

(No Model.)

E. R. WETHERED.
LATCH.

3 Sheets—Sheet 1.

No. 407,268.

Patented July 16, 1889.

Fig. 1.

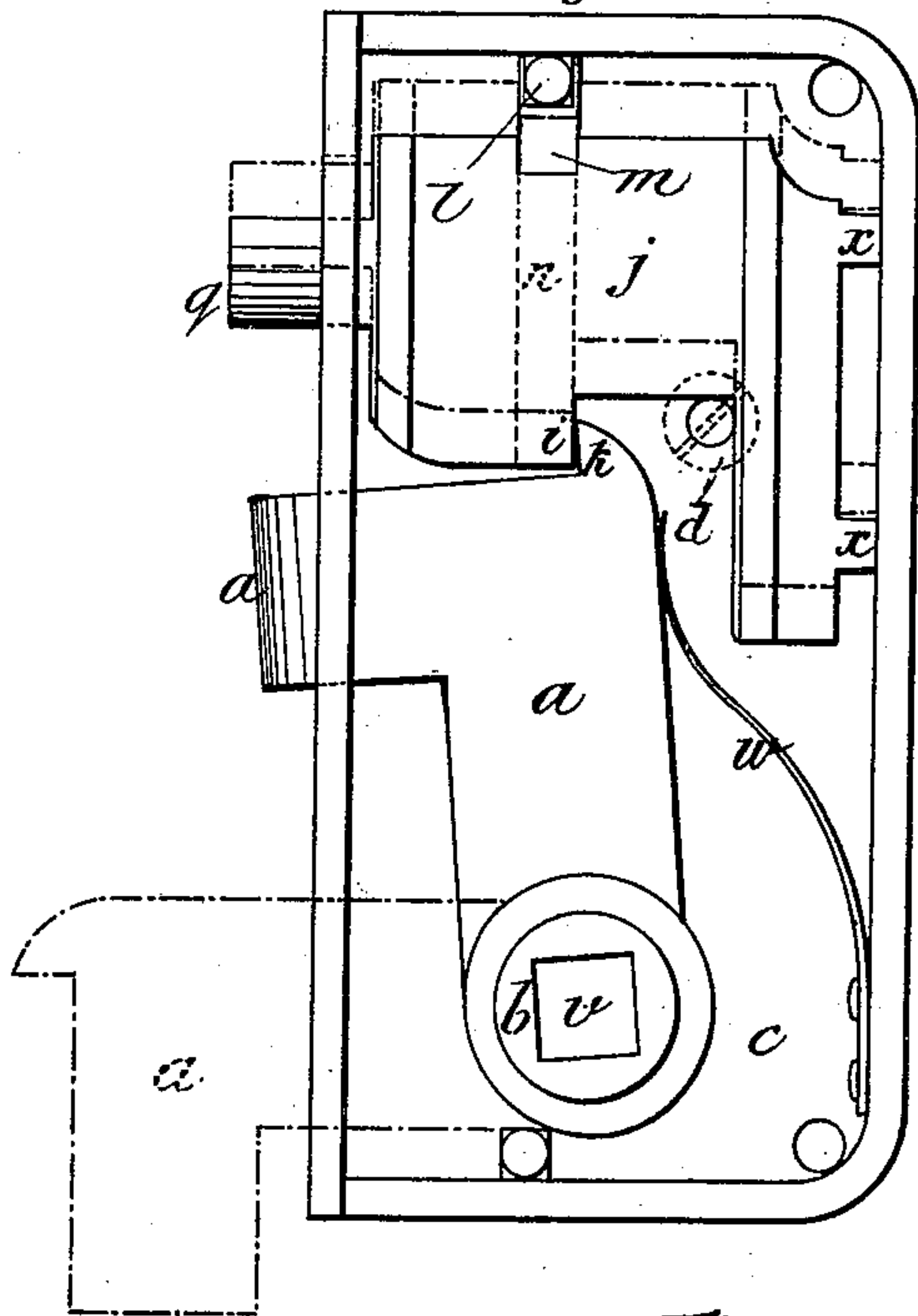


Fig. 2.

