A. VAN DEN PLAS.

DOOR LOCKING MECHANISM.

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1,094,278.

Patented Apr. 21, 1914.

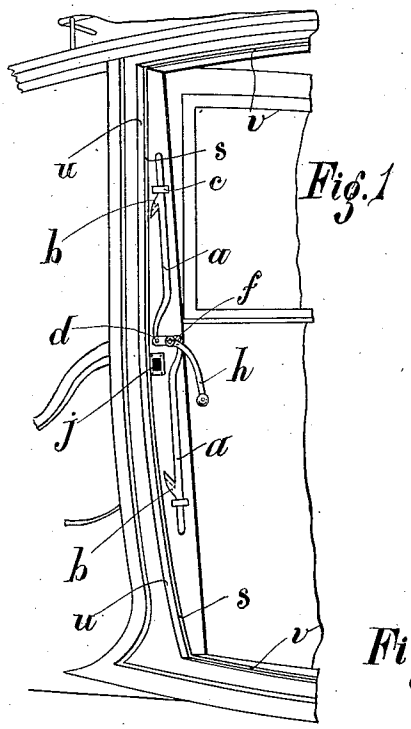


Fig. 1

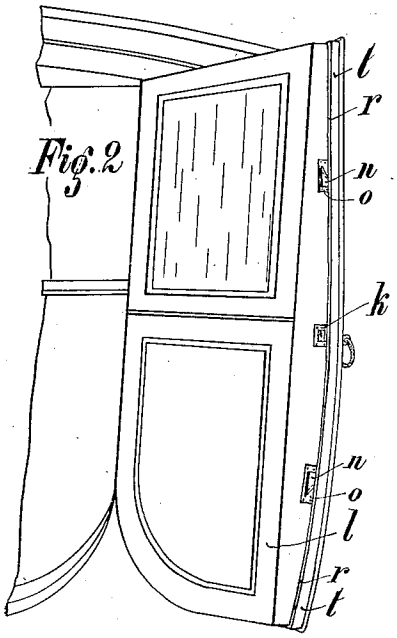


Fig. 2

Fig. 5

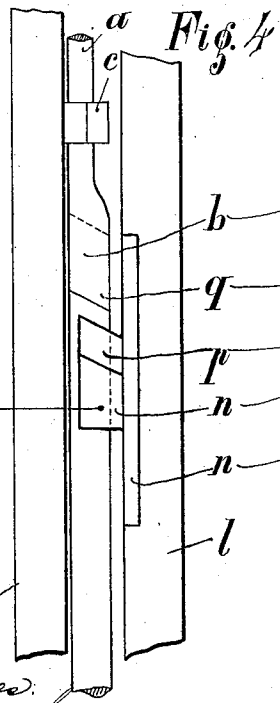
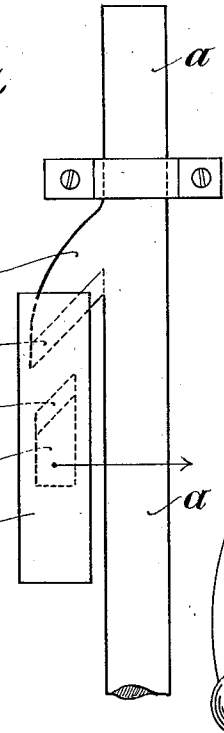


Fig. 4



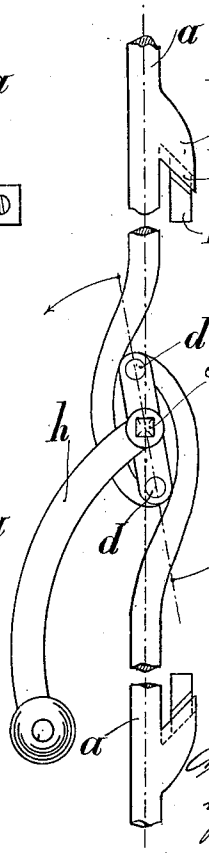


Fig. 6

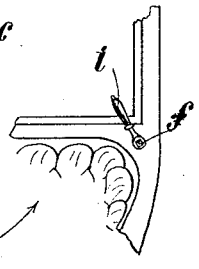


Fig. 3

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DOOR-LOCKING MECHANISM.

