

(No Model.)

2 Sheets—Sheet 1.

W. F. LITTELL.
INDICATOR LOCK.

No. 506,647.

Patented Oct. 10, 1893.

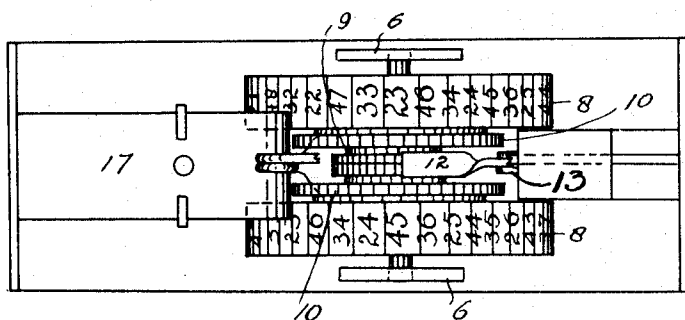


Fig. 1.

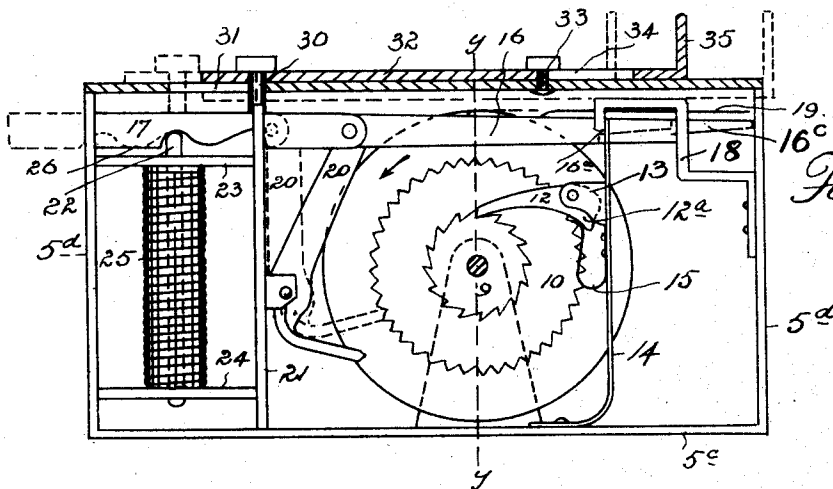


Fig. 2.

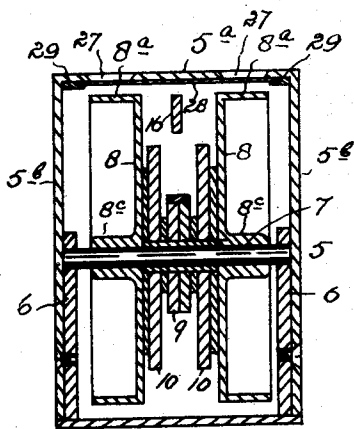


Fig. 3.

WITNESSES:

