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(54) Covering mask for door-lock cylinder.

(57) A covering mask for a door lock cylinder is provided with pressure-locking means adapted to apply a pressure on the outer surface of the cylinder. The covering mask can be made of one piece or may comprise two separate parts including a main body provided with anchoring means and a housing for a door-lock cylinder, and a door-lock cylinder-mask fitting into the said housing and around the door-lock cylinder. The mask is used to protect door-cylinders from unauthorized entry.

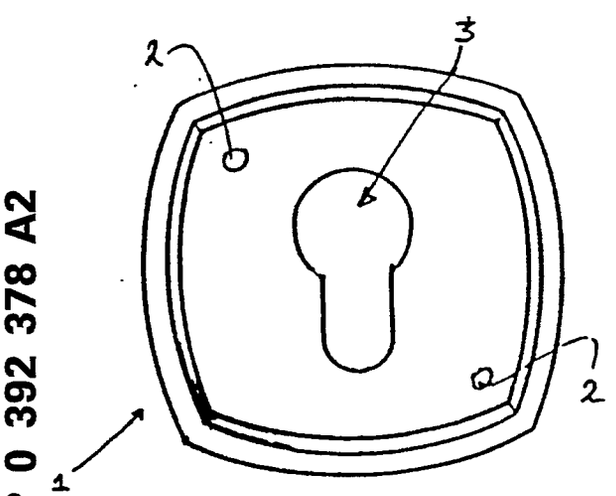

Fig. 1

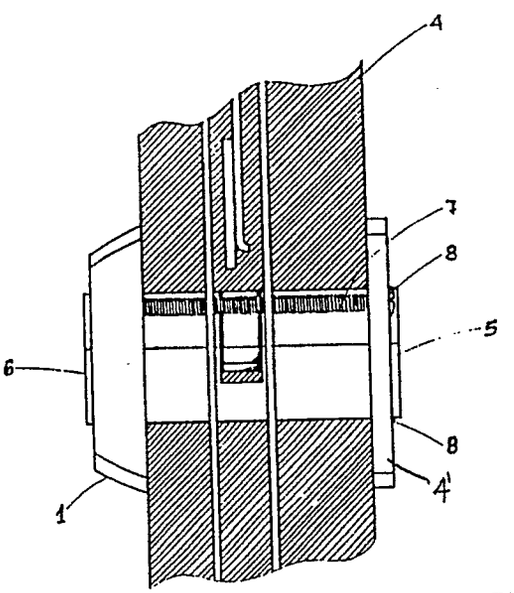

Fig. 2

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COVERING MASK FOR DOOR-LOCK CYLINDER

The present invention relates to a covering mask for a door lock. More particularly, the invention relates to a protective mask which is intended to prevent burglars from easily breaking a door lock.

Masks of the type described in this application are commonly employed in the art and have the purpose of making it difficult to reach the lock and break it open. Normally, cylinders of a lock, when mounted on a door, protrude from the door by varying depths, depending on the width of the door. Most often, however, the length of the cylinder which is exposed outside of the door is sufficient to enable a burglar to get hold of it with an instrument, and to apply a force in a direction perpendicular to the axis of the cylinder, thereby causing it to break open. In order to prevent this, a mask is provided around the portion of the cylinder which protrudes outside the plane of the door, so that getting hold of the cylinder itself becomes virtually impossible. One such mask is shown in Figure 1, which represents the back of a mask according to the prior art. The mask is firmly connected to the door by means of two or more screws which pass through the door and are bolted on the mask in bores provided for that purpose, two of such bores being shown in Figure 1. The mask is generally indicated by 1, and the bores by 2.

The opening into which the tip of the lock fits is indicated by 3.

Fig. 2 shows in partial cross-section the situation in which the mask is mounted on a cylinder lock. A portion of the door is indicated by 4. The cylinder 5 protrudes from both ends of the door in this figure, but the outer tip 6 is masked by a mask 1. Two screws 7 and 7′ (not shown) pass throughout the door 4, and are provided with screw heads 8 and 8′ which are in contact with the inner side of the door 4, conveniently with a reinforced base 4′, while their other extremity is bolted into bores 2 (not shown in the figure) of mask 1.

