

No. 607,831.

Patented July 26, 1898.

E. N. CASE.
ALARM PADLOCK.

(Application filed Aug. 26, 1897.)

(No Model.)

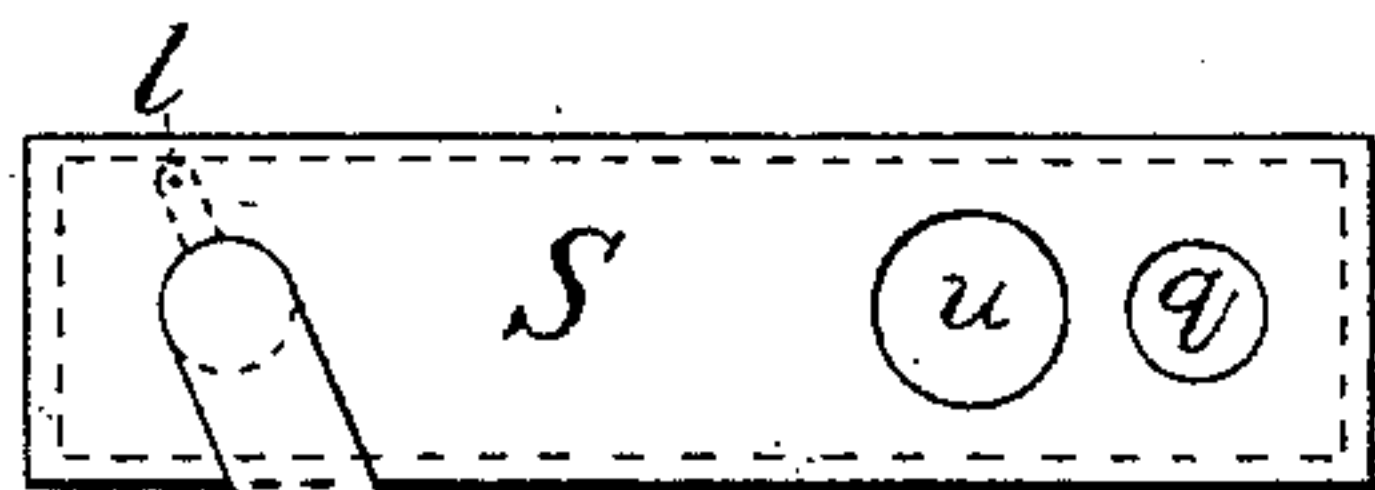
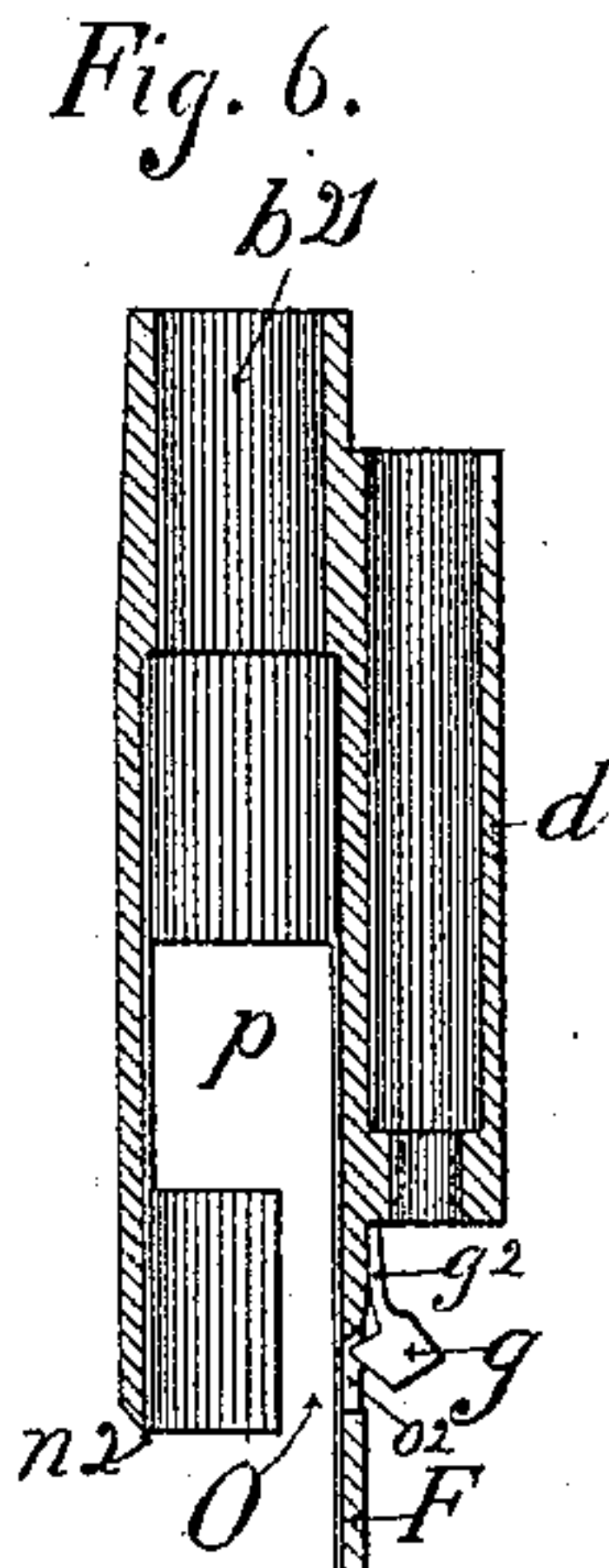
