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(54) Clip for anchoring clamps to terminals.

(57) Clip for anchoring eyelet clamps (10) to terminal bars (14) of a machine or electric equipment or device comprised of a punched and double folded metallic resilient strip, consisting in a body (42) from which a downwardly turned leg (44), two parallel upwardly turned legs (50, 52) and a diasgonally lifted anchoring tang (54), to engage a through hole (56) of the terminal bar (14), depart, needing the tang (54) the intervention of a specific tool to be disengaged from the hole (56) of the terminal bar (14).

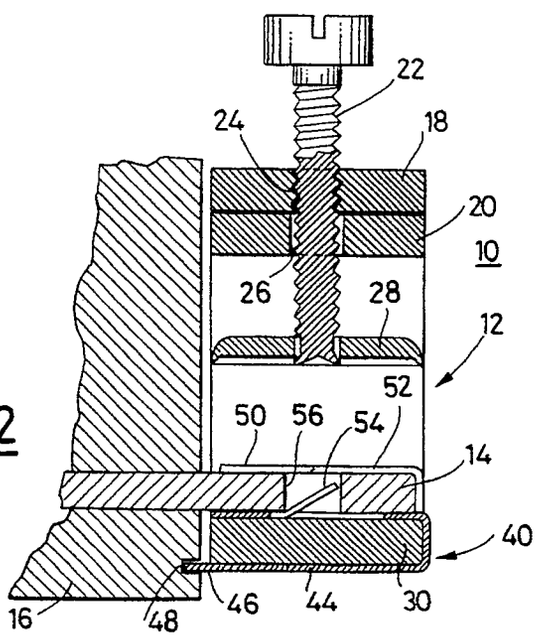

Fig.2

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The present invention pertains to a clip anchoring an eyelet terminal clamp to a terminal bar of an electric device or machine, being said clamp provided to receive and fasten external supply conductors allowing to said clip to anchor in simple and fast way the eyelet terminal to the terminal bar.

It is well known that the clamp of electric machines and devices must be provided with means to fasten cables thereto. Should the currents through said terminals be high (from tens to hundreds of amperes) there is the need to use clamps surely fastening with the lowest contact resistance the possible said cables to said terminals.

The clamps can be manufactured integral with the terminals themselves, what allows particularly safe clamping and connection, but implies a very high cost, only justifiable for high cost machines and devices.

Alternatively, the clamps can be manufactured separated from the terminals at a quite lower cost, but in such a case a particularly careful manufacture is needed to avoid possible poor connections and consequent overheatings.

One of the most common clamps is the socalled "eyelet" clamp comprised of a sleeve shaped metal member provided with threaded clamping means allowing to clamp inside said sleeve a cable to be connected thereto.

The problem connected with this eyelet clamps is their mobility with respect to the terminals, with the risk of a loss, happening when said clamps are loosed.

A partial solution for this problem is to provide an insulating basis, bearing said terminals, with bracket protrusions on which can abut said clamps when they are loosed. Said solution is only partial because can assure a gravity support of the clamps on said brackets which, for its shape is rather problematic.

It could be possible to remedy this fact by conforming said bracket protrusions with seats forcefully housing said clamps, but this implies higher expenses and larger size of the insulating basis which not always are permitted.

It is an object of the present invention to provide a resilient and conductive material clip maintaining a clamp anchored to a terminal when is loosed, but able to clear it through a specific intervention on a particular engagement of said clip between said clamp and said terminal.

A clip according to the present invention consists of a metallic stiff and resilient structure provided with two each oter opposite bends, of which a first one spans a terminal bar and a second one spans an eyelet clamp, and with a lifted tang engaging a bore through said bar and therefrom disengageable just on will through the use of a specific tool, as for example a screwdriver.

Particularly, said clip is comprised of a stiff and resilient metallic strip made of materials such as bronze or beryllium copper, so punched to have a first integral area, to be put against a terminal bar, followed by at least a finger folded according to a first direction to span said terminal bar and another finger folded in opposed direction to span a side of said eyelet clamp, being the internal area abutting against the terminal bar provided with a liftable tang to be engaged in a hole through said terminal bar.

Preferably, said clip on a side shows two fingers or legs spanning the terminal bar and on the other side a finger spanning a side of the eyelet clamp.

More preferably, said clip is provided in the finger spanning a side of the clamp with a further protrusion engaging a seat in an insulating basis of the terminal to add a bearing point to said finger and make safer the anchoring operation of the clamp to the terminal.

According to a specifical embodiment of the present invention, an eyelet clamp engaged with said clip is comprised of a metallic strip, folded to form a first frame, having a first side comprised of two superimposed ends of said strip, crossed by a fastening screw of the clamp and a second side opposed to the first one anchored by said clip to an electric machine or device terminal, the clip retaining the clamp against the terminal and being clearable through the operation of a tang engaged in a hole of said terminal.

