(No Model.) 2 Sheets—Sheet 1.

O. P. HIX.

CAR DOOR LOCK.

No. 453,004. Patented May 26, 1891.

FIG. 1.

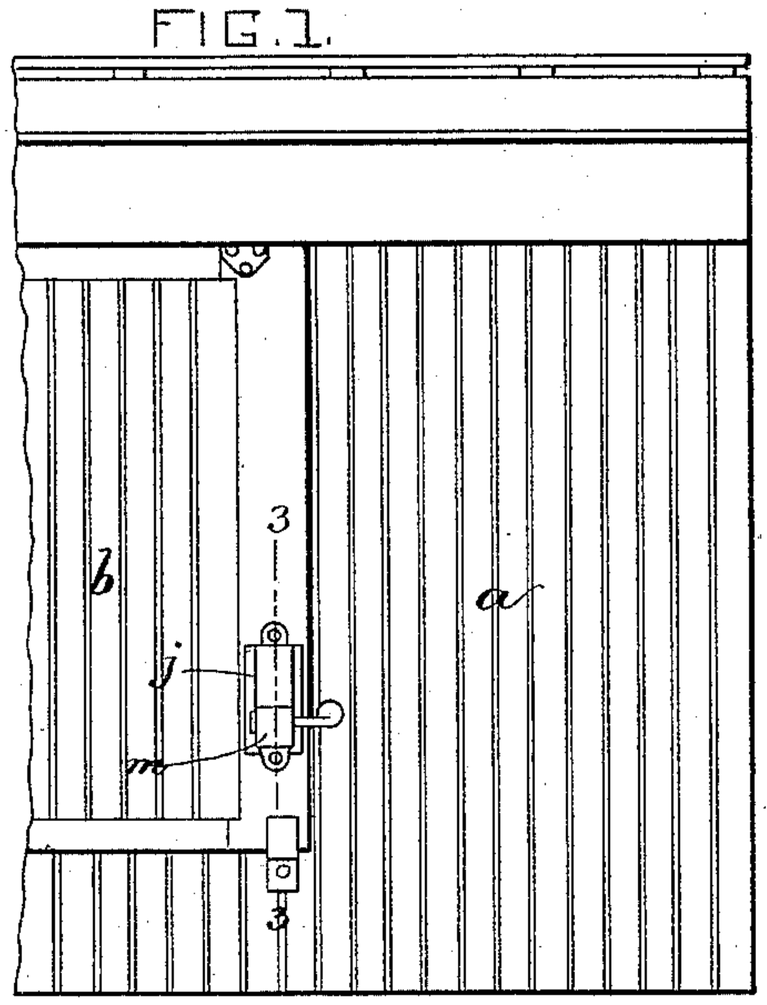


FIG. 3.