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To all whom it may concern:

Be it known that I, ANTOINE VAN DEN PLAS, of 32 Rue St. Michel, Woluwe, St. Pierre-lez-Brussels, Belgium, have invented new and useful Improvements in Door-Locking Mechanism.

This invention relates to improvements in door locking mechanism, especially adapted for use on vehicles to prevent rattling of the door.

According to this system, the doors are opened and closed by means of an oscillating bolt of the so-called reciprocating type, simply by laterally pushing it in one or in the other direction, without operating any handle or lever; while the looking in the closed position, and the shutting or wedging of the door in every direction are simultaneously effected by the engagement of the hooks of a French window fastener concealed in the jamb of the door, with corresponding projections provided on the face of the thickness of the upright of the door-frame. The operation of the said French window fastener enabling the hooks to be brought into, or out of engagement with the projections of the door, is effected from the outside, from the seat of the driver, or from the inside, by the occupants of the car, by means of a handle or lever.

A construction according to this invention, applied to a motor body, is illustrated merely by way of example in the accompanying drawing, in which—

Figure 1 is a perspective view showing the French window fastener let into the thickness of the door frame as well as the keeper of the oscillating bolt producing closing by reciprocation. Fig. 2 is a perspective view showing the lateral face of the upright member of the door-frame to which are applied the projections which come into engagement with the hooks of the French fastener and of the reciprocating bolt. Fig. 3 shows the lever for operating from the outside the French fastener mechanism. Fig. 4 shows, in elevation of the outer side, the method of engagement of the projection of the door with the hook of the French fastener of the door-case. Fig. 5 is a front elevation corresponding to that of Fig. 4, and finally, Fig. 6 shows the position taken by the balance beam of the French fastener when the door is closed and locked.

In the drawing, *a a* are the rods of the French fastener provided, near their free end, with a hook *b* and guided at *c* on the face of the jamb *g* of the door. These rods are pivoted at *d d* to the ends of a balance beam *e* mounted on a pin *f* pivoted in the jamb *g* of the door case. The said pin *f* terminates at both ends in square portions on which are mounted the lever *h* at the inside, and the lever *i* at the outside.

The whole of the device thus described, is covered in practice by a sheet metal plate not shown in Fig. 1. At the point where the keeper *j* is arranged, the said plate (not shown) is provided with a corresponding opening for affording passage to the oscillating bolt *k* provided on the upright or stile *l* of the door *n* (Fig. 2). On the edge of the said stile *l* shown in Fig. 2, are arranged projections *n n* the mortised bottom plate *o* of which is secured to the said stile. The face *p* of the said projections, which engages with a corresponding face *q* of the hook *b* (Figs. 1, 2, 4 and 5), is inclined both in the direction of height and in that of the thickness of the projection, or in other words, in the vertical and in the horizontal directions. In the same way, the engagement face of the hook *b* corresponding to that of the projection *n*, is inclined in the direction of the height of the hook as clearly shown in the said drawing. Simultaneous engagement of the projections *n* by the hooks *b* produces consequently a double result: (1) Owing to the inclination in the direction of height, the engagement face of the hook has the tendency to bring the projection *n* nearer to the rod *a*, as shown by the arrow (Fig. 5). Consequently the ledge or face *r* of the door (Fig. 2) is forced throughout the whole of its height against the ledge *s* of the door case *g* (Fig. 1). (2) Owing to the inclination of the faces of the hook and of the projection in the direction of the thickness of the said hook and projection, the engagement face of the hook has the tendency to pull the projection toward the flat portion of the rod *a* as shown by an arrow in Fig. 4. Consequently the face *t* of the stile of the door is forced throughout the whole of its height against the entrance face *u* of the door frame. The door is therefore forcibly pressed throughout the whole of its height both against the bearing *s* of the door frame

and against the entrance face u of the said door frame. The said door is in that way applied in the whole of its width against the faces v v of the door frame. The door is thus closed and wedged in every direction into the door frame. In that way, any play, and consequently any vibration, of the door is absolutely done away with, even when the hinge pin of the door is worn out, the injurious effect of the play produced by such wear, being prevented by the action of the closing. In fact, the action of the hooks a on the projection n has the tendency to bring the face t of the door (Fig. 2) against the face n of the door frame and consequently any play of the pins in the hinges is done away with.

It is obvious that the device hereinbefore described is applicable to each of the two doors of a closed motor car or of any other vehicle.

In order to enable the door to be opened, the driver operates the lever i so as to disengage the projection n, and the occupant of the car has merely then to push the door outward. In order to close again the door, the occupant pulls it inward, and the reciprocating bolt k engages with the keeper j. The driver then operates the lever i (Fig. 3), so that the projections n come into engagement with the hooks b of the French fastener. The door is then wedged and locked in every direction. The occupant himself can moreover lock and unlock the door by manipulating the lever h which is within his reach (Fig. 1).

It must be pointed out that in the closing and locking position shown in Fig. 6 (right hand door), the axial line of the balance beam e passes beyond the axial line of the rods a a of the French fastener in the direction of the arrow shown in the figure in question. When the balance beam e is in such position, the vibrations have the tendency to incline the said balance beam still more in the direction of the arrow, that is to say, to increase the closing and locking action of the French fastener. The door thus locked, cannot therefore open under the action of vibrations during the travel of the vehicle.

It is obvious that the number of projections n on the vertical face of the stile of the door, is not limited to two, and that three or more of these projections could be provided at suitable points in which case the French fastener is provided with three or more corresponding hooks.

The arrangement of the French fastener as well as that of the projections, could obviously be changed without departing from the spirit of this invention. It will be understood without any other explanation that hooks and projections could be provided acting in a direction or in a plane normal to that shown in the drawing. In that case it would be sufficient to let the French fastener into the jamb of the door frame sufficiently in order that the hooks b should not pass beyond the face of the said door case when the door is in the unlocked position. In that case the projections n should be completely let into the stile of the door. The invention provides also for the use of an espagnolette mechanism, instead of the French fastener for wedging and locking the door in its closed position in every direction. It will be readily understood that in that case the hooks act by rotation and that they, as well as the projections, must be shaped accordingly.

The invention obviously provides that the French fastener or the espagnolette could be arranged in the stile of the door, while the projections would be arranged on the jamb of the door frame. In that case, the locking and unlocking could no longer be controlled by the driver, but only by the occupant of the car. The invention is however not limited to a French fastener or to an espagnolette mechanism the hooks of which engage with projections. It comprises further any device in which a movable wedge with a suitably beveled engagement face, can come out from the jamb of the door frame for engaging with the corresponding suitably beveled face of a notched part let into the inlet face of the stile of the door, or vice-versa, so that the penetration of the wedge into the notched part should produce simultaneously the application of the bearing faces against each other, and the application of the vertical face of the stile against that of the door frame.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In combination, a door jamb, locking bars movably mounted on said jamb and provided with rigid locking bolts having locking portions inclined in different directions and disposed in different planes, said locking portions facing toward each other, a door provided with keepers having portions inclined in different directions and disposed in different planes and of complemental formation with respect to said locking portions, and means for operating said bars to engage the bolts thereof with said keepers, substantially as described.

2. In combination, a door jamb, locking bars movably mounted on said jamb and provided with rigid locking bolts having locking portions inclined in different directions and disposed in different planes, said locking portions facing toward each other and having keeper engaging spaces slanting laterally and transversely with respect to the door opening, a door provided with

keepers having portions inclined in different directions and disposed in different planes and of complemental formation with respect to said locking portions, and means for operating said bars to engage the bolts thereof with said keepers, substantially as described.

Dated this 16th day of September 1912.

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

ANTOINE VAN DEN PLAS.

Witnesses:
CHAS. ROY NASMITH,
GASTON NUEZ.

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