

(No Model.)

2 Sheets—Sheet 1.

E. G. PARKHURST.

SAFETY LOCK FOR BOLTS AND FIRING PINS.

No. 599,288.

Patented Feb. 15, 1898.

Fig. 2.

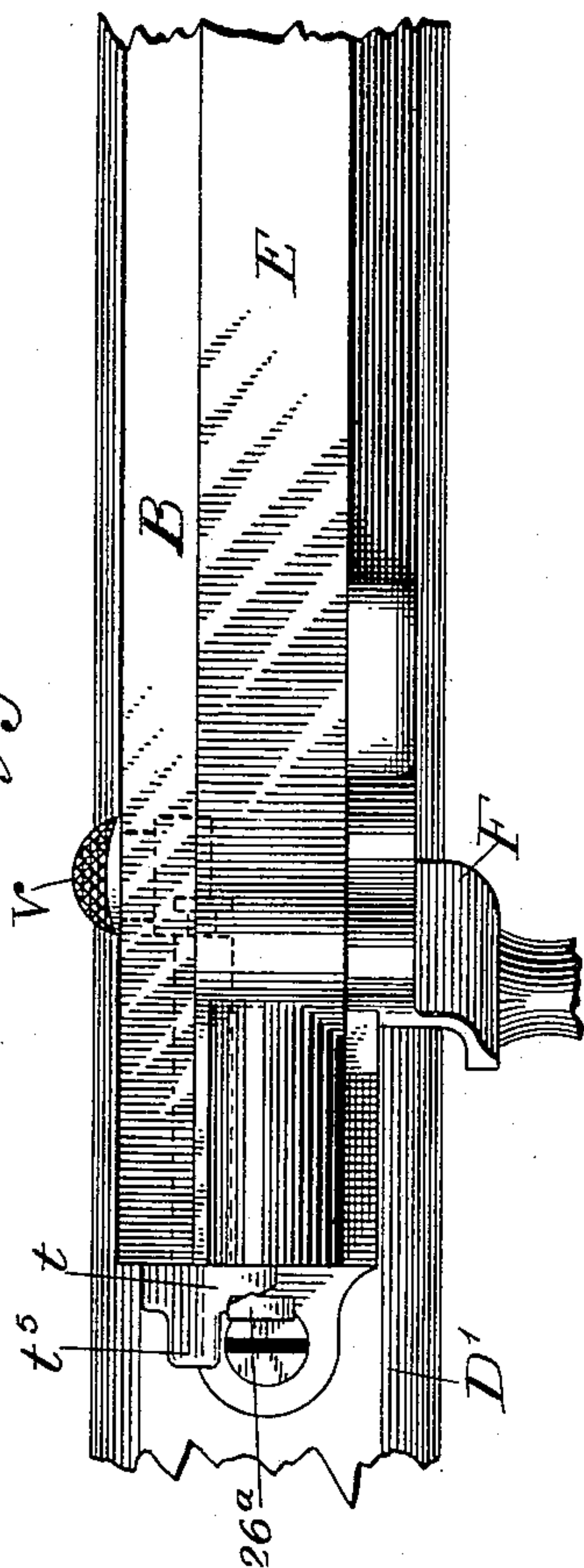


Fig. 4.

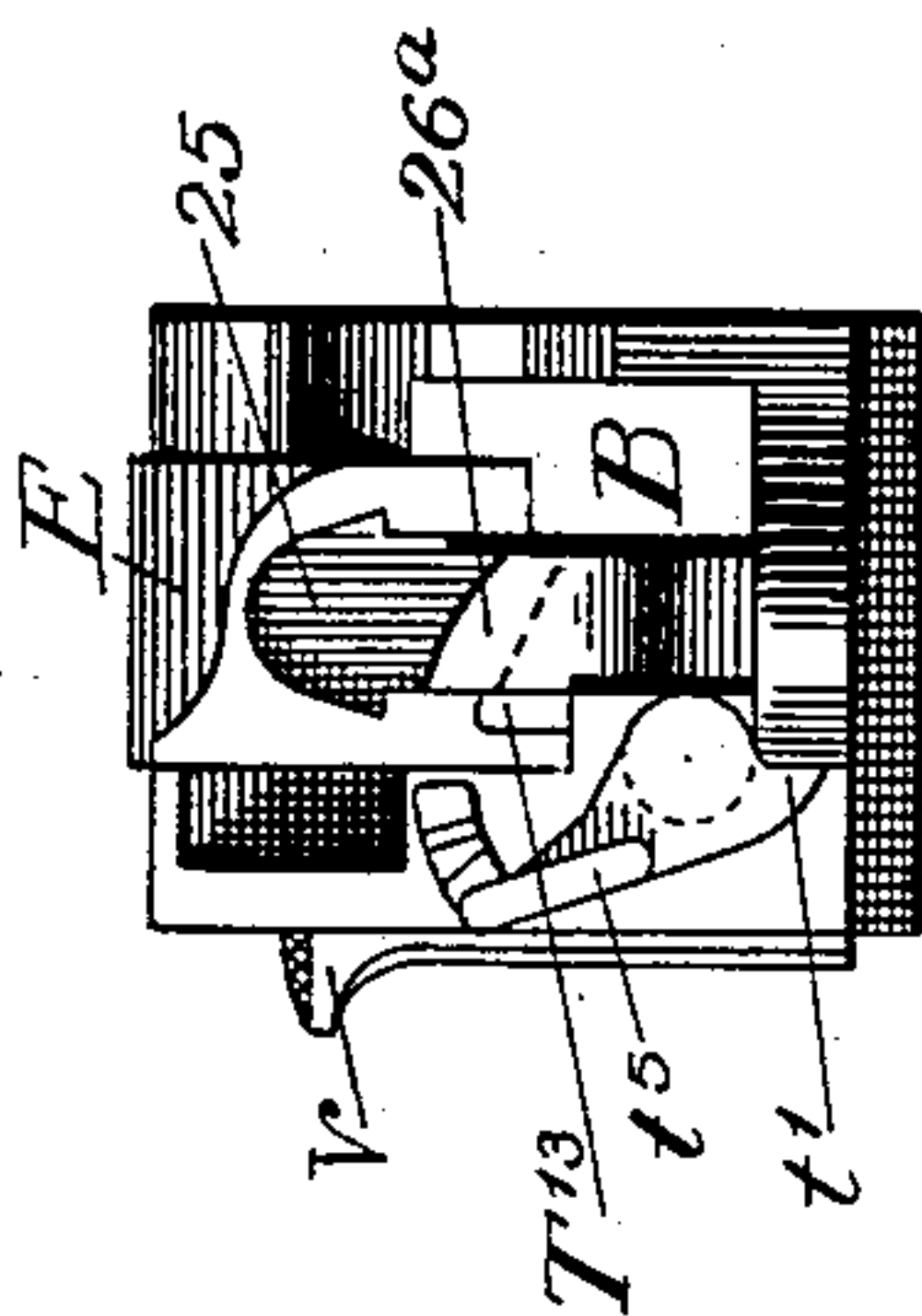


Fig. 1.

