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(54) **Corrosion-resistant hinge for casements or the like.**

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Description

The present invention relates to a corrosion-resistant hinge for casements or the like.

Hinges having a structure which is particularly suitable for use in corrosive environments, for example marine environments, are already known.

Such hinges are composed of a male element and a female element, each having a metallic core, adapted to perform the mechanical bearing function and being covered by a plastic material which protects it from corrosion.

The male core is provided with a metallic pin which can be rotatably inserted in the hole of the female core.

Threaded stems for fixing to casements are welded orthogonally to said metallic cores.

GB-A-851 630 discloses a hinge as defined in the preamble of the appended claim 1.

The covering made of plastic material is usually obtained by injection-molding thermoplastic materials into molds in which the cores have been arranged beforehand.

A disadvantage observed in the manufacture of the above mentioned known hinges consists in the fact that burr or welding defects which form during related operations often cause damage to the molds when the cores are inserted therein to be covered with plastic material.

The particular configuration of said cores furthermore complicates the automation of their loading into the molds.

This negatively affects production costs and ultimately the retail cost.

The aim of the present invention is to provide a corrosion-resistant hinge for casements or the like which eliminates the disadvantages described above in known hinges.

Within the above-cited aim, a primary object of the invention is to provide a corrosion-resistant hinge which completely eliminates the operation of welding each metallic core to the corresponding threaded stem, and which thus eliminates the risk of damaging the molds due to the formation of burr, welding defects etc.

Another important object of the invention is to provide a hinge which has lower production costs than currently available hinges and which can therefore be sold at a considerably economical price.

A not least object of the invention is to provide a corrosion-resistant hinge which can be manufactured with the desired aesthetic shapes and colors.

This aim, these objects and others which will become apparent hereinafter, are achieved by a hinge for casements or the like, composed of two complementary elements, each having a metallic core being covered with plastic material and being constituted by a fork-like end of a threaded fixing stem, a metallic ar-

ticulation pin being provided which longitudinally associates said two complementary elements, characterized in that said pin has portions which are at least partially embraced by said fork-like ends, at least one of said ends constituting a rotation seat for said pin.

Further characteristics and advantages of the invention will become apparent from the detailed description of an embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of a hinge according to the invention;

figure 2 is a longitudinal sectional view of the hinge of figure 1;

figure 3 is a transverse sectional view of the hinge of figure 1;

figure 4 illustrates the metallic elements of the hinge of figures 1 and 2.

With reference to the above described figures, the hinge according to the invention is generally indicated by the reference numeral 1 and is composed of two parts, respectively a first part indicated by the reference numeral 2 and a second part indicated by the reference numeral 3.

Each part 2, 3 comprises a metallic core adapted to perform the mechanical bearing action and a covering made of plastic material, preferably nylon, which protects the metallic core against corrosion.

In particular, each part 2, 3, has a metallic core which is constituted by a fork-like end 4 of a threaded stem 5 for fixing to the casements.

According to the invention, the fork like end 4 is conveniently obtained from a cylindrical expansion 6 of the stem which is diametrically traversed by a U-shaped recess 7.

Still according to the invention, the extension of said U-shaped recess 7 is arranged longitudinally to the axis of the hinge 1, and the center of its rounded portion is arranged on said axis.

Each fork-like end 4 is covered by a layer 8 of plastic material which is applied by inserting said end in a mold and by injecting said plastic material under pressure.

The mold is conveniently provided with an insert which extends through said U-shaped recess 7 so that the layer 8 is finally provided with an axial recess 9 in which a cylindrical rotation pivot or pin 10 is inserted during the assembly of the hinge; said pin 10 is thus almost completely surrounded by metal at the fork-like ends 4 of the threaded stems 5.

Axial holes 11 may be provided during the molding operations on the top of each part 2 or 3 of the hinge 1, connecting the outside with each end of the pivot 10, which can thus be lubricated.

From what has been described, therefore, the two parts 2 and 3 which constitute the hinge 1 are substantially identical and are simply associated by the pin 10 which can rotate inside both U-shaped recess-

es 7.

In any case, however, the rotation pivot 10 may have annular recesses or coupling devices, and may be rigidly associated with one of the two parts during the molding step, e.g., by being partially embedded in the plastic material.

Another aspect of the invention consists in deforming the tips 12 and 13 of the fork-like end 4 so that the recess 9 almost completely embraces the pivot 10, thereby improving the mechanical resistance of the walls of the rotation seat.

