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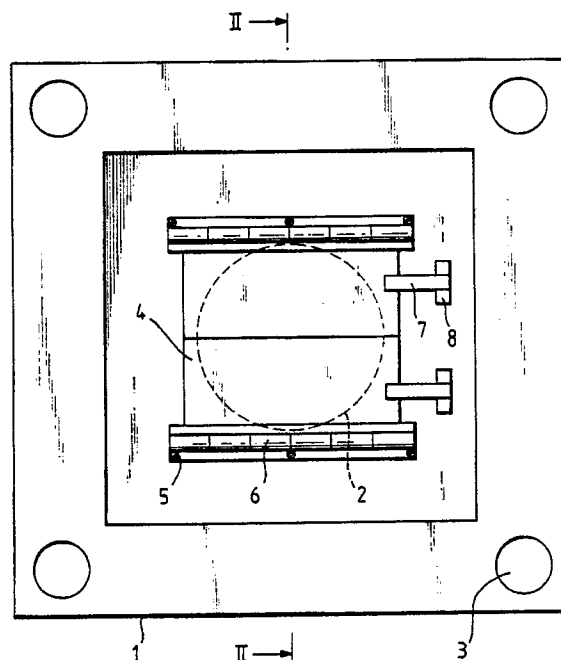
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54 **Protecting device.**

57 The present invention relates to a protecting device for the lock of doors being constituted of a housing (1) made of a strong material, e.g. reinforced steel, mounted in a rigid, tight manner on said lock and being provided with a bore (2) located opposite the cylinder and fitting the size of the key and protecting means (4, 10), e.g. plates, arms, etc. covering the cylinder and actuated by a spring (6) for the cylinder located between the housing and the cylinder, said protecting means being coupled to alarm actuating means, e.g. a micro-sensor. The protecting device may be provided with additional parts as a time, a de-activating device, e.g. a micro-sensor, sensitive sensors. The alarm device of said protecting device may be an integral part thereof or be remote.

Fig.1.



EP 0 370 790 A1

PROTECTING DEVICE

The present invention relates to a device protecting the lock of doors of flats, shops, safes, etc. (hereinafter called a "protecting device").

There are known various locks for doors and devices for protecting same from the access of unauthorized persons, e.g. burglars. In the known locks access to the cylinder of the lock is usually not protected and this facilitates the attach of the burglar even if the lock is connected to an alarm system.

It has therefore been desirable to devise a protecting device which overcomes this drawback, i.e. substantially protects the cylinder from unauthorized access and increases the difficulty of an entrance of such person into the flat, etc. The device should be relatively cheap and easy to manufacture and easy to mount on said lock.

The present invention thus provides a protecting device for a lock, comprising a housing mounted on the lock and being provided with a bore located opposite the cylinder of the lock and fitting the size of the key and protecting means for the cylinder located between the housing and the cylinder, said protecting means being coupled to alarm actuating means.

The housing is preferably manufactured as one integral unit without welding, etc. and is advantageously made of reinforced steel. The outside walls of the housing are suitably oblique so that one cannot apply tools to them, such as tongs, etc. The base of the housing is suitably provided with holes through which screws are inserted from the inside of the door. The housing is thus tightly connected to the door.

The protecting means consists advantageously of plates, discs, arms or the like covering the cylinder and being pressed by a spring towards the housing. Said protecting means is coupled to the alarm actuating means, e.g. a micro-sensor such as a micro-switch or the like.

The protecting means may be located within the door or outside thereof.

The moment the protecting means is moved, even by the correct key, the micro-sensor is turned on and thus actuates the alarm device.

In order to enable the authorised person to enter the flat, etc. without actuating the alarm device it is advantageous to provide the protecting device with a timer. The timer ascertains that said person can enter the flat in a pre-determined time without actuating the alarm device.

The timer may be arranged in such a manner that the moment the door is opened in the pre-determined period the alarm device is automatically de-activated. However, in a preferred embodi-

ment the device is provided with a de-activating element, e.g. a second micro-sensor being located at a secret place. This provides that even if such an authorised person has a copy of the key, the alarm will be set off as that person does not know the location of the said de-activating element.

The alarm device may be any suitable one, e.g. a siren, a clock, a light, etc. It may be located within the flat, shop, etc. or even be far away, e.g. at a police station.

In a preferred embodiment of the protective device according to the present invention, sensors sensitive to shocks, heat, rotation of an engine, drilling, etc. are located within the housing. Such sensors are connected directly to the alarm device. The moment somebody tries to attack the housing by any of the above means, said sensors will actuate the alarm device.

The bore of the housing of the protecting device according to the present invention may be covered by a movable plate, disc or the like (hereinafter called "cover"). The purpose of such a cover is to avoid that anybody should play with said actuating means and thus actuate the alarm device. However, if desired, said cover may be connected to the alarm device.

Advantageously, the protective device according to the present invention is provided with means actuated by the alarm device (hereinafter "actuated means"). The moment these means are actuated by the alarm device, the lock is closed and can only be opened by de-activating the alarm device by outside means, e.g. a remote control, a magnetic card, etc. Preferred means are a rod mounted on a spring around which a solenoid coil is wound.