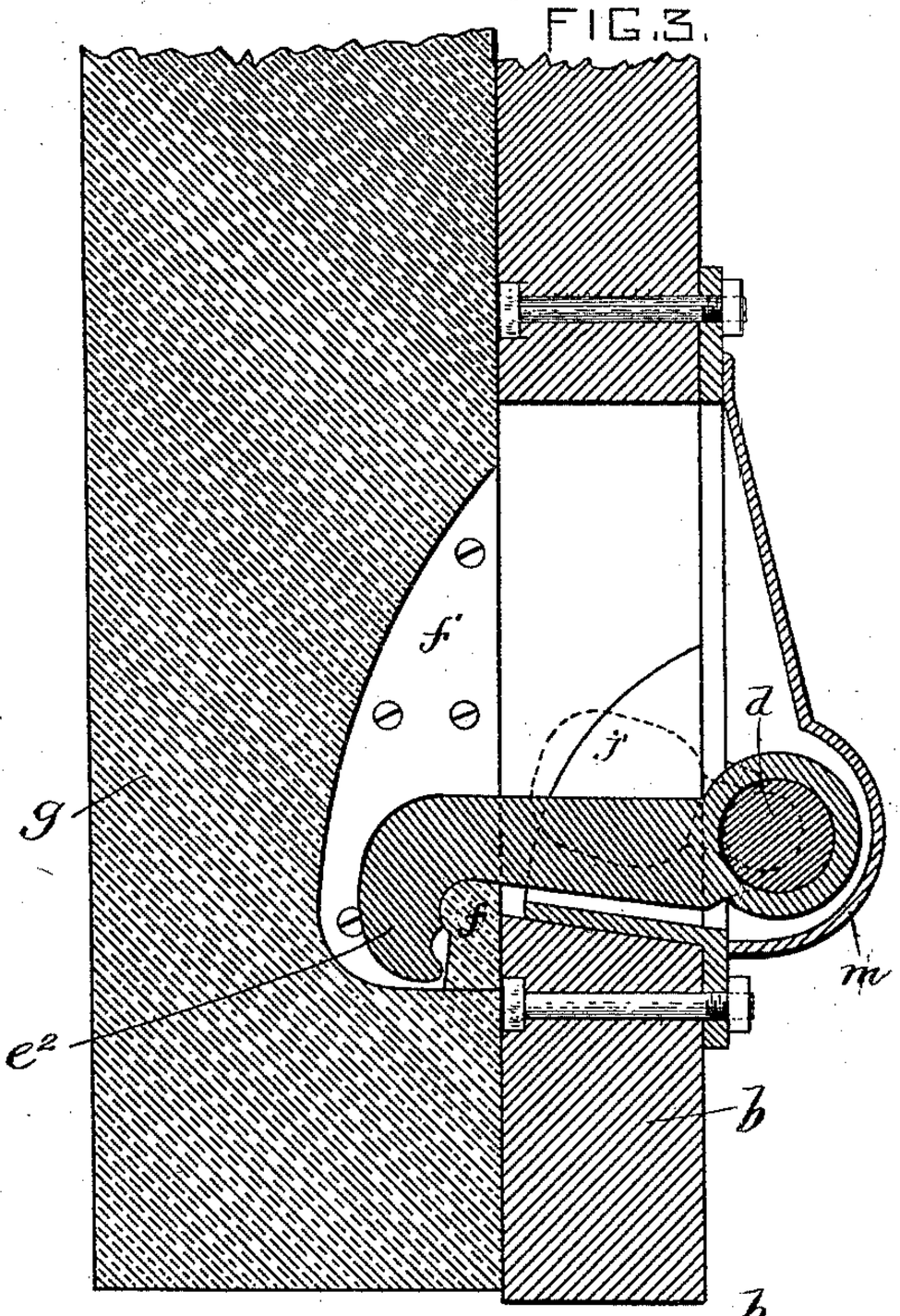


FIG. 2.

