(No Model.) 2 Sheets—Sheet 1.

D. E. YOUNG & W. F. LITTELL.

INDICATOR LOCK.

No. 483,092. Patented Sept. 20, 1892.

Fig. 1.

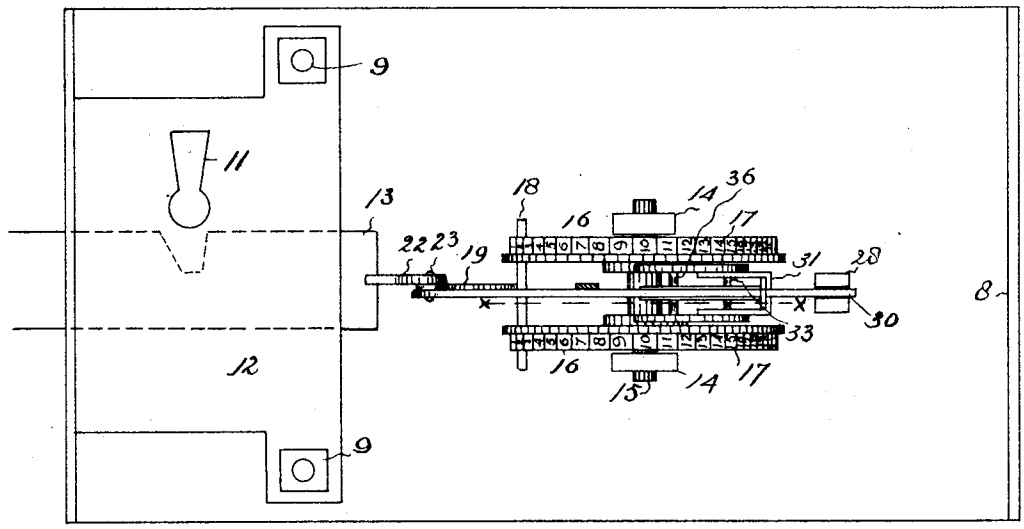
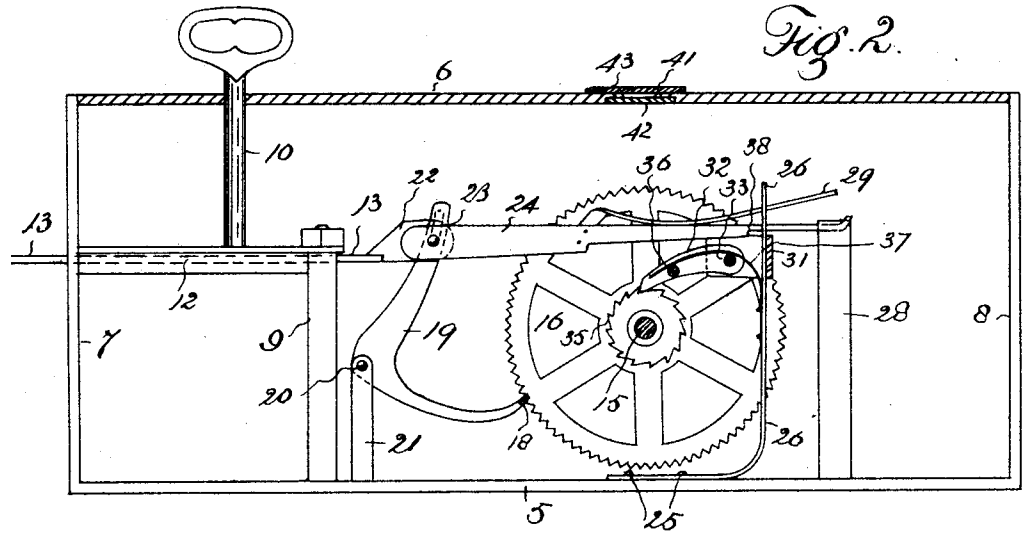


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

D. E. YOUNG & W. F. LITTELL.

INDICATOR LOCK.