G. J. Rolland
Wm. M. Connell

INVENTOR

W. F. Littell

BY

A. J. Brien
ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

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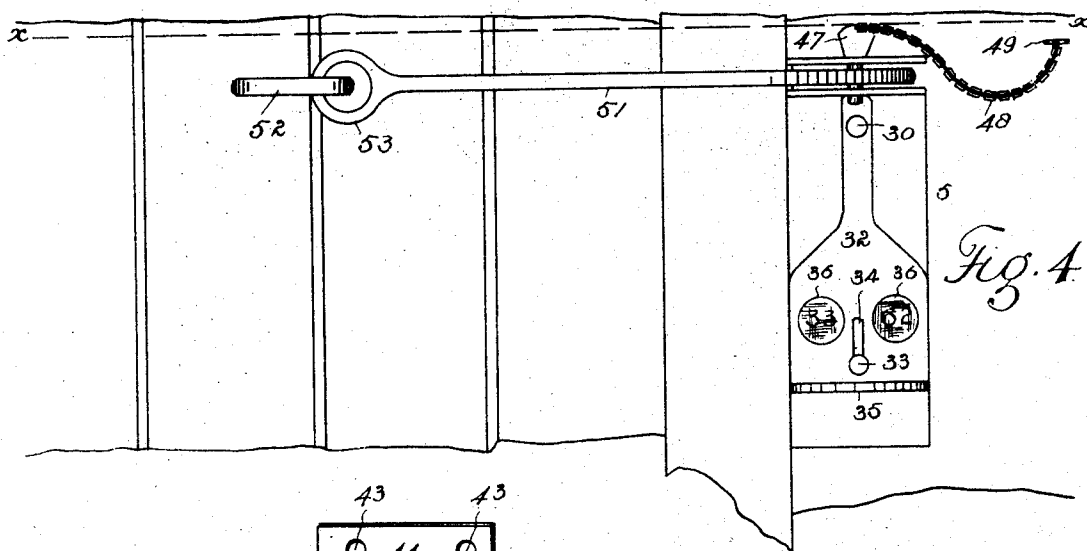


Fig. 4

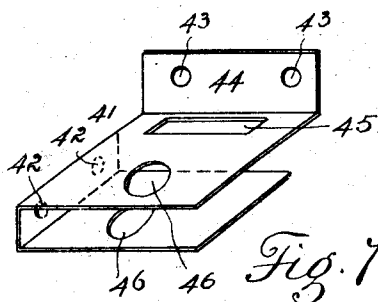


Fig. 7

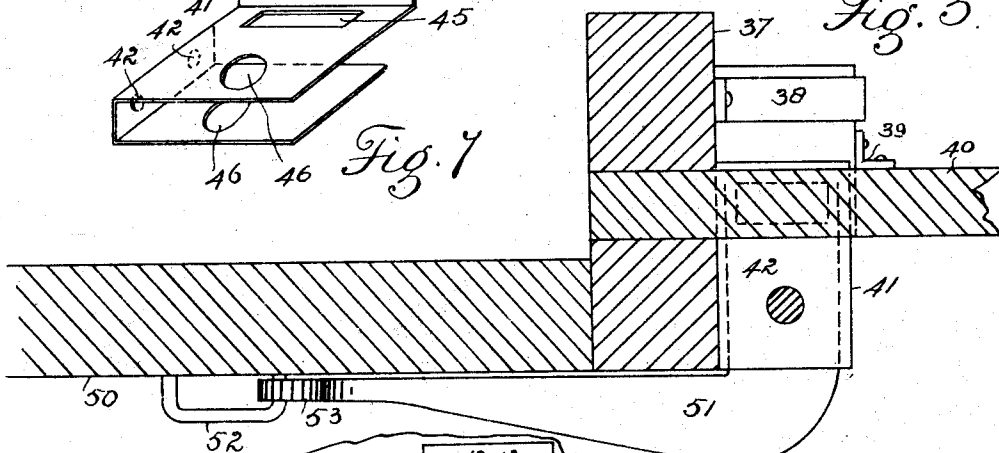


Fig. 5

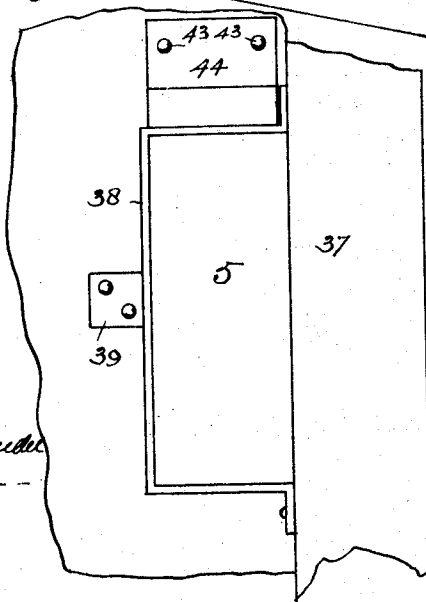


Fig. 6

WITNESSES:

C. J. Rolland
W. M. Connell

INVENTOR

W. F. Littell
BY *A. J. Brien*
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM F. LITTELL, OF DENVER, COLORADO.

INDICATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 506,647, dated October 10, 1893.

