

No. 611,212.

Patented Sept. 20, 1898.

E. N. CASE.  
ALARM LOCK.

(Application filed Dec. 10, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

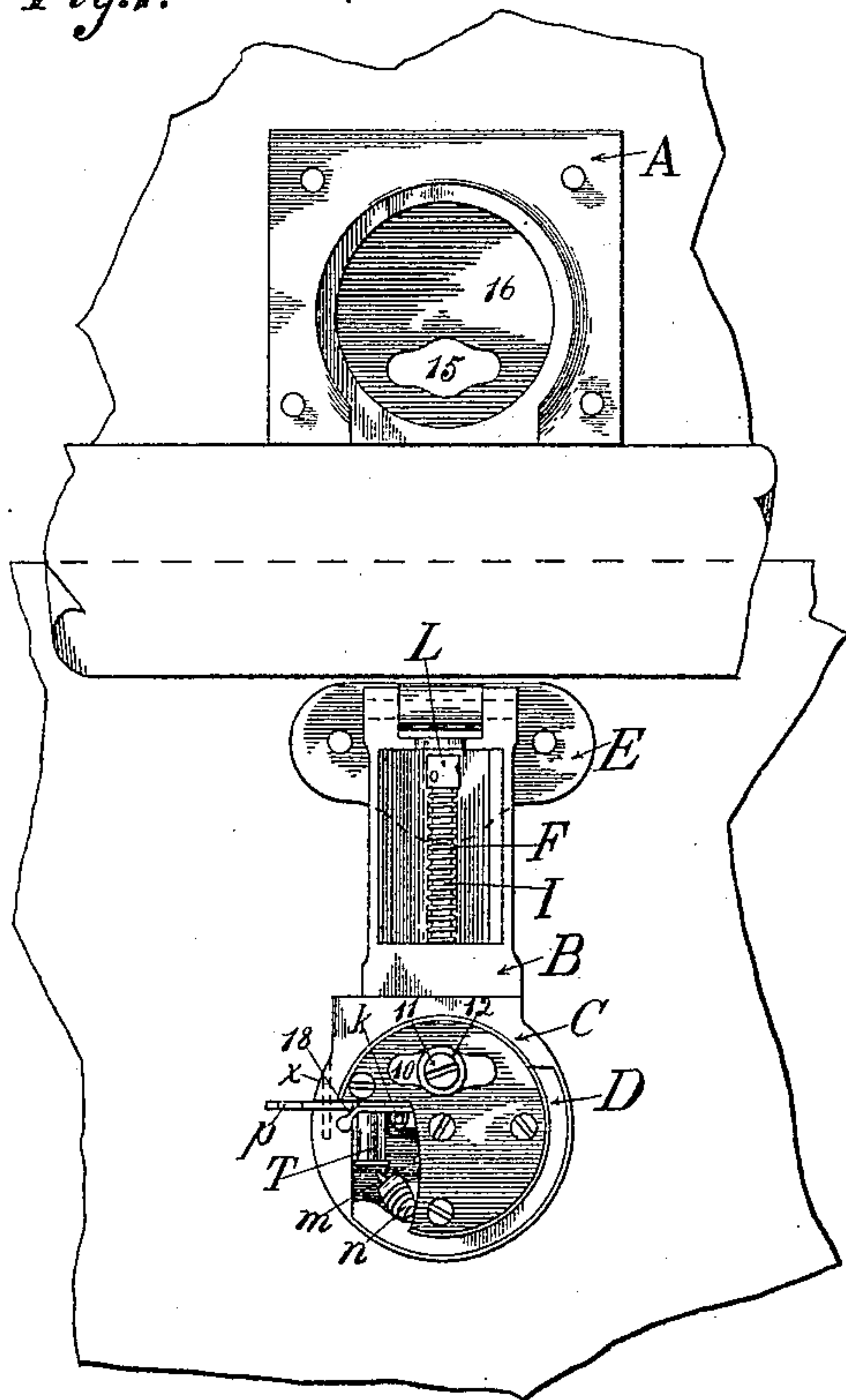


Fig. 2.

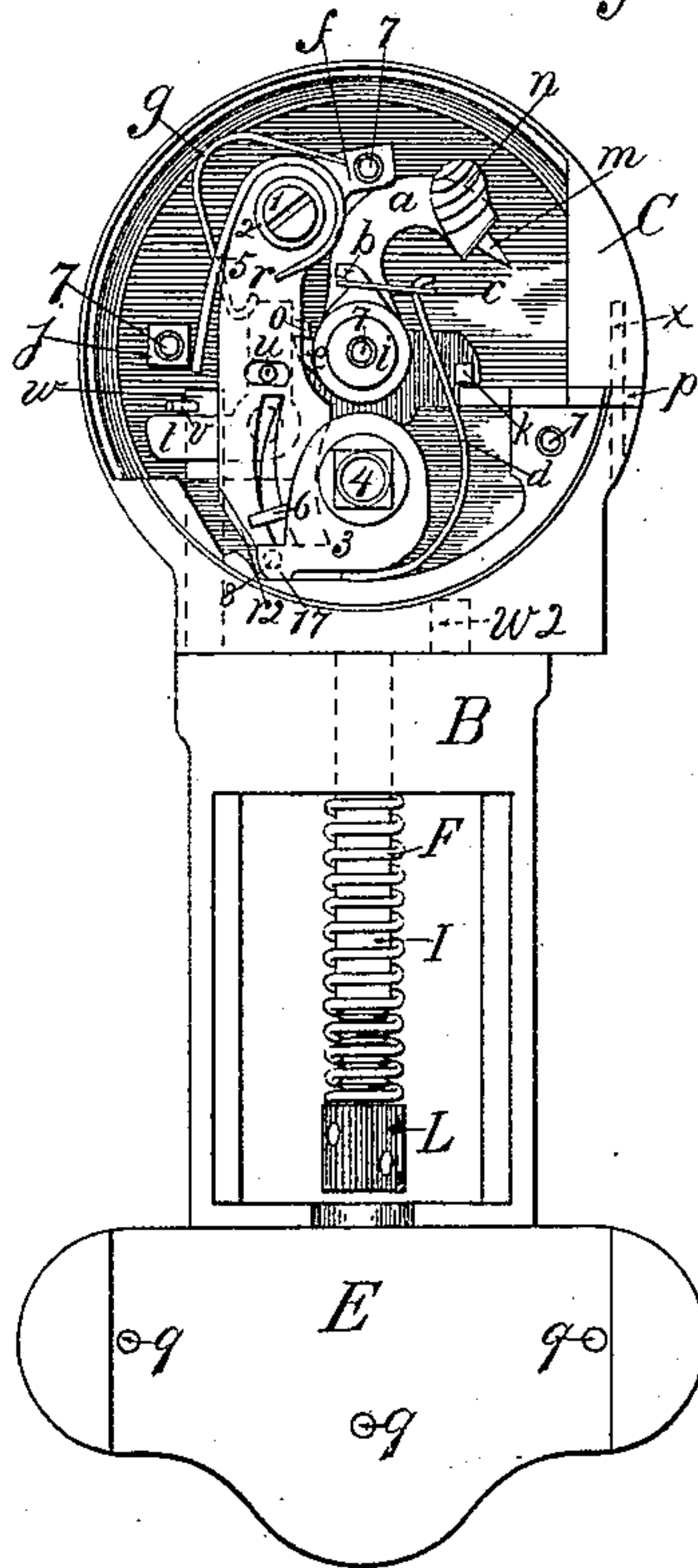


Fig. 3.