A preferred embodiment of the invention will now be described, by example only, with reference to the accompanying drawings (similar parts being referenced for the sake of convenience, by the same numeral), wherein;

Fig.1 shows a view from the rear of (i.e. between cylinder and device) the protecting device;
Fig. 2 shows a section along line II-II of Fig. 1;

Fig. 3 shows a rear view of the embodiment illustrated in Figs. 1 and 2, having also a sensor;

Fig. 4 shows a front view of another embodiment of the protecting device;

Fig. 5 shows a section along line V-V of Fig. 4;

Fig. 6 shows a rear view of the protecting device shown in Figs. 2, 4 and 5;

Fig. 7 shows a rear view of still another embodiment of the protecting device;

Fig. 8 shows a section along line VIII-VIII of

Fig. 7;

Fig. 9 shows a side view of a protecting device connected to a cylinder;

Fig. 10 shows a schematic view of a protecting device in a closed position;

Fig. 10b shows a schematic view of a protecting device in an open position;

Fig. 11a and 11b show the device protected by a cover, in a covered and open position, respectively;

Fig. 12a and 12b show the device protected by another cover, in a covered and open position, respectively; and

Fig. 13 shows a side view according to Fig. 9, being provided with actuated means.

The device illustrated in Figs. 1-3 comprises housing 1 with central bore 2. Housing 1 is provided with holes 3 through which screws are passed from inside the door and thus connecting the housing in a tight and rigid manner to the door (not shown).

Bore 2 is covered by plates 4 which are connected about axis 5 at which are located springs 6. Arms 7 are fixedly connected to plates 4 and movably to micro-switch 8.

The moment somebody puts the key in plates 4 are opened (see plate 4a in Fig. 2) by the action of spring 6.

Arms 8 move along micro-switch 8 which in turn actuates the alarm device (not shown).

The device illustrated in Fig. 3 comprises also sensor 9 which is directly connected to the alarm device (not shown). The moment somebody tries to attack housing 1, sensor 9 will actuate the alarm device.

The embodiment illustrated in Figs. 4 to 6 differs substantially from that illustrated in Figs. 1 to 3 in that plates 4 are substituted by plates 10 which are in the open position located as 10a (Figs. 5 and 6). Numeral 11 indicates the depression in housing 1 in which the device is located.

In the embodiment illustrated in Figs. 7 and 8 the device is constituted by disc 15 being provided with springs 16. In the centre of disc 15 is located opening 17. Disc 15 is held by pins 18 and by springs 19.

The moment the key is inserted through opening 17 the disc 15 is rotated and actuates the micro-switch (not shown) which in turn actuates the alarm device (not shown).

Fig. 9 shows an embodiment similar to that illustrated in Fig. 3 being connected to cylinder 20 after key 21. Hole 22 indicates the opening for key 21.

Figs. 10a and 10b show in a schematic manner the protecting device in closed and open position, respectively.

Figs. 11a and 11b show the device covered by

plate 25 and disc 26, respectively. Figs. 12a and 12b show the same device where plate 25 and disc 26, respectively have been removed.

The device shown in Fig. 13 is provided with actuated means. Said means comprise rod 29 entering door 27. Rod 29 sits on a spring (not shown) and around it is wound solenoid 28. The moment the alarm device is actuated by an unauthorized person, it in turn actuates solenoid 28, which presses rod 29 downwards and the door cannot be opened. The moment solenoid 28 is de-activated, rod 29 springs outwards and the lock can be opened.

Claims

1. A protecting device for a lock, comprising a housing mounted on the lock and being provided with a bore located opposite the cylinder of the lock and fitting the size of the key, and protecting means for the cylinder located between the housing and the cylinder, said protecting means being coupled to alarm actuating means.

2. A protecting device according to Claim 1 being manufactured as one integral unit and made of reinforced steel.

3. A protecting device according to Claim 1 or 2, wherein the outside walls of the housing are oblique.

4. A protecting device according to any of Claims 1 to 3, wherein the base of the housing is provided with holes for screws to be inserted from the inside of the door.

5. A protecting device according to any of Claims 1 to 4, wherein the protecting means consists of plates, arms or the like covering the cylinder and being actuated by a spring.

6. A protecting device according to any of Claims 1 to 5, wherein the alarm device is an integral part of the protecting device.

7. A protecting device according to any of Claims 1 to 6, wherein the protecting means are located on the door.

8. A protecting device according to any of Claims 1 to 7, wherein the bore of the housing is covered by a cover (as herein defined).

9. A protecting device according to any of claims 1 to 8, being provided with actuating means (as herein defined).

10. A protecting device according to Claim 9, wherein said actuating means consists in a rod mounted on a spring around which a solenoid is wound.

Fig.1.

