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LOCK STRUCTURE

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This invention relates generally to lock structures and, more particularly, to a certain new and useful improvement in lock-structures of hasp-type for use especially, though not exclusively, with the doors of freight cars, warehouses, and the like.

Our invention has for its principal objects the provision of a lock of the type stated which is economical and sturdy in construction, which is substantially burglar and pick-proof and cannot be unlocked without completely destroying and breaking the entire lock structure, which is facile in operation and relatively secure against weather

or damage from accidental causes, which will not jam, freeze, or become otherwise inoperative in 15 the course of its use, and which is highly effi-

cient in the performance of its intended functions.

And with the above and other objects in view, 20 our invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing-

Figure 1 is a fragmentary perspective view of 25 a standard freight car door and its jamb equipped with a hasp-lock constructed in accordance with and embodying our invention;

Figure 2 is a top plan view, partly broken away 30 and in section, of the lock;

Figure 3 is a transverse sectional view of the lock, taken approximately along the line 3-3, Figure 2;

Figures 4 and 5 are fragmentary sectional views 35 of the lock, taken approximately along the line

4-4, Figure 3, showing the lock-bolt in doorlocking and unlocking positions, respectively; and Figures 6 and 7 are, respectively, top plan and side elevational views of a modified form of hasp-

40 lock also embodying our invention.

Referring now in more detail and by reference characters to the drawing, which, for illustration, shows practical embodiments of our present invention in association with a standard freight

45 car, A designates a door-jamb of the car, against which a sliding door B abuttingly fits when closed. Recessed and apertured, as at 1, adjacent its opposite ends, and mounted and suitably, as by 50 bolts 1', secured flatwise on the outwardly presented face of the jamb A, is the base-plate 2 of

a keeper C integrally including a socket-lug 3 formed centrally upon, and extending outwardly at right angles from, the plate 2, the lug 3 prefer-

55 ably having tapering lateral side margins a, a, an

arcuate forward-end margin b, and opposite, or upper and under, flat faces c, c'.

Formed in the lug 3 and opening to the under face c' thereof, is a circular recess 4 of substantial depth, as best seen in Figures 2 and 3, and com-5 municating with recess 4 and opening upon the end-margin b of the lug 3, is a parallel-sided way 5 of a width substantially smaller than the diameter of the recess 4, also as best seen in Figures 2 and 3, for purposes presently more fully 10 to appear.

D designates the hasp-member proper, which is constructed of cast iron or other suitable preferably metallic material and includes a shank 6 of suitable length provided at an end with an 16 eye 1, and suitably fixed on the door B and engaging the eye 7 for swingably securing the member D upon the door B for co-operation with the keeper C, is a suitable staple 8. The shank 6 is, in turn, integrally provided at its outer end 20 with an open-faced, box-like shell 9 shaped and sized for fitting disposition over and enclosing or housing the keeper C.

Having communication with the chamber, and integrally projecting axially outwardly or down- 25 wardly from a side wall, of the shell or housing 9, is a tubular extension 10, fixed and housed within which is a suitable key-actuable lockstructure E comprising an axially rotatable bolt 11 having an inner end-portion 12 disposed with- 30 in the housing 9 and conforming in shape, as it may be said, to a cylinder flattened off on two sides equi-distantly from its center in the provision of diametrically opposed flat faces 13.

The bolt-end or tail portion 12 has a radius 35 substantially equivalent to the radius of the lugrecess 4 and a thickness, that is to say, the flat faces 13 thereof are spaced apart by a distance, substantially equal to the width of the way 5, as best seen in Figures 4 and 5. 40

As is particularly desirable in locks designed especially for use on the doors of freight cars. bonded warehouses, and the like, the extension or lock-housing 10 is provided adjacent its outer margin with a pair of diametrically opposite 45 apertures, as at 14, positioned in a plane spaced outwardly of the lock structure E for accommodating a sealing strip or wire, as 15, of the type conventionally used on freight car doors and the like.

