

No. 652,405.

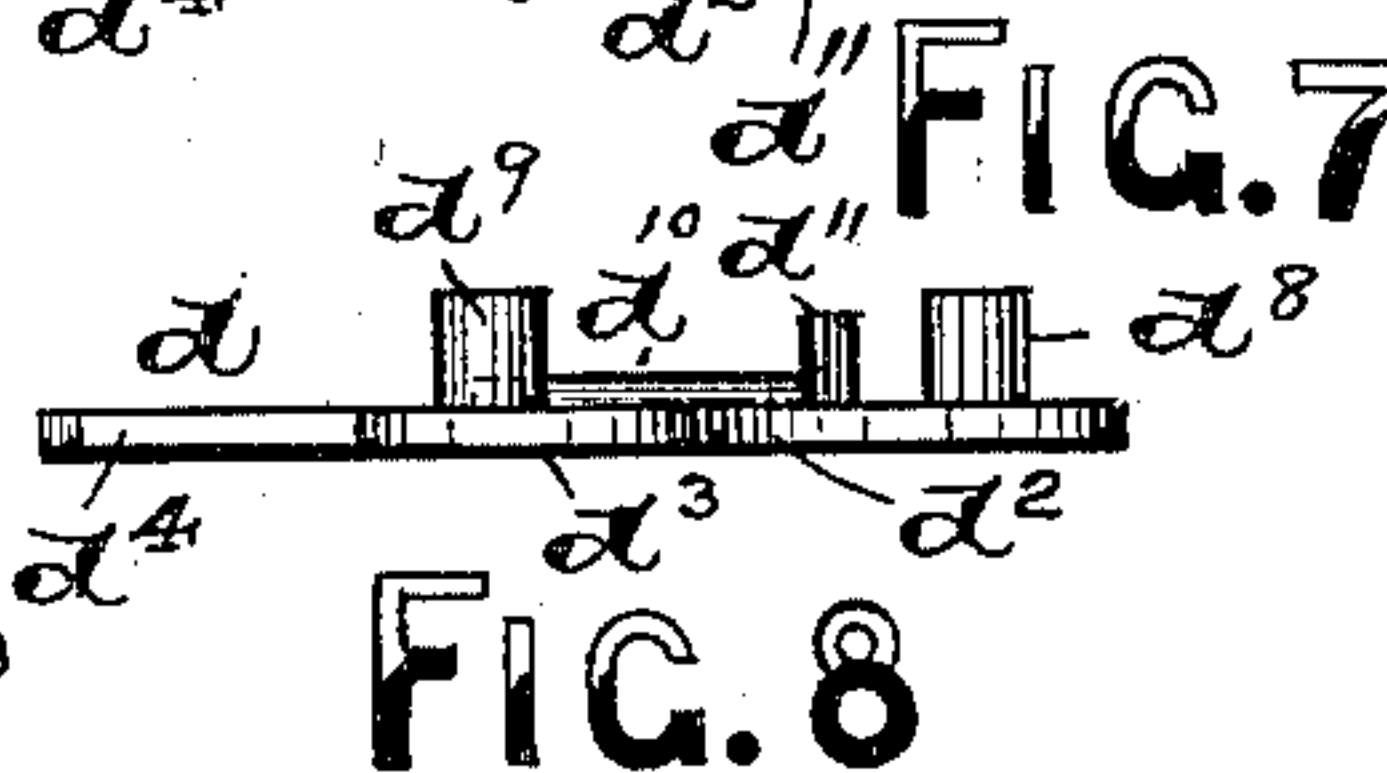
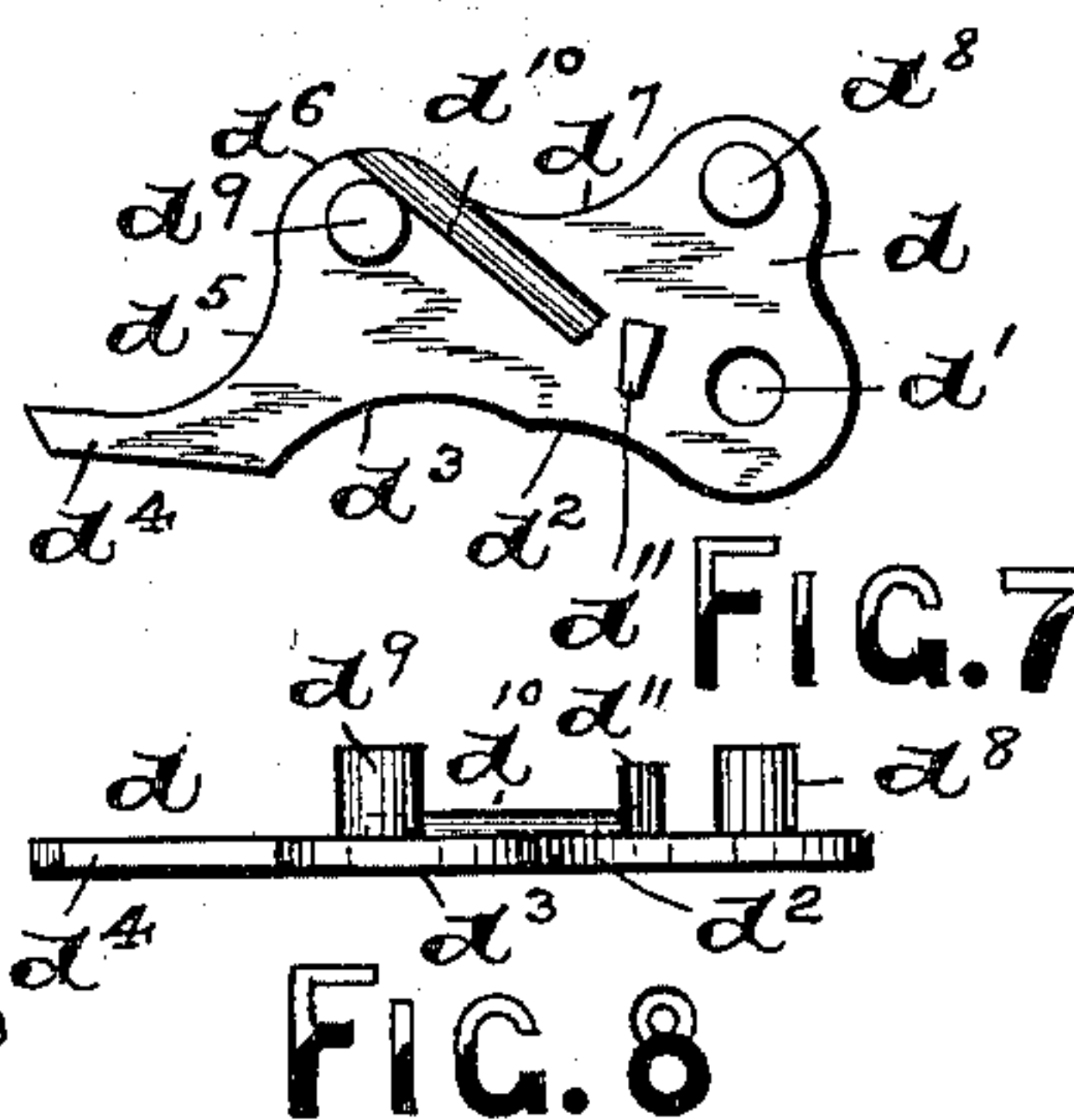