Application filed December 21, 1892. Serial No. 455,967. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. LITTELL, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Indicator-Locks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in indicator locks and the object of the invention is to still further improve the construction shown in Letters Patent No. 483,092, bearing date September 20, 1892.

My improved device consists of the features, arrangements and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a plan view of the mechanism, the top part of the case being removed. Fig. 2 is a side view of the mechanism, the side of the case and one of the indicating disks being removed. Fig. 3 is a transverse section taken on the line $y-y$, Fig. 2. Fig. 4 is a fragmentary front view of a car showing my improved indicator lock in place. Fig. 5 is a section taken on line $x-x$, Fig. 4. Fig. 6 is a rear view of the lock in place. Fig. 7 is a perspective view of the metal socket which receives the locking hasp.

Similar reference characters indicating corresponding parts or elements of the mechanism in the several views, let the numeral 5 designate the outer case preferably formed in two sections, the top 5^a and the sides 5^b constituting one section and the bottom 5^c and ends 5^d the other section. Each of these sections is stamped from an integral piece of metal. To the bottom of this case are secured two posts 6, one on each side of the operating parts. In these posts is supported the spindle 7 carrying two wheels 8 having flanged peripheries 8^a and hubs 8^c. These wheels are loosely mounted and adapted to rotate independently of each other on the

spindle, and each wheel carries two toothed or ratchet disks 9 and 10 made fast to its inner surface. These disks are of unequal size and the two smaller disks are both engaged by a dog 12 pivoted on a slotted lug 13 made fast to an upwardly projecting spring 14, the lower extremity of which is bent to engage the bottom plate of the casing to which it is made fast by screws, rivets or other suitable means. The dog 12 carries a projection 12^a extending rearwardly and downwardly from the pivot. This projection is engaged by one extremity of a leaf spring 15 made fast at its opposite extremity to the upright spring 14. The upper extremity of the last named spring is slotted above lug 13 to receive a bar 16 having one extremity pivoted to the locking bolt 17 while the other extremity passes through slots formed in an angular bracket 18 made fast to one end of the case. This bar 16 is normally pressed downward to the bottom of the slots in spring 14 and the bracket 18 by a leaf spring 19 made fast to the bar 16 at one extremity, the opposite or free extremity passing through the slots in the bracket above the bar. This bar is provided with a shoulder 16^a which when the bolt is in the locking position lies to the left of spring 14 as shown in Fig. 2, whereby as the bolt is withdrawn the shoulder engages the spring 14 and thrusts it toward the right. Bar 16 tapers from its shoulder to its extremity which is narrowest. The spring 14 is located in such proximity to the slot in the bracket 18 that when the shoulder of the bar engages the spring 14 the tapering part of the bar engages the bottom of said slot. Hence as the bar is moved to the right in withdrawing the bolt, and the spring 14 thrust in a corresponding direction, the free extremity of the bar will be raised sufficiently to raise the shoulder of the bar from engagement with the spring, when the spring is released, recoils suddenly, expending its force upon the wheels 8 through the medium of the dog 12 and disks 9.