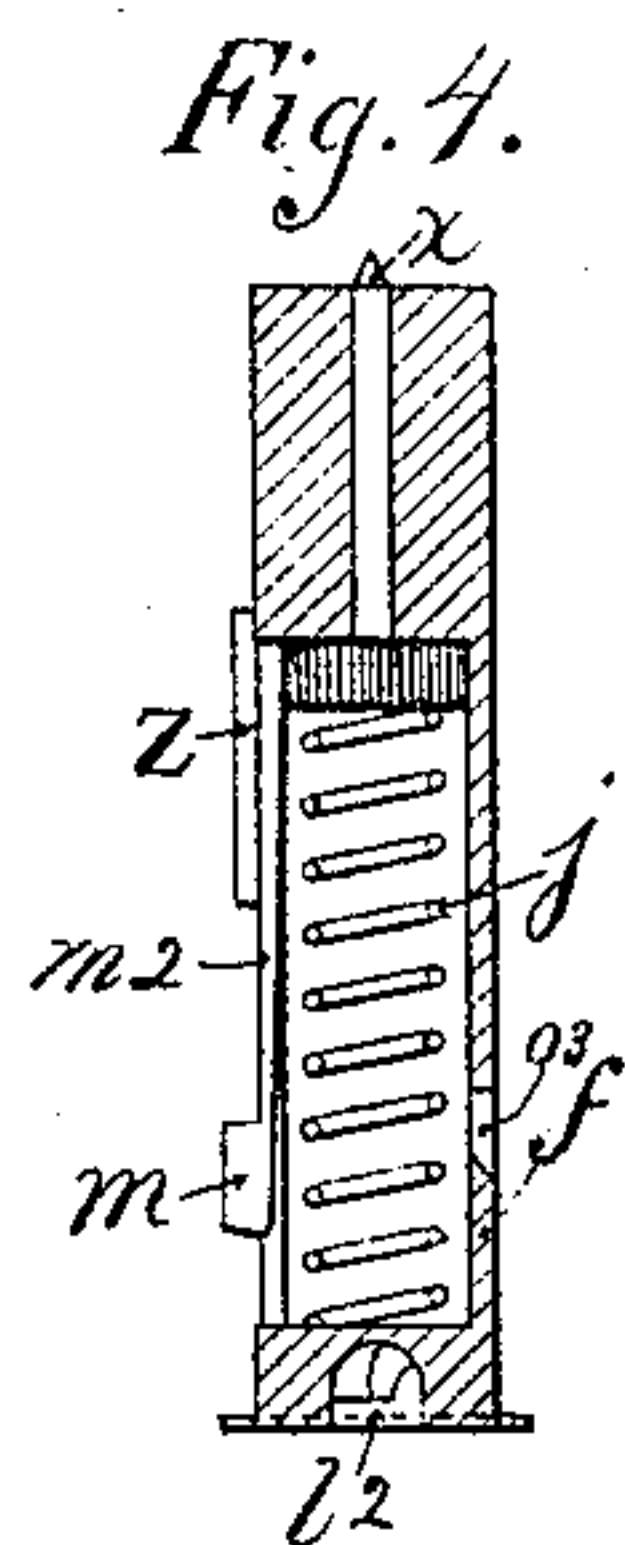
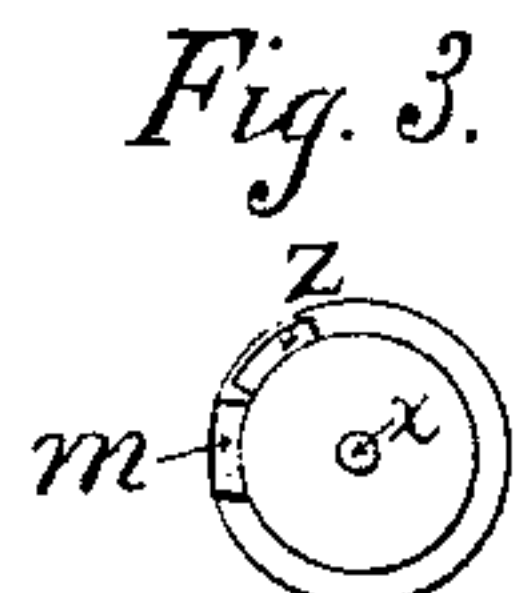
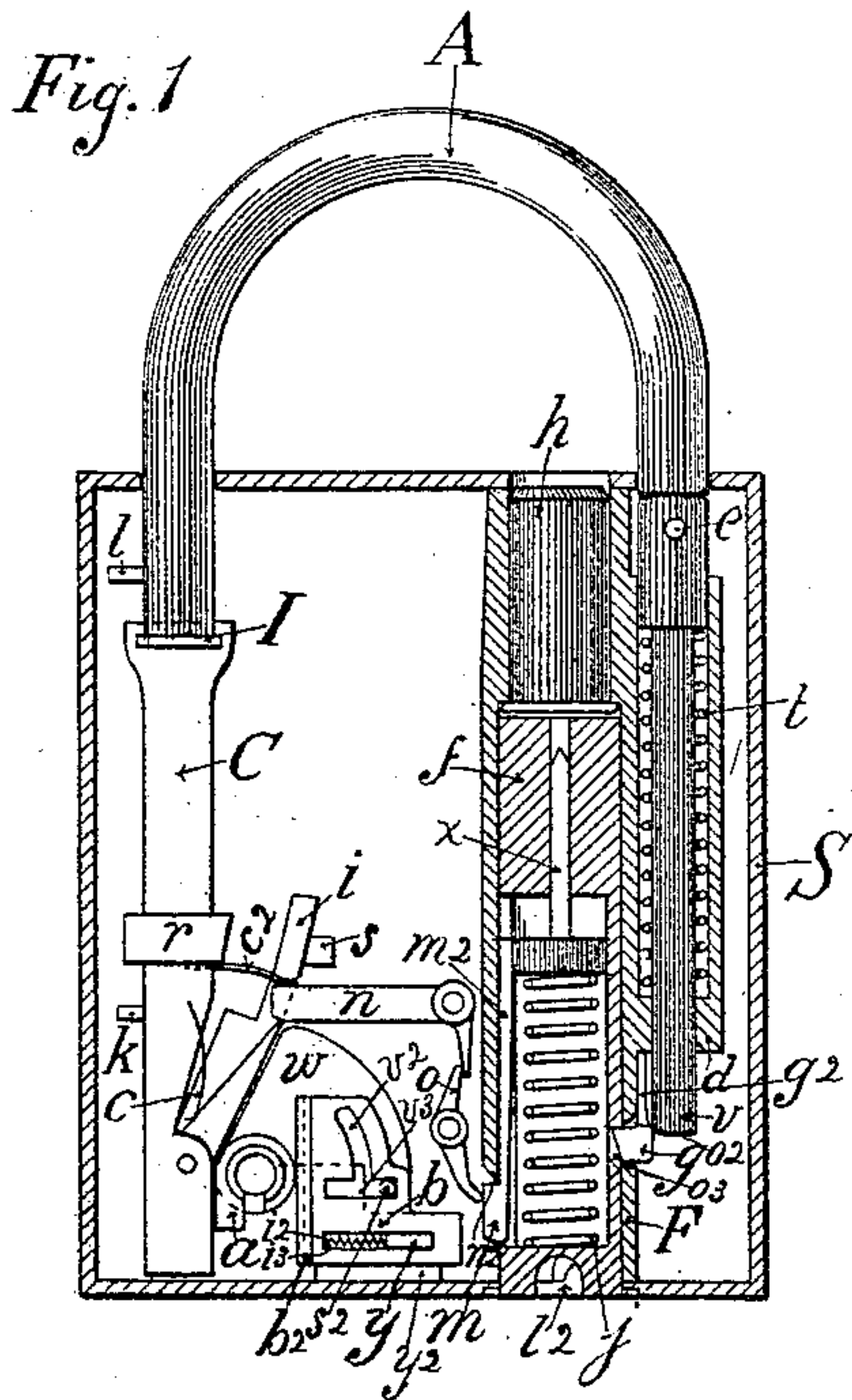