The features and the advantages of the present invention will be specified in the concluding part of this disclosure, while further features and advantages of an embodiment, herebelow given in a not limiting way, will be depicted in the following detailed description provided with the enclosed drawings, wherein:

- figure 1 is a front view of an eyelet clamp anchored to a terminal by means of a clip according to the present invention;
- figure 2 is a sectional view along a line 2-2 of the same clamp depicted in figure 1;
- figure 3 is a perspective detailed view of a clip according to the present invention.

Considering specifically the figures 1 and 2, an eyelet clamp 10 is seen as comprising a rectangular window 12, obtained by folding a metal strip, which surrounds a terminal bar 14 coming out from an insulating basis 16. Said window 12 has two superimposed side 18 and 20 through which pass a screw 22 whose threaded stem is engaged in a threaded hole 24 crossing the upper side 18 of the window 12, while the lower side 20 has a not threaded larger hole 26 crossed, without be engaged, by the screw 22. Said screw ends with a fastening plate 28 having the task to fasten a

possible cable against the terminal 14, assuring connection therewith.

The window 12 has a side 30, opposed to the superimposed sides 18 and 20, passing around the terminal 14 and therewith anchored by means of a clip 40 according to the present invention.

Considering in addition the figure 3, the clip 40 according to the present invention is comprised of a punched and double folded metallic strip from which protrude a downwards bent leg 44, for engaging the side 30 of the window 12, possibly ending with a restricted area 46 to be engaged in a support seat 48 into the insulating basis 16 (figures 1 and 2), and two legs 50 and 52 upwards bent, for engaging the terminal bar 14.

From the body 42 protrudes also an inclined tang 54 insetrable in a through hole 56 in the terminal bar 14, preventing unwanted extraction of the eyelet clamp 10from the terminal bar 14, because it is impossible to extract the clip 40, being said tang able to be disengaged from said throug hole 56 just by means of the operation of a tool, as a screwdriver, lowering said tang 54 making it to pass under the bar 14.

The tang 54 is provided to be possibly lowered just to clear the clip 40 from the bar 14 and allow the replacement of the clip 40 itself or the whole eyelet clamp 10, should it be damaged.

The operation of the present invention is the following one:
when it is intended to fasten an eyelet clamp 10 to a terminal bar 14, a clip 40 is grasped and inserted around the side 30 of the clamp window 12 with the leg 44 thereof engaging said side. Then the assembly of the window 12 and clip 40, inserted around the side 30, is taken and iserted around the terminal bar 14 in such a way that the two legs 50 and 52 engage said bar 14 and the tang 54 is flattened, passing under the bar 14, meeting the hole 56 through the bar, getting rid and getting the orientation depicted in figures 2 and 3, so that said tang 54 tends to engage the walls of the hole 56 at any attempt to extract the clip 40 from the terminal bar 14, making impossible to disconnect the eyelet clamp 10 from the bar 14, unless an interrvention through a tool is made on the tang to lower it, permitting the extraction of the clip 40 from the bar 14. Once extracted from the bar 14, the clip 40 is esaslily extracted from the window 12 of the clamp 10, allowing any clamp or clip substitution in case of damages thereto.

What has been hereabove disclosed is a not limiting embodiment of the present invention and it will be obvious to people skilled in the art to find equivalent means in manufacturing said clip, which must be considered as all here covered.

For example, according to a less preferred embodiment, the leg 44 could be upwards folded for engaging the bar 14 and the legs 50 and 52 downwards folded for engaging the side 30 of the window 12, being in this case sufficient to add a hole in the leg 44, coincident with the hole 56 of the bar 14, for allowing the insertion of a tool for the disengagment of the tang 54.

Claims

1. Clip for anchoring to terminal bars 14 eyelet clamps (10) comprised of a window (12) of folded metallic strip, characterized by a stiff and resilient sheet structure provided with two bends folded in opposite directions, of which one spans a terminal bar (14) and the other spans an eyelet clamp (10), keeping anchored said eyelet clamp (10) against said terminal bar (14), and with a raised tang (54) engaged in a through hole (56) pierced into said bar (14) and from this disengageable just on will through the use of a suitable tool.

2. Clip for anchoring clamps to terminal bars, as in claim 1, characterized in that is comprised by a stiff and resilient metallic strip made of materials, such as bronze or beryllium coppper, so punched to have a first integral area (42), to be put against a terminal bar (14), followed by at least a finger (50 or 52) folded in a first direction to span said terminal bar (14) and by another finger (44) folded in opposite direction to span a side of said eyelet clamp (10), the integral area against the terminal bar (14) being provided with a liftable tang (54) to be engaged in a through hole (56) pierced through said terminal bar (14).

3. Clip for anchoring clamps to terminal bars, as in claim 2, characterized in that on a side has two fingers or legs (50, 52) spanning the terminal bar (14) and on another side a finger spanning a side (30) of the eyelet clamp (10).

4. Clip for anchoring clamps to terminal bars, as in claim 3, characterized by having in the finger (44), spanning a side of the clamp (10), a further protrusion (46) to engage a seat (48) of an insulating base (16) of the terminal bar (14) for adding a support point to said protrusion (44) in order to have a safer anchoring action of the clamp (10 to the treminal bar (14).

5. Clip for anchoring clamps to terminal bars, as in claims 1 to 4, characterized in that an eyelet clamp (10) engaged with said clip is comprised of a metal strip, folded to form a first window (12) with superimposed ends of said strip, crossed by a screw (22) fastening the clamp

and a second side (30) opposed to the first one anchored by said clip to a terminal bar (14) and being clearable through the action on a tang (54) engaged in a through hole (56) of said terminal bar (14).

Tav. I

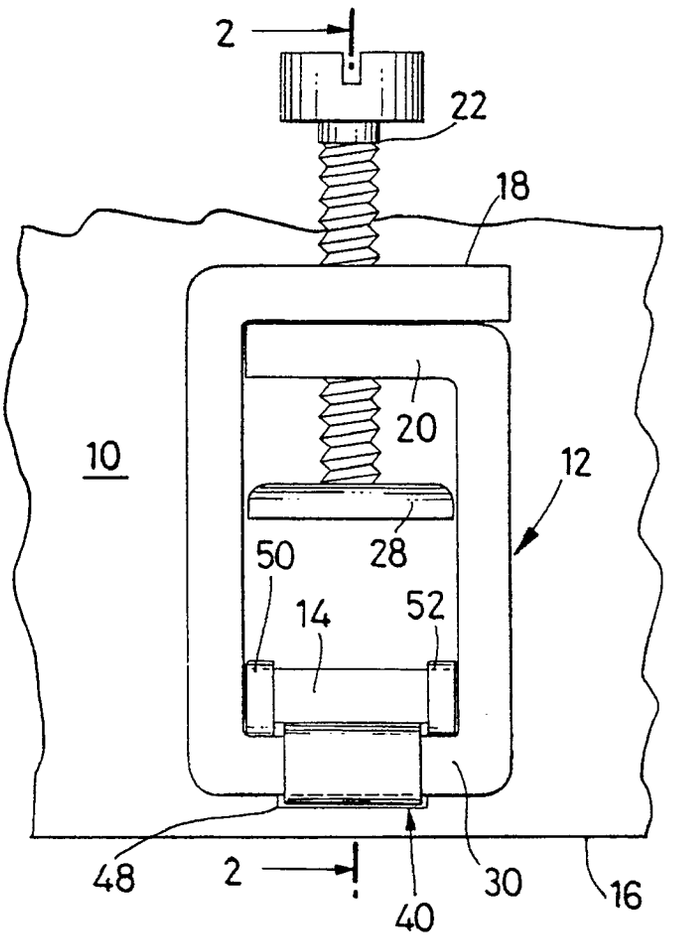

Fig. 1

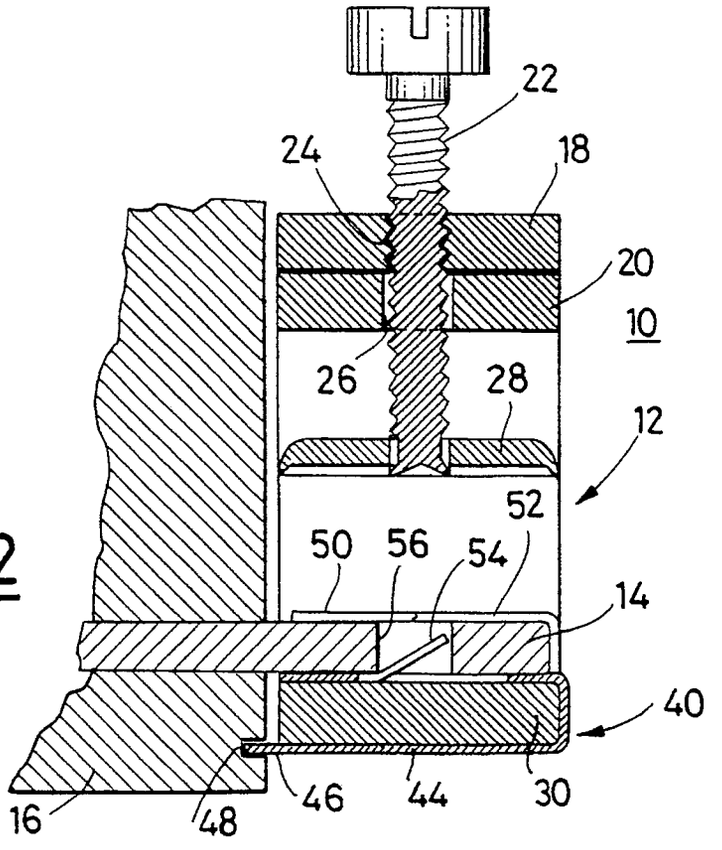

Fig. 2

Tav. II

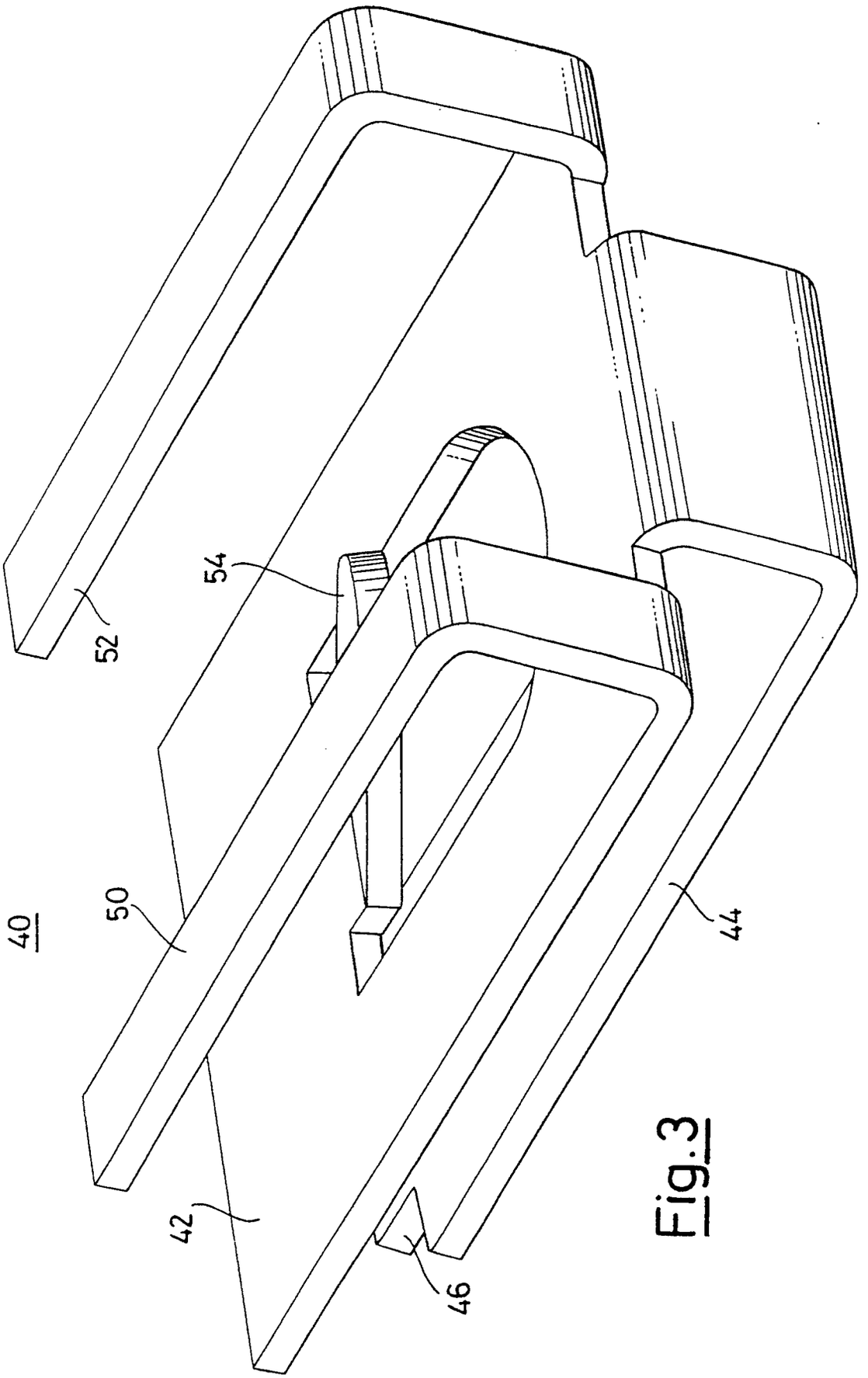

Fig.3