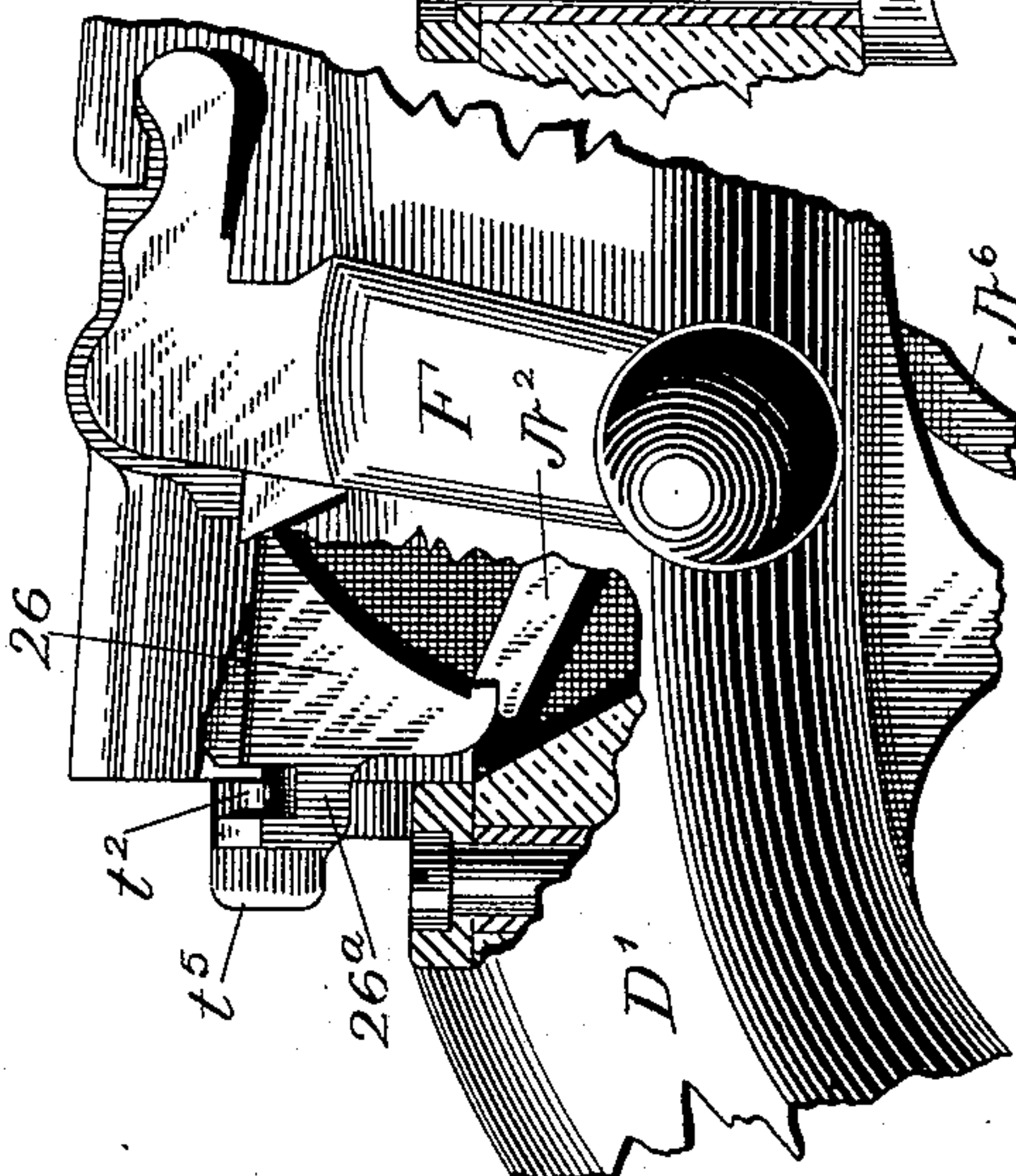


Fig. 3.

