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(54) A RESET MECHANISM FOR A MANUAL ALARM DEVICE AND A MANUAL ALARM DEVICE WITH THE SAME

RÜCKSTELLMECHANISMUS FÜR EINEN MANUELLEN ALARMSCHALTER UND MANUELLER ALARMSCHALTER MIT EINEM SOLCHEN MECHANISMUS

MÉCANISME DE DÉSARMEMENT D'UN DISPOSITIF D'ALARME MANUEL ET DISPOSITIF D'ALARME MANUEL COMPORTANT UN TEL MÉCANISME

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(56) References cited:
GB-A- 2 401 992
GB-A- 2 456 327
US-A- 3 054 869
US-A- 4 262 180
US-A- 4 404 549

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Description

Technical field

[0001] The present invention relates to a reset mechanism for a manual alarm device and, in particular, to a reset mechanism for a manual alarm device with reset protection functions; and the present invention also relates to a manual alarm device with the above reset mechanism.

Prior Art

[0002] GB 2 401 992 A discloses a call point having a chassis, a displaceable element movable between set and activated positions so as to trigger an alarm, a flag to provide a visual indication of such activation and a cover. A key is used to reset the element back to its original position. The key comprises a pair of resilient limbs which are able to flex away from each other upon introduction of the key into a keyhole, with a somewhat hexagonal guide element assisting in this splaying separation. The key is also provided with a pair of shoulder-like catch formations which, once the key is fully introduced, engage with a pair of suitably configured engagement elements provided on the cover. This engagement allows the key to be used to pull the cover away from the chassis, subsequent to which the key may be removed.

Background art

[0003] Manual alarm devices are a category of alarm devices commonly used for fire and other dangerous situations, for example, when a fire occurs, an operator presses an operating element of a manual alarm device to sound an alarm immediately. Alarm devices can be divided into disposable manual alarm devices and reusable manual alarm devices. The former ones are not provided with a reset mechanism, so they have relatively high costs and are not easily serviceable; and the latter ones have reset mechanisms, and after sounding an alarm an operator can activate the reset mechanism to return the manual alarm device to the original monitoring state.

[0004] Currently, the reset mechanisms are mainly divided into two categories: one of them uses a reset tool to make an operating panel reset directly, and since this category of solution is simple in structure and low in cost, it has got wider applications. For example, in the Chinese patent 200956321Y a reset mechanism for a manual fire alarm button, which reset mechanism comprises an internal shaft, a shaft bushing and a thumbwheel concentrically sleeved together, is disclosed and in the device the inner shaft can be turned to reset the operating panel by inserting a general-use tool, such as, a screw driver, a nail clipper, etc., into a tool groove. However, according to the provisions of Chinese National Standards GB19880-2005 and European Standards EN54-11, manual alarm devices have to use a specific mechanism to reset, and therefore this kind of reset method cannot satisfy the relevant standards properly. The other kind of reset method uses a mechanical drive mechanism to achieve the reset of an alarm device indirectly, but such a reset mechanism generally has a complicated structure and relatively high manufacturing costs.

Contents of the invention

[0005] One object of the present invention is to provide a reset mechanism for a manual alarm device, the reset mechanism comprising a reset key to ensure that the manual alarm mechanism can achieve the reset only when this special reset key is inserted therein, and the reset mechanism is simple in structure and low in costs.

[0006] Another object of the present invention is to provide a manual alarm device which utilizes the reset mechanism of the present invention, the manual alarm mechanism can achieve the reset only when this special reset key is inserted therein, and the reset mechanism is simple in structure and low in costs.

[0007] In order to achieve the above objects, the present invention provides a reset mechanism for a manual alarm device comprising a base with a bottom face and an upper cover which can cover the base, and the base and the upper cover can be viewed as the outer shell of the manual alarm device, said reset mechanism comprises: a reset key with an insertion part thereon; an upper insertion aperture disposed on the upper cover for the reset key to be inserted therein; a base insertion aperture disposed on the base for the reset key to be inserted therein; a stop block connected pivotably onto the base, which stop block can pivot about a shaft which is parallel with the base; and a pair of locking elements disposed on the upper cover which can clamp the stop block and can be pushed by the reset key to release the stop block clamped thereby.

[0008] In another particular embodiment of the reset mechanism for a manual alarm device, the locking elements are elastic elements which have a cantilever structure.

[0009] In yet another particular embodiment of the reset mechanism for a manual alarm device of the present invention, the insertion part of the reset key is formed by two columns parallel with each other, and here two upper cover insertion apertures can also be provided in a way adapted to the cross-sectional shape of the two columns in the reset key.

[0010] In the present invention, a manual alarm device which comprises a base with a bottom face, an upper cover which can cover the base, an operating element disposed in the receiving space formed by the base and the upper cover, and a reset key insertable into the receiving space through the upper cover and the base for pushing the operating element to reset is provided. A base insertion aperture is disposed on the base for the reset key to be inserted therein; an upper cover insert is disposed on the upper cover for the reset key to be inserted therein; a stop block is connected pivotably to the base, which stop block can pivot about a shaft which is parallel with the base; and a pair of locking elements are disposed on the upper cover, which locking elements can clamp the stop block and the reset key can push the locking elements to release the stop block clamped thereby.

[0011] In another particular embodiment of the manual alarm device of the present invention, the locking elements are elastic elements which have a cantilever structure.

[0012] In yet another particular embodiment of the manual alarm device of the present invention, the insertion part of the reset key is formed by two columns parallel with each other, and here two upper cover insertion apertures can also be provided in a way adapted to the cross-sectional shape of the two columns in the reset key.

[0013] By way of the cooperation between the locking elements and the stop block, etc., it can prevent objects other than the reset key from pushing the operating element to reset, and this increases the safety factor of the manual alarm device. Furthermore, the reset mechanism for the manual alarm device is simple in structure and low in costs, and there is no need for any further mechanical drive device, thus saving manufacturing costs.

Brief description of accompanying drawings

[0014] The following drawings are only intended for illustrative description and explanation of the present invention, without limiting the scope of the present invention. In the drawings:

Fig. 1 is an exploded perspective view for illustrating a reset mechanism for a manual alarm device of the present invention;
Fig. 2 is an enlarged partial cross-sectional view after the assembly of all the parts shown in Fig. 1; and
Figs. 3 and 4 illustrate the case when a reset key is inserted.

Description of the symbols:

[0015]

10: base	12: base insertion aperture	13: stop block
14: bottom face		
60: upper cover	62: upper cover insertion aperture	
63: locking element		
40: operating element	70: reset key	
72: insertion part	80: receiving space	

Exemplary embodiments

[0016] For the sake of understanding more clearly the technical features, objects and effects of the present invention, a particular embodiment of the present invention is now described with reference to the accompanying drawings. In which, the same parts use the same symbols.

[0017] Fig. 1 shows a main structure of a manual alarm device, which comprises a base 10 with a bottom face 14 (as shown in Fig. 2), an operating element 40 and an upper cover 60. A circuit panel for which an alarm is to be made is disposed in the base 10 (not shown in the figure), the upper cover 60 can be disposed to cover the base 10, and the operating element 40 and other parts of the manual alarm device are disposed in a receiving space 80 formed by the upper cover 60 and the base 10.

[0018] The alarm device is normally in the monitoring state, and when a dangerous situation occurs, an operator presses the operating element 40 along the pressing direction shown in Fig. 1, making the operating element 40 move along the alarm direction, so as to sound an alarm; and after the dangerous situation has ended, if it needs to reset the alarm device, an insertion part 72 of a reset key 70 can enter along the reset direction shown in the figure into the receiving space 80 through the upper cover insertion aperture 62 and the base insertion aperture 12, so as to push the operating element 40 back to the original position (with the detailed process being described below).

[0019] Fig. 2 shows an enlarged partial cross-sectional schematic view after the assembly of the manual alarm device shown in Fig. 1, in which it only shows the portion relevant for the reset key to be inserted therein. As shown in the figure,

a stop block 13 is disposed on the base 10, with the stop block 13 being connected pivotably to the base 10 and pivotably about its pivoting shaft (not shown in the figure) which is parallel with the bottom face 14. A pair of locking elements 63 are disposed on the upper cover 60, and when the reset key is not inserted therein, the locking elements 63 clamp the stop block 13, making it unmovable.

[0020] Referring to Fig. 3, the base 10 has the base insertion aperture 12 disposed thereon, and after the reset key 70 is inserted therein through the upper cover insertion aperture (not shown in the figure) and the base insertion aperture 12, the reset key 70 pushes the locking elements 63 along the arrow direction shown in Fig. 2 away to the two sides, so as to release the clamping of the stop block 13 by the locking elements 63. In this way, as shown in Fig. 4, the stop block 13 can pivot about its pivoting shaft, leaving a space for the reset key to be inserted therein to facilitate the reset key in continuing to move forward until pushing the operating element 40 to reset. Under normal circumstances, the stop block 13 is clamped by the locking elements 63 and is not movable, and accordingly, when any object other than the reset key is inserted therein, this other object will not be able to pass the stop block 13 so as to push the operating element 40.

[0021] In another particular embodiment of the reset mechanism for a manual alarm device, the locking elements 63 can be cantilevers with elasticity. The width of the insertion part 72 of the reset key 70 is adapted to the installation distance between the two locking elements 63 such that, after the reset key 70 is inserted therein, the locking elements 63 will be pressed and pushed to make them leave the abovementioned restricted position. After the reset key 70 is withdrawn, the locking elements 63 are no longer subject to the pushing of the reset key 70, and due to the action of their own elasticity, the locking elements 63 will return to the initial restricted position.

[0022] In another particular embodiment of the reset mechanism for a manual alarm device, the reset key can have a relatively wide insertion part, as shown in Fig. 1, by using two columns parallel with each other. If the insertion parts 72 of the reset key are two columns parallel with each other, then the upper cover insertion aperture 62 can also have the shape which is adapted thereto.

[0023] Described above in detail are the reset mechanisms for a manual alarm device, and since the cases of employing the abovementioned reset mechanisms for manual alarm devices correspond to the contents mentioned above, they will not be described redundantly one by one.

[0024] As illustrated above, the manual alarm device of the present invention ensures that only a specific tool can reset the operating element by way of the cooperation between the locking elements and the stop block, and this increases the safety factor of the manual alarm device and is in conformity with the requirements of the relevant standards. Furthermore, the reset key protection device for the manual alarm device is simple in structure and low in costs, and there is no need to fit a mechanical drive device, thus saving manufacturing costs.

[0025] Described above are merely schematic particular embodiments of the present invention, which are not intended to limit the scope of the present invention. Any equivalent changes, amendments and combinations made by those skilled in the art without departing from the spirit and principle of the present invention should all belong to the scope of protection for the present invention.

Claims

1. A reset mechanism for a manual alarm device, wherein said manual alarm device comprises a base (10) with a bottom face (14) and an upper cover (60) capable of covering the base (10);
   wherein said reset mechanism comprises:

   a reset key (70);
   an upper cover insertion aperture (62) disposed on said upper cover for said reset key (70) to be inserted therein;
   a base insertion aperture (12) disposed on said base (10) for said reset key (70) to be inserted therein;
   a stop block (13) connected pivotably to said base (10), with the stop block (13) being capable of pivoting about a shaft parallel with said bottom face; and
   a pair of locking elements (63) disposed on said upper cover (60) and being capable of clamping said stop block (13), with said reset key (70) being capable of pushing said locking elements (63) to release said stop block (13) clamped thereby.

2. The reset mechanism for a manual alarm device as claimed in claim 1, wherein said locking elements (63) are elastic cantilevers.

3. The reset mechanism for a manual alarm device as claimed in claim 1, wherein said reset key (70) has an insertion part in the shape of two parallel columns.

4. The reset mechanism for a manual alarm device as claimed in claim 3, wherein there are two of said upper cover insertion apertures (62), and the upper cover insertion apertures (62) are adapted to the cross-sectional shape of said columns of the reset key (70).

5. A manual alarm device, comprising:

a base (10) with a bottom face;
an upper cover (60) capable of covering said base (10);
an operating element (40) disposed in a receiving space (80) formed by said base (10) and said upper cover (60); and
a reset key which can be inserted into said receiving space (80) via said upper cover (60) and said base for pushing said operating element (40) to reset;
wherein
a base insertion aperture (12) is disposed on said base (10) for said reset key (70) to be inserted therein;
an upper cover insertion aperture (62) is disposed on said upper cover (60) for said reset key (70) to be inserted therein;
a stop block (13) is connected pivotably to said base (10), which stop block (13) can pivot about a shaft that is parallel with said bottom face; and
a pair of locking elements (63) are disposed on said upper cover (60) and are capable of clamping said stop block (13), with said reset key (70) being capable of pushing said locking elements (63) to release said stop block (13) clamped thereby.

6. The manual alarm device as claimed in claim 5, wherein said locking elements (63) are elastic cantilevers.

7. The manual alarm device as claimed in claim 5, wherein said reset key (70) has an insertion part (72) in the shape of two parallel columns.

8. The manual alarm device as claimed in claim 7, wherein there are two of said upper cover insertion apertures (62), and the upper cover insertion apertures (62) are adapted to the cross-sectional shape of said columns of the reset key (70).

Patentansprüche

1. Rückstellmechanismus für eine manuelle Alarmvorrichtung, wobei die manuelle Alarmvorrichtung ein Unterteil (10) mit einer Bodenfläche (14) und einer oberen Abdeckung (60), die in der Lage ist, das Unterteil (10) abzudecken, aufweist;
wobei der Rückstellmechanismus aufweist:

einen Rückstellschlüssel (70);
eine Einsetzöffnung (62) der oberen Abdeckung, die an der oberen Abdeckung dafür angeordnet ist, dass der Rückstellschlüssel (70) in diese eingesetzt wird;
eine Einsetzöffnung (12) des Unterteils, die an dem Unterteil (10) dafür angeordnet ist, dass der Rückstellschlüssel (70) in dieses eingesetzt wird;
einen Anschlagblock (13), der schwenkbar mit dem Unterteil (10) verbunden ist, wobei der Anschlagblock (13) in der Lage ist, um eine zu der Bodenfläche parallele Welle zu schwenken; und
ein Paar Verriegelungselemente (63), die an der oberen Abdeckung (60) angeordnet sind und in der Lage sind, den Anschlagblock (13) festzuklemmen, wobei der Rückstellschlüssel (70) in der Lage ist, die Verriegelungselemente (63) zu verschieben, um den durch sie festgeklemmten Anschlagblock (13) zu lösen.

2. Rückstellmechanismus für eine manuelle Alarmvorrichtung nach Anspruch 1, wobei die Verriegelungselemente (63) elastische Kragarme sind.

3. Rückstellmechanismus für eine manuelle Alarmvorrichtung nach Anspruch 1, wobei der Rückstellschlüssel (70) ein Einsetzteil in Gestalt von zwei parallelen Säulen aufweist.

4. Rückstellmechanismus für eine manuelle Alarmvorrichtung nach Anspruch 3, wobei zwei von den Einsetzöffnungen (62) der oberen Abdeckung vorhanden sind und die Einsetzöffnungen (62) der oberen Abdeckung an die Quer-

schnittsform der Säulen des Rückstellschlüssels (70) angepasst sind.

5. Manuelle Alarmvorrichtung, welche aufweist:

ein Unterteil (10) mit einer Bodenfläche;
eine obere Abdeckung (60), die in der Lage ist, das Unterteil (10) abzudecken;
ein Betätigungselement (40), das in einem Aufnahmeraum (80) angeordnet ist, der durch das Unterteil (10) und die obere Abdeckung (60) gebildet wird; und
eine Rückstelltaste, welche über die obere Abdeckung (60) und das Unterteil in den Aufnahmeraum (80) eingesetzt werden kann, um das Betätigungselement (40) zum Rückstellen zu verschieben;
wobei
eine Einsetzöffnung (12) des Unterteils an dem Unterteil (10) dafür angeordnet ist, dass die Rückstelltaste (70) in dieses eingesetzt wird;
eine Einsetzöffnung (62) der oberen Abdeckung an der oberen Abdeckung (60) dafür angeordnet ist, dass der Rückstellschlüssel (70) in diese eingesetzt wird;
ein Anschlagblock (13) schwenkbar mit dem Unterteil (10) verbunden ist, wobei der Anschlagblock (13) um eine Welle schwenken kann, die zu der Bodenfläche parallel ist; und
ein Paar Verriegelungselemente (63) an der oberen Abdeckung (60) angeordnet sind und in der Lage sind, den Anschlagblock (13) festzuklemmen, wobei der Rückstellschlüssel (70) in der Lage ist, die Verriegelungselemente (63) zu verschieben, um den durch sie festgeklemmten Anschlagblock (13) zu lösen.

6. Manuelle Alarmvorrichtung nach Anspruch 5, wobei die Verriegelungselemente (63) elastische Kragarme sind.

7. Manuelle Alarmvorrichtung nach Anspruch 5, wobei der Rückstellschlüssel (70) ein Einsetzteil (72) in Gestalt von zwei parallelen Säulen aufweist.

8. Manuelle Alarmvorrichtung nach Anspruch 7, wobei zwei von den Einsetzöffnungen (62) der oberen Abdeckung vorhanden sind und die Einsetzöffnungen (62) der oberen Abdeckung an die Querschnittsform der Säulen des Rückstellschlüssels (70) angepasst sind.

Revendications

1. Mécanisme de réarmement pour un dispositif d'alarme manuel, dans lequel ledit dispositif d'alarme manuel comprend une base (10) avec une face de fond (14) et un couvercle supérieur (60) apte à recouvrir la base (10) ;
dans lequel ledit mécanisme de réarmement comprend :

une clé de réarmement (70) ;
une ouverture (62) d'insertion de couvercle supérieur disposée sur ledit couvercle supérieur pour que ladite clé de réarmement (70) puisse être insérée dans celui-ci ;
une ouverture (12) d'insertion de base disposée sur ladite base (10) pour que ladite clé de réarmement (70) puisse être insérée dans celle-ci ;
un bloc d'arrêt (13) connecté de façon pivotante à ladite base (10), avec le bloc d'arrêt (13) étant apte à pivoter autour d'un arbre parallèle à ladite face de fond ; et
une paire d'éléments de blocage (63) disposés sur ledit couvercle supérieur (60) et étant aptes à pincer ledit bloc d'arrêt (13), avec ladite clé de réarmement (70) étant apte à pousser lesdits éléments de blocage (63) pour libérer ledit bloc d'arrêt (13) pincé par ceux-ci.

2. Mécanisme de réarmement pour un dispositif d'alarme manuel selon la revendication 1, dans lequel lesdits éléments de blocage (63) sont des porte-à-faux élastiques.

3. Mécanisme de réarmement pour un dispositif d'alarme manuel selon la revendication 1, dans lequel ladite clé de réarmement (70) a une partie d'insertion sous la forme de deux colonnes parallèles.

4. Mécanisme de réarmement pour un dispositif d'alarme manuel selon la revendication 3, dans lequel il y a deux desdites ouvertures (62) d'insertion de couvercle supérieur, et les ouvertures (62) d'insertion de couvercle supérieur sont adaptées à la forme en coupe transversale desdites colonnes de la clé de réarmement (70).

5. Dispositif d'alarme manuel, comprenant :

une base (10) avec une face de fond ;
un couvercle supérieur (60) apte à recouvrir ladite base (10) ;
un élément opérationnel (40) disposé dans un espace de réception (80) formé par ladite base (10) et ledit couvercle supérieur (60) ; et
une clé de réarmement qui peut être insérée dans ledit espace de réception (80) par l'intermédiaire dudit couvercle supérieur (60) et ladite base pour pousser ledit élément opérationnel (40) pour le réarmement ;
dans lequel
une ouverture (12) d'insertion de base est disposée sur ladite base (10) pour que ladite clé de réarmement (70) puisse être insérée dans celle-ci ;
une ouverture (62) d'insertion de couvercle supérieur est disposée sur ledit couvercle supérieur (60) pour que ladite clé de réarmement (70) puisse être insérée dans celui-ci ;
un bloc d'arrêt (13) est connecté de façon pivotante à ladite base (10), lequel bloc d'arrêt (13) peut pivoter autour d'un arbre qui est parallèle à ladite face de fond ; et
une paire d'éléments de blocage (63) sont disposés sur ledit couvercle supérieur (60) et sont aptes à pincer ledit bloc d'arrêt (13), avec ladite clé de réarmement (70) étant apte à pousser lesdits éléments de blocage (63) pour libérer ledit bloc d'arrêt (13) pincé par ceux-ci.

6. Dispositif d'alarme manuel selon la revendication 5, dans lequel lesdits éléments de blocage (63) sont des porte-à-faux élastiques.

7. Dispositif d'alarme manuel selon la revendication 5, dans lequel ladite clé de réarmement (70) a une partie d'insertion (72) sous la forme de deux colonnes parallèles.

8. Dispositif d'alarme manuel selon la revendication 7, dans lequel il y a deux desdites ouvertures (62) d'insertion de couvercle supérieur, et les ouvertures (62) d'insertion de couvercle supérieur sont adaptées à la forme en coupe transversale desdites colonnes de la clé de réarmement (70).

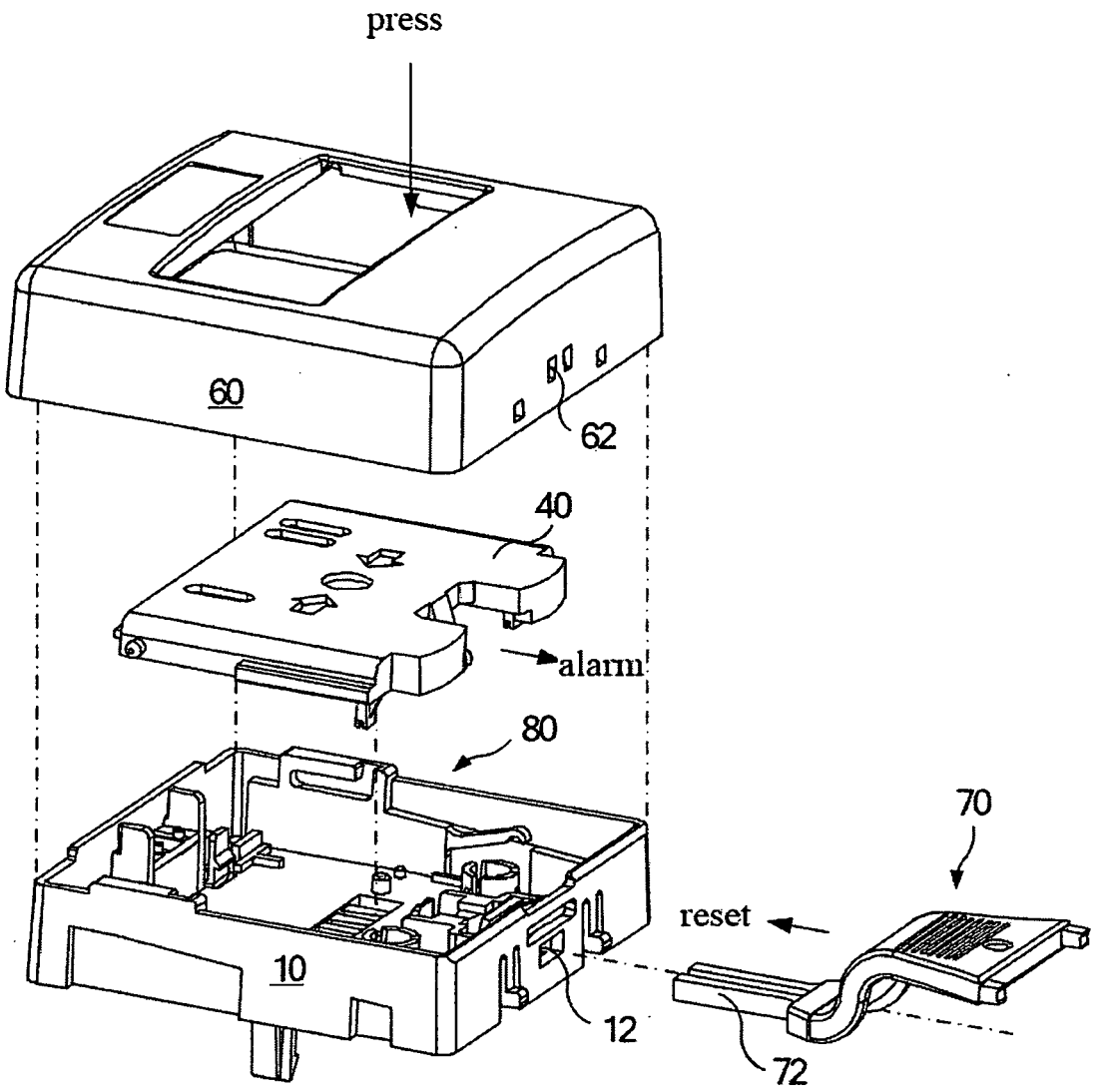

Fig. 1

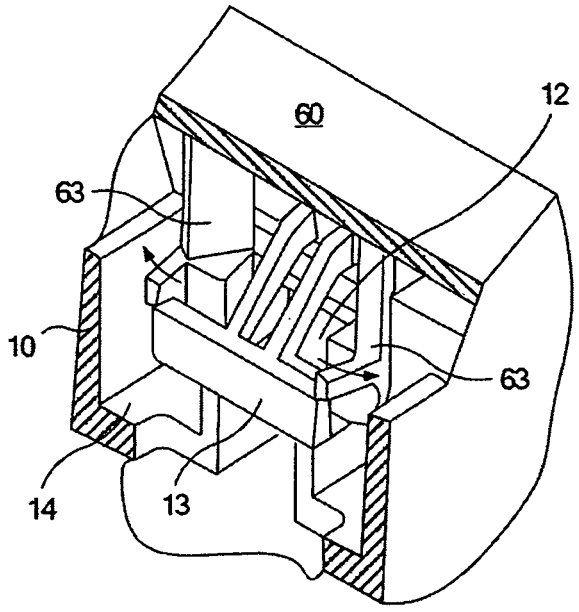

Fig. 2

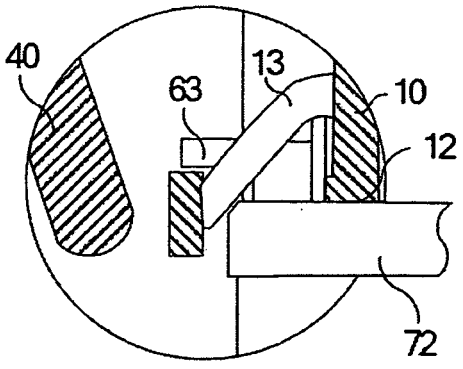

Fig. 3

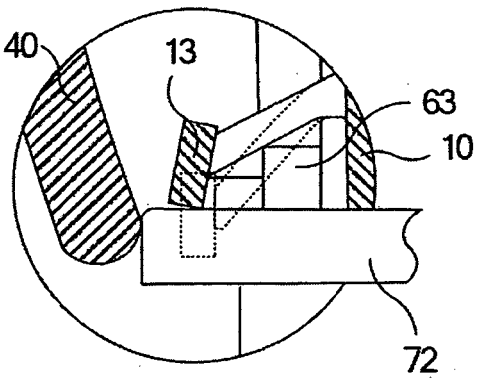

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 2401992 A **[0002]**