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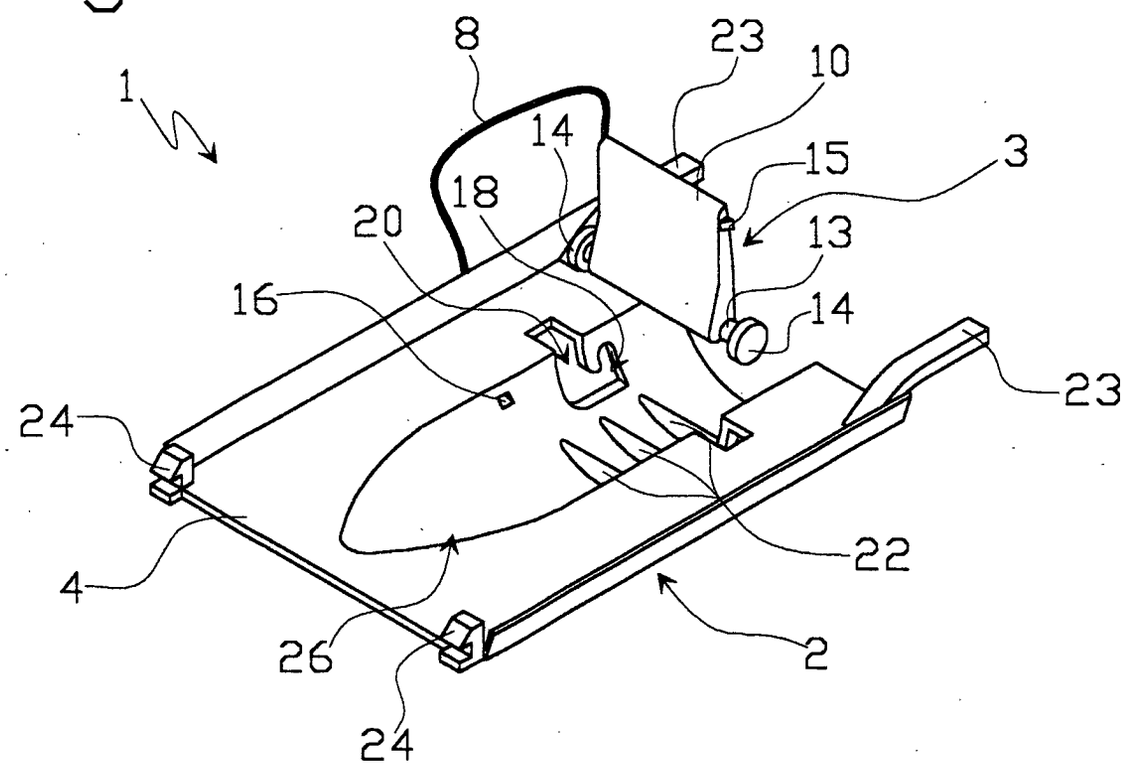
(54) Cam cable clamping device

(57) A cable clamping device has a body (2), having a base (4) and a seat (5) for receiving an electric cable (6); and a clamping member (3). The clamping member (3) has a cam profile, and is movable angularly, with respect to the body (2), between a first position, in which a cable (6) can be slid inside the seat (5), and a second position, in which the cable (6) is gripped against a wall (7) of the seat (5).

Fig. 1



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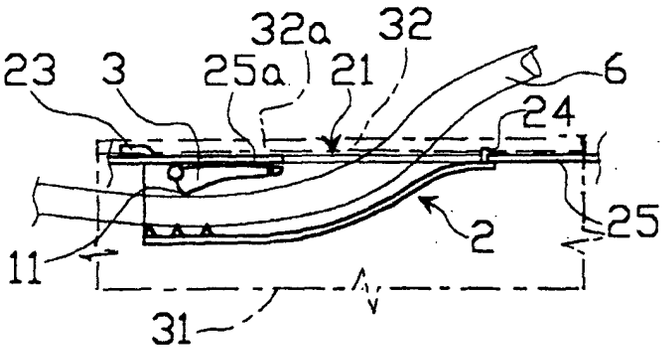


Fig. 3

Description

[0001] The present invention relates to a cam cable clamping device.