This type of mask presents several considerable disadvantages. Firstly, it is necessary to drill holes for the screws throughout the entire door. Furthermore, different standards exist which result in difierent positioning and types of holes and masks. It is therefore clear that it would be highly desirable to provide a mask which overcomes these and other drawbacks, and avoids the need of different standards.

It is an object of the present invention to provide a covering mask which overcomes these problems, and which can be effectively employed to mask the exposed part of a door lock cylinder.

It is another object of the invention to provide a mask which can be easily and quickly fitted on the exposed part of a door lock cylinder.

It is still another object of the present invention to provide a mask which renders the forced removal thereof increasingly difficult.

The covering mask according to the invention is characterized in that it is provided with pressure locking means adapted to apply a pressure on the outer surface of the cylinder. Preferably, but not limitatively, the pressure is applied in a direction substantially perpendicular to the plane of the insertion of the key.

According to one embodiment of the invention, the means adapted to apply a pressure on the cylinder comprise one or more screws driven through a threading provided in the body of the mask. As stated, the direction in which these screws are driven is substantially perpendicular to the plane of the insertion of the key. It is clear, however, that the screws or other locking means can create a small angle with the plane of the cylinder which they contact, without causing any problem, as long as they apply the desired pressure on the lock cylinder. Care should be taken, however, not to apply a pressure in a direction which may render the insertion of the key, or the operation of the lock, difficult or impossible. The screws may not only apply a pressure on the cylinder, but actually thereby create bores on the surface of the cylinder, which will firmly keep the mask in place.

In a preferred embodiment of the invention, the said screws are provided with a weakened portion which, in the mounted position, is located inside the body of the mask, the said weakened location causing the screw to break up when a force which exceeds the strength of the weakened location is applied thereto. Thus, the mask will be securely mounted on the lock cylinder, but the pressure means which serrate it to the cylinder will be practically destroyed after mounting, so that dismantling of the mask-cylinder assembly becomes virtually impossible. Alternatively, the screw when breaking may leave a conical or semispherical tip which may protrude outside the mask.

In another preferred embodiment of the invention, the pressure means may comprise loose tips which can be housed in the mask and a pressure may be applied thereon by independent pressure generating means, e.g. a screw.

In a particularly preferred embodiment of the invention the covering mask comprises a main body provided with anchoring means, for firmly connecting it to the door, and a door-lock cylinder

mask fitting into the said main body at its outer perimeter and around the door-lock cylinder at its inner perimeter and which is fastened to both the main body and to the cylinder. Preferably, when the door-lock cylinder mask is fitted into the main body the neighboring boundaries of the two parts lie substantially on the same plane, so that no easy hold can be obtained on the cylinder mask for forcedly removing it.

Alternatively, if the door-lock cylinder mask plane protrudes from the plane of the main body, it should have sloping edges to prevent breaking apart thereof by introducing an object to dismantle the mask.

In another preferred embodiment of the invention, the pressure means may comprise loose tips which can be housed in the mask and a pressure may be applied thereon by independent pressure generating means, e.g. a screw.

A further embodiment of the invention includes a single hole for both the pressure applying screws and fastening screws, instead of two separate threadings. In such a case at least part of the thread of the inner hole will remain free for engaging the fastening screw.

In still another preferred embodiment of the invention, the circumference of the main body is toothed, so that when it is fastened to the door, it penetrates into the door, which will make the dismantling of the mask much more difficult because it would become impossible to insert a sharpened tool, such as a screwdriver, between the mask and the door in an attempt to break the lock.

The above and other characteristics and advantages of the invention will be further made clear by the following description of a preferred embodiment of the invention, with particular reference to Figs. 3 through 8 appended hereto.

Fig. 3 shows a mask according to one embodiment of the invention, in the front direction, which is provided with three screws for applying pressure on the exposed part of the cylinder. The tip of the exposed portion of the cylinder will pass through the opening 3. In this embodiment of the invention, the pressure-locking means comprise a screw 10 and a threaded hole 11 provided in the mask.

