

L. Yale Jr,

Lock.

No. 95,865.

Patented Oct. 12. 1869.

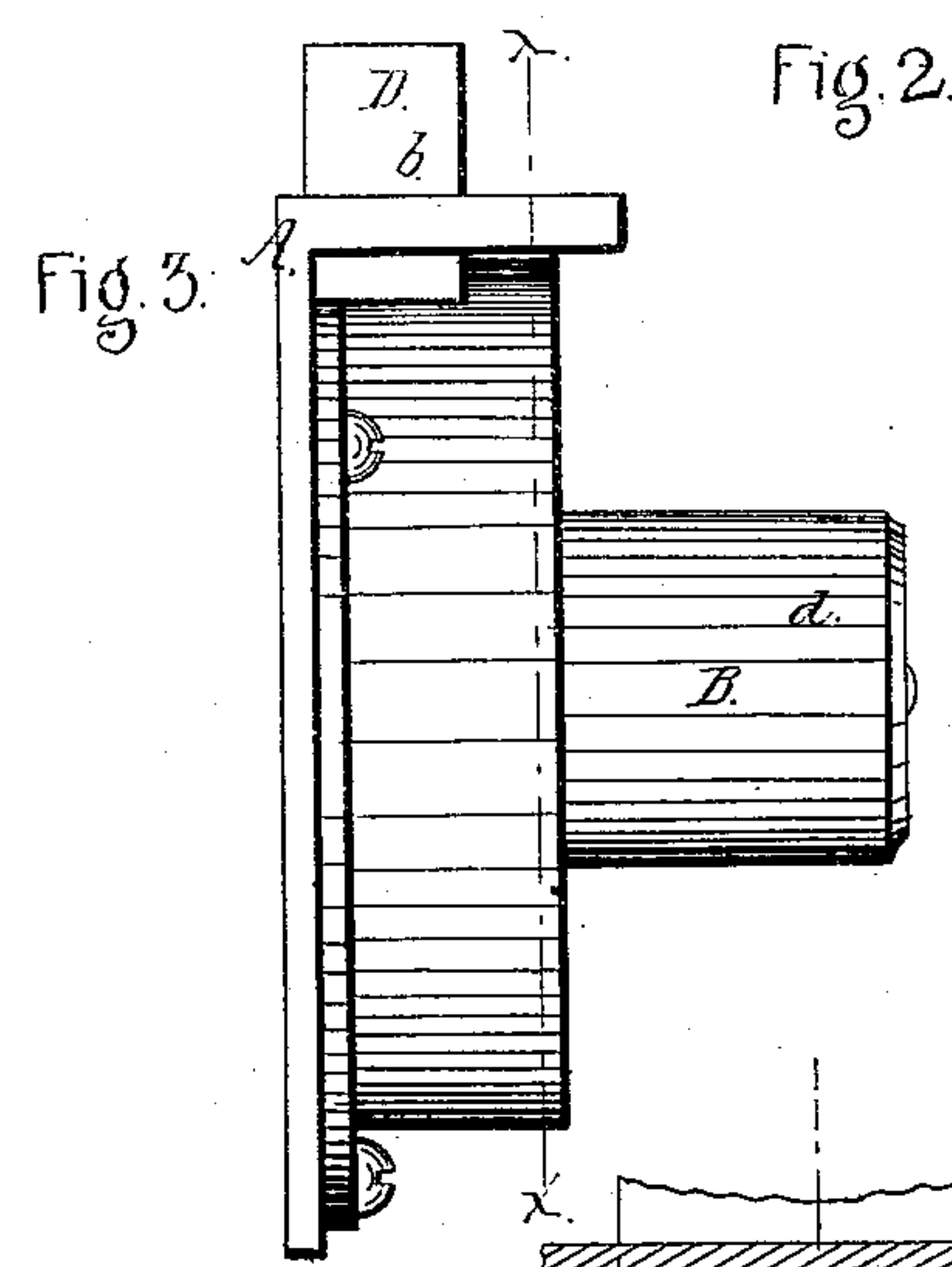