From the above description it is thus evident that the hinge is composed of three simple elements, two of which are substantially identical, since the differences arising from a male-female coupling have been eliminated.

It is important to stress that the hinge is manufactured without welding operations, since the threaded stems 5 are locked in the layers of plastic material 8 by virtue of the embedding of the expansions 6.

This allows a considerable simplification of the production steps and a considerable reduction of production times.

Another considerable advantage resides in the fact that by eliminating the weld for connecting the threaded stem to a male or female part of the hinge, the danger of the molds being subjected to damage caused by burr or welding defects is also eliminated.

The result is a hinge which is practically totally weather-proof, since none of its metallic parts is exposed to the atmosphere.

The most convenient material for covering the metal parts is nylon, which has excellent corrosion-resistance characteristics as well as excellent self-lubrication characteristics.

With respect to known hinges, the simplification of the elements of the hinge and of the production cycle required for its manufacture, allow lower production costs and consequently provide a more commercially competitive product.

Finally, the use of plastic material as a covering allows to obtain any aesthetic form according to models related to styles or lines of various kinds.

The colors may also consequently be chosen according to requirements.

It should be furthermore stressed that hinges of any kind, all of which are within the scope of the protection of the present invention, may be obtained starting from the same concept of combinations of parts.

In practice, the materials, so long as compatible to the contingent use, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect

on the scope of each element identified by way of example by such reference signs.

Claims

1. Hinge (1) for casements or the like, composed of two complementary elements (2, 3), each having a metallic core (5) being covered by plastic material (8) and being constituted by a fork-like end (4) of a threaded fixing stem (5), a metallic articulation pin (10) being provided which longitudinally associates said two complementary elements (2, 3), said hinge characterized in that said pin (10) has portions which are at least partially embraced by said fork-like ends (4), at least one of said ends (4) constituting a rotation seat for said pin (10).
2. Hinge (1) according to claim 1, characterized in that said fork-like end (4) is obtained from a cylindrical expansion (6) of said threaded stem (5) which is diametrically traversed by a U-shaped recess (7), the center of the round portion of said recess being arranged on the axis of rotation of said hinge (1).
3. Hinge (1) according to claims 1 and 2, characterized in that said expansion (6) of each stem (5) is completely embedded in said plastic material covering (8), thus locking the movement of each stem (5) with respect to said covering (8) and to the corresponding hinge element without requiring welding operations.
4. Hinge according to claims 1 and 2, characterized in that a hole (11) may be provided at the top of each plastic material covering (8), said hole (11) connecting the corresponding end of said articulation pin (10) to the outside, thereby allowing its lubrication.
5. Hinge according to claims 1, 2 and 3, characterized in that said articulation pin (10) may be provided with annular recesses or coupling tabs which lock it in one of said two complementary elements (2, 3), thereby preventing rotation and/or extraction of said one of said complementary elements (2, 3) with respect to said pin (10).
6. Hinge according to claims 1, 2 and 3, characterized in that the tips of said fork-like ends (4) may be deformed so as to further embrace the corresponding portions of said pin (10).
7. Hinge according to the preceding claims, characterized in that said plastic material (8) is injected into a mold in which said metallic cores (5) are ar-

ranged as inserts together with elements adapted to define the rotation seats of said pin (10).

