

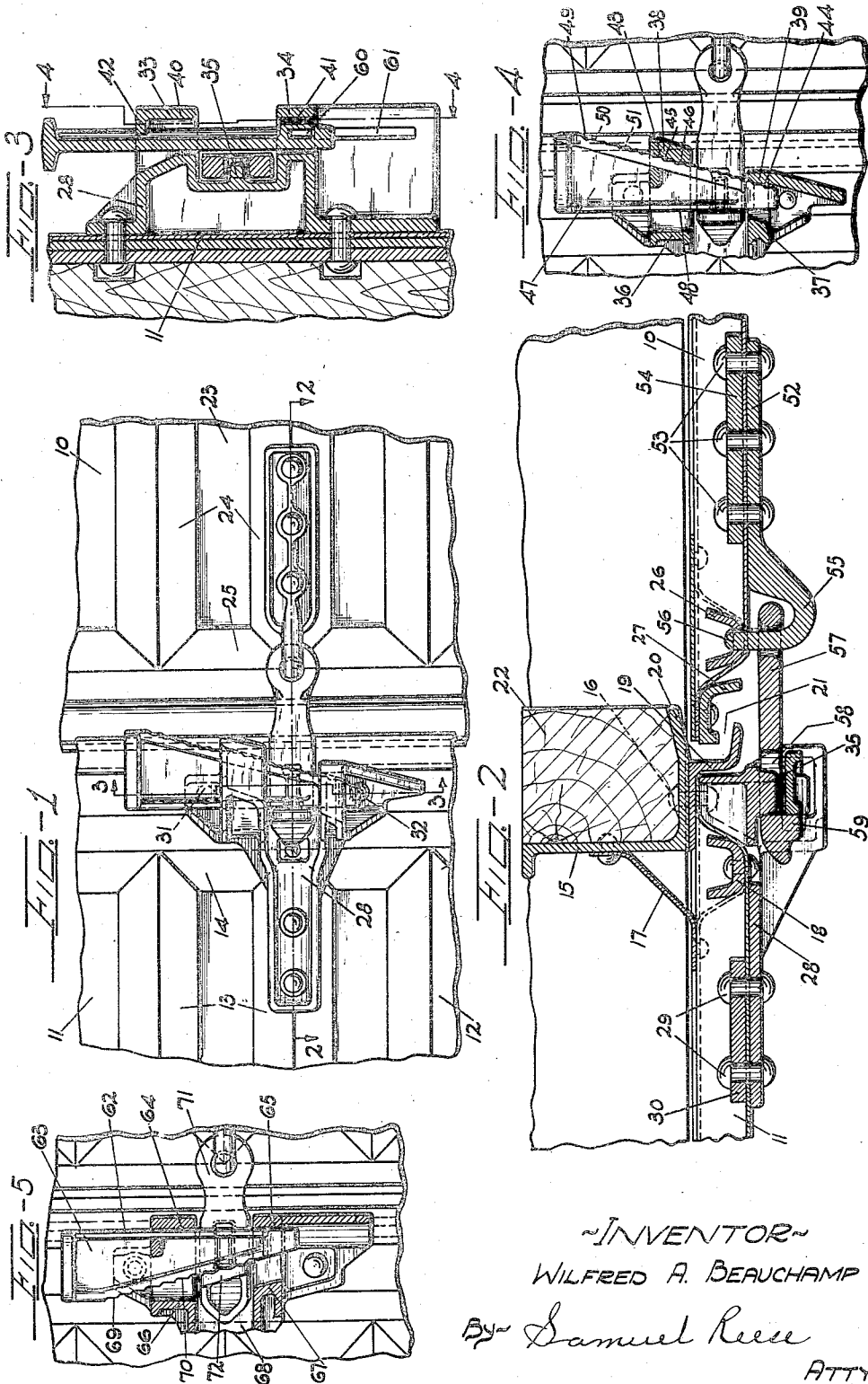
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CAR DOORLOCK

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## UNITED STATES PATENT OFFICE

1,976,913

## CAR DOORLOCK

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4 Claims. (Cl. 292—283)

This invention relates to locks for car doors having special adaptation to sliding car doors.