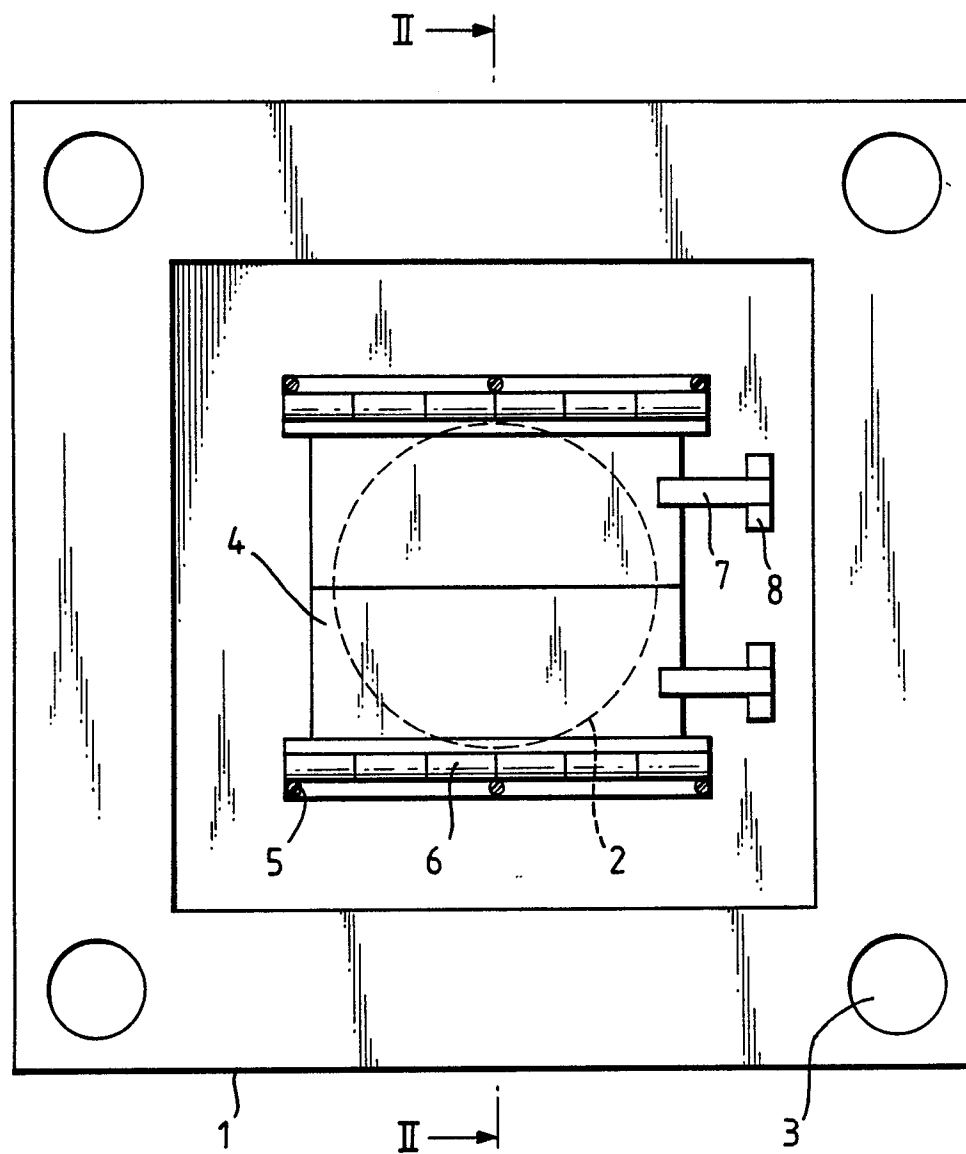


Fig.2.

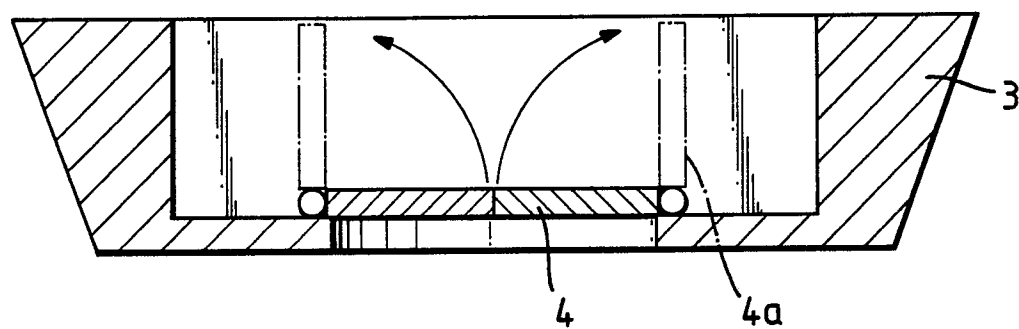


Fig. 3.