Patentansprüche

1. Scharnier (1) für Fensterrahmen o. dgl, bestehend aus zwei komplementären Teilen (2,3), die jeweils einen mit Kunststoffmaterial (8) überzogenen, durch ein gabelähnliches Ende (4) eines Befestigungsstifts (5) mit Gewinde gebildeten metallischen Kern (5) aufweisen und durch einen metallenen Scharnierstift (10) in dessen Längsrichtung miteinander verbunden sind, dadurch gekennzeichnet, daß der Stift (10) Bereiche aufweist, die wenigstens teilweise von den gabelähnlichen Enden (4) umfaßt sind, und daß wenigstens eines der Enden (4) einen Drehsitz für den Stift (10) bildet.
2. Scharnier (1) nach Anspruch 1, dadurch gekennzeichnet, daß das gabelähnliche Ende (4) aus einer zylindrischen Verdickung (6) des Gewindestifts (5) gebildet ist, durch die sich diametral eine U-förmige Ausnehmung (7) erstreckt, wobei die Mitte des runden Bereichs der Ausnehmung auf der Rotationsachse des Scharniers (1) angeordnet ist.
3. Scharnier (1) nach den Ansprüchen 1 und 2, dadurch gekennzeichnet, daß die Verdickung (6) jedes Stifts (5) vollständig in dem Kunststoffüberzug (8) eingebettet ist, wodurch eine Relativbewegung jedes Stifts (5) gegenüber dem Überzug (8) und dem zugeordneten Scharnierteil ohne jede Schweißarbeiten unterbunden ist.
4. Scharnier nach Ansprüchen 1 und 2, dadurch gekennzeichnet, daß an der Oberseite jedes Kunststoffüberzugs (8) eine Öffnung (11) vorgesehen ist, die das zugeordnete Ende des Scharnierstifts (10) mit der Außenseite verbindet und so dessen Schmierung ermöglicht.
5. Scharnier nach den Ansprüchen 1, 2 und 3, dadurch gekennzeichnet, daß der Scharnierstift (10) mit Ringnuten oder Verbindungsnasen versehen sein kann, die ihn in einer der beiden komplementären Teile (2,3) festlegen, wodurch eine Drehung und/oder ein Herausziehen eines der komplementären Teile (2,3) in bezug auf den Stift (10) unterbunden ist.
6. Scharnier nach den Ansprüchen 1, 2 und 3, dadurch gekennzeichnet, daß die Spitzen der gabelähnlichen Enden (4) verformt werden können, um so die zugeordneten Bereiche des Stifts (10) weiter zu umschließen.

7. Scharnier nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das Kunststoffmaterial (8) in eine Form eingespritzt wird, in die die metallenen Kerne (5) als Einsätze zusammen mit Elementen zur Bildung der Drehsitze des Stifts (10) angeordnet sind.

Revendications

- 1.- Charnière (1) pour châssis dormants ou analogues, composée de deux éléments complémentaires (2,3), comportant chacun un noyau métallique (5) recouvert d'une matière plastique (8) et constitué par une extrémité fourchue (4) d'une tige de fixation filetée (5), une tige d'articulation métallique (10) étant prévue pour associer longitudinalement lesdits deux éléments complémentaires (2,3), ladite charnière étant caractérisée en ce que la dite tige d'articulation (10) comprend des parties qui sont au moins partiellement entourées par lesdites extrémités fourchues (4), au moins une desdites extrémités (4) constituant un siège de rotation pour ladite tige d'articulation (10).
- 2.- Charnière (1) suivant la revendication 1, caractérisée en ce que ladite extrémité fourchue (4) est obtenue à partir d'un prolongement cylindrique (6) de ladite tige filetée (5) qui est traversé diamétralement par un évidement en forme de U (7), le centre de la partie arrondie dudit évidement étant situé sur l'axe de rotation de ladite charnière (1).
- 3.- Charnière (1) suivant les revendications 1 et 2, caractérisée en ce que ledit prolongement (6) de chaque tige filetée (5) est complètement noyé dans le dit revêtement de matière plastique (8), ce qui interdit le mouvement de chaque tige (5) par rapport audit revêtement (8) et à l'élément de charnière correspondant, sans nécessiter d'opérations de soudage.
- 4.- Charnière suivant les revendications 1 et 2, caractérisée en ce qu'un trou (11) peut être prévu au sommet de chaque revêtement de matière plastique (8), le dit trou (11) faisant communiquer l'extrémité correspondante de ladite tige d'articulation (10) avec l'extérieur et permettant ainsi sa lubrification.
- 5.- Charnière suivant les revendications 1, 2 et 3, caractérisée en ce que ladite tige d'articulation (10) peut comporter des gorges annulaires ou des languettes de couplage qui la verrouillent dans l'un desdits deux éléments complémentaires (2,3), ce qui empêche la rotation et/ou l'extraction dudit un desdits éléments complémentaires (2,3) par rapport à ladite tige d'articulation (10).
- 6.- Charnière suivant les revendications 1, 2 et 3, caractérisée en ce que les bouts desdites extrémités fourchues (4) peuvent être déformés de manière à entourer davantage les parties correspondantes de ladite tige d'articulation (10).
- 7.- Charnière suivant les revendications précédentes, caractérisée en ce que ladite matière plasti-

que (8) est injectée dans un moule dans lequel lesdits noyaux métalliques(5) sont disposés comme des inserts en même temps que des éléments prévus pour définir les sièges de rotation de ladite tige d'articulation (10).

