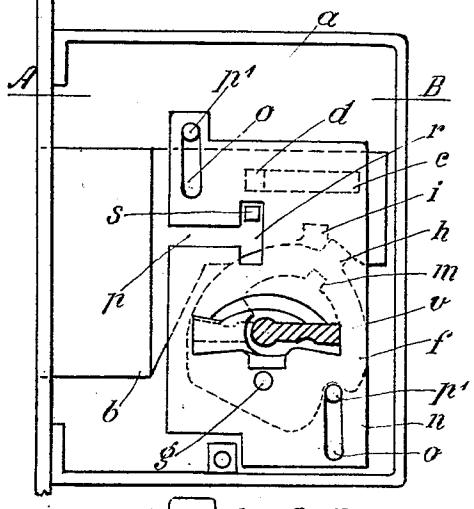
Oct. 27, 1931. G. LALITY ET AL 1,829,596

LOCK

Filed Feb. 6, 1929

Fig 1.



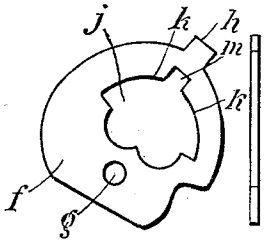


Fig. 4.

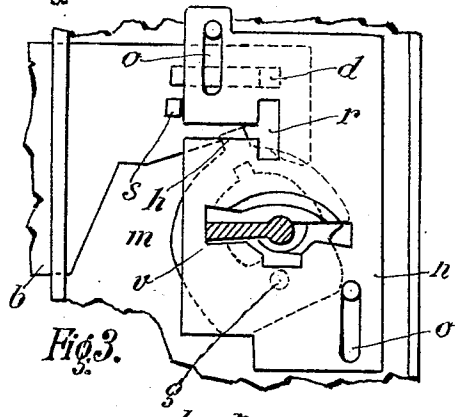


Fig. 3.

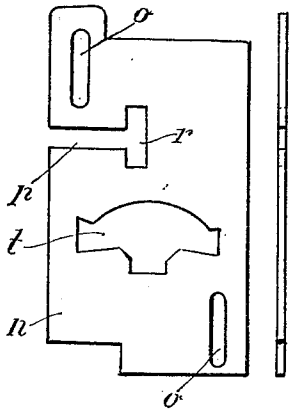


Fig 5.

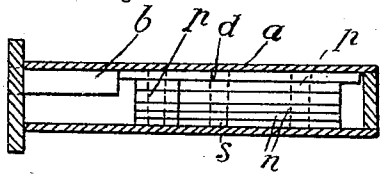


Fig. 2.

INVENTORS
G. Lality
and N. Karpati
BY Lanyon, Parry, Yard & Lanyon
ATTYS

Patented Oct. 27, 1931 1,829,596

UNITED STATES PATENT OFFICE

GEORG LALITY AND NANDOR KARPATI, OF BUDAPEST, HUNGARY

LOCK

Application filed February 6, 1929, Serial No. 337,987, and in Hungary February 9, 1928.

This invention relates to an improved lock which is distinguished from locks hitherto known by its simple design and efficiency.

In the accompanying drawings an embodiment of the invention is shown by way of example, in which:

Figure 1 is an elevation illustrating the interior of the lock casing with the lock in the open position.

Figure 2 is a section on the line A—B of Figure 1.

Figure 3 is an elevation of the interior of the lock with the lock in the closed or "shot" position.

Figure 4 illustrates a plate for actuating the lock-bolt in side and front elevation and

Figure 5 shows a tumbler in side and front elevation.

Referring to the drawings *a* is the lock casing in which is mounted a lock-bolt *b* provided with a horizontal guide slot *c* with which a guide pin *d* projecting inwardly from the wall of the casing engages.

In the plane of the lock-bolt there is arranged a latch plate *f* rotatable on a pivot *g*. This latch plate is provided with a nose *h* adapted to engage a groove-shaped notch *i* on the inside edge of the lock-bolt.

Adjacent the notch *i* the lock-bolt is chamfered, which renders it possible for the nose *h* to leave the groove *i* in a certain position of the lock-bolt.