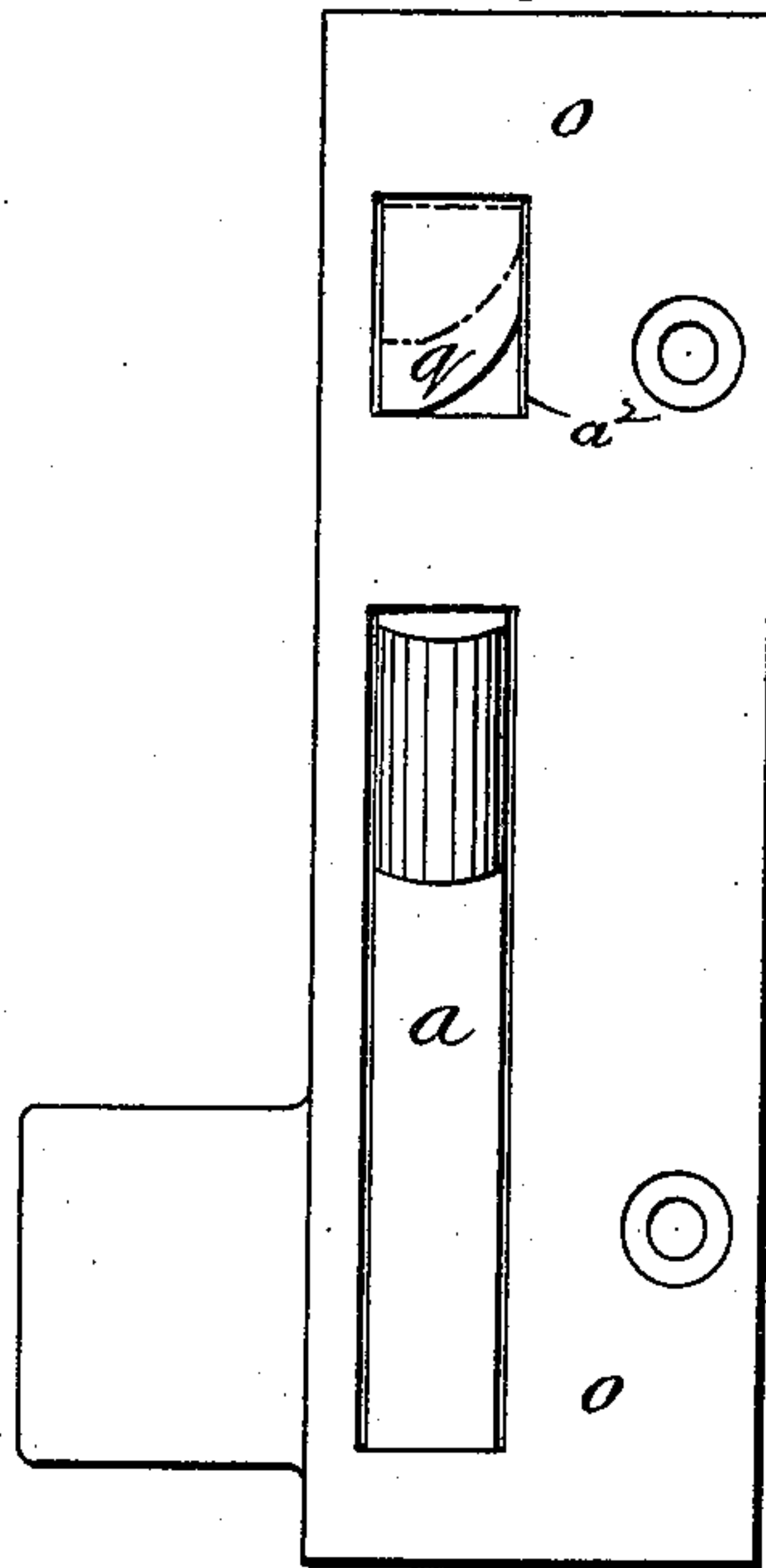


Fig. 4.

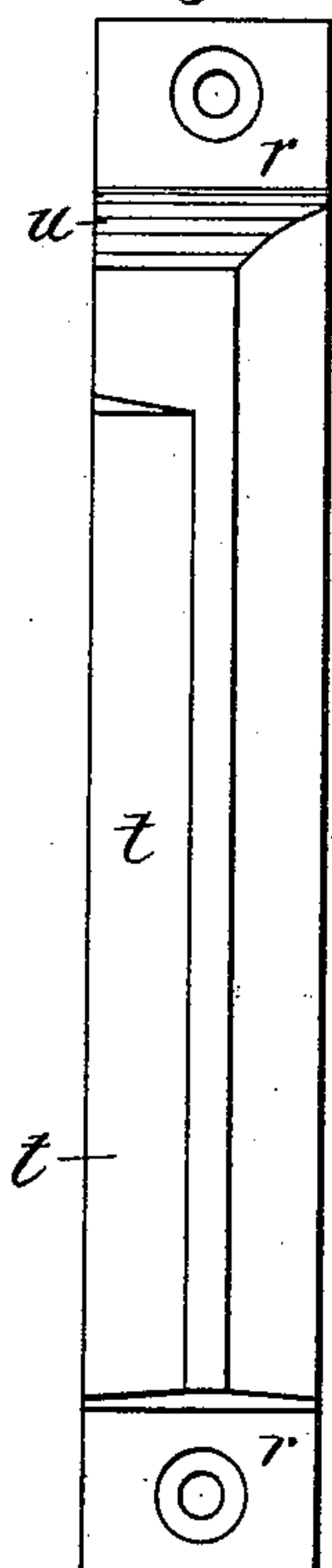


Fig. 5.

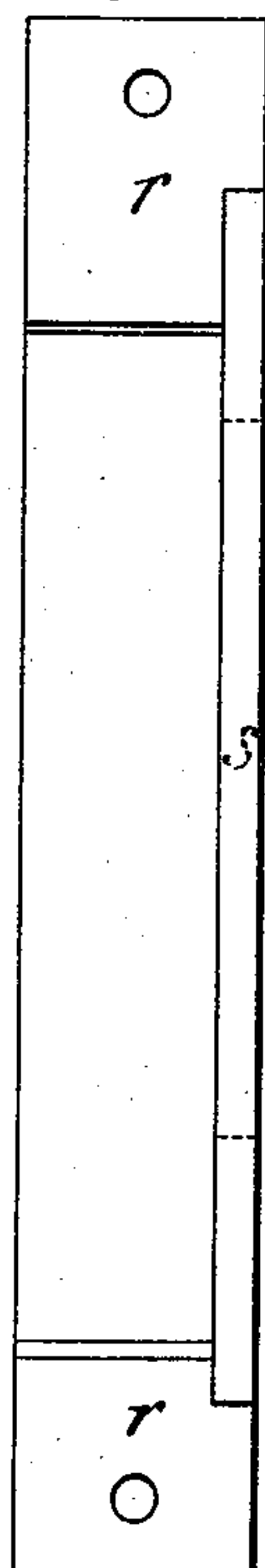


Fig. 3.