When it is desired to mount the mask on a lock cylinder, the mask is mounted on the desired position and the screws 10 are screwed on, so that their tips 12 start to apply a pressure on the outer walls of the lock and, if enough pressure is applied, to provide bores on the outer part of the cylinder. The screws 10 are provided with a weakened location 13, in which the diameter of the screw has been rendered considerably smaller. When the tip 12 of the screw reaches the point beyond which it cannot proceed, further attempt to turn the screw will cause it to break at the said weakened location 13. The outer part of the screw will thus be separated from the part which is housed within the hole 11 in the mask. Unscrewing the broken screw will then be virtually impossible.

Fig. 4 shows the back of the mask after having been mounted, the lock cylinder having been removed for illustration purposes. Only the tips 12 of the screws remain, and the outer part of the screws, which have broken off, are no longer visible.

Turning now to Figs. 5 to 8, a mask according to another preferred embodiment of the invention is illustrated. The main body of the mask is shown in Fig. 5(a) in front view, and in Fig. 5(b) in side view and in cross-section. The main body 100 comprises anchoring means 101, in this embodiment, a plane the shape of which can be chosen, e.g., between square, round, elliptic, rectangular or any other geometric shape such as multihedron, comprising several holes 102 for screws to be screwed into the door. An opening 103 is left for the cylinder, which may have the shape of a cylinder or may be larger. This part is first mounted around the cylinder and fastened to the body of the door by regular means, preferably by screws (not shown). In Fig. 5 there are shown 6 possible locations of such screws, but alternative ones may be employed, depending on the shape of the anchoring means 101. As said, additional anchoring means, e.g., tooths which penetrate into the door (not shown) can be provided.

The main body 100 further comprises a housing 104 for receiving the cylinder mask, which is shown in Fig. 5(b) in cross-section. Holes 105 are also provided, for insertion of pressure screws which are to reach the cylinder, and holes 106 can be provided to house tightening means such as screws, to securely connect the mask to the main body.

The door-lock cylinder-mask (indicated by numeral 107) is shown in Fig. 5(c) in front view and in Fig. 5(d) in side view. The central hole 108 is shaped so as to fit around the cylinder, and the body 109 is sized and shaped so as to fit into housing 106 of the main body without leaving substantial gaps. Holes 105′ and 106′ are positioned so as to be found in correspondence with holes 105 and 106 of the main body, when the device is mounted. Of course, holes 105,105′, 106 and 106′ should be threaded as required, as will be apparent to a skilled person.

Fig. 6 shows the device of Fig. 5 in the mounted position, where both parts of the mask are mounted on the cylinder. This figure also shows two screws 110 functioning as pressure means to apply pressure on the cylinder.

As said, the thickness of mask 107 should be such that, when inserted into the main body 100,

no substantial portion of it is exposed. When it is desired to mount the mask on a lock cylinder, the main body 100 of the mask is initially fastened to the door in the desired position, e.g., using several screws. Then the mask 107 is inserted into the housing 104 of the main body 100, and then screws 110 are screwed on so that their tips 112 start to apply a pressure on the outer walls of the lock and, if enough pressure is applied, to provide bores on the outer part of the cylinder. The screws 110 are provided with a weakened location 113, in which the diameter of the screw has been rendered considerably smaller. When the tip 112 of the screw reaches the point beyond which it cannot proceed, further attempt to turn the screw will cause it to break at the said weakened location 113. The outer part of the screw will thus be separated from the part which is housed within the hole 105 in the mask. Unscrewing the broken screw will then be virtually impossible.

Fig. 7 shows the back of the mask after having been mounted, the lock cylinder having been removed for illustration purposes. Only the tips 112 of the screws remain, and the outer part of the screws, which have broken off, are no longer visible.

As replacing the door-lock cylinder may become difficult when a device according to this embodiment of the invention has been tightly fitted thereon, a preferred embodiment of the invention provides connecting means for securely connecting the door-lock cylinder-mask to the main body of the masking device, which connecting means are actuated by the insertion of the cylinder therein. Thus, according to this embodiment of the invention, the cylinder-mask is loosely fitted into the housing of the device, and introducing the cylinder causes the connecting means to move to the fastened portion. Likewise, removing the cylinder will cause the connecting means to return to the inactive position, thereby permitting to separate the cylinder-mask from its housing.

