Jan. 15, 1929. 1,699,190

A. HOFFMANN

LOCK

Filed March 7, 1927

Fig. 1.

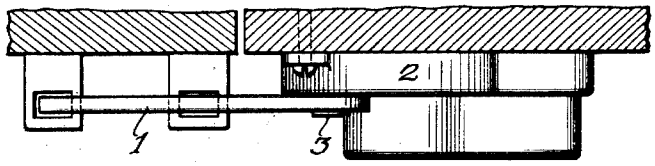


Fig. 2.

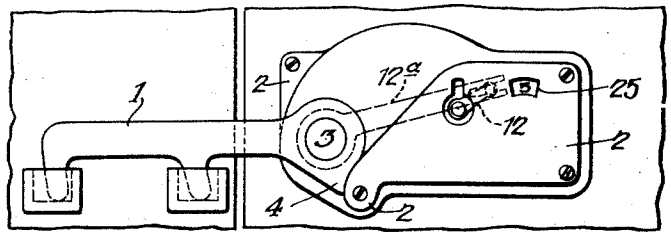


Fig. 3.

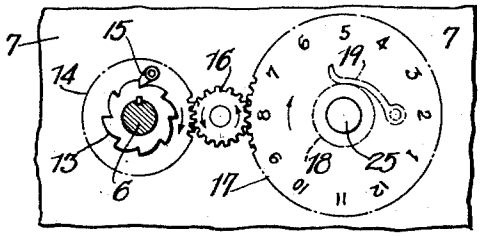


Fig. 4.

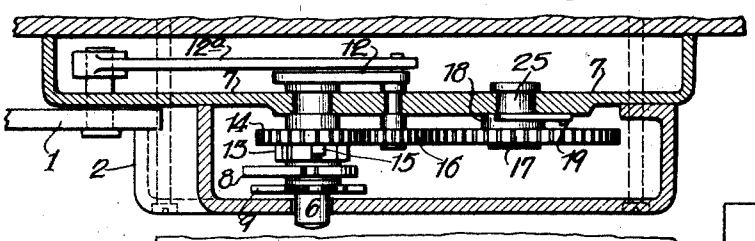


Fig. 7.

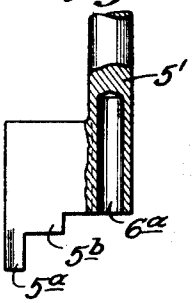


Fig. 5.

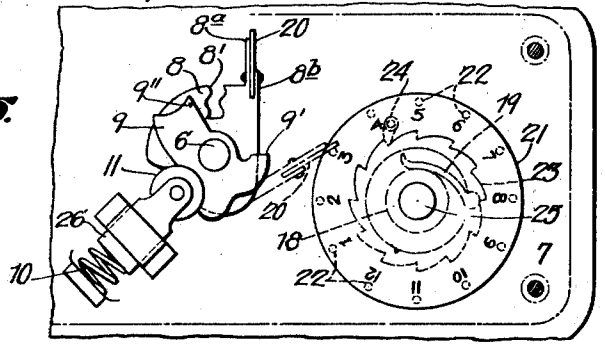
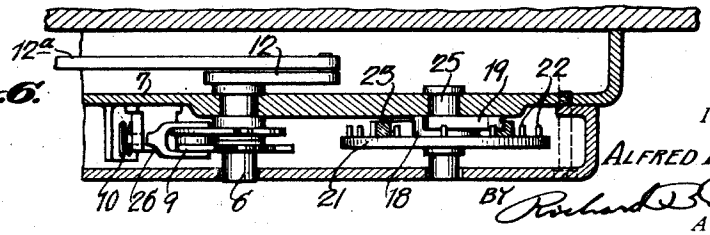


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALFRED HOFFMANN, OF FRANKFORT-ON-THE-MAIN, GERMANY.

LOCK.

Application filed March 7, 1927, Serial No. 173,512, and in Austria January 25, 1927.