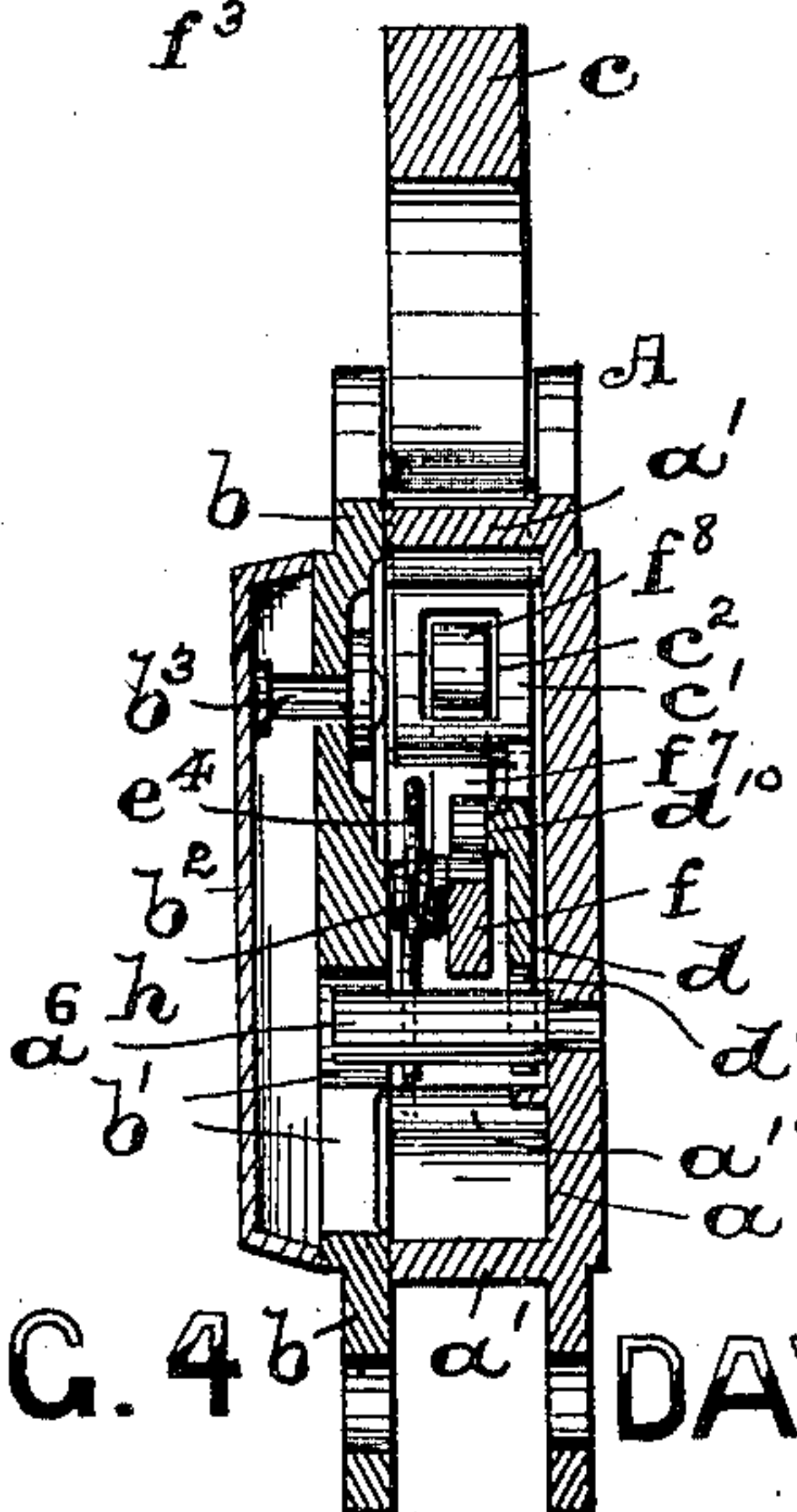
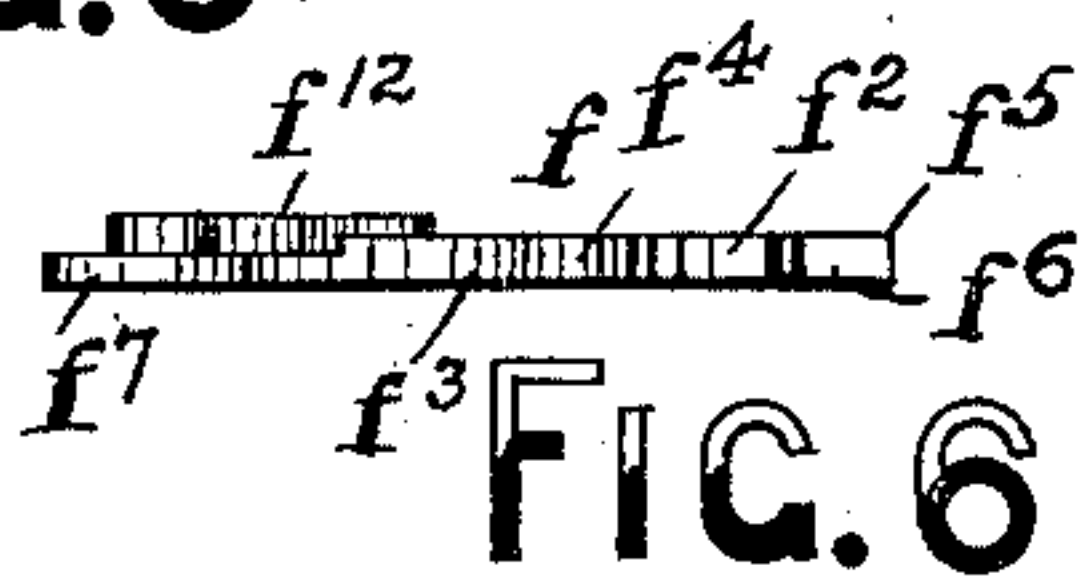