An illustrative and non-limitative example of a possible shape of this embodiment of the invention is shown in Fig. 8, which illustrates a cylinder-mask 107, provided with a plurality of pins 114 (four such pins being shown in the figure) which may slide outwardly, in the direction of the arrows. When the cylinder is introduced into opening 108, the pins 114 are pushed out and their tips 115 protrude from the mask 107 and fit into corresponding holes provided in the housing (104 in Fig. 3(b)). Thus, interlocking of the two parts of the device is achieved, which is reversible by removing the door-lock cylinder, e.g., by providing springs which apply a force toward the center of the opening 108.

While throughout this specification reference has been made to pins and screws to serve as pressure-locking means, it will be clear to the skilled person that the same result can be obtained in many different ways and by means of many different devices. For instance, the mask may be made of two different pieces which can be connected by connections such as screws, and thus closing the screws causes pressure to be substantially uniformly applied around the cylinder. Alternatively, the mask could have an Ω configuration and its bottom part could be open and provided with closure means. Thus, closing its bottom part (e.g., by means of a screw) would cause a pressure to be applied on the cylinder. referring to Fig. 8, in the first instace both portions containing upper and lower pin, 115, would be removed to result in two symmetrical parts, and in the second case only the bottom section 115 would be removed, to provide a substantially Ω configuration.

The invention also embraces the door-lock cylinder-mask and the main body that houses it, as such. As will be apparent to the skilled person, using these two parts to mask the cylinder, even if no pressure means are provided, will result in a considerable advantage over the knowm art. Thus, the application is meant to include also a composite cylinder mask of the type herein described, even when no pressure means are provided.

As will be apparent to the person skilled in the art, the invention provides a very convenient method of masking door cylinders, which is free from the disadvantages of the masks known in the art. The need for long screws passing through the entire depth of the door has been obviated and the invention, as well as the problems of masks which do not effectively prevent the breaking up of lock cylinders. The skilled engineer will of course be able to provide many modifications of the mask, its shape as well as the number, shape and nature of the pressure-locking means. As will be apparent to the skilled person, however, these modifications are not such as to exceed the scope of the invention.

Claims

1. A covering mask for a door lock cylinder, characterized in that it is provided with pressure-locking means adapted to apply a pressure on the outer surface of the cylinder.

2. A covering mask according to claim 1, wherein the means adapted to apply a pressure on the lock comprise one or more screws driven through a threading provided in the body of the mask.

3. A covering mask according to claim 2, wherein the pressure means comprise loose tips which are housed in the mask, and a pressure may

be applied thereon by independent pressure generating means, e.g. by a screw.

4. A covering mask according to claim 2 or 3, wherein the said screws are provided with a weakened portion or location, the said weakened location causing the screw to break up when a force which exceeds the strength of the weakened location is applied thereto.

5. A covering mask according to claim 4, wherein the weakened location, in the mounted position, is located inside the body of the mask.

6. A covering mask according to claim 4, wherein the weakened location, when breaking up, leaves a conical or semispherical tip which is located outside or inside the body of the mask.

7. A covering mask according to any one of claims 1 to 6, wherein the pressure-locking means are adapted to create a bore on the surface of the cylinder, which can house the pressure-generating end of the said locking means.

8. A covering mask according to any one of the previous claims, in which the opening through which the cylinder passes has the shape of the cylinder tip.

9. A masking device for a door lock cylinder according to any one of claims 1 to 8, characterized in that it is provided with pressure-locking means adapted to apply a pressure on the outer surface of the cylinder, a main body provided with anchoring means and a housing for a door-lock cylinder, and a door-lock cylinder-mask fitting into the said housing and around the door-lock cylinder.

10. A covering mask according to claim 9, wherein the neighboring boundaries of the housing of the main body and of the mask lie substantially on the same plane.

11. A masking device according to claim 9 or 10, wherein the means adapted to apply pressure on the lock comprise one or more screws driven through interconnecting holes provided in the main body and in the mask.

