



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.11.2005 Bulletin 2005/48

(51) Int Cl.7: **E05D 15/06**

(21) Application number: **05007154.7**

(22) Date of filing: **01.04.2005**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL BA HR LV MK YU

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(30) Priority: **24.05.2004 IT MI20040239 U**

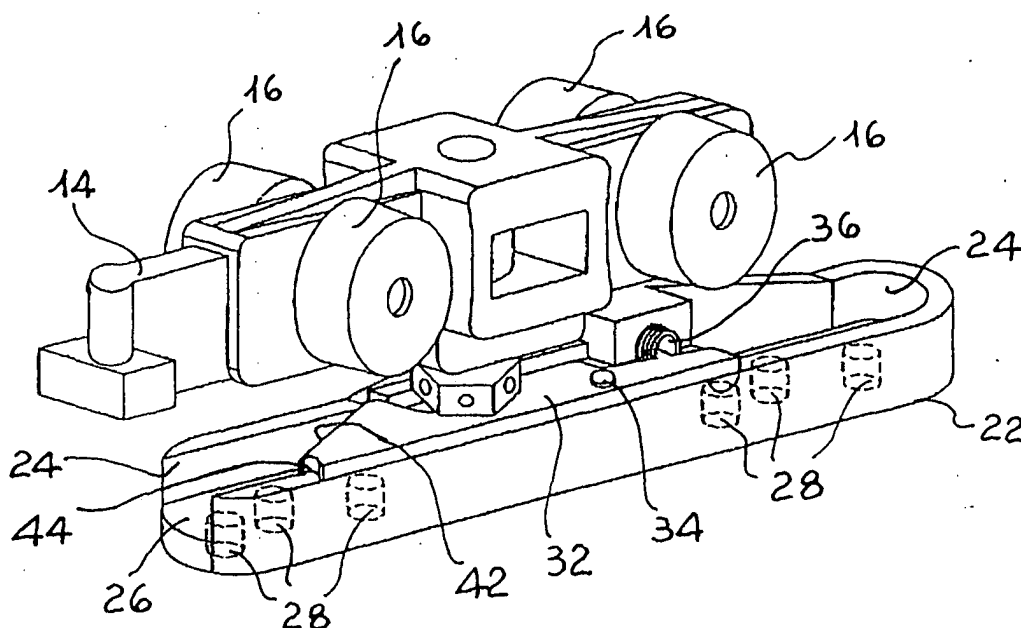
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(54) **An automatic clutch clamp for sliding trucks**

(57) An automatic clutch clamp (10) for sliding trucks (12) provided with a pin (18) with a mushroom-shaped end (20) in their lower part, which is particularly suitable for furniture doors or doors, comprising a small support frame (22) fastened and/or at least partly integrated into the upper and/or lower edge of said furniture doors or doors and meant to constrain the pin (18) with a mushroom-shaped end (20) of said sliding trucks (12) to which one or more wheels (16) or sliding blocks car-

ried by a shaped support (14) are associated. The substantially rectangular-based small frame (22) is partly delimited by an external curb (24) and it comprises a transversal extension defining a parallel plane at its base being spaced from it, upon which a shaped notch (30) forming a shoulder or abutment for said pin (18) of the trucks (12) is obtained. The same small frame (22) is provided with travelling stabilizing means (32) of the pin (18).

FIG. 1



Description

[0001] The present invention refers to an automatic clutch clamp for sliding trucks.

[0002] More particularly, the present invention refers to a clamp as defined above which can be easily and quickly applied to furniture doors or doors in order to allow their manual opening and closing translation.

[0003] It is known that in the furnishing field solutions carrying out the sliding motion or translation of panels along horizontal rails are widespread. This kind of solutions are generally used in the manufacturing of furniture wherein closing doors are engaged along opposite upper and lower edges with the bearing frame and, by means of trucks provided with wheels or sliding blocks sliding on a plane which is at right angle to the floor. Sometimes, the same manufacturing and functional layout is used for the motion of furniture doors making separation doors or panels between two living environments. These embodiments are particularly appreciated as they allow removing the projecting parts, but they also show important features from the aesthetic point of view as the motion components for the articulation such as hinges, joints and other trouble elements are hidden.