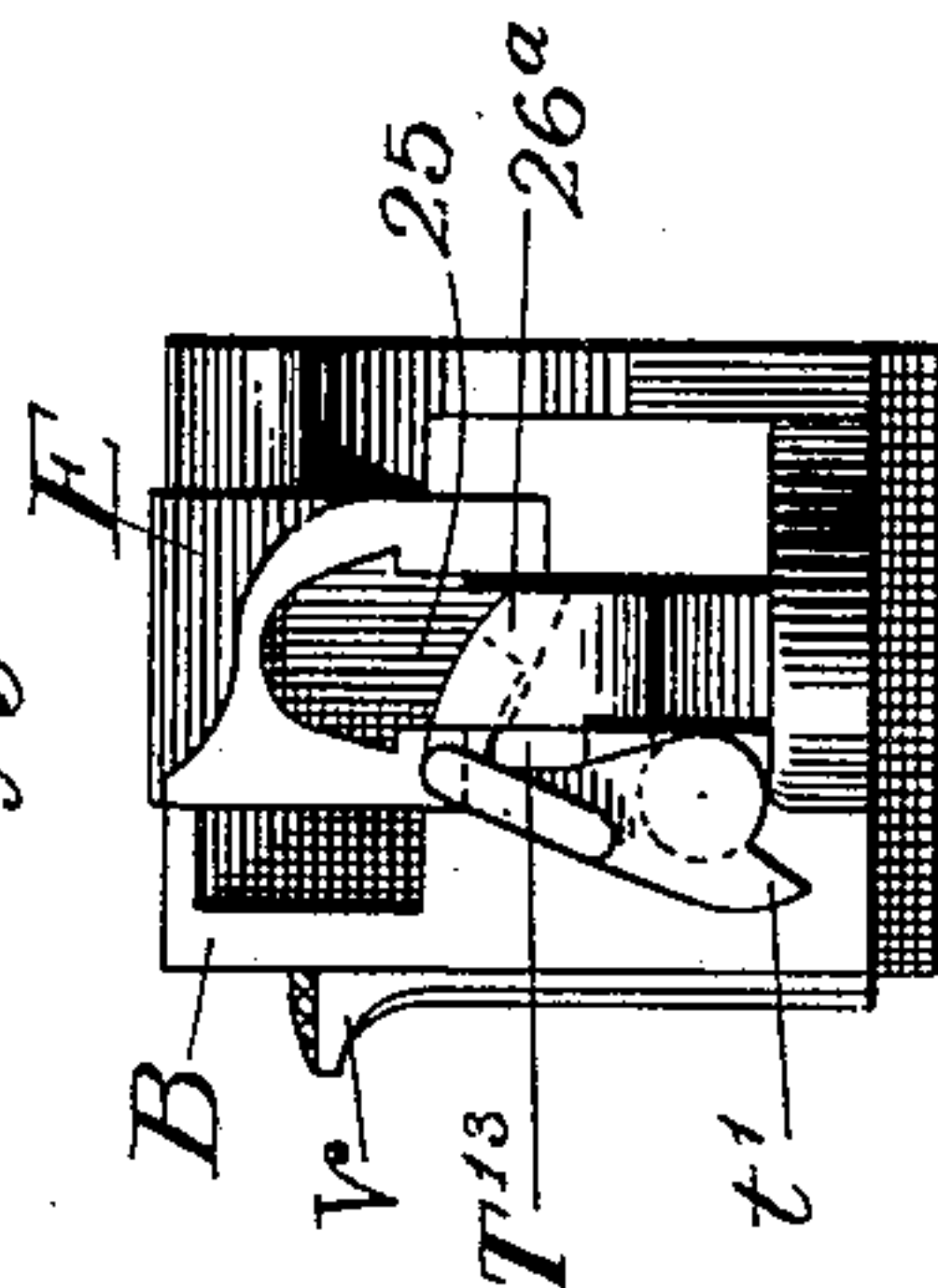
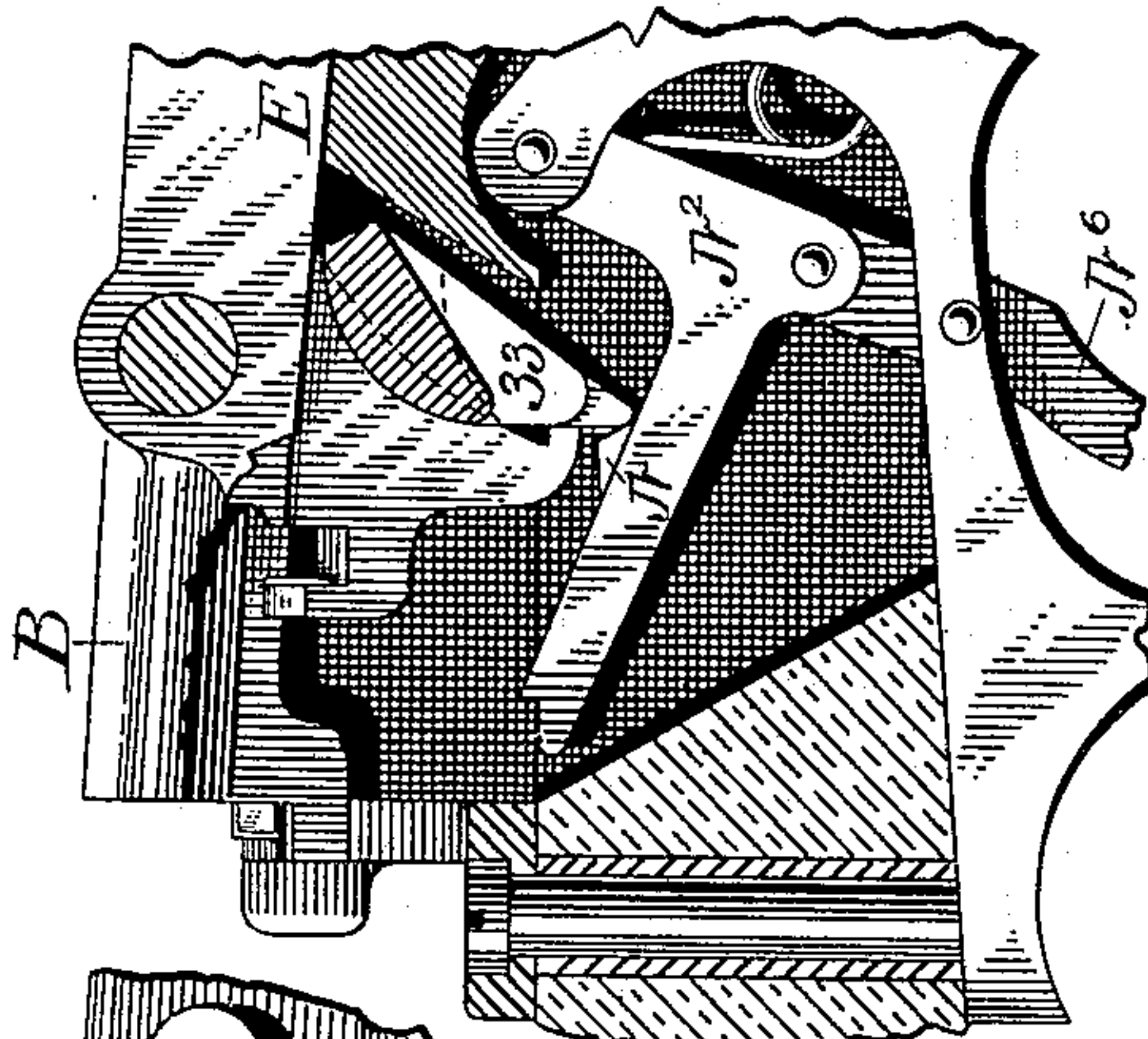


Fig. 5.



Witnesses
L. St. Forner.
Jennie Kellis

Inventor
E. G. Parkhurst
By his Attorney
W. H. Honiss.

(No Model.)

2 Sheets—Sheet 2.

E. G. PARKHURST.

SAFETY LOCK FOR BOLTS AND FIRING PINS.

No. 599,288.

Patented Feb. 15, 1898.

Fig. 6.