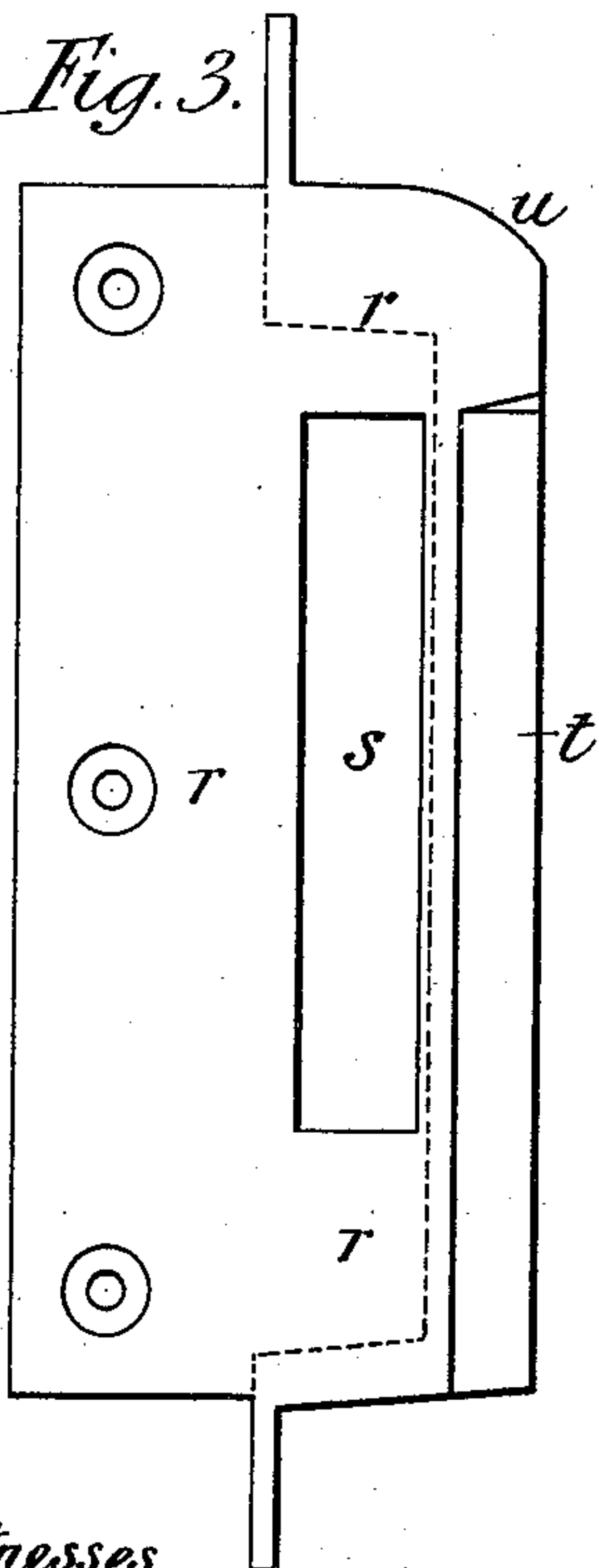


Fig. 6.

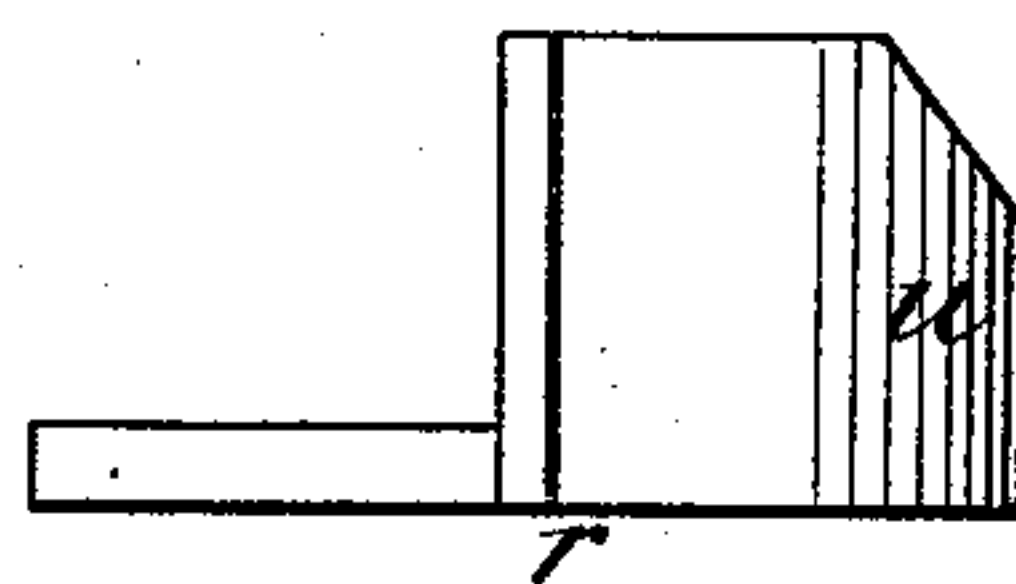
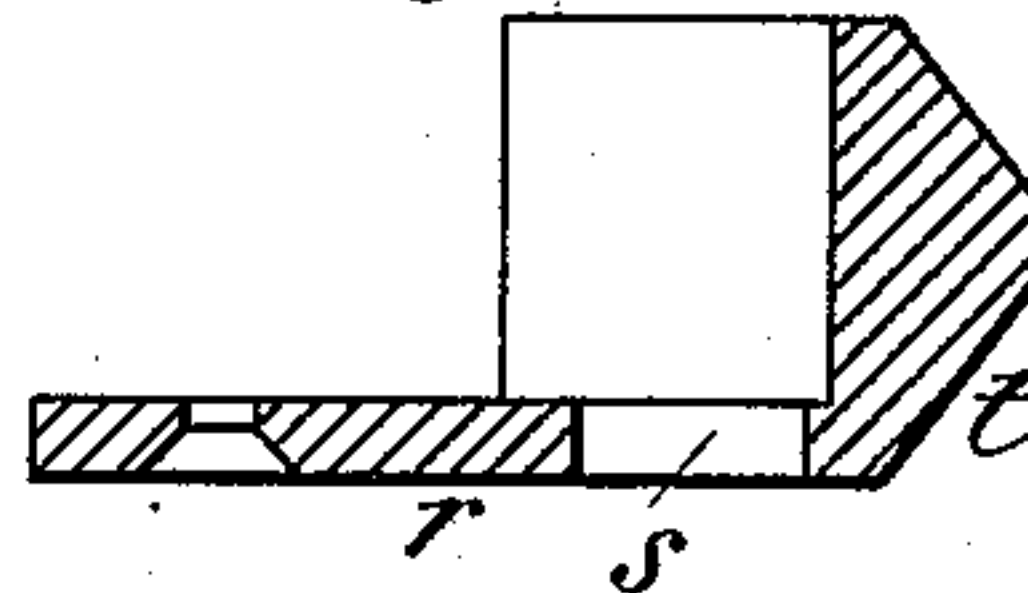


Fig. 7.



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Fig. 8.

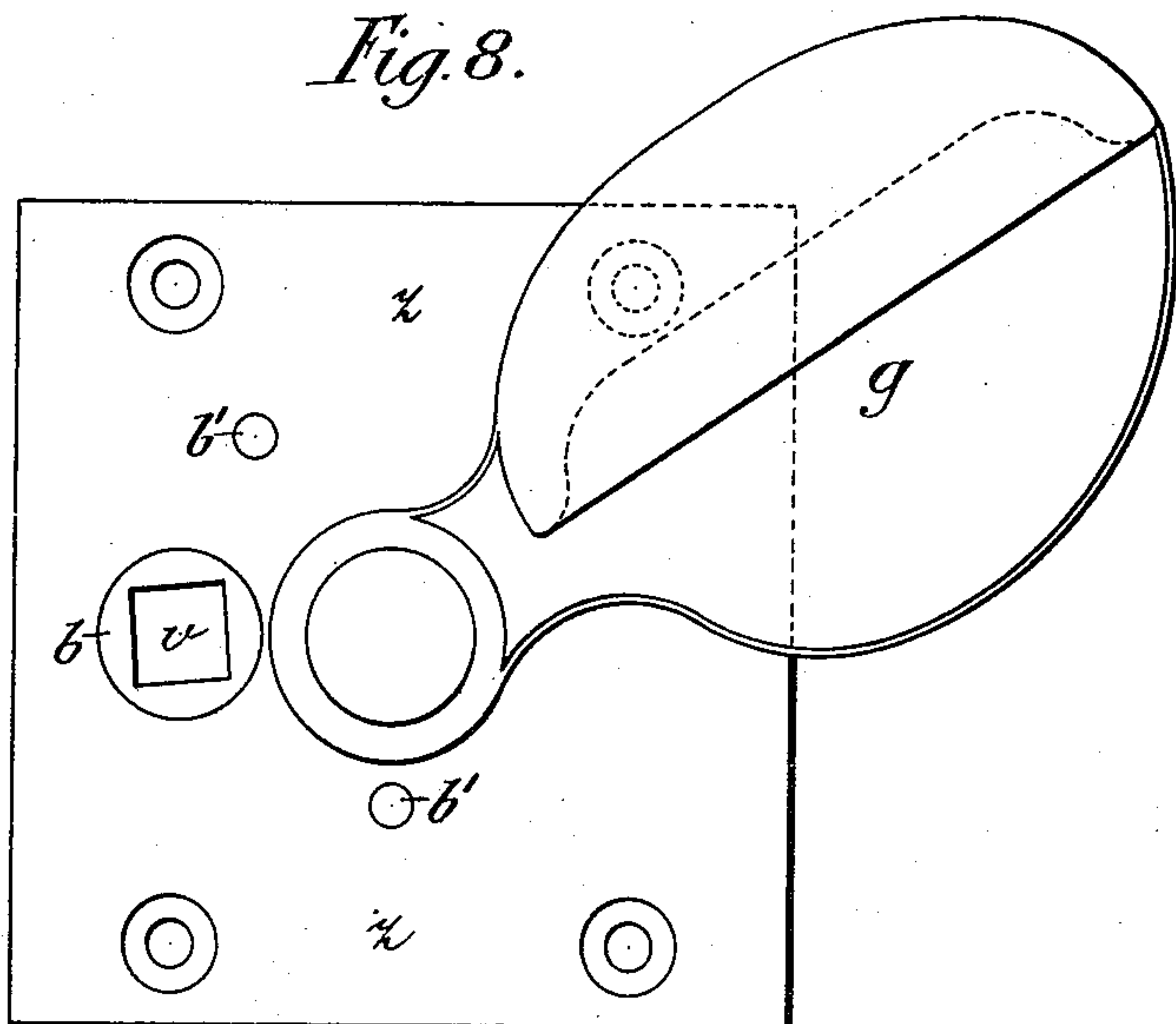


Fig. 9.

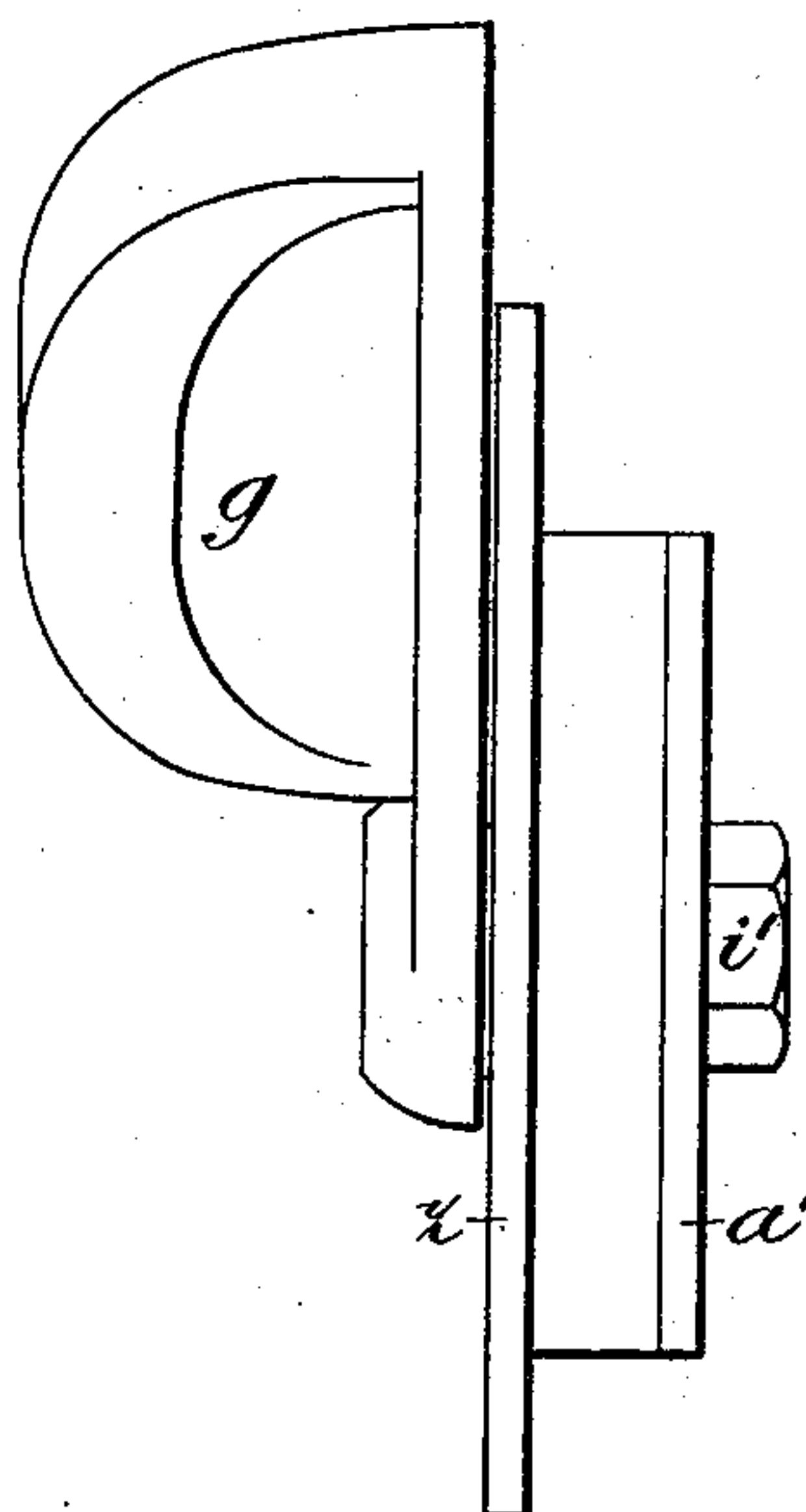
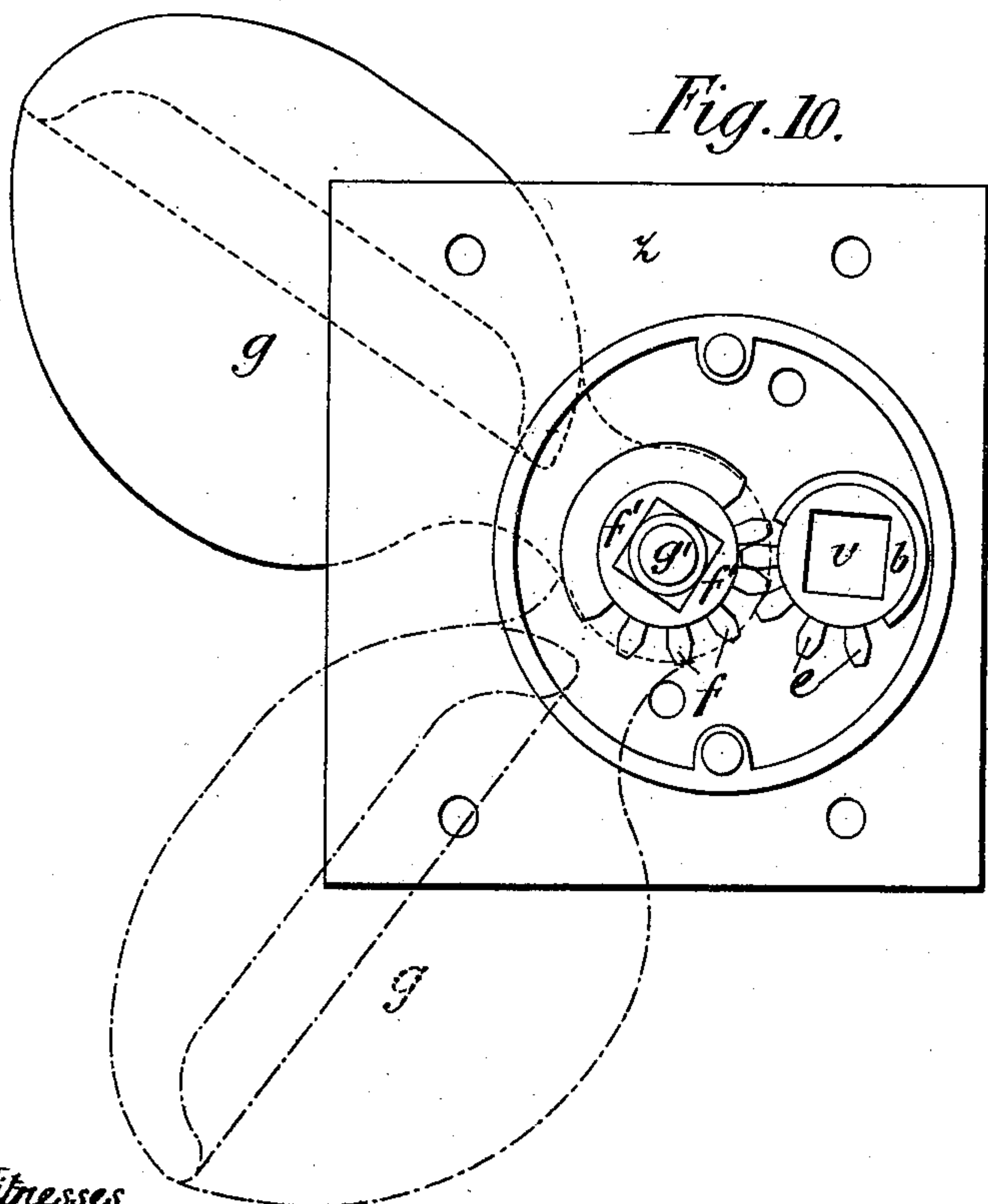


Fig. 10.



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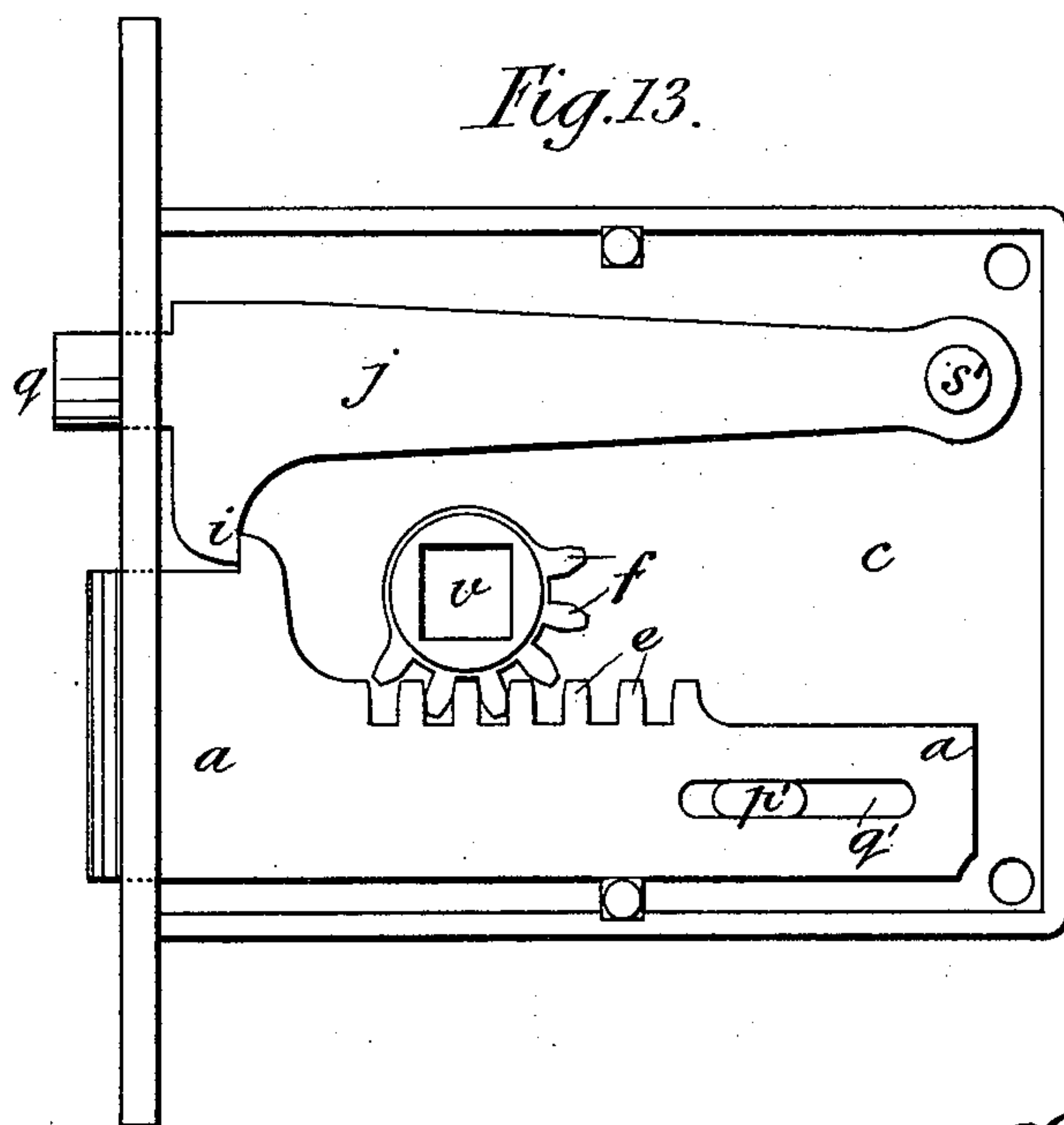
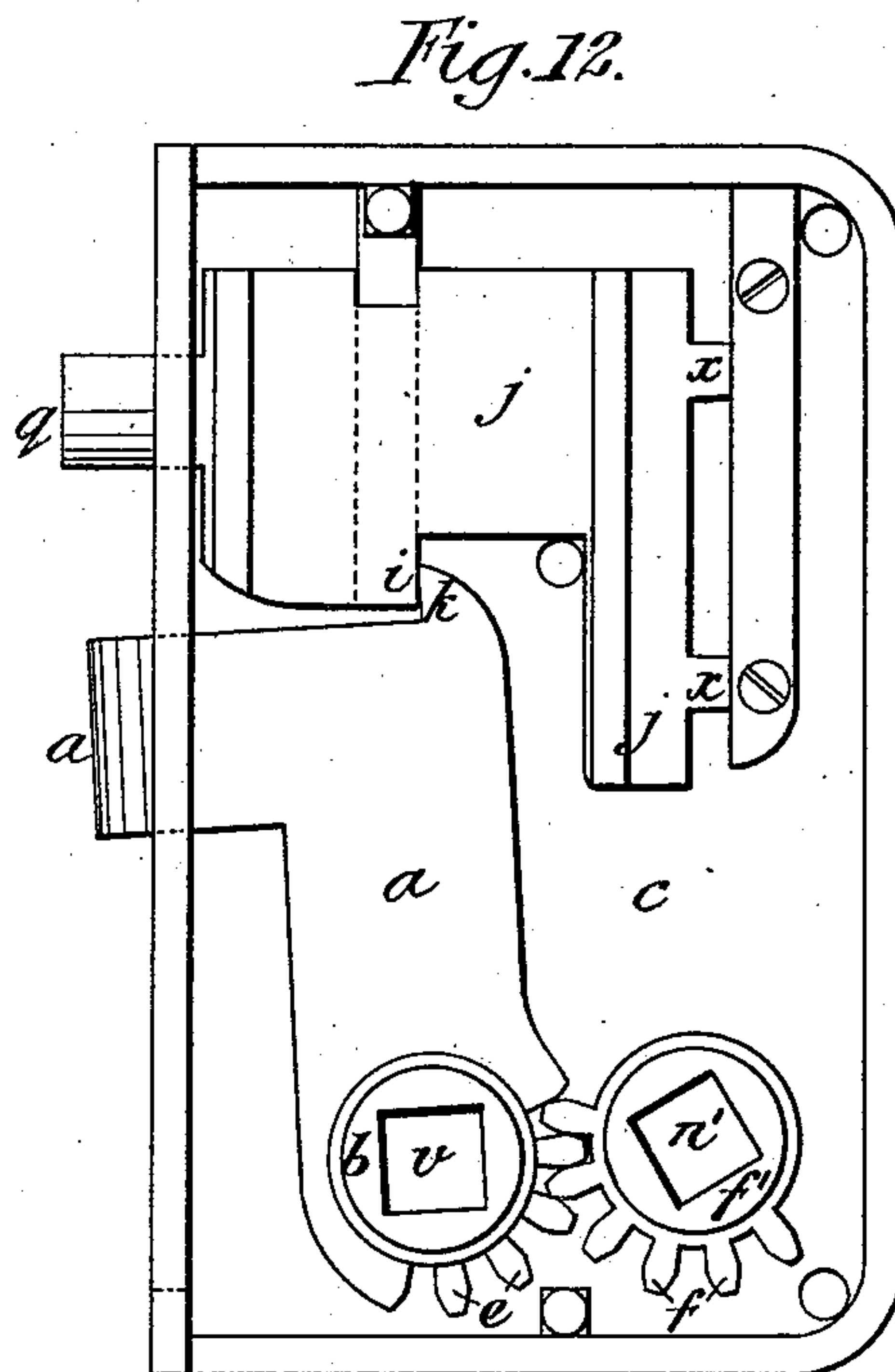
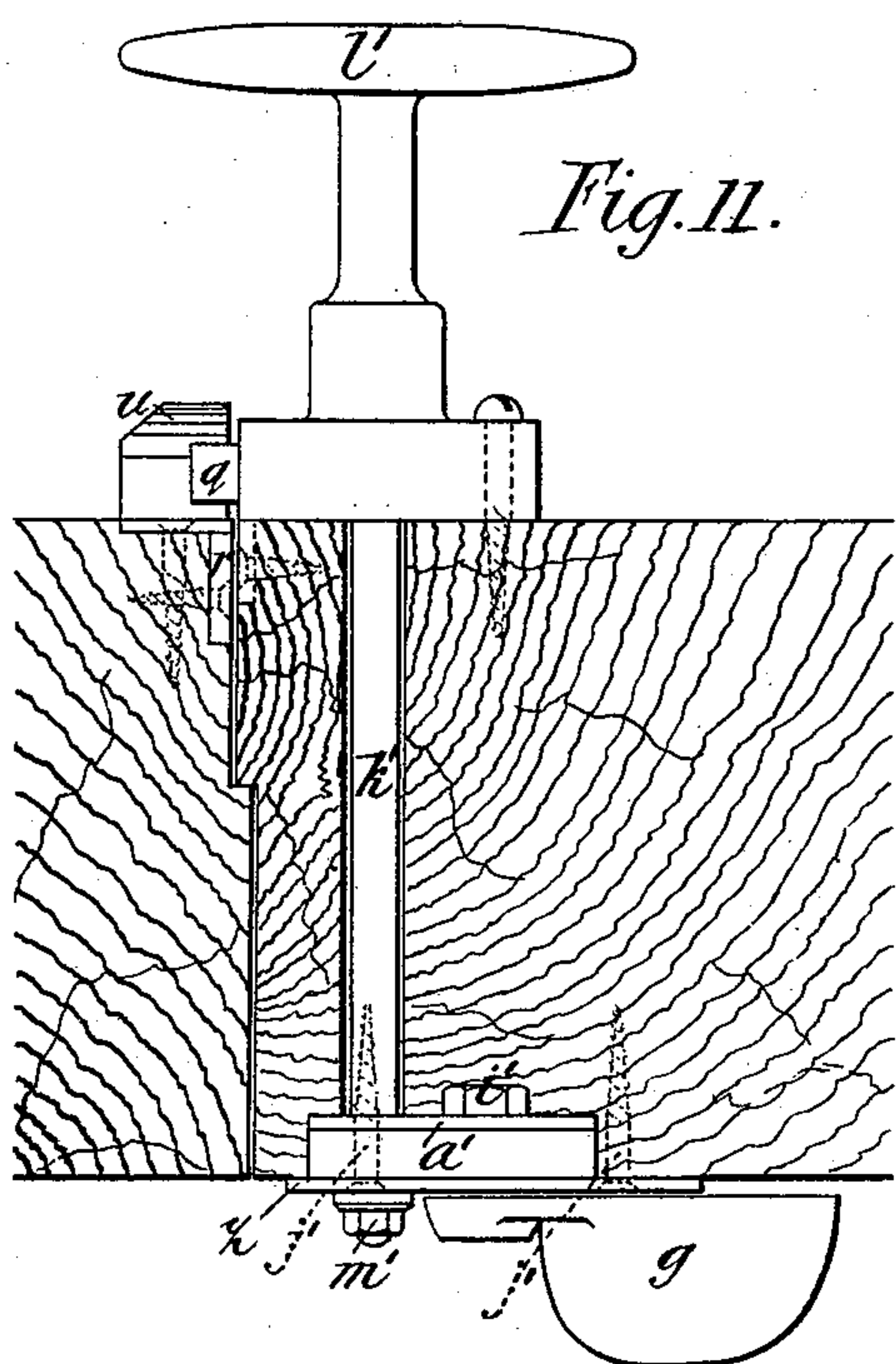
(No Model.)

3 Sheets—Sheet 3.

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LATCH.

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UNITED STATES PATENT OFFICE.

EDWIN R. WETHERED, OF WOOLWICH, COUNTY OF KENT, ENGLAND.

LATCH.

SPECIFICATION forming part of Letters Patent No. 407,268, dated July 16, 1889.

Application filed December 17, 1886. Serial No. 221,856. (No model.) Patented in England July 5, 1884, No. 9,798.

To all whom it may concern:

Be it known that I, EDWIN ROBERT WETHERED, a subject of the Queen of Great Britain, residing at Woolwich, in the county of Kent, England, have invented new and useful Improvements in Latches, (for which I have obtained a patent in Great Britain, No. 9,798, dated July 5, 1884,) of which the following is a specification.

My invention relates to improvements in the construction of that kind of latches which are operated without the use of springs.

In carrying out my invention I provide the bolt of the latch with a nib or projection adapted to be engaged with a catch or pawl when the bolt is operated by the handle in opening the door, the said catch or pawl being moved out of engagement with the bolt by coming in contact with and sliding over an inclined or curved surface on the striking-plate when the door is closed, the bolt being then shot forward by a counter-weight.

In order to enable my invention to be fully understood, I will describe the same by reference to the accompanying drawings, in which—

Figures 1 and 2 show an interior plan and an end view, respectively, of a rim-latch suitable for a railway or other carriage door, the counter-weight for operating the same not being shown. Fig. 3 is a face view. Figs. 4 and 5 are edge views. Fig. 6 is a plan, and Fig. 7 is a horizontal section, of the striking-plate of the latch. Figs. 8 and 9 are respectively a front elevation and a side elevation of the arrangement of counterweighted handle for operating the lock shown in Figs. 1 and 2, and Fig. 10 is a rear elevation of the same with the back plate removed. Fig. 11 is a horizontal section drawn to a smaller scale and taken through a portion of a door and door-jamb, showing the application thereto of the lock illustrated in Figs. 1 and 2, the striking-plate, Figs. 3 to 7, inclusive, and the counter-weighted handle arrangement shown at Figs. 8, 9, and 10. Fig. 12 is a similar view to Fig. 1, but showing a slightly-modified construction of mechanism for shooting and withdrawing the bolt of the lock. Fig. 13 is a front elevation of a mortise-latch with a sliding bolt, the front plate being removed.

Similar letters of reference indicate similar or corresponding parts throughout the drawings.

Referring to Figs. 1 and 2, *a* represents the bolt, which I pivot by its boss *b* in the front and back plates of the lock, only one of which plates is shown in the drawings at *c*, the other plate being removed in order to allow the mechanism of the lock to be seen. The said plates when in proper position are secured together by a screw *d*. (Shown in dotted lines in Fig. 1.)

i is the catch or pawl, formed on a block *j*, mounted in the upper part of the latch-casing, and which is capable of sliding up and down, so as to allow its catch *i* to be engaged with or disengaged from the projection *k* on the bolt *a*. The block *j* is guided in its vertical motion by a projection *l* on the back latch-plate *c*, which projection fits into a slot *m* in the block *j*, and by ribs or projections formed on the latch-plates and engaging with grooves *n*, provided in the side or sides of the block, as represented in dotted lines at Fig. 1.

o is the selvage or edge plate, through which the bolt *a* is canted over, when the door is closed, into the position shown in dotted lines in Fig. 1, the bolt *a* projecting slightly through the edge plate *o* when withdrawn within the lock-case, as shown in Fig. 1. The edge plate *o* is slotted at *a*², and through this slot passes a projection *q* on the block *j*, as shown at Figs. 1 and 2.

The striking-plate *r*, Figs. 3, 4, 5, 6, and 7, is formed with an opening *s*, into which the bolt *a* enters, and with a curved or beveled cam-surface *t*, which, when the door is being closed, presses the upper end of the bolt *a* back into the latch-case farther than is indicated at Fig. 1, so as to remove it from contact with the block *j*. The block *j* is raised by the inclined surface *u* on the striking-plate *r*, over which surface the projection *q* passes for this purpose.

When the lock has been fitted into the railway or other carriage door, a square spindle (not shown in the drawings) is secured into a handle in the ordinary manner and is passed through the square opening *v* in the bolt *a*, and is retained therein by means of a screwed nut or its equivalent fitted at the inner end of such spindle—that is to say, at the inner

side of the door—as usual. The handle *g* forms the counter-weight, and this, as well as the segmental racks *e* and *f*, is arranged on the opposite side of the door to the lock-case.

5 A spring *w* (see Fig. 1) serves for starting or giving the initial movement to the bolt *a* when released from the catch *i*; but I desire it to be understood that the said spring may be dispensed with. The sliding block *j*, Fig. 10, at its innermost or back edge is guided by projections *x*, which bear against the lock-casing, as shown.

10 The boss *b*, on which is formed the segmental rack *e*, is mounted so that it can rotate between two plates *z* and *a'*, (see Fig. 9,) which are secured together by screws at *b'*, Fig. 8.

The central square opening *v* is made in the boss *b* and receives a square spindle *k'*, 20 connecting the same with the outside handle *l'*, Fig. 11, and passing through the bolt *a*. The rack *f* is formed on a boss *f'*, as shown at Fig. 10. This boss *f'* is mounted in the plates *z* and *a'* in a similar manner to the boss *b*, and 25 is provided with a central square opening which receives a short square spindle *g'*, Fig. 10, on the weighted handle *g*, which spindle is retained in the boss *f'* by a nut *i'*, Fig. 9, or by other equivalent means. The plate *z* 30 is secured to the inner side of the door by screws *j'*, as represented in dotted lines in Fig. 11. The square spindle *k'* of the outside handle *l'* is retained by the nut *m'* on its inner screwed end. By this arrangement the door 35 can be unfastened either from the inside by raising the handle *g* from the position in which it is represented in dotted lines at Fig. 10 to that in which it is represented in full lines at Figs. 8 and 10, or from the outside by turn- 40 ing the handle *l'* in the usual manner.

In the latch shown in Fig. 12 the segmental rack *e* is formed on the bolt *a* and engages with the rack *f* in the latch-case. The square opening *v* in the bolt *a* receives the spindle 45 *k'* of the outside handle *l'*, which need not be so long as that shown in Fig. 11, and the square opening shown at *n'* in the boss *f'* receives the square spindle *g'* of the weighted handle *g*, which spindle is extended through into 50 the latch-case at the other side of the door.

The operation is as follows: When the door is closed, the projection on the block *j* will be raised by the inclined surface *u* on the striking-plate *r*, and, the projection *k* on the 55 bolt *a* being then no longer retained by the catch *i*, the bolt will be carried by the counter-weight through the slot *s* in the striking-plate into its locked position, (see dotted lines in Fig. 1,) the block *j* being kept in its raised 60 position until the door is again opened, so that if the bolt *a* be raised by operating the handle while the door is closed it will not be

retained by the catch *i*, but will again fall into its locked position. When required to open the door, the handle is turned in the 65 usual manner, and the bolt *a* and counter-weight *g* will be thereby raised, and as the door is at the same time opened the block *j* will descend and its catch *i* will drop in front of the projection *k* and will retain the bolt *a* 70 in its raised position.

In the latch represented at Fig. 13 my improvements are shown applied to the operation of a sliding bolt such as is used in locks or latches for house-doors. The sliding bolt 75 *a* is guided at its rear end by a stud or projection *p'*, which fits into a slot *q'*. The rack *e* is formed on the upper edge of the bolt *a* and engages with the segmental rack *f*, fitted on the square spindle of a weighted lever- 80 handle such as that shown at Figs. 8 to 11 (inclusive) or the equivalent thereof. The catch *i*, for retaining the bolt *a* in its unlocked position, is formed on the piece or block *j*, which is preferably pivoted at *s'* to 85 the lock-case, its free end being operated by a suitable cam-surface provided upon the striking-plate, as hereinbefore described.

If desired, small spiral springs may be provided to assist the return of the blocks *j* and 90 catches *i* to their lowest position. It will be obvious that any ordinary locking-gear may be employed to prevent the return of the bolt.

Having now particularly described and ascertained the nature of my said invention 95 and in what manner the same is to be performed, I declare that what I claim is—

1. In a latch, the combination, with a latch-bolt having a projection thereon, of a block having a catch or pawl adapted to engage 100 such projection on the bolt, and also having a projection *q*, a latch-spindle extending to the opposite side of the door, its weighted arm, and a striking-plate *r*, having a slot *s* and cam-surfaces *t* and *u*, substantially as and for 105 the purposes described.

2. In a latch, the combination, with a latch-bolt having a projection *k* on its upper end and provided with a boss having an opening therein, a sliding block *j*, having a catch or 110 pawl *i*, adapted to engage said projection *k*, and also having a projection *q* and a spindle *k'*, fitting in the opening of the bolt and extending to the opposite side of the door, a boss through which said spindle passes, pro- 115 vided with teeth to engage the teeth of the rack *f*, the short spindle and its weighted arm, and a striking-plate *r*, having a slot *s* and cam-surfaces *t* and *u*, all substantially as and for the purposes set forth.

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Witnesses:

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M. C. BROKENSHIRE.