May 18, 1926. 1,585,144

C. W. A. HANNEBOHN

LOCKING DEVICE FOR CARRIAGE DOORS

Filed Jan. 10, 1925

Fig. 1.

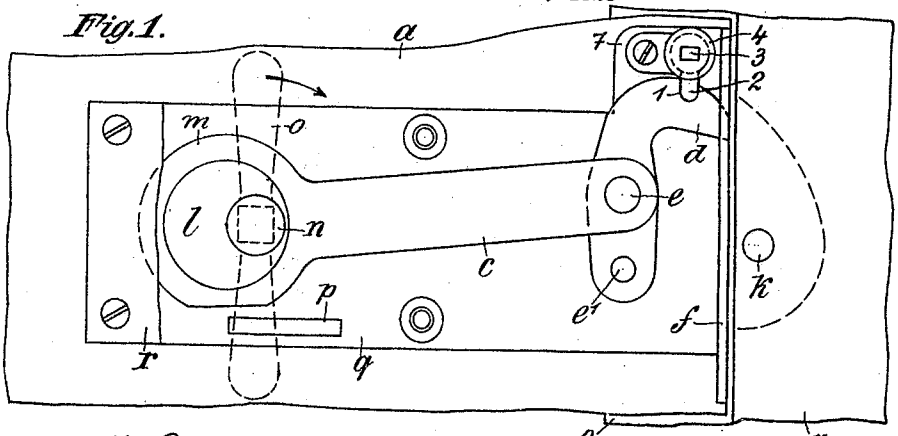


Fig. 2.

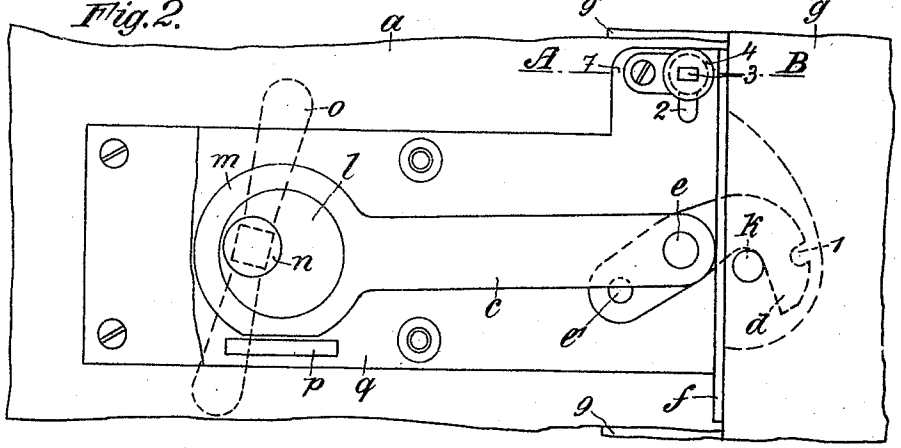


Fig. 3.

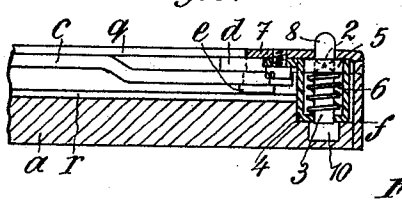


Fig. 4.

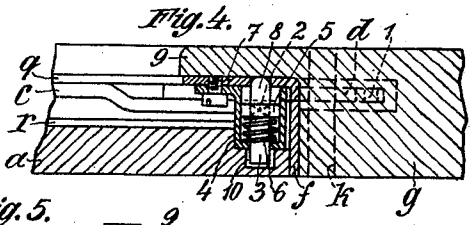


Fig. 5.

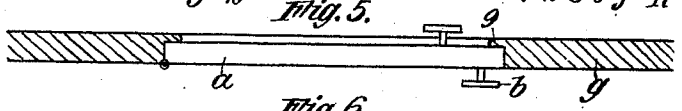
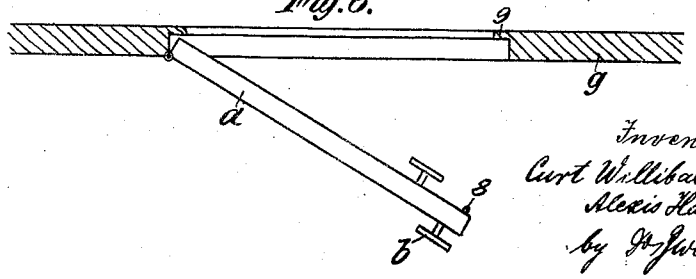


Fig. 6.



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UNITED STATES PATENT OFFICE.

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LOCKING DEVICE FOR CARRIAGE DOORS.

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The doors of carriage-bodies, especially those of motor-carriages, are mounted generally with a certain free play in order to prevent clamping of the doors in their frames by reason of their unavoidable warping as taking place in service in the course of time. On the other hand, mounting the doors with a free play entails the disadvantage that they commence to rattle already after a comparatively short time of use of the carriage which is felt an annoying drawback.

The object of my invention is to obviate that drawback, and I attain this object by doing away with the free play existing between the door and its frame when the door is closed by means of a locking device consisting essentially of a pin connected firmly either with the door or with the frame thereof, and of a gripper-hook encompassing said pin and being so arranged that a pull can be exerted on it, this pull being effected preferably by an eccentric which may be combined with the usual ring by which the door is to be closed. In order to prevent the grip or handle which is easily accessible when the door is opened from being disadjusted by an unauthorized person in such a manner that the gripper hook can get out of the door or the lining of the same which would cause damage to the carriage-body when the door is being closed, as well as bending of said hook, the locking device is provided with an automatically acting checking device which does not impede the free movability of the gripper device when the door is closed, but which retains the rearwardly turned gripper hook within the door or the door lining when the door is open.