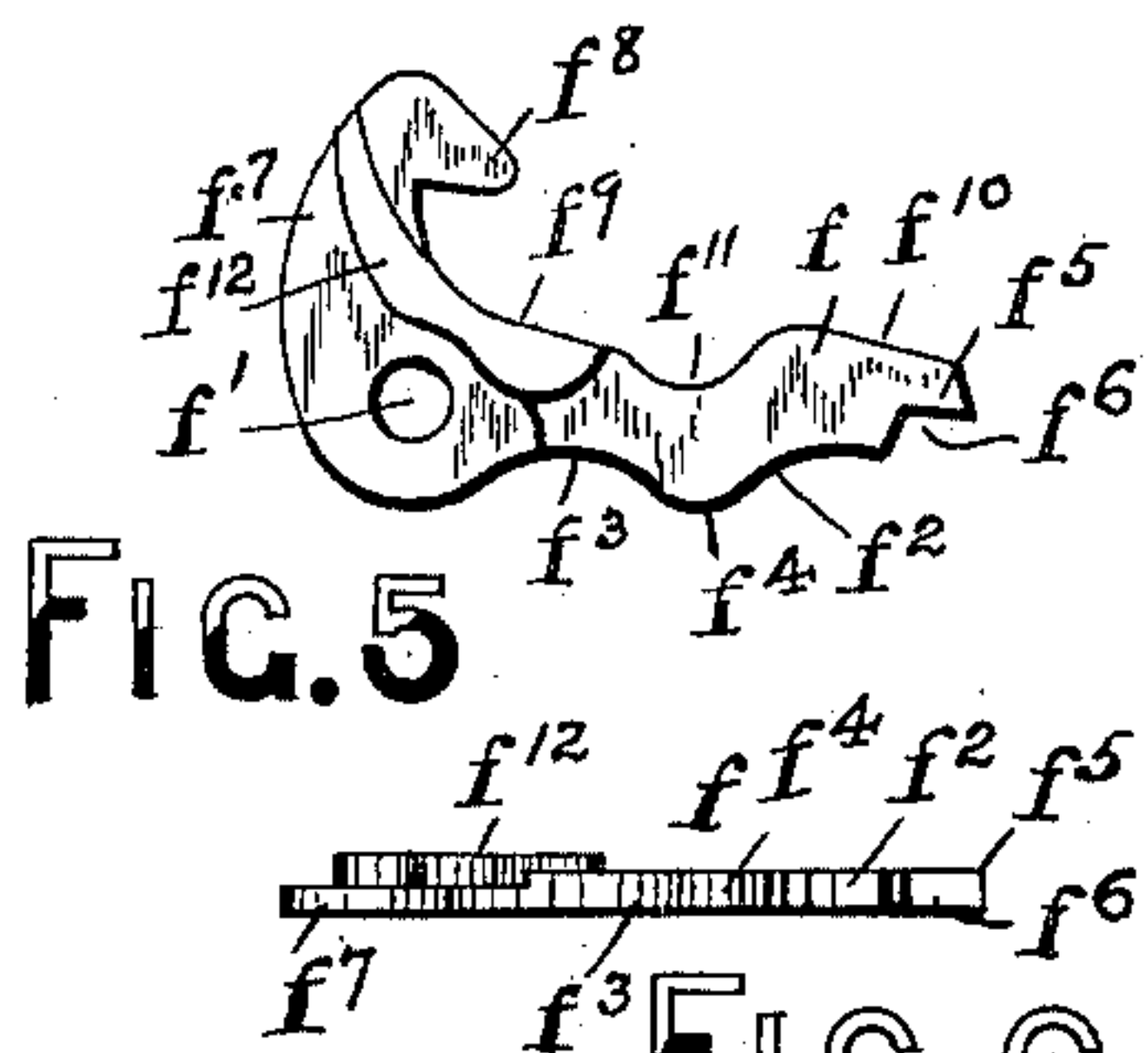
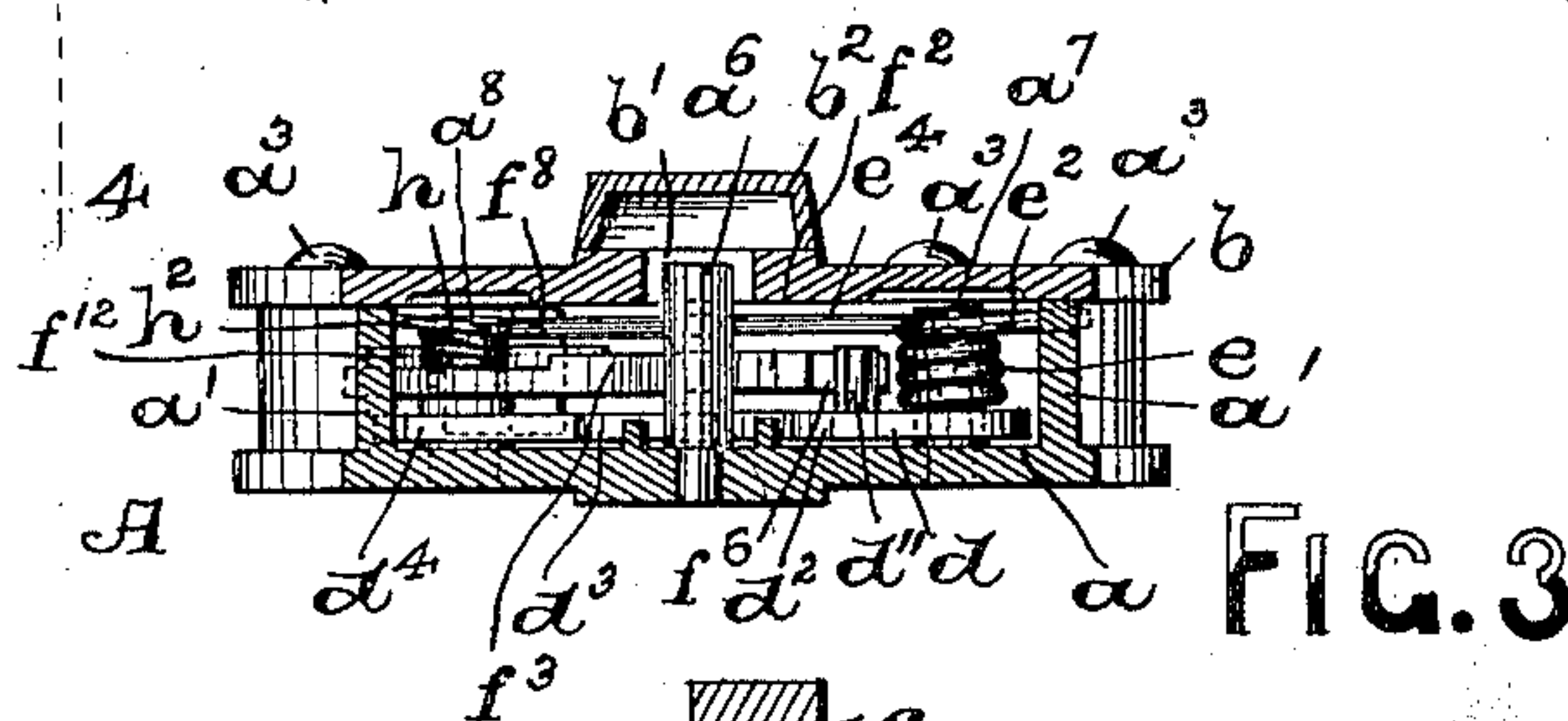