Fig. 2.



Fig. 5.

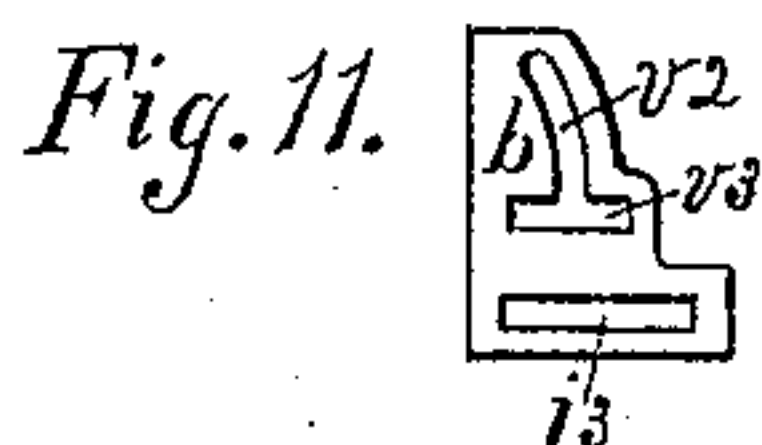
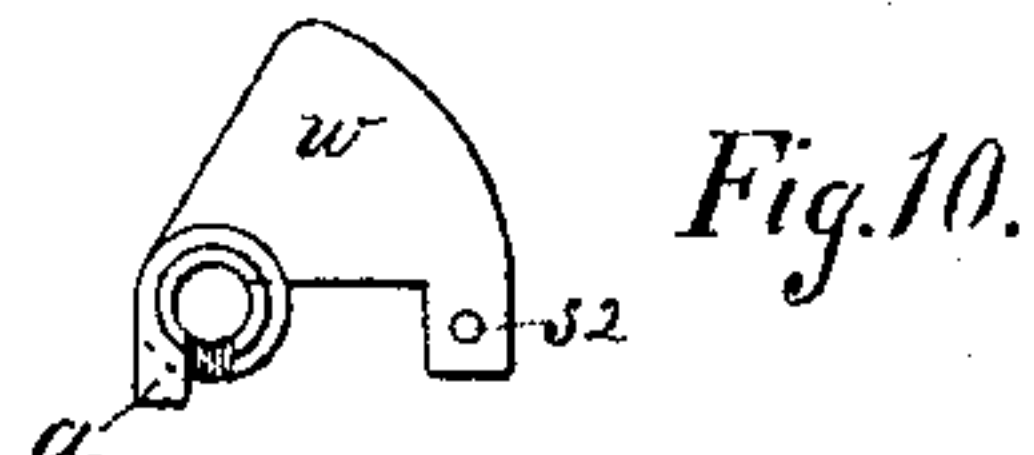