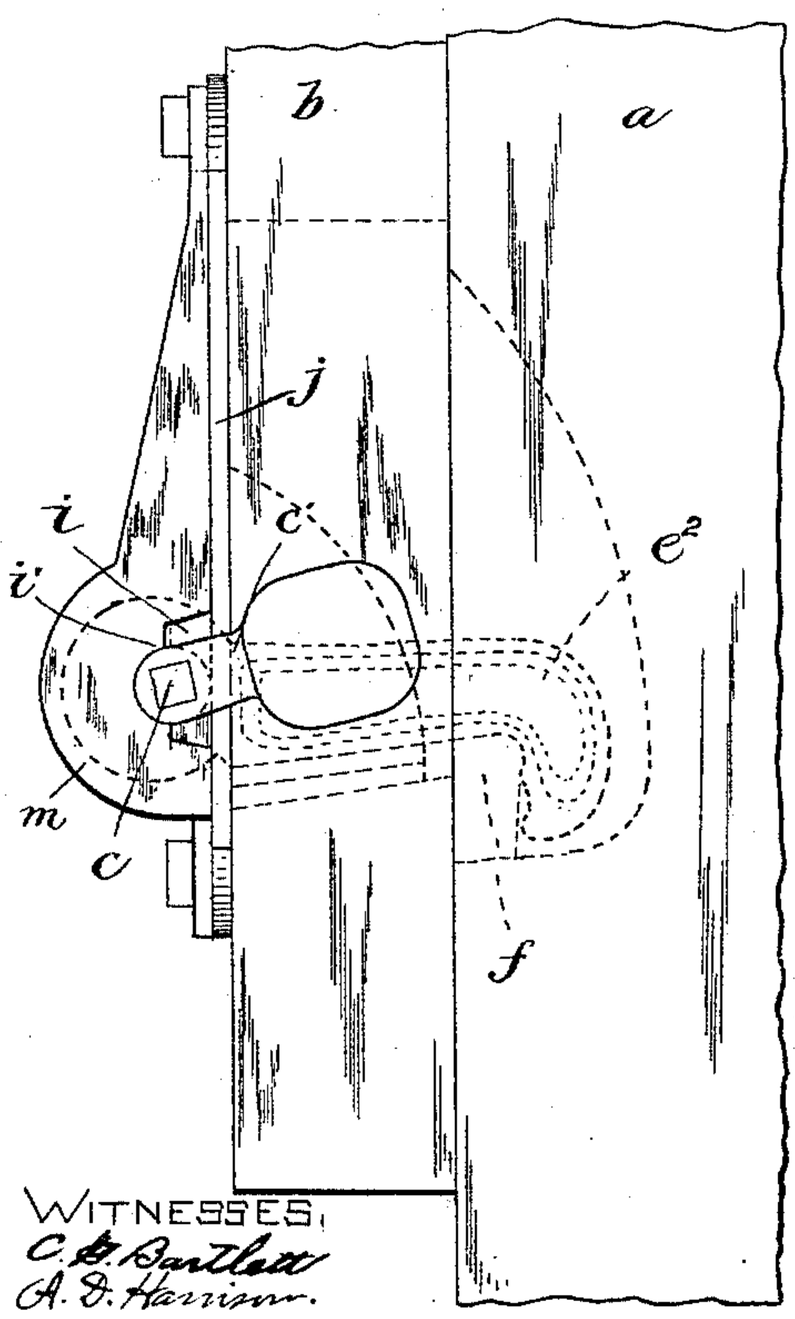
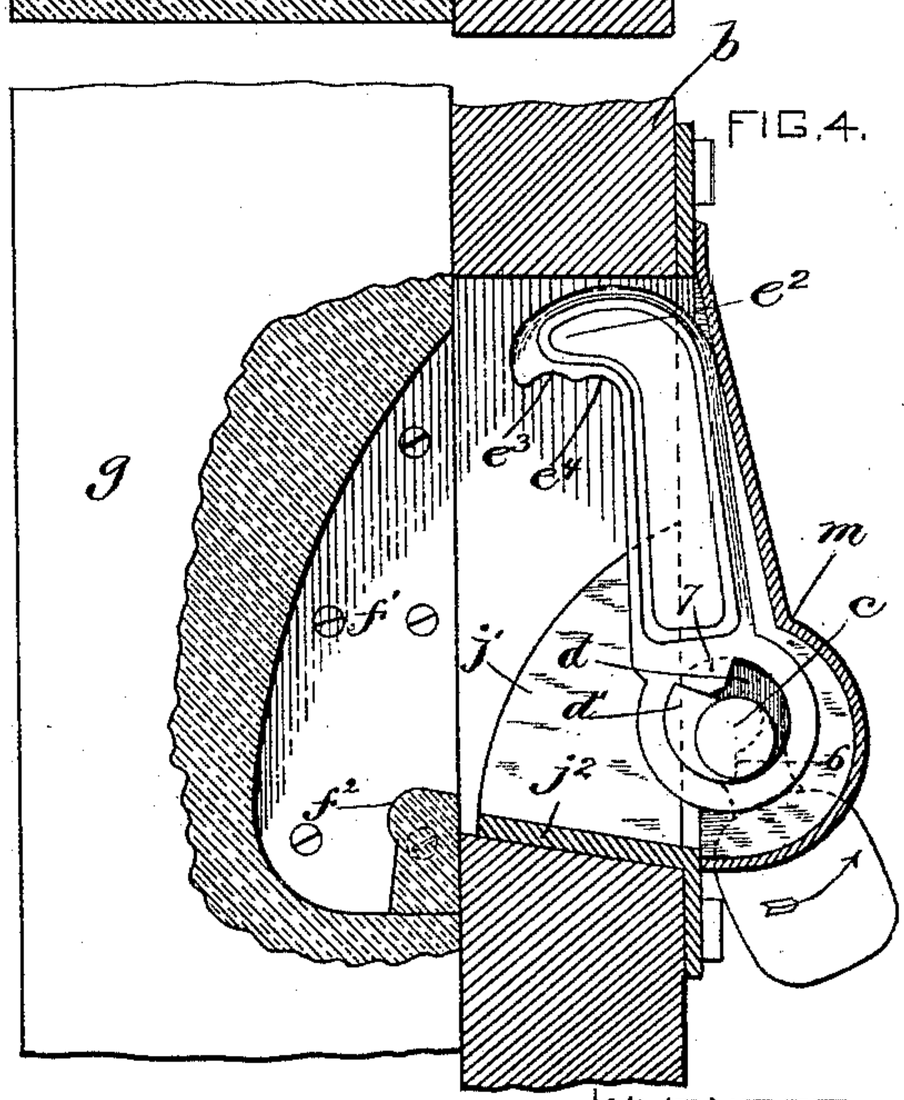