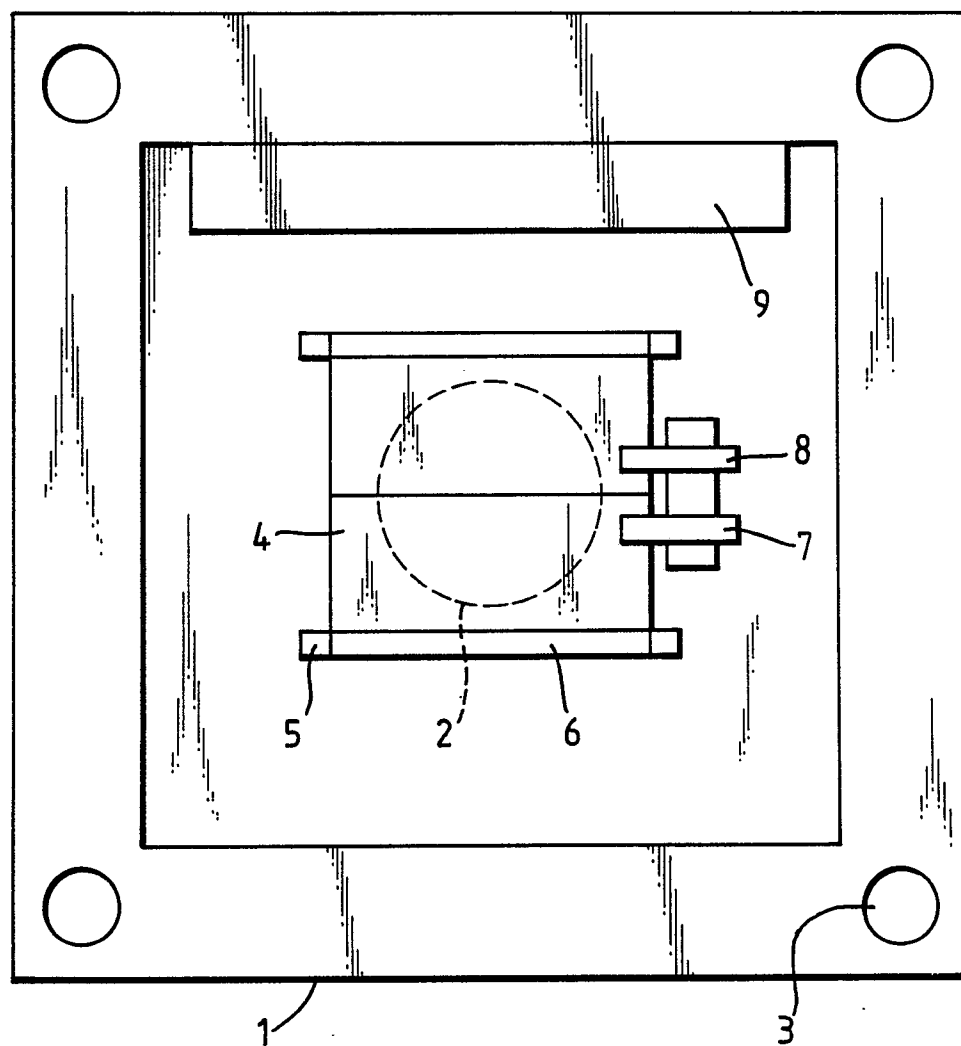


Fig. 4.

