

(No Model.)

W. F. TROAST.  
PADLOCK.

No. 496,921.

Patented May 9, 1893.

FIG. 1.

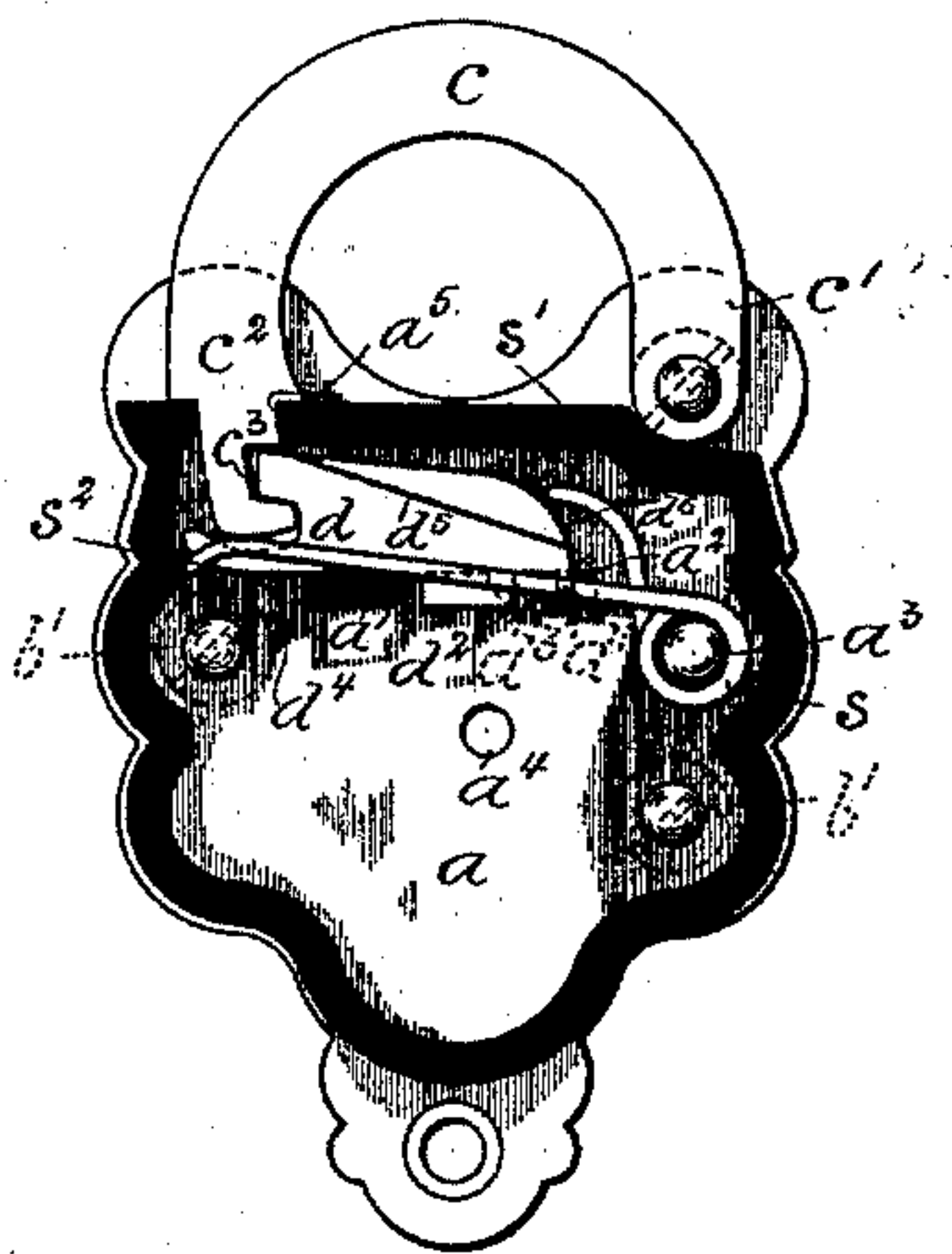


FIG. 2.

