

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN REGISTERS FOR FREIGHT-CAR DOORS.

Specification forming part of Letters Patent No. 195,284, dated September 18, 1877; application filed July 19, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. HOYT, of Batavia, in the county of Genesee and State of New York, have invented certain new and useful Improvements in Registers for Freight-Cars, which improvements are fully set forth in the following specification, reference being had to the accompanying drawing.

My invention relates to a registering mechanism designed to be employed on freight-cars for recording the number of times the car has been opened, such as is described and shown in Letters Patent of the United States No. 167,901, granted to myself and Frederick J. Hoyt, September 21, 1875.

My invention consists of the particular construction of the mechanism, as will be hereinafter fully set forth.

In the accompanying drawing, Figure 1 is an elevation, showing a portion of a freight-car with the sliding door and register secured thereto. Fig. 2 is an inside elevation of the register. Fig. 3 is an inside elevation of the means for actuating the register. Fig. 4 is a horizontal section of the registering mechanism. Fig. 5 is an edge view of the bridge-tree of the register with the detent-pawls attached thereto. Fig. 6 is a side elevation of one of the detent-pawls.

Like letters of reference refer to like parts in each of the figures.

A represents the side of the car, and B the sliding door.

C is the case in which the register mechanism is arranged. It is made circular in form, and open at the back and secured by bolts *c* in a recess formed in the car-door, as shown in Fig. 4.

D is the slotted latch, pivoted to the case C at *d*, so as to engage over a catch or staple, *e*, in the side of the car, for securing the door. The latch D is provided on its inner side, near the pivot *d*, with a claw or tooth, *f*.

G is the slide for actuating the register mechanism. It is arranged horizontally on the outer side of the face-plate of the case C, so as to project with its front end through the side of the case, and is protected by a cover, G', as shown in Fig. 4. The front end of the slide G is provided with a cavity, *g*, in which

engages the claw *f* of the latch, so as to move the slide backward as the latch is closed.

h is a shoulder formed on the inner side of the front portion of the slide G, so as to strike against the case C when the slide is sufficiently moved back, thereby limiting the backward movement of the slide.

H is a spiral spring arranged in a recess of the case C and slide G, so as to bear against the latter, and return it to its forward position when the latch is opened.

i is a gear-rack formed on the inner end of the slide G, and *k* a mutilated pinion meshing therewith, and mounted on a short shaft, *l*, arranged centrally in the case C, so as to turn with the pinion *k*.

M is the primary or unit registering wheel or disk, mounted loosely on the shaft *l*, and M¹ M² M³ are the multiplying wheels or rings, arranged concentric with the wheel M, so as to be capable of independent motion around a common axis. Each of the wheels M M¹ M² is supported with its rim or periphery on an inwardly-projecting flange of the respective surrounding wheel, while the outer wheel M³ is supported on an offset of the case C, as clearly shown in Fig. 4.

Motion is transmitted to the unit-wheel M from the shaft *l* by means of a clutch-coupling, *n*, one half of which is secured to the wheel M, while the other half of the coupling is fitted on the square portion of the shaft *l*, in such manner as to turn therewith while being capable of longitudinal motion thereon. This half of the coupling *n* is held in engagement with the half secured to the wheel M by a spiral spring, *o*, interposed between the loose half of the coupling and the case C. The outer end of the shaft *l* is held in position by the hub of the pinion *k*, turning in a corresponding opening in the case C, while the inner end of the shaft *l* turns in a bridge-tree, P, arranged perpendicularly on the rear side of the register-wheels, and secured with its ends to the case C. The register-wheels are each provided on their outer sides with numerals or characters, from 0 to 9, one of each wheel being exposed at a time through an opening, *q*, in the face-plate of the case, which opening is preferably covered with glass.

The rings $M^1 M^2 M^3$ are each provided on their inner side with a projecting rim or flange, r , arranged around their inner edges. These circular flanges r are each provided with ten equidistant notches, s , corresponding in arrangement with the numerals on the face side of the rings. $t t^1 t^2$ are pawls or dogs pivoted, respectively, to the wheels $M M^1 M^2$, near their peripheries; and u are guide-ribs or flanges arranged on the under side of the bridge-tree P , for forcing the pawls as they pass under the bridge-tree into the adjacent notch s of the next surrounding wheel. v are detent spring-pawls, secured to the bridge-tree P , for preventing any retrograde movement of the rings $M^1 M^2 M^3$. The pawls v are arranged with their heads partially above the circular flanges r of the rings, so as to engage in the notches s thereof, and partially over the adjacent inner wheel, as shown in Fig. 2. That portion of the head of each pawl engaging in the notch s is made with a perpendicular face, so as to hold the respective ring against movement in either direction, while the inner portion of the head of each pawl is made inclined, as shown in Fig. 6, to enable the pawl v to be raised and disengaged from the respective notch s as one of the pawls $t t^1 t^2$ passes under the same. The unit-wheel M is held against backward movement by a ratchet, w , and detent-pawl w' .

In closing the latch D for securing the door, the slide G is moved backward by the claw f , and the pinion k is turned one-tenth of a revolution, which movement is transmitted to the unit-wheel by the coupling n . The number of teeth in the latter corresponds with the number of numerals on the unit-wheel, being ten in the drawing.

Upon opening the latch D the slide G is returned to its forward position by the spring H , and the pinion k and loose half of the coupling n are turned back one-tenth of a revolution, ready to be operated again when the latch is again closed.

When the unit-wheel M has completed a

revolution, the pawl t thereof strikes under the inner detent-pawl v , disengaging the same from the notch s of the ring M^1 and releasing the latter. The head of the pawl t is at the same time forced into the notch s by the guide-flange u , so that the next movement of the unit-wheel also causes the next surrounding ring M^1 to be turned one-tenth of a revolution. At the completion of this movement of the ring M^1 the pawl t drops out of the notch s , and the ring M^1 remains stationary, while the wheel M continues its movement. When the ring M^1 has completed a revolution this is registered by moving the ring M^2 one degree, in a similar manner.

By noting the numbers exposed by the register after the latch is locked, and comparing them with the numbers exhibited by the register upon the arrival of the car at its point of destination, it is readily ascertained whether or not the latch has been opened between the stations.

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

1. The combination, with the latch D , of a slide, G , and registering mechanism for recording the number of times the latch has been opened and closed, substantially as hereinbefore set forth.

2. The combination, with the latch D , provided with claw f , of the slide G , provided with spring H , and registering mechanism, substantially as and for the purpose hereinbefore set forth.

3. The combination, with the latch D and slide G , provided with rack i , of the pinion k , coupling n , spring o , and registering-wheels, substantially as and for the purpose hereinbefore set forth.

WM. H. HOYT.

Witnesses:

EDWARD WILHELM,
CHAS. J. BUCHHEIT.