

1,037,042.

F. S. OWEN.
INDICATOR LOCK.
APPLICATION FILED OCT. 3, 1911.

Patented Aug. 27, 1912.
2 SHEETS—SHEET 1.

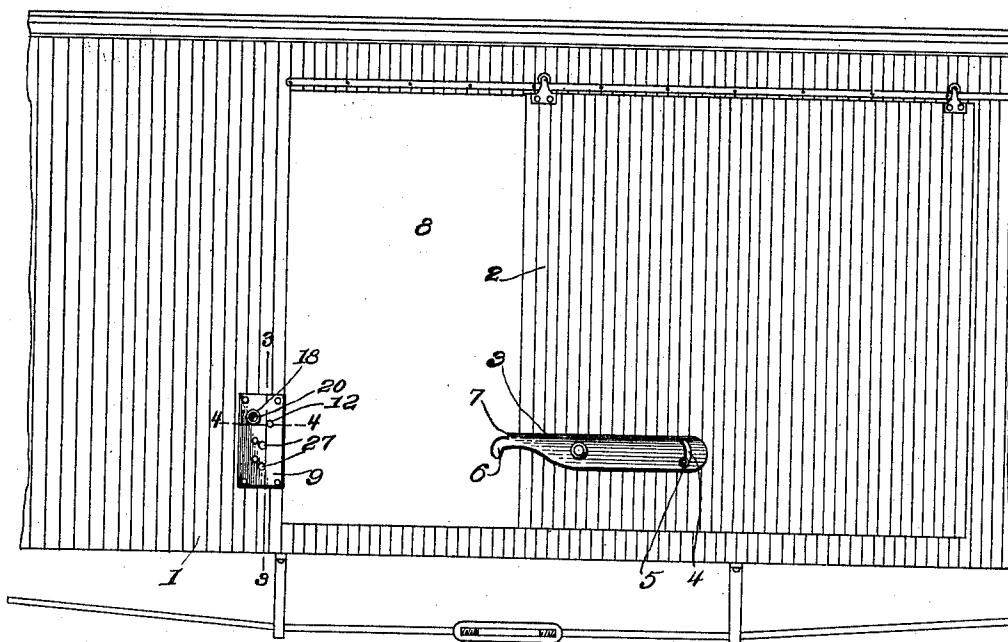


Fig. 1.

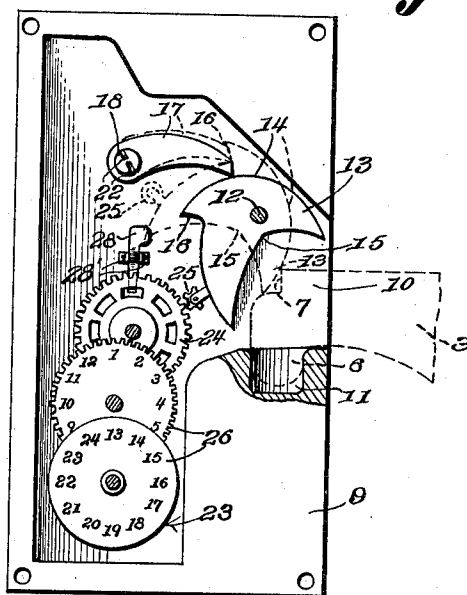


Fig. 2.

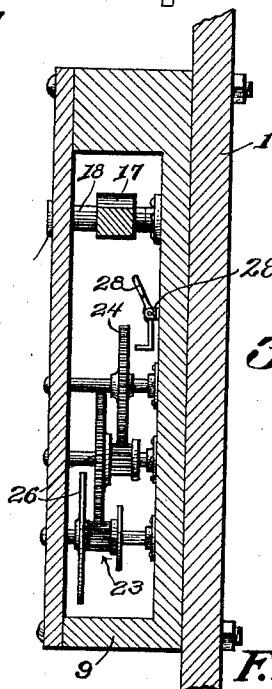


Fig. 3.