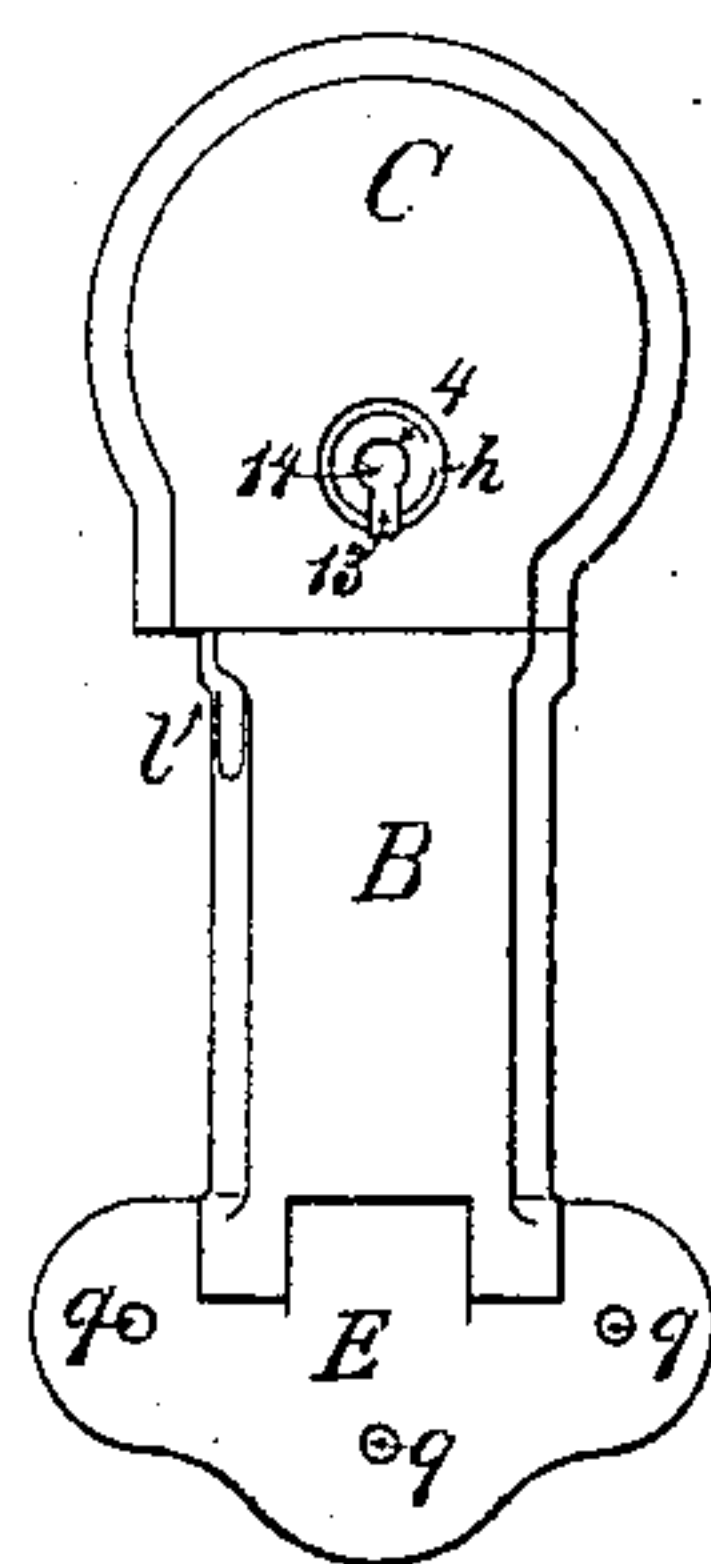


Fig. 4.