12. A covering mask according to claim 9, wherein the mask has sloping edges and has a plane which protrudes outside the plane of the main body.

13. A covering mask according to any one of the preceding claims comprising connecting means for connecting the door-lock cylinder-mask to the main body of the masking device, which connecting means are actuatable by the insertion of the cylinder therein.

14. A mask according to claim 13, wherein the connecting means are integral with the cylinder-mask.

15. A mask according to claim 14, wherein the connecting means comprise movable pins.

16. A mask according to any one of the preceding claims, wherein the pressure is applied on the cylinder at an extended surface.

17. A mask according to claim 16, wherein the pressure is applied by the mask fitting around the cylinder.

18. A mask according to claim 17, wherein the mask is made of two parts connected by connecting means, and pressure is applied by closing the connecting means.

19. A mask according to claim 17, wherein the mask is made of an open ring provided with clamping means, such as a screw connecting the open ends, whereby pressure is applied when closing the mask around the cylinder.

20. A mask according to claim 19, having a substantially Ω-like shape.

21. A combination masking device for a door lock cylinder comprising a main body provided with anchoring means and a housing for a door-lock cylinder, and a door-lock cylinder-mask fitting into the said housing and around the door-lock cylinder.

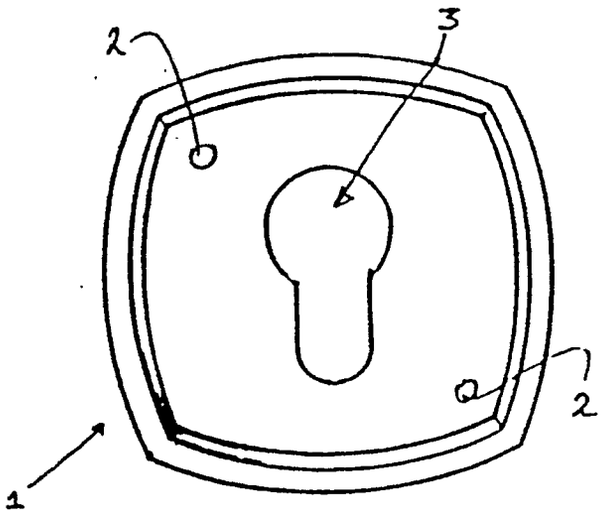


Fig. 1

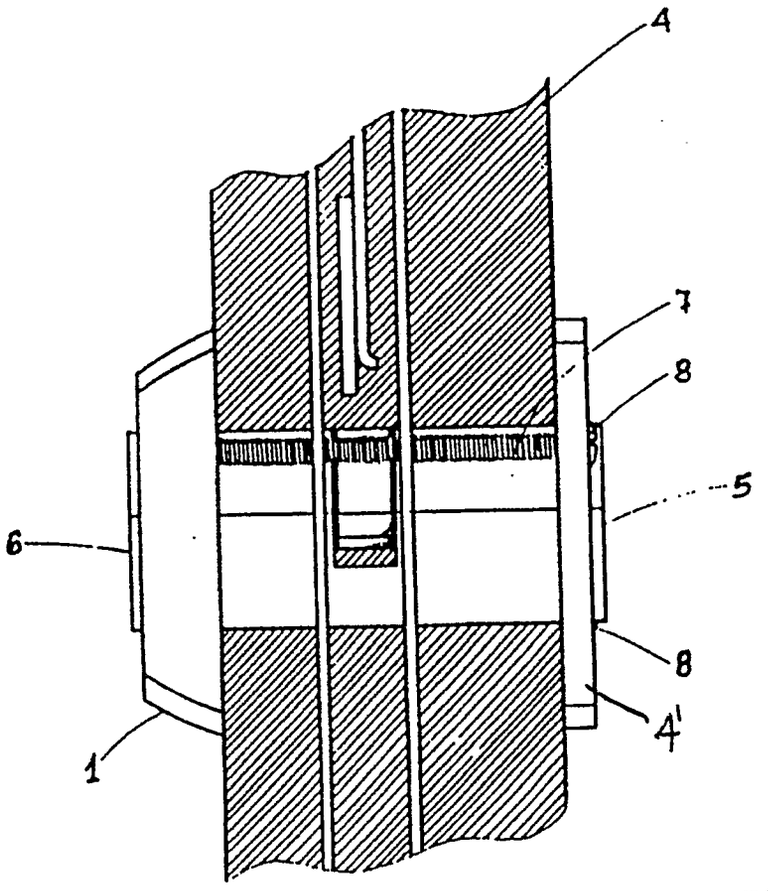


Fig. 2

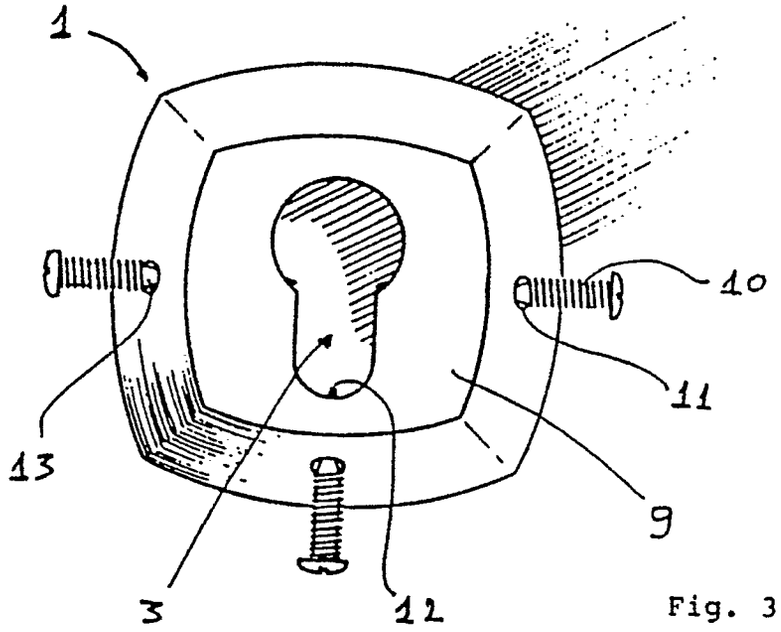


Fig. 3

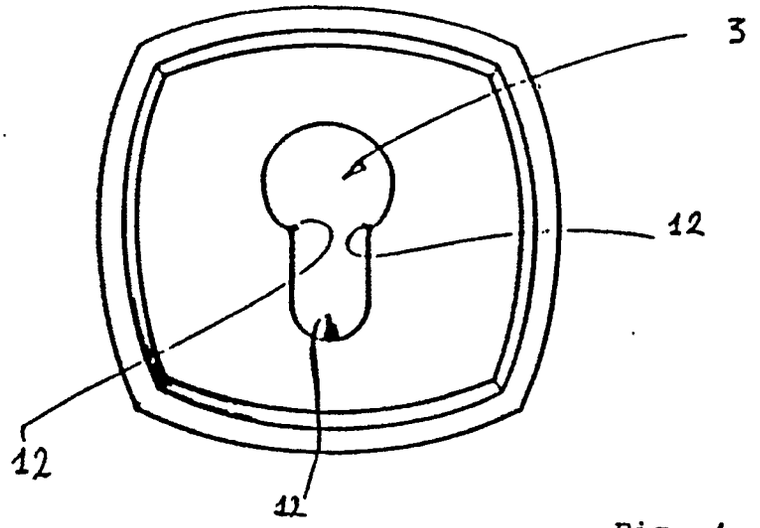
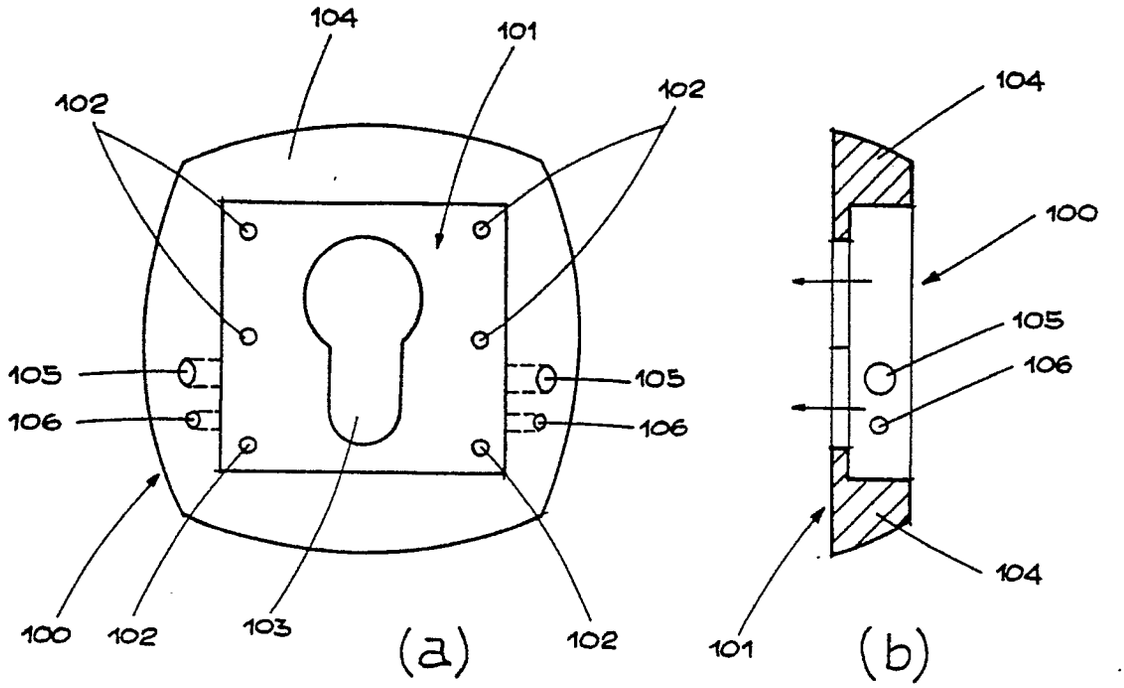