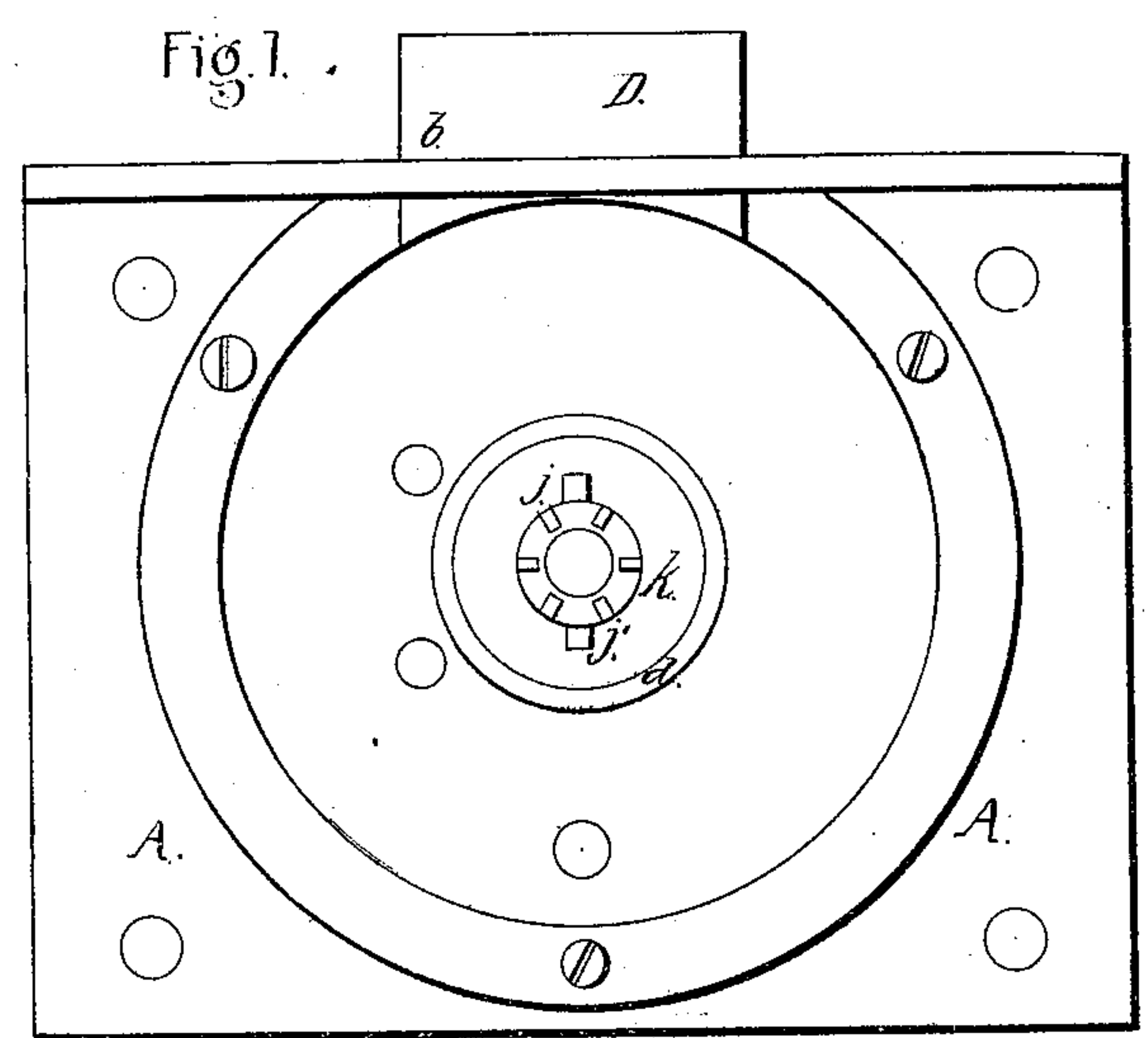
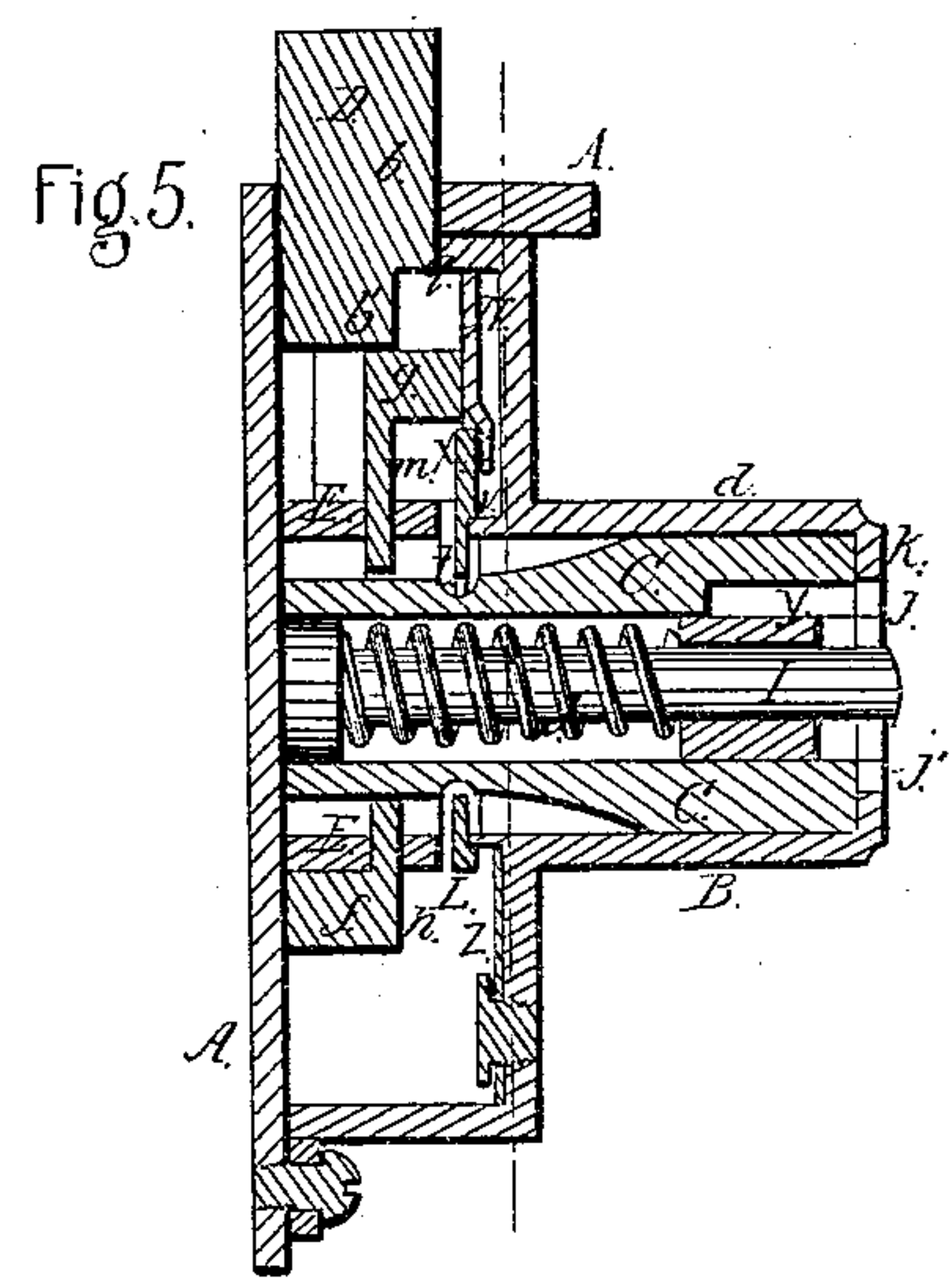
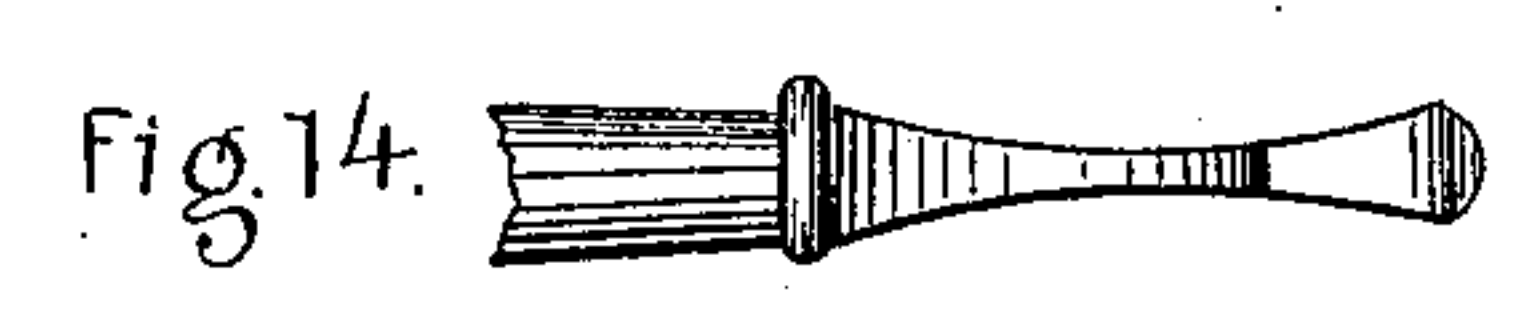