This invention relates to improvements in disengageable locks provided with a bolting hook and indicating device for use in connection with cars, luggage-vans, warehouses, storage rooms, sheds and the like, particularly of the kind in which the bolting hook is subjected to the action of an operating lever, which is secured to the keyhole-pin of the lock and operates the locking bolt, and whereby one or more tumblers are mounted on the said key-hole-pin and are rotated by means of a key introduced into the lock.

In arrangements of this kind, it has been proposed already to cut through or sever a check-card, which is removably located in the lock, by operating the tumblers of the lock, whereby also a trap-door is opened through which the cut up card may drop out, in order to indicate, that the lock has been unlocked. However, this construction possesses the drawback, that the cut up card is folded up within the lock or that the paper or material of which the card consists is rolled up at the cutting edges, so that the pieces of the card cannot drop out of the lock and the operation of the tumblers and thus also the operation of the lock is interfered with.

According to the present invention these drawbacks are removed by providing a rotatable indicating device or a counting device instead of the check-card, the said device being fed forward for a pre-determined distance or for one number by means of rotating the tumbler in the unlocking direction with the aid of the key, in order to indicate whether and how many times the lock has been unlocked.

Two modes of carrying out the present invention are illustrated by way of example on the accompanying sheet of drawings in which:—

Figure 1 is a top plan view of the lock.

Figure 2 is a front view of the lock.

Figure 3 illustrates in sectional elevation a construction of the feed-mechanism, the section being taken through the shaft of Figure 4, and in front of the feed gears.

Figure 4 shows in sectional plan view the embodiment illustrated in Figure 3, the section being taken through the casing.

Figures 5 and 6 illustrate in front view and sectional plan view respectively a modified construction of the feed-mechanism, the section of figure 6 being taken through the casing.

Figure 7 shows a key end adapted for operating the lock.

The bolting hook 1 of the lock is rotatable about a pin 3 mounted in the casing 2 and, in the locking position shown in Figure 2, the extension 4 of the hook rests against an extended portion of the casing 2, whereby the downward rotation of the said hook is limited. The casing 2 is provided with a keyhole 5, through which the key 5′ is inserted, the latter consisting of a key-barrel 6^a and two key-bits 5^a and 5^b and is pushed over the key-hole-pin 6. The pin 6 is rotatably mounted in a partition 7 of the casing 2 and carries a freely rotatable tumbler 8 and a tumbler 9, which is fixed to the keyhole-pin 6. The freely rotatable tumbler 8 is provided with a recess 8′, (Figure 5) which is shaped in any desired manner to fit the key-bit 5^a, while the tumbler 9, which is fixed to the keyhole-pin 6, is furnished with a stop 9′ for cooperation with the other bit 5^b of the key. The two tumblers are secured in the desired position by a yieldable retainer 26, which is subjected to the action of a spring 10 and furnished with a roller 11, in this position the latter engaging suitably shaped cut outs in the tumblers 8 and 9. A pin carrying lever 12, secured to the inner end of the pin 6, operates the locking or hook bar 1, through the medium of the bifurcated lever 12^a which is secured to the hook pin 3, at one end and at its bifurcated end engages and is operated by the pin of lever 12. The parts above described and the operation of the same are already known and do not form the essential feature of the present invention.

I shall now describe the construction and operation of the parts forming the subject matter of the present invention.

In the embodiment shown in Figures 3 and 4, a ratchet wheel 13 is keyed to the keyhole-pin 6 and cooperates with a pawl 15, secured to a toothed wheel 14. On rotating the key-hole-pin 6 in the direction of the arrow, which is effected by the cooperation of the key-bit 5^b with the stop 9′ of the tumbler 9 secured to the pin 6, the toothed wheel 14 is fed forward a certain distance in the direction of the arrow by means of the pawl 15. Thereby a pinion 16, which is mounted for free rotation on a suitable stub shaft journaled in the partition 7, is rotated and the same revolves a toothed dial-plate 17, which is secured to a shaft 25, journaled for free rotation in the partition 7. The ratio of the gear combination 14, 16 and 17, is such, that at each rotation of the pin 6 in the unlocking direction