[0004] Even though the known embodiments of clamps for furniture doors or doors are appropriate from the functional point of view, they are usually designed in such a way that the constraint between the door and the bearing framework is obtained by difficult operations, particularly for the reciprocal assembly and the subsequent stabilization. These operations particularly refer to the coupling between the truck provided with wheels and the relevant support, or clamp, fastened to the head of the furniture door or door and at least partly integrated into them. In fact this coupling usually requires that the projecting part of the truck made of a mushroom-shaped head, is stabilized compared to the clamp and this stabilization is generally obtained by a screw or the like engaging into a movable plate associated to the same clamp.

[0005] This operation is quite awkward considering that the furniture door or door is still in uncertain conditions, i.e. it is basically movable compared to the truck placed on the rails of the bearing structure; this makes the mounting by the operator difficult, he needs to work with a tool on a ladder and not at floor level.

[0006] The same drawback occurs if, for any reason, the disassembly of the furniture door or door is required; this usually occurs during removals or special maintenance services.

[0007] Object of the present invention is to solve the above-mentioned drawbacks.

[0008] More particularly, object of the present invention is the provision of a clamp for sliding trucks, especially for furnishing elements, such as furniture doors or doors wherein the coupling and, above all, the stabilization of the truck itself compared to said clam are immediately and automatically carried out thus avoiding the

operator to use wrenches or similar tools to fasten screws or equivalent constraint means.

[0009] A further object of the present invention is the provision of a clamp as defined above suitable to allow, if required, the same quick and easy opposite disassembly operation of the furniture door or door, for which the separation of the same clamp compared to relevant truck is required.

[0010] A further object of the present invention is to provide the users with an automatic clutch clamp for sliding trucks particularly for furniture doors or doors, being able to assure a high resistance and reliability level in time, which can also be easily manufactured at low costs.

[0011] According to the present invention, these and other purposes are reached by the automatic clutch clamp for sliding trucks provided with a mushroom-shaped pin in their lower part, particularly suitable for furniture doors or doors, comprising a support framework fastened and/or at least partly integrated into the upper and/or lower edge of said furniture doors or doors which is meant to fasten the pin with a mushroom-shaped end of said sliding trucks to which one or more wheels or sliding blocks carried by a shaped support are associated and wherein the basically rectangular-based small support frame is partly delimited by an external curb and it comprises a transversal extension defining a parallel plane at its base and spaced from it, upon which a shaped notch forming a shoulder or abutment for said pin of trucks is obtained, said small frame being provided with travelling stabilization means of said pin is obtained.

[0012] The manufacturing and functional features of the automatic clutch clamp for sliding trucks of the present invention can be better understood from the following description, wherein reference is made to the attached tables of drawings representing a preferred and non-limiting embodiment wherein:

Figure 1 represents the perspective schematic view of the automatic clutch clamp of the present invention assembled with a sliding truck; and

Figure 2 represents the perspective schematic view of the same clamp and the relevant truck before said assembly.

[0013] With reference to the mentioned Figures, the automatic clutch clamp of the present invention, marked in its whole with 10 in Figure 2, is meant to be steadily matched with a truck 12, which is known in itself, of the kind used for the translation along linear rails of furniture doors or doors. The truck 12 usually comprises a metal or plastic shaped-support 14 provided with one or more wheels 16 or with sliding blocks if required, suitable for the abutment with a linear rail matched with the bearing structure of the furniture door or door. The truck 12, which in the embodiment given by way of example in the Figures, comprises two matched and spaced cou-

ples of wheels 16, shows a pin 18 with a mushroom-shaped end 20 on the lower part of said support 14, which is known in itself. Said pin 18 projects from the lower end of the same support 14 and it is meant to engage, from its exposed end 20, into a shaped seat, described here below, of the clamp 10 of the present invention. According to the preferred embodiment of the present invention, said clamp 10 comprises a body 22 made of metal or other suitable material, which is advantageously formed by a basically rectangular-shaped small support frame, at least partly delimited by an integral external curb defining a containment wall 24 with a limited height. In correspondence with at least one of the heads of the small frame 22, in its development, the wall 24 is broken, this break forms a mouthpiece 26 for the insertion of the truck 12, starting from the exposed end 20 of the mushroom-shaped pin 18 the same truck is provided with. The small frame 22 forms, in its whole, the support of the truck 12 and it is fastened to the upper and/or lower edge of the furniture door or of the door by screws or similar means. For this purpose, the base of the small frame 22 is provided with a plurality of pass-through holes 28 marked with hatches, which are meant to house the mentioned screws or equivalent fastening means. In the half part of its longitudinal development, the small frame 22 is provided with a shoulder 30, marked with hatches in Figure 2.