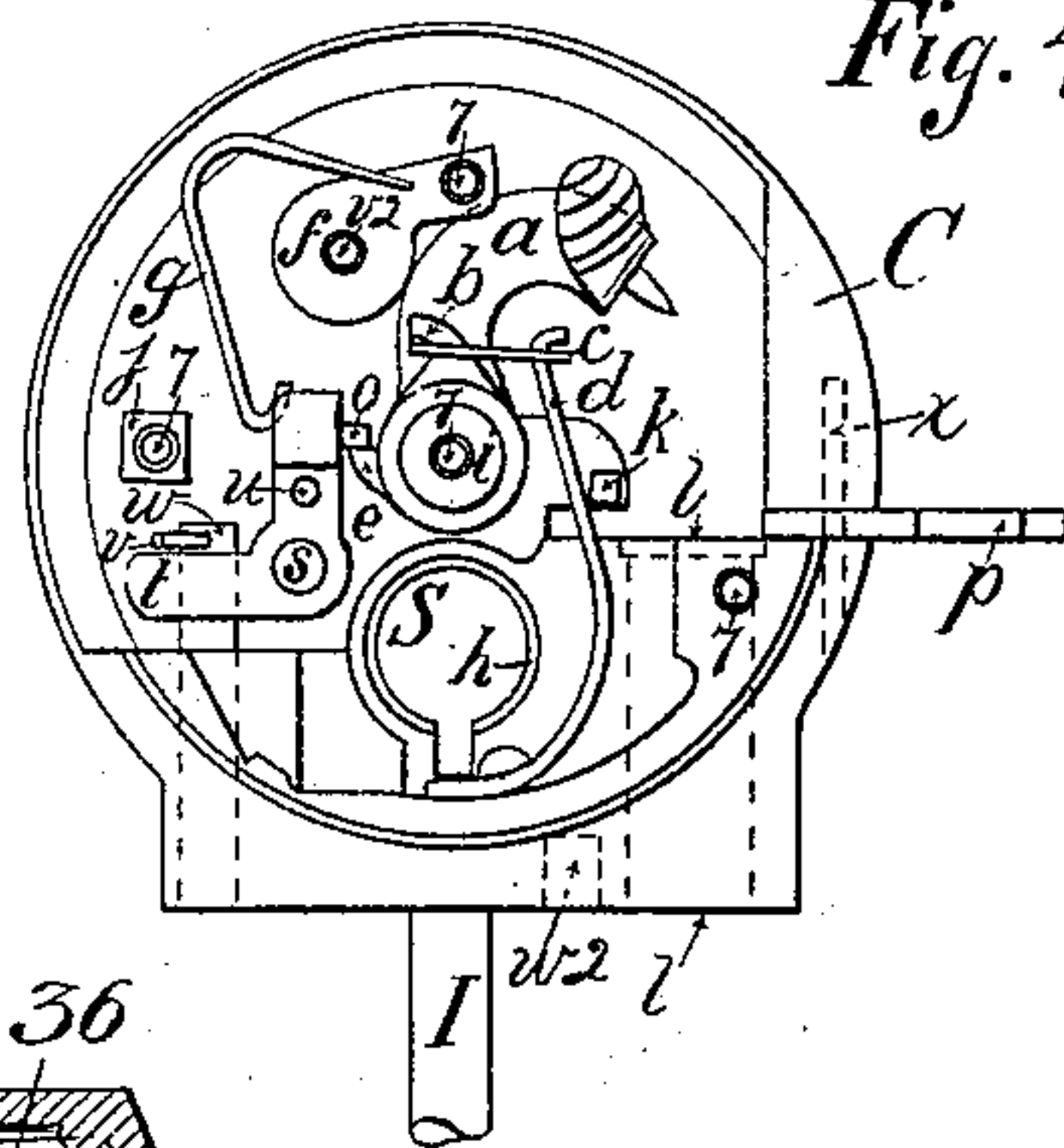
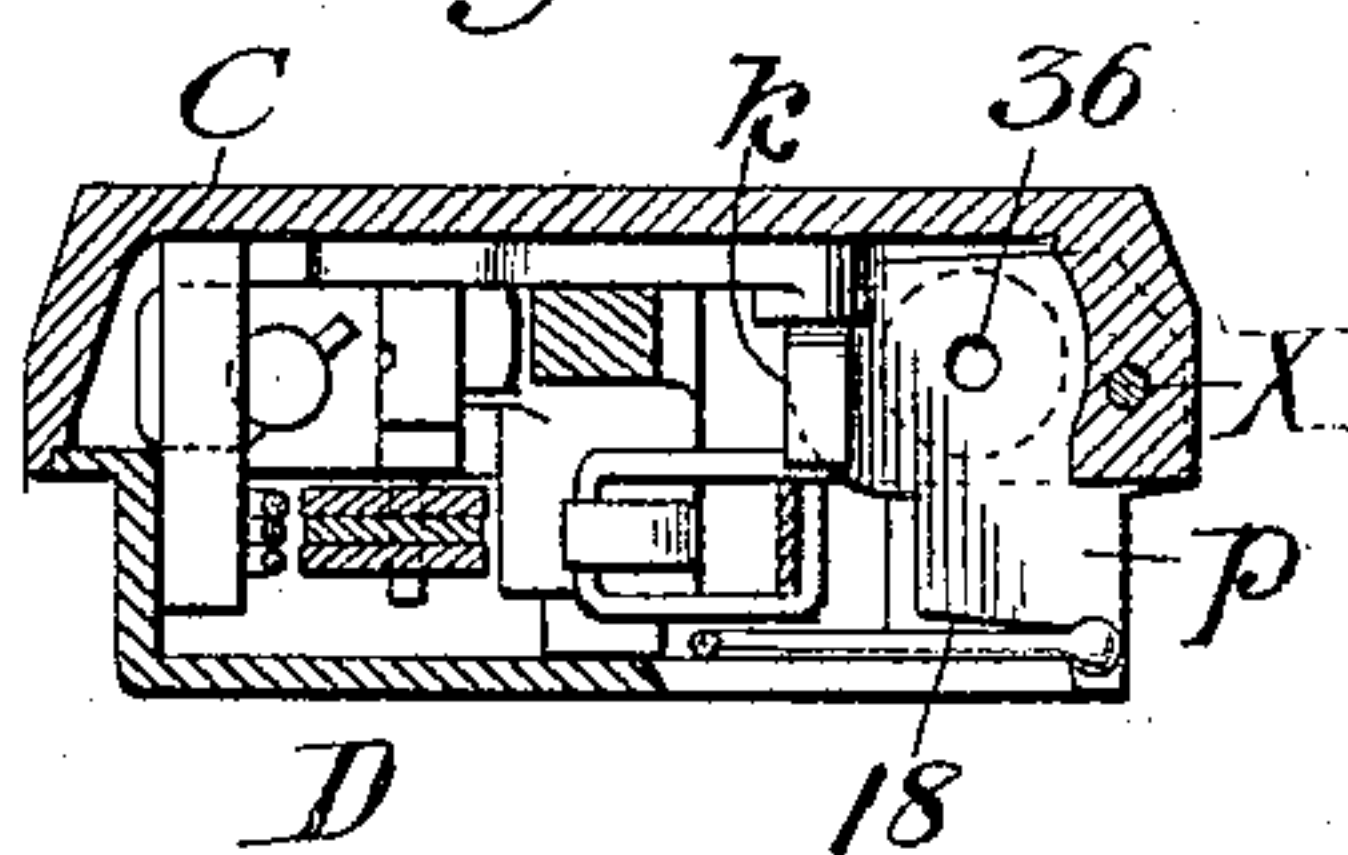


Fig. 17.



Witnesses  
Edmund A. Shaw.  
Herold G. Barrett.

Inventor  
Edward A. Case

No. 611,212.