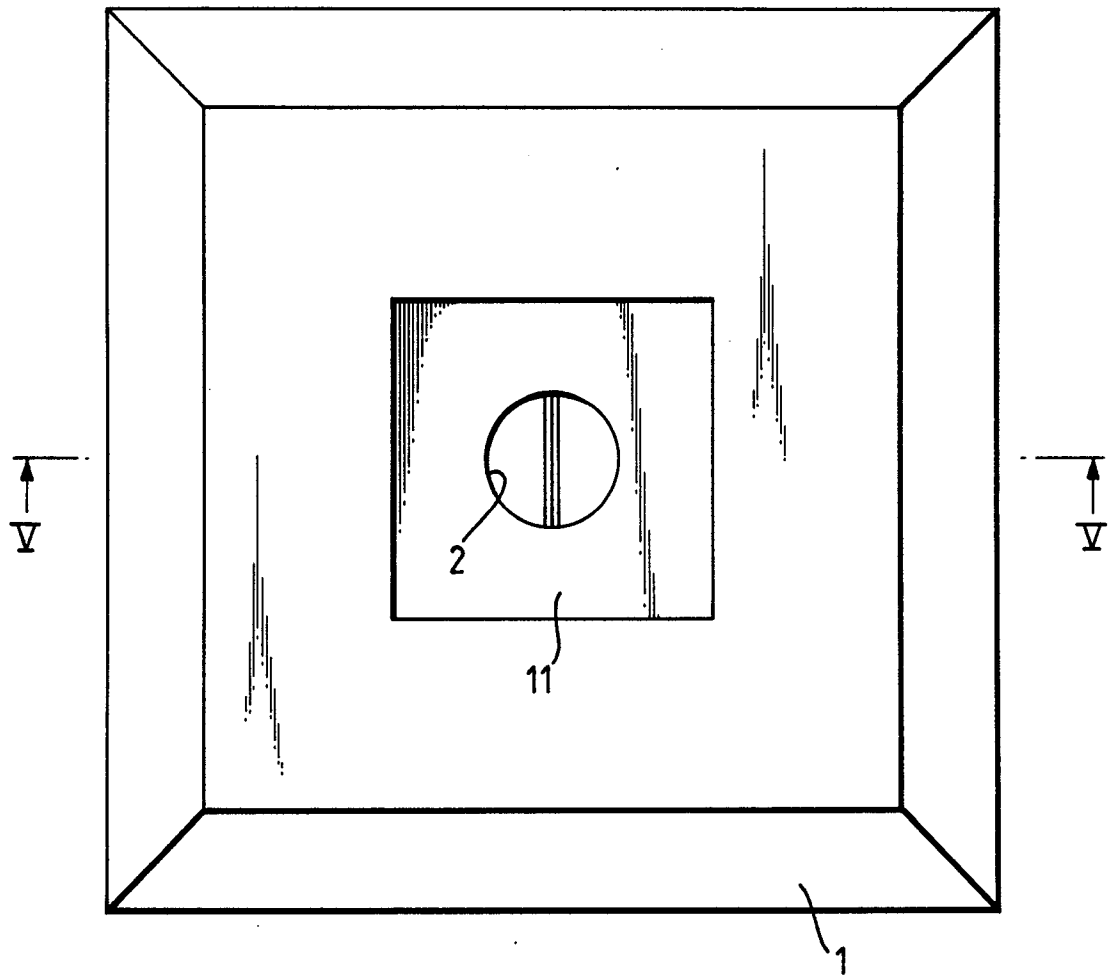


Fig. 5.

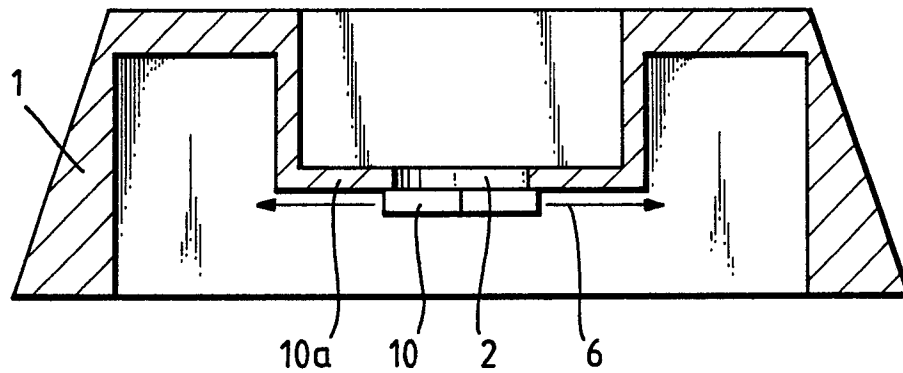


Fig.6.

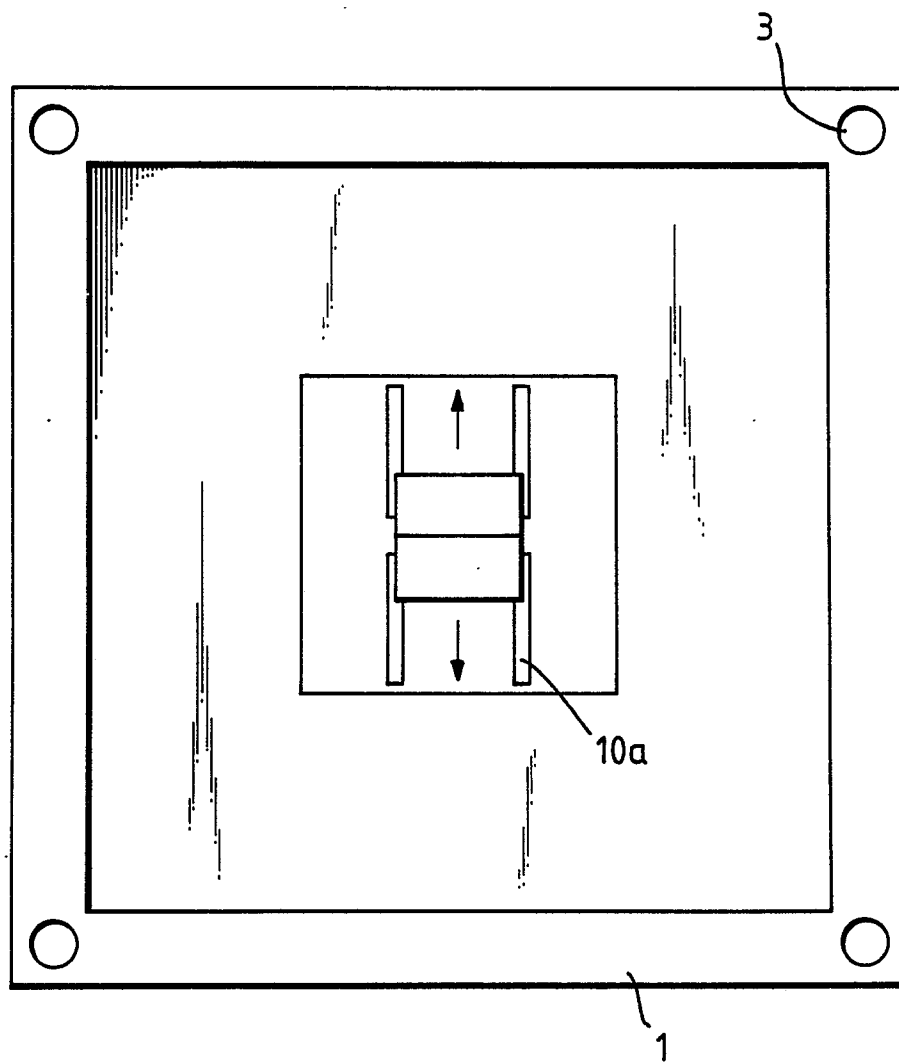


Fig. 7.

