Aug. 4, 1942. R. NELSON ET AL 2,292,008

LUGGAGE LOCK

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Fig-1

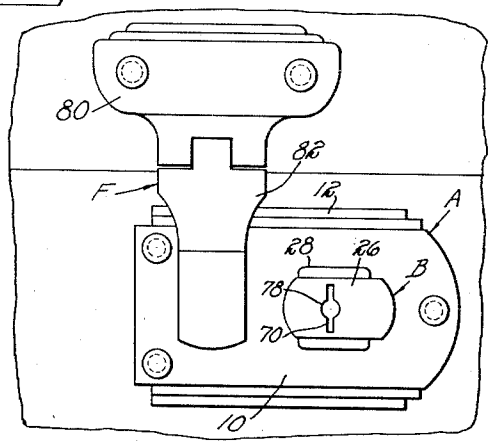


Fig-2

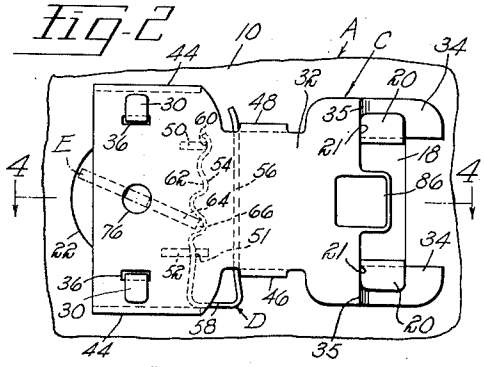


Fig-4

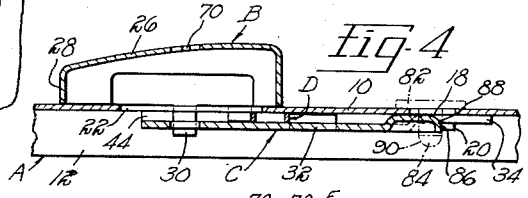


Fig-3

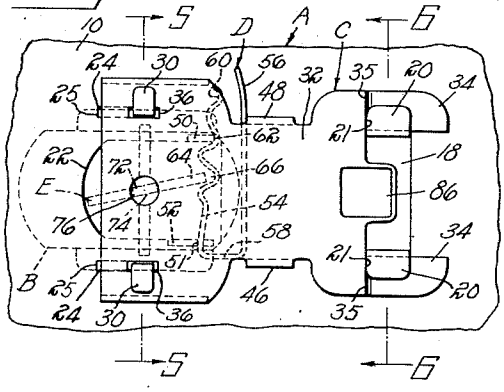


Fig-5

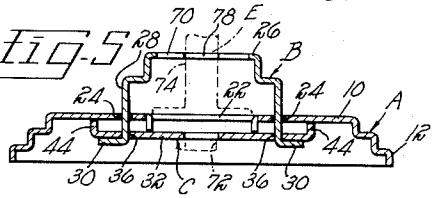


Fig-6

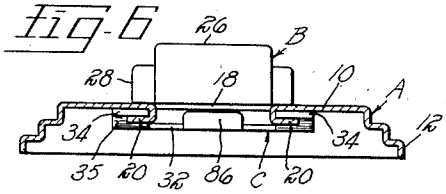


Fig-7

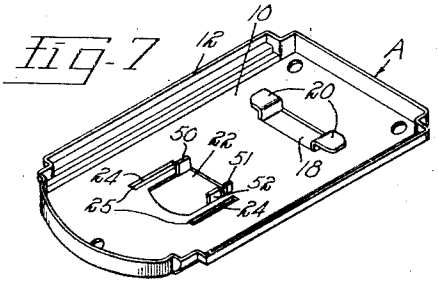


Fig-8

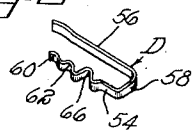
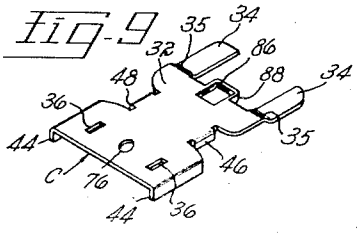


