July 27, 1948. J. W. ALBIN 2,446,070

SEPARABLE FASTENER

Filed June 6, 1945

Fig. 1

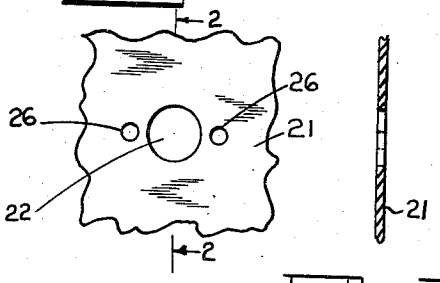


Fig. 2

Fig. 3

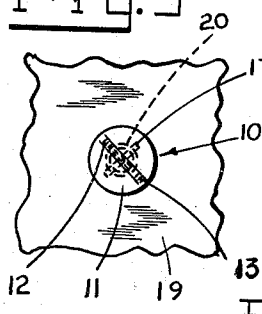


Fig. 4

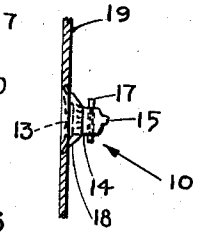


Fig. 5

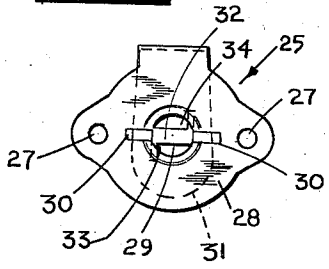


Fig. 6

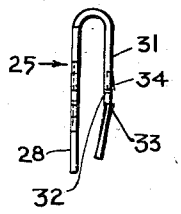


Fig. 7

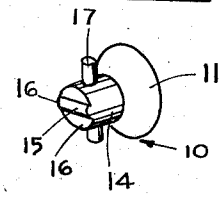


Fig. 8

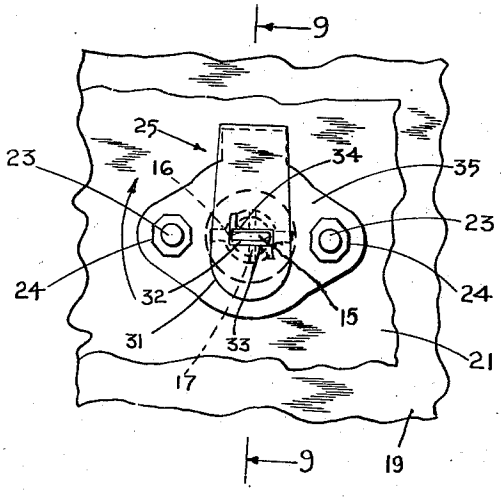
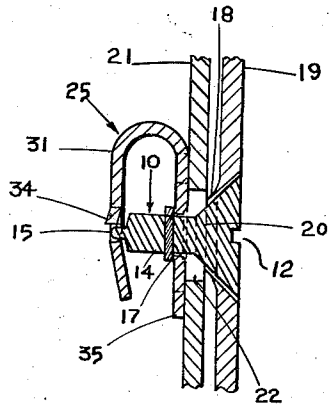


Fig. 9



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SEPARABLE FASTENER

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4 Claims. (Cl. 24—221)

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This invention relates to holding or locking devices especially adapted for use on doors on airplanes or other moving vehicles or other devices subject to excessive vibrations or shock due to sudden starting and stopping.

One object of the present invention is the provision of a lock of this character which is simple and inexpensive in construction, in which the maximum efficiency in operation is secured and one which will successfully withstand vibrations and shocks as well as other forces exerted thereupon.

Other objects and advantages will appear as the nature of the improvements is better understood, the invention consisting substantially in the novel arrangement and corelation of parts herein fully described and illustrated in the accompanying drawings, wherein similar reference characters are used to denote corresponding parts throughout the several views.

The disclosure made the basis of exemplifying the present inventive concept suggests a practical embodiment thereof, but the invention is not to be restricted to the exact details of this disclosure, and the latter, therefore, is to be understood from an illustrative, rather than a restrictive standpoint.

In accordance with a preferred form of the present invention, the door, lid or cover to be locked is provided with a frusto-conical depression terminating in a hole, for the reception of the frusto-conical head of a key, the said key being provided with a cylindrical shank having a locking tongue for engagement with a slotted member secured to the door frame. The said shank is further provided with a pin or other projecting member to maintain the key in the door.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustration, is shown in the accompanying drawings, in which—

Figure 1 shows a portion of a door frame in front elevation;

Figure 2 is a longitudinal section taken on line 2—2 Fig. 1;

Figure 3 is a front elevational view of a portion of a door showing the key in place;

Figure 4 is a side view thereof, looking from the right of Fig. 3;

Figure 5 is a front elevational view of the hasp or keeper plate;

Figure 6 is a side view thereof looking from the right of Fig. 5;

Figure 7 is a perspective view of the key;

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Figure 8 is a fragmental rear view on an enlarged scale of a door showing the locking device applied thereto; and

Figure 9 is a longitudinal section taken on line 9—9, Fig. 8.