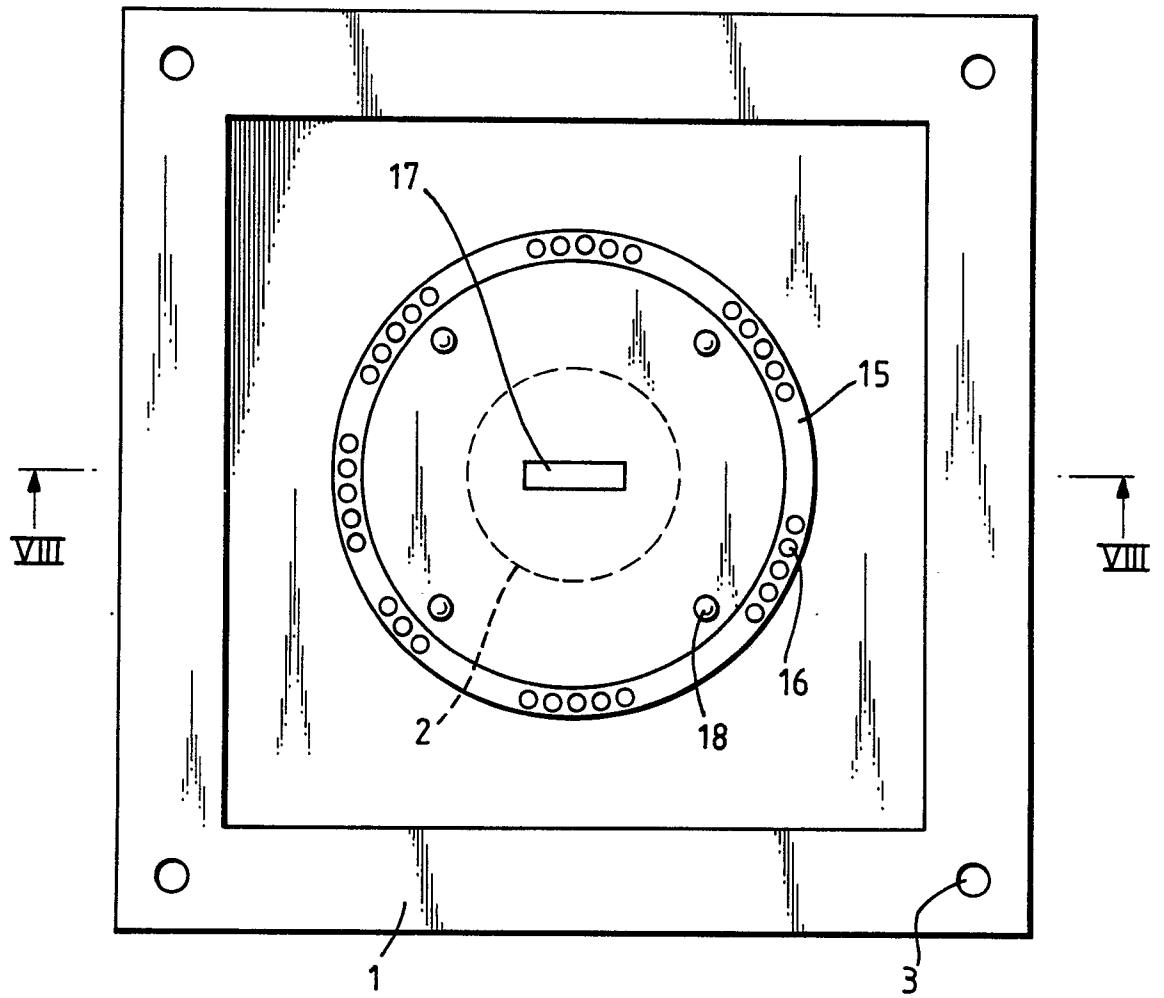


Fig. 8.

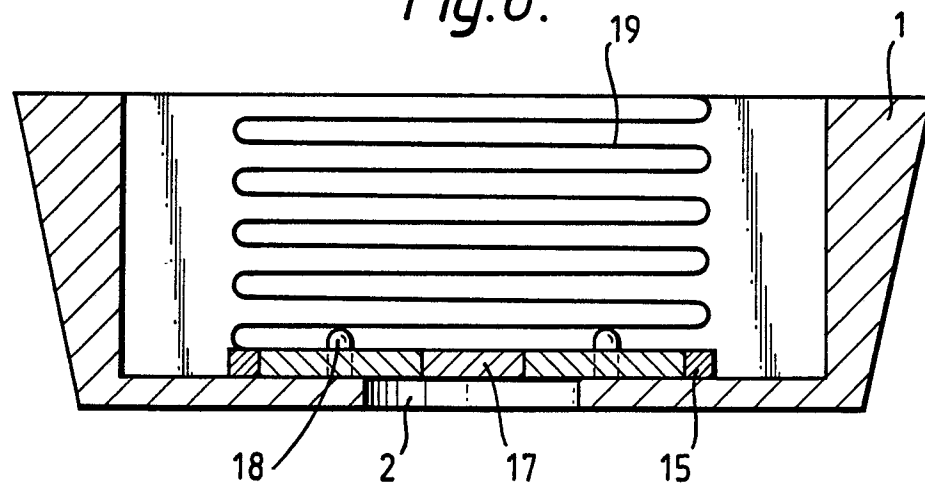


Fig. 9.

