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MAGNETIC KEY

Filed Feb. 6, 1925

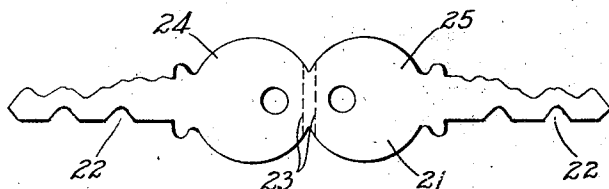


Fig. 1

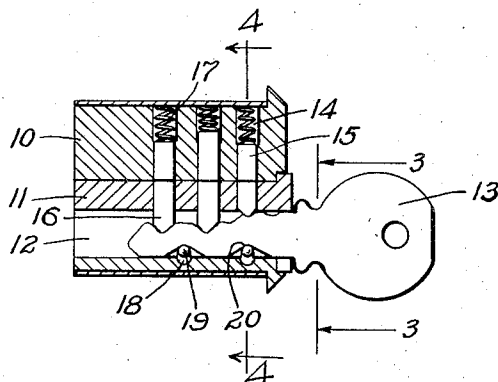


Fig. 2

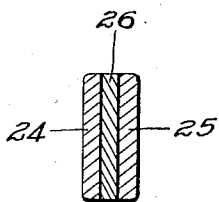


Fig. 3

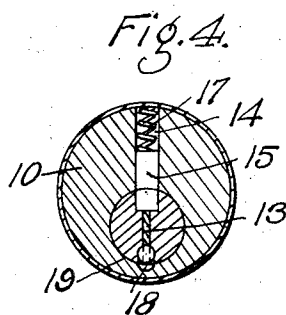


Fig. 4

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UNITED STATES PATENT OFFICE.

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MAGNETIC KEY.

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This invention relates to improvements in keys.

It is an object of this invention to provide a specially designed magnetic key adapted to operate a lock.

A still further object of this invention is to provide a key formed of magnetized and non-magnetized material, in which the magnetized material is formed in the shape of a U-shaped or horse-shoe magnet so as to keep the key highly magnetized.

With the foregoing and other objects in view which will be made manifest in the following detailed description and pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a plan view of a blank which I may employ in forming my improved key;

Fig. 2 is a vertical section through a lock of such construction as to employ my magnetized key; and

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 2.

Figure 4 is a vertical section taken upon the line 4—4 upon Figure 2 in the direction indicated.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the lock which I preferably employ consists of a body 10 in which there is rotatable a cylinder 11. The cylinder 11 has a keyway 12 formed therein adapted to receive a key 13. Tumbler slots 14 are formed in the body 10 and in the cylinder 11. Upper tumblers 15 are disposed within the tumbler slots formed in the body 10, and lower tumblers 16 are disposed in the tumbler slots in the cylinder 11. If desired, coil springs 17 may be employed for urging the upper tumblers 15 and the lower tumblers 16 toward the bottom of the tumbler slots. In the bottom of the body 10 there are formed one or more cup-shaped recesses 18, which are adapted to receive balls 19. When the balls 19 are disposed within the recesses 18, they are only half within the recesses, the upper half of each ball extending above the lower surface of the cylinder 11, so that the balls effectively key the cylinder 11 against rotation within the body 10.

The key 13 is magnetized so that it provides a permanent magnet, and when the key is inserted in the keyway 12, so as to lift

the tumblers to their proper positions, notches 20 which are formed in the key are disposed over the balls 19. These notches are of such depth as to completely receive the balls 19. In this manner, when the key 13 is inserted, it will not only lift the tumblers into their proper positions, but will attract the balls 19 so as to lift them out of their recesses 18. By lifting the balls 19 out of the recesses 18, the cylinder may then be rotated by the key 13.

From the above it will be appreciated that in order to open the lock, it is not only necessary to provide a key of such shape that it will hold the tumblers in proper position to open the lock, but it is also necessary to employ a magnetized key to lift the balls 19.

The preferred key which I employ is formed of a blank 21 formed of steel which is sufficiently hardened to become permanently magnetized, or the key may be formed of any other material capable of being permanently magnetized. The blank 21 is in the form of two keys having their heads secured together, and notches 22 are formed in the blank, which, when the blank is folded upon the fold lines 23, cooperate to form the recesses or notches 20. Between the two sections 24 and 25 of the blank 21 I place a spacer 26 of brass, lead or other non-magnetic material which is not capable of being magnetized. In this manner when the portions 24 and 25 are folded and held separated from each other by the non-magnetic spacer 26, a U-shaped or horse-shoe magnet is in reality provided, which will remain highly magnetized for a long period of time, and will easily and quickly lift the balls 19 upon being inserted into the lock.

From the above it is seen that I have provided a key which is magnetic and which is formed both of magnetized material and non-magnetic material, and that the key is in reality a U-shaped or horse-shoe magnet.

The balls 19 preferably are of a diameter greater than the thickness of the key 13, and suitable grooves are formed in the sides of the keyway 12 which maintain the balls in the cylinder 11, so that they will not be withdrawn from the cylinder upon removal of the key 13.

Although the lock, as above described, is provided with no permanently magnetized parts, it is contemplated within the scope of this invention to magnetize the balls 19 or

the tumblers 16, or both, so that the key and these parts may mutually attract each other.

It will be understood that various changes in the detail of construction may be made without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A key formed of magnetic material adapted to form a U-shaped magnet, and a spacer disposed between the free ends of said magnetic material, the upper edges of said free arms having a configuration thereon adapted to conform to the requirements of a lock, the lower edge of said arms having indentations thereon adapted to draw magnetized balls from said lock.

2. A key formed of magnetic material adapted to form a U-shaped magnet, and a

spacer of non-magnetic material disposed between the free ends of said magnet, the free ends of said magnet and said spacer having an identical marginal configuration.

3. A key comprising a U-shaped member formed of magnetic material, the free ends of said member being spaced apart and having edges of such a configuration as is adapted to conform to the requirements of a lock.

4. A key comprising a section of sheet metal which has been magnetized and which is bent U-shaped in form, and a spacer disposed between the free ends thereof and substantially occupying all of the space between the free ends.

In testimony whereof I have signed my name to this specification.

ARTHUR E. ANAKIN.