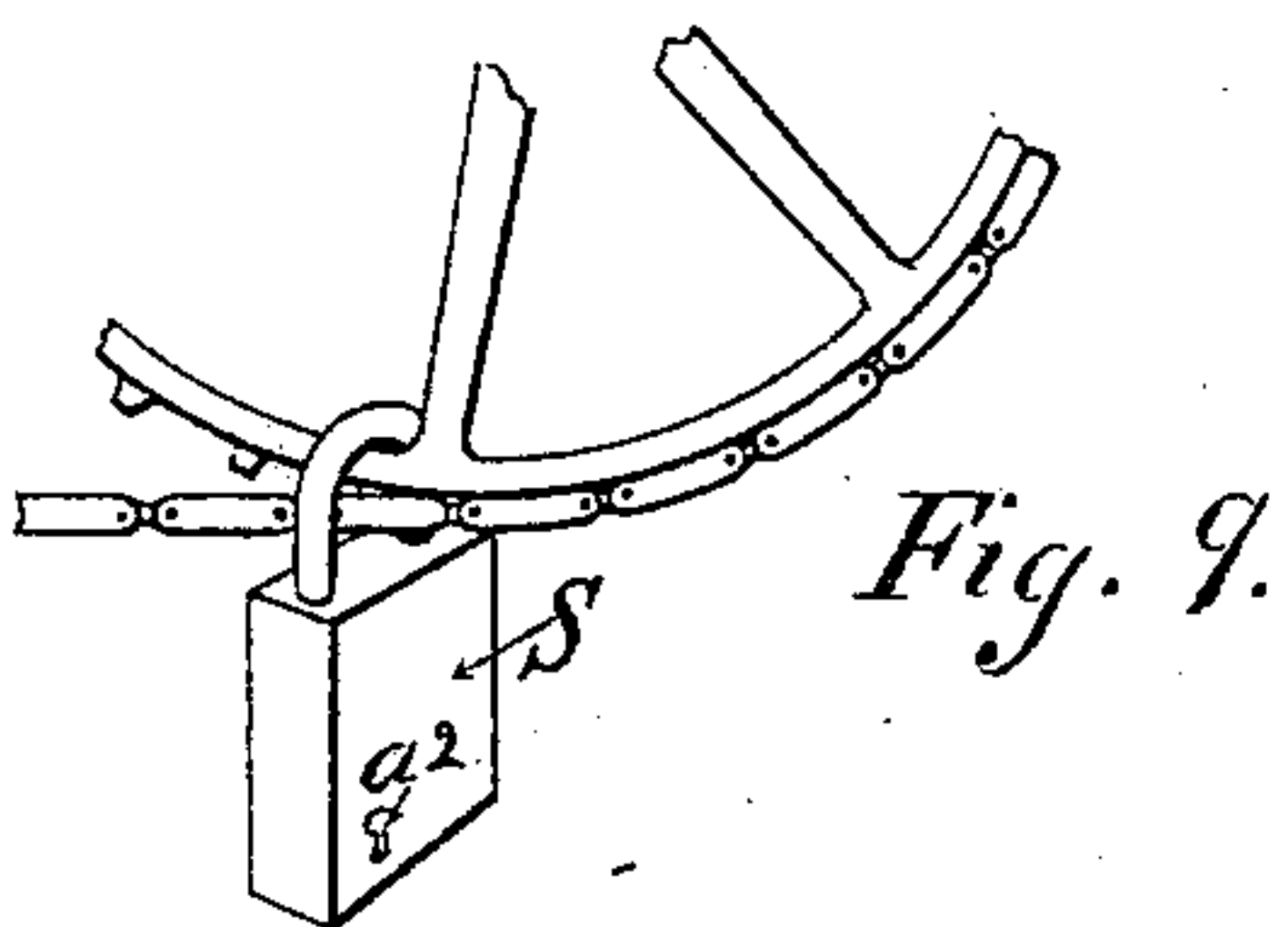
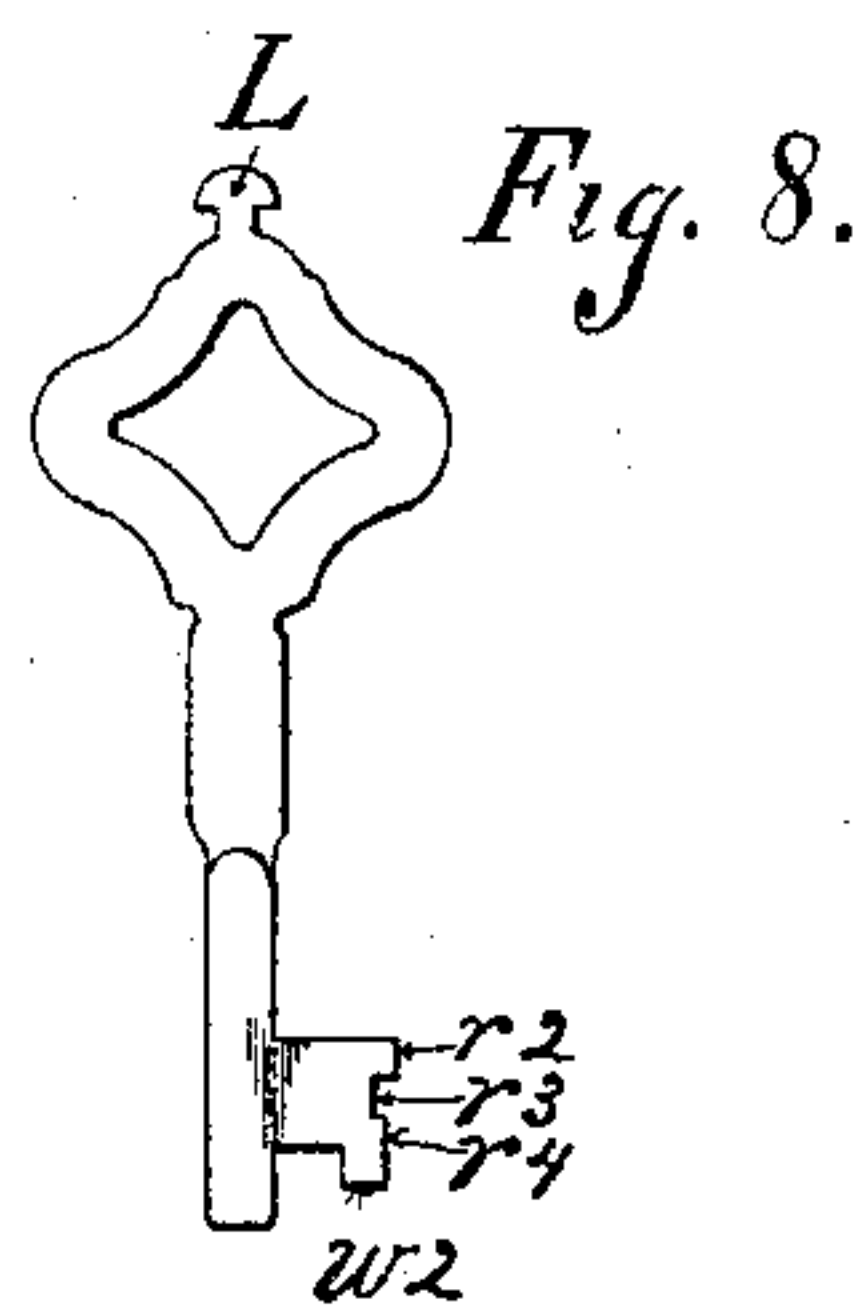
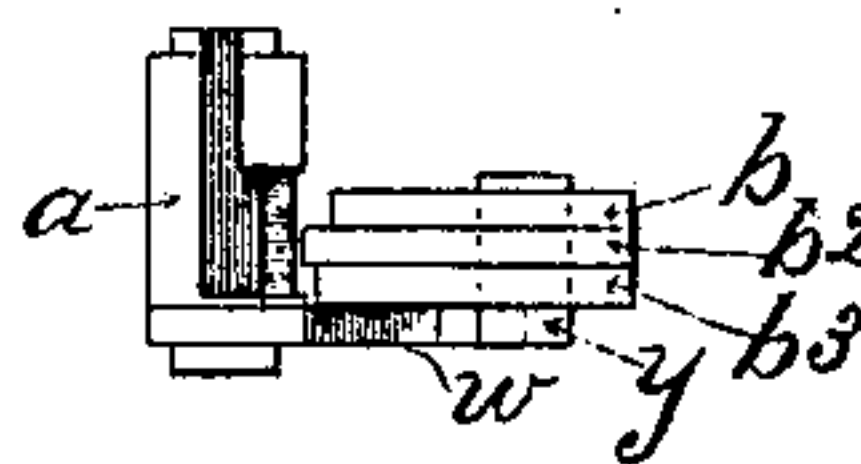