[0014] The shoulder 30 is preferably formed by a transversal extension of the same small frame defining a plane with a development parallel to its base, being connected, on the opposite sides, to the upper edge of the containment wall 24. In the preferred embodiment shown in Figure 2, the shoulder 30 defines a notch with at least a partial semicircular profile, with a shape complementary to a part of the pin 18 of the truck 12.

[0015] Compared to the upper part of the base of the small frame 22, the plane which transversely extends and forms the shoulder 30 is placed at an upper level and at such height suitable for housing said pin 18 of the truck 12.

[0016] The small frame 22 comprises further movable means for the stabilization of the truck 12 inserted into it starting from the mouthpiece 26.

[0017] According to the preferred embodiment shown in Figures, said movable means are constituted by a shaped plate 32 made of metal or other suitable material, which is articulated on the small frame 22. In particular, said shaped plate 32 is overlapped to the transversely extended plane forming the shoulder 30 and it is fastened to one side of the containment wall 24 by an articulation pin 34, placed in a rear position compared to the shoulder 30. Said shaped plate 32 is aligned with its outer edge to said wall 24 and the rear end, which is opposite to the mouthpiece 26 of the small frame 22, shows a lowered rectilinear portion abutting with an elastic element 36, which is made, for example, of a helical spring 36. Said spring 36 is oriented in a parallel way compared to the base of the small frame 22 and is

partially inserted into a seat obtained into a projection 38 of the same small frame. In particular, said projection 38 develops from the containment wall 24 on the side opposite to the one the shaped plate 32 is fastened to the pin 34 and it is slightly thrown towards the inner part of the small frame 22.

[0018] Said side of the containment wall from which the projection 38 is raised, advantageously projects in the front and in the rear part near the same projection in order to form two stiffening sectors 40 and 40' which are angularly developed upwards into opposite directions.

[0019] The front end facing the mouthpiece 26 of the shaped plate 32 is provided with an angular chamfer 42 forming a cut for the rod 18 of the truck 12 when it introduces into the mouthpiece 26 of the small frame 22. Said chamfer 42 defines an angularly-oriented edge, branching off from the area close to the shoulder 30 and ends with a basically sharpened portion facing said mouthpiece 26 and aligned to the containment wall 24 with the mentioned articulation pin 24 on one side. The basically sharpened ending portion of the plate 32 is provided with a small notch 44 opening the same plate as described here below.

[0020] In the part placed immediately behind the angular chamfer 42, the same plate 32 comprises a shaped notch 46 whose profile integrates a substantially semicircular portion to match with part of the rod 18 of the truck. The notch 46 is obtained on the plate 32 in correspondence with the underlying shoulder 30 which also comprises a similar semicircular profile.

[0021] As can be worked out by the previous description, the assembly between the automatic clutch clamp 10 of the present invention and the relevant truck 12 comprises the following operation steps.

[0022] The clamp 10 is previously fastened to the upper and/or lower head of the furniture door or door. The truck 12 is also previously associated to the sliding rails of the bearing framework. During the assembly, the operator aligns the furniture door or the door to the mushroom-shaped end of the truck 12, so that it can slide into the clamp 10 getting into it from the mouthpiece 26 according to the direction of the "A" arrow. The mushroom-shaped end 20 of said truck 12 slides along the internal side of the base of the clamp 10 and the pin 18 connected to it matches with the angular chamfer 42 according to the movement of the plate 32.

[0023] For the pushing effect, the plate 32 laterally exposes into the direction marked by the "B" arrow allowing the rod 18 to get into the small frame 10 to match the shoulder 30. During this step, the spring 36 abutted into the projection 38 shrinks due to the pushing effect exerted by the lowered rear portion of the same plate 32 fastened into 34. At the same time, the pin 18 stepped over the angular chamfer 42 of said plate, which after the spontaneous extension of the spring 36 comes back into its original position in such a way that its shaped notch 46 partly circumscribes the rod 18. In this condi-

tion, the latter, is peripherally and partly delimited by the shoulder 30 as for the circumference and partly by said notch 46.

[0024] The truck 12 is therefore steadily matched with the rod 10 and the two components can be released only by a movement that exposes again the plate 32. For this reason, the basically shaped end of the plate 32 is provided with the small notch 44 which advantageously creates an appropriate grip point for the operator. The manual intervention allows the operator exposing the plate 32 and removing the furniture door or door in case a disassembly is required.

[0025] In closing condition, i.e. when the notch 46 partly delimits the pin 18, the plate 32 abuts the containment wall 24 with the wider part of the angular chamfer 42.