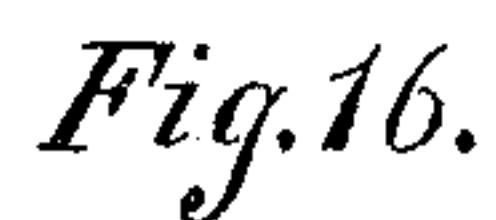
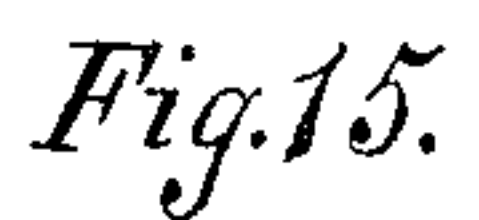
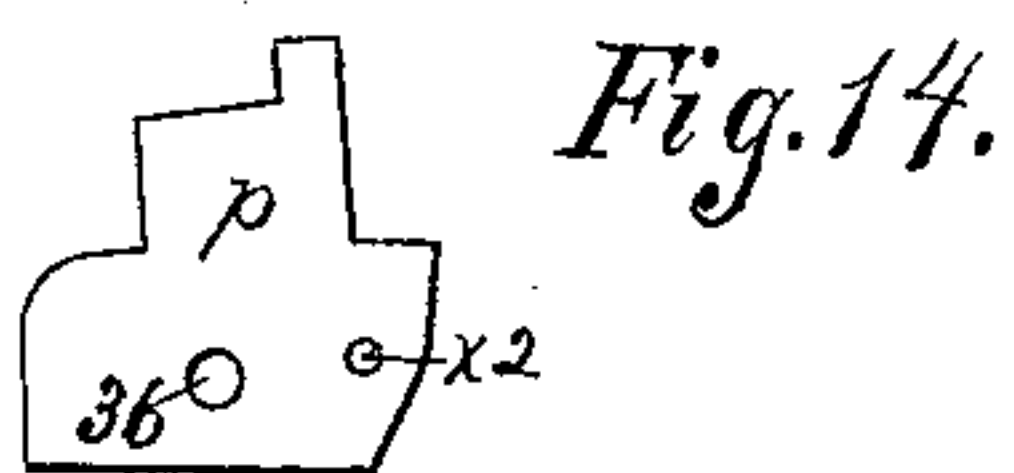
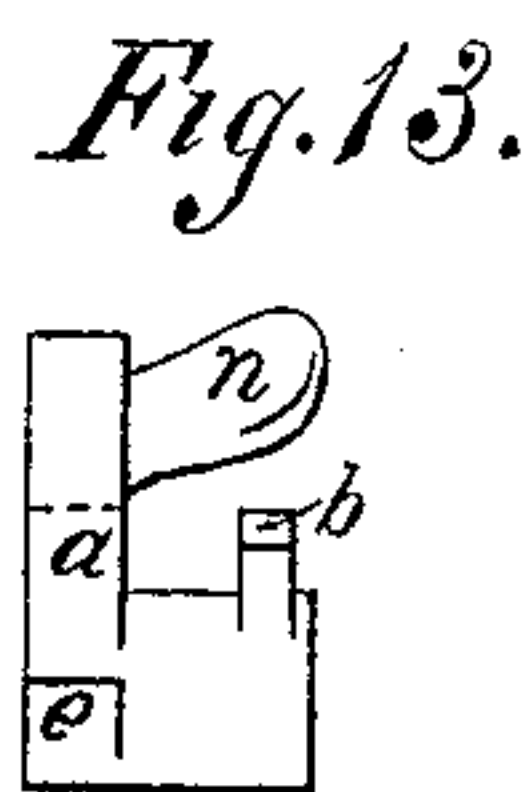
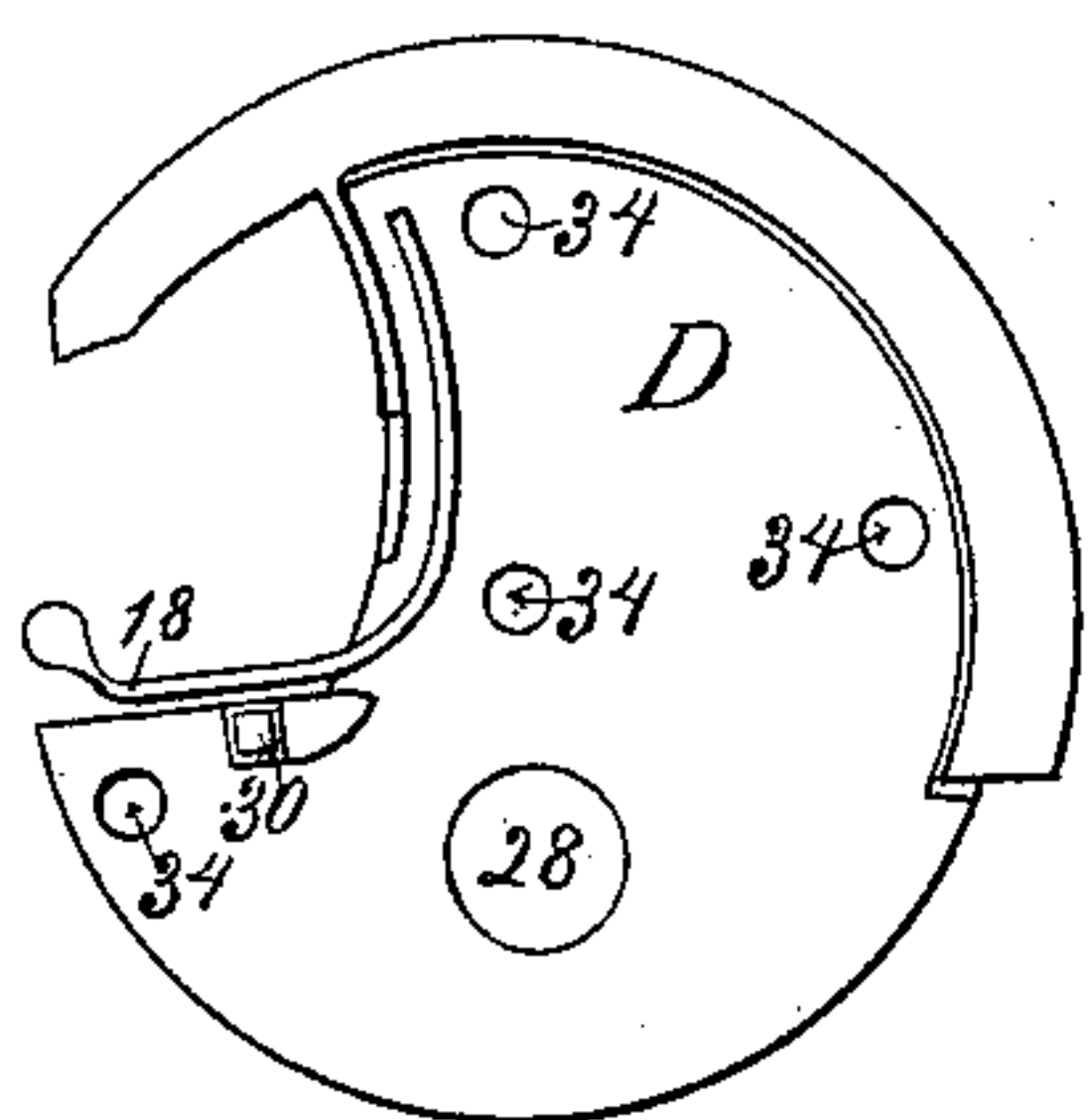
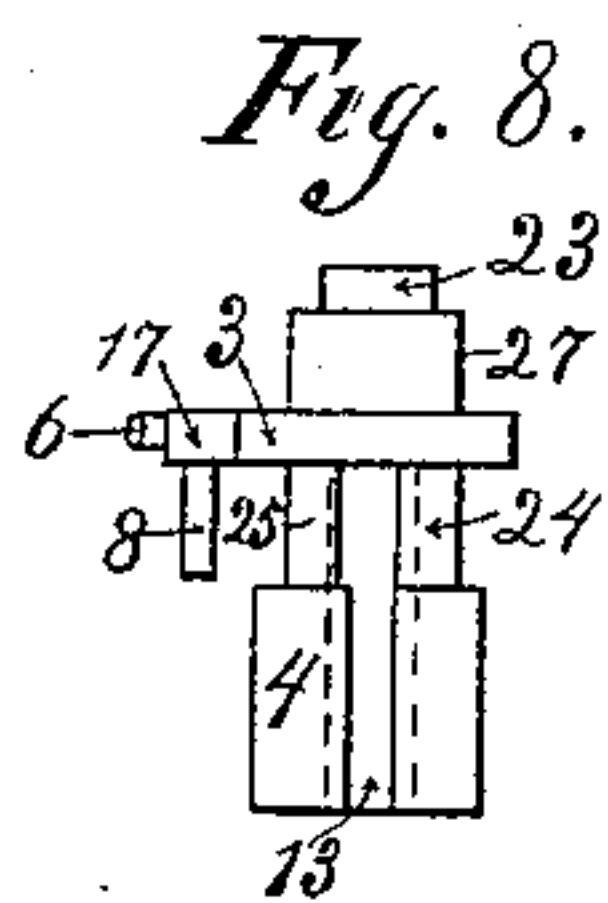