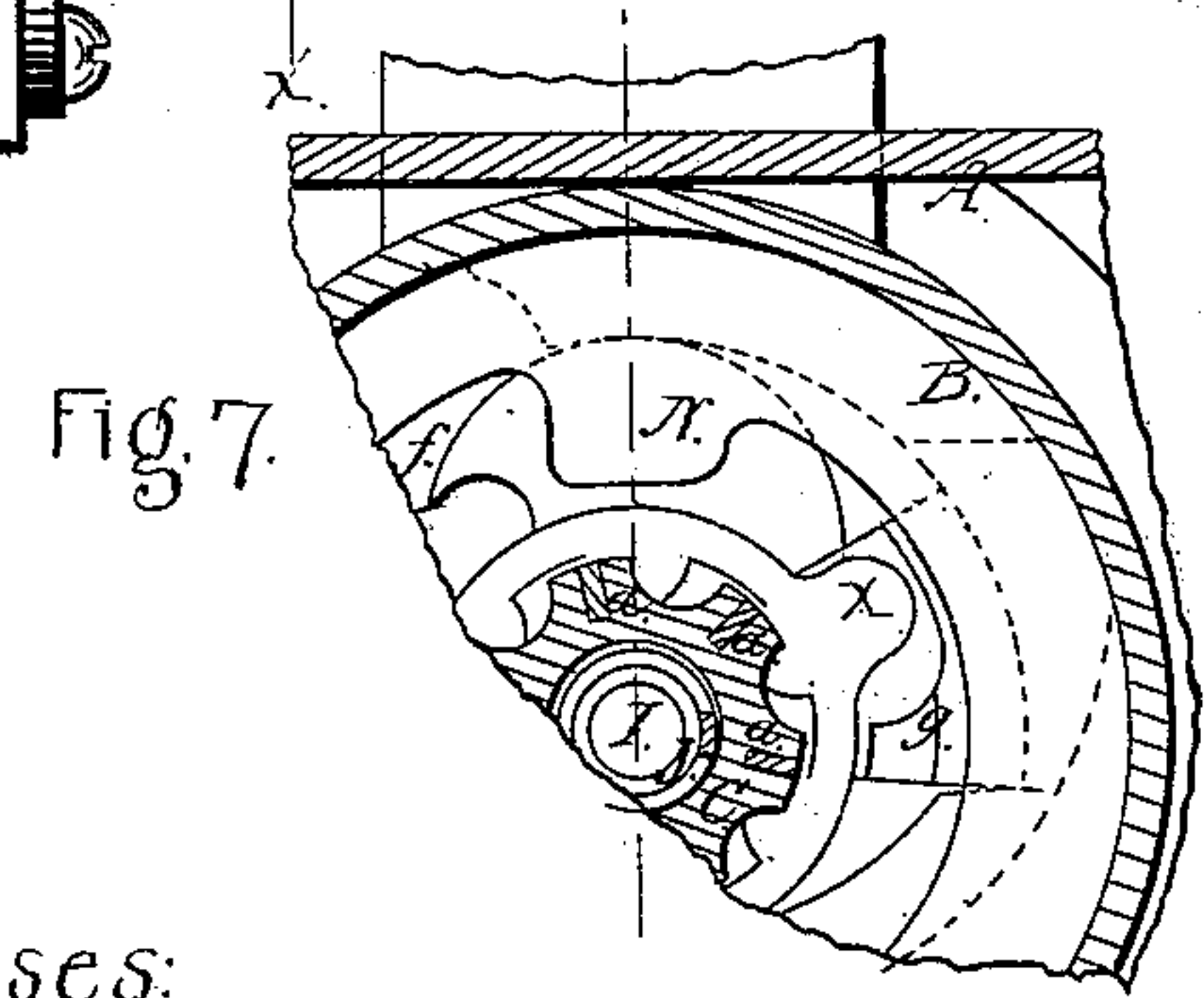
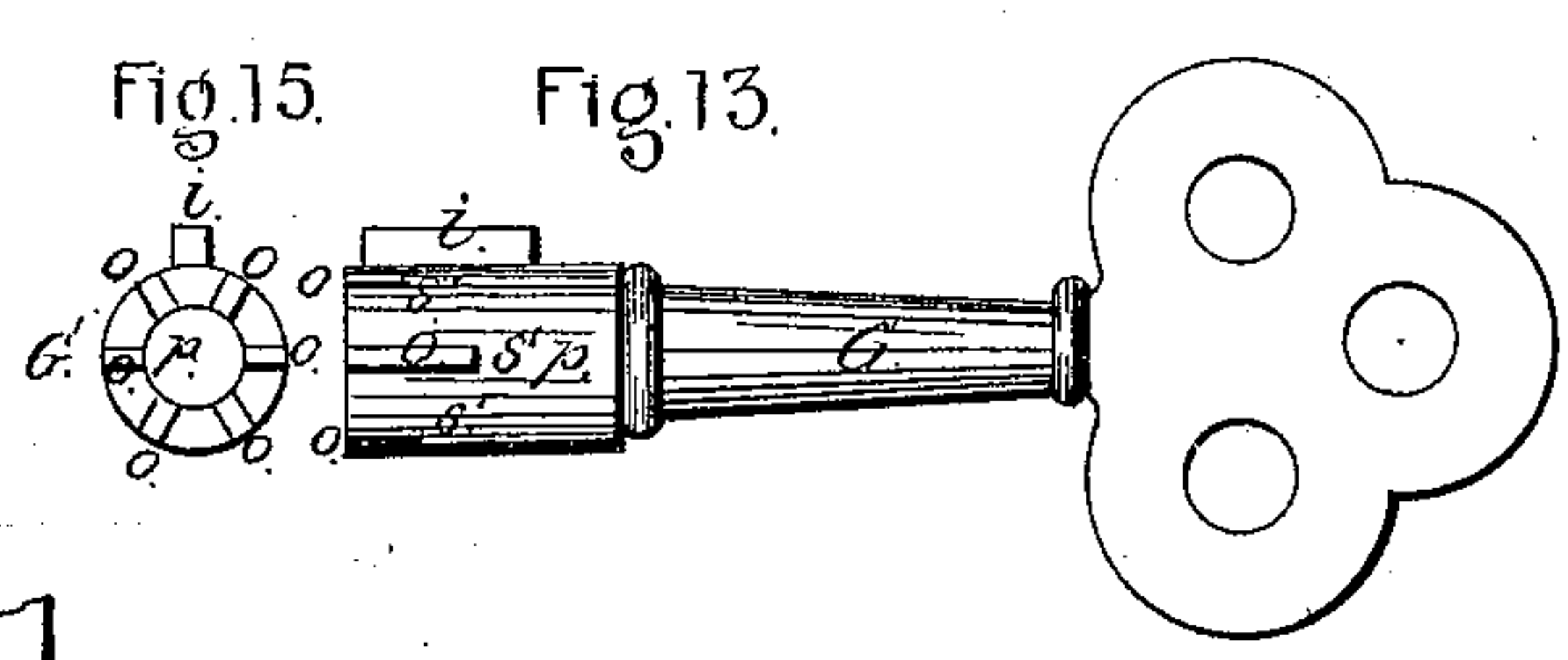
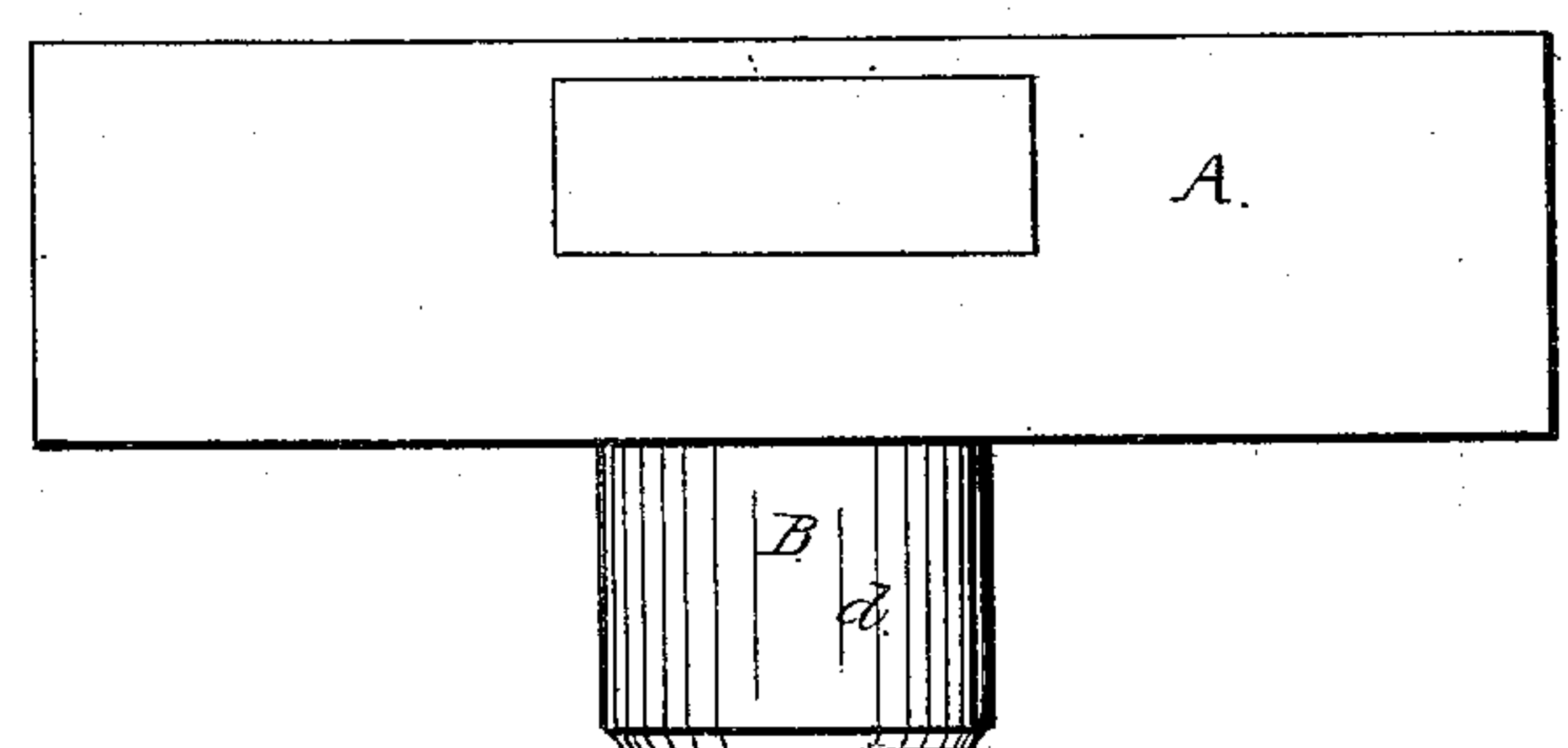