[0002] As is known, cable clamping devices are normally used to fix electric cables to electrically powered appliances or devices, and to secure the cables in their respective work positions and so prevent any accidental movement (for the sake of simplicity, reference is made herein, purely by way of example, to such devices as applied to electric household appliances).

[0003] Known cable clamping devices - which may be produced as separate parts or formed integrally with an electric user device (e.g. an electric gas-lighter) - normally comprise a body having a seat for housing the cable, and a clamping member of various shapes. For example, the clamping member may be cup-shaped with contoured edges matching the contour of the cable, or may comprise a bridge member.

[0004] For effective clamping, once the cable is inserted inside the seat, the clamping member is normally screwed to the body of the cable clamping device or to the casing of the electric household appliance, so as to grip the cable and prevent it from sliding.

[0005] The need for one or more screwing operations, however, constitutes a drawback of known devices, by making assembly of the device complicated and time-consuming, regardless of whether it is assembled manually or automatically.

[0006] Moreover, fixing the cable is particularly awkward when working in confined spaces.

[0007] It is an object of the present invention to provide a cable clamping device designed to eliminate the drawbacks of known devices, and which, in particular, is easy to fit and cheap and easy to produce.

[0008] According to the present invention, there is provided a cable clamping device comprising a body, having a base and a seat for receiving an electric cable; and a clamping member; characterized in that said clamping member has a cam profile, and is movable angularly, with respect to said body, between a first position, in which a cable can be slid inside said seat, and a second position, in which said cable is gripped against a wall of said seat.

[0009] Therefore, once the cable is inserted inside the seat, the clamping member need simply be moved from the first to the second position; the cable, in fact, being clamped using the cam profile of the clamping member, with no need for screws, thus greatly simplifying assembly of the cable clamping device according to the invention.

[0010] According to a further aspect of the invention, the cable clamping device comprises adjusting means for adjusting a distance between a clamping edge of said clamping member and a bottom wall of said seat, when said clamping member is in said second position.

[0011] As such, the same cable clamping device may advantageously be used for cables of widely differing diameters.

[0012] A number of non-limiting embodiments of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic, simplified rear view in perspective of a first embodiment of a cable clamping device in accordance with the present invention;
Figure 2 shows a schematic, simplified front view in perspective of the Figure 1 device;
Figure 3 shows a partly sectioned side view of the Figure 1 device and a possible variation in one operating position;
Figures 4 and 5 show partly sectioned side views of a further embodiment of a cable clamping device in accordance with the present invention and in two different operating positions;
Figure 6 shows a rear view of a detail in Figures 4 and 5.

[0013] With reference to Figures 1-3, a cable clamping device, indicated as a whole by 1, comprises a body 2; and a clamping member 3 preferably connected to body 2 by a strap 8.

[0014] Body 2 comprises a substantially flat base 4; and a seat 5 for receiving an electric cable 6, and defined by a preferably ogival or semicylindrical wall 7.

[0015] Clamping member 3 has a cam profile; is movable angularly, with respect to body 2, between a first position, in which electric cable 6 can be slid inside seat 5, and a second position, in which electric cable 6 is gripped against wall 7 of seat 5 (Figure 3); and is also selectively removable from body 2 inside seat 5.

[0016] More specifically, clamping member 3 comprises a tongue 10, which can be maneuvered to move clamping member 3 between the first and second position; and a clamping edge 11 for gripping electric cable 6 against wall 7 when clamping member 3 is in the second position.

[0017] Clamping member 3 also comprises, at one longitudinal end, two pins 13 projecting on opposite sides and having respective mushroom-shaped heads 14; and retaining teeth 15, which cooperate with respective slots 16 formed in wall 7 of seat 5, to click clamping member 3 into the second position.

