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MAGNETIC DEVICE FOR AIDING IN LOCATING A POSITION

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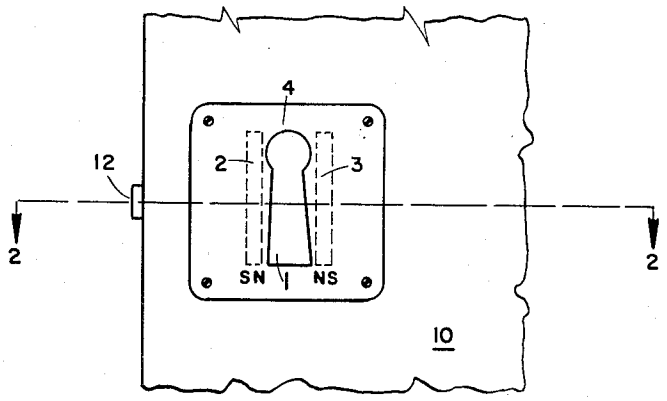


Fig.1

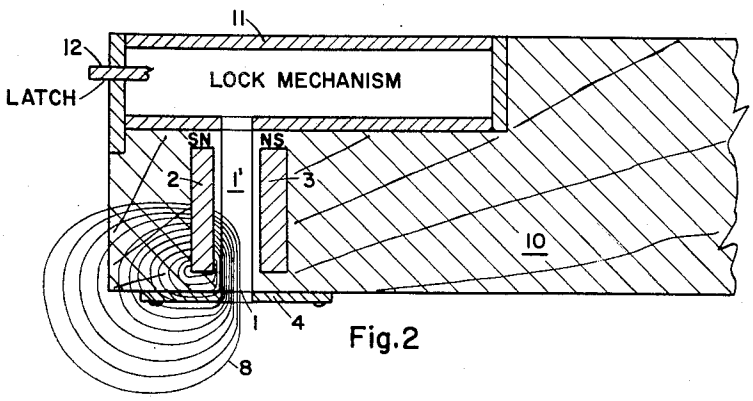


Fig.2

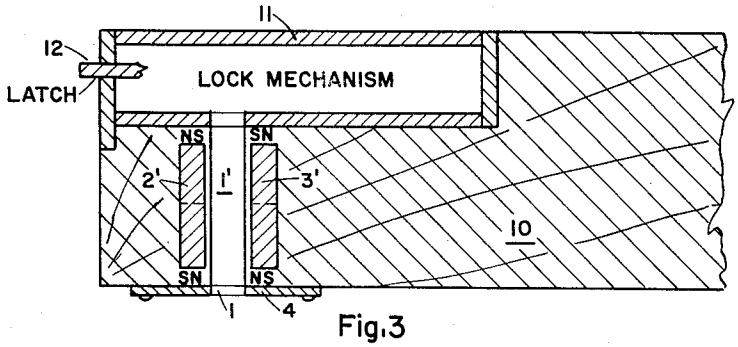


Fig.3

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MAGNETIC DEVICE FOR AIDING IN LOCATING A POSITION

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Claims priority, application Belgium January 7, 1952

3 Claims. (Cl. 70—454)

This invention relates to a device for controlling the position of a ferromagnetic body, and more particularly to a device for aiding in locating the position of the keyhole of a lock.

One object of the invention is to provide means for aiding in locating the position of a keyhole more conveniently than by means of a pocket light or similar locating aids.

According to the invention, a pair of permanent magnets are provided, one mounted on each side of the position to be located, that is, the keyhole, the magnets being magnetized in directions such that their fields are directed so as to attract or pull a ferromagnetic body, such as an iron key, towards the position desired, that is towards the region of and into the keyhole.

The invention will now be described in greater detail with reference to the accompanying drawing, in which:

Fig. 1 shows a front view of part of a door containing a magnetic device of the invention for aiding in locating a keyhole therein;

Fig. 2 is a cross-sectional view of the door illustrated in Fig. 1 along line 2—2;

Fig. 3 is a view similar to Fig. 2 of a modification.