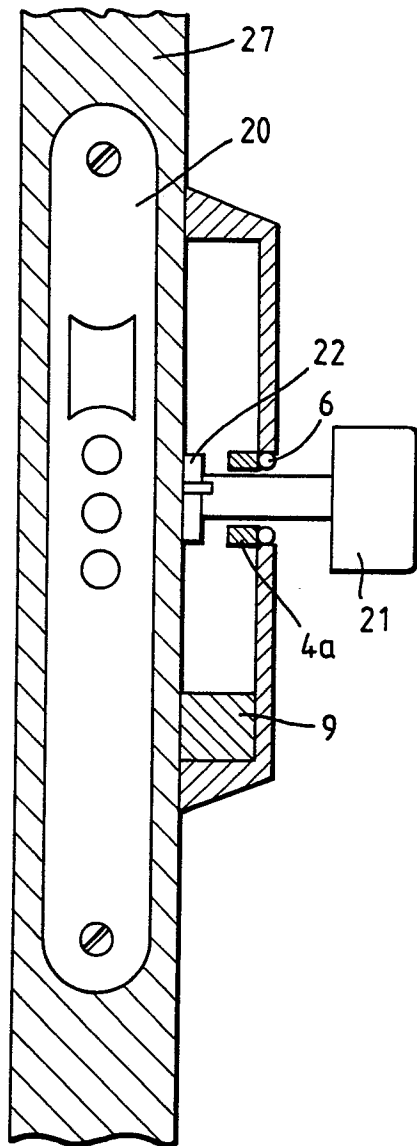


Fig. 10a.

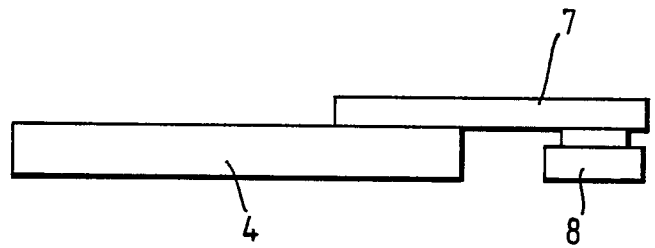


Fig. 10b.

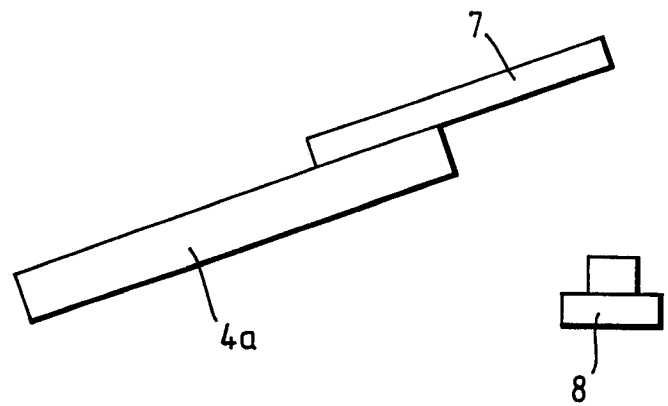


Fig. 11a.

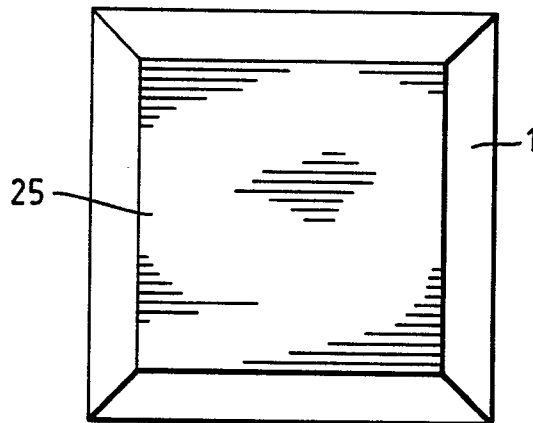


Fig. 11b.

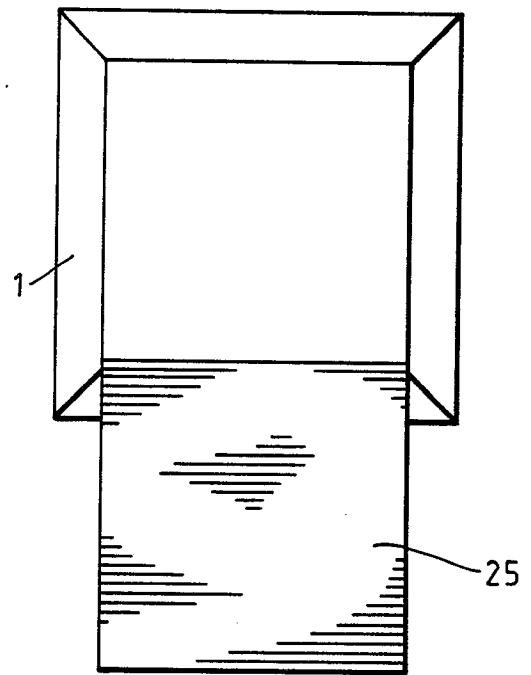


Fig. 12a.