Witnesses

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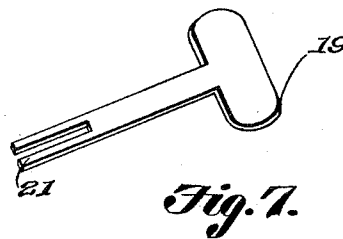
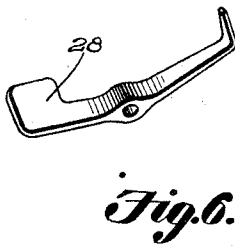
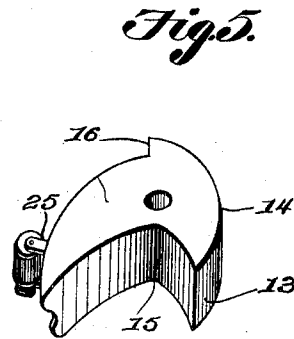
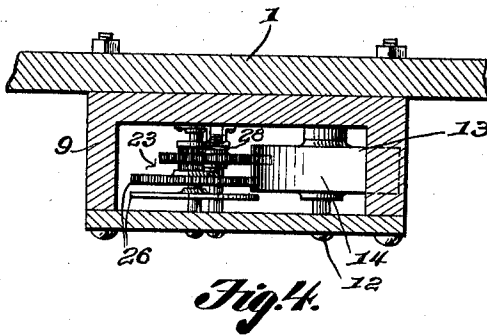
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UNITED STATES PATENT OFFICE.

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INDICATOR-LOCK.

1,037,042.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed October 3, 1911. Serial No. 652,522.

To all whom it may concern:

Be it known that I, FELIX S. OWEN, a citizen of the United States, residing at Billings, in the county of Yellowstone and State of Montana, have invented certain new and useful Improvements in Indicator-Locks, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in locks and more particularly to an indicator lock adapted for use in connection with a sliding door and my object is to provide a device of this character which will indicate when the same has been operated or otherwise tampered with, after having once been set.

A further object of the invention resides in providing a device which will automatically lock a latch as the latter is introduced therein and a still further object resides in providing means to prevent the indicating mechanism being independently operated when the device is set in its locked position.

A further object resides in providing a train of gears within the lock casing and numbered disks in connection therewith, which gears are adapted for operation through the means automatically locking the latch within the casing and a still further object resides in providing means for locking said gears against rotation, which means is also operated by the means for automatically locking said latch within the casing.

A still further object resides in providing a device which is extremely simple in construction, thereby inexpensive to manufacture, and one which is very effective and useful in operation.

With these and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a fragmentary side elevation of a car showing my improved lock applied thereon. Fig. 2 is a front elevation of the lock proper showing the front wall of the casing thereof removed. Fig. 3 is a vertical section through the lock as seen on line 3—3, Fig. 1. Fig. 4 is a transverse section as seen on line 4—4, Fig. 1. Fig. 5 is a detail perspective view

of the pivoted dog removed from the lock. Fig. 6 is a similar view of the pawl member which is used for the locking of the gearing against rotation, and, Fig. 7 is a perspective view of the key member.

In carrying out my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which—

1 indicates one side of a freight car or the like upon which is slidably mounted in the usual or any desired manner, the door 2, and fulcrumed on the outer face of said door is a latch member or the like 3. This latch member has the inner end thereof provided with an arcuate slot 4 through which extends a pin or the like 5 to limit the oscillating movement of said latch member and the free end thereof extends a short distance beyond the one edge of said door. This free end of the latch member 3 is tapered somewhat smaller than the body portion thereof and has a dependent stem 6 formed thereon, and the upper edge of said latch member adjacent the stem 6 has also formed thereon, a shoulder 7, the purpose of which will be hereinafter and more particularly described. The door 2 is designed to close the doorway 8 formed in the side of said car, and mounted on the wall of said car to one side of the frame of said doorway, is a lock casing 9, the front wall of which is removable and the side wall of said casing adjacent the doorway 8 is provided with a slot 10 which is adapted to receive therein, the free end of the latch member 3 carried on said door 2. That portion of the casing or housing 9 immediately below the slot 10 has a vertical slot or socket 11 provided therein which communicates with said slot 10, and pivotally mounted on a pin 12 which extends transversely through said casing, is a dog member or the like 13 having a portion of the outer edge thereof convexed, as shown at 14, and also provided with an enlarged cavity 15 therein. The outer edge of said dog 13 opposite that portion having the cavity 15 therein, is somewhat cut-away to form a shoulder or the like 16 on the convexed periphery thereof, and said dog is so positioned in the casing that when moved in one position, the cavity 15 therein will register with the slot 10 and the end of the convexed portion 14 will contact with the top edge of said slot to limit

the movement of said dog. This latter position is the normal and unlocked position of the device, and when the door is moved to its closed position, the free end of the latch 3 thereon is adapted to enter the slot 10, whereupon said free end of the latch will enter the cavity 15 of said dog 13, and engaging the wall thereof, will cause said dog to be swung on its pivot. A continued forcing of the door inwardly will cause the free end of the convexed portion 14 immediately adjacent the cavity to engage the upper edge of the latch member immediately adjacent the shoulder 7 and force the same downwardly, which downward action will correspondingly force the dependent arm 6 of the latch into the socket 11. At this point, the shoulder 7 will contact with the outer periphery or outer edge of this convexed portion 14, and a latch member 17 pivoted on a pin 18 a short distance to the left and above the dog 13, is adapted to drop into the cut-away portion of said dog to contact with the shoulder 16 thereof, thus preventing the return of the dog to its normal position heretofore described, and at the same time, locking the latch in the socket.