Fig. 1 shows a door containing a magnetic device of the invention. The door comprises, for example, the usual wooden support member **10** in which is mounted a lock mechanism **11** of conventional form, which upon actuation by the correct key will actuate a latch **12** for locking or unlocking the door. Access to the lock mechanism **11** is afforded by a keyhole **1** in a front plate **4** secured to the front side of the door **10**. The keyhole **1** in turn communicates with an aperture **1'** in the wooden portion of the door **10**, which aperture **1'** in turn communicates with the lock mechanism **11**. The latch **12** may be actuated by pushing the proper key through the keyhole **1**, through the aperture **1'** and into the lock mechanism **11**, whereupon rotation of the key will cause the latch **12** to be actuated in the usual manner.

In order to aid in locating the position of the keyhole, for example in the absence of light, a pair of closely-spaced permanent magnets **2** and **3** are provided behind the front plate **4**, each magnet on an opposite side of the keyhole **1**. The directions of magnetization "NS" of said magnets **2** and **3** have opposite senses as shown in the figures, so that the magnets are in repelling relationship, that is, like poles of the magnets face one another. In such case, it has been found that, if a ferromagnetic body, such as an iron key, is brought in registration with the keyhole **1**, the fields of the magnets **2** and **3** act upon the key so as to attract or draw the latter into the keyhole **1**.

In Fig. 2 has been shown some of the lines of force **8** that exist between the repelling magnets **2** and **3**. As will be observed, due to the opposite directions of magnetization and the close spacing of the magnets, the greatest concentration of the lines of force, indicated by the smaller spacings between the lines **8**, appears in the area of the keyhole **1**. Furthermore, a movable ferro-magnetic iron member will be attracted towards the greater

concentration of the lines of force. Thus, an iron key brought in registration with the keyhole **1** and becoming subject to the influence of the lines of force shown will be attracted into the keyhole **1**. Then, the key can be inserted manually through the aperture **1'** into the lock mechanism **11**.

Fig. 3 shows a modification of the magnetic device illustrated in Fig. 2 in which each magnet **2'** and **3'** is constituted of two integral portions with opposite directions of magnetization. In this modification, the magnets on opposite sides of the keyhole are maintained in repelling relationship.

Since each of the permanent magnets **2** and **3** are preferably of small size and are also subject to demagnetization due to the presence of the other magnet, they are preferably constituted of permanent magnet material having a remanence Br, measured in gauss, which is smaller than its coercive field strength $_{B}H_{C}$, measured in oersted. A material which satisfies this requirement is characterized by a composition consisting essentially of non-cubic crystals of a composite oxide of iron and at least one of the metals barium, strontium and lead. This material and the methods for its preparation are described in a copending application, Serial No. 239,264, filed July 30, 1951, issued as Patent No. 2,762,277.

What I claim is:

1. In combination, a plate-like member having an aperture therein for receiving a ferromagnetic element, and means providing magnetic forces to draw said ferromagnetic element towards said aperture, said magnetic-force-providing means comprising a pair of closely-spaced permanent magnets mounted on one side of said plate-like member and at opposite sides of said aperture, said magnets having poles of like polarity on facing surfaces thereof whereby said magnets are in repelling relationship, said repelling magnets providing a magnetic field which attracts towards said aperture a ferromagnetic element when positioned at the opposite side of said plate-like member and in registration with said aperture.

2. In combination, a door member containing a lock mechanism actuable by a key, a plate-like member secured to said door and having a keyhole therein for receiving a ferromagnetic key and thus providing for the key access to the lock mechanism, and means providing magnetic forces to draw said ferromagnetic key towards said keyhole, said magnetic-force-providing means comprising a pair of closely-spaced, opposed, thin, permanent magnets mounted on the side of said plate-like member adjacent the door member and at opposite sides of said keyhole, said magnets having poles oriented in the direction of their thin dimension and such that poles of like polarity on the magnets face each other whereby said magnets are in repelling relationship, said repelling magnets providing a magnetic field which attracts towards said keyhole a ferromagnetic key when positioned at the opposite side of said plate-like member and in registration with said keyhole, said magnets being constituted of a material consisting essentially of a composite oxide of iron and at least one of the metals selected from the group consisting of barium, strontium and lead.

3. A combination as set forth in claim 1, wherein the magnets are constituted of a material consisting essentially of a composite oxide of iron and at least one of the meals selected from the group consisting of barium, strontium and lead.

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