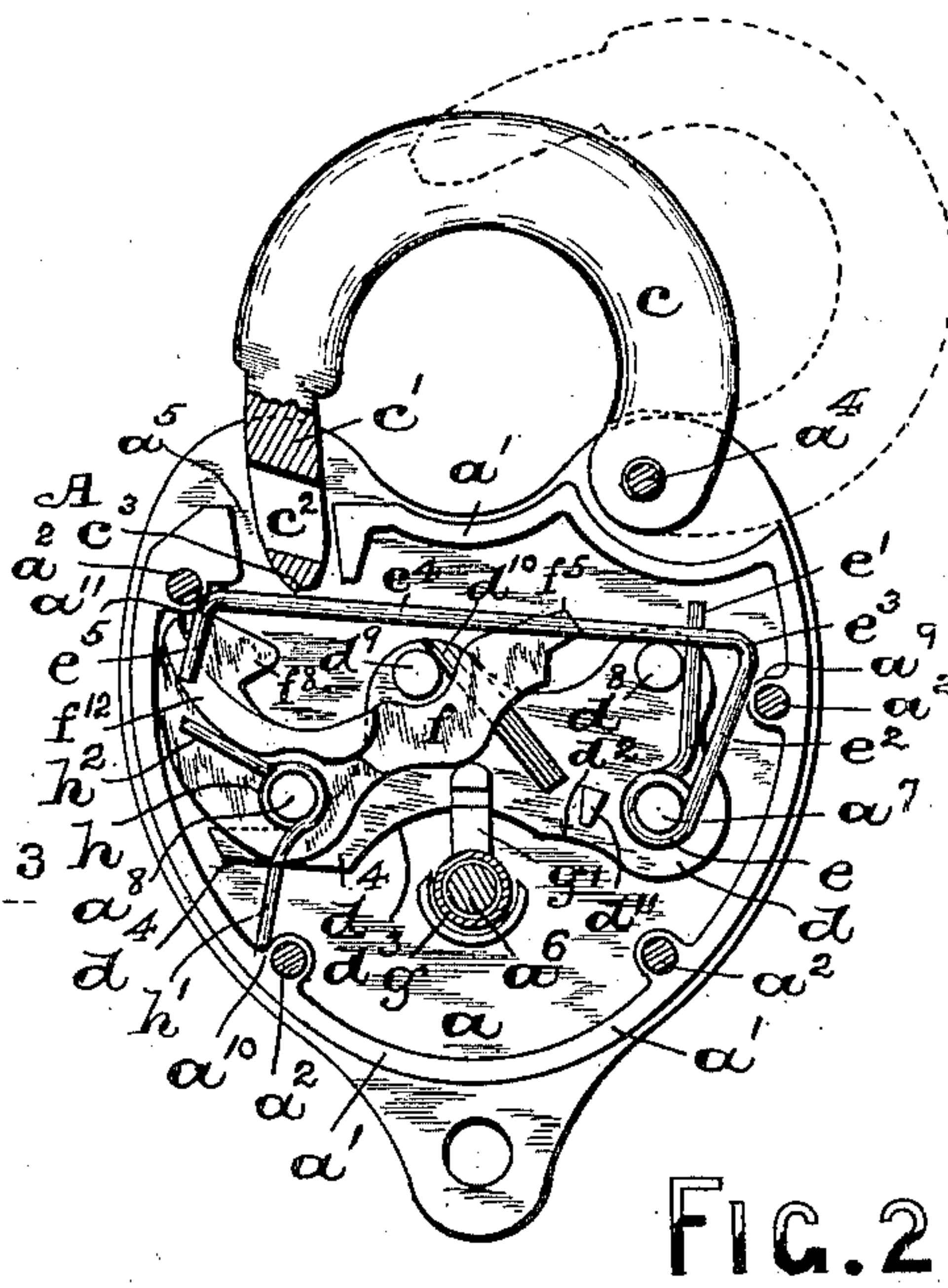
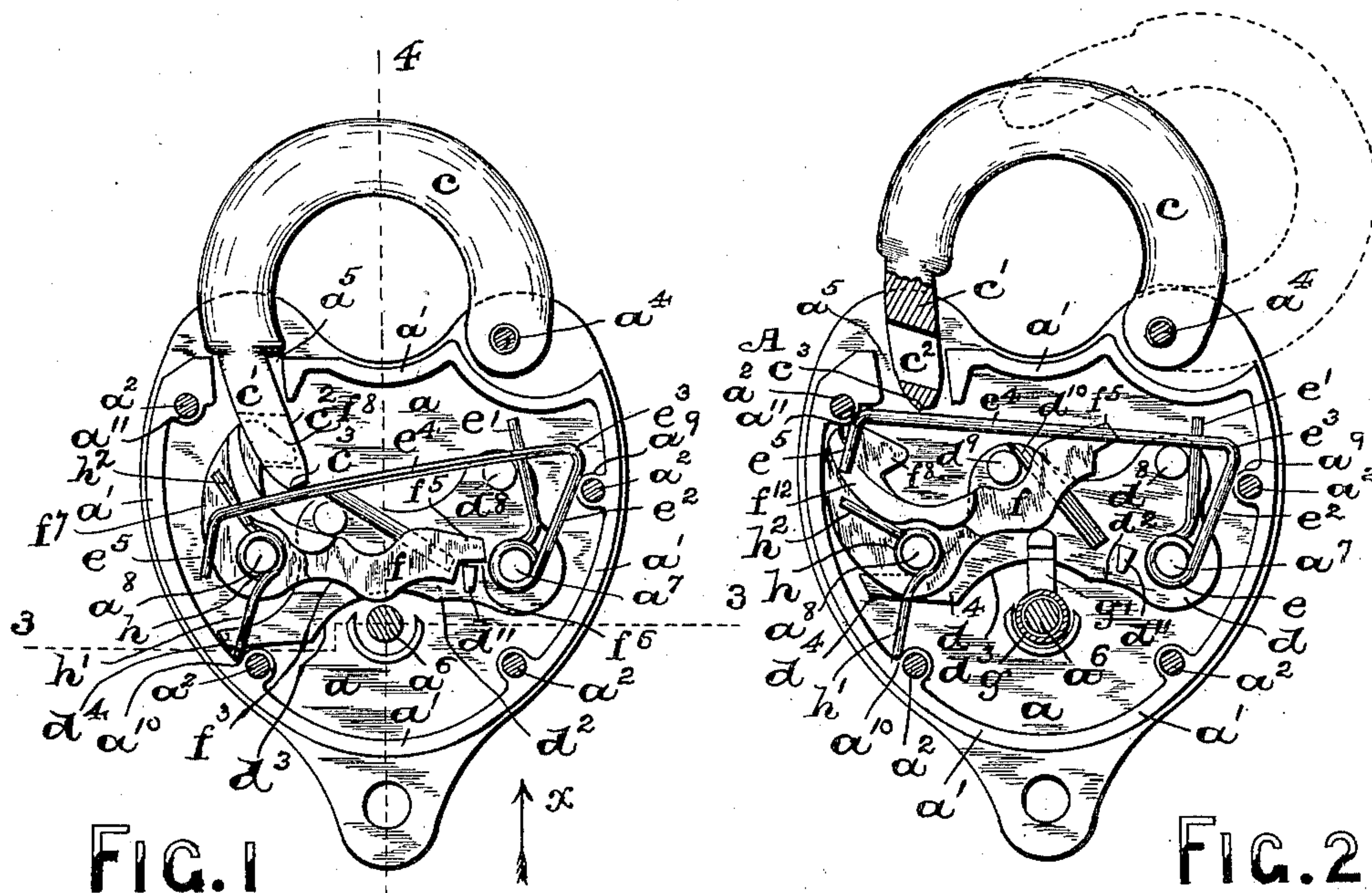
Patented June 26, 1900.