In the centre of the plate *f* an aperture *j* is provided which is so dimensioned as to provide sufficient space for the turning of the web of the key. The side of this aperture facing the lock-bolt is limited by an arcuate wall *k* along which the web of the key grazes. In front of the nose a groove-shaped notch *m* is formed in which the key web engages during turning and by means of which the key turns the plate *f*.

The tumblers *n* are not spring operated as in prior arrangements but are provided with vertical slots *o* in which engage guide pins *p'* projecting from the lock casing. The slots and pins only permit of a vertical positive movement of the tumblers. In addition, horizontal notches *p* and vertical slots *r* are provided on the tumblers which serve to permit the passage of the locking pin *s* projecting from the lock-bolt. Finally on each of the individual tumblers an aperture *t* is provided for the passage of the key. These apertures are at such a height in the tumblers and are so formed that they enable the key web, in both extreme positions, i. e. in the open and closed or "shot" state of the lock-bolt, to penetrate into the interior of the lock case, but as soon as the lock-bolt leaves either extreme position, only the part of the openings under the key-hole of the lock case remains which permits the passage of the key-shank.

To operate the lock a key is used, on the shank of which and on the side opposite the key-web *v* channels are cut for taking up the edges of the tumblers.

The lock operates in the following manner:—

The key web *v* is introduced into the open lock in the position shown in Figure 1 and to operate the bolt, the web is turned in the direction of the arrow Fig. 1. During this turning movement the key web lifts the tumblers *n* into a position in which the locking pin *s* of the lock-bolt comes in front of the notch *p* of the tumblers. During this upward vertical displacement the tumblers are guided by the pins *p'* and by the slots *o*. The tumblers, during their upward movement, completely cover the key-hole of the lock-case, so that no foreign body, for example wire or the like can be inserted into the lock, for the purpose of opening the lock. During the movement of the tumblers by the key into a position in which the pin *s* is in front of the notch *p* the key-web passes along the arcuate edges *k* of the aperture *j* of the plate *f* until it reaches a position in front of the notch *m*. The key-web then engages in the notch *m* and on further movement carries the plate *f* with it, whereby the nose *h* of the latter, engaging in the groove *i* of the lock-bolt, displaces the latter out of the lock casing in a horizontal direction. After the lock bolt *b* is closed, the web springs out of the recess *m*, turns underneath the left-hand arcuate segment *k*, until engagement, striking against which it turns the plate *f* to the left so that the tooth projection *h* is pressed

tightly against the left-hand slope of the lock-bolt adjacent the groove *i* thereby preventing forcible pressing back of the lock-bolt from the outside. On opening the operation is reversed.

During the outward movement of the lock-bolt the pin *s* passes along the notch *p* of the tumblers and then passes out of same and reaches a position in front of the tumblers, in which position the withdrawal of the lock-bolt is prevented (Fig. 3).

To release the locking action, the key first moves the tumblers in vertical direction into the position in which the pin *s* comes in front of notch *p* when, with the turning of the plate *f* the lock-bolt is also withdrawn, whereby the pin *s* passes along the notch *p* and enters the slot *r*.

The advantage of the lock resides in the fact that no springs are employed so that its design and action is more secure than that of the hitherto known locks. The tumblers move positively in a vertical direction, actuated by the key-web. This lock is much more perfect than the locks hitherto known with tumblers turning by their own weight around a pivot, as the latter, owing to friction, pressing or catching on each other frequently jam and cannot move, whereas in the lock according to the present invention, each individual tumbler is moved positively by the key-web. This is also achieved by the fact that the key-shaft opposite the web, is provided with notches in which the tumblers engage. If an attempt is made to raise the tumblers with the aid of a strange key, they immediately cover the keyhole, rendering forcible opening impossible. A further advantage resides in the fact that during the movement of the lock-bolt the tumblers cover the key-hole and also in the fact that the latch plate *f* owing to its peculiar form guides the key-web in its movement until engaged in the notch *i*.

What we claim is:

A springless safety lock comprising a casing having a keyhole therein, a lock-bolt in said casing, tumblers in said casing capable of being raised and lowered vertically by a key-web, and apertures in each of said tumblers for the passage of the key-web, the apertures in the tumblers being formed and arranged so that when the tumblers are in the raised position only sufficient opening is left in the said apertures for the passage of the key-shank whereby forced opening of the lock is prevented.

In testimony whereof we have signed our names to this specification.

GEORG LALITY.
NANDOR KARPATI.