Fig. 2.



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L. Yale Jr,

2. Sheets. Sheet 2.

Lock.

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Fig. 4.
Section on
XX Fig. 3

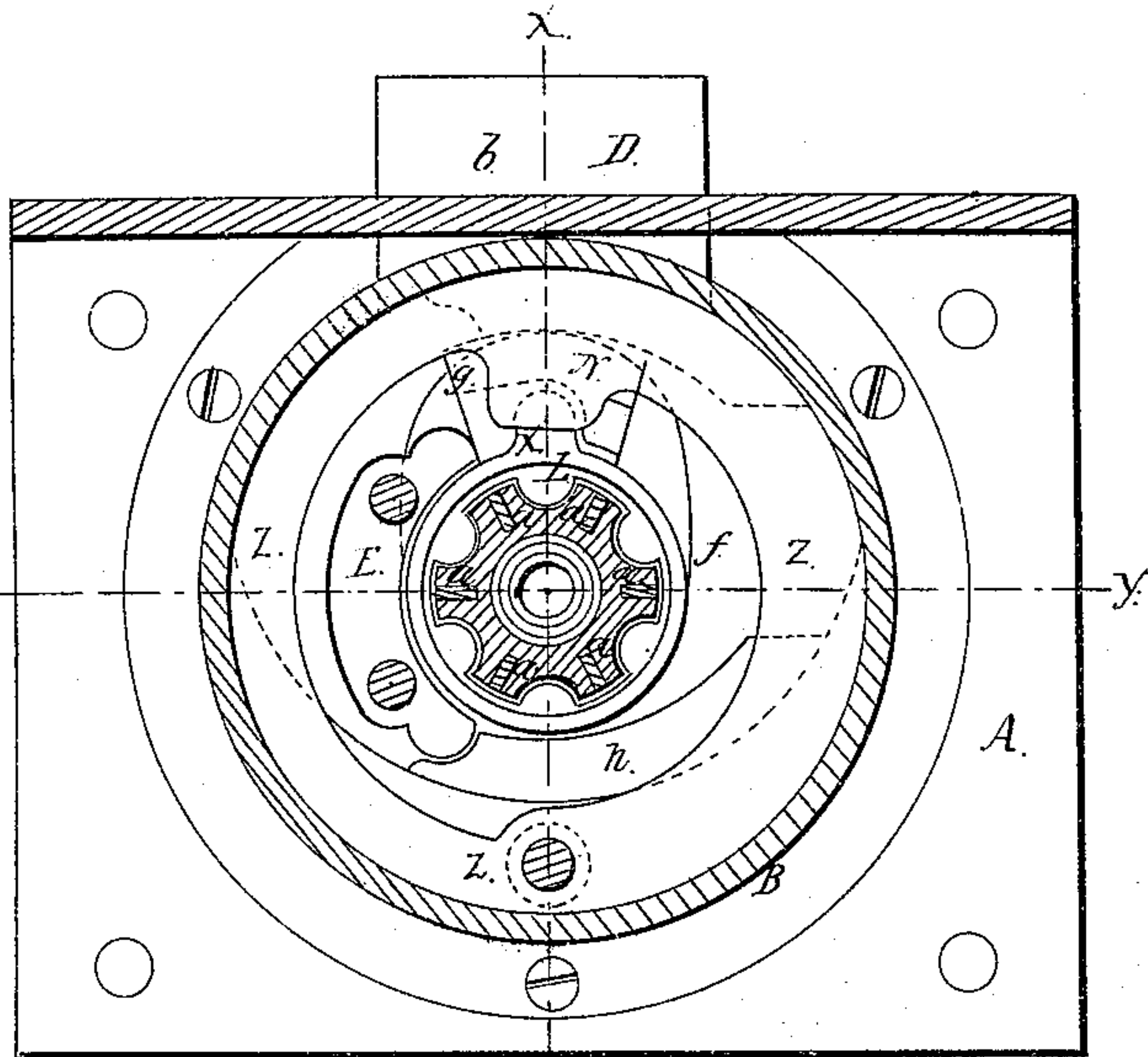


Fig. 8.