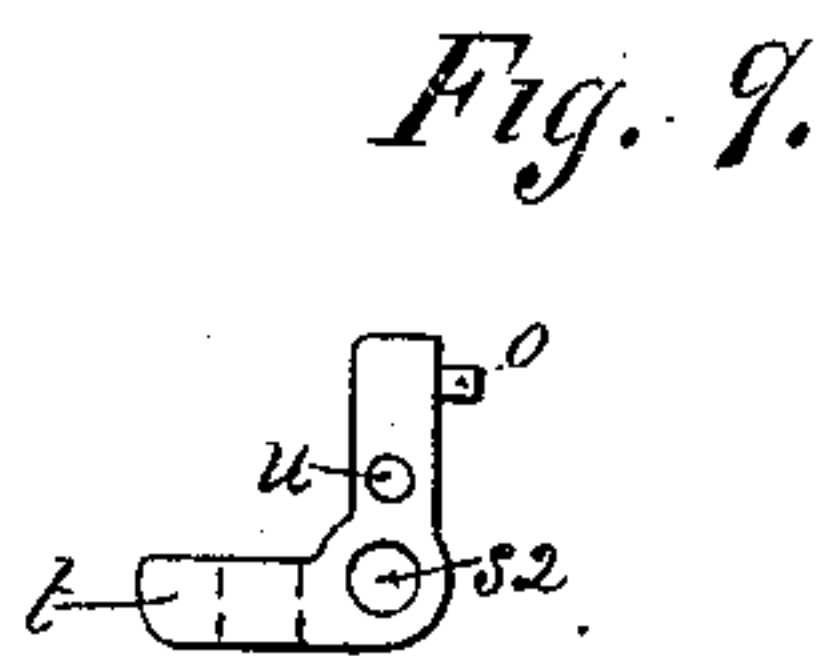
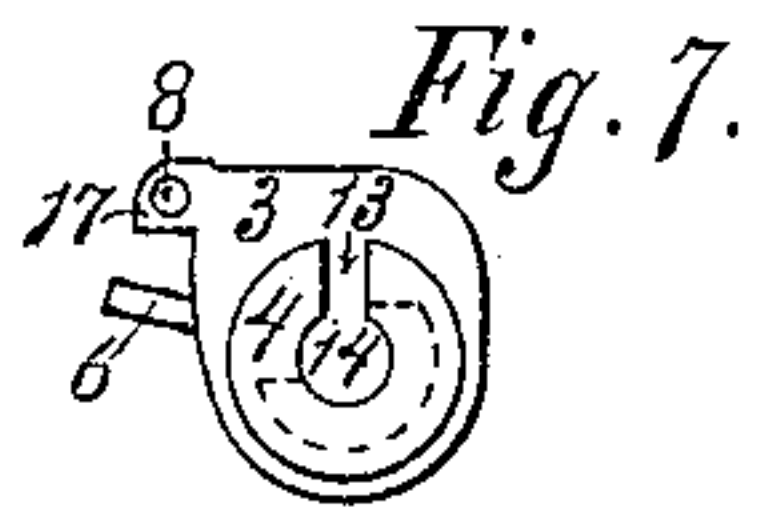
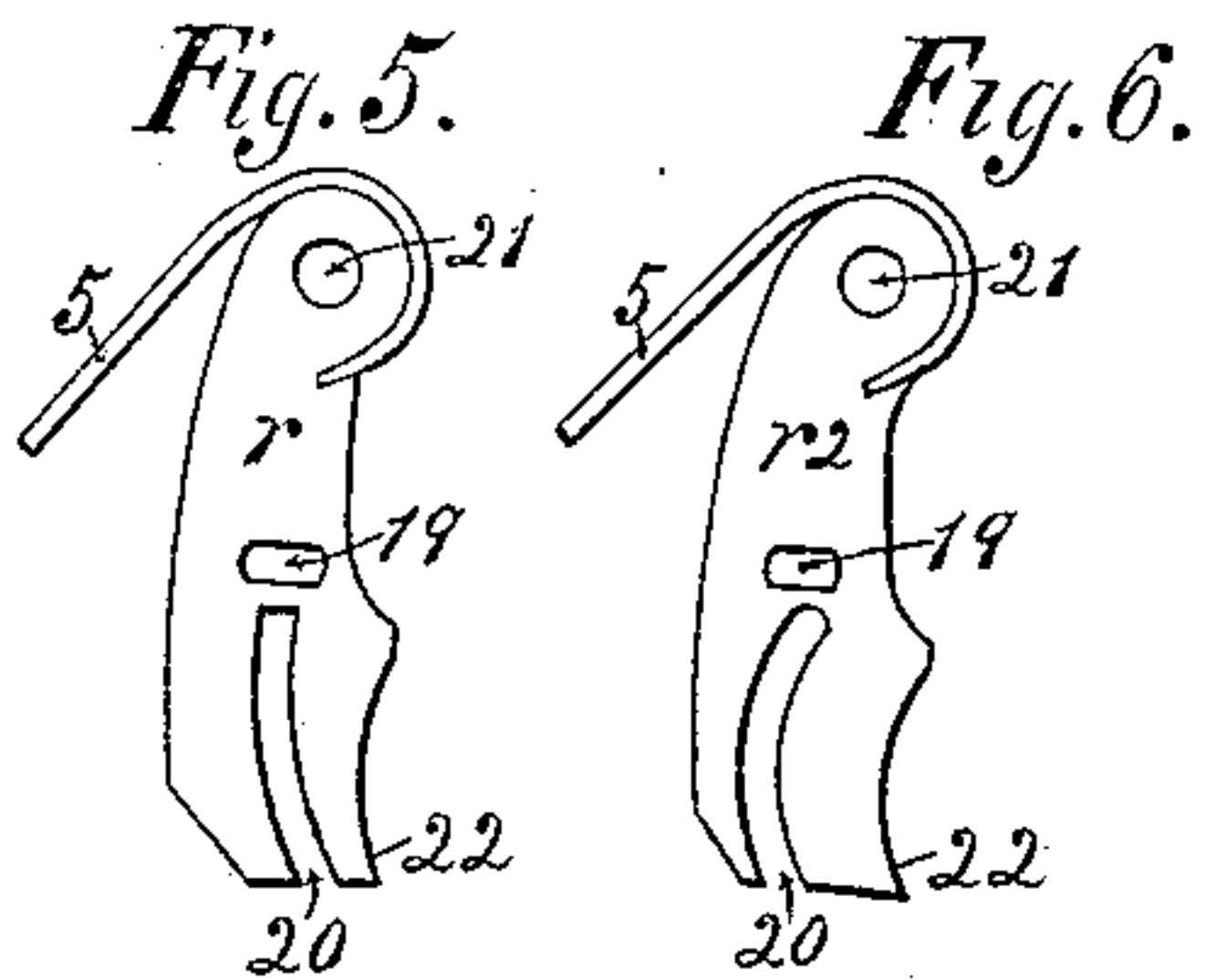
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Harold G. Barrett.  
Edmund A. Shaw.