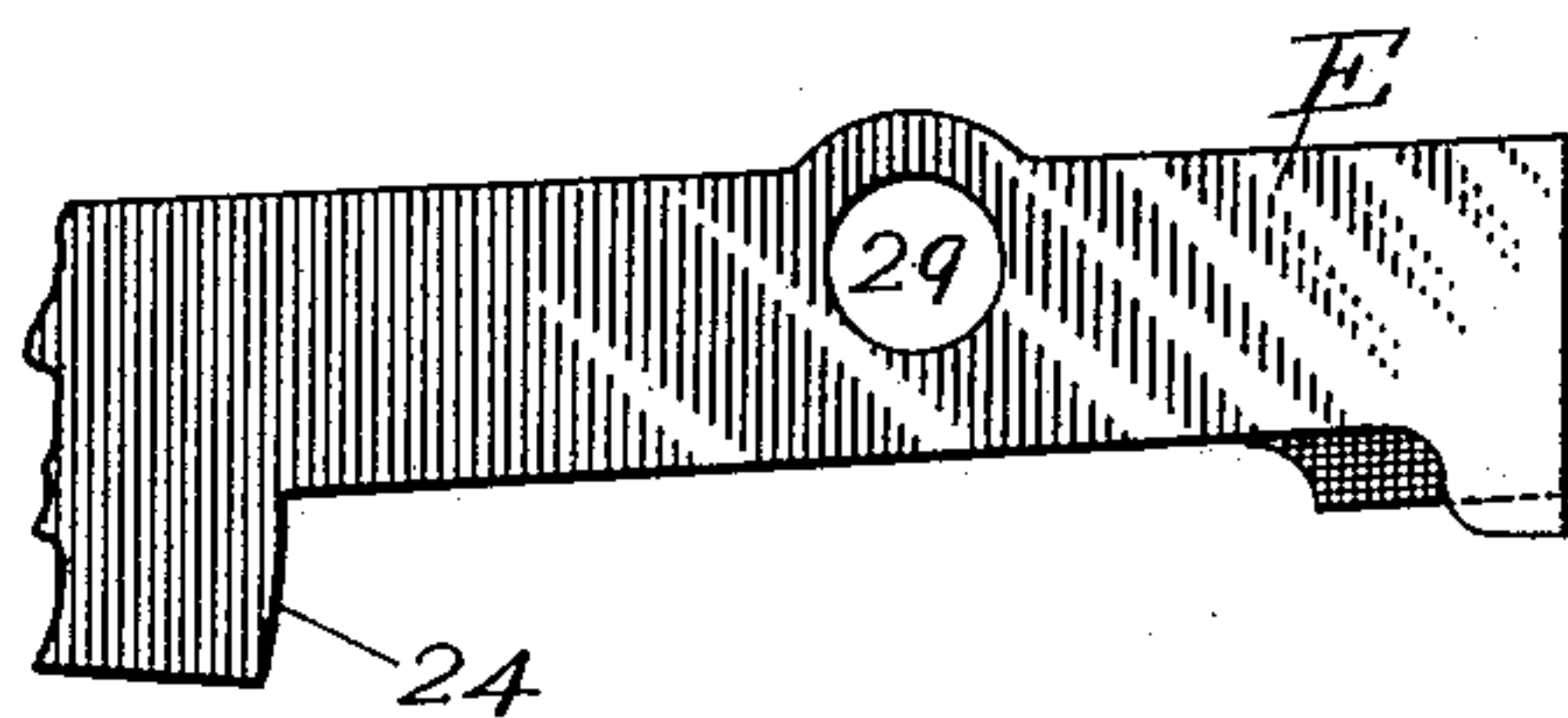


Fig. 7.

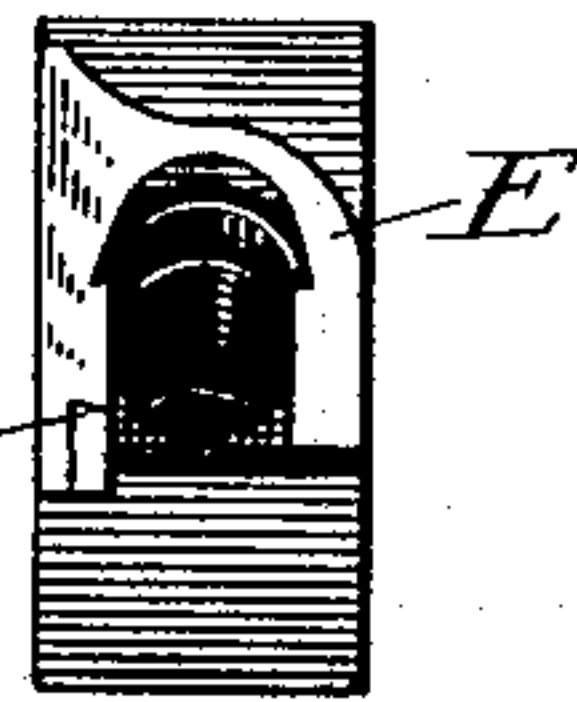


Fig. 15.

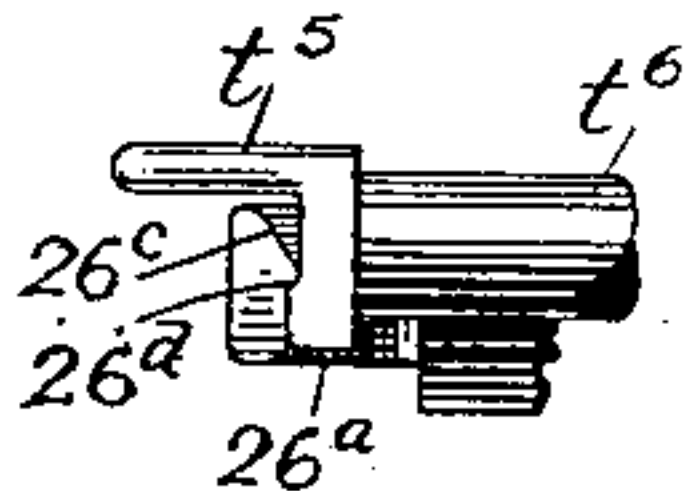


Fig. 16.

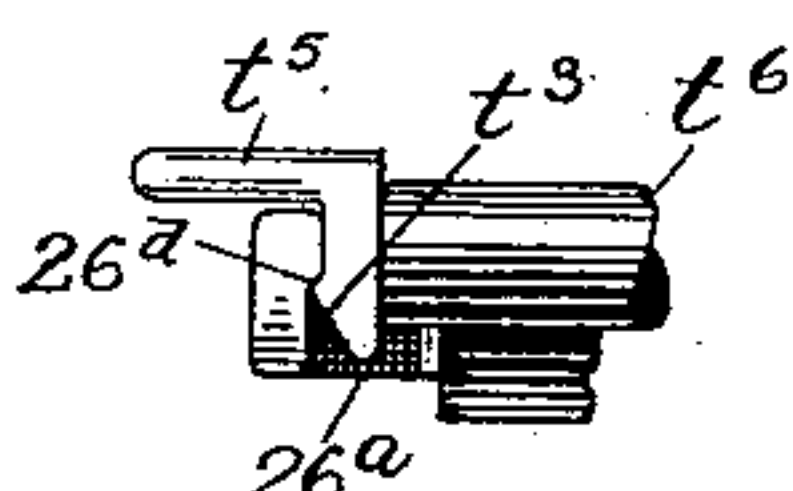


Fig. 8.