In order to release the latch member 17 from its effective position, a key 19 is provided which is adapted to be inserted through a slot 20 in the front wall of the casing 9 and engaged with the latch 17 to remove the same from its position in engagement with the dog. This key, however, has its effective or free end slotted, as shown at 21, to form bifurcations thereon, which bifurcations are adapted to enter a pair of spaced apart slots or the like 22 in the latch member, and thus, the latch member may be readily turned out of its effective position and at the same time, it will be seen that the ordinary strip of wire or the like which may be entered in the lock maliciously, will not affect the locked condition of the device.

That portion of the casing 9 to the left of the portion having the slot 11 therein, has mounted therein, a train of gears 23, the upper of which numbered 24 is provided with a plurality of openings arranged in a circle therein, and carried on the outer edge of the dog 13 a short distance below the shoulder 16 thereon, is a pinion 25 which is adapted to mesh with the teeth of the gear 24 as said dog 13 is swung on its pivot. Thus, when said dog is swung on its pivot, as stated, the train of gears will be rotated and a pair of numbered disks 26 also carried in the lower end of the train, will be rotated and may be viewed through openings 27 in the front wall of said casing, whereby the operators of the cars may observe the numbers on said disks at any time desired.

Mounted on the rear wall of the casing 9,

is an L-shaped locking pawl or the like 28, which has the longer vertical arm thereof pivoted intermediate of its ends on a horizontal axis between the arms of a keeper or the like 28'. The shorter or horizontally extending arm of this L-shaped pawl is disposed in such a position as to enter one of the plurality of openings arranged circularly on the gear 24 when said pawl is swung on its pivot, but in its normal position, this horizontally projecting portion of the pawl is free of any contact with the gear. That portion of the longer arm of this L-shaped pawl, from the pivot point to the upper free end thereof is bent outwardly to form an angle with the remaining portion of the arm and this outwardly bent portion in the normal position of the pawl is disposed in the path of the dog 13. Thus, as said dog is swung on its pivot to its effective locking position, the outer extended end thereof will contact with the upper face of this bent portion of the pawl to force the same toward the rear wall of the casing 9, thereby swinging the horizontally disposed shorter arm of the pawl outwardly and through one of the openings in the gear 24. When so disposed in one of the openings of said gear, the pawl will securely lock said gear against rotation and correspondingly lock the complete train of gears against any possible rotation, but as soon as said dog 13 is disposed to its ineffective position, said pawl will, by gravity, drop to its normal position, thereby allowing the gears to be rotated.

In operation, the door, when moved to its open position, after having once been locked, leaves the dog 13 in its ineffective position, that is, in the position wherein the cavity 15 thereof is in registration with the slot 10 and in a position to be engaged by the latch 3 when the latter is inserted in said slot. When it is desired to close the door and lock the same in its closed position, said door is moved along until the free end of the latch member 3 thereon contacts with the wall of the slot 10, whereupon said latch is slightly raised and permitted to enter said slot. As stated previously, the free end thereof will engage the wall of the cavity 15 in said dog, and as that portion which it engages is below the pivoted point, said dog will swing on its pivot, and in so turning, the same will force downwardly upon the free end of the latch and force the stem or arm 6 thereof into the socket 11. When so positioned, the latch 17 will have dropped into the cut-away portion of the dog 13 immediately forward of the shoulder 16, thereby preventing the return of the dog to its initial position without certain manual operation. The dog 13 being forced to swing on its pivot, through the movement of the latch thereagainst the pinion 25 on said dog will engage the