FIG. 4.



WITNESSES:
C. E. Bartlett
A. D. Harrison.

INVENTOR:
O. P. Hix
by Wright Brown Quinby & Otty.

(No Model.) 2 Sheets—Sheet 2.

O. P. HIX.

CAR DOOR LOCK.

No. 453,004. Patented May 26, 1891.

FIG. 5.

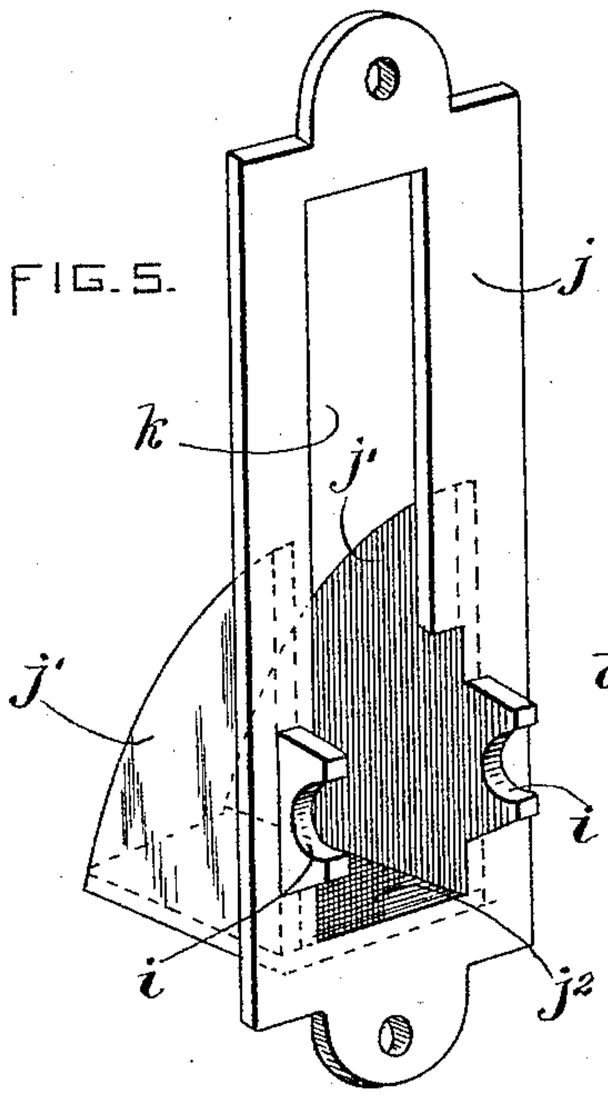


FIG. 7.

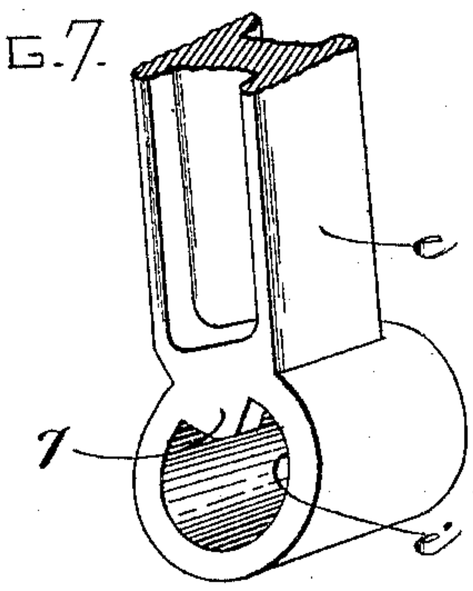


FIG. 6.