[0018] Body 2 also comprises two guides 18 formed in opposite faces of wall 7 of seat 5, and each for receiving, in use, a respective pin 13. Guides 18 are substantially vertical, are accessible from the bottom by means of respective lead-in grooves 20, and are closed at the top.

[0019] A bottom portion of wall 7 is provided with contrasting ribs 22 extending crosswise to a principal development direction of seat 5, and for assisting clamping of electric cable 6 in the operating position.

[0020] Cable clamping device 1 is provided with fastening means comprising brackets 23 projecting from the front end of body 2, and fastening teeth 24 carried

at the rear end of body 2 and facing the opposite way to brackets 22. Brackets 23 and fastening teeth 24 provide for fixing cable clamping device 1 inside a housing 21 in an electric household appliance casing 25.

[0021] When cable clamping device 1 is assembled, clamping member 3 is fitted to body 2 by inserting pins 13 along lead-in guides 20 into respective guides 18, so that mushroom-shaped heads 14 of pins 13 rest on an outer surface (not shown) of wall 7, to prevent any transverse movement of clamping member 3 with respect to body 2, over and above the limited clearance allowed.

[0022] When clamping member 3 is in the first position, tongue 10 projects upwards from seat 5, and clamping edge 11 is substantially parallel to base 4 of body 2, so that electric cable 6 can be inserted freely and positioned easily inside seat 5.

[0023] Tongue 10 is then maneuvered to move clamping member into the second position (Figure 3), and is pressed to click retaining teeth 15 inside respective slots 16, so that clamping edge 11 faces wall 7 and inwards of seat 5, and cooperates with contrasting ribs 22 to grip and immobilize electric cable 16.

[0024] When clamping member 3 is in the second position, tongue 10 is housed inside seat 5, flush with a mouth 26 of the seat and substantially parallel to base 4 of body 2; and brackets 23 and fastening teeth 24 are so formed that, when body 2 is fixed inside housing 21, tongue 10 rests against and is immobilized by a contrasting portion 25a of casing 25, and clamping member 3 is maintained in the second position, thus preventing accidental release of cable clamping device 1 and, therefore, withdrawal of electric cable 6 from its seat.

[0025] A second embodiment of the invention will be described with reference to Figures 4-6, in which any parts identical with those already described are indicated using the same reference numbers.

[0026] In this embodiment, a cable clamping device 1' differs from cable clamping device 1 in Figures 1-3 by comprising a first and a second number of notches 27, 28 formed along respective edges of guides 18' open at the top to permit insertion of clamping member 3; and catch means carried by clamping member 3 and defined, for example, by two adjusting teeth 30 projecting from pins 13 and substantially parallel to the longitudinal axis of clamping member 3. In use, adjusting teeth 30 selectively engage a first and second notch, in first and second numbers of notches 27, 28 respectively, located at the same distance from the bottom wall of seat 5.

[0027] In other words, the numbers of notches 27, 28 and adjusting teeth 30 form an adjusting device for adjusting the distance between clamping member 3 (in particular, clamping edge 11) and the bottom wall of seat 5, when clamping member 3 is in the second position, so as to insert and clamp inside seat 5 electric cables 6', 6" of different diameters, as shown schematically in Figures 4 and 5.

[0028] Clearly, changes may be made to the cable clamping device as described herein without, however, departing from the scope of the present invention. In particular, the cable clamping device may be formed integrally with an electric user device, e.g. an electric gaslighter; in which case, as shown by the dash line in Figure 3, the cable clamping device is enclosed in a case 31 with a lid 32. When lid 32 is closed, the tongue of the clamping member rests against and is maintained in the second position by a contrasting portion 32a of lid 32, thus preventing accidental release of the cable.

[0029] Changes may also be made to the device for adjusting the distance between the clamping member and the bottom wall of the seat.

