

(Model.)

2 Sheets—Sheet 1.

W. J. MANDEVILLE.  
LOCK.

No. 331,073.

Patented Nov. 24, 1885.

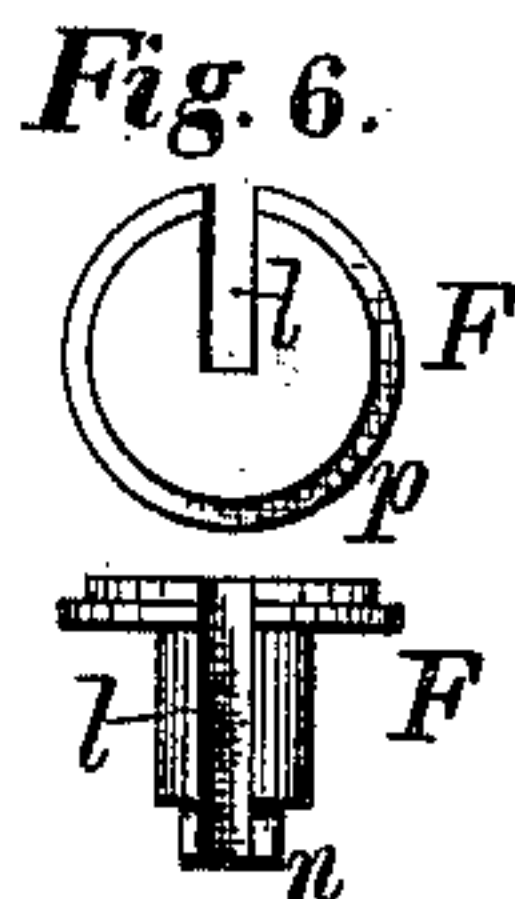
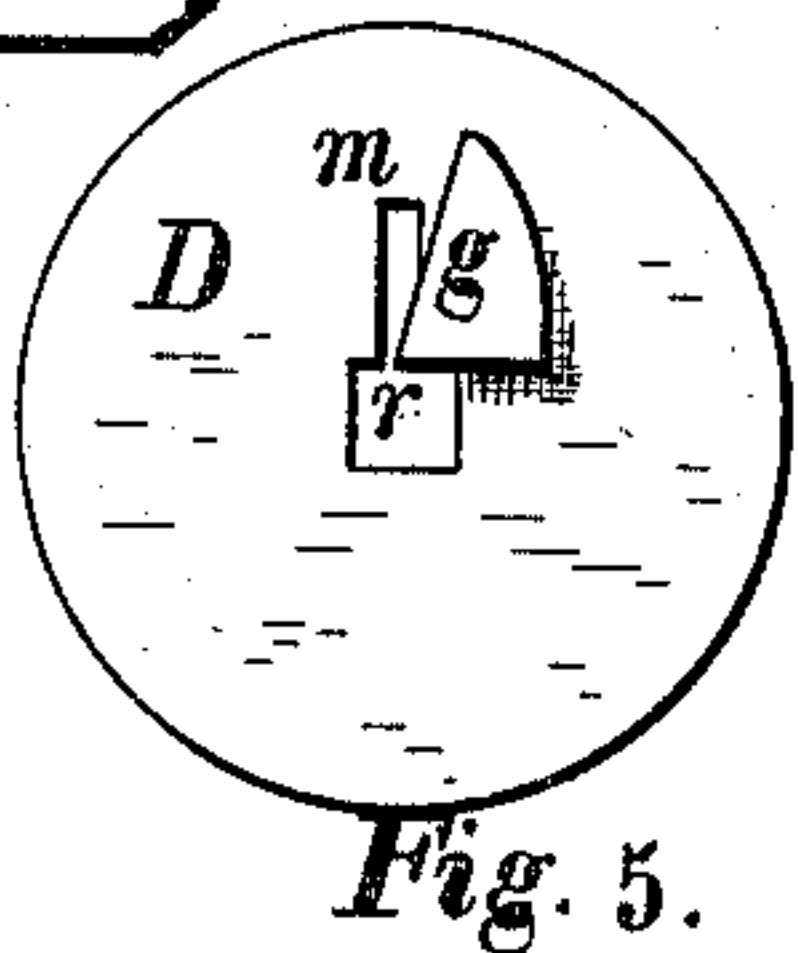
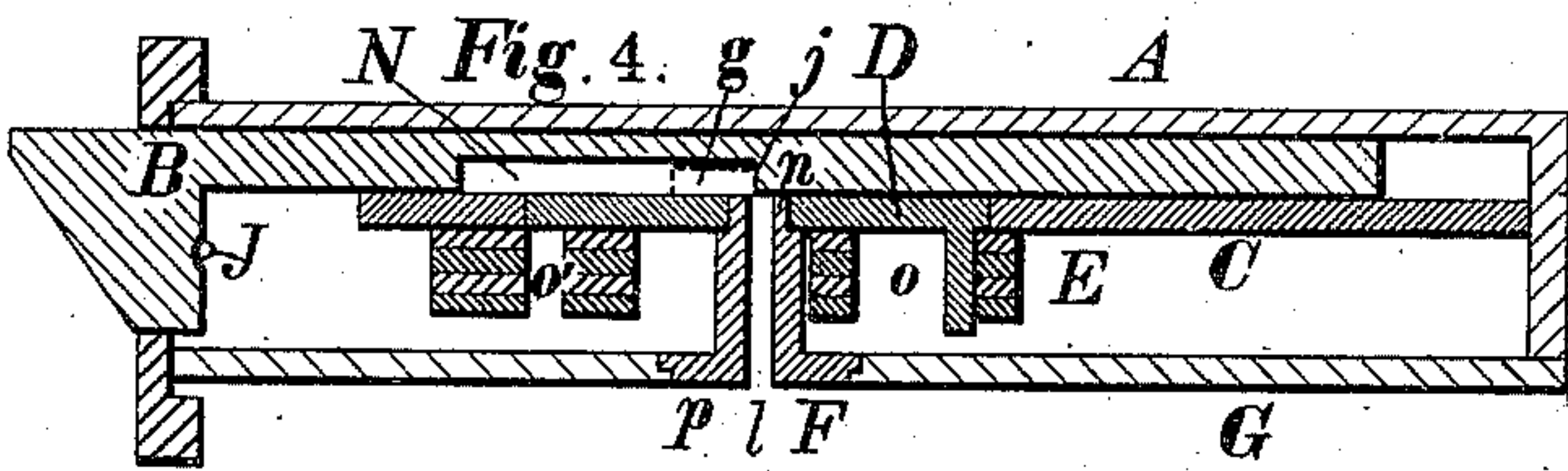
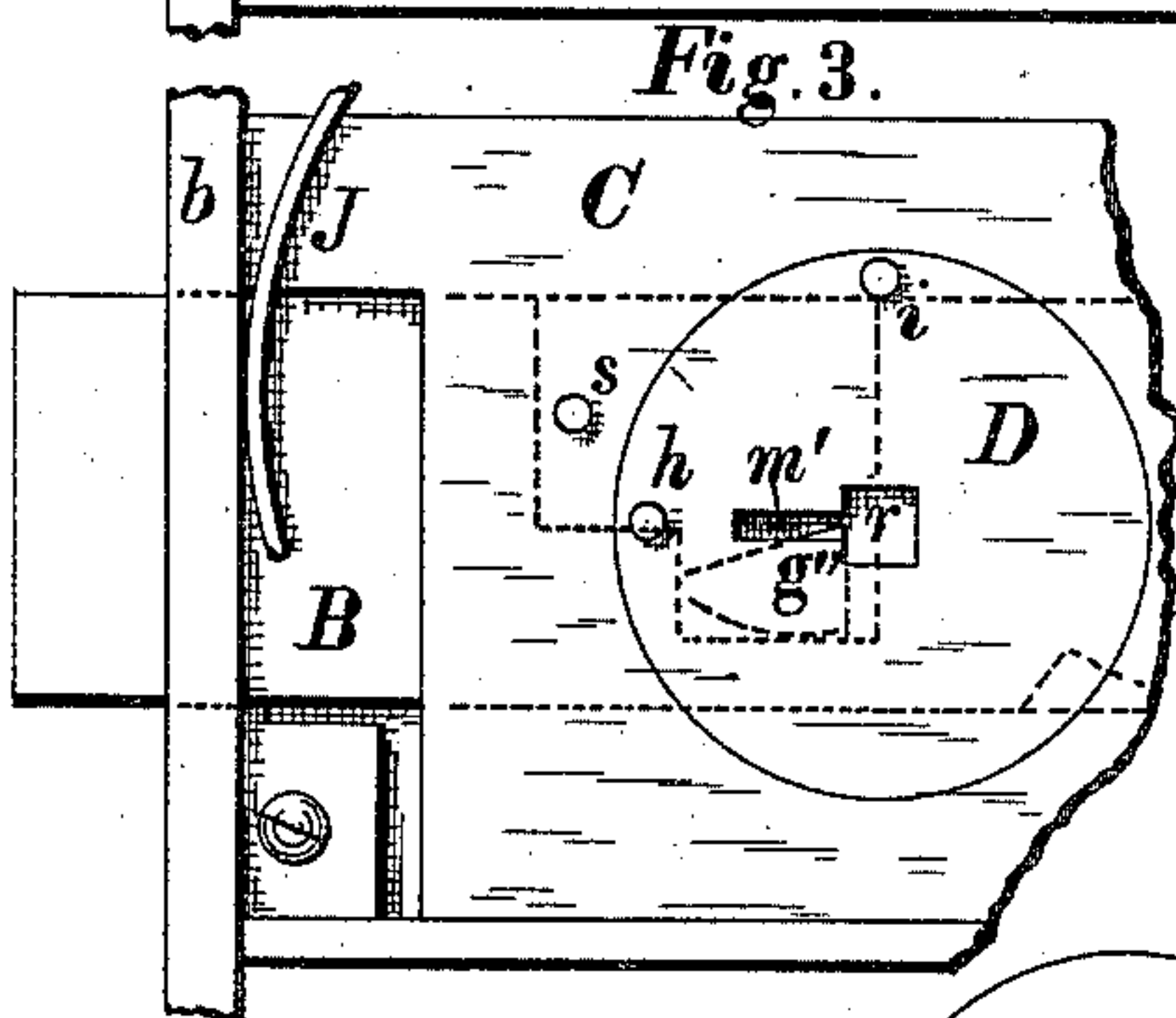
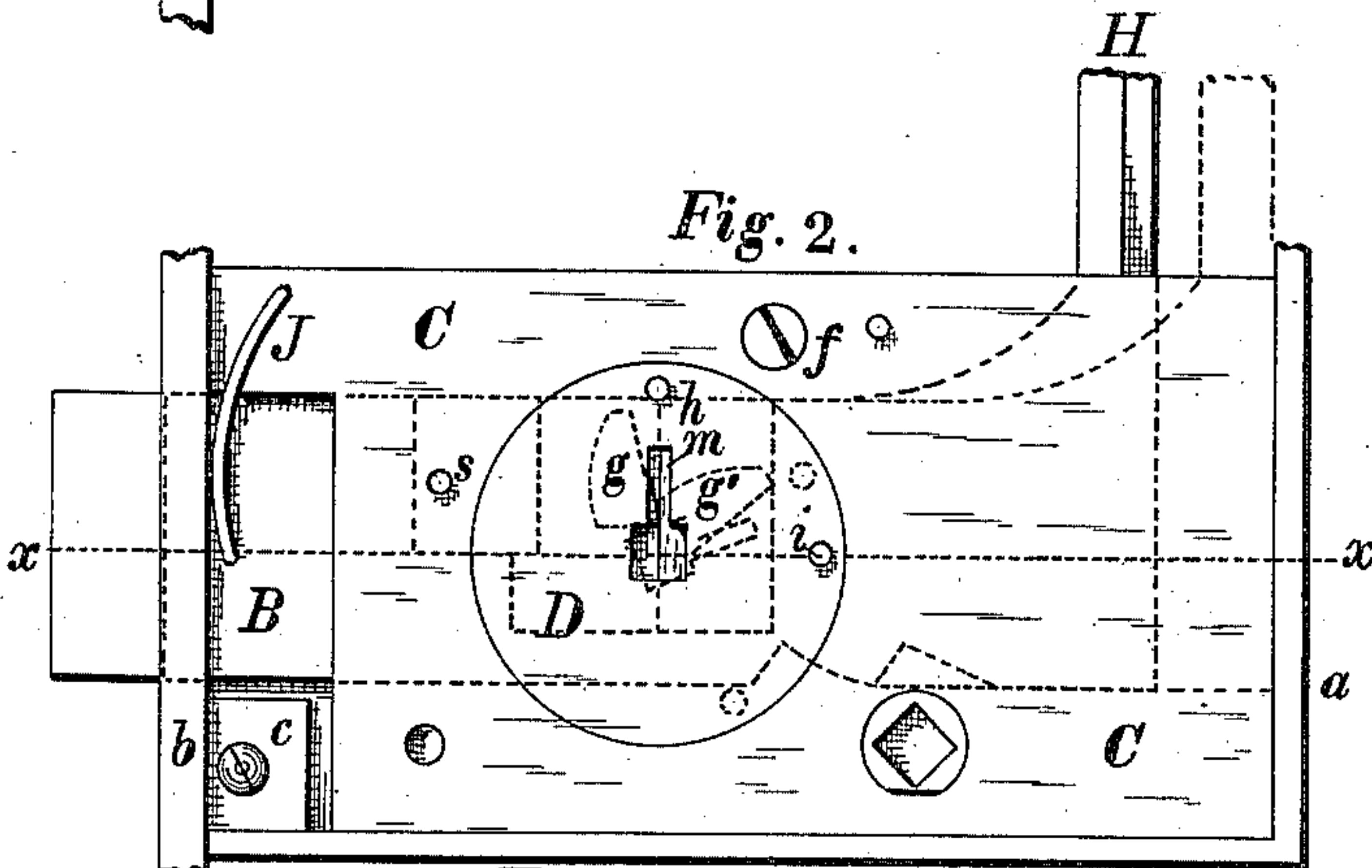
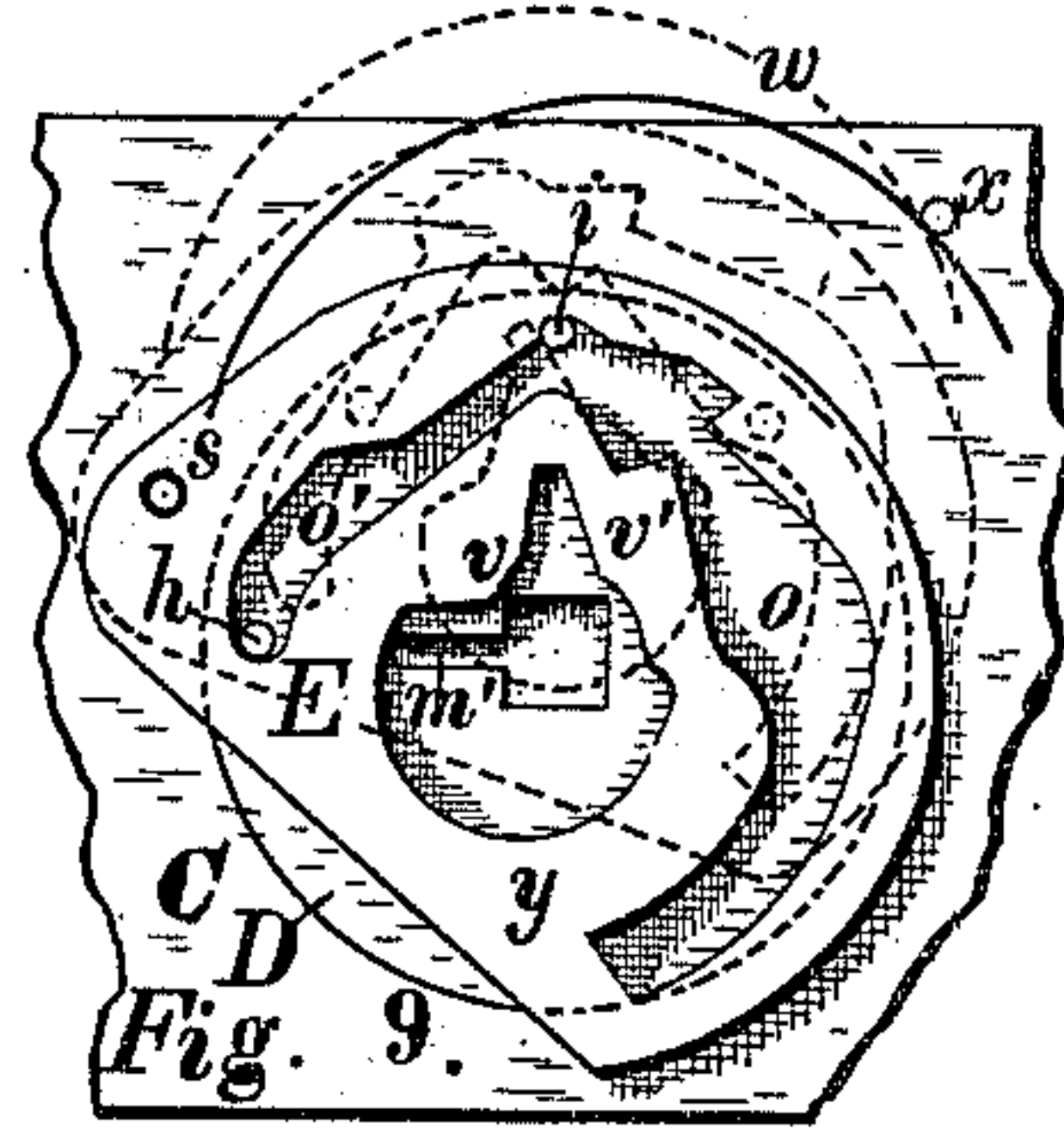
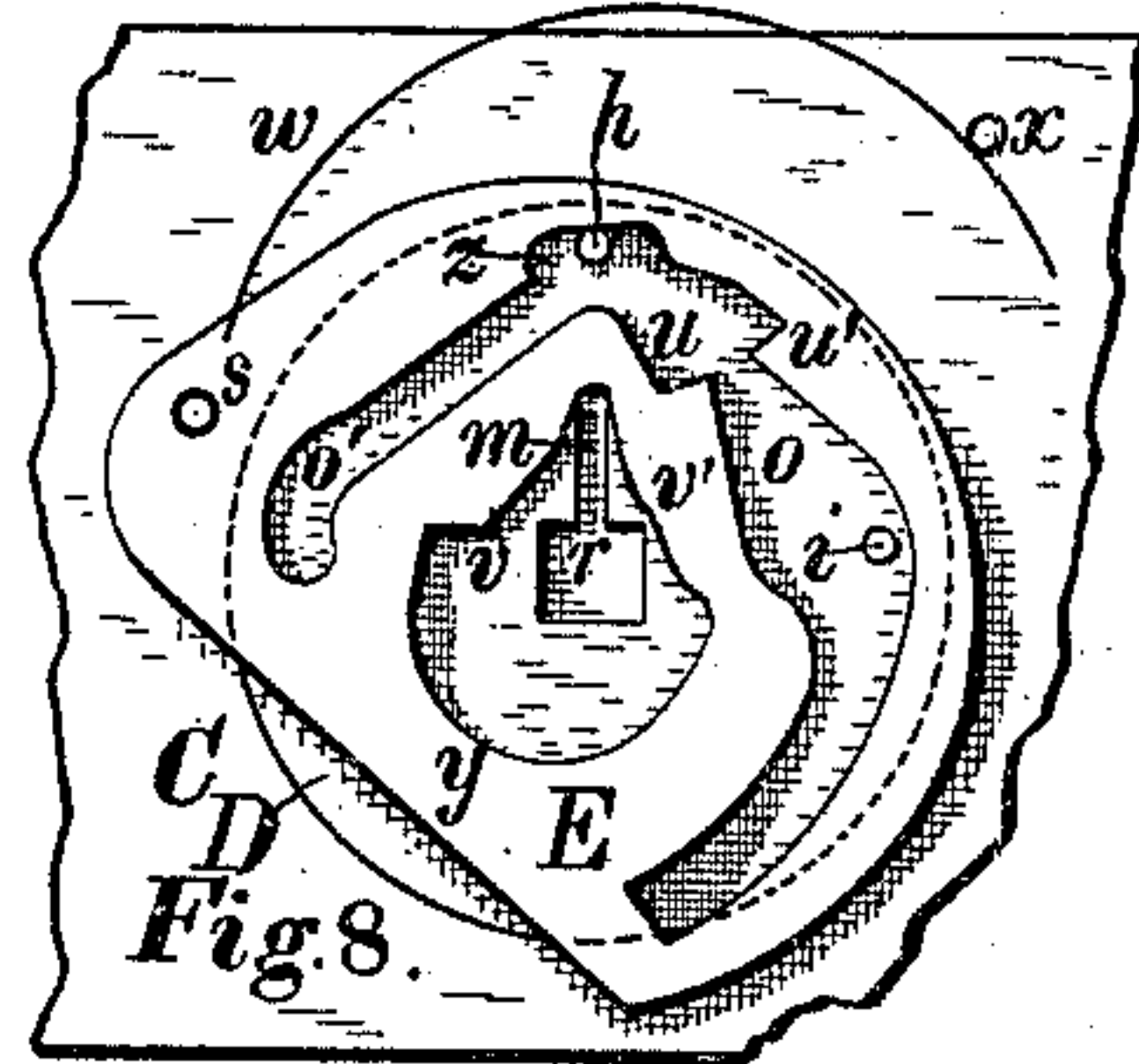