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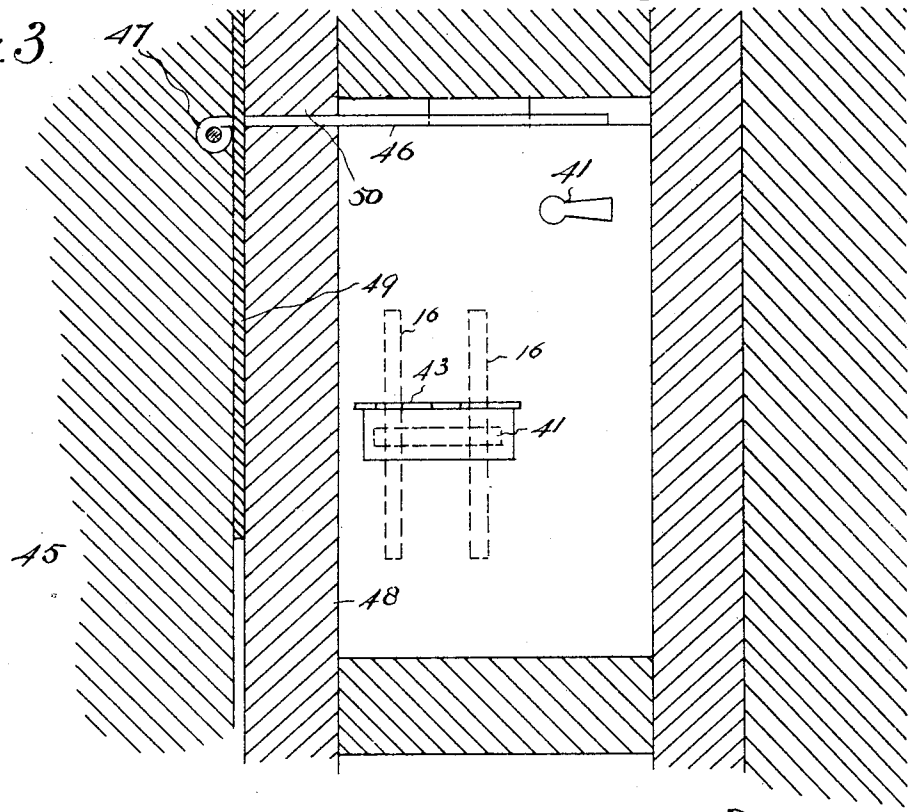
Fig. 3.



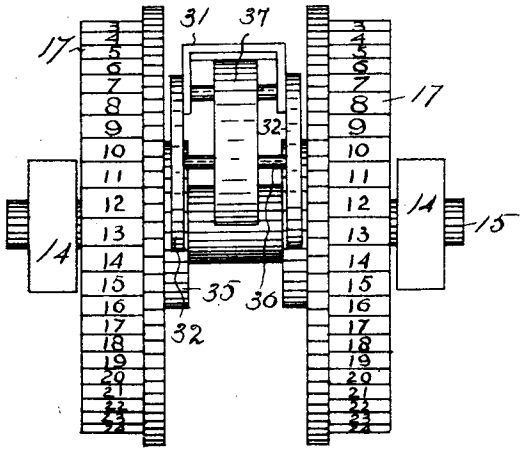
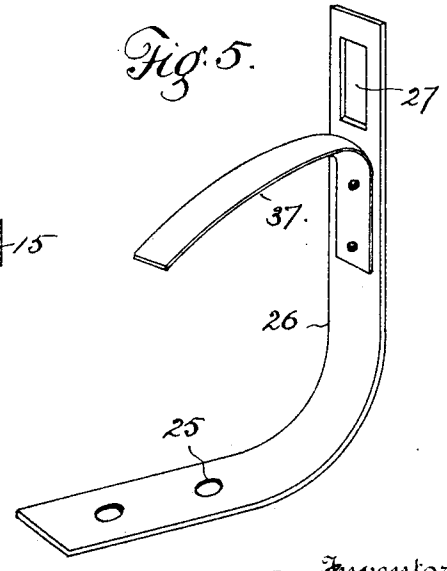


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

DEWITT E. YOUNG AND WILLIAM F. LITTELL, OF WELLSVILLE, COLORADO, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE LITTELL INDICATOR LOCK AND CAR SEAL COMPANY.

INDICATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 483,092, dated September 20, 1892.

Application filed September 14, 1891. Serial No. 405,707. (No model.)

To all whom it may concern:

Be it known that we, DEWITT E. YOUNG and WILLIAM F. LITTELL, citizens of the United States of America, residing at Wellsville, in the county of Fremont and State of Colorado, have invented certain new and useful Improvements in Lock-Movement Indicating Mechanism; and we 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.