Fig. 7.



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ALARM-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 607,831, dated July 26, 1898.

Application filed August 26, 1897. Serial No. 649,630. (No model.)

To all whom it may concern:

Be it known that I, EDWARD NEWELL CASE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Explosive Alarm-Padlock for Bicycles, Switches, Car-Doors, Trunks, and other Objects, of which the following is a specification.

This invention relates to improvements in alarm-locks, and refers more specifically to that class of such locks in which a cartridge is so placed within the lock-casing as to be discharged when the lock is being tampered with.

The object of the invention is to provide a device of the character mentioned in which the cartridge will be made to explode either when it is attempted to pick the lock with a false key or other instrument or to render the same inoperative by attempting to pull the shackle from the casing.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In said drawings, Figure 1 is a sectional elevation of the lock shown in its locking position. Fig. 2 is a plan view showing the shackle swung to one side ready to be attached to the article to be locked. Fig. 3 is a top plan view of the firing device. Fig. 4 is a sectional elevation of the firing device. Fig. 5 is a bottom plan view thereof. Fig. 6 is a section of the barrel within which the firing device is contained, together with the chamber in which is located the spring for actuating the shackle. Fig. 7 is a detail view of the locking-post and tumblers. Fig. 8 is an elevation of the key. Fig. 9 is a view showing the application of the lock to a sprocket-wheel of a bicycle. Fig. 10 is a detail view of the cam attached to the locking-post, and Fig. 11 is a separate view of one of the tumblers.

In said drawings, S designates the lock-casing, which is shown of oblong rectangular form, and A designates the shackle, which is mounted in one end of said casing. Said shackle is connected at one end by a swivel-joint connection with a shackle-rod C, which is mounted in one side of the casing, longitudinal thereof, and to the lower end of which

the locking mechanism is attached, as will hereinafter be described. Said shackle-rod is mounted to have longitudinal movement in the casing and is engaged between its ends by a bearing-bracket *r*. The opposite end of the shackle A is adapted to enter an aperture *q* in the end wall of the casing opposite said shackle-rod C and engages a longitudinally-movable plunger *e*, which is mounted in the upper end of a plunger-chamber *d*, which latter is located within the casing parallel with and opposite said connecting-rod C. Said plunger is provided with a stem *v*, which passes through the plunger-chamber *d*, and the plunger is actuated by a spring *t*, which, as herein shown, is of spiral form and surrounds said stem. Said spring engages at one end a shoulder in the lower end of said chamber and at its opposite end a shoulder between the plunger *e* and stem *v* and acts to hold said plunger in its elevated position, and to thereby eject the shackle out of the casing when the locking mechanism is released. Said shackle is provided on its end adjacent the shackle-rod C with a stop *l*, which serves to limit the rotary movement thereof, as clearly shown in Fig. 2.

F designates a barrel within which the firing or alarm device is located, said barrel being generally of cylindric form and extending between the opposite ends of the casing parallel with the plunger-chamber *d*. As herein shown, said barrel F and chamber *d* are made integral; but it will be obvious that they may be made separate and separately attached within the casing. Said barrel is divided into an upper and lower section, the upper section being adapted to contain the cartridge and the lower section the firing device by means of which the cartridge is exploded. As herein shown, said cartridge is designed to be inserted into the barrel from the outer end of the casing. The firing device is constructed as follows:

f designates a cylindric shell which is of hollow construction in its lower end and is provided in its upper end with a central bore, through which passes a firing-pin *x*. Said firing-pin is provided on its inner end with a head, and between said head and a shoulder in the lower end of the hollow portion of the

cylindric shell is mounted an expansion-spring j , which acts to hold the firing-pin in its innermost position, with the inner end thereof projecting slightly beyond the inner end of the casing f . The firing-pin head is provided with a detent-arm m^2 , which passes outwardly from the head and is provided at its outer end with a detent m , which is adapted when in the barrel F to project through an opening in the outer end thereof and to have locking engagement with a shoulder n^2 , formed upon the inner edge of said opening. Said detent-arm is of such length that when the detent m is engaged with the shoulder n^2 the head of the firing-pin will be moved outwardly, and the spring j thereby brought under tension. With this construction when the detent has been forced out of engagement with the shoulder n^2 the spring will act to forcibly drive the firing-pin into contact with the cartridge, and to thereby explode the same. The detent-arm m^2 is made of spring metal and is so constructed as to normally hold the detent away from the central axis of the casing f . Said firing device and the cartridge are inserted from the outer end of the casing, and in order that the parts may be maintained in their proper relation when the firing device is being inserted the shell f is provided upon one side thereof with a rib or projection Z , which passes through a slot O in the barrel F when the device is being inserted therein. Said slot O is connected at its inner end with an opening P in the wall of the barrel, which is provided with an inwardly-facing shoulder which is adapted to be engaged by the outer end of the rib Z , said firing device being inserted within the barrel until the rib passes said shoulder, and is then rotated to bring said rib out of the plane of the slot O and into engagement with the shoulder, and to thereby prevent outward movement of said firing device until the same be rotated again to bring the rib into the plane of the slot O . When said firing device is being inserted within the barrel F , the detent m engages the shoulder n^2 , and thereby moves the firing-pin outwardly against the action of the spring j and holds it in such position until released by the means hereinafter to be described.