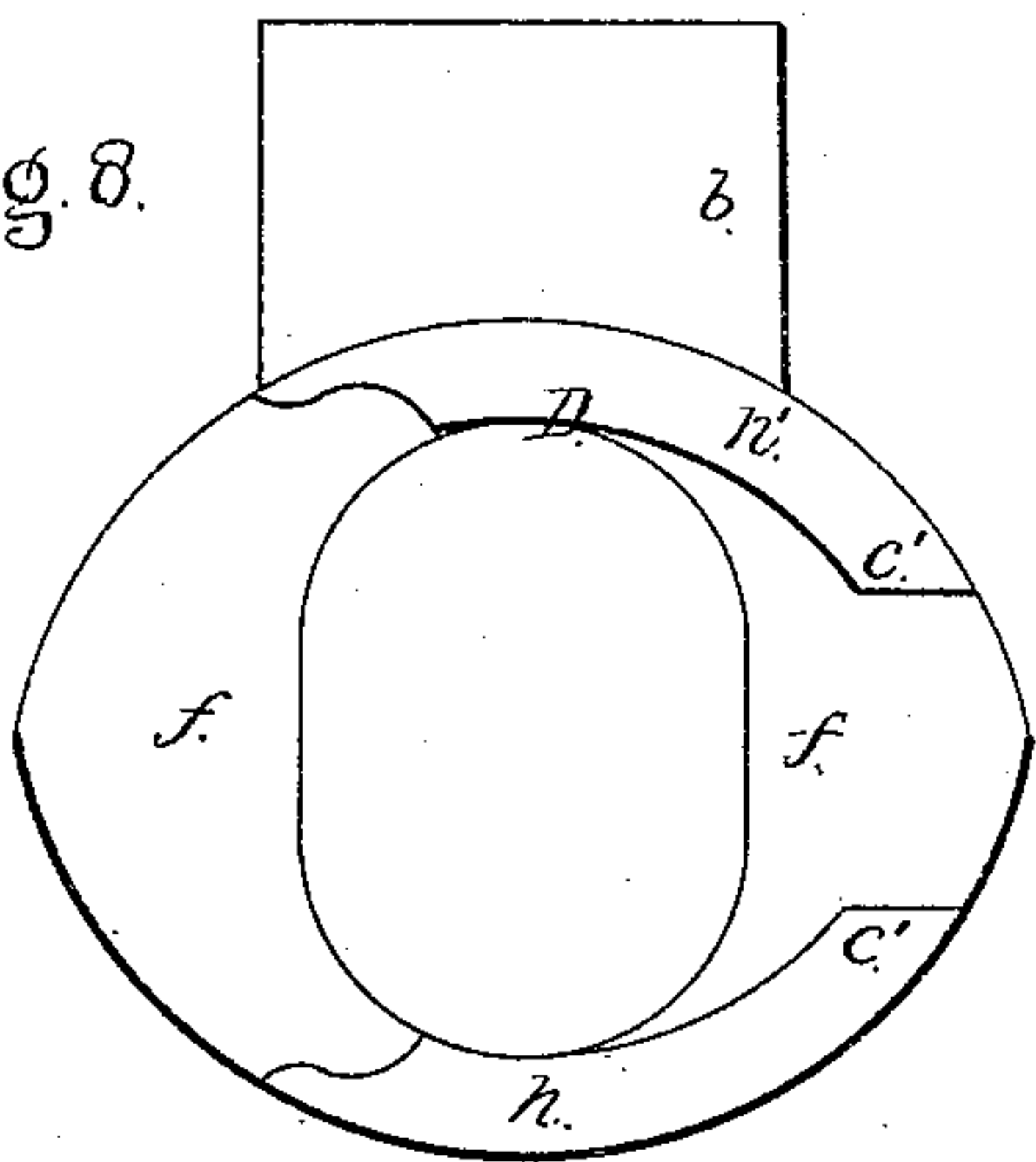


Fig. 6.

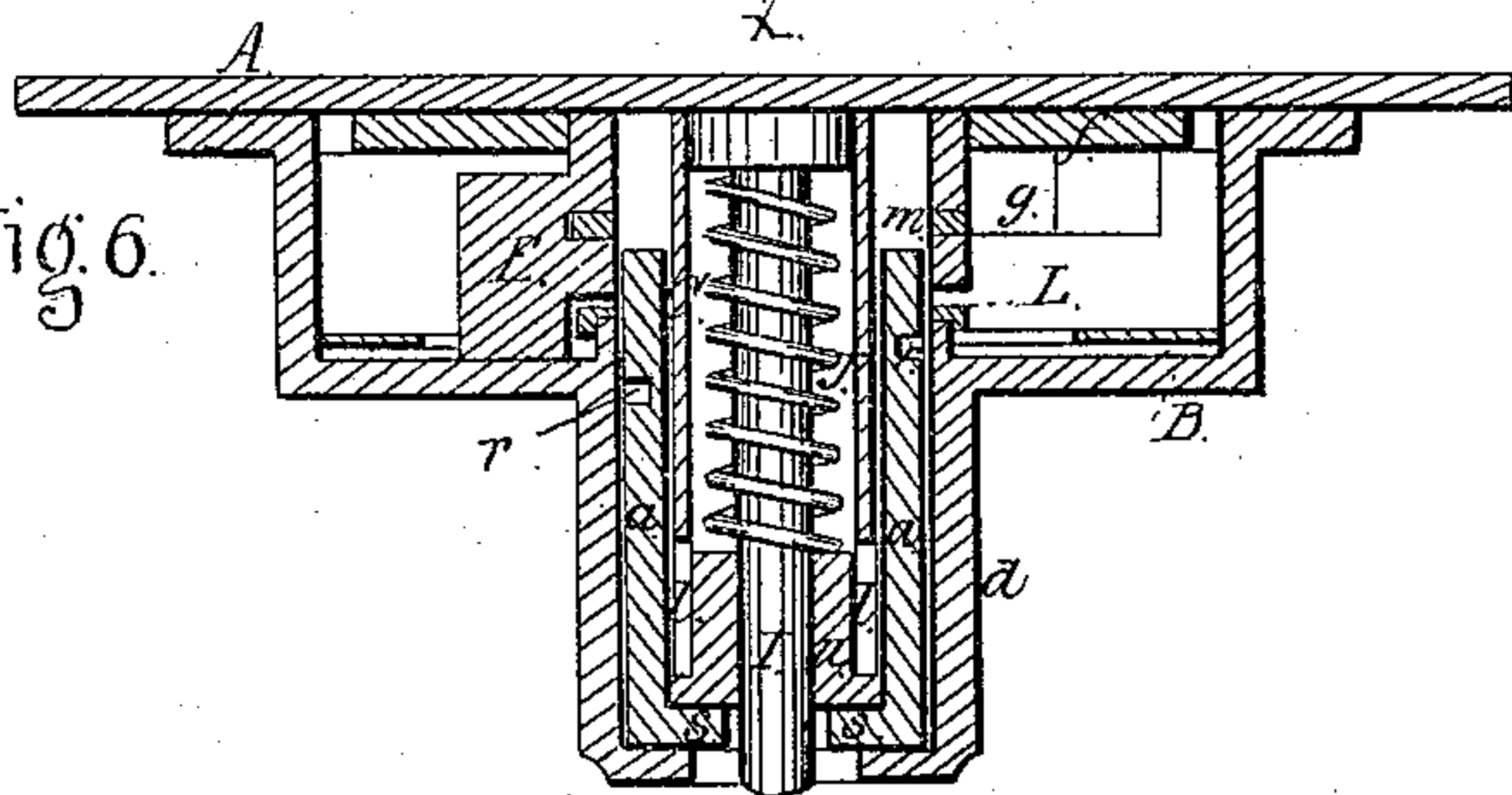


Fig. 12.

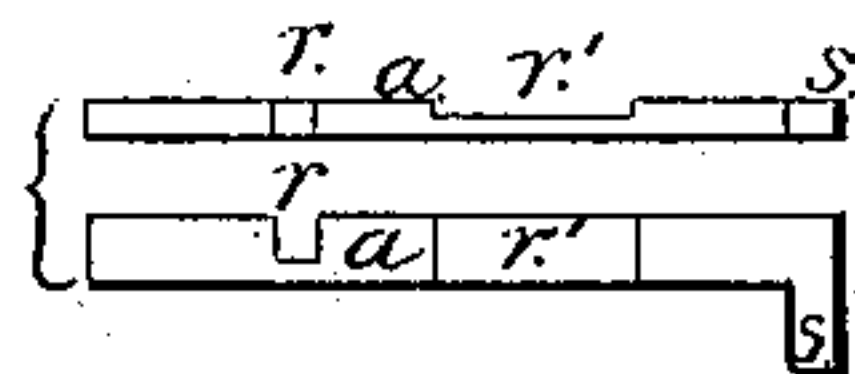


Fig. 10.

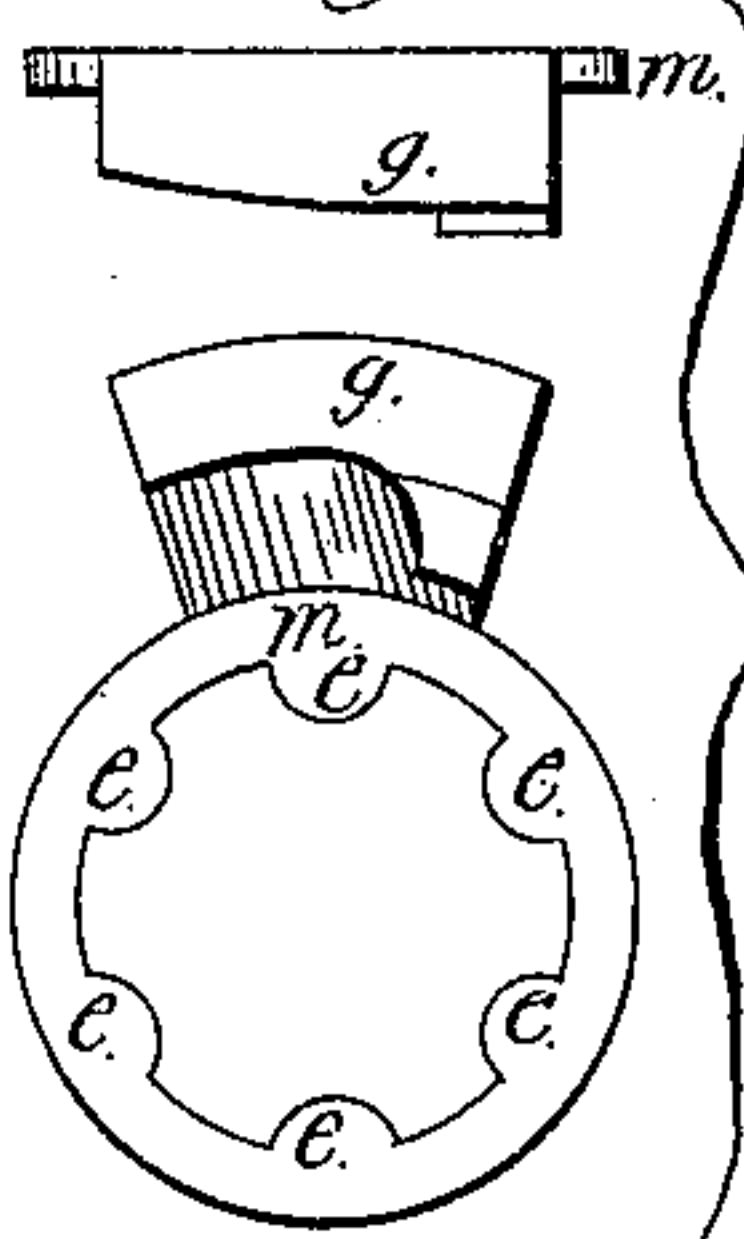


Fig. 9.

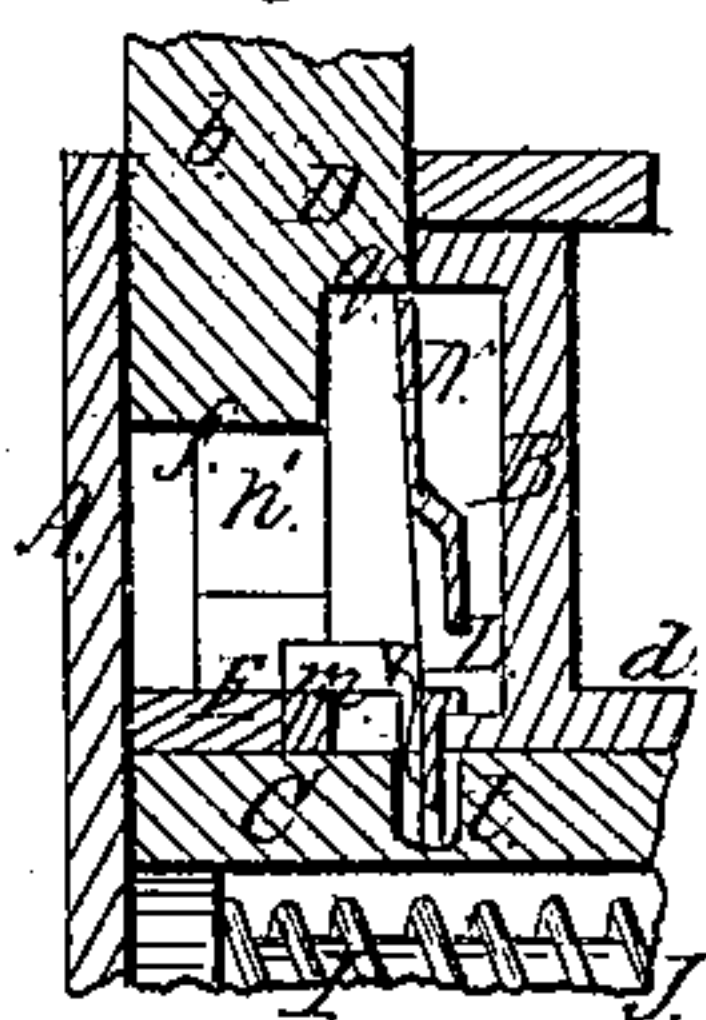
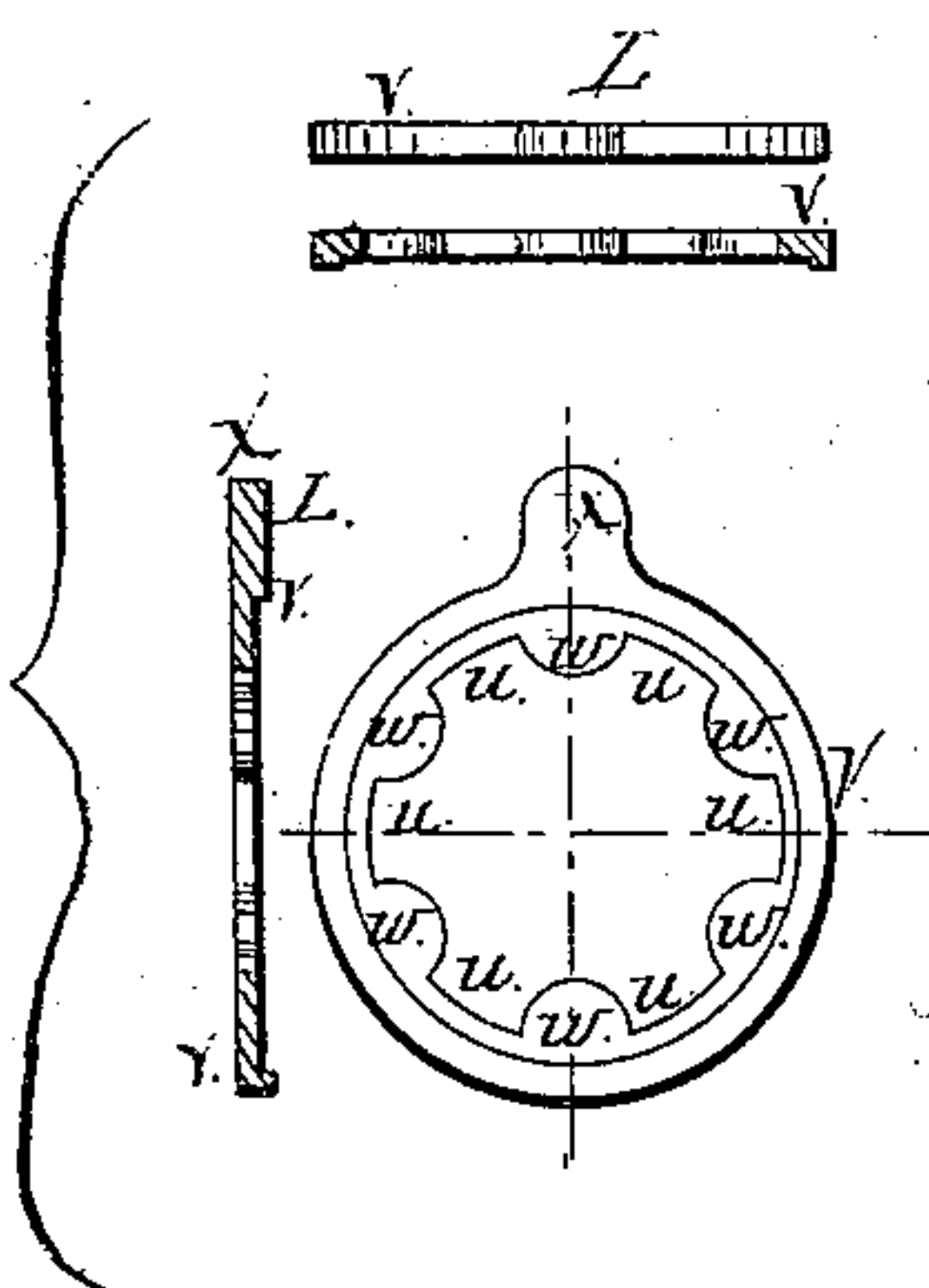


Fig. 11.



Witnesses:

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E. S. Runkley

United States Patent Office.

SILAS N. BROOKS, OF BERNARDSTON, MASSACHUSETTS, ADMINISTRATOR
OF THE ESTATE OF LINUS YALE, JR., DECEASED.

Letters Patent No. 95,865, dated October 12, 1869.

IMPROVEMENT IN LOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that LINUS YALE, Jr., late a resident of Shelburne Falls, in the State of Massachusetts, did, in his lifetime, make an invention of certain new and useful Improvements in Rotary Locks; and that the following is a full, clear, and exact description and specification of the same.

The object of the said invention is to render rotary locks unpickable; and

The invention consists, first, of the combination of a turning-slide with the bolt, and with a stop, in such manner that when the slide is turned without being properly set, the stop is interposed in the path of the lock-bolt or its connections, so that the lock-bolt cannot then be unlocked.

The invention consists, further, of the combination of the turning-slide, the bolt, and the stop, with a movable turning-detent, which, in case the slide is not properly set, is caused to turn with the slide and to permit the stop to act upon the lock-bolt, so as to prevent the unlocking of the latter.

The invention is of great advantage, when applied to the well-known Bramah lock; and, in order that it may be understood, there is represented, in the accompanying drawing, a Bramah lock constructed upon the principle of this invention, which I will proceed to describe.

In the said drawings—

Figure 1 represents a side view of the lock;

Figure 2 represents an edge view of it, viewed in the line of movement of the bolt;

Figure 3 represents an edge view of it, viewed at right angles to the line of movement of the bolt;

Figure 4 represents a section of the lock, at the line *x x* of fig. 3;

Figure 5 represents a section of the lock, at the line *x x* of fig. 4;

Figure 6 represents a section of the lock, at the line *y y* of fig. 4;

Figures 7 to 12 inclusive, represent views of parts of the lock, designated by the same letters as the corresponding parts in the preceding figures; and

Figures 13, 14, and 15, represent views of the key of the lock.

The said lock is constructed with a lock-plate, A, with which the other parts are connected, and which is perforated with holes, for the insertion of the screws by which the lock is made fast to the door or other article to be secured by it.

The working-parts of the lock are covered by a case, B, which is secured to the lock-plate A.

The lock represented has a series of slides, *a a*, each of which is constructed to slide endwise in a groove, formed in the turning slide-cylinder C; and the slide-cylinder is arranged to turn upon its longi-

tudinal axis in the cylindrical part *d* of the case B, the inner end of the slide-cylinder being held in position by the ring-bracket E, in which that end turns.

The bolt D is constructed to slide crosswise to the axis of the slide-cylinder, its end *b* moving through an opening formed for the purpose in the lock-plate A, and its stock *f* being perforated with an opening of the same breadth as the circular periphery of the ring-bracket E, upon which the said stock slides when the bolt is shot outward or drawn inward.

In order that the turning of the slide-cylinder may effect the movement of the bolt, a cam or wiper, *g*, is provided, to be turned by the former, and to operate upon the latter.

This cam *g* has a ring-stock, *m*, which fits upon the slide-cylinder, and the interior of this stock is provided with projections *e e*, which fit into longitudinal flutes, formed in the exterior of the slide-cylinder C, between the slide-grooves, so that, when the cylinder is turned, the cam is compelled to turn with it.

The ring-cam stock is supported by the ring-bracket E, being constructed to turn in a slot formed therein.

The stock *f*, of the bolt, has two projections, *h h'*, fig. 8, upon the end *c* of one (*h*) of which the cam *g* operates when turned to unlock the bolt, while the cam operates upon the end *c'* of the other projection *h'*, when the cam is turned to lock the bolt.

Each projection is curved interiorly, to permit the cam to turn a portion of a revolution after and before the bolt is moved, the extent of movement of the cam being sufficient to bring the key-bit *i* to the notch *j* or *j'*, by which it is permitted to withdraw from or to enter through the escutcheon-plate *k* of the lock-case B.

Each slide *a* is constructed, as represented at fig. 12, with a finger or lug, *s*, which projects through a slot, *l*, in the slide-cylinder, into the interior of the same, to be operated upon by a sliding collar, *n*, which is pressed outward or toward the key-hole by a spring, J, so that all the slides, when not operated upon by the key G, are forced outward into close proximity with the inner face of the escutcheon-plate *k* of the case B.

The spring J is fitted upon the stem I, to which the pipe *p* of the key G is applied when the lock is to be locked or unlocked.

Each slide *a* is constructed with a notch, *r*, in its outer edge, and the notches of the several slides are arranged at different distances from their outer ends, so that the slides have to be moved different distances, in order that their respective notches may all be set opposite a ring-groove, *t*, formed in the periphery of the slide-cylinder.

The detent L is arranged in this groove, its stock *v* being of ring form, and being fitted to turn freely

and concentrically with the slide-cylinder C, upon a ring-projection on the interior of the case B, while it is prevented from escaping from the ring-projection by the adjacent face of the ring-bracket E.

The interior of the detent L has as many notches *u*, fig. 11, as there are slides *a*, and when the lock is either locked or unlocked, the centres of these notches correspond in positions with the centres of the slides *a*, so that the said slides may then be moved endwise through said notches, for the purpose of setting the notches of the slides opposite the ring-groove in which the detent stock is placed. The portions *w*, of the detent stock, between the detent notches, project within the circle drawn around the outer edges of the slides *a*, but not quite as far as the circle drawn around the bottoms of the slide-notches *r*; hence, if every slide be set so that its notch *r* is opposite the ring-groove of the cylinder, the slides will turn with the cylinder, and will pass the projections of the detent without moving it, the notches of the slides moving over the projections *w*, of the detent, which can then remain at rest; while, if the cylinder and slides be turned upon the axis of the cylinder when the notch of any one of the slides does not correspond in position with the ring-groove *t* of the cylinder, the body of that slide will come in contact with the adjacent projection of the stock of the detent, and will compel the detent to turn with it.

The detent L has, at its exterior, a tongue, *x*, which, when the detent is in its normal position, as represented at figs. 4 and 5, overlaps the stop N, by which the movement of the bolt is stopped when necessary.

This stop is, in this example, constructed in one piece, with a spring, *z*, which tends to move it laterally from the adjacent face of the lock-case B, to which it is secured, and to interpose it behind a shoulder, *q*, of the lock-bolt, as represented in fig. 9, in which position it presents an effectual obstacle to the movement of the bolt.

When the bolt is locked, the stop N is held toward the lock-case and out of engagement with the shoulder *q* of the bolt, by the pressure of the side of the cam *g*, which projects slightly beyond the detent for this purpose, and the stop in this, its normal position, is overlapped by the tongue *x* of the detent, so that when the cam *g* is turned to move the bolt, and then ceases to hold the stop, the stop is prevented from interposing itself in the way of the bolt by the presence of the detent.

If, however, the detent be turned from its normal position by the action of any improperly set slide, the detent, being out of the way of the stop, permits it to be moved laterally by its spring *z*, as represented at fig. 9, until it interposes itself behind the shoulder *q* of the lock-bolt, and effectually stops its movement; and, as this is done without producing friction upon the slides *a*, it is practically impossible to discover which one of the slides has been improperly set; and has, in consequence, prevented the bolt from being unlocked.

In such case, the movement of the detent to liberate the stop is effected during the period the cam *g* is passing along the curved part of the projection *h'* of the bolt-stock, consequently the stop N is brought into position to stop the bolt, before the latter is moved by the action of the cam *g* upon the end of the projection *h*.

Whenever the detent has been moved to liberate the stop, the detent must be restored to its normal position, so as to hold the stop, before the bolt can be unlocked even by setting the tumblers properly.

In order that the detent may be thus restored, the stop N must first be pushed back to its place, near the lock-case, in order that its edges may not obstruct the movement of the detent; this backward movement of the stop is effected by the cam *g*, whose side, adjacent to the face of the stop, is inclined so as to operate upon the ring-spring *z*, with which the stop N is connected, and push the spring, with the stop, to their positions, when the slide-cylinder and detent are turned back to the positions they occupy when the bolt is locked.

As the movement of the cylinder turns the cam *g* about a quarter of a revolution before it begins to operate upon the stock of the bolt, the cam is moved sufficiently to permit the stop to interpose itself in the way of the bolt before the cam is in position to act upon the bolt.

The key G, of the lock, is constructed with a bit, *i*, to enter through the escutcheon-plate *k*, into a groove, *y*, in the interior of the cylinder, and turn it.

The key is also constructed with a series of notches, *o*, corresponding in position with the slides at each side of the key-bit, when the key is applied to the lock; and the lengths of these notches are such that when the key is applied to the lock each slide is moved by the solid shoulder *s'* of the respective slot until the notch of the slide corresponds in position with the ring-groove of the slide-cylinder, so that the bolt can then be unlocked.

In practice it is found expedient to construct the slides with a spring body, as at *r'*, fig. 12, and to curve them slightly, so that their own weight will not move them in their grooves in the slide-cylinder; this construction, however, forms no part of the invention.

What is claimed as the invention of said LINUS YALE, deceased, is—

The combination of the turning-slide, lock-bolt, and stop, all constructed, to operate substantially as before set forth.

Also, the combination of the turning-slide, bolt, stop, and detent, all constructed to operate substantially as before set forth.

In testimony whereof, I have hereunto set my hand, this 7th day of July, A. D. 1869.

SILAS N. BROOKS.

Witnesses:

JNO. B. YALE,
CHESTER C. CONANT.