Our invention relates to improvements in that class of locks known as "indicator-locks;" and the object of the invention is to indicate whether the lock has been manipulated by any one except the proper parties.

The invention will be fully understood by reference to the accompanying drawings in connection with the description hereinafter given.

In the drawings, Figure 1 is a plan view of the device, shown in connection with a simple form of locking-bolt, the top plate of the casing being removed. Fig. 2 is a side elevation of the mechanism partially in section, the section being taken on the line *x x*, Fig. 1, thus removing one of the indicating disks or wheels and its actuating-dog to permit better illustration of the working parts. Fig. 3 illustrates the location of the mechanism to one side of the car-door and between the inner and outer walls forming the sides of the car. Fig. 4 is an enlarged plan view in detail illustrating the indicating-disks and their actuating mechanism. Fig. 5 is a perspective view of the mainspring and its auxiliary attachment for depressing the dogs.

Similar reference characters indicating corresponding parts or elements in the several views, let the numeral 5 designate the bottom plate, 6 the top plate, and 7 and 8 the end plates, respectively, of the casing inclosing the mechanism.

Supported by standards 9 9, having their lower extremities secured to the base-plate, is a simple form of lock 12, accessible by the use of a key 10, inserted through a suitable opening 11. By the use of this key the locking-bolt 13 is reciprocated. End plate 7 is provided with a suitable opening, through which the bolt protrudes when driven to the locking position.

Secured to suitable supports 14 14, having their lower extremities made fast to the base-plate, is a spindle 15, upon which are mounted at a suitable distance apart two rotating toothed disks or wheels 16 16, each provided with a flange 17, having the outer face of its periphery provided with suitable characters, as letters or figures, either single or combined to form numbers or words. The outer teeth of the disks project beyond the flanges 17 to permit the engagement of a transverse blade or thin bar 18, carried by a bell-crank locking-lever 19, fulcrumed at 20 upon a support 21, secured to the base-plate. The outer extremity of one arm of lever 19 is supported and pivoted upon a pin 23, connecting a lug or projection 22, made fast to bolt 13, with one extremity of a bar 24 extending therefrom toward end plate 8 and lying between wheels 16. The opening in the arm of lever 19, through which pin 23 passes, must be somewhat elongated or enlarged, so as to permit the lever-arm to move independently of the other connected parts, since any point in said arm moves in the arc of a circle whose center is the fulcrum of the lever, while the parts 22 and 24 move in a plane approximating the horizontal or parallel with that in which bolt 13 reciprocates.

Rigidly secured to base-plate 5, as shown at 25, and projecting upward in a vertical plane lying between the two wheels 16, is a leaf-spring 26, preferably formed of steel and provided with a slot 27 near its upper extremity, through which bar 24 extends. The outer extremity of this last-named bar is received within a guide-slot 30, formed in the top of standard 28. This bar as it reciprocates is held to position within this guide-slot by a leaf-spring 29, secured at one extremity to the bar and engaging the upper extremity of slot 27.

Just below slot 27 of spring 26 is secured a stirrup-plate 31, carrying two dogs 32, pivoted thereon, as shown, at 33. The free extremities of these dogs engage ratchet-teeth

35, formed around the hubs of wheels 16. These dogs are connected by a pin 36, the extremities of which are rigidly secured thereto, causing the dogs to move together or in unison at all times. These dogs are held in engagement with teeth 35 by means of a spring 37, secured at one extremity to spring 26 and pressing downward upon pin 36 between the two dogs.

Bar 24 is provided with a notch or shoulder 38, which engages spring 26 beneath its slot and forces the spring toward end 8 of the casing until it is released from engagement with the bar, when it immediately returns and rotates the wheels through the medium of the dogs acting on the ratchet-teeth 35. The top plate 6 of the casing is provided with an outer keyhole 40 directly in line with the opening 11, formed in the lock-casing. Plate 6 is further provided with a slot 41, covered underneath by a transparent plate 42 and outwardly protected by a hinged plate 43, which may be easily raised when it is necessary to inspect the flanged peripheries 17 of wheels 16, carrying the characters heretofore referred to.

The application of the mechanism to a car-door lock is illustrated in Fig. 3, in which 45 is a sliding door provided with a hasp 46, hinged at 47. The door jamb or post 48 is provided with a metal plate 49, and the jamb is provided with an opening 50, through which the hasp passes, when the door is closed to the position shown in the figure, engaging end plate 7 of the casing, the hasp being provided with an opening through which the bolt 13 passes when it is thrust outward to lock the door. The slot 41 is so located that it lies directly in front of wheels 16, extending across their peripheries and being of sufficient width to expose one character on each flange 17 of the wheels.