Fig-9



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LUGGAGE LOCK

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Fig-10

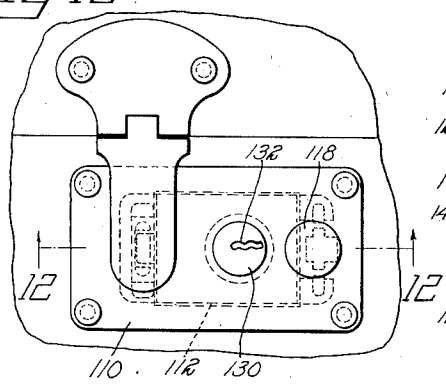


Fig-11

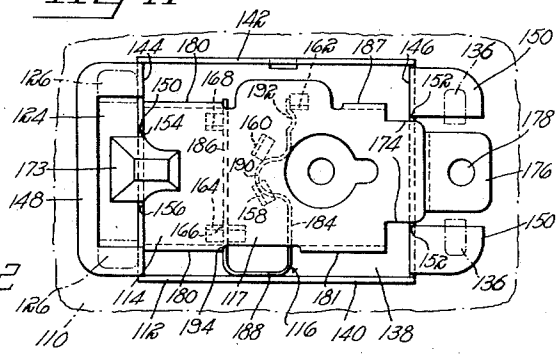


Fig-12

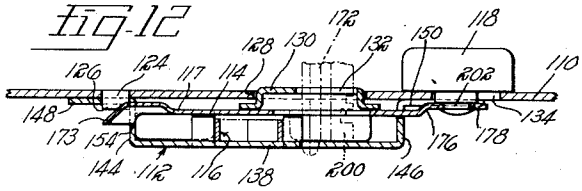


Fig-16

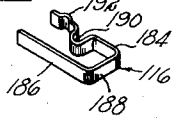


Fig-13

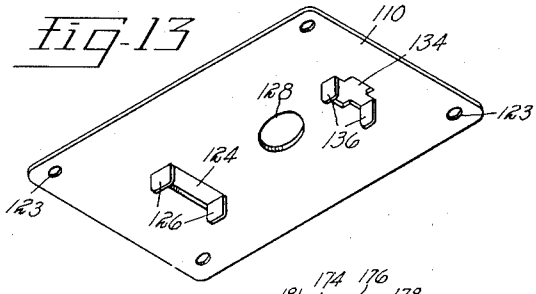


Fig-14

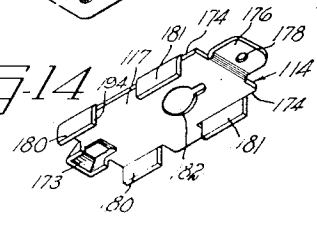
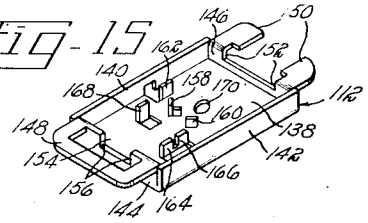


Fig-15



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UNITED STATES PATENT OFFICE

2,292,008

LUGGAGE LOCK

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Application May 1, 1940, Serial No. 332,630

1 Claim. (Cl. 70—74)

The present invention relates to locks and more particularly to spring actuated locks of the type used as luggage equipment.

The object of the present invention is to provide an improved lock of the above mentioned type that can be manufactured and assembled at the least possible expense and has the further advantage of requiring a minimum number of parts.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings:

Figure 1 is a plan view of the lock and cooperating hasp properly mounted;

Fig. 2 is an enlarged plan view of the bolt mounted on the casing with the spring in locking position;

Fig. 3 is a view similar to Fig. 2 showing the spring in unlocked position;

Fig. 4 is a cross-sectional view taken along line 4—4 of Fig. 2;

Fig. 5 is a cross-sectional view taken along line 5—5 of Fig. 3;

Fig. 6 is another cross-sectional view taken along lines 6—6 of Fig. 3;

Fig. 7 is a perspective view of the lock casing;

Fig. 8 is a perspective view of the spring;

Fig. 9 is a perspective view of the bolt;

Fig. 10 is a view similar to Fig. 1 illustrating a second embodiment of the invention;

Fig. 11 is an enlarged view of Fig. 10 with the mounting plate and hasp removed;

Fig. 12 is a cross-sectional view taken along lines 12—12 of Fig. 10;

Fig. 13 is a perspective view of the face plate shown in Fig. 10;

Fig. 14 is a perspective view of the bolt shown in Fig. 11;

Fig. 15 is a perspective view of the casing member shown in Fig. 11; and

Fig. 16 is a perspective view of the spring member shown in Fig. 11.