In order to afford additional protection against the locking device being removed when the shackle is in its locking position, the barrel is provided, on the outside thereof, with a dog g , mounted upon a spring g^2 , which tends to hold it away from the wall of said barrel. Said barrel is provided at this point with an aperture o^2 , and the tubular shell f is provided with a similar opening o^3 , which registers with said opening o^2 when the casing is in position within the barrel. The plunger v is extended through the lower wall of the plunger-chamber d , so as to engage at its outer end the dog g and to move it into contact with a downwardly-facing shoulder in said opening o^3 of the casing f . With this construction when the barrel has been charged, the firing

device set, and the shackle is in its locking position it will be impossible to remove said firing device without first releasing the locking mechanism, and thereby disengaging the stem v from the dog g . The outer end of said casing f is provided with a slot l^2 , which is adapted to be engaged by an extension L on the key and by means of which the firing device may be withdrawn.

Referring now to the locking mechanism by means of which the shackle is held in its locking position, these parts are constructed as follows:

i designates a pawl which is mounted upon the lower end of the shackle-rod C and extending inwardly therefrom. Said pawl is provided with a spring c , which acts to normally hold it away from the shackle-rod.

n designates a bell-crank lever which is pivoted at its angle adjacent to the barrel F , with one arm thereof adapted to engage a shoulder or detent on the pawl i . The other arm of said bell-crank lever extends toward the outer end of the casing and engages at its outer end a rocking lever o , which is pivoted between its ends and extends at its outer end adjacent to the detent m of the detent-arm m^2 and operates to move said detent out of engagement with the shoulder n^2 , and to thereby allow the spring j to move the firing-pin into contact with the cartridge.

a designates a locking-post which is located adjacent to the lower end of the shackle-rod C , which is adapted for the reception of a key, by means of which the locking mechanism is released. Said locking-post is provided with a slot through which the lips r^2 r^4 of the key are adapted to pass, and with an opening in the inner end thereof in a plane at right angles to the slot adapted to receive said lips when the key is in its normal position in said post.

w designates a cam-plate which is rigidly mounted upon the end of the locking-post remote from the end into which the key is inserted. Said cam-plate is adapted to rest with the edge thereof which is adjacent the pawl i just out of contact with said pawl and in position to move said pawl when the cam-plate is turned toward the rod C , and to thereby move said pawl out of engagement with the lever n to allow the rod C to move inwardly under the action of the spring t , so as to release the shackle A from the casing.

c^2 designates a spring, which is herein shown as mounted upon the bearing r and yieldingly engages at its opposite end the adjacent arm of the lever n . The tension of said spring regulates the force necessary to explode the cartridge by exerting tension upon the shackle.

b b^2 b^3 designate tumblers which are movably mounted within the casing adjacent to the cam-plate. Said tumblers are provided with slots v^2 v^3 , which intersect each other, and said slots are engaged by a guide-pin s^2 , which projects outwardly from the cam-plate

w , said guide-pin being adapted to normally rest in the slot v^3 to prevent the locking mechanism from being released except when the tumblers are actuated by the particular key designed therefor. Said tumblers are also provided with a third slot v^3 , extending parallel with the slot v^3 , which is engaged by a guide and stop block y , by means of which the same may be guided laterally toward and from the barrel F , containing the firing device. Within said slots are mounted springs i^2 , which tend to normally maintain the tumblers against or adjacent to the locking-post and to yieldingly hold the tumblers against the key while unlocking.

w^2 designates an inwardly-projecting lip on the key, which is adapted to engage the cam-plate w when the key is turned within the locking-post to release the locking mechanism.

The operation of the device is as follows: The key is inserted into the locking-post until the lips are within the plane of the side opening shown in Fig. 7, when the key will be turned to the left, with the lips r^2 r^4 engaging the tumblers b b^3 and the depression r^3 engaging the tumbler b^2 to move the same away from the post to bring the slots v^2 into register and opposite the guide-pin s^2 . At this time the lip w^2 will strike a shoulder on the cam w , which will act to rotate said cam upon its axis of rotation and to move the guide-pin s^2 within the slots v^2 . The cam w acts to move the pawl i out of engagement with the lever n , after which the shackle will be moved outwardly by the action of the spring t . It will be noted that this operation of the lock will not disturb the detent m of the firing device, as the tumblers and lips of the key are so constructed and arranged that the tumblers will not come into contact with the detent m of the firing device. If, however, a key of different shape be inserted into the lock, it will not act to actuate the tumblers so as to release the locking mechanism, but will move the tumblers laterally toward the detent m , and thereby actuate the detent to release the firing mechanism. Again, if it be attempted to release the locking mechanism by pulling the shackle from the casing it will be seen that such operation will move the shackle-rod C outwardly, and thereby move the pawl connected therewith against one arm of the lever n , which will cause the other arm thereof to move the rocking lever o against the detent, and thereby trip the firing mechanism.

Fig. 9 illustrates the application of my lock to the sprocket-wheel of a velocipede. It will be obvious that if an attempt were made to operate said machine the rotation of the sprocket-wheel would tend to pull the shackle from the casing, with the result above mentioned.