Claims

1. A cable clamping device comprising a body (2), having a base (4) and a seat (5) for receiving an electric cable (6); and a clamping member (3); **characterized in that** said clamping member (3) has a cam profile, and is movable angularly, with respect to said body (2), between a first position, in which a cable (6) can be slid inside said seat (5), and a second position, in which said cable (6) is gripped against a wall (7) of said seat (5).

2. A device as claimed in Claim 1, **characterized in that** said clamping member (3) comprises a clamping edge (11) for gripping said cable (6) when said clamping member (3) is in said second position.

3. A device as claimed in Claim 1 or 2, **characterized by** comprising click-on retaining means (15, 16) for retaining said clamping member (3) in said second position.

4. A device as claimed in any one of the foregoing Claims, **characterized in that** said clamping member (3) is connected to said body (2) by a strap (8), and is selectively removable from said body (2) inside said seat (5).

5. A device as claimed in any one of the foregoing Claims, **characterized in that** said clamping member (3) comprises, at one longitudinal end, two pins (13) projecting laterally on opposite sides; and **in that** said body (2) comprises two guides (18; 18'), each for receiving, in use, a respective one of said pins (13).

6. A device as claimed in Claim 5, **characterized in that** said pins (13) have respective mushroom-shaped heads (14), and are inserted inside said guides (18; 18') along respective lead-in grooves (20).

7. A device as claimed in any one of the foregoing Claims, **characterized by** comprising adjusting

means (27, 28, 30) for adjusting a distance between said clamping edge (11) and a bottom portion of said wall (7), when said clamping member (3) is in said second position.

8. A device as claimed in Claims 5 and 7, **characterized in that** said adjusting means (27, 28, 30) comprise a first and a second number of notches (27, 28) formed along respective edges of said guides (18'), and catch means (30) carried by said clamping member (3); said catch means (30) selectively engaging a first and a second notch, in said first and second number of notches (27, 28) respectively, located at the same distance from said bottom portion of said wall (7).

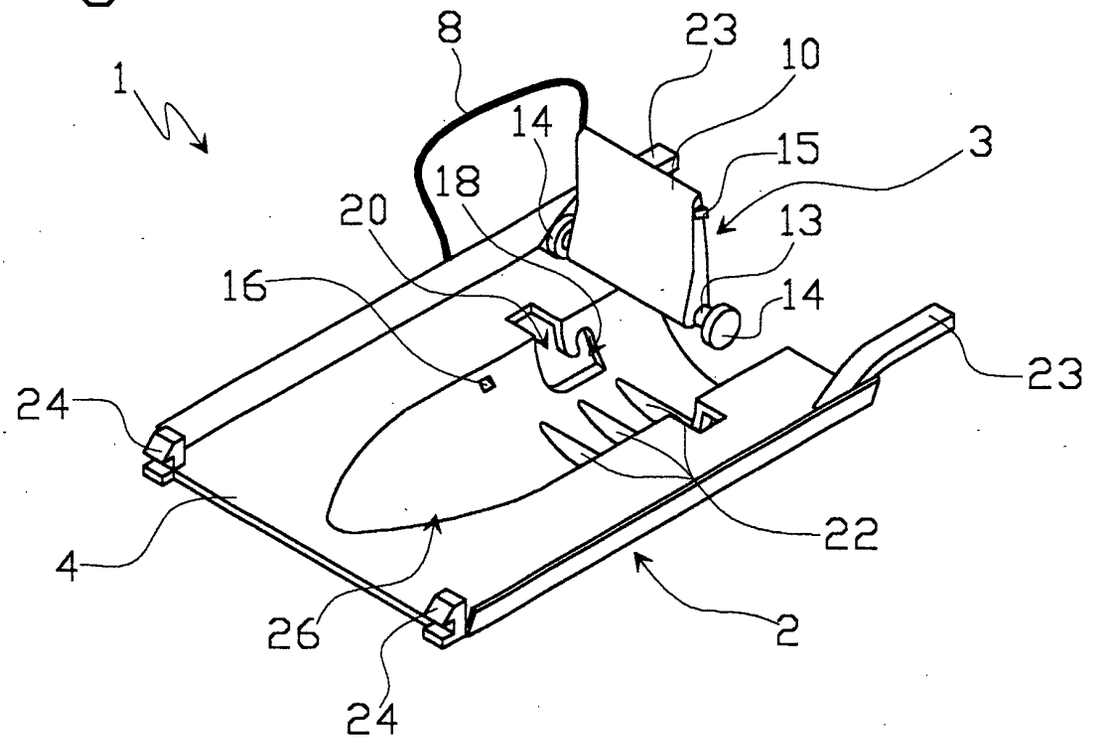
9. A device as claimed in Claim 8, **characterized in that** said catch means (30) comprise two adjusting teeth projecting from said pins (13) and substantially parallel to a longitudinal axis of said clamping member (3).