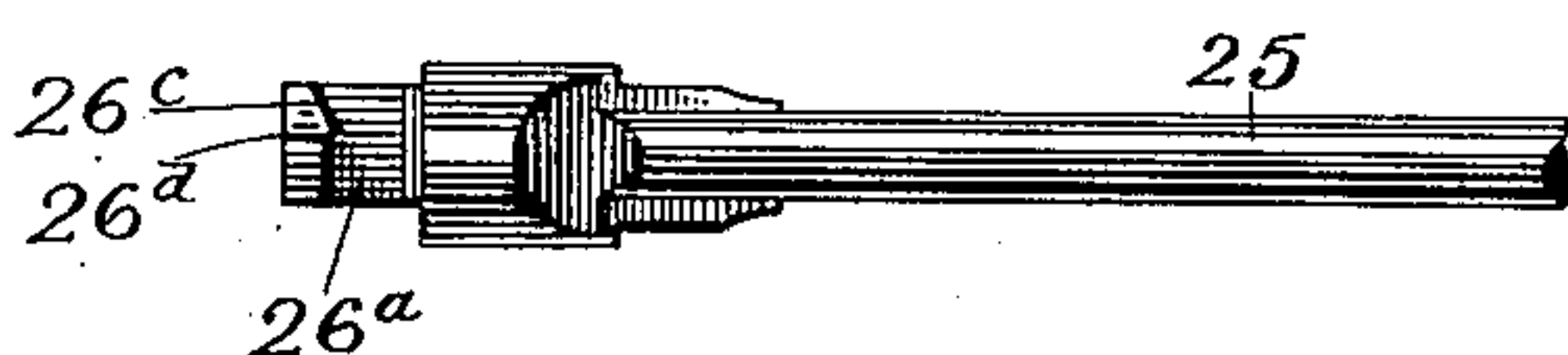


Fig. 10.

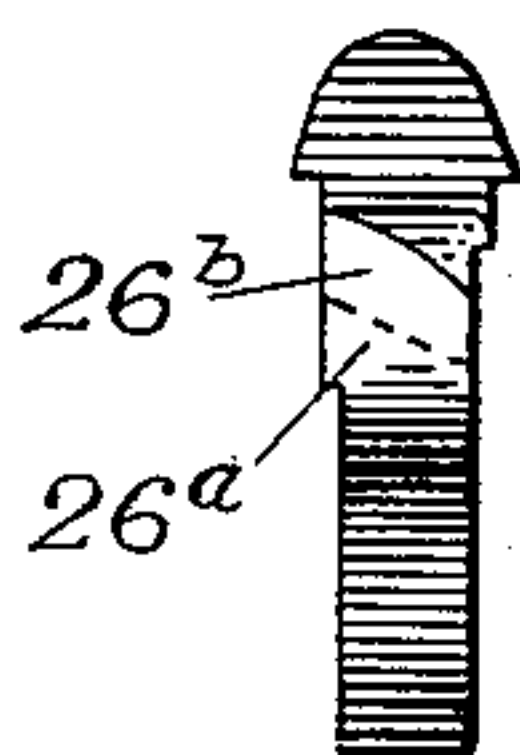


Fig. 9.

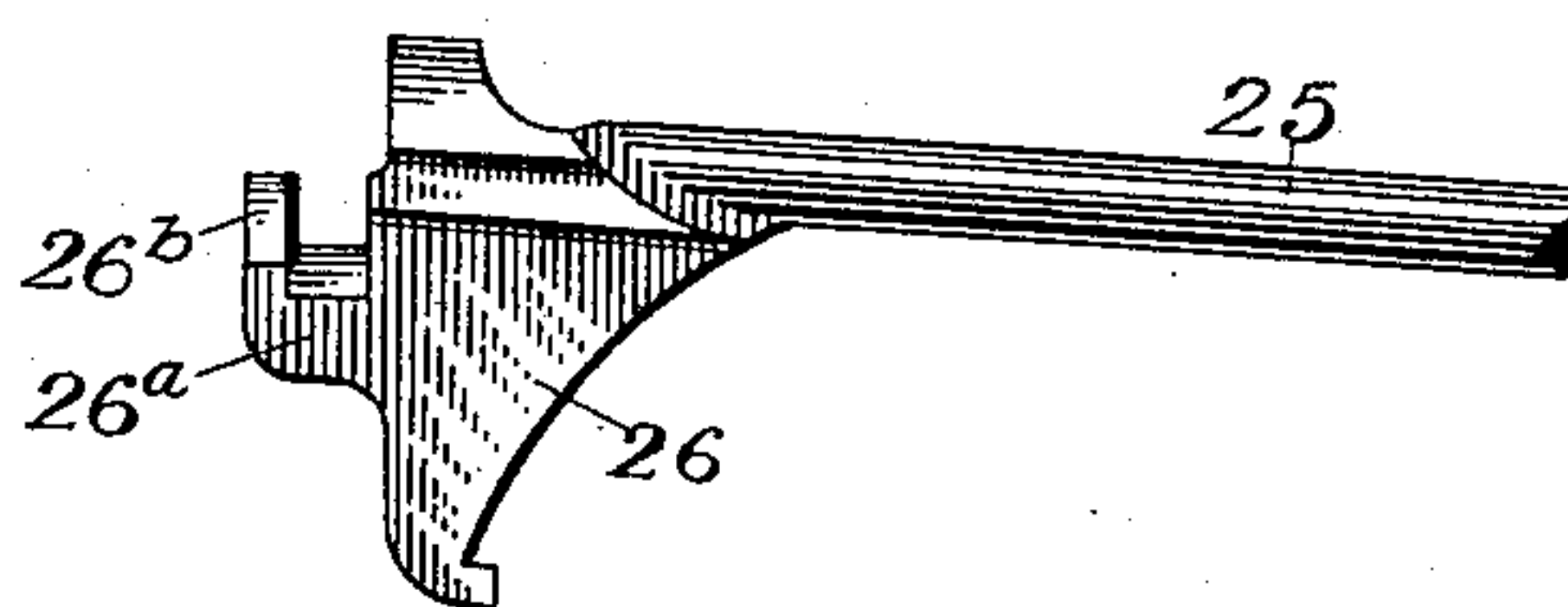


Fig. 11.