In use and practice, a key F is inserted into the lock structure E and suitably manipulated for rotatably actuating the associated lock bolt 11, so that the flat sides 13 of the bolt-tail 12 will be in parallel alignment with the side walls 55

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of the way 5 when the hasp D is swung to bring the shell 9 thereof into housing registration with the keeper-lug 3, as shown in dotted lines in Figure 5. Accordingly, on the hasp D being swung inwardly into embracing engagement with the keeper-lug 3, the bolt-tail 12 travels through the way 5 and into the communicating recess 4,

as shown in full lines in Figure 5. The key F is thereupon turned, rotating the lock-bolt 11 and its tail 12, the latter within the recess 4 to

the position shown in Figure 4, whereupon the key F may be removed and the hasp D will be securely held in locked position to the keeper C. For disengaging the hasp D, the key F is re-in-5 serted, and the operations described performed

in reverse order. Under certain circumstances, it may be de-

sired to provide a lock structure in which the key and lock cylinder are in more or less axial 20 alignment with, instead of at right angles to, the shank of the hasp. Thus, I may provide a

- the shank of the hasp. Thus, I may provide a hasp structure D' having a keeper embracing shell 9' provided integrally on its outwardly presented face with a tubular lock-housing 10',
- 25 which is substantially in axial alignment with the shank 6' of the hasp D'. In such case, the keeper structure C' is mounted with its longer axis in horizontal, rather than in vertical, position, so that the axis of its circular recess 4' lies in a 30 vertical plane for registering alignment with the
 - bolt-tail 12'. Actual use under both normal and exceptional

adverse conditions has demonstrated that the present lock presents unusually desirable and **36** burglar-proof characteristics, and in this regard

- it will be evident that the points of engagement between the keeper C and the lock-bolt 11 are substantially remote from the abutment lines between the lug-housing 9 and the keeper base-49 plate 1, thus making it practically impossible for burglars to insert jimmies and other types of
 - tools into the lock.

In addition, locks constructed in accordance with the present invention do not readily become

- 45 jammed and ruggedly withstand hard, abnormal use. Many commonly used locks, when subjected to appreciable strains, will become so tightly interlocked that unlocking bolt-actuation is very difficult. Such difficulty is entirely elimi-50 nated in locks constructed in accordance with
- our present invention by reason of the fact that strains normally imposed upon the lock during use are exerted across the face of a substantially cylindrical bolt which is held in a circular recess.
- ^{1.5} Since the bolt and recess are in snug fitting accurately machined engagement, any stresses which are not normal to, or parallel with, the axis of the bolt will necessarily be transmitted
- 60 to the keeper. Thus, any tendency toward tilting of the bolt with respect to the keeper will be substantially eliminated, thereby preventing jamming. Further, by reason of the fact that the locking bolt structure moves in a plane at right

angles to its axis results in substantially simple and easy free swinging unlocking action.

The lock is also substantially weather-proof and exceedingly efficient in the performance of its intended functions.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the lock may be made and substituted for those herein shown and described without departing 10 from the nature and principle of our invention,

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A hasp-lock comprising, in combination, a fixed keeper having an outwardly projecting lug 15 having a recess and a communicating slot opening to a margin of the lug, a swingable member, a housing on the free end of said member for embracing the lug, and a lock structure associated with the housing, said structure including a rotatable bolt sized for endwise movement through said slot for engagement with the lug at said recess.

2. A hasp-lock including, in combination, a fixed keeper comprising a base-plate and a lug 2f outwardly extending from said plate, said lug being provided with a recess and a communicating slot opening to a margin of the lug, a swingable member, an open-face shell on said member for housing disposition about the lug, 30 and locking means operably mounted on the shell and including a key-actuable bolt positioned in line with the path of swingable movement of said member for locking engagement with the lug at said recess when the shell is in housing disposition about the lug.

3. A hasp-lock including, in combination, a fixed keeper comprising a base-plate and a lug outwardly extending from said plate, said lug being provided with a bayonet-slot opening to the 40 margin thereof, a swingable member, an open-face shell on said member for housing disposition about the lug, a tubular extension projecting from the shell, and locking means operably mounted within said extension and including a key-actuable bolt projecting into the shell for locking engagement with the lug at said recess when the shell is in housing disposition about the lug.

4. A hasp-lock including, in combination, a 50 fixed keeper comprising a base-plate and a lug outwardly extending from said plate, said lug being provided with a circular recess and a way opening to a margin of the lug and communicating with the recess, a swingable member, an 55 open-face shell on said member for housing disposition about the lug, a tubular extension projecting from the shell, and locking means mounted in said extension and including a key-actuable rotatable bolt projecting into the shell and shift- 60 able through said way for locking engagement with the lug at said recess.

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