10. A device as claimed in any one of the foregoing Claims, **characterized in that** said clamping member (3) comprises a tongue (10), which can be maneuvered to move said clamping member (3) between said first and said second position; said tongue (10) being housed inside said seat (5), flush with a mouth (26) of the seat and substantially parallel to said base (4) of said body (2), when said clamping member (3) is in said second position.

11. A device as claimed in Claim 10, **characterized by** comprising fastening means (23, 24) for fixing said body (2) inside a housing (21) in a casing (25) of an electric household appliance; said fastening means (23, 24) being so formed that, when said body (2) is fixed to said casing (25), said tongue (10) rests against a contrasting portion (25a) of said casing (25).

12. An electric device comprising a case (31) with a lid (32); and an integral cable clamping device (1) housed inside said case (31); **characterized in that** said cable clamping device (1) is formed as claimed in Claim 10; and **in that**, when said lid (32) is closed, said tongue rests against a contrasting portion (32a) of said lid (32).

Fig. 1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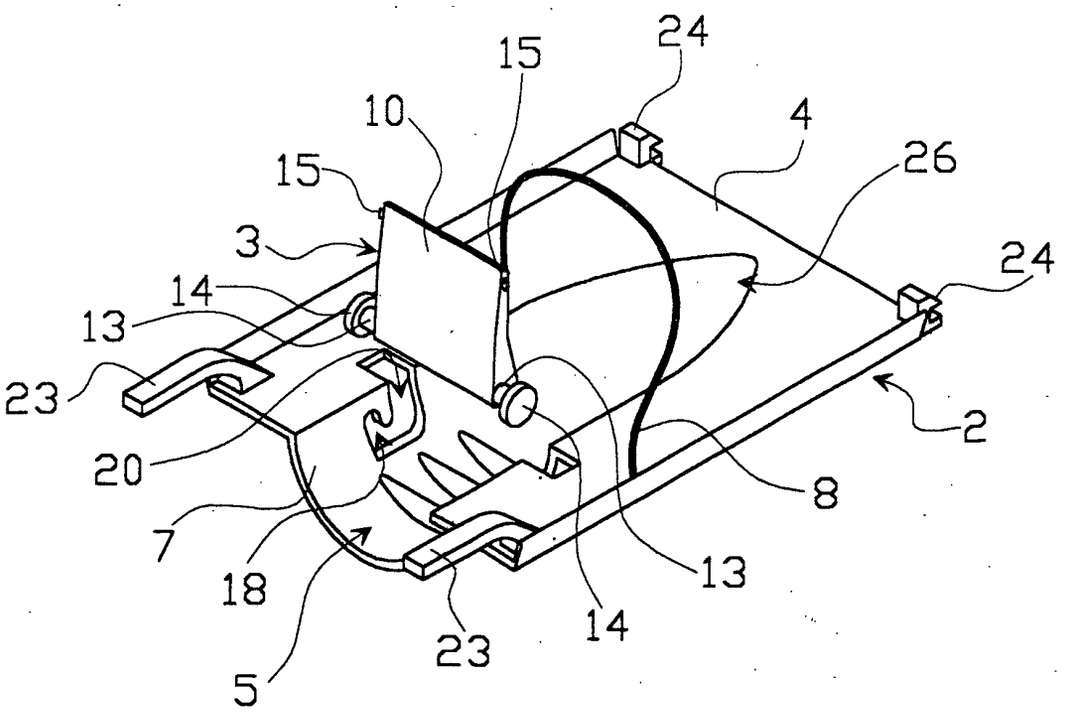
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Fig. 2