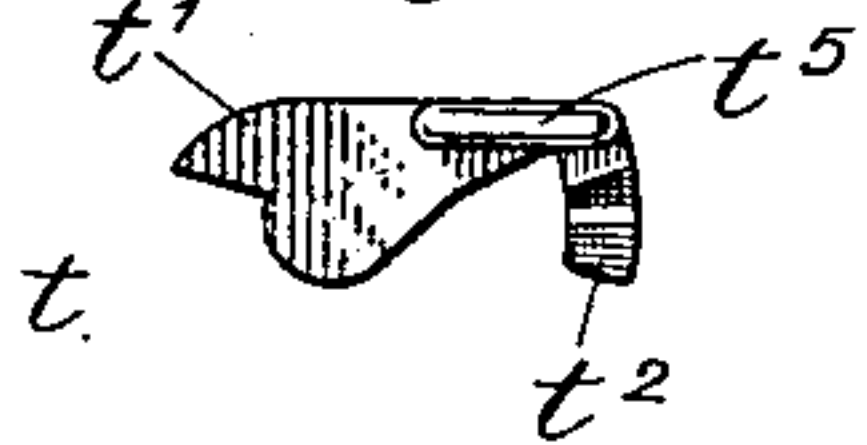


Fig. 12.

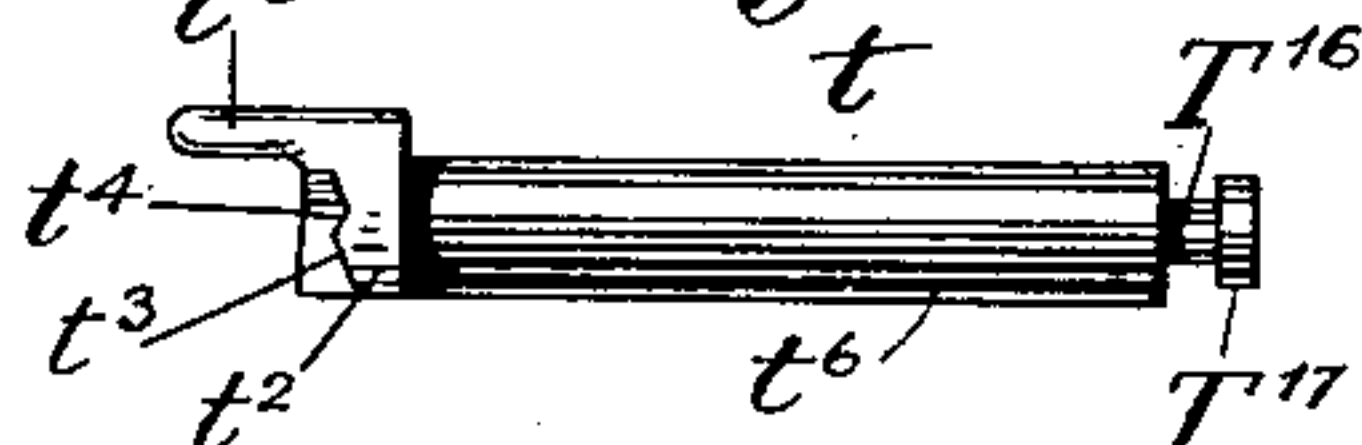


Fig. 13.

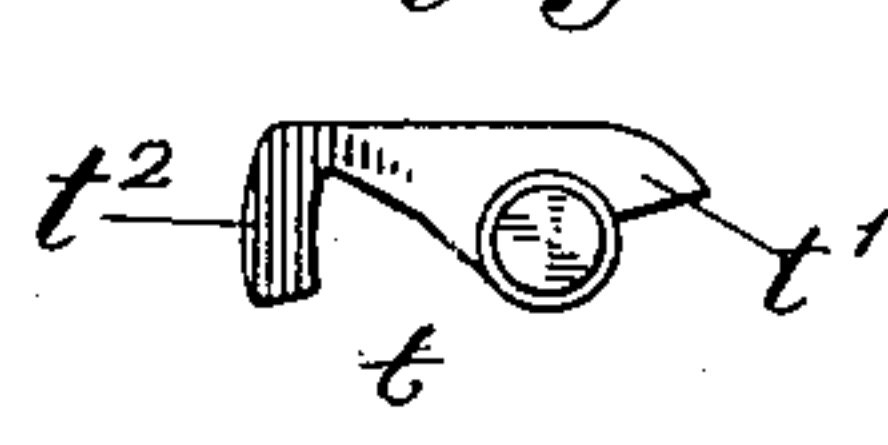
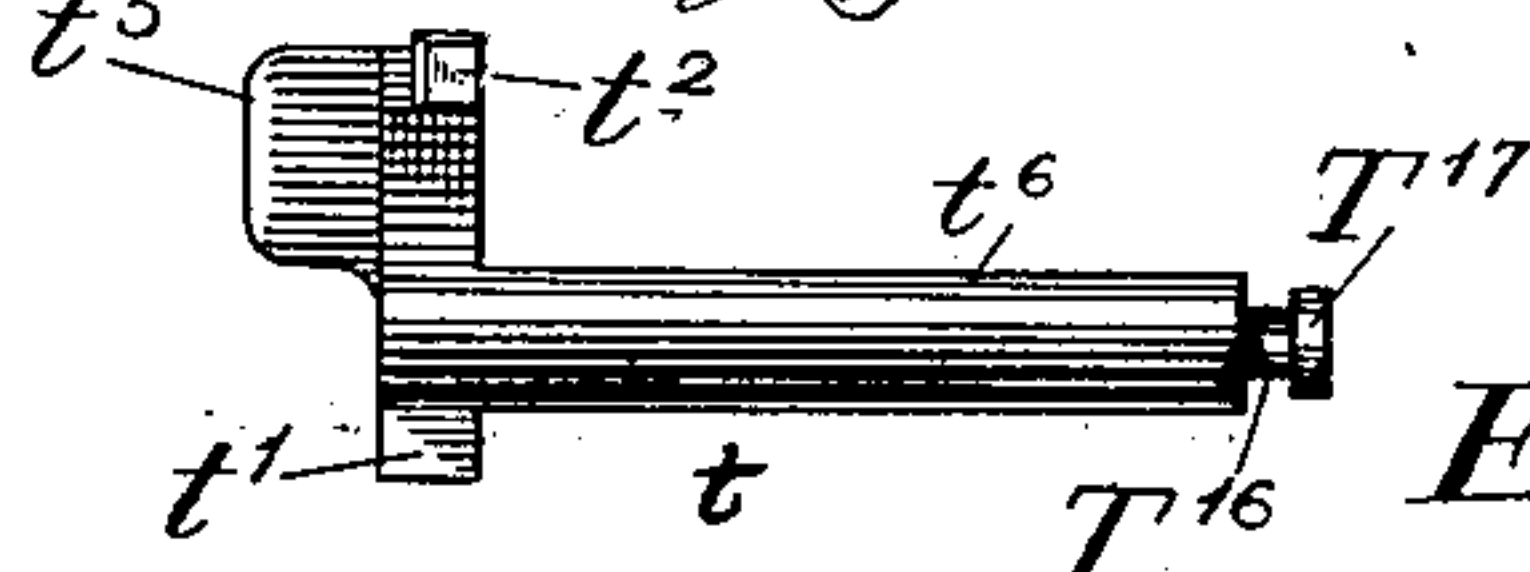


Fig. 14.