Referring now to the drawings in detail the numeral 10 indicates a key having preferably frusto-conical head 11 provided with a transverse groove or slot 12 which may have a curved bottom 13. The said slot 12 is adapted to receive any suitable instrument for turning the key. Should such an instrument, however, be unavailable, a coin may be used for turning said key due to the curved bottom of the slot.

The key 10 is provided with a cylindrical shank 14 which terminates in a tongue 15 having camming surfaces 16 at its ends, one on the upper and the other on its lower side, the object of which will presently be described. A pin 17 passes through the shank 14 and extends on either side thereof.

The head 11 of the key is housed in a frusto-conical depression or housing 18 in the door 19 and the shank 14 extends inwardly of the door through a hole or opening 20 in the said depression. The door frame 21 with which the locking device cooperates is provided with a hole 22 which permits the passage of the housing 18 therethrough.

Secured to the frame 21 by means of screws 23 and nuts 24 is a member or bracket 25 which acts as a keeper plate, hasp or latching member. The screws 23 pass through holes 26 in the door frame 21 and holes or openings 27 in the base 28 of the member 25. The base 28 has a central circular opening 29 from which extend oppositely disposed slots 30. The opening 29 provides a passageway for the key shank 14 and the slots 30 provide passageways for the extensions of the pin 17. The member 25 is further provided with a tab 31 bent from the base 28. The said tab 31 has a slotted opening 32 at the diagonally opposite corners 33—34 of which the metal defining said opening is somewhat raised outwardly thereof. The slot 32 is sufficiently wide enough to admit the key tongue 15, thus acting as a lock and preventing unwarranted or accidental rotation of the key.

To lock the door 19 the key 10 is rotated in the door until the projecting ends of the pin 17 are in alinement with the slots 30 in the latching member 25. Pressure is then applied to the head of the key forcing the said pin above the top surface 35 of the base 28 and then turn or rotate the key until the tongue 15 enters and en-

gages the parallel sides of the slot **32** at which position the door is firmly locked. In the above described position the pin **17** bears against the upper surface **35** of the base **28** and the tongue **15** engages the slot **32** thus simultaneously preventing any unwarranted longitudinal or rotary movement of the said key.

It will be noted that the position of the pin **17** with respect to the slot engaging tongue **15**, is such, that when the tongue is horizontally disposed in the slot the pin is at an angle thereto and to the slots **30** in the base **28**.

To open the door the key is rotated in clockwise direction with respect to Fig. 8. In so rotating the key the raised corners or leading edges **33** and **34** in the latching tab **31** co-act with the cam surfaces **16** on the key tongue **15** for ready rotation and withdrawal of the key tongue from the locking slot **32** and consequent opening of the door.

It will be noted that during the unlocking operation there is a slight tension produced between the door and door frame tending to separate or push the said door and frame apart. However, such opening action is only possible when the key is physically and intentionally operated but will not react to vibration or jar due to the positive engagement of the tongue in the slot and to the further engagement of the key pin with the latch base.

From the foregoing it will be seen that I have provided a simple, inexpensive, yet highly efficient locking means adapted to withstand shock and vibration.

It is to be understood that instead of using the lock for doors it can just as readily be used in combination with two plates or other members which are required to be locked together; therefore, wherever in the claims the term plates is used, doors and their cooperating frames, as well as all other parts with which the lock is adapted to be used are to be included.

What is claimed is:

1. For use with two plates which are adapted to be locked together, a lock comprising a key rotatably and axially movably mounted in one of said plates, a shank on said key, a pin in said shank to prevent axial disengagement thereof with respect to said plate, the said shank extending through the other of said plates, a keeper plate bracket, a base on said bracket secured to the said other plate and provided with a slotted opening to admit the passage of the key shank and pin therethrough, a tab on said base in spaced relation thereto and having a slot therein in axial alinement with the opening in the base, and a tongue at the end of the shank disposed at an angle to the pin for locking engagement with the slot in the tab when the key is rotated to locking position.

2. The combination according to claim 1, wherein the material defining the slot in the tab is raised at diagonally opposite corners, and camming means on the tongue coacting with said raised corners to insure ready rotation and withdrawal of the tongue from the slot during unlocking operation.

3. For use with a pair of perforated juxtaposed plates, a lock comprising a key, a shank on said key rotatable and slidable in the perforation of one of said plates and extending through the perforation of the other of said plates, a head on said shank to limit the axial movement of the key in locking direction, a pin extending from the shank and cooperating with the said plate to limit the axial movement of the key in unlocking direction, a bracket secured at its base to the said other plate, the said bracket having a slotted perforation through which the shank and pin pass, a tab on the bracket in spaced relation to the base, the said tab being provided with a slot in alinement with the perforations in the plates, and a tongue at the end of the shank disposed at an angle to the pin for locking engagement with the slot in the tab when the key is rotated to locking position.

4. The combination according to claim 3 wherein the material defining the slot in the tab is raised at diagonally opposite corners, and camming means on the tongue coacting with said raised corners to insure ready rotation and withdrawal of the tongue from the slot during unlocking operation.

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