My invention is illustrated diagrammatically and by way of example in the accompanying drawing in which Figure 1 is a side-view of the combined locking and checking device, the lock-plate being partly broken away and the gripper hook being withdrawn; Figure 2 is a similar view showing the parts in the locking position of the gripper hook; Figure 3 is a section in line A—B of Fig. 2, it being supposed that the door is open; Figure 4 is another such section, it being supposed that the door is closed and the gripper is in its operative position; and Figures 5 and 6 are plans of a carriage-body door provided with the present invention, Fig. 5 showing this door in closed state, Fig. 6 showing it in open state.

On the drawing a denotes the carriage-body door which is furnished with the usual outer grip b. Pretty much free play is left between the door a and the frame g, but this play is done away with by the locking device constituting the present invention. This device consists of a draw-bar c, to the front end of which is hinged a gripper hook d by means of a bolt or pivot e. The hook d can pass outwards through an aperture provided in the bolt-nab and can then engage a pin k located in the door-frame g.

Moving the draw-bar to and fro and actuating thereby the gripper hook d is effected by a disk l embraced by a ring m made integral with the bar c; the disk l can turn in the ring m, but it is an eccentric motion in that the bolt or pivot n which serves as fulcrum for the disk is arranged eccentrically with respect thereto. The pivot n is connected firmly with a grip or handle o which may be annular, if desired. The ring m is flattened at its lower side, and this flattened portion can contact with an abutment p provided on the lock-plate q. The disk l is supported in this plate q and in the opposite plate r.

The configuration of the operative end of the hook, especially on the face located opposite the pivot e^1 is such that door a is drawn towards and against the frame g when the operative end of the hook has arrived at the pin, has come in contact therewith, and has then been moved further down until having arrived in the end-position indicated in Fig. 2 in which the door and the front-part concerned lie firmly against one another.

The eccentric l can now be turned only counter-clockwise whereby the members m, c, e, d, will be moved reversely to their former movement, that is to say, the hook d will be disconnected from the pin k, or this will be released from said hook respectively.

When the gripper hook d is in its position shown in Fig. 2, the flat part of the ring m does not contact with the abutment p, the said abutment serves only for the purpose to hold the draw bar c and the gripper hook d for the event that the pivot or handle o should be turned while the door is open. The abutment prevents in such a case the

gripper hook swinging so far, that, after the door has been closed the hook *d* lies beneath the pin *k*. The abutment *p* further prevents the gripper hook *d* from being swung too far rearwardly.

The gripper *d*, the free end of which is curved, as shown in Fig. 1, is provided in the outer face of its head with a curved recess 1 which can be engaged by a tongue 2 that is connected firmly with a square-head bolt 3 guided in a hood 4 and provided with a disk 5. Between this disk and the cover of the hood 4 a strong compression-spring 6 is provided, a pin 8 projects from the sheet-metal member 7 which closes the hood on its inner side, that pin contacting when the door is closed with the door-abutment 9 whereby the pin 8 is pressed back and the spring is put under tension. By this movement the tongue 2 which is secured to the bolt 3 is pressed so much outwards that the gripper *d* can be moved to and fro at will. If, however, the door is opened, the spring 6 presses the pin 8 out of the lock-plate, the tongue 2 then engaging the recess 1 of the gripper whereby this latter is checked in its withdrawn position. The door *a* must be provided with a recess 10 into which the head of the bolt 3 can enter when the checking device has been pressed back.

The manner of operation of the device is as follows:

If the grip *o* is in the position shown in Fig. 1, the rod *c* is withdrawn so that the hook *d* lies behind the lock-plate *f*. If then the grip *o* is turned in the direction indicated by the arrow (Fig. 1), the rod *c* will be shoved forward by reason of the eccentric motion of the disk *l* within the ring *m*. the hook *d* which turns on the stationary pivot e^1 being then caused to project forth from the plate *f* and to engage the pin *k*, as shown in Fig. 1 in dotted lines. By exerting an eccentric draught on the members *c* and *d* the door is drawn gradually against the door frame whereby the door is prevented completely from rattling. When the hook *d* is in vertical position, as shown in full lines in Fig. 1, it can be secured against spontaneous or other turning by the checking device shown and described.

I claim:

1. A locking device for use in connection with doors and door-frames, especially of the bodies of motor carriages, comprising, in combination, a gripper pivotally mounted on the door, a pin located in the door-frame in such a position relatively to said gripper that the gripper can engage said pin when said gripper is in its operative position; a bar hinged to the gripper and an eccentric ring connected rigidly with said bar and having a flat face on its periphery; an eccentric disk within said ring; and an abutment member adapted to co-operate with the flat face mentioned, substantially as set forth.

2. A locking device for use in connection with doors and door-frames, especially of the bodies of motor carriages, comprising, in combination, a gripper pivotally mounted on the door and having a recess near its operating end; a bolt and a tongue so arranged relatively to said recess that said tongue can enter thereinto when the gripper is in its position of rest; a pin located in the door-frame in such a position relatively to said gripper that the gripper can engage said pin when said gripper is in its operative position; and means to cause the said gripper to exert a pulling action on the pin, substantially as set forth.

In witness whereof, I have hereunto signed my name.

CURT WILLIBALD ALEXIS HANNEBOHN.