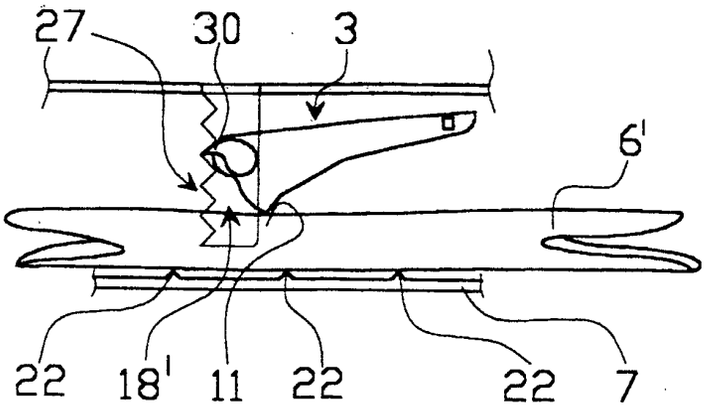

Fig. 4

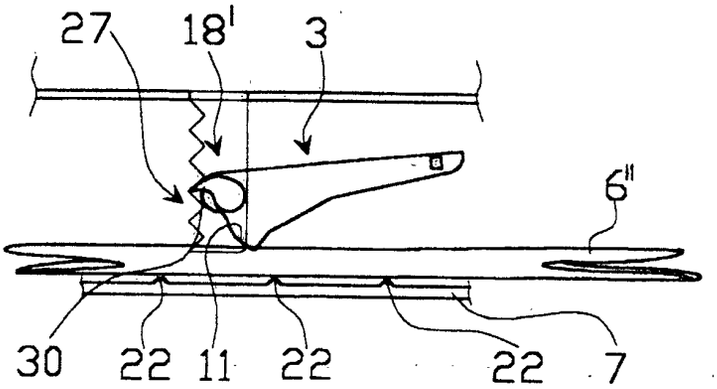

Fig. 5

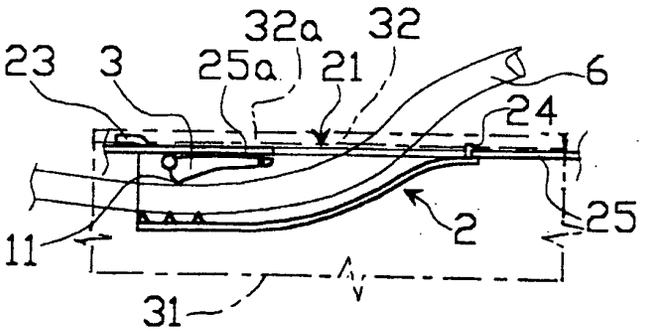

Fig. 3

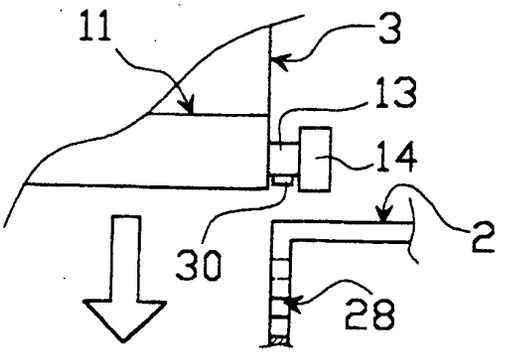

Fig. 6