Fig. 4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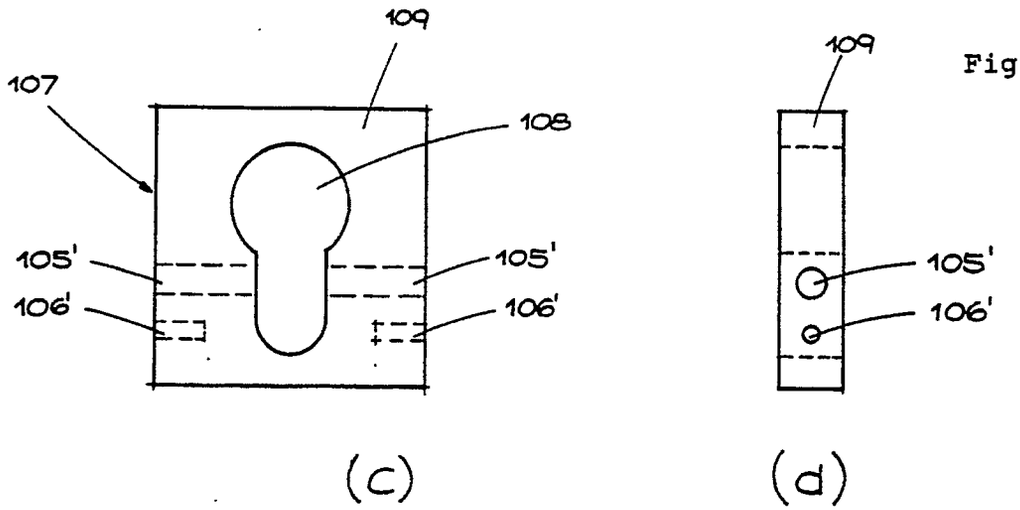
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Fig. 5