To the inner extremity of bolt 17 is also pivoted one arm of a bell-crank lever fulcrumed on an upright plate 21 having its lower extremity made fast to the bottom of the case. The arm of lever 20 below the fulcrum is adapted to engage both toothed disks 10 and lock the wheels from movement when

the bolt is moved to the locking position. The locking bolt is supported by plate 21 and one end of the case which is apertured to receive the bolt. The bolt is notched on its under surface to receive the upper extremity of a spring actuated bar 22 which passes through apertures formed in two plates 23 and 24 supported between plate 21 and the end of the case, to both of which they are made fast. Between these plates 23 and 24 is located a coil spring 25, its lower extremity bearing against plate 24 and its upper extremity engaging a disk forming a shoulder on the bar 22 below the upper plate 23. There are two notches formed within bolt 17, and between these notches is located the cam 26 having inclined sides from its apex to the bottom of the notches or recesses. This cam in connection with the spring actuated bar 22 engaging it, so increases the power required in manipulating the bolt that the latter will remain in the desired position under all ordinary circumstances and will never move from its position of adjustment except by design. The peripheries of the wheels are provided with characters, as numbers which are observed through openings 27 in the top of the case, one opening being formed above each wheel. These openings are protected by a transparent plate 28 placed across the top of the case and supported on the inside by stops 29. This transparent plate is also sealed to the case around the openings so as to prevent the possible access of moisture or foreign particles of matter to the operating parts of the device.

The bolt is provided with a projection or short pin 30 which extends upward through a slot 31 in the top of the case and through an aperture formed in the sliding plate 32. This pin is provided with a head located outside of the sliding plate, whereby it is securely attached thereto. Another pin 33 is riveted to the inside of the case and projects upward through a slot 34 formed in the plate 32, and is provided with a head on the outside of the plate sufficiently large to retain the plate in place and guide it during movement of the bolt, the slot 34 being of sufficient length to permit the sliding plate to move with the bolt. This plate is also provided with an upwardly projecting flange whereby the plate may be manipulated in operating the lock or moving the bolt. Plate 32 is provided with apertures 36 which are so located that when the bolt is in the locking position the apertures in the plate coincide as to position with the openings 27 in the top of the case. When, however, the bolt is withdrawn from the locking position the apertures 27 in the case are concealed by plate 32, thus preventing the possibility of tampering with the wheels through the apertures in the case, since it is possible, were it not for this guard plate, that the transparent plate covering the openings in the case might be broken and escape the notice of the in-

spector or the person whose business it is to examine the locks and make a record of the numbers exposed. This sliding plate effectively overcomes this objection when the bolt is withdrawn or when the door is unlocked. When, however, the door is locked and the numbers on the indicating wheels are exposed to view, these wheels are securely locked from movement by the bell-crank lever 20, heretofore described. The locking position of this lever is shown by dotted lines in Fig. 2.

It will be observed that plate 32 may be located on the inside of the case, and this will, undoubtedly be found preferable in practice. In this case the plate might occupy the position shown by dotted lines in Fig. 2.

The position of the device when applied to a car is shown in Figs. 4, 5 and 6. In this case the device is secured to the inner post 37, located to one side of the door-way of the car, by means of the metal strap 38 and the angle plates 39. The side or wall of the car is recessed to receive the box or case 5, the top plate of which is exposed to view there-through as shown in Fig. 4. Located within this recess or opening and attached to the side of the car above the device, is the socket plate 41 shown in detail in Fig. 7. This plate is fastened to the car by bolts, screws or nails passed through apertures 42 formed in the body of the plate, and apertures 43 formed in the upwardly projecting flange 44 secured to the inner surface of the wall of the car. The part of this plate which passes through the opening in the side of the car is provided with an aperture 45 to receive the locking bolt, while the plate 41 is double outside of the car, the two parts being provided with coinciding apertures 46 to receive a pin 47 connected with a chain 48 made fast to the side of the car in any suitable manner, as by a staple 49.

To the door 50 of the car is attached a hook-shaped hasp 51 by means of a staple 52 passed through the eye 53 of the hasp. This connection is loosely made as shown to give the hasp perfect freedom of movement. The hook end of this hasp is provided with an opening to receive the bolt of the lock and also an aperture through which the pin passes when the hasp is in place. The aperture through which the bolt passes is large, while that through which pin 42 passes is of such size that the pin fits more tightly therein as it also does in apertures 46 of the socket plate. By this means all strain incident to jars and vibrations may be removed from the bolt of the lock to the pin 47.