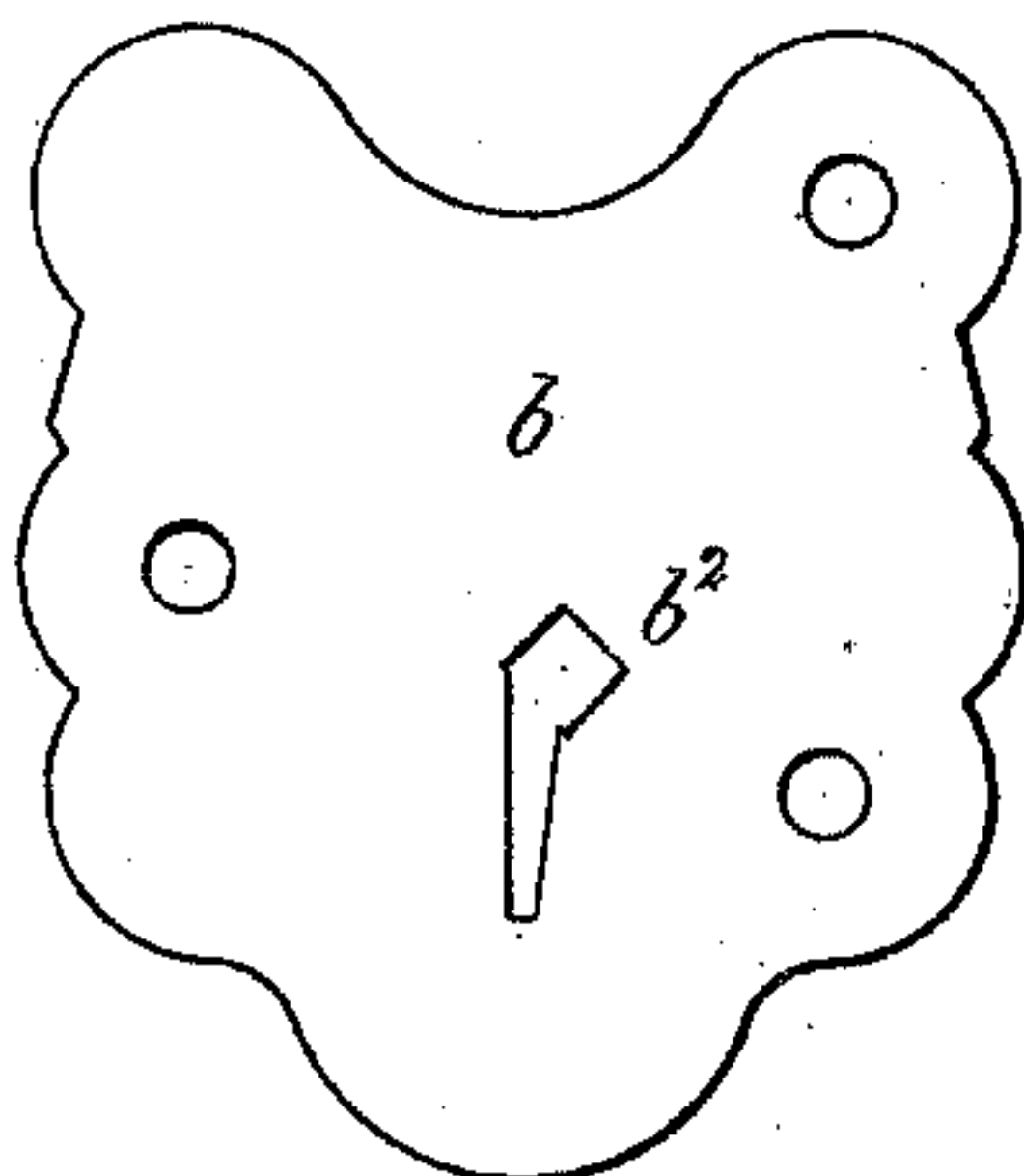


FIG. 3.