D. D. SLAIGHT.
PADLOCK.

(Application filed Oct. 12, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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FIG. 4b



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No. 652,405.

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(Application filed Oct. 12, 1899.)

(No Model.)

2 Sheets—Sheet 2.

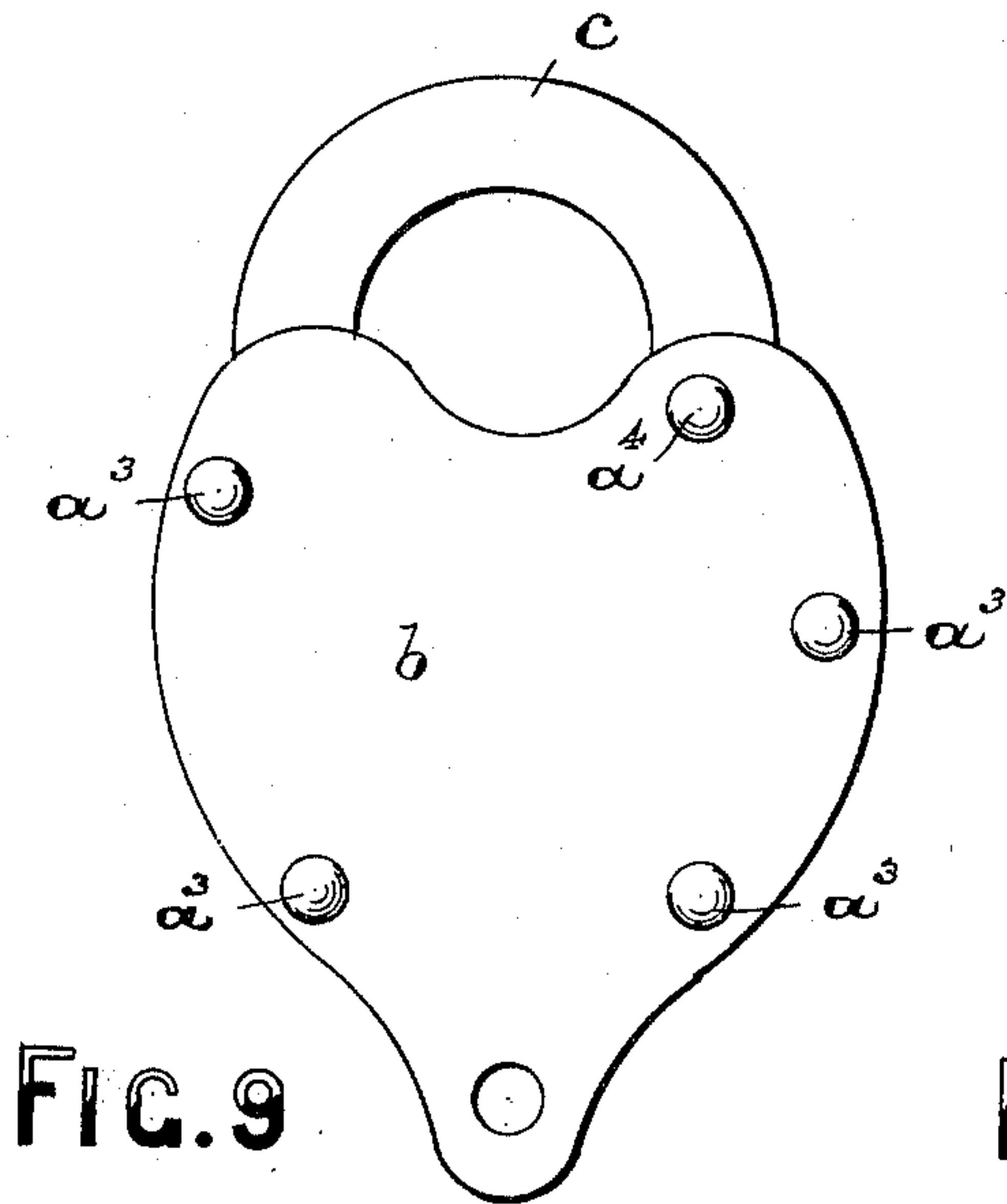


FIG. 9

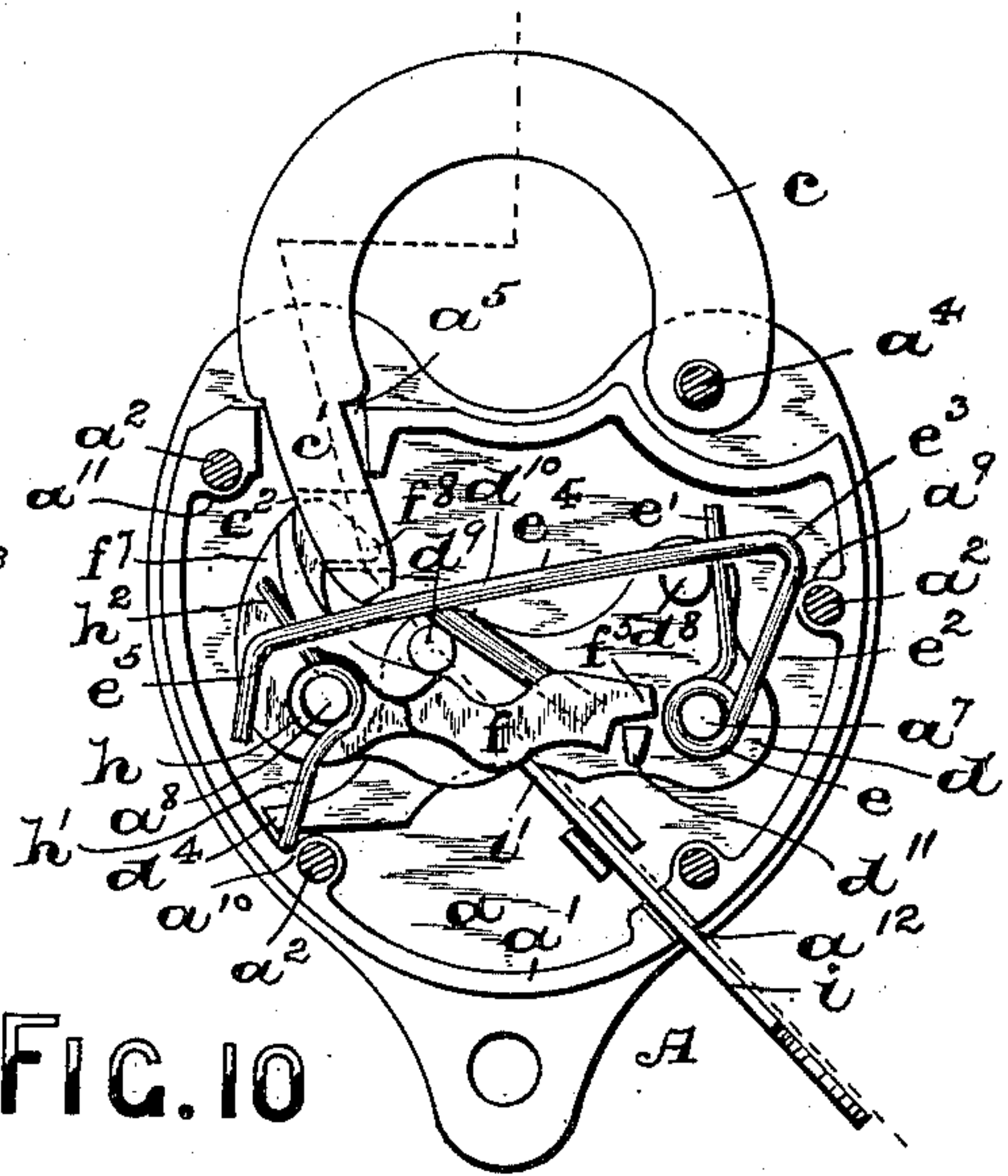


FIG. 10

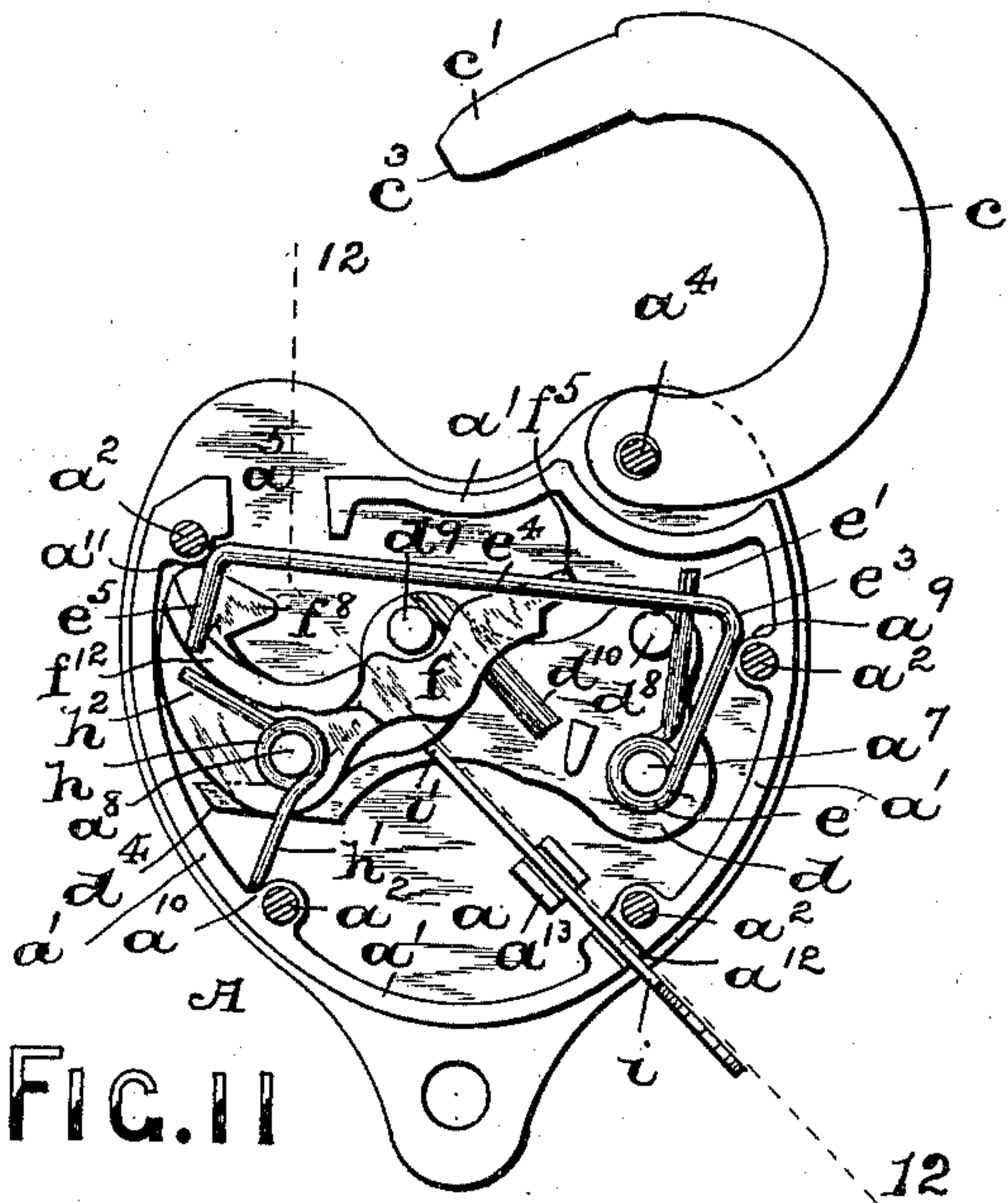


FIG. 11

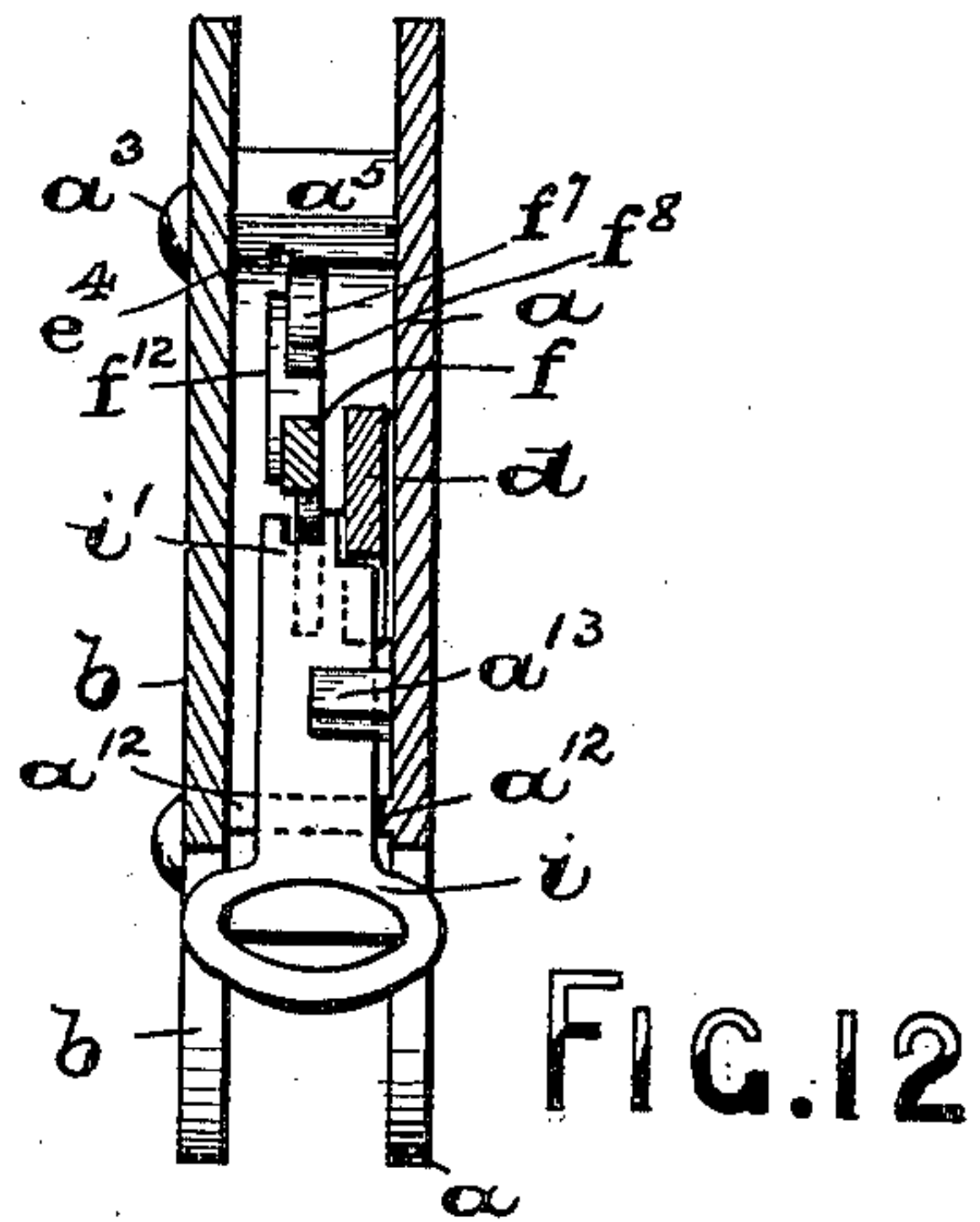


FIG. 12

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UNITED STATES PATENT OFFICE.