Witnesses
L. S. S. S. S.
Jennie S. S.

Inventor
E. G. Parkhurst
By his Attorney
W. H. Morris.

UNITED STATES PATENT OFFICE.

EDWARD G. PARKHURST, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
LEE ARMS COMPANY, OF CONNECTICUT.

SAFETY-LOCK FOR BOLTS AND FIRING-PINS.

SPECIFICATION forming part of Letters Patent No. 599,288, dated February 15, 1898.

Application filed May 18, 1896. Serial No. 591,928. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. PARKHURST, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Firing-Pins and Bolt-Locks, of which the following is a full, clear, and exact specification.

This invention relates to improvements in firearms of the general type shown and described in Letters Patent of the United States to James P. Lee, No. 547,583, dated October 8, 1895, the devices of my present invention being improvements upon certain features of that firearm.

The object of this invention is to provide improved and simple means whereby the firing-pin may be locked in its backward position with respect to the breech-bolt while the latter is in its closed position in such a way as to retract the pin, and thus draw the catch of the firing-pin away from its sear, serving also to lock the breech-bolt in its closed relation to the receiver whether the firing-pin is at its forward or at its rearward position.

In a prior application, Serial No. 588,363, filed April 20, 1896, I have shown and described other means for thus locking the firing-pin and the breech-bolt with relation to each other and to the receiver by means of a mutilated cylindrical firing-pin locker, which engages with the firing-pin both at the open and the closed positions of the latter; but in the device herein shown, which may be regarded as an improved modification of that shown in my aforesaid prior application, I lock the firing-pin only at its rearward position, it being considered unnecessary for general purposes to lock the firing-pin of this particular type of firearm in its forward or discharged position, inasmuch as the locking of the breech-bolt at that time serves also to prevent opening movement of the bolt-actuator arm, and thereby prevents backward movement of the firing-pin, since such a backward movement of the pin is in this type of firearm derived from the movement of the bolt-actuator arm.

Figure 1 of the drawings is a right-hand side view of a firearm of the class specified, a portion thereof being broken away to ex-

pose the firing-pin, which in this view is shown to be locked in its backward position. Figs. 2 and 3 are a plan view and a rear end view, respectively, of what is shown in Fig. 1. Fig. 4 is an end view similar to that of Fig. 3, but differing therefrom in the respect that the firing-pin locker is shown in its open or unlocked position. Fig. 5 is a right-hand side view, partly in section, showing the firing-pin in its forward position and showing the breech-bolt locked to place by means of the firing-pin locker. Fig. 6 is a left-hand side view, and Fig. 7 a rear end view, of the breech-bolt, showing the locking projection at its rearward end. Fig. 8 is a plan view, and Fig. 9 a side view, of the firing-pin, showing the rearwardly-extending locking projection, while Fig. 10 is a rear end view of the firing-pin of Fig. 9. Fig. 11 is a rear end view, and Fig. 12 a plan view, of my improved firing-pin locker. Fig. 13 is a front end view of the firing-pin locker projected from Fig. 12, while Fig. 14 is a side view also projected from Fig. 12. Figs. 15 and 16 are plan views showing two modified forms of the engaging surfaces of the firing-pin arm 26^b and its latch 2².

In the organization of mechanism shown in the drawings the stock D', the receiver B, the breech-bolt E, the bolt-actuator F, and the firing-pin 25 are in a general way similar in construction, arrangement, and mode of operation to the similarly-designated parts shown in the Lee patent, No. 547,583, above referred to, while the sear N², its hook N, the spring N⁴, and the trigger N⁶ are in all essential respects similar in construction and arrangement to the correspondingly-designated parts shown in my prior application, Serial No. 588,363, above referred to.

The breech-bolt E is fitted in the receiver B, so as to slide longitudinally therein, being provided with a recoil-resisting abutment 24, similar to that shown in the above-mentioned patent, it being necessary in the operation of opening the breech-bolt to first raise its rearward end vertically until its abutment 24 is clear of the coacting abutment of the receiver, when it may be drawn rearwardly to its open position. In order to lock the breech-bolt in its closed position, it is therefore only necessary to lock it against the initiatory elevating

movement. For this purpose the breech-bolt E is provided at its rearward end with the shouldered projection T^{13} , similar to the correspondingly-designated shoulder of my above-named contemporaneously-pending application. That projection of the breech-bolt E is located immediately adjacent to the mortise for the rearward end of the firing-pin 26, and that firing-pin is provided with a rearwardly-extending projection 26^a, which when the firing-pin is in its rearward or retracted position lies alongside of the projection T^{13} of the breech-bolt. The projection 26^a is provided with an upwardly-extending hook 26^b, the forward wall of which is provided with an incline 26^c, terminating in an oppositely-beveled shoulder 26^d.

The firing-pin locker (designated in a general way by t) is pivotally attached upon the rearward wall or end of the receiver B and is arranged to have an oscillatory movement in a direction transverse to the axis of the firing-pin to an extent shown by a comparison of Figs. 3 and 4, the former representing it in its locked position, while the latter represents it in its unlocked or free position, being limited in its movement toward the latter position by means of the shoulder t' , abutting against any convenient extension or lug of the receiver. That portion of the firing-pin locker t which engages with and locks the breech-bolt and the firing-pin consists of a latch t^2 , which is preferably an integral portion of the general structure of the firing-pin locker t , and is also preferably curved to coincide with the lines of an arc struck from the center, upon which the firing-pin locker oscillates, as best shown in Figs. 3 and 4. The latch t^2 is adapted to be swung into the recess formed in front of the hook 26^b of the firing-pin, the bottom of that recess being also curved to agree with the path of movement of the latch t^2 . The rearward side of the latch t^2 is inclined at an angle t^3 coinciding with the incline 26^c of the firing-pin hook, and is provided also with a beveled shoulder t^4 , which when the latch is in its closed or locking position fits against the correspondingly-beveled shoulder 26^d of that hook, as shown in Fig. 2. The relation of these inclines and their respective shoulders is such that when the firing-pin is locked in its rearward position, as shown in Figs. 1 and 2, it is carried backward out of engagement with its sear N^2 , so as to relieve that sear of the pressure of the mainspring of the firing-pin and to enable it to return fully to its upper or firing-pin-engaging position if it should be accidentally moved from that position by the inadvertent pulling of the trigger while the firing-pin is in its locked position, as shown in those figures. If the tension of that spring were not thus positively and fully transferred from the sear to the firing-pin locker, so as to leave the sear perfectly free, there would be great liability of accidental discharge of the firearm, for in that case if the sear were to be moved away by the acci-