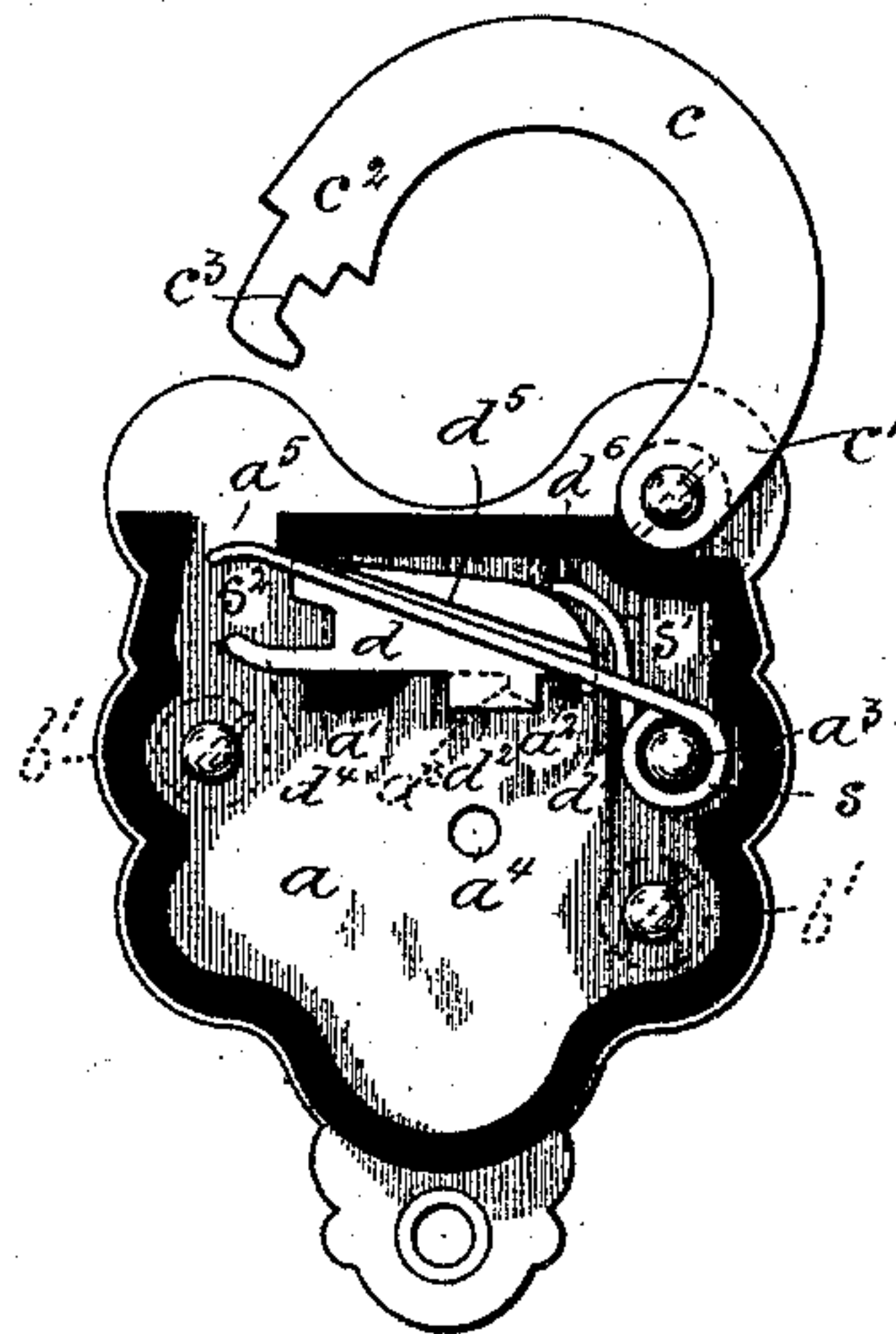


FIG. 4.

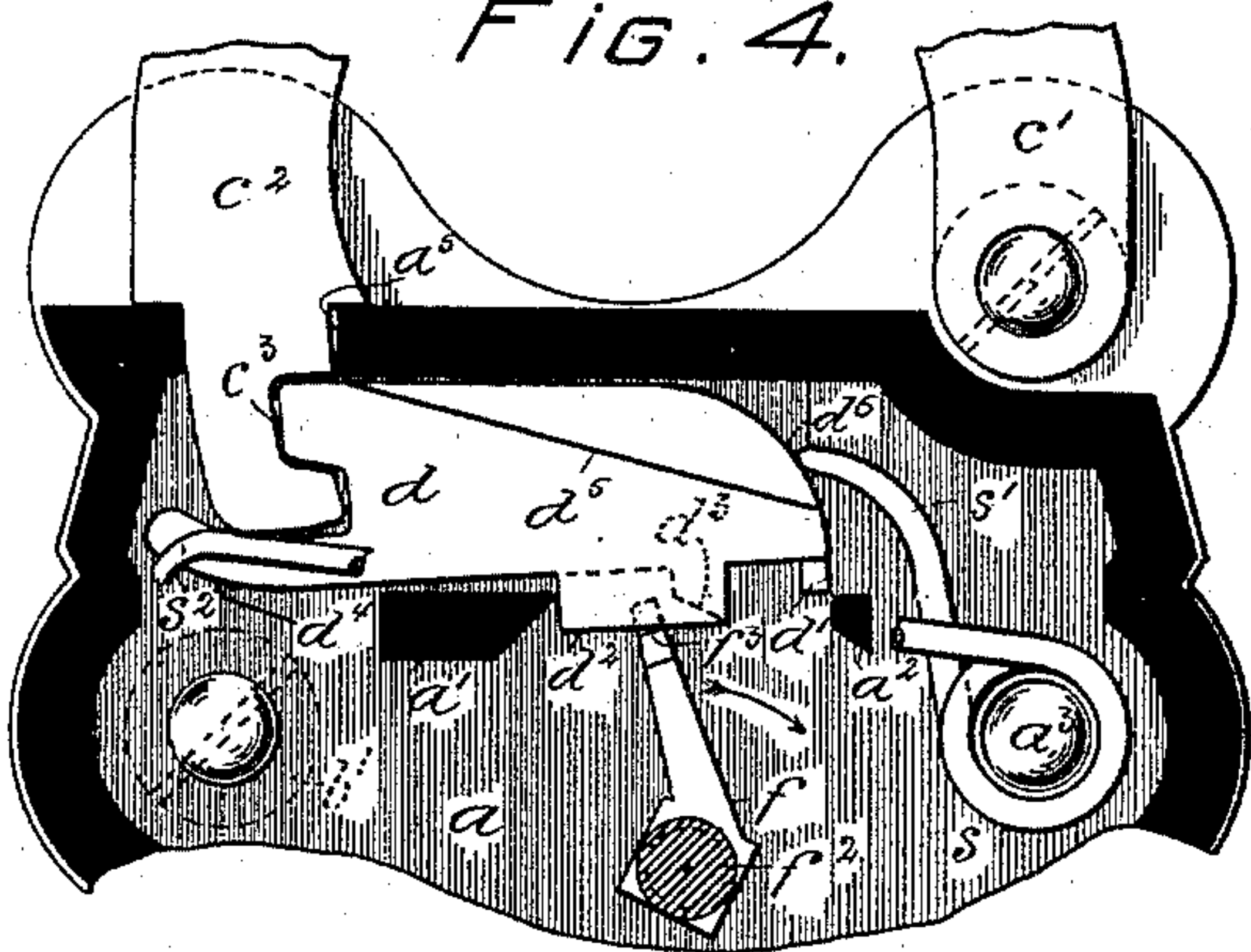


FIG. 5.

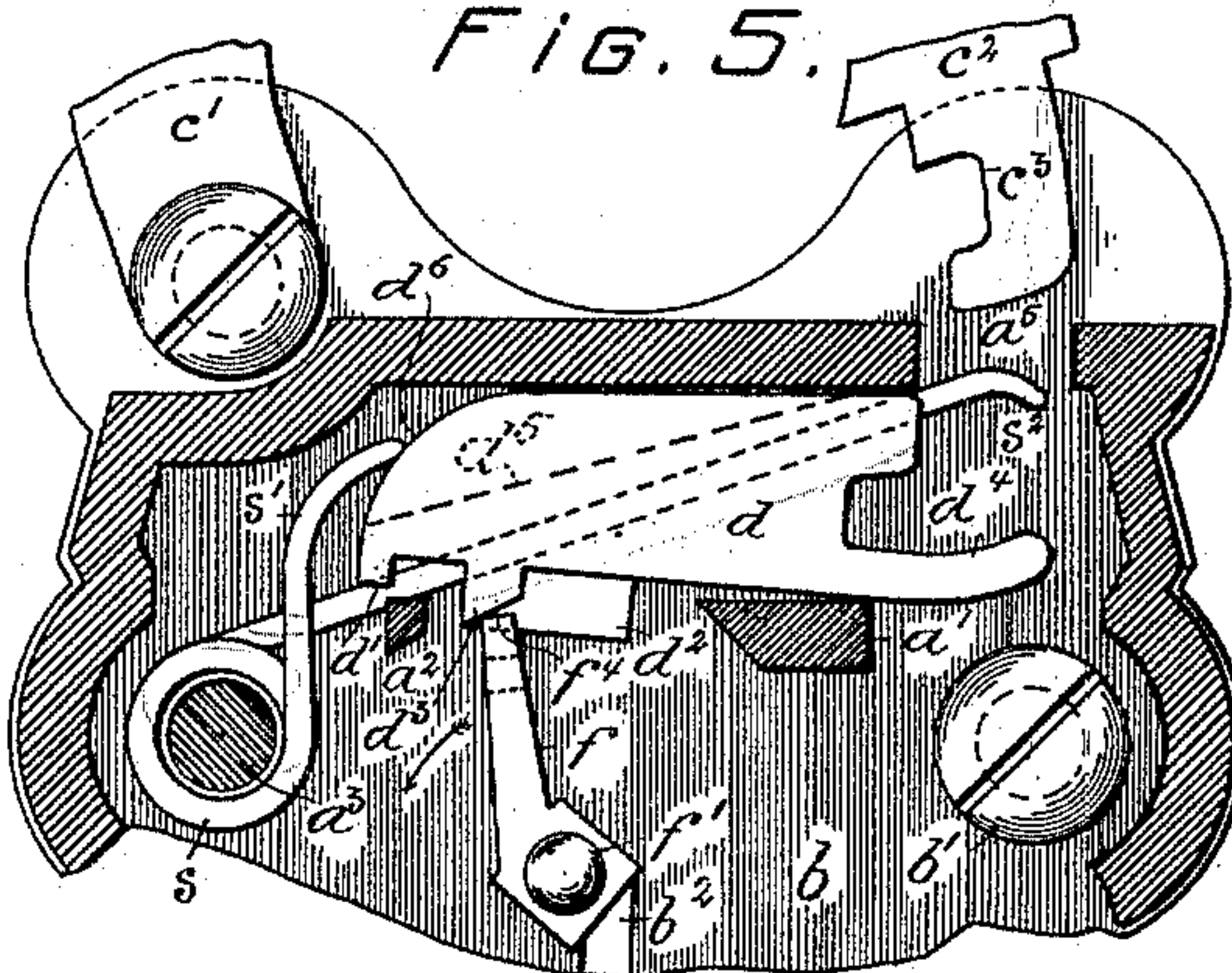


FIG. 6.

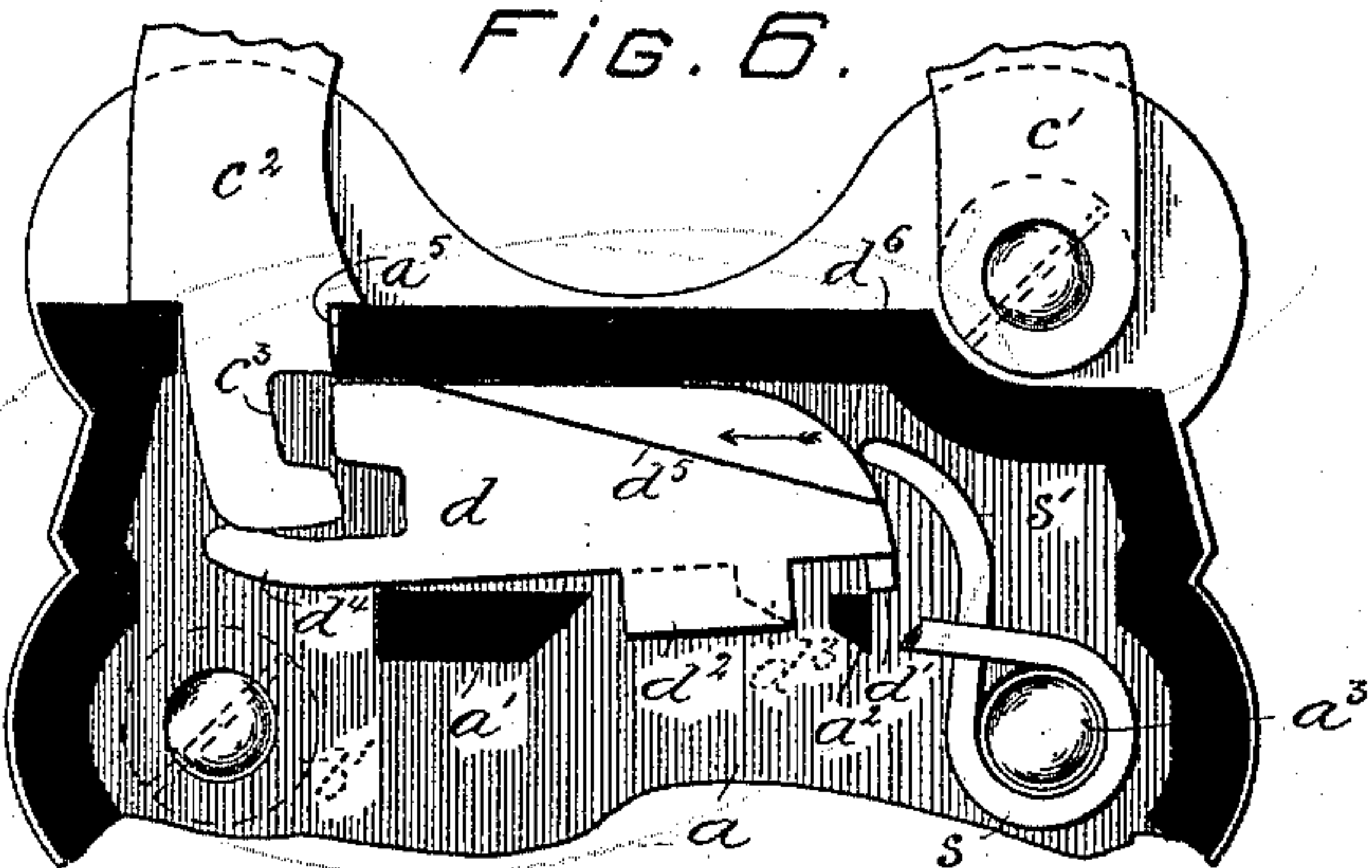


FIG. 7.

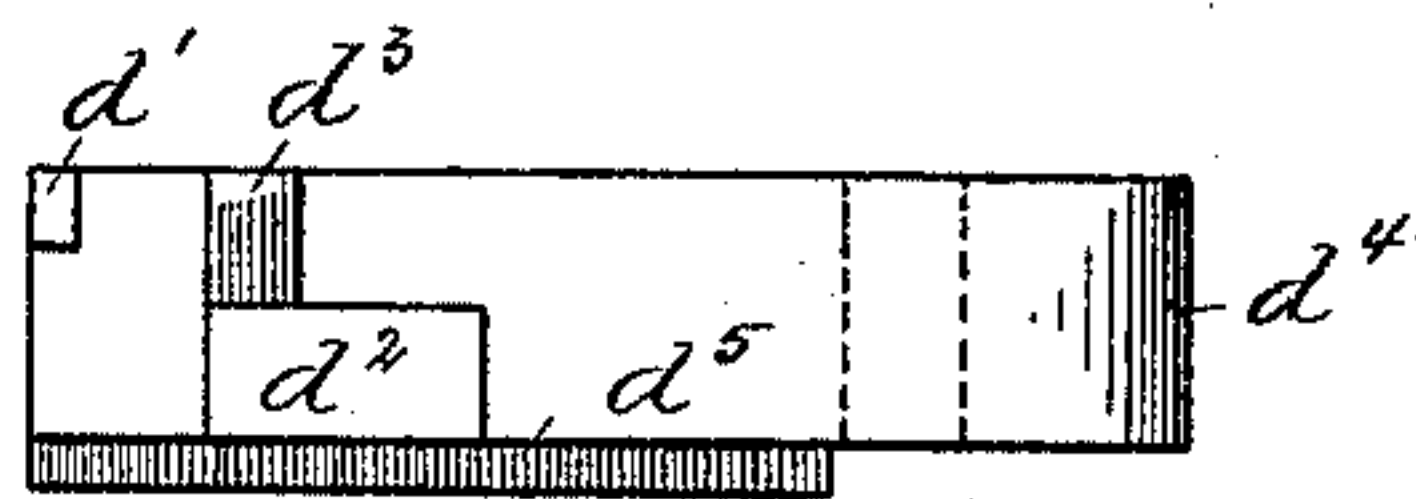
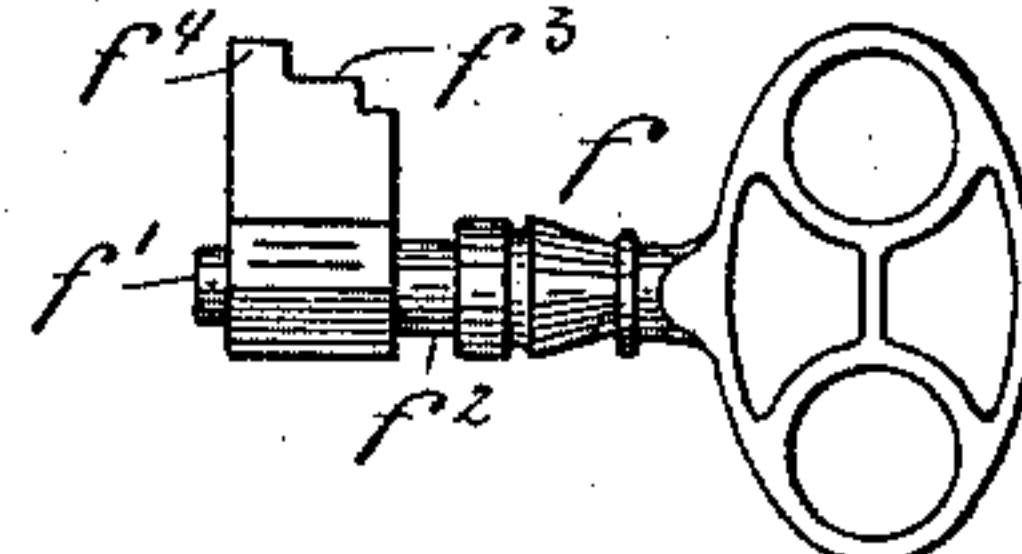


FIG. 8.



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# UNITED STATES PATENT OFFICE.

WILLIAM F. TROAST, OF LANCASTER, PENNSYLVANIA, ASSIGNOR TO HIMSELF, SAMUEL R. SLAYMAKER, AND JOHN F. BARRY, OF SAME PLACE.

## PADLOCK.

SPECIFICATION forming part of Letters Patent No. 496,921, dated May 9, 1893.

Application filed August 9, 1892. Serial No. 442,593. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. TROAST, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention is applicable in whole or in part to various types of locks; and it relates more particularly to that class known as padlocks provided with a notched shackle and means for automatically throwing the shackle out when the shot-bolt is shifted into open position, and with devices for automatically locking the shackle when the same is inserted into the housing of the lock.

The principal objects of my invention are first, to provide a safe, efficient, compact, durable and comparatively inexpensive padlock; second, to reduce the number and simplify the construction of the working parts of such a lock; and third, to construct and arrange the shot-bolt and its complementary spring for operation in such manner that the shot-bolt is normally locked in open and closed positions, and hence cannot be moved by jarring or picking, but is adapted to be lifted and shifted into open position by the key and to be oscillated and released by the shackle and permitted to return to its closed and locked position under the influence of the spring.

My invention consists of a lock provided with a locking-post, a shot-bolt having a finger or projection, a cheek and an ear, a spring tending to cause the finger to engage the post, and a key adapted to engage the cheek, overcome the spring and release the finger or projection, and to engage the ear and shift the bolt into open position.

My invention further consists of a lock provided with a bolt-guide, a locking-post, a shot-bolt having a finger or projection and a hook-shaped lip, a spring tending to force the bolt into engagement with the post and into closed position, a shackle for engaging the lip and pivoting the bolt on the bolt-guide and releasing the finger or projection to permit the bolt to move under the influence of the spring into engagement with the shackle.

My invention further consists of a lock pro-

vided with a locking-post, a bolt-guide, a slotted shackle, a shot-bolt having a finger or projection, a cheek, an ear and a lip, a spring having one extremity in engagement with an inclined face on the bolt and tending to shift the latter into engagement with the post and into closed position, and having the other extremity in range of the shackle; and my invention further consists of the improvements in locks, hereinafter described and claimed.

The nature, scope and general characteristic features of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof; and in which—

Figure 1, is a front elevation of a padlock showing the shot-bolt in closed position in engagement with the notched shackle and also showing the cover-plate removed in order to expose to view the internal mechanism embodying features of my invention. Fig. 2, is a similar view of the cover-plate showing the same provided with a key-hole. Fig. 3, is a view similar to Fig. 1, showing the shot-bolt in open position and the free or slotted extremity of the shackle thrown out of the housing of the lock. Fig. 4, is a detail view drawn to an enlarged scale and taken from the front of the lock in order to illustrate the manner in which the key engages a cheek on the shot-bolt and lifts a finger or projection on the latter out of range of the locking-post. Fig. 5, is a view similar to Fig. 4, but taken from the back of the lock in order to illustrate the manner in which the key engages an ear on the shot-bolt and effects the shifting of the latter into open position. Fig. 6, is a view similar to Fig. 4, showing the manner in which the shackle engages a lip on the shot-bolt, and turns the latter into position for releasing the finger from the locking-post in order to permit the shot-bolt to move under the influence of a spring forward and downward into closed position in engagement with the shackle as shown in Fig. 1. Fig. 7, is a plan view of the underside of the shot-bolt showing the cheek and ear with which the key engages; and Fig. 8, is an elevation of a skeleton key adapted to actuate the shot-bolt.

In the drawings *a*, is a case or housing provided with a bolt-guide *a'*, a locking-post *a''*,



a spring retaining pin  $a^3$ , a key-seat  $a^4$ , and an opening  $a^5$ , for purposes to be presently fully described.

$b$ , is a cover-plate adapted to be secured to the case or housing  $a$ , by means of screws  $b'$ , and provided with a key-hole  $b^2$ . In the present instance the key-hole  $b^2$ , is of the form of a square, one of whose sides communicates with an oblong slot. However, other forms of key-holes may be employed.

$c$ , is a shackle having one extremity  $c'$ , thereof pivotally connected with the housing  $a$ , and having the free extremity  $c^2$ , thereof provided with a notch or slot  $c^3$ , and adapted to enter the opening  $a^5$ , of the housing  $a$ .

$d$ , is a shot-bolt adapted to engage the notch  $c^3$ , of the shackle and provided with a finger or projection  $d'$ , a cheek  $d^2$ , an ear  $d^3$ , a hook-shaped lip  $d^4$ , and a recess  $d^5$ .

$s$ , is a spiral spring mounted upon the pin  $a^3$ , and having one extremity thereof in engagement with an inclined and curved face  $d^6$ , cut or otherwise formed upon the shot-bolt  $d$ , and having the other extremity  $s^2$ , thereof adapted to work in the recess  $d^5$ , and extended into range of the free end  $c^2$ , of the shackle.

$f$ , is a skeleton key adapted to register with the key-hole  $b^2$ , and provided with circular portions  $f'$  and  $f^2$ , whereof one is adapted to turn in the key-seat  $a^4$ , and the other in the upper square portion of the key-hole. This key  $f$ , is also provided with projections  $f^3$  and  $f^5$ , adapted respectively to engage the cheek  $d^2$ , and ear  $d^3$ , of the shot-bolt  $d$ . Of course the key  $f$ , may be provided with "wards" of any preferred construction. However, in the present instance the wards are not shown.

The mode of operation of the hereinabove described lock, is as follows:—When the shot-bolt  $d$ , is in closed position (Fig. 1) or in open position (Fig. 3), the finger or projection  $d'$  engages the locking-post  $a^2$ , and the extremity  $s'$ , of the spiral spring  $s$ , by engaging the curved and inclined face  $d^6$ , of the shot-bolt  $d$ , tends to maintain the finger or projection  $d'$ , in engagement with the locking-post  $a^2$ , so that the shot-bolt  $d$ , is automatically locked in closed and in open positions. This result is important, because it prevents the lock from being opened by jarring and "picking," and also prevents the shot-bolt from being accidentally shifted into closed position, when the shackle  $c$ , has been withdrawn from the housing  $a$ . For the sake of a further description of the invention it will be assumed that the shot-bolt  $d$ , is in closed position in engagement with the notch  $c^3$ , of the shackle  $c$ , as shown in Fig. 1, and that it is necessary or desirable to release the shackle  $c$ , and shift the shot-bolt  $d$ , into open position as shown in Fig. 3. These results are accomplished in the following manner:—The key  $f$ , is inserted into the key-hole  $b^2$ , and turned in the direction indicated by the arrows in Figs. 4 and 5, so that the projection  $f^3$ , of the key  $f$ , engages the cheek  $d^2$ , and thus overcoming the force of the extremity  $s'$ , of the spring  $s$ , lifts the

shot-bolt  $d$ , upward and consequently releases it by causing the finger or projection  $d'$ , to clear the locking-post  $a^2$ , as shown in Fig. 4. The subsequent turning of the key  $f$ , causes the projection  $f^4$ , thereof to engage the ear  $d^3$ , of the shot-bolt  $d$ , and to thus bring the same into the position shown in Fig. 5, with the result that the extremity  $c^2$ , of the shackle is released and then thrown out of the housing  $a$ , by the extremity  $s^2$ , of the spiral spring  $s$ . The continued turning of the key  $f$ , causes the projection  $f^4$ , to pass out of range of the ear  $d^3$ , whereupon the extremity  $s'$ , of the spring  $s$ , forces the shot-bolt  $d$ , downward into open position with the finger or projection  $d'$ , behind the locking-post  $a^2$ , as shown in Fig. 3. The shot-bolt  $d$ , may be returned to closed position as shown in Fig. 3, by forcing the portion  $c^2$ , of the shackle  $c$ , into the opening  $a^5$ . During this operation the extremity of the shackle  $c$ , contacts with the hook-shaped end of the lip  $d^4$ , and thus turns the shot-bolt  $d$ , about the bolt-guide  $a'$ , as shown in Fig. 6, into position for permitting the finger or projection  $d'$ , to clear the locking-post  $a^2$ , whereupon the extremity  $s'$ , of the spiral spring  $s$ , acting upon the curved and inclined face  $d^6$ , forces the shot-bolt  $d$ , forward as indicated by the arrows in said figure and downward into closed position as shown in Fig. 1, in engagement with the shackle and with the finger or projection  $d'$ , in front of the locking-post  $a^2$ .

From the foregoing description it appears that the function of the spiral spring  $s$ , is three-fold: first, it serves to throw the shackle  $c$ , out of the lock; second, to force the shot-bolt  $d$ , downward; and third, it tends to shift the shot-bolt  $d$ , forward. This is important because it results in causing a single spring to perform the combined functions of three separate springs and consequently is conducive to economy of labor and space.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A lock provided with a bolt-guide, a locking-post, a shot-bolt having a finger or projection and a hook-shaped lip, a spring tending to force the finger or projection into engagement with the post and to force the shot-bolt into closed position, a shackle for engaging the lip and turning the bolt on the bolt-guide to release the finger or projection and to permit the bolt to move under the influence of the spring into engagement with a slot in the shackle, substantially as and for the purposes set forth.

2. In a lock, a locking post, a bolt-guide, a shot-bolt provided with a finger or projection, a cheek and an ear, a spring and a key, substantially as and for the purposes set forth.

3. A lock provided with a locking-post, a bolt-guide, a slotted-shackle, a shot-bolt provided with a finger or projection, a cheek, an ear and a lip, a spring having one extremity in engagement with an inclined face on the



bolt and tending to shift the latter into engagement with the post and into closed position, and having the other extremity in range of the shackle, and a key for engaging the  
5 cheek and ear, substantially as and for the purposes set forth.

4. In a lock, a shackle, a locking-post, a shot-bolt having a finger or projection and a cheek and an ear and an inclined face and a  
10 spring having one extremity in range of the shackle and the other extremity in engagement with the curved face and tending to shift the shot-bolt forward and downward and  
15 a key substantially as and for the purposes set forth.

5. In a lock, a shot-bolt provided with a projection, a cheek and an ear, means substantially as described for normally retaining the shot-bolt in closed position, and a key having a projection for engaging the cheek and releasing the bolt and a projection for engaging the ear and shifting the bolt, substantially as  
20 and for the purposes set forth.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.  
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WILLIAM F. TROAST.

Witnesses:

CHARLES F. HAGA, Jr.,  
JNO. N. HETRICK.