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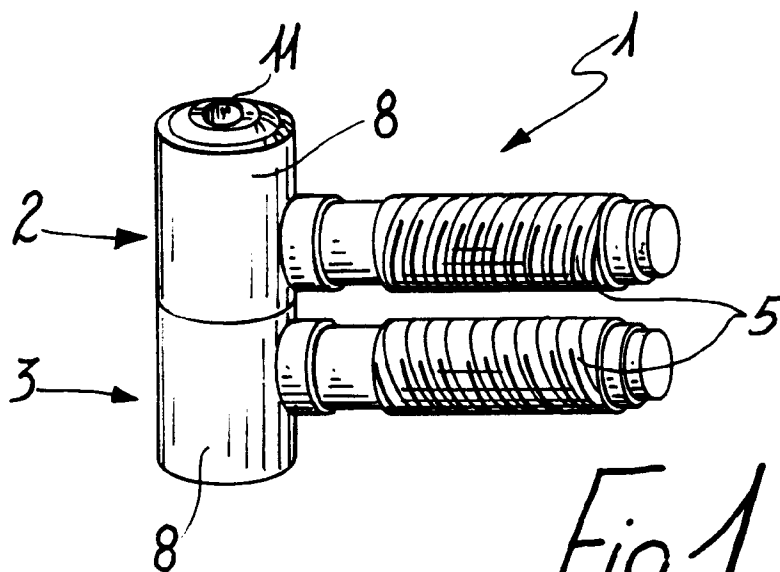


Fig. 1

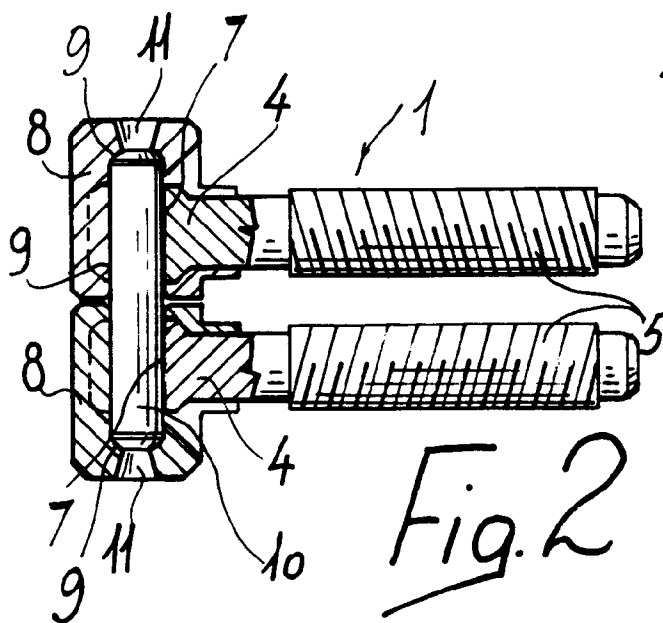


Fig. 2

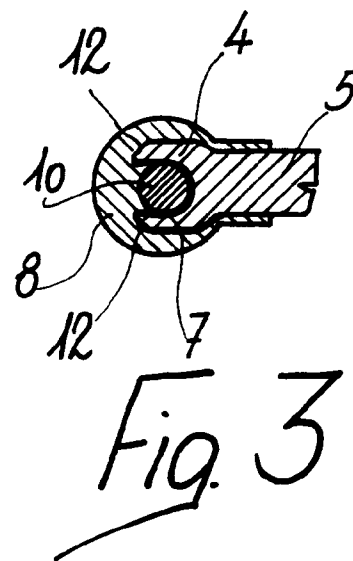


Fig. 3

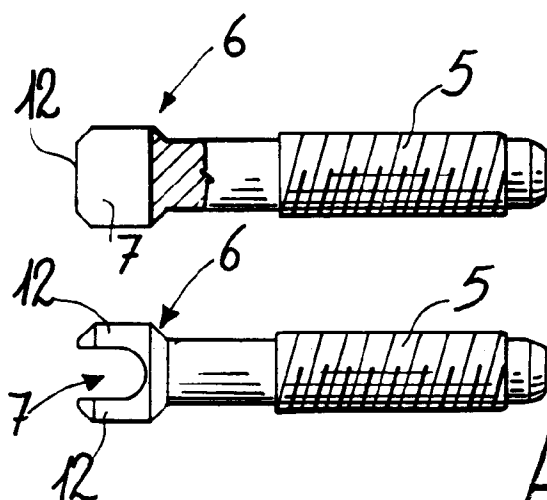


Fig. 4

