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AUXILIARY LOCKING BOLT

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Inventor

His Attorneys
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UNITED STATES PATENT OFFICE.

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AUXILIARY LOCKING BOLT.

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To all whom it may concern:

Be it known that I, WILLIAM ELGIN CLARK, a citizen of the United States, resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Auxiliary Locking Bolts, of which the following is a specification.

This invention relates to improvements in auxiliary locking bolts, and more particularly relates to such locking bolts adapted to use in connection with safes, vaults and similar receptacles or enclosed spaces employed for the safe-keeping of valuables. This novel locking bolt apparatus is used as an auxiliary to the usual locking bolts, locks, bars, etc., customarily employed at the present time in connection with the door of what may be generically termed safes. This auxiliary bolt is normally retained in inoperative or unlocked position but is adapted to be moved to operative position upon the application of heat to the safe as by an attempted burglars entry through the use of a cutting flame. Movement of this locking bolt is caused by combustion of a charge, ignited by the cutting flame, which combustion, explosive or otherwise, generates gaseous pressure to cause movement of the locking bolt to locked position. Movement of the locking bolt may be directly caused by the generated pressure or the locking bolt may be held in inoperative position against the force of a suitable tension means and the generated pressure may indirectly cause movement of the locking bolt by effecting release of the device holding the bolt in inoperative position.

Applicant is aware that heretofore combustible or explosive charges have been employed in connection with safes so that, upon ignition of the charge, projectiles are fired, an auxiliary casing is fragmented and blown off, with the intent of killing or injuring the burglar. Not only is this the value of the safe impaired or destroyed, but these devices constitute "man-traps" usually forbidden by law. This novel device does not injure either the safe or the burglar but provides an additional locking means and incidentally functions as an alarm.

The object of this invention, therefore, is to provide an improved auxiliary locking bolt for safes.

Other objects of the invention will more fully appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a view in vertical section through the locking bolt, casing and associated parts;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a view in section similar to that of Figure 1 but showing the charge adapted directly to move the bolt; and

Figure 4 is a section on the line 4—4 of Figure 3.

In the selected embodiment of the invention here disclosed, there is shown a casing 1 having a tube 2 of relatively thin metal supported at its ends in bosses integrally provided on opposed ends of the casing. The locking bolt 3 is slidably supported in the tube 2, being capable of longitudinal movement from the retracted inoperative position to an extended locking position, as for example against the usual bolt work on a safe door, or its terminal portion may seat in a similarly shaped recess in body of a safe (not necessary to be shown). It is to be understood that, if this casing 1 is mounted upon the body of the safe, then the recess will be in the door, and vice versa. The casing is affixed to the interior of the safe.

In the form shown in Figure 1, the bolt is constantly under tension tending to move the bolt to extended locking position and is releasably retained in inoperative position, the combustible charge being employed to effect release of the retaining means whereby the bolt is moved to locked position. The tension is provided by means of the coiled spring 4 seated within the tube 2 and having one end abutting against the adjacent face of the boss recess and its other end abutting against the adjacent end face of the bolt. The bolt is retained in retracted unlocked position by means of a dog or latch 5 pivotally borne by the stud 7 provided on the casing 1. The upper end of this latch is preferably beveled as shown and is adapted to enter the recess 9 provided in the under surface of the bolt 3.
whereby the bolt is normally held in retracted inoperative position. The combustible charge is adapted to effect release of such retaining means. To this end, the latch is provided with a head integrally projecting therefrom on the opposite side of its pivotal mounting. This head, when the latch is in bolt-retaining position, forms a closure for the chamber 15 provided by a breech-block 10 suitably riveted to the casing. This chamber 15 communicates with a rearwardly extending recess which is adapted to receive the combustible charge and to be thereby also closed. The combustible charge employed is preferably gunpowder although it is to be understood that various other substances may be employed which upon ignition will generate sufficient gaseous pressure in the chamber. The combustible charge here shown is in the form of a cartridge shell 11 containing the gunpowder 12 at an intermediate portion thereof, forwardly of the gunpowder in the shell 11 is positioned the wadding 16 while rearwardly is positioned the end face of a fuse tube 21 which carries a fuse 14. The nut 13 is received in threaded engagement on the rear end of the breech block 10 and holds the shell 11 and tube 21 in assembled relation to the block 10.