Inventor  
Edward A. Case



# UNITED STATES PATENT OFFICE.

EDWARD NEWELL CASE, OF CHICAGO, ILLINOIS.

## ALARM-LOCK.

SPECIFICATION forming part of Letters Patent No. 611,212, dated September 20, 1898.

Application filed December 10, 1897. Serial No. 661,379. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD NEWELL CASE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Alarm-Locks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and numerals of reference marked thereon, which form a part of this specification.

This invention relates to improvements in alarm-locks of that class in which an alarm device is placed within the lock and so constructed that when the lock is being tampered with by an unauthorized person the alarm device will be actuated without releasing the locking mechanism. The lock herein shown and described is adapted to be used upon trunks, boxes, chests, sliding doors, and the like, wherein the operative parts of the lock are contained within a casing which is adapted to be pivoted to the stationary part of the device to be locked and to have detachable connection with the movable part thereof, or vice versa.

The invention relates also to improvements in locks of this description in which force applied to separate the movable and stationary parts of the device when locked will actuate the alarm device. As herein shown, the alarm device consists of a cartridge and means for exploding the same; but it will be understood that other forms may be used, if desired.

For convenience of description and illustration the lock is herein shown as applied to a trunk.

In the drawings, Figure 1 illustrates a fragmentary view of the front wall and lid of a trunk with my improved lock applied thereto, showing the same in its unlocked position. Fig. 2 is a rear elevation of the lock with the rear plate removed therefrom. Fig. 3 is a front elevation of the lock on a small scale. Fig. 4 is a rear elevation of the casing in which the locking mechanism is contained, with a portion of said mechanism removed. Figs. 5 and 6 are plan views of the two forms of tumblers used in my lock. Fig. 7 is a top plan view of the key-actuated locking-cylinder. Fig. 8 is a side view thereof. Figs. 9

and 10 are top plan view and side elevation, respectively, of the bell-crank lever *t*. Fig. 11 is an inside face view of the rear plate of the locking-casing. Figs. 12 and 13 are detail views of the alarm-hammer. Fig. 14 is a plan view of the cartridge-retaining plate. Figs. 15 and 16 are views of the key, taken in planes at right angles to each other. Fig. 17 is a detail view of the cartridge-retaining plate and its connections with the lock-casing.

As shown in said drawings, C designates the casing within which the locking apparatus is contained, and B designates a shank which has yielding engagement with said casing C. Said casing and shank constitute in effect a hasp which is pivotally connected at its lower end with a plate E, which is adapted to be secured to the adjacent part edge of the wall of the trunk, said plate being secured in place by means of rivets passing through apertures 9 in said plate.

A designates a locking-plate or keeper which is adapted to be mounted on the lower edge of the lid of the trunk and to which the upper end of the hasp formed by the casing C and shank B has detachable locking connection. Said locking-plate A is provided centrally thereof with a depression or recess 16, which is adapted to receive a projecting part of the casing C.

D designates the rear plate or wall of the casing, secured in place by means of screws or rivets passing through openings 34 therein.

Referring now to the locking mechanism contained in the casing, these parts are constructed as follows: The wall of the casing C is provided with an aperture *h*, in which is located a key-actuated locking-cylinder 4, which extends through the casing and through an opening 28 into the opposite wall or plate D of the casing. Said cylinder is provided with an axial aperture 14 on one side thereof and with a slot 13, which intersects said axial aperture and which is adapted to receive the lip of the key when said key is inserted therein. Said cylinder is also provided on one side thereof with a cut-away portion or recess which is in open communication with the slot 13 and which forms on the opposite sides of the axial bore shoulders 24 and 25, adapted to be engaged by the lip of the key in turning the cylinder in either



direction. Said cylinder is slightly reduced in that portion engaging the aperture 28 of the plate D and forms a bearing 27 therefor and is provided outside of said bearing with a reduced rectangular-shaped portion 23, upon which is mounted a cross-bar 10, Fig. 1, said cross-bar being held in place by a suitable screw or rivet 11, between which and the bar is interposed a washer 12. When the lock is in its locking position with the plate A, said reduced portion of the cylinder is adapted to pass through a slot 15 in said plate, and when said cylinder with the cross-bar 10 attached thereto is rotated so that said cross-bar extends in a plane at right angles to the line of the greatest length of said slot said parts will be locked together. It will be noted that the cylindric bearing portion 27 is of such length as to extend beyond the rear of the plate D of the casing a distance equal to the thickness of said plate A to permit the cross-bar 10 to pass beyond the rear face of said plate A.

$r$   $r^2$  designate tumblers located in the rear of the casing. Said tumblers are provided in one end thereof with apertures 21, by means of which they are pivoted to a lug  $f$  in the upper end of the casing, said lug being provided with an aperture  $v^2$ , which is adapted to be engaged by a screw or rivet  $1^x$ , by means of which the tumblers are pivoted upon said lug, a washer 2 being interposed between the head of said screw or rivet and the tumbler. Said tumblers are shown in detail in Figs. 5 and 6 and extend at their ends opposite said pivotal connection adjacent to the key-actuated cylinder. They are provided in their ends adjacent to the cylinder 4 with curved slots 20, which serve as guide-slots for a pin 8, carried by said key-actuated cylinder, as usual in such constructions. As herein shown, said pin is mounted upon a lip 17, which projects from a flange 3, formed integral with the inner end of the stud 4. Said tumblers are provided with springs 5 to hold them yieldingly against the key when engaged thereby, said springs being rigidly attached to the tumblers adjacent to their pivotal connection with the stud  $f$  and engaging at their opposite ends a stud  $j$ , which serves in the present instance as a means for receiving one of the screws or rivets by which the plate D is held in place.

The key H is herein shown as adapted to be used with three tumblers. The arrangement herein shown is such that the slots 20 of the outside tumblers stand normally out of line with the pin 8, while the slot of the intermediate tumbler stands almost opposite said pin. With this construction said pin 8 normally engages shoulders on the adjacent outer ends of the tumblers, so that the cylinder which carries said pin cannot be rotated until said outside tumblers are moved to carry the slots therein opposite said pin. As will hereinafter appear, this particular arrangement of the tumblers is not essential nor the number herein shown. For instance, the ar-

rangement may be reversed or a larger number of tumblers used, in which event the keys will be changed to meet the different requirements.

Referring now to the alarm device and the connections between the same and the construction described, these parts are made as follows: The casing is provided upon one side thereof with a circular opening or barrel 1, (indicated in dotted lines in Fig. 4,) in which a cartridge or other alarm device T is adapted to be inserted.

$a$  designates a spring-pressed hammer, which is pivotally mounted at one end thereof upon a stud or pin  $i$ , located centrally in the casing and extending from the front to the rear wall thereof. Said stud is provided with an axial aperture 7, adapted to receive one of the screws or rivets which holds the plate D in position. Said hammer is made of such length as to strike the cartridge T when it is oscillated in one arc of its curved path of movement and is bent to give the proper impact upon said cartridge in a manner common in such constructions. Said hammer is provided upon its outer end with a firing-pin  $m$ , adapted to strike the cartridge, and is also provided with an operating stud or handle  $n$ , by which it is conveniently forced back into its retracted position. The spring herein shown as applied to force the hammer against the cartridge consists of a curved leaf-spring  $d$ , which is secured to the wall of the casing adjacent to the locking-cylinder and is connected at its upper end by means of a suitable connecting-link  $c$  with a lug  $b$ , mounted upon or formed integral with the inner end of the hammer A.