From the foregoing description the operation of the device will be readily understood. When the car is locked by the proper person the numbers exposed to view through the apertures in the case are registered or recorded. The bolt, as herein shown, is actuated by moving the plate 32. This movement of the bolt throws lever 20 to engagement with the toothed disks 10, thus locking

the wheels 8 from movement. To unlock the door, or withdraw the bolt the latter moves to the right as shown in Fig. 2. This action of the bolt first moves lever 20 from engagement with the disks 10 and then forces the spring 14 to the right through the connections of the bolt with bar 16, until this bar is disengaged from the spring, the bar being raised by the engagement of its inclined part 16° with the bottom of the slot formed in the bracket 18. Spring 14 being released recoils suddenly and forces the dog 12 against the ratchet disks 9 and drives the wheels 8 around on the spindle in the direction indicated by the arrow in Fig. 2. This is a chance adjustment of the wheels, since it is impossible to determine in advance the extent of their movement, or the numbers that will be exposed through the openings in the case when the bolt is again moved to the locking position. The hook of the hasp being placed in position in the socket plate as shown in Figs. 4 and 5, the bolt is moved to the locking position and the pin 47 inserted in the plate 41 engaging the hasp.

It will be readily understood that the use of my improved indicator lock is not limited to cars, since it may with equal advantage be employed on bank vaults, safes, lock-boxes, and security receptacles of all classes, whereby it may always be determined whether the lock has been manipulated by any person other than the properly constituted official.

Having thus described my invention, what I claim is—

1. In an indicator lock the combination with a rotatable indicating mechanism, and the inclosing case apertured in proximity to said mechanism, of an apertured sliding plate connected with the lock whereby the plate is moved simultaneously with the operation of the lock, the apertures in the plate being so located that they coincide with the apertures in the case when the mechanism is in the locked position, while the plate conceals the apertures in the case when the mechanism is reversed, substantially as described.

2. In an indicator lock the combination with the indicating mechanism, the inclosing case, a locking bolt, and means for connecting the bolt with said mechanism whereby the latter is operated as the bolt is manipulated, of a spring actuated bar engaging a cam on the bolt as the latter is operated whereby the bolt is securely held in the adjusted position

against vibrations or jars, substantially as described.

3. In an indicator lock the combination with the rotating indicating mechanism, the locking bolt, the upright spring, the bar pivoted to the bolt and shouldered to engage the spring, said bar having its free extremity tapering, a slotted bracket attached to the case and engaging the tapering extremity of the bar whereby as the bolt is moved from the locked position the spring is placed under tension and suddenly released, a dog connecting the spring with the indicating mechanism whereby the latter is subjected to a chance adjustment by the recoil of the spring, and a spring-actuated bar engaging a cam on the bolt substantially as described.

4. In an indicator lock the combination of a case a spindle, two wheels supported and independently rotatable thereon, each wheel being provided with a ratchet disk on its inner surface, an upright spring secured to the case at one extremity, a dog pivoted on the spring and engaging both ratchet disks, an auxiliary spring attached to the upright spring and engaging a projection extending rearwardly and downwardly from the pivot, means connected with the lock whereby as the latter is operated the spring is placed under tension and suddenly released and a spring-actuated bar engaging a cam on the bolt, substantially as described.

5. The combination of the indicator lock attached to the car, the socket plate apertured to receive the bolt, the hooked hasp loosely connected with the door of the car at one extremity and apertured to receive the bolt at the opposite extremity and a spring-actuated bar engaging a cam on the bolt, substantially as described.

6. The combination of the indicator lock attached to the car, the socket plate apertured to receive the bolt and provided with another aperture for a locking pin, and the hooked hasp loosely attached to the car door at one extremity and apertured to receive both the bolt and a suitable locking pin at the opposite extremity, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. LITTELL.

Witnesses:

WM. MCCONNELL,
L. S. STREPEY.