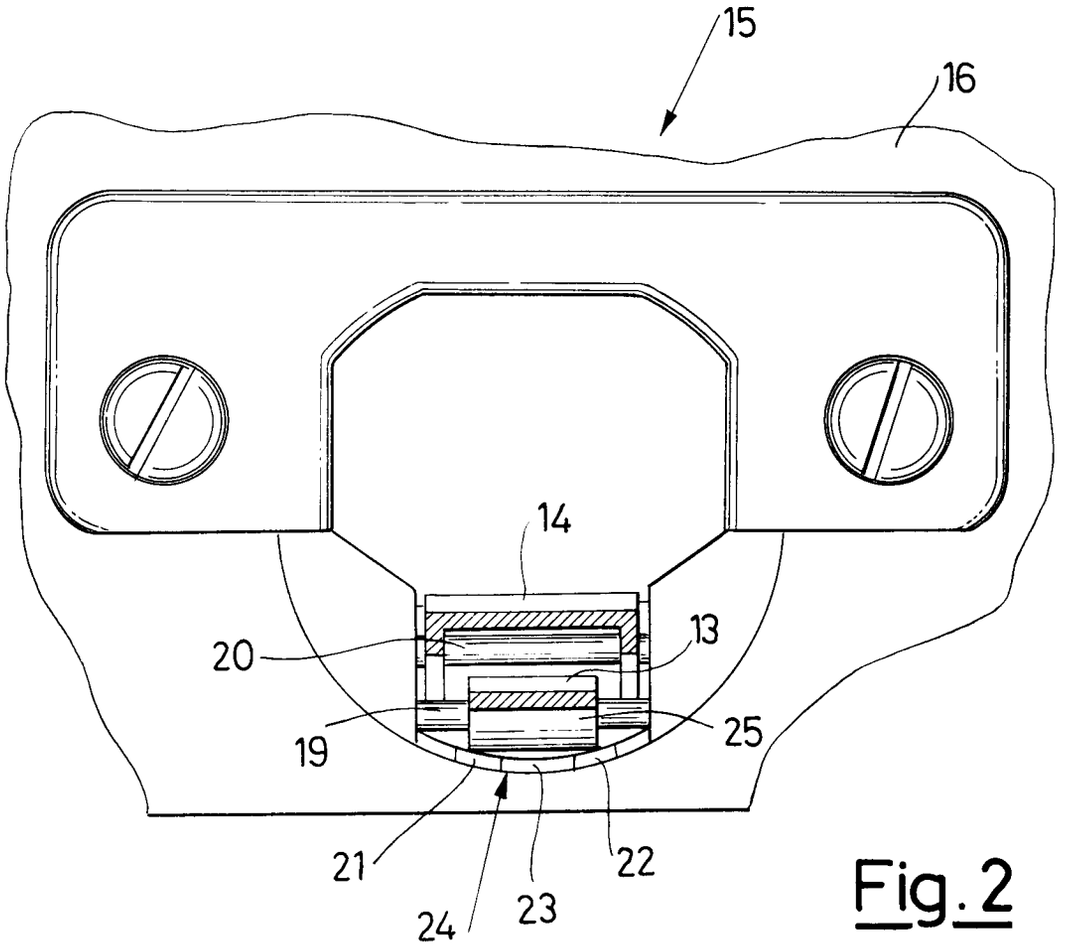

Fig.2

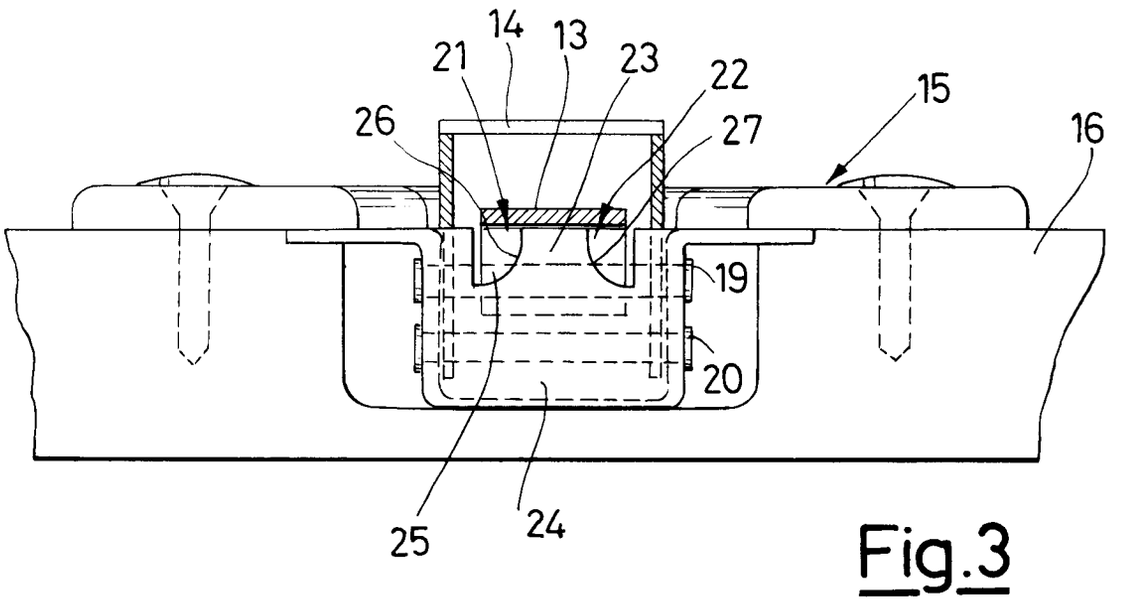

Fig.3

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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 2821

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.5)
A	DE-A-2 816 635 (DEUTSCHE SALICE GMBH) * page 6, line 21 - line 22; figures *	1	E05D5/08
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	16 DECEMBER 1992	DELZOR F.N.M.

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
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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