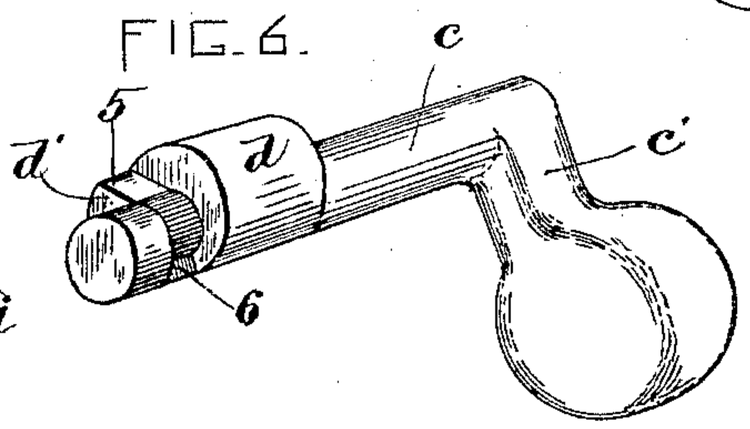


FIG. 8.

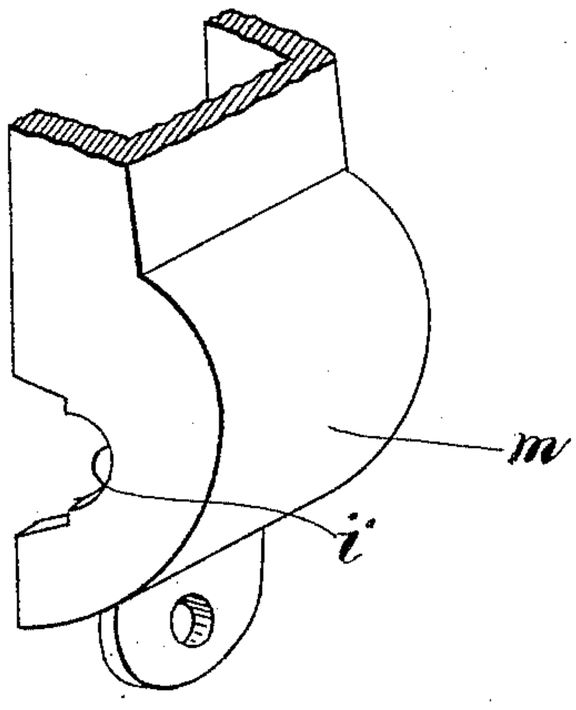
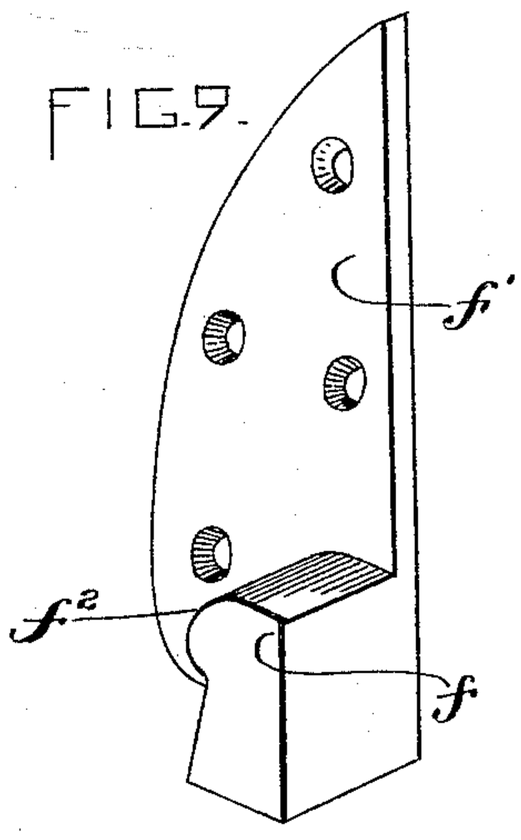


FIG. 9.