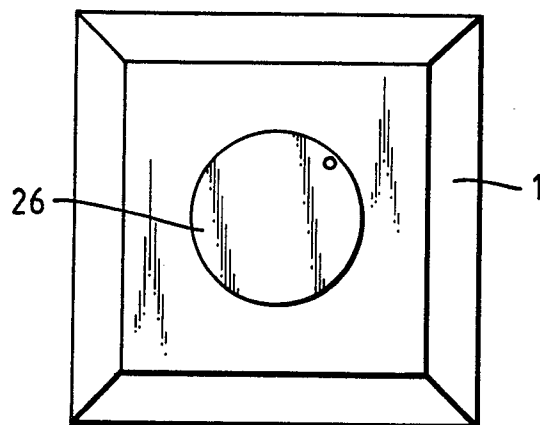


Fig. 12b.

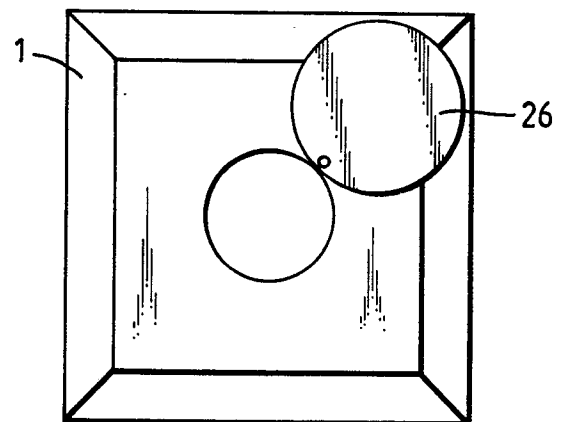
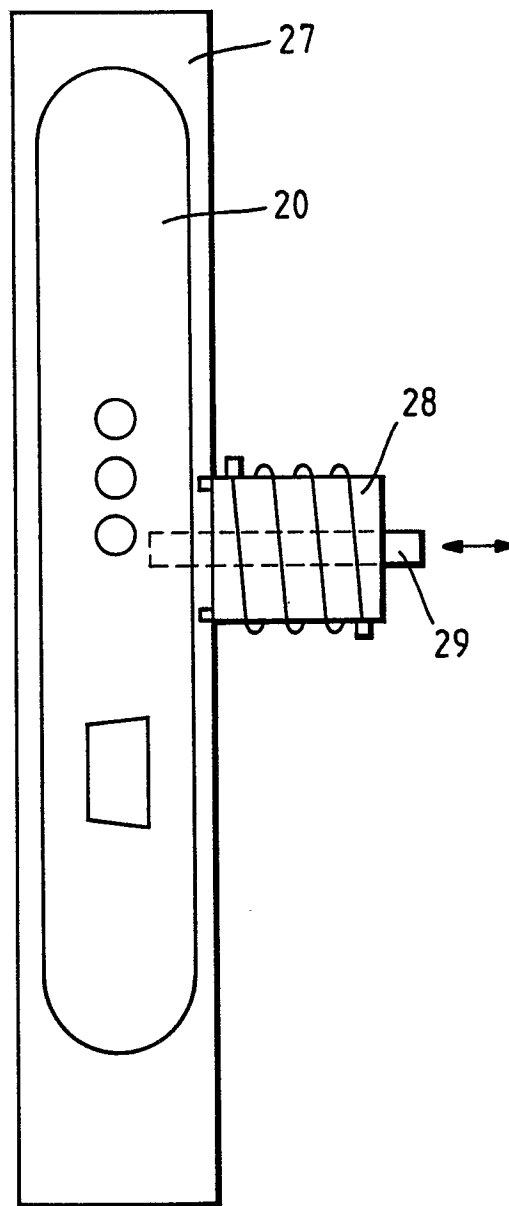


Fig. 13.





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 89312123.6
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl')
A	FR - A - 1 490 087 (EAGLE LOCK CORPORATION) * Fig. 1-3; claims 1-4 *	1, 3, 5, 7, 8, 9	E 05 B 13/00
A	FR - A - 1 147 185 (GEBR. HAPPICH) * Fig. 1-17; claim 1 *	1, 2, 3, 4, 8	
A	FR - A - 783 694 (FLEURY-DEPOILLY) * Fig. 1-4; claims 1-3 *	1, 3, 4, 5, 7, 8, 9	
A	US - A - 2 690 071 (E.N. JACOBI) * Fig. 1-3; claims 1-14 *	1, 3, 5, 8, 9	
A	US - A - 1 965 942 (E.N. JACOBI) * Fig. 1-5; claims 1-5 *	1, 5, 8	
A	US - A - 952 643 (J. ROCHE) * Fig. 1-8 *	1, 3, 4, 5	TECHNICAL FIELDS SEARCHED (Int Cl')
			E 05 B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
VIENNA		22-02-1990	CZASTKA
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			