The present invention comprises generally a lock having a casing A, upon the outer surface of which is slidably mounted an escutcheon B for manually retracting into unlatched position an attached, reciprocating bolt C located within the casing, the bolt being normally urged into latched position by the action of a movable spring D. According to the present invention, the spring D has two positions of stability; in one of them it permits retraction of the bolt by means of the escutcheon and in the other locks the bolt in latching position.

Referring more specifically to the preferred embodiment of the invention comprising a lock adapted for surface mounting (see Figs. 1 through 9), the lock casing is a metal stamping having a bearing plate 10 and a peripheral wall 12 for spacing the bearing plate away from the surface on which it is mounted in order to provide a space beneath the bearing plate in which to mount the bolt C and spring D, as will be hereinafter described. Cut in the plate 10, adjacent its forward edge, is a strike opening 18 having at each side edge thereof downwardly and outwardly turned L shaped lugs 20 for supporting one end of the bolt C as is hereinafter apparent. Also cut in the plate 10, adjacent its rear edge, is a large key opening 22 having at either side thereof, parallel longitudinal slots 24 for slidably mounting the escutcheon on the outer surface of the plate above the key opening 22.

More specifically, the escutcheon B is a metal stamping having a substantially rectangular face 26 and a depending peripheral wall 28, having its lower edge slidably bearing on the plate 10 and retained thereon by a pair of oppositely disposed tongue fasteners 30 depending from the wall 28 and extending through the aligned slots 24 of the plate 10. In addition, the fasteners 30 cooperate with the casing lugs 20 to slidably mount the bolt C on the under surface of the plate 10.

To accomplish this mounting, the bolt C is an irregular metal stamping comprising a body portion 32 having a pair of forwardly extending spaced fingers 34 slidably received and retained beneath the L-shaped lugs 20. The plate is further provided with a pair of aligned apertures 36 cut in the body portion 32 adjacent the rear edge thereof through which the escutcheon fasteners 30 are inserted and thereafter peaned over to permanently slidably mount the bolt C on the plate 10. With this construction longitudinal movement of the escutcheon results in a like movement of the bolt, the forward travel of the latter being limited by the engagement of the shoulders 21 of the L-shaped lugs 20 with the upsets 35 of the fingers 34, and the rearward travel limited by the engagement of the fasteners 30 with the rear ends 25 of the slots 24. By upsetting the fingers 34 out of the plane of the body portion 32, the latter is spaced from

the plate 10 and this spacing maintained by a pair of bearing runnners 44 extending upwardly from the side edges of the body portion 32 adjacent the rear edge thereof.

The space between the body portion 32 of the bolt and the plate 10 contains the bolt actuating spring D. In order to properly locate the spring, the bolt is provided with a pair of oppositely disposed compression lugs 46 and 48 turned inwardly from a reduced central portion thereof, and to cooperate therewith, the under face of the casing is provided with oppositely disposed positioning lugs 50 and 52, the lug 52 having therein a retaining slot 51.

According to the present invention the spring D acts, in one position, to retractably urge the bolt into latching position, and in another, to lock the bolt against such retraction. To accomplish this, the spring D comprises a U shaped spring wire member, having an irregular leg 54, a straight leg 56 and a connecting head portion 58. The legs of spring D are positioned transversely of the bolt and compressed between the bolt C and the casing A by positioning the end of the irregular leg 54, adjacent the head 58, within the slot 51, and the free end thereof against the lug 50; and compressively engaging the straight leg 56 with the compression lugs 46 and 48 provided on the reduced central portion of the bolt C.