It is an object of this invention to provide locks for sliding car doors comprising vertically movable tapered locking pins constructed to prevent upward creeping of said pins in the operative position of said locks.

A further object is to provide a lock for sliding car doors comprising a lock member and a vertically movable locking pin having an inclined side, said locking member and inclined side of the pin being constructed to prevent undesired upward movement of the pin.

A further object is to provide a lock for sliding car doors comprising a hasp and vertically movable locking pin having an inclined side, the hasp and inclined side of the pin being constructed to prevent undesired upward movement of the pin.

A further object is to provide a lock for sliding car doors comprising a lock member and a vertically movable tapered locking pin carried thereby, the lock member and pin being constructed so that pressure applied to the pin transversely thereof will be incident upon parallel vertical surfaces.

A further object is to provide a lock for sliding car doors comprising a hasp and a vertically movable tapered locking pin, the hasp and pin being so constructed that stress incident upon the pin transversely thereof will be carried by parallel vertical surfaces.

A further object is to provide a lock for sliding car doors comprising a vertically movable locking pin having an inclined serrated side and a member having a correspondingly inclined and serrated portion engageable with said inclined side of the pin.

A further object is to provide a lock for sliding car doors comprising a vertically movable locking pin having an inclined serrated side forming vertical surfaces and a member having a correspondingly inclined serrated portion forming vertical surfaces engageable with the vertical surfaces on the locking pin.

Other objects will become clear as the description of the invention proceeds.

In the drawing forming part of this specification

Figure 1 is a partial elevation of a double door structure to which a lock, embodying the invention, is applied.

Figure 2 is a horizontal section taken on line 2—2 of Figure 1.

Figure 3 is a vertical section taken on line 3—3 of Figure 1.

Figure 4 is a vertical section taken on line 4—4 of Figure 3.

Figure 5 is a view similar to Figure 4, showing a modified embodiment of the invention.

Referring, first, to Figures 1 to 4, inclusive, of the drawing illustrating one embodiment of the invention there is shown partially the main door 10 and the auxiliary door 11 of a double door construction customarily utilized in automobile cars. It is to be understood that the doors are shown merely for purposes of illustration and that the invention is not limited thereto but is applicable as well to single door structures. The auxiliary door 11 is formed of metal and embodies a metallic panel 12, provided with horizontal corrugations 13 merging at their ends into vertical corrugations 14, one only of which is illustrated. The auxiliary door 11 carries a movable post or jamb 15 which is secured to the forward margin of the door by means of rivets such as 16 and braced with relation to the door by means of a knee brace 17 secured to the post and to the door. Vertical stiffening members 18 are secured within the vertical corrugation 14 of the auxiliary door. The rivets 16 are utilized to secure to the forward margin of the door a substantially Z-shaped member 19 which co-acts with the flange 20 of the post 15 to provide a recess 21 within which the forward margin of the main door 10 is received in the closed position of the doors. A filler post 22 is secured to the post.

The auxiliary door 10 is also of metallic construction and comprises a metallic panel 23 provided with horizontal corrugations 24 merging into vertical corrugations 25, one of which is shown in Figure 1 of the drawing. The vertical corrugation 25 is provided with stiffening members 26. The forward edge of the main door 10 is provided with a front edge weather strip 27 adapted to co-act with the flange 20 of the post 15 and the substantially Z-shaped member 19 secured thereto to effectively seal the meeting edges of the main and auxiliary doors against the ingress of the elements.

The main and auxiliary doors are provided with a lock adapted to maintain said doors in closed position and to automatically absorb any play between said doors so as to retain them in intimate engagement and avoid wear of the parts thereof normally caused by such play. The lock comprises a lock member 28 secured preferably upon the auxiliary door by means of a plurality of rivets 29 extending through said lock member,

the door and a backing plate 30. The lock member is preferably positioned upon a horizontal corrugation. Additional rivets, such as 31 and 32, are utilized to secure the lock member to the auxiliary door.