As is here indicated, the fuse-carrying tube 21 extends outwardly through the locking bolt casing through an aperture thereon preferably surrounded by an annular shoulder externally threaded to receive the apertured lock nut 19 thereon. The fuse may extend to positions along the interior surface of the safe or door which may be exposed to possibility of burglary or operation of an oxyacetylene, thermit or other metal cutting flames or intense heat applications.

The cutting flame generates sufficient heat to ignite the fuse which in turn ignites the gunpowder; or, it is possible that the gunpowder may be directly ignited. Upon combustion of the charge, gaseous pressure is created in the pressure chamber 15 causing pivotal movement of the latch 5 and withdrawal of its beveled end from the recess 9 thereby causing movement of the bolt to extended or locking position. Preferably the latch is under tension of the leaf spring 6, anchored in the breech block 10, which presses against the adjacent face of the latch 5 to hold the same in engagement with the recess 9 in the bolt 3.

Means are provided which are automatically operable, upon movement of the bolt to locking position, to maintain the bolt in such position. Such means are provided by the dog 17 pivotable on the stud 20 carried by the casing 1. This dog is under tension of the leaf spring 18 normally upwardly pressing the dog against the under face of the bolt. Movement of the bolt to locking position permits the dog 17 to enter the angled recess 8 provided in the bolt 3 thereby preventing retraction of the bolt.

The casing 1 is preferably integrally formed and is open on one side which is adapted to be closed by the cover 22 of sheet metal which is secured to the casing as by means of the screws shown in Figure 2. Annularly shouldered holes 23 are provided through the casing for the reception of cap screws by means of which the casing 1 may be attached to the interior of the safe.

In the modified form shown in Figure 3, the breech block 10 is mounted in the tube 2 and the fuse tube 21 rearwardly projects from the casing, the lock nuts 13 and 19 performing functions similar to those performed in the structure shown in Figure 1. In this modified form, the bolt is simply supported in inoperative position and is not under tension. Ignition of the combustible charge, such as the gunpowder 12, generates gaseous pressure in the chamber 15. This pressure is communicated directly to the rear face of the bolt 3 whereby the bolt is caused to move to extended locking position. In this form the spring pressed dog 17 enters the recess 8 automatically to lock the bolt in extended position.

I claim as my invention:

1. In a safe, the combination of an auxiliary locking bolt normally supported in inoperative position, with a combustible charge, and means adapted upon combustion of the charge to cause movement of the bolt to locking position.

2. In a safe, the combination of an auxiliary locking bolt normally supported in inoperative position, with a combustible charge, and means adapted upon combustion of the charge to cause movement of the bolt to locking position, and a fuse connected to said combustible charge and adapted to ignite the same.

3. In a safe, the combination of an auxiliary locking bolt normally supported in inoperative position, with a combustible charge, and means adapted upon combustion of the charge to cause movement of the bolt to locking position, and means automatically operable, upon movement of the bolt to locking position, to maintain the bolt in locked position.

4. In a safe, the combination of an auxiliary locking bolt normally supported in inoperative position, with a combustible charge, and means adapted upon combustion of the charge to cause movement of the bolt to locking position, and spring-pressed latching means automatically operable, upon movement of the bolt to locking position, to maintain the bolt in locked position.
5. In a safe, the combination of an auxiliary locking bolt normally supported in inoperative position, a chamber, a combustible charge adjacent said chamber and adapted upon combustion to generate pressure in said chamber whereby the bolt is caused to move to locking position.

6. In a safe, the combination of an auxiliary locking bolt, with a support slidably to hold said bolt, tension means normally tending to move the bolt to locking position, a chamber closed by said latch when in bolt-retaining position, a combustible charge adjacent said chamber and adapted upon combustion to move the latch to release the bolt whereby the bolt is tensionally moved to locking position.

7. In a safe, the combination of an auxiliary locking bolt, with a support slidably to hold said bolt, tension means normally tending to move the bolt to locking position, a latch adapted normally to retain the bolt in inoperative position, a chamber closed by said latch when in bolt-retaining position, a combustible charge adjacent said chamber and adapted upon combustion to move the latch to release the bolt whereby the bolt is tensionally moved to locking position.

8. In a safe, the combination of an auxiliary locking bolt, tension means normally tending to move the bolt to locking position, means normally to retain the bolt in inoperative position, a combustible charge, and means adapted upon combustion of the charge to cause release of said bolt whereby the bolt is tensionally moved to locking position.

In witness whereof, I have hereunto set my hand this 7th day of May, 1921.

WILLIAM ELGIN CLARK.