When the door is locked by the proper person, said person makes a note of the exposed numbers. Then if the door is unlocked those numbers will be changed, and though it may be relocked the original numbers will not appear.

From the foregoing description the operation of the mechanism will be fully understood.

Assuming that the parts occupy the relative positions shown in Fig. 2, the operation is as follows: As the bolt 13 is withdrawn by turning the key, the bar 24 is thrown forward, disengaging bar 18 from the wheels, then thrusting spring 26 to the right and turning the wheels in the same direction by virtue of the engagement of dogs 32 with ratchets 35. Spring 26 continues to move in this direction until released from shoulder 38. It will be observed that shoulder 38 moves in a plane, while the engaging part of spring 26 moves downward in the arc of a circle. Hence from the time bar 24 engages the spring and begins to force it toward the right bar 24 gradually rises in the slot until the spring is released from the bar, when its sudden recoil, acting on the dogs, drives the wheels forward beyond the position they originally occupied, since their momentum causes the ratchet-teeth 35 to slip under the engaging extremities of the dogs after the latter have reached their extreme limit of movement toward the left. The strength of spring 37 is so regulated as to permit this.

It is not necessary that the two wheels should move in unison beyond their original position. Indeed it is not likely that they will ever do this. The one essential point, however, is that the movement of the wheels toward the left shall be such as to change the numbers exposed at the slot 41 every time the bolt is withdrawn, and this will always occur.

It will be observed that when the bolt 13 is in the locking position there is a small space between shoulder 38 and spring 26. The object of this space is to permit bar 24 to move forward sufficiently to unlock the wheels 16 through the medium of the bell-crank levers before engaging the spring, since the wheels should begin to move simultaneously with the spring's movement. This backward movement of the wheels is not, however, essential, since if the wheels remained stationary the dogs would simply slip over the teeth 35 as the spring 26 moved toward the left; yet as the wheels must be released or unlocked before the recoil of the spring it is thought preferable to unlock them as soon as the movement of the bolt begins or before the bar 24 begins to act on spring 26.

It will be understood that there may be any desired number of characters upon the flanged periphery 17 of each wheel, so that the number of possible variations in the sets of characters exposed to view through slot 41 is practically unlimited.

It may be well to state that we do not wish to limit ourselves to the exact mechanism shown and described, since we are aware that many different forms of construction may be employed to carry out our principle, which consists, essentially, of indicating mechanism actuated by a lock for the purpose stated.

Having thus described our invention, what we claim is—

1. In an indicator-lock, the combination, with a locking mechanism, of rotating indicating mechanism loosely mounted and having no definite limit to its forward movement, a spring carrying dogs engaging a notched rack formed on said indicating mechanism, and a bar connecting the spring with the lock, whereby as the lock is actuated the spring is placed under tension and suddenly released, acting on the indicating mechanism through the medium of the dogs, substantially as described.

2. In an indicator-lock, the combination, with the locking mechanism, of rotating indicating mechanism provided with exposed characters, said mechanism being loosely mounted and having no definite limit to its

forward movement, an actuating-spring carrying a dog engaging the indicating mechanism, and a bar connecting said spring with the lock, whereby as the lock is operated the spring is placed under tension and suddenly released, acting on the indicating mechanism through the medium of the dogs, substantially as described.

3. In an indicator-lock, the combination, with the locking mechanism, of the rotating indicating mechanism, a spring acting on said mechanism, a bar connecting the lock with the spring, and a bell-crank locking-lever connected with said bar and adapted to engage the indicating mechanism, the connection between these parts being such that as the lock is operated the locking-lever is released from engagement with the indicating mechanism and the spring placed under tension and released, substantially as described.

4. The combination, with a locking-bolt, of a plural number of independently-rotating disks provided with exposed characters, a spring, a bar connecting the bolt with the spring, and dogs connecting the spring with the disks, whereby as the bolt is manipulated the disks are subjected to an uncontrolled or chance adjustment, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

DEWITT E. YOUNG.
WILLIAM F. LITTELL.

Witnesses:
WM. MCCONNELL,
G. J. ROLLANDET.