6 designates a stop-pin mounted on the flange 3 of the locking-cylinder 4, which is adapted to engage the inner end of the hammer  $a$  when said cylinder has been rotated to release the locking mechanism and to thereby limit the rotation of said cylinder. In order to release the key from the lock, it will be necessary to turn the cylinder backwardly to its starting-point, thereby fastening the lock. The means for locking said hammer in its retracted position against the tension of the spring  $d$  are made as follows:

$t$  designates a detent having the form of a lever, which is pivoted to a pin or stud  $s$ , mounted adjacent to the locking-cylinder 4 and between the tumblers and the outer wall C of the casing. Said detent is provided on the arm thereof, adjacent to said hammer, with a tooth  $o$ , which is adapted to engage the lug  $e$  on said hammer and when so engaged to hold said hammer in its retracted position, as shown in Fig. 4. A spring is applied to the detent  $t$  to maintain said detent in its locking position. As herein shown, said spring consists of a leaf-spring  $g$ , which is attached at one end to the lug  $f$  and engages at its opposite end said detent. With this construction said hammer  $a$  will be maintained in its retracted position until the detent  $t$  is



moved against the action of the spring *g*, so as to disengage the tooth *o* from the lug *e*. The construction of the locking mechanism is such, as will hereinafter be described, that  
 5 a key of proper form will rotate the locking-cylinder 4 and thereby release the locking mechanism without moving said detent *t*, while a key of improper form will move said detent out of engagement with the hammer,  
 10 but will not release the locking mechanism. The construction by which this result is obtained is made as follows:

*u* designates a pin which is herein shown as mounted upon the rear face of the detent  
 15 *t*. Said pin is adapted to engage apertures 19 in the tumblers *r* *r*<sup>2</sup>. The tumblers are mounted to have a variable movement with relation to each other, and the key by which they are adapted to be actuated to release the  
 20 locking mechanism is so formed that when actuated by said key the tumblers will be oscillated a sufficient distance from the key-actuated locking-cylinder to bring the slots therein opposite the pin 8; but neither of the  
 25 tumblers will be moved against the pin *u*, so that such movement thereof will not act through said pin and detent *t* to release the alarm device. If, however, the tumblers be engaged by a key of another form, one or  
 30 more of the tumblers will be moved against the pin *u*, which will act through the detent *t* to release the alarm device, without, however, releasing the locking mechanism. The key *H* is herein shown as adapted to be used  
 35 with a lock containing three tumblers, the bit of said key being provided with projections 31 and 33 and an intermediate recess 32. The projection 31 is of slightly-greater length than the projection 33, so that the tumbler en-  
 40 gaged by the first-mentioned projection will be moved a greater distance than the tumbler engaged by the projection 33, while the intermediate tumbler, which is designated by *r*<sup>2</sup> in the construction shown, will normally  
 45 stand with the slot 20 thereof almost opposite the pin 8, carried by the locking-cylinder, when said pin is in the position shown in Fig. 2, so that when the tumblers are moved with the slots therein opposite the pin the pin will  
 50 be free to enter therein when the cylinder 4 is rotated by the key. In the construction shown the aperture 19 in the intermediate tumbler *r*<sup>2</sup> is made of less length laterally of said tumbler than said apertures in the tum-  
 55 blers *r*, so that relatively but slight movement of said tumbler will be required to move the same in contact with the pin *u* and to thereby release the locking mechanism. On the other hand, if a key having the proper-  
 60 shaped recess 32 be inserted into the lock, but in which one of the prongs 31 33 is longer than herein shown, the tumbler engaged by said longer prong will be moved such a distance as to engage the pin *u*, and thereby ac-  
 65 tuate the alarm device, while shifting said tumbler so that the pin 8 will not enter the slot therein.

The particular form of the key and arrangement of the tumblers have been shown and described merely for convenience in illustrating the operation of the lock. It will be ob-  
 70 vious, however, that said particular construction and arrangement is not essential so long as the general arrangement in the tumblers is preserved and that the tumblers herein  
 75 shown may be used interchangeably. It will also be obvious that in such variation of arrangement and by the use of a number of tumblers a large number of combinations may be made, there being, of course, a differ-  
 80 ent key provided for each combination and for each variation in the arrangement. The operative connections between the detent *t* and the tumblers may be of other form than that herein shown. Next describing the  
 85 means for releasing said alarm device when force is applied to open the trunk without releasing the locking mechanism, these parts are constructed as follows: As before stated, the shank *B* has a yielding engagement with the  
 90 casing *C*, said yielding engagement being provided by means of a suitable spring. As herein shown, said shank is of hollow construction and is adapted to receive a guide-  
 95 rod *I*, which is rigidly secured at one end to the casing *C*. Said rod *I* is provided upon its outer end with a shoulder *L*, which in the present instance consists of a nut which has  
 100 screw-threaded engagement with the rod *I*, and between said shoulder and a shoulder on the inner end of the shank is interposed a  
 105 spring *F*, which in the present instance consists of a spiral spring surrounding said rod.

*w* designates a connecting-rod which is rigidly attached to the inner end of the shank  
 110 and passes through a suitable opening in the circumferential wall of the casing. The detent *t* is for this purpose made in the form of a bell-crank lever, and said connecting-rod  
 115 *w* passes at its inner end through an opening in that arm of said detent opposite the tooth *o* and is provided on its inner end with a suitable shoulder consisting of a pin *v*, by means of which it is prevented from being  
 120 disengaged from said detent. The rods *I* and *w* serve as guides between said shank and casing, and in order to provide a more rigid connection between the same a guide-rod *w*<sup>2</sup> is provided on the side of said rod *I* opposite  
 125 the connecting-rod *w*. With the construction described it will be seen that when force is applied to open the lid of the trunk the shank *B* and casing *C* being yieldingly con-  
 130 nected together said force will act through the connecting-rod *w* and detent *t* to disengage said detent from the hammer *a* and thereby give an alarm. As stated, the shoulder *L* is adjustable upon the rod *I*, so that the tension of said spring may be regulated as desired and the force required to actuate said  
 135 alarm device against the tension of said spring increased or diminished accordingly.

In order to prevent the cartridge from falling out of the barrel 1 when the lock is thrown



downwardly, as shown in Fig. 1, the casing is provided with a stop-plate  $p$ , which is shown as pivoted upon a pin  $x$ , mounted in the outer circumferential wall of the casing, said pin passing through an aperture  $x^2$  in said plate. Said stop-plate, when swung inwardly, closely engages the inner end of the barrel, and a lug  $k$  is provided in the casing, which engages the face of said plate opposite the barrel and prevents said plate from moving away from said inner end of the barrel. In order to prevent said plate from being accidentally swung outwardly when the lock is in the position shown in Fig. 1, a stop 18 is provided, which is herein shown as consisting of a spring and as mounted upon the rear wall or plate D of the casing in such position as to engage said plate to hold it in its innermost or normal position. Said stop-plate is provided opposite the cartridge with an aperture 36, through which the firing-pin  $m$  of the hammer may project when the alarm device is actuated. A lug 30 is formed on the plate or wall D, which serves to limit the movement of the stop-spring 18. Said stop-plate also serves the purpose of a breech-block to receive the impact of the recoil of the cartridge when exploded.