the toothed dial-plate 17 is fed forward the distance corresponding to one number of the dial-plate, so that it is possible through an opening 25 in the casing, to determine whether and how many times the lock has been unlocked and the locking hook 1 has been disengaged. On rotating the pin 6 in the opposite direction, i. e., anti-clockwise, the key-bit 5^b cooperates with the contacting face $9''$ of the tumbler 9 and thereby the ratchet wheel 13 is also rotated in the same direction, i. e., anti-clockwise. However, the pawl 15 slides over the teeth of the ratchet wheel, so that the toothed wheel 14 and therefore also the toothed dial-plate 17 are not rotated backwards. In order to prevent an automatic rotation of the toothed dial-plate 17, the same is provided with a brake-disc 18, which is subjected to the action of a brake-spring 19, secured to the partition 7.

In the construction shown in Figures 5 and 6, the tumbler 8, which is mounted on the pin 6 to freely rotate, is provided with a slitted extension, in which is secured a plate-spring 20 in any convenient manner. The arm 8^a of the slitted extension nearly extends to the free end of the plate spring, while the other arm 8^b of the said extension is comparatively short, in order to permit a bulging of the plate-spring in the direction away from the long arm 8^a. On rotating the freely rotatable tumbler 8 by means of the key-bit 5^a and as soon as the tumbler 9 is rotated clockwise by the cooperation of the key-bit 5^b with the stop $9'$, the end of the plate-spring 20 cooperates with one sprocket of a number of sprockets 22, arranged on a dial-plate 21, and feeds forward the latter a distance, which corresponds to the distance between two numbers of the dial-plate. The latter is mounted for free rotation as heretofore described. On rotating back the tumbler 8 into its original position, the plate-spring 20 evades the sprocket 22 in its path by bulging out, because the dial-plate 21 is prevented from rotating backward by a ratchet-wheel 23, which is secured to the dial-plate 21 and which is engaged by a pawl 24, mounted on the partition 7. In its position of rest the dial-plate 21 is prevented from rotating by a brake-disc 18 and a brake-spring 19, cooperating with the same.

The adjusted number is visible in a window 25 (Figure 2) provided in the casing 2 of the lock.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:—

1. An indicating lock for use in connection with luggage-van doors and the like comprising in combination, a casing, a bolting hook hinged thereto, a keyhole-pin rotatably mounted in the casing, a ratchet wheel keyed to the said keyhole-pin, a toothed wheel freely rotatable on the said pin, a pawl secured to the said toothed wheel and engaging the said ratchet wheel, and a toothed indicating dial-plate mounted in the said casing and meshing with the said toothed wheel for showing the number of times the van door has been opened in transit.

2. An indicating lock as claimed in claim 1, comprising a braking device cooperating with the toothed dial-plate for the purpose specified.

3. An indicating lock for use in connection with luggage-vans, and the like comprising in combination a casing, a bolting hook hinged thereto, a keyhole-pin rotatably mounted in the casing, a tumbler mounted freely rotatable on the said pin, a dial-plate mounted in the said casing, sprockets and an arm on the tumbler for engaging said sprockets on the dial-plate for causing rotation of the latter to indicate an unlocking movement of the bolt hook during transit.

4. An indicating lock for use in connection with luggage-vans, and the like comprising in combination a casing, a bolting hook hinged thereto, a keyhole-pin rotatably mounted in the casing, a tumbler mounted freely rotatable on the said pin, a plate-spring secured to the said tumbler, a dial-plate mounted in the said casing, sprockets arranged on the dial-plate, adapted to be engaged by the plate spring for revolving said dial-plate whereby indication is given that the bolting hook has been opened in transit.

In testimony whereof I affix my signature.

ALFRED HOFFMANN. [L. S.]