teeth of the gear 24 to cause the latter to be rotated and correspondingly rotate the train of gears so that the numbered disks will be rotated and particular numbers indicated through the openings 27 to show the observer the particular number at which the door has been locked. Also upon the swinging of this dog into its locked or effective position, the pawl 28 will have been moved to its effective position to engage the gear 24 and prevent further rotation thereof. Thus, the door cannot be opened nor the lock tampered with without detection, and when it is desired to open the door, the key 19 is inserted in the slot 20 until the free end thereof engages the latch member 17 to raise the same from its effective engagement with the dog 13, whereupon the latch member 3 may be swung on its fulcrumed point to raise the free end thereof. The door may then be thrown open, which movement will allow the latch to be moved readily and cause the dog to be again turned on its pivot and correspondingly rotate the train of gears within the housing. When the cars leave the station in which they are loaded, the figures on the disks are noted and placed on the freight bill as well as the numbers of the cars, and when the train reaches its destination, the figures on these disks are again noted, and if the same do not correspond with the numbers indicated on the freight bill, it is then understood that there has been tampering with the lock and very probably theft of the contents of the car. It will, therefore, be possible to detect whether or not the cars have been opened *en route*, since it is practically impossible to have the same numbers indicated after the lock has been once opened, so that this gear arrangement with the numbered disks thereon, performs the same functions as the seals used in the present system.

While I have particularly described my lock as applied to sliding freight car doors, it will be understood that the same is applicable to any use wherein an indicator lock is found desirable, and in this connection, it might be stated that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

From the foregoing, it will be seen that I have provided an improved indicator lock adapted for use in connection with sliding doors wherein the door will be automatically and effectively locked when moved to its closed position. Furthermore, it will be seen that once locked, the same cannot be readily unlocked except by means of the particular key which is adapted for such purpose.

It will still further be seen that with the application of such a lock as I have pro-

vided, to freight car doors, the casual opening through the movement of the cars, the picking of the locks with malicious intent, and the many other inconveniences that are experienced in the present form of locks, will be obviated.

It will still further be seen that my device is of extremely simple construction, whereby the same may be readily and cheaply manufactured, and one which is very effective and useful in operation.

What I claim is:—

1. In a device of the class described, the combination with a sliding door and a latch member fulcrumed thereon; of a lock comprising a casing having a slot in one side thereof adapted to receive one end of said latch member therethrough, a dog pivotally mounted in said casing immediately adjacent said slot, said dog being adapted to be engaged by the free end of said latch as the same enters said slot to force said latch downwardly, said casing being also provided with a socket to receive said latch as the same is forced downwardly by the dog, means to retain said dog in its effective position, a train of gears within the casing carrying numbered disks thereon and means for operating said gears and disks as the dog is moved to its locked and unlocked positions.

2. A device of the class described, comprising the combination with a sliding door and a latch member fulcrumed thereon; of a lock comprising a casing having a slot in one side thereof adapted to receive the free end of said latch therethrough, a dog pivotally mounted in said casing immediately adjacent said slot and adapted to lock said latch within the casing, a train of gears mounted within said casing and carrying numbered disks thereon, means carried on the dog to rotate said gears and disks as said dog is moved on its pivot, means to lock said gears against rotation when the dog is in its effective position, and means to lock said dog in its effective position.

3. An indicator lock, comprising a casing having a slot in one side thereof, a dog pivotally mounted within the casing adjacent said slot, a train of gears carrying numbered disks mounted within said casing, means on the dog adapted to rotate said gears as said dog is moved on its pivot, said casing being provided with openings in the front face thereof through which the numbers on said disks may be observed, means co-operating with said dog to lock said gears against rotation when the dog is in its effective position, and means to retain said dog in its effective position.

4. An indicator lock, comprising a casing having a slot in one side thereof, the front wall of said casing being also provided with openings, a dog pivotally mounted within

said casing adjacent said slot, a train of gears mounted in the casing and carrying numbered disks thereon, the numbers on said disks being observed through the openings in the front wall of the casing, a pinion carried on the dog adapted to engage one of the gears of said train to rotate the same as said dog is moved on its pivot, a pawl adapted to coöperate with said dog and the last mentioned gear to lock the train against rotation when said dog is in its effective position, and means to retain said dog in its effective position.

5. An indicator lock, comprising a casing having a slot in one side thereof, the front wall of said casing being also provided with openings, a dog pivotally mounted within the casing adjacent said slot, a train of gears mounted within the casing and carrying numbered disks thereon, the numbers on said disks being observed through the openings in the front wall of the casing, a pinion carried on said dog and adapted to engage one of the gears of said train to rotate the same upon the movement of said dog on its pivot, said last mentioned gear being provided with a plurality of openings, a pawl also mounted within the casing adapted to be forced into engagement with the openings in said gear as said dog is moved to its effective position, a catch member adapted to retain said dog in its effective position, and means to release said catch member from its engagement with the dog.

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

FELIX S. OWEN.

Witnesses:
S. W. SOULE,
WM. ROGERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."