As shown in Fig. 2, when the compression lug 46 and the notched lug 52 are engaged by the spring, any force tending to urge the bolt rearwardly against the spring will be resisted by the spring at its point of engagement with lug 46. Inasmuch as the moment arm between this engagement point and the head portion 58, which may be considered as the fulcrum of the straight leg 56, is relatively short, the force necessary to bend the leg would have to be excessively large, and thus for all practical purposes, the bolt is locked in this position. In order to retain the spring in the locking position, the irregular leg 54 is provided at its forward end with an indent 60 within which the positioning lug 50 is seated. The irregular leg 54 is further provided with an adjacent inner indent 62 within which the positioning lug 50 may be seated, as indicated in Fig. 3. When the spring is so positioned the leg 56 is no longer engaged by the compression lug 46, and inasmuch as the bolt only engages the spring D through the one compression lug 48, the bolt may be retracted against the resilient action of the spring. Obviously, the distance between the engagement point of lug 48 and the head portion 58 is sufficiently long to permit further compression of the spring by a relatively small force applied on the escutcheon and therefore permits retraction of the bolt.

In order to slide the spring D transversely of the bolt into its several positions there is provided a key E receivable within a key hole 70 cut in the escutcheon. The key is provided with bearing points 72 and 74 on its shank which may be respectively pivotally journalled in a bearing opening 76 in the bolt and a bearing aperture 78 in the key hole 70. A cam portion 64 extends outwardly of the shank of the key and is engageable with a large notch 66 formed in the irregular leg 54 of the spring. Upon rotation of the key the cam 64 engages one of the walls of the notch 66 and forces the spring transversely of the bolt into one of its two positions. Further rotation of the key in the same direction causes the cam to disengage the notch without urging the spring beyond the desired position. Likewise when the key is rotated in the opposite direction the cam 64 engages the notch 66 to urge the spring into the other of its two positions and thereafter disengages without forcing the spring beyond said position.

A lock made in accordance with the present invention may employ a variety of strike engaging members. In the present embodiment wherein the lock is designed for use with luggage it has been found advantageous to use the lock in conjunction with the usual pivoted hasp F which includes a plate 80, mountable on the closure member of the luggage, and having pivotally supported thereby a spring actuated pivoting tongue 82 carrying a strike loop 84 insertable within the strike opening 18. In order to latchably retain the loop 84 within the strike opening 18 the bolt C has extending from its forward end, intermediate the fingers 34, an upset latch 86 engageable with the loop 84. It will be noted that the latch 86 has a beveled tip 88 for cooperatively engaging the rounded surface 90 of the strike 84, so that when the spring D is in its unlocked position, the strike 84, upon being forced into the opening will cam the bolt C backwardly to allow alignment and subsequent engagement of the latch and strike.

Referring now to Figs. 10 through 16, there is shown an embodiment of the invention wherein the lock is adapted for recess mounting, comprising generally a lock having a mounting plate 110 and an attached casing 112 within which is positioned a slidable bolt 114 and a spring 116. On the outer surface of the plate 110 there is slidably mounted an escutcheon 118 attached to the bolt 114.

More specifically, the mounting plate 110 is a rectangular sheet metal stamping having rivet openings 123 at its corners for properly mounting the plate. Likewise, cut in the plate 110 adjacent its forward edge is a strike opening 124 having at either end thereof downwardly extending fastening lugs 126 for supporting one end of the casing 112. A round beveled opening 128 is also cut in the central portion of the plate and rotatably retains therebeneath a beveled circular key disc 130 provided ith a key hole 132 therein. Rearwardly of the opening 128 there is cut a cross-shaped opening 134 having at the ends of two of the oppositely disposed arms a pair of downwardly extending lugs 136 for securing the other end of the casing 112.

Casing 112 comprises a rectangular shallow box-shaped metal stamping having a bearing plate 138, corresponding to the bearing plate 10 of the first embodiment, side walls 140 and 142; front wall 144 and rear wall 146. In order to support the casing 112 on the mounting plate 110 there extends outwardly of the upper edge of the front wall 144 and parallel with the bearing plate 138 of the casing a loop member 148 through which the fastening lugs 126 are inserted and thereafter peaned over. Likewise, in order to support the rear of the casing there is provided a pair of fingers 150 extending outwardly from the upper edge of the rear wall 146 over which the fasteners 136 are bent in order to retain the fingers 150 therebeneath.