I claim as my invention—

1. In an alarm-lock the combination of a casing, a shackle mounted therein, a barrel in

said casing, an alarm device mounted in said barrel, and means actuated by the shackle for locking said alarm device within the barrel. 70

2. In an alarm-lock the combination of a casing, a shackle mounted therein, a barrel in said casing, an alarm device in said barrel, a dog mounted adjacent to said barrel and adapted to engage said alarm device, and a spring-pressed plunger engaged at one end by said shackle for actuating said dog. 75

3. In an alarm-lock the combination of a casing, a shackle mounted therein, a barrel in said casing, an alarm device comprising a hollow cylindric shell, a spring-pressed plunger in said shell adapted to strike an alarm, said shell being provided in its side wall with an opening and the barrel being provided with a registering opening, a dog mounted on the barrel adapted to pass through said openings and engage a shoulder on the shell to hold the same from movement within the barrel, and means operatively connected to shackle for maintaining said dog in its locking position. 80 85 90

4. In an explosive-lock the combination of a casing, a shackle mounted therein, a barrel in said casing adapted to receive at one end a cartridge, a firing device mounted in said barrel comprising a hollow cylindric shell provided with a spring-pressed firing-pin, and means operatively connected with the shackle for locking the said firing device within the barrel. 95

5. In an alarm-lock the combination of a casing, a spring-pressed shackle therein, an alarm device in said casing embracing a setting detent or trigger, tumblers in said casing adapted to be actuated by a key, operative connections between said tumblers and the shackle, said tumblers acting when engaged by a key of proper form to release said shackle, but when engaged by a key of other form to actuate said setting detent or trigger of the alarm device. 100 105 110

6. In an alarm-lock the combination of a casing, a spring-pressed shackle therein, an alarm device in said casing, a spring-pressed pawl on the outer end of said shackle, a locking-post adjacent to said pawl, a cam-plate connected with said post and adapted to actuate said pawl, and operative connections between said cam-plate and the alarm device. 115

7. In an alarm-lock the combination of a casing, a spring-pressed shackle mounted thereon, an alarm device in said casing, a spring-pressed pawl operatively connected with said shackle, a locking-post, a cam-plate connected with said post and adapted to actuate said pawl, tumblers operatively connected with said cam-plate, said tumblers being constructed and mounted in such relation to the firing device that when actuated by a key other than of the proper form they will release the alarm device and not release the locking mechanism. 120 125 130

8. In an alarm-lock the combination of a casing, a spring-pressed shackle mounted therein, a longitudinal sliding shackle-rod in

said casing having swivel connection with said shackle, an alarm device in said casing, a spring-pressed pawl on the outer end of said shackle-rod, a spring-pressed lever engaged
5 at one end by said pawl and operatively connected at its other end with the alarm device.

9. In an alarm-lock the combination of the casing provided with an alarm device, the shackle A, the shackle-rod C, the spring-pressed pawl *i* mounted on said rod, the
10 spring-pressed lever *n* and lever *o*, all operating when the shackle is pulled from the casing to actuate the alarm device.

10. In an alarm-lock the combination of the casing, an alarm device, the shackle A, the shackle-rod C connected therewith, the spring-pressed pawl *i* connected with said post, the locking-post *a*, the cam-plate *w* connected
15 therewith, the tumblers *b*, *b*², *b*³, operatively connected with said plate, the detent *m* of the alarm device, said parts being so constructed and arranged that when a key of proper form is inserted into the locking-post the locking
20 mechanism will be released without actuating the alarm device, but when a key of other form is inserted therein the alarm device will be actuated without releasing the locking mechanism.

11. In an alarm-lock the combination of a casing, a shackle mounted therein, an alarm
30 device embracing a setting detent or trigger, a pawl mounted on one end of said shackle, a bell-crank lever one arm of which engages said pawl and the other arm of which is adapted to actuate said detent or trigger when
35 tension is brought upon the shackle to draw it from the casing and a spring applied to said lever and acting in opposition to said tension upon the shackle.

40 12. In an alarm-lock of the character described, the combination of the firing device embracing the shell *f* provided with the slot *l*² and a key provided with the projection L.

13. In an alarm-lock the combination of a
45 casing, a locking and unlocking device there-

in, an alarm device in said casing, tumblers in said casing adapted to be actuated by a key, and operative connections between said tumblers and the locking and unlocking device, said tumblers acting when engaged by a
50 key of proper form to actuate said locking and unlocking device, but when engaged by a key of other form to actuate said alarm device.

14. In an alarm-lock the combination of a casing, a shackle therein, an alarm device embracing a setting detent or trigger, operative
55 connections between said shackle and detent or trigger acting to actuate the latter when tension is brought upon the shackle to draw it from the casing, and a spring applied to maintain a predetermined tension required to
60 actuate the alarm device.

15. In an alarm-lock, the combination of a casing, an alarm device therein, embracing a
65 detent by which said alarm device is held out of action, a locking mechanism embracing tumblers which prevent the locking mechanism from being released except when said
70 tumblers are actuated by the key designed therefor, said tumblers being constructed to engage and actuate the said detent and release the alarm device when acted upon by a
75 key of other form, a part such as the shackle described which is movably connected with the lock-case and which has operative connection with said detent acting to actuate the
latter when tension is brought upon said movable part in a direction to draw it from the casing, and a spring applied to said movable
80 part to maintain a predetermined tension required to actuate the alarm device.

Signed at Chicago, in the county of Cook and State of Illinois, this 23d day of August, 1897.

EDWARD NEWELL CASE.

Witnesses:

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