WITNESSES:
H. Brown
C. G. Bartlett

INVENTOR:
O. P. Hix
by Wright Brown Quinby & Otis
Attys.

UNITED STATES PATENT OFFICE.

OLIVER P. HIX, OF ROCKLAND, MAINE, ASSIGNOR TO THE DUNHAM MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

CAR-DOOR LOCK.

SPECIFICATION forming part of Letters Patent No. 453,004, dated May 26, 1891.

Application filed September 26, 1890. Serial No. 366,213. (No model.)

To all whom it may concern:

Be it known that I, OLIVER P. HIX, of Rockland, in the county of Knox and State of Maine, have invented certain new and useful Improvements in Car-Door Locks, of which the following is a specification.

This invention has for its object to provide improved means for locking freight-car doors at their rear ends; and it has for its object to provide a simple and effective locking device adapted to secure the door to the side of the car and to press the door inwardly by the act of securing it.

The invention consists in the improved lock which I will now proceed to describe and claim.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side view of a portion of a freight-car and the rear portion of its sliding door, showing the location of my improved lock. Fig. 2 represents a view of the rear edge of the door and a side view of my improved lock. Fig. 3 represents a section on line 3 3, Fig. 1, the door being locked. Fig. 4 represents a similar section taken on a plane at the left of the line 3 3, Fig. 1, showing the door unlocked. Figs. 5, 6, 7, 8, and 9 represent perspective views of detached parts of the lock.

The same letters and numerals of reference indicate the same parts in all the figures.

In the drawings, *a* represents the side of a freight-car, and *b* the sliding door thereof.

c represents a horizontal rock-shaft or rotary rod fitted to rock in bearings attached to the door, said shaft or rod being just outside the outer face of the door and parallel therewith. On said rock-shaft is an eccentric *d*, one side of which has an offset or projection *d'*, presenting two shoulders 5 6, the rock-shaft being cut away or recessed to form the shoulder 6, as shown in Fig. 6.

e represents a latch, having at one end a socket *e'*, formed to receive and turn loosely upon the eccentric *d*, and at the other end a hook e^2, formed to engage a shoulder *f* in a mortise or recess formed in the door-post *g*, which forms the rear end of the doorway of the car. The socket *e'* is provided with an inwardly-projecting ear 7 at one end, said ear being arranged to play at one end of the eccentric *d* between the shoulders 5 6. This construction permits the rock-shaft *c* to be rotated and the eccentric revolved in the socket *e'* to a limited extent or as far as the distance between the shoulders 5 6 will permit without swinging the latch *e*. Hence the rock-shaft may be turned to cause the cam to give the latch an endwise movement to engage said latch with and disengage it from the shoulder *f*, as presently described, without giving said latch a swinging movement in either direction.

The rock-shaft is journaled in bearings *i i*, which are formed in ears projecting outwardly from a plate *j*, which plate is attached to the outer surface of the door *b*, and is provided with a vertical slot *k*, through which the latch *e* passes. Said plate is provided on its inner side with side wings *j' j'*, the lower ends of which are connected by a bottom j^2, said side pieces *j' j'* and bottom j^2 being cast with the plate *j* and projecting into the slot or mortise formed in the door for the reception of the latch *e*, and prevent said latch from striking the unprotected wood-work of the door.

The bearings *i i* are formed to receive one side only of the rock-shaft, and they are supplemented by similarly-formed bearings *i' i'*, formed in a cap or cover *m*, which is adapted to be bolted or otherwise secured to the plate *j*. When said cap or cover is in place, the rock-shaft is supported by the bearings *i* and *i'*, as will be readily seen. The shoulder *f*, affixed to the door-post *g*, is preferably cast or otherwise formed on a plate *f'*, as shown, Fig. 9, said plate having screw-holes and being adapted to be attached by screws to one side of the recess formed in the door-post.