In order to prevent transverse movement of the bolt 114 in the casing 112 a portion of the rear wall 146 is cutaway to provide a pair of positioning shoulders 152 for slidably locating the rear end of the bolt therebetween and a similar opening 154 is cut in the front wall 144 of the casing having a corresponding pair of position-

ing shoulders 156 for slidably locating therebetween the front end of the bolt.

To properly locate the spring 116 in the casing, as will be hereinafter described, there extends upwardly from the bearing plate 138 a pair of stop lugs 158 and 160; a positioning lug 162; a notched retaining lug 164 having a notch 166 therein; and a locating lug 168. There is also cut centrally of the bottom 138 of the casing and rearwardly of the lugs 158 and 160 a small bearing opening 170 for pivotally supporting the outer shank of a key 172.

The bolt 114 comprises a substantially rectangular body plate 117 having extending outwardly from its forward edge, an upset beveled latch 173 slidably located between the positioning shoulders 156 and underlying the strike opening 124. Likewise the side edges 174 of the rear portion of the shoulder are slidably located between the positioning shoulders 152 of the casing. Extending outwardly from the rear edge of the bolt is an upset plate 176 having a hole 178 cut centrally therein for securing the escutcheon member 118 thereto. There is further provided centrally of the body portion of the bolt a key bearing aperture 182 cut centrally therein.

There extends downwardly from the side edges of the body plate 117 of the bolt, forwardly and rearwardly disposed runners 180 and 181 adapted to slidably bear upon the bearing plate 138 of the casing to provide a space therebetween in which to locate the spring 116.

Spring 116 is a substantially U-shaped spring wire member having an irregular leg 184, a straight leg 186 and a connecting head portion 188. As shown in Fig. 11 the irregular leg 184 of the spring has a large key indent 190 positioned between the stop lugs 158 and 160 and having at its outer end a positioning offset 192 engageable with the positioning lug 162 of the casing. In this position the engagement of the lug 162 with the upset 192 holds the key indent 190 in engagement with the stop 158 and the spring in the proper position to lock the bolt against retraction. Inasmuch as the straight leg of the spring is located in the notch 166 of lug 164 and engages the end 194 of one of the runners 180 only a short distance therefrom, the force necessary to apply sufficient moment to bend the spring leg 186 is so large that the bolt is virtually locked against retraction.

In order to permit retraction of the bolt, there is provided a key 172 having a lever portion 200 adapted to engage the key indent 190 when the key is inserted in the key hole 132. Rotation of the key in a clockwise direction will cause the lever to slide the spring 116 transversely of the bolt so that the indent 190 abuts the stop lug 160 and moves the upset 192 to the opposite side of the positioning lug 162. The transverse movement of the spring is sufficient to move the spring out of the path of the runner end 194. As in the previously described embodiment the bolt in this position engages only the free end of the straight leg 186 and as the leg is relatively flexible at this point as a result of the greater effective moment arm, the bolt may be retracted against the action of the spring 116.

In order to provide means for manually retracting the bolt an escutcheon 118 is slidably mounted on the outer surface of the plate 110 above the opening 134 and there extends downwardly from the escutcheon through the opening 178 a fastener 202, the lower end of which is fixedly attached in the opening 178. It is obvious from this construction that manual retraction of the escutcheon will retract the bolt.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claim is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

We claim as our invention:

In a luggage lock having a bearing plate and a bolt slidably mounted thereon, a pair of L shaped lugs depending from the bearing plate, a pair of fingers extending outwardly from the forward edge of said bolt slidably received and retained beneath said L shaped lugs, means for securing the rear portion of said bolt in slidable engagement with the bearing plate, a spring positioned between and resiliently engaging said plate and said bolt for constantly urging said bolt to a forward position relative to said plate, means engaging the straight leg of the spring when said spring is in one position of stability for locking the bolt against retraction, means for sliding said spring transversely of the bolt into another position of stability to disengage the locking means, and means for retracting the bolt when the locking means is disengaged.

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