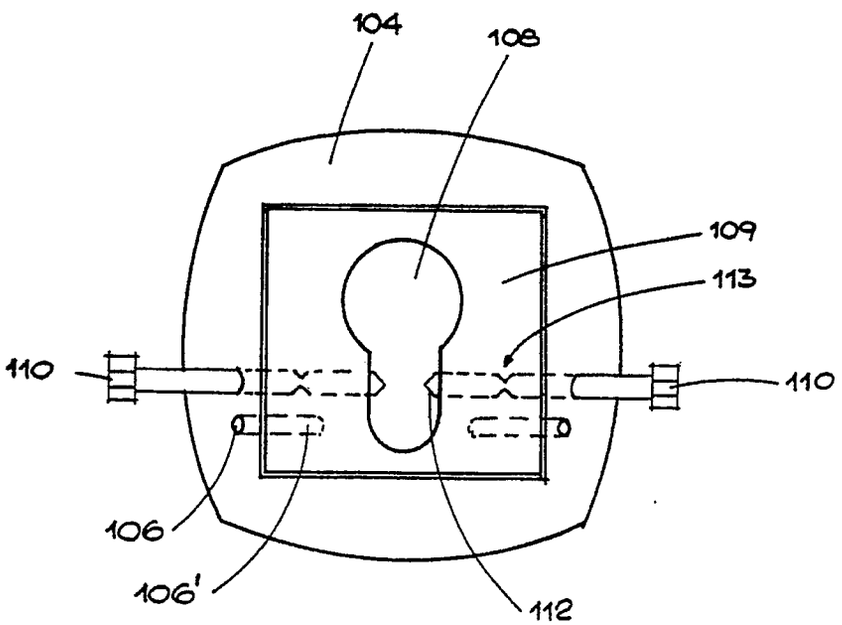
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Fig. 6

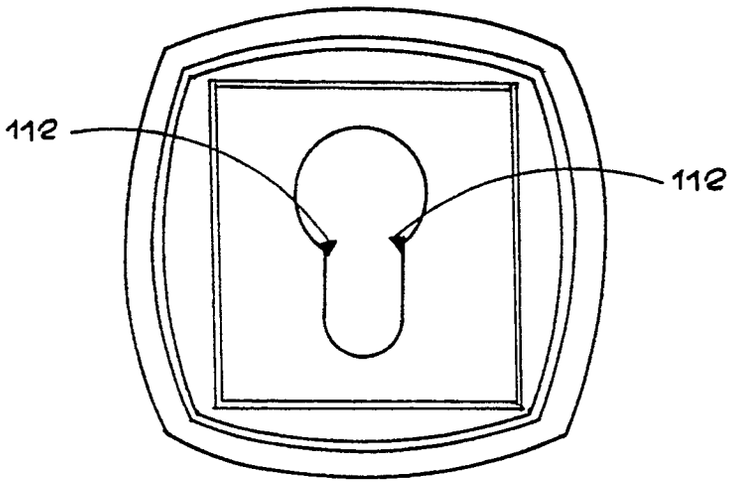

Fig. 7

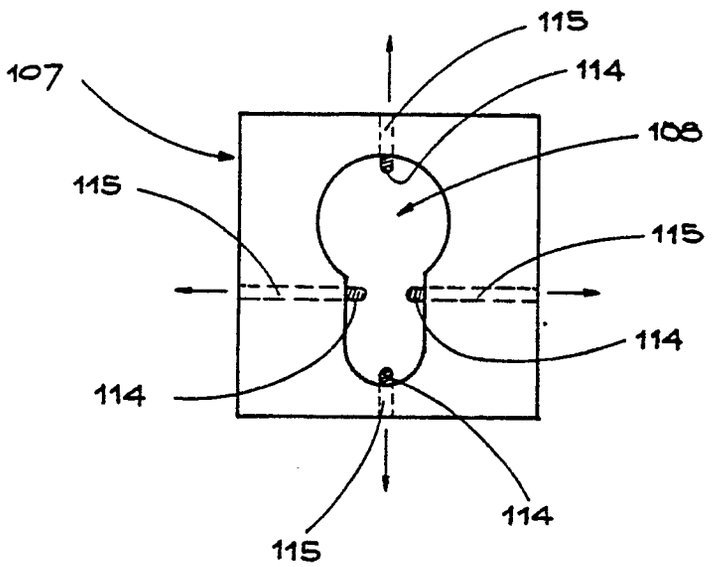

Fig. 8