The operation of the above-described device is as follows: When the rock-shaft is turned to the position shown in Figs. 4 and 6, so that the weighted arm or lever *c'* projects outwardly from the door and downwardly, the shoulder 5, bearing against the ear 7 in the socket of the latch, holds said latch in the raised position shown in Figs. 4 and 7, the eccentric *d* being at the same time held in such position as to increase the distance between the center of the rock-shaft and the

hook e^2 of the latch to the maximum. The latch now occupies a position wholly outside of the body of the car, and is within the slot in the door, as shown in Fig. 4, the weighted arm c' holding the latch in this its inoperative position. When it is desired to lock the door, the weighted arm of the rock-shaft is thrown over in the direction indicated by the arrow in Fig. 4 toward the position shown in Figs. 1, 2, and 3, thus depressing the shoulder 5 and permitting the latch e to swing inwardly through the slot in the door and into the recess in the door-post until the hook e^2 falls behind the shoulder f. After the hook has engaged the shoulder f a continuation of the movement of the rock-shaft in the same direction throws the eccentric outwardly, as shown in Fig. 3, so that when the weighted arm c' reaches the position shown in Figs. 1, 2, and 3 the latch is moved outwardly endwise, and its hook is caused to bear firmly against the inner surface of the shoulder f, and thus pull the door inwardly against the side of the car. The movement which exerts this endwise pressure of the hook on the shoulder f takes place after the hook is engaged with said shoulder, the hook being at its maximum distance from the center of the rock-shaft during its entire downward movement into engagement with the shoulder f. To release the door the rock-shaft is turned in the opposite direction, thus throwing the cam inwardly and separating the hook from its bearing on the shoulder f, said separation occurring just before the shoulder 5 reaches the ear 7, so that when said shoulder strikes said ear it can readily raise the latch to the position shown in Fig. 4.

I prefer to provide the hook e^2 with two recesses e^3 e^4, either of which is adapted to engage a bead f^2 on the inner side of the shoulder f. The groove e^3 is farther from the rock-shaft than the groove e^4, so that in case the door becomes warped so as to prevent engagement of the recess e^4 with the shoulder f the fastening of the door can be effected by the engagement of the recess e^3 with said shoulder.

It will be seen that the described lock is simple and durable in construction and compact in form and readily accomplishes the purposes for which it is intended.

It is obvious that means may be provided for locking the rock-shaft in the position shown in Figs. 1, 2, and 3, such as a seal of any suitable construction, to prevent the unauthorized manipulation of the lock. If desired, the bearings for the rock-shaft may be supported entirely by the plate j.

I claim—

1. In a locking device for sliding doors, the combination of a rock-shaft adapted to turn in bearings on the door and provided with an eccentric, a hooked latch provided with a socket adapted to turn loosely on said eccentric, said eccentric and socket having reciprocal projections or bearing-surfaces arranged to permit a limited independent rotary movement of the eccentric in the latch, and a device on the car to engage the latch, as set forth.

2. In a locking device for sliding doors, the combination of a rock-shaft adapted to turn in bearings on the door and provided with an eccentric and with shoulders at one end of said eccentric, a hooked latch having a socket fitted loosely on said eccentric and provided with an ear or projection movable in the space between said shoulders, and a device on the car to engage the latch, as set forth.

3. In a locking device for sliding doors, the combination of a rock-shaft adapted to turn in bearings on the door and provided with an eccentric and with shoulders at one end of said eccentric, a hooked latch having a socket fitted loosely on said eccentric and provided with an ear or projection movable in the space between said shoulders, a weighted arm on the rock-shaft, whereby the latch may be retained in an elevated position, and a device on the car to engage the latch, as set forth.

4. The combination of the slotted plate j, having bearings on its outer side, the rock-shaft fitted to turn in said bearings and provided with the eccentric d and the shoulders 5 6, the latch e, fitted to turn loosely on the eccentric and passing through the slot in the plate j, said latch having an ear or projection 7, located between the shoulders 5 6, the cap m, detachably secured to the plate j and provided with bearings for the rock-shaft, said cap being formed to cover the slot in said plate, and a device on the car to engage the latch, as set forth.

5. The combination, with the fixed beaded shoulder arranged in a recess in the side of the car, of the swinging hooked latch having a plurality of grooves in its hooked portion, said grooves being at different distances from the center on which the latch swings, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 19th day of September, A. D. 1890.

OLIVER P. HIX.

Witnesses:
C. F. BROWN,
A. D. HARRISON.