The lock member includes a pair of forwardly extending vertically spaced housings 33 and 34 formed preferably integral with the lock member. Between the housing members an outwardly extending projection 35 is provided. As best illustrated in Figure 4 of the drawing each of the housing members 33 and 34 is provided with a straight side wall 36 and 37, respectively, and an inclined side wall 38 and 39, respectively, providing tapered openings in said housing members. The side walls of each of the housings are connected by a front wall 40 and 41, the former of which adjacent the top edge thereof is formed with an inwardly extending projection 42. The inclined walls of the housing members are roughened as for example by the provision of serrations, as indicated at 43 and 44, respectively. As clearly shown in Figure 4 of the drawing these serrations are defined by inclined and vertical surfaces as indicated at 45 and 46, said inclined surfaces being directed downwardly and inwardly of said housings between said vertical surfaces.

The lock member 28 is adapted to carry a locking pin 47 which extends through the aligned tapered openings of the housings 33 and 34. The locking pin 47 is correspondingly tapered, being provided with a straight side 48 and an inclined side 49. As best shown in Figure 4 of the drawing the inclined side 49 is roughened by means of serrations so as to provide a plurality of inclined surfaces 50 and vertical surfaces 51 similar to the inclined and vertical surfaces provided on the inclined side walls of the housings.

The main door 10 has secured thereto a hasp fastener 52 preferably upon a horizontal corrugation 24 by means of a plurality of rivets 53 passing through the hasp fastener, the door and a backing plate 54 positioned within the horizontal corrugation. The hasp fastener 52 is provided with a neck or hook portion 55 the free end of which extends through aligned openings provided in the vertical corrugation 25 and in the reinforcing member 26, as indicated at 56. A hasp 57 is carried by the hasp fastener 52 and is provided with an elongated slot 58 into which the projection 35, formed on the lock member, extends in the operative position of the hasp. The hasp 57 is additionally provided with an outwardly extending lug 59 formed adjacent one end of the slot 58 and adapted to bear against the straight side of the locking pin which lies exteriorly of the hasp in the operative position of the portions of the lock.

It will be apparent from the foregoing description of the instant embodiment of the invention and with particular reference to Figure 2 of the drawing, that the main door cannot move toward the right as viewed in said figure in view of the position of the elements of the lock. It will be observed that the main door is not in its completely closed position. In the event that said main door should move toward the left as viewed in Figure 2 of the drawing it is apparent that the engagement of the lug 59 with the straight side of the pin will be broken. The locking pin 47 will be lowered by the action of gravity, until the abutting relationship between the lug 59 and the straight side of the pin is again established. This action will occur until the main door is completely closed, after which no relative movement

between said door and the auxiliary door, or between the parts of the lock, can occur.

In the operative position of the lock bearing engagement between the inclined sides of the locking pin and the housings is had. In the form of the lock shown in applicant's Patent No. 1,877,263, dated September 13, 1932, over which the lock of the instant invention is an improvement it was found that upward movement of the pin in the operative position of the lock sometimes occurred to such an extent that the seal, adapted to extend through aligned openings 60 and 61 provided in the locking pin and in the lock member, respectively, was sheared. This difficulty is overcome by means of the engaging inclined serrated sides of the pin and the housing member. As hereinbefore set forth these serrations are formed with vertical surfaces so that the pressure applied to said pin by means of the hasp is incident upon vertical surfaces of the pin and lock member. The pressure exerted by the hasp upon the pin is also transmitted to vertical surfaces thereof. Therefore, while the advantages of a tapered pin are obtained the resistance to upward creeping of said tapered pin, as in the case of a pin provided with parallel vertical sides, is also obtained.