dental or inadvertent pulling of the trigger the firing-pin would be liable to settle forward slightly, so that the sear could not return to its previous position to again engage with and support the catch of the firing-pin, and therefore the latter when released from the firing-pin lock would at once be thrown forward to its firing position by its spring, thus prematurely discharging the cartridge. Therefore to obviate this danger I find it desirable to retract the firing-pin entirely out of contact with its sear when locking the pin in its safe position, so that if the sear should be moved away by the accidental or inadvertent pulling of the trigger it will return without hindrance to the position shown in Fig. 1 ready for reengaging with the catch of the safety-lock.

As a convenient means for enabling the operator to manipulate the safety-locker t I have provided it with a thumb-piece t^5 , which may be located at any point thereon considered to be most convenient to the thumb or finger of the operator. As shown in the drawings, I have located that thumb-piece at the upper portion of the lock adjacent to the neck of the latch t^2 , so as to reinforce that neck and enable it to be made comparatively thin, so as not to extend beyond the general line of the outside of the gun when in its open position shown in Fig. 4.

As a convenient means of pivoting the locker upon the receiver and of retaining it in position thereon with a sufficient degree of frictional resistance to its movement to cause it to remain in the position to which it is moved by the operator I have provided that locker with a forwardly-extending cylindrical portion t^6 , which is fitted in a corresponding bore in the rearward end of the receiver, and the forward end of that cylindrical portion is provided with an annular groove T^{16} , leaving an annular rim or head T^{17} , which is located adjacent to and adapted to engage with a rib upon the inside of the bolt-stop V in the manner shown and described in my pending application, Serial No. 588,363, above referred to. The construction, arrangement, and operation of the bolt-stop V, whereby it is adapted to retain the firing-pin lock in position and to impose a frictional resistance to the rotary movement thereof, is in all respects exactly like that of the corresponding parts shown and described in that application.

During the firing operation of the gun the firing-pin locker remains in the open or disengaged position (shown in Fig. 4) and is pushed toward the right to the position shown in Fig. 3 when it is desired to lock the bolt in its closed position. If at this time the firing-pin is in its rearward position, resting against its sear N^2 , the end of the latch t^2 passes over the shoulder T^{13} of the breech-bolt and its inclined surface t^3 engages with the corresponding incline 26^c of the hook 26^b of the firing-pin, the continued movement of the firing-pin locker forcing the firing-pin backward

against the pressure of its spring. This rearward movement of the firing-pin is made sufficiently in excess of the required retraction to allow of a slight forward or return movement of the pin as the firing-pin locker at the conclusion of its locking movement brings the beveled shoulder t^4 into engagement with the correspondingly-beveled shoulder 26^d of the pin. These beveled shoulders operate to hold the locker and the firing-pin with a suitable degree of resistance against return movement, requiring on the part of the operator a definite and appreciable effort to disengage them, and thus preventing inadvertent or involuntary opening of the safety-locker.

In locking the breech-bolt to its closed position, whether the firing-pin is in its forward position, as shown in Fig. 5, or in its backward position, (shown in Fig. 1,) the latch passes over the shoulder T^{13} of the bolt, and thus prevents any upward movement of the rearward end of the bolt necessary as a preliminary to the opening thereof, either accidentally in the ordinary handling of the gun or by attempted manipulation of the bolt-actuator.

The engaging surfaces of the hook 26^b of the firing-pin and of the latch t^2 may be formed as shown in Fig. 15 or Fig. 16, the inclined portion thereof, which is employed for forcing the firing-pin backwardly, being only upon the hook, as shown in Fig. 15, or only upon the latch, as in Fig. 16; but I prefer to divide the required inclination between both of those surfaces substantially as shown in the preceding figures of the drawings. In arranging the pitch and extent of the incline allowance must be made for the slight return movement of the firing-pin above alluded to, so that the latch when in its locking position (shown in Fig. 2) will hold the catch of the firing-pin clear of its sear, as shown in Fig. 1, for the purpose hereinbefore set forth. The locking-hook 26^b may extend from the firing-pin over the latch instead of below it, as herein shown, or the arm may extend both above and below, the recess for the latch forming a mortise in the firing-pin.

I claim as my invention—

1. In a firearm of the class specified, a combined locker for the breech-bolt and the firing-pin, provided with a latch for locking the breech-bolt against lateral movement, and for retracting the firing-pin, the engaging sur-

faces of the latch and of the pin having a reversely-beveled shoulder for retaining the latch in its locked position.

2. In a firearm of the class specified, an oscillating locker mounted on the receiver, having a latch passing over a portion of the breech-bolt and locking it against lateral movement relative to the receiver, the latch being also provided with an inclined shoulder for retracting the firing-pin, and having a reversely-beveled shoulder for retaining the locker in its locked position, substantially as described.

3. In a firearm of the class specified, in combination with the receiver and with the firing-pin thereof, the latter being provided with a rearwardly-projecting hook, a locker therefor consisting of a latch pivotally mounted on the rearward end of the receiver and engaging with the arm of the firing-pin, one of their engaging surfaces being inclined so as to retract the pin, and having a reversely-beveled shoulder for retaining the latch.

4. In a firearm of the class specified, in combination with the receiver, the breech-bolt, and the firing-pin thereof, the breech-bolt being provided with a locking-shoulder, a locking-latch therefor pivotally mounted on the rearward end of the receiver, passing over the locking-shoulder of the breech-bolt into engagement with the firing-pin, substantially as described.

5. In a firearm of the class specified, in combination with the receiver, the breech-bolt, and the firing-pin thereof, the breech-bolt being provided with a rearwardly-extending locking-shoulder, and the firing-pin being provided with a rearwardly-projecting locking-hook, a locker therefor pivotally mounted upon the rearward end of the receiver and provided with a latch arranged to swing over the locking-shoulder of the breech-bolt, and into engagement with the locking-hook of the firing-pin, the latch being provided with an inclined surface for retracting the pin, and with a reversely-beveled shoulder for retaining the latch in locking engagement with the firing-pin and with the breech-bolt, substantially as described.

E. G. PARKHURST.

Witnesses:

REINA MORSE,
W. H. HONISS.