[0026] As can be noticed from what described above, the advantages obtained by the automatic clutch clamp of the present invention are clear.

[0027] Said automatic clutch clamp allows an easy and quick assembly, of furniture doors and doors to their truck sliding on the rails of the bearing framework without using tools.

[0028] The opposite operation of disassembly, if required, is also easy.

[0029] In the preferred embodiment described above, the clamp 10 comprises the shaped plate 32 which is elastically tensioned by the spring 36; said plate 32 can be also configured in a different way and contemplate a snap stabilization with elastic clutch on one or more parts of the small frame 12, thus excluding the presence of said spring.

[0030] The configuration and/or layout of the plate 32 can also be different from what described above.

[0031] Therefore, even though the automatic clutch clamp has been described above with reference to one embodiment which is given only by way of non-limiting example, many changes and variants will be clear to a technician skilled in the art according to the above-mentioned description.

[0032] The present invention is meant to include all the changes and variants falling within the spirit and the protective scope of the appended claims.

Claims

1. An automatic clutch clamp (10) for sliding trucks (12) provided with a pin (18) with a mushroom-shaped end (20) in their lower part, which is particularly suitable for furniture doors or doors, comprising a small support frame (22) fastened and/or at least partly integrated into the upper and/or lower edge of said furniture doors or doors and meant to constrain the pin (18) with a mushroom-shaped end (20) of said sliding trucks (12) to which one or more wheels (16) or sliding blocks carried by a shaped support (14) are associated, **characterized in that**

the substantially rectangular-based small frame (22) is partly delimited by an external curb (24) and it comprises a transversal extension defining a parallel plane at its base being spaced from it, upon which a shaped notch (30) forming a shoulder or abutment for said pin (18) of the trucks (12) is obtained, said small frame (22) being provided with travelling stabilizing means of said pin (18).

2. The clamp according to claim 1, **characterized in that** the external curb (24) breaks its development at least in correspondence with a head or front end of the small frame (22) thus forming a mouthpiece (26) upon it for the introduction of the pin with a mushroom-shaped end (20) of the truck/s (12).
3. The clamp according to claim 1 or 2, **characterized in that** the travelling means are made of a shaped plate (32) which is placed upon the transversely extended plane defining the shoulder (30) and is articulated through a pin (34) placed at one side of the containment wall (24) in a rear position compared to said shoulder, said shaped plate (32) being aligned to the same containment wall (24) with its outer edge.
4. The clamp according to any of the previous claims, **characterized in that** the shaped plate (32) is provided with a lowered rectilinear portion at the rear end opposite to the mouthpiece (26) of the small frame (22), matching with an elastic element (36) being partially inserted into a seat formed into a projection (38) of the same small frame.
5. The clamp according to claim 4, **characterized in that** the projection (38) develops from the containment wall (24) of the small frame (22) on the side opposite to the one upon which the shaped plate (32) is articulated through the pin (34) and is thrown towards the inner part of the small frame.
6. The clamp according to any of the previous claims, from 3 to 5, **characterized in that** the shaped plate (32) is provided with a chamfer (42) forming a cut for the introduction of the rod (18) of the truck/s (12) at the front end facing the mouthpiece (26) of the small frame (12), said chamfer (42) defining an angularly-oriented edge branching off from the area close to the shoulder (30) and ending in a basically sharpened portion with a small notch (44) facing said mouthpiece (26) and aligned, on one side, to the containment wall (24) carrying said articulation pin (34).
7. The clamp, according to any of the previous claims, from 3 to 6, **characterized in that** the shaped plate (32) comprises a notch (46) placed in a rear position compared to the chamfer (42) its profile integrating

a basically semicircular portion which is meant to combine with part of the rod (18) of the truck/s (12), said notch (46) being obtained in correspondence with the underlying shoulder (30).

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8. The clamp according to any of the previous claims, **characterized in that** the profile of the shaped notch forming the shoulder (30) has a basically semicircular profile with a shape complementary to a part of the pin (18) of the truck/s (12). 10
9. The clamp according to any of the previous claims, **characterized in that** the external curb (24), in the part from which the projection (38) integrating the seat for said elastic element (36) comes out, is raised both in its front and rear part near the same projection and forms respective stiffening sectors (40-40') which angularly develop upwards into opposite directions. 15
10. The clamp according to any of the previous claims, **characterized in that** said elastic element (36) is made of a helical spring. 20

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FIG. 1