The principle of the invention is also embodied in the construction illustrated in Figure 5 of the drawing. In this embodiment abutment or engagement between the straight side 62 of a tapered locking pin 63 and the straight side walls 64 and 65 of housing members 66 and 67 provided on a lock member 68 is had. The tapered side 69 of the locking pin is serrated as indicated at 70 similar to the serrations provided on the locking pin 47. The hasp 71, in this embodiment of the invention, is provided with an outwardly extending lug 72, which is inclined and serrated correspondingly to the inclined serrated side of the locking pin. As in the previous described embodiment the serrations are provided with inclined and vertical surfaces so that pressure transmitted by the hasp 71 to the locking pin will be applied to parallel vertical surfaces.

It is apparent that numerous changes and modifications in the details of the invention will become apparent to those skilled in the art. It is intended, therefore, that all such changes and modifications be comprehended within this invention, which is to be limited only by the scope of the claims appended hereto.

I claim:

1. In a railway car having a relatively stationary portion and a door slidable longitudinally toward and away from said portion, a lock member secured to said relatively stationary portion, a hasp carried by said door, a vertically movable fastening pin having a vertical side and a downwardly converging inclined side, abutments provided on said lock member and hasp for respectively engaging the sides of said pin, the abutment engaging the inclined side of said pin being similarly inclined, said inclined abutment and inclined side of said pin being engageable upon vertical faces, whereby upward creeping of said pin in the operative position of said hasp and pin is prevented, said pin being lowered by the action of gravity upon release of said hasp abutment from said pin in response to a predetermined longitudinal movement of said door.

2. In a railway car having a relatively stationary portion and a door slidable longitudinally toward and away from said portion, a lock mem-

- ber secured to said relatively stationary portion, a  
hasp carried by said door, a vertically movable  
fastening pin having downwardly converging sides  
carried by said lock member, said hasp being pro-  
5 vided with an abutment, said abutment and one  
side of said pin having substantially vertically  
engaging faces, said lock member having an abut-  
ment engageable with the opposite side of said  
pin, said lock member abutment and opposite  
10 side of said pin being provided with teeth having  
substantially vertically disposed engaging por-  
tions, whereby upward creeping of said pin in the  
operative position of said hasp and pin is pre-  
vented, said pin being lowered by the action of  
15 gravity upon a predetermined longitudinal move-  
ment of said hasp.
3. In a railway car having a relatively sta-  
tionary portion and a door slidable longitudinally  
toward and away from said portion, a lock mem-  
20 ber secured to said relatively stationary portion,  
a hasp carried by said door, a vertically mov-  
able fastening pin having a vertical side and a  
downwardly converging inclined side, a vertical  
abutment on said hasp engageable with the ver-  
25 tical side of said pin, an inclined abutment on said  
lock member engageable with the inclined side of  
said pin, said inclined side and abutment being  
provided with teeth having vertical faces and ob-  
tusely related connecting faces, whereby upward  
creeping of said pin in the operative position of  
said hasp and pin is prevented, said pin being low-  
ered by the action of gravity upon a predeter- 80  
mined longitudinal movement of said hasp.
4. In a railway car having a relatively sta-  
tionary portion and a door slidable longitudinally  
toward and away from said portion, a lock mem- 85  
ber secured to said relatively stationary portion,  
a hasp carried by said door, a vertically movable  
fastening pin having downwardly converging  
sides carried by said lock member, said lock mem-  
ber having an abutment, said abutment and one  
side of said pin having substantially vertically 90  
engaging faces, said hasp having an abutment  
engageable with the opposite side of said pin,  
said hasp abutment and opposite side of said pin  
being provided with teeth having substantially  
vertically disposed engaging portions, said por- 95  
tions of the teeth on said hasp abutment being  
connected by obtusely related portions, whereby  
upward creeping of said pin in the operative po-  
sition of said hasp and pin is prevented, said pin  
being lowered by the action of gravity upon a pre- 100  
determined longitudinal movement of said hasp.

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