Many of the novel features herein described and claimed may be applied to locks other than of the special form described—as, for instance, a lock embodying the main features of my invention may be without the rotating locking-cylinder illustrated or the lock-case and keeper may be arranged with respect to the parts to which they are connected differently from that herein shown.

A main feature of my invention is embraced in the construction described wherein a lock-case is provided with an alarm device and has attached to it a yieldingly-connected piece or part, such as the shank described, through the medium of which the lock-case is connected with one of the parts to be joined by the lock, such yielding part having operative connection with the alarm device, so that if an effort be made to open the lid, door, or other part which is held closed by the lock a strain will be brought on the yieldingly-connected piece or part in a manner to move the same with respect to the lock-case, and thereby set off the alarm. A lock embracing these general features of construction may be constructed otherwise than in the form of the trunk-lock described, and I desire to claim such a construction without limitation to the details illustrated, except so far as the latter may be herein specifically claimed.

Another important feature of my invention, which is separately claimed herein, is embraced in the construction set forth wherein the lock-case is provided with an alarm device embracing a spring-pressed hammer which is held in its retracted position by a detent, a key-actuated locking member, tum-

blers which control the movement of the key-actuated locking members by preventing the action thereon of any but the proper key and which act on said detent if moved otherwise than by the proper key, and a part, such as the shank connecting shank B, which is yieldingly connected with the lock-case, is subject to strain when an effort is made to separate the locked parts without the use of a proper key and which has positive engagement with said detent, so that strain on the said connecting part will actuate the alarm device.

Other features of the invention are set forth separately in the appended claims.

I claim as my invention—

1. The combination with a lock-case, of a part which is yieldingly connected with and movable away from and toward the lock-case and through the medium of which the lock-case is connected with one of the two parts to be joined together by the lock, an alarm device within the lock-case, and actuating connections between the said part which is yieldingly connected with the lock-case and the said alarm device.

2. The combination with a lock-case provided with an alarm device, a keeper for attachment to one of the parts to be joined by the lock, and a locking means on the case detachably engaging the keeper, of a connecting part or plate which is yieldingly joined to the lock-case and through the medium of which the case is connected with the other of the parts to be joined by the lock, and actuating connections between said connecting part and the alarm device, whereby the alarm device will be operated when strain is brought on the case tending to separate it from the connecting part.

3. The combination with a lock-case provided with an alarm device, of a keeper, a locking member engaging the keeper, a tumbler or tumblers which control the actuation of the locking member, and operative connections between the tumbler or tumblers and said alarm device.

4. The combination with a lock-case and a keeper, adapted for attachment to one of the two parts to be secured together by the lock, of an alarm device in the lock-case, a rotative locking member which engages the keeper, and a tumbler or tumblers which control the actuation of the locking member, said tumbler or tumblers having operative connection with the said alarm device.

5. The combination with a lock-case, a keeper, a key-actuated locking member, tumblers which control the action of the locking member, an alarm device embracing a spring-pressed hammer, a detent for holding the hammer in its retracted position, said detent being constructed for actuation by either of said tumblers, and a connecting part or shank which is movably connected with the lock-case and is adapted to act on said detent and



release the hammer when tension is brought thereon in a direction to withdraw it from the case.

6. The combination of a casing containing a locking device, and a shank, said parts having a constant yielding engagement with each other.

7. The combination of a casing containing a locking and an alarm device and a shank, said casing and shank having a constant yielding engagement, and the shank having a positive engagement with the alarm device.

8. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer in said casing, a tumbler, a detent engaging said hammer to hold the latter in its retracted position, and a pin on said detent engaging said tumbler.

9. An alarm-lock comprising a casing, a locking member therein, an alarm device in said casing embracing a spring-pressed hammer pivotally mounted in said casing, tumblers in the casing controlling the actuation of said locking member, means for locking said hammer in its retracted position, and operative connections between said tumblers and locking means.

10. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer in said casing, a key-actuated locking-cylinder, a tumbler adjacent said cylinder, a lever engaging said hammer to hold the latter in its retracted position, and a pin on said lever engaging the tumbler.

11. An alarm-lock comprising a casing, an alarm device therein, a hammer pivoted in said casing, a lug on said hammer, a spring attached rigidly at one end in the casing and connected at its free end with said lug, means for locking said hammer in its retracted position, key-actuated tumblers in said casing and operative connections between said tumblers and locking means.

12. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer pivotally mounted in the said casing, a rotative key-actuated cylinder in said casing, means for locking said hammer in its retracted position, and operative connections between said cylinder and locking means, said operative connection being constructed to permit the cylinder to rotate without releasing the hammer when a key of proper form engages the same, and to release said hammer and prevent the cylinder from rotating when said cylinder is engaged by a key of other form.

13. The combination with a stationary and a movable part of a lock comprising a shank and casing constituting a hasp which is pivoted to one of said parts, an alarm device in said casing, locking mechanism also in the casing, and a keeper attached to the other of said parts and adapted to have locking engagement with said locking mechanism, said

shank being so connected with the alarm device as to release the same when force is applied to separate said parts.

14. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer pivotally mounted in said casing, means for locking said hammer in its retracted position, a spring-pressed rod projecting into said casing and engaging said locking means and acting to release the same when tension is brought thereon to withdraw the rod from the casing.

15. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer pivoted in said casing, means for locking said hammer in its retracted position, a rod projecting into said casing and engaging said locking means and acting to release the same when tension is brought thereon to withdraw the rod from the casing, a spring applied to said rod and acting to thrust the same into said casing, and means for adjusting said spring to vary the tension of the same.

16. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer pivoted in said casing, means for locking said hammer in its retracted position, a shank yieldingly connected with said casing, said connections consisting of a guide-rod rigidly attached to said casing and extending into said shank, a spring applied to said rod to hold the shank in yielding engagement with the casing, and an actuating-rod connected with said shank and operating to actuate said alarm device when force is applied to the shank to withdraw the same from the casing.

17. An alarm-lock comprising a casing, an alarm device therein, a spring-pressed hammer in said casing, a detent engaging said hammer to hold the same in its retracted position, a rod projecting into said casing and engaging said detent, and a spring applied to normally thrust said rod into said casing, said rod acting when tension is brought thereon to withdraw it from the casing to disengage said lever from the hammer.

18. An alarm-lock comprising a casing, an alarm device therein, a hammer pivoted in said casing, a lug on said hammer, a spring attached rigidly at one end to the casing and connected at its free end with said lug, a detent engaging said hammer to hold the same in its retracted position, and a spring-pressed rod engaging said detent and acting to disengage the same from the hammer when force is applied to withdraw it from the casing.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 8th day of December, A. D. 1897.

EDWARD NEWELL CASE.

Witnesses:

WILLIAM L. HALL,  
HAROLD G. BARRETT.