DAVID D. SLAIGHT, OF NEWARK, NEW JERSEY.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 652,405, dated June 26, 1900.

Application filed October 12, 1899. Serial No. 733,369. (No model.)

To all whom it may concern:

Be it known that I, DAVID D. SLAIGHT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in padlocks; and the invention has for its object to provide a simple and cheap construction of lock mechanism which can be readily manipulated and is not liable to get out of repair.

The invention consists in the novel construction of lock, to be hereinafter set forth, and also in the several novel arrangements and combinations of the various parts, all of which will be described in the accompanying specification and finally embodied in the clauses of the claim.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a padlock constructed according to my invention, the cap-plate of the lock being removed to illustrate the parts of the lock mechanism in their normal positions in holding or locked engagement with the shackle or bolt; and Fig. 2 is a similar view of the lock, but representing the various parts of the lock mechanism in their unlocked positions and the shackle or bolt in its actuated and disengaged relation with the various parts of the lock mechanism. Fig. 3 is a horizontal cross-section taken on line 3 3 in Fig. 1 looking in the direction of the arrow x , and Fig. 4 is a vertical section taken on line 4 4 in said Fig. 1. Figs. 5 and 6 are a face and bottom edge view, respectively, of a tumbler or bolt-hook plate; and Figs. 7 and 8 are a face and bottom edge view, respectively, of a second tumbler, termed a "frog" or "lever," all of which figures illustrate parts of my novel construction of lock mechanism. Fig. 9 is a face view of a padlock of a slightly-modified form of construc-

tion, but still embodying the principles of this invention. Fig. 10 is a face view of the padlock represented in said Fig. 9, with the cap-plate removed, illustrating the parts of the lock mechanism in their normal positions in holding or locked engagement with the shackle. Fig. 11 is a similar view of the lock, but the parts of the mechanism being represented in their unlocked positions; and Fig. 12 is a cross-section taken on line 12 12 in said Fig. 11.

Referring to the several figures of the drawings, A indicates the lock-casing, which may be of any desirable configuration in outline and which consists, essentially, of a back plate a and a surrounding wall a' . The said casing is provided with any suitable arrangement of studs or posts a^2 , which are passed through correspondingly-placed holes in a cap-plate b and then riveted down to provide the heads a^3 , as clearly illustrated in Fig. 9, and whereby the said cap-plate and casing A are properly secured together in the usual manner. The said back plate a is also provided with a post a^4 , which is in like manner secured to the cap-plate b and forms a pivot for the shackle or bolt c . The said lock-casing A is formed in the upper part of its wall a' with a suitable opening a^5 for the reception and entrance of the end portion c' of the shackle or bolt c , said end portion c' being provided with a hole or opening c^2 for the purpose to be hereinafter more fully set forth. As will be noticed from Figs. 1 to 4, inclusive, the said back plate a is provided with a drill pin or post a^6 , which extends upwardly and partly into the keyhole b' of the cap-plate b , said plate being preferably provided with a suitably-constructed escutcheon-plate b^2 , which is pivotally connected with said plate b by means of a stud b^3 to cover the keyhole, as will be clearly evident. The said back plate a of the lock-casing A is also provided with a pair of upwardly-extending posts a^7 and a^8 . Upon the said post a^7 , so as to oscillate thereon, I have arranged a tumbler or lever d , which is preferably of the configuration represented in outline in Fig. 7 of the drawings. The said tumbler or lever, as shown in said Fig. 7, has a hole or perforation d' for arranging it in its operative position on the post a^7 and is provided on its lower side or edge with the curved

or concave portions d^2 and d^3 , both of which are of the same curvature, and with a forwardly-extending finger or lug d^4 . The upper edge of said plate d is suitably curved, as at d^5 , d^6 , and d^7 , and on the upper surface of the said plate there are a pair of posts or studs d^8 and d^9 , a raised portion d^{10} , and a lug or projection d^{11} . Encircling the said post a^7 , directly above the plate d , is a coiled spring e , which terminates in an arm e' , pressing against the side of the post or stud d^8 , and an arm e^2 , which presses against the side of a projection a^9 or other suitable portion of the wall a' of the lock-casing A. The normal tendency of the arms e' and e^2 when compressed is to force the finger or lug d^4 down upon the projection a^{10} or other suitable portion of the wall a' of the lock-casing, thereby causing the said plate d when in its normal position to assume the positions represented in Figs. 1 and 10 of the drawings. The arm e^2 , connected with the spring e , may be suitably curved, as at e^3 , and provided with a forwardly-extending arm or portion e^4 , the forward end of which when the several parts of the lock mechanism are in the positions indicated in said Figs. 1 and 10 is in forcible holding contact with the under edge c^3 of the end portion c' of the shackle or bolt c , substantially as illustrated.

Upon the post a^8 , hereinabove mentioned, so as to oscillate thereon and slidably arranged upon the raised portion d^{10} of the tumbler d , I have placed a tumbler f , which is provided with a hole f' for arranging the said tumbler on said post, as stated. The said tumbler is preferably of the configuration shown, being provided on its lower side or edge with the concave portions f^2 and f^3 , both of which are of the same curvature and are joined by the convex portion f^4 . The said tumbler f has a projection f^5 at one end and is formed with a recess or cut-away part f^6 , while at its opposite end the said tumbler f has an upwardly-extending arm f^7 , which is provided with a hook end f^8 , substantially as illustrated. The upper edge of said tumbler, between said hook end f^8 and the projection f^5 , is made, as at f^9 and f^{10} , with a concave part f^{11} between said parts f^9 and f^{10} , said parts f^9 , f^{10} , and f^{11} riding against the stud d^9 when the tumblers are actuated. Said tumbler f is also preferably provided with a raised part f^{12} , on which the bent end portion e^5 , connected with the arm or portion e^4 of the spring e , rides to prevent said arm e^4 interfering with the action of the tumblers d and f when the mechanism is operated. Encircling the said post a^8 , directly above the plate f , is a coiled spring h , having an arm h' , which presses against the side of the projection a^{10} of the wall a' , said spring h terminating in a second arm h^2 , which presses against the side of the raised part f^{12} of the tumbler f , substantially as illustrated in the several figures of the drawings. The said arms h' and h^2 of the spring h , as will be seen from Figs. 1 and 10, cause the projection f^5 of the plate f to rest

on the upper surface of the lug or projection d^{11} of the tumbler d , and its hook end f^8 will extend into the opening c^3 of the bolt or shackle c to retain the latter in its closed or locked position against the action of the spring arm or portion e^4 of the spring e .

It will be noticed from an inspection of Fig. 1 that the action of the springs e and h and the parts connected with the said springs will cause the tumblers d and f to assume the positions indicated, and when the shackle or bolt c is closed down to cause its end portion c' to enter the opening a^5 in the lock-casing it will be held in its locked position. The lock can therefore be closed about a hasp or the like without the use of a key.

From an inspection of Figs. 1, 2, 10, and 11 it will be seen that the stud d^8 and the projection d^{11} upon the plate d act as stops, the said stud d^8 limiting the rotative movement of the tumblers d and f in an upward direction and the stop d^{11} limiting the downward rotative movement of said tumblers after they have been returned to their initial positions by the action of the springs connected with said tumblers.

To unlock the bolt mechanism, a key is inserted through the keyhole in the cap-plate, the tubular shank g of the key (see Fig. 2) being arranged upon the post a^6 , and by turning the key in either direction—from right to left or from left to right—the bit g' of the key is brought against either of the concave portions d^2 or d^3 on the lower side or edge of the tumbler d and against either of the concave portions f^2 or f^3 of the tumbler f , (according to the direction of the turning of the bit of the key,) thereby first raising the tumbler or lever d and then actuating the tumbler f and causing both to assume the positions indicated in Fig. 2 of the drawings. This action causes the hook end f^8 to be withdrawn from its holding engagement with the end portion c' of the shackle or bolt c and allows the spring-arm e^4 to throw the shackle or bolt open and cause it to stand in the position indicated in dotted outline in said Fig. 2. At the same time the portion e^5 of the spring-arm e^4 is forced against a projection a^{11} of the wall a' , as shown in Fig. 2, where it remains, while the arm portions e' and e^2 of the spring e and the arm portions h' and h^2 of the spring h , as the bit of the key is still being turned for the removal of the key from the lock-casing, will cause the tumblers d and f to assume their initial positions. (Indicated in said Fig. 1.) When the shackle or bolt c is to be again closed, its end c^3 comes in contact with the arm portion e^4 , as illustrated in Fig. 2, and the said arm e^4 will be forced from its position in said Fig. 2 to the position in Fig. 1, and the hook end f^8 of the tumbler f will again enter into holding or locked engagement with the end portion c' of the shackle or bolt c , as will be clearly understood from an inspection of said Fig. 1.

The accompanying drawings (indicated in

Figs. 1 to 8, inclusive) show one manner of carrying out my invention to the best advantage to produce a lock mechanism which can be actuated to release the shackle or bolt by the turning of a key in either direction; but it will be understood that I do not limit my invention to the exact arrangement and combinations of the various parts nor to the precise details of the construction of the same, for the number of tumblers may be increased and the shape of the same, as well as that of the lock-casing, might be modified, and the arrangement of the springs might be changed without departing from the scope of my present invention. It will also be understood that the lock mechanism can be successfully operated by means of a push or flat key *i*, as clearly indicated in Figs. 9 to 12, inclusive. In the construction of lock represented in said last-mentioned figures the lock mechanism and arrangement of shackle are practically the same as those illustrated in Figs. 1, 2, 3, and 4 of the drawings and which has been fully described hereinabove.

In the construction of lock represented in Figs. 9 to 12, inclusive, the cap-plate *b* is left without a keyhole, and the wall *a'* of the lock-casing is provided in one side, near the bottom of the casing, with a slot or opening *a''*, into which a flat key *i* can be inserted to force its end *i'* against the under edges of the tumblers *d* and *f* and force them from the positions indicated in Fig. 10 to those represented in Fig. 11, and whereby the shackle or bolt *c* is released from the hook end *f''* of the tumbler *f* in the manner previously described. The back *a* of the lock-casing is preferably provided with guides *a'''*, between which the key *i* slides, as illustrated. As soon as the key *i* is withdrawn from the lock-casing the spring-actuated tumblers will again assume their initial positions, and when the shackle or bolt *c* is again forced down its end portion *c'* will be made to again lock with hook end of the tumbler or lever *f*.

Having thus described my invention, what I claim is—

1. A padlock comprising a casing having an opening through it for the end portion of a bolt or shackle, and having a keyhole in one of the flat sides of said casing, a bolt or shackle connected with said casing, a drill-pin in said casing terminating in said keyhole for the reception of a single-bit key, a lock mechanism within said casing adapted to hold and release said shackle, comprising a set of flat tumblers arranged side by side, and at one side above said drill-pin, one of said tumblers having stops with which the edges of the other tumblers are brought in engagement, and said tumblers having concave or curved lower edges for the sliding engagement therewith of the bit of the key, whereby said mechanism can be actuated by the turning of the key in either direction to release said bolt or shackle, substantially as and for the purposes set forth.

2. A padlock comprising a casing having

an opening through it for the end portion of a bolt or shackle, and having a keyhole in one of the flat sides of said casing, a bolt or shackle connected with said casing, a drill-pin in said casing terminating in said keyhole for the reception of a single-bit key, a pair of posts *a'* and *a''* in said casing, a tumbler on each post *a'* and *a''*, a spring on said post *a'* having an arm portion in engagement with a stop on one of said tumblers and other portions of said spring in engagement with a portion of the lock-casing and with the holding end of the bolt or shackle, and a spring *h* on said post *a''* having an arm portion in engagement with the other tumbler and another arm portion in engagement with a portion of the lock-casing, said tumblers being arranged side by side, and at one side above said drill-pin, one of said tumblers having stops with which the edges of the other tumbler are brought in engagement, and said tumblers having concave or curved lower edges for the sliding engagement therewith of the bit of the key, whereby said mechanism can be actuated by the turning of the key in either direction to release said bolt or shackle, substantially as and for the purposes set forth.

3. A padlock comprising a casing having an opening through it for the end portion of a bolt or shackle, and having a keyhole in one of the flat sides of said casing, a bolt or shackle connected with said casing, a drill-pin in said casing terminating in said keyhole for the reception of a single-bit key, a pair of posts in said casing, both arranged above said drill-pin, a tumbler *d* pivoted on one of said posts, a tumbler *f* pivoted on the other of said posts, having a hook end in normal holding engagement with the end portion of said bolt or shackle, a spring encircling one of said pivotal posts having one of its arms in operative engagement with one of said tumblers and having its other arm in engagement with the end portion of said post or shackle, one of said tumblers having stops with which the edges of the other tumbler are brought in engagement, said tumblers having concave or curved lower edges for the sliding engagement therewith of the bit of the key, whereby said mechanism can be actuated by the turning of the key in either direction to release said bolt or shackle, substantially as and for the purposes set forth.

4. A padlock comprising a casing having an opening through it for the end portion of a bolt or shackle, a bolt or shackle connected with said lock-casing, a post *a'* and a post *a''* in said casing, a tumbler or lever *d* on said post *a'*, having curved edge surfaces *d''* and *d'''*, and a pair of studs or posts *d''* and *d'''*, a spring *e* on said post *a'*, arms *e'* and *e''* connected with said spring, and an arm portion *e'''* in engagement with the end portion of the bolt or shackle, a tumbler *f* on said post *a''* having curved edges *f''* and *f'''* and a hook end *f''* in normal holding engagement with the end portion of the bolt or shackle, and a spring

h on said arm a^8 having a pair of arms h' and h^2 , all substantially as and for the purposes set forth.

5 5. In a lock, the combination, with the lock-casing and shackle or bolt, of a lock mechanism in said casing, comprising a spring-actuated tumbler d , having curved edges d^2 and d^3 , and a tumbler f having a hook end f^8 and curved edges f^2 and f^3 , said tumblers being
10 ing arranged to be actuated by the turning of the bit of a key in either direction against

said curved edges of the tumblers, to release the shackle or bolt, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 15
10th day of October, 1899.

DAVID D. SLAIGHT.

Witnesses:

FREDK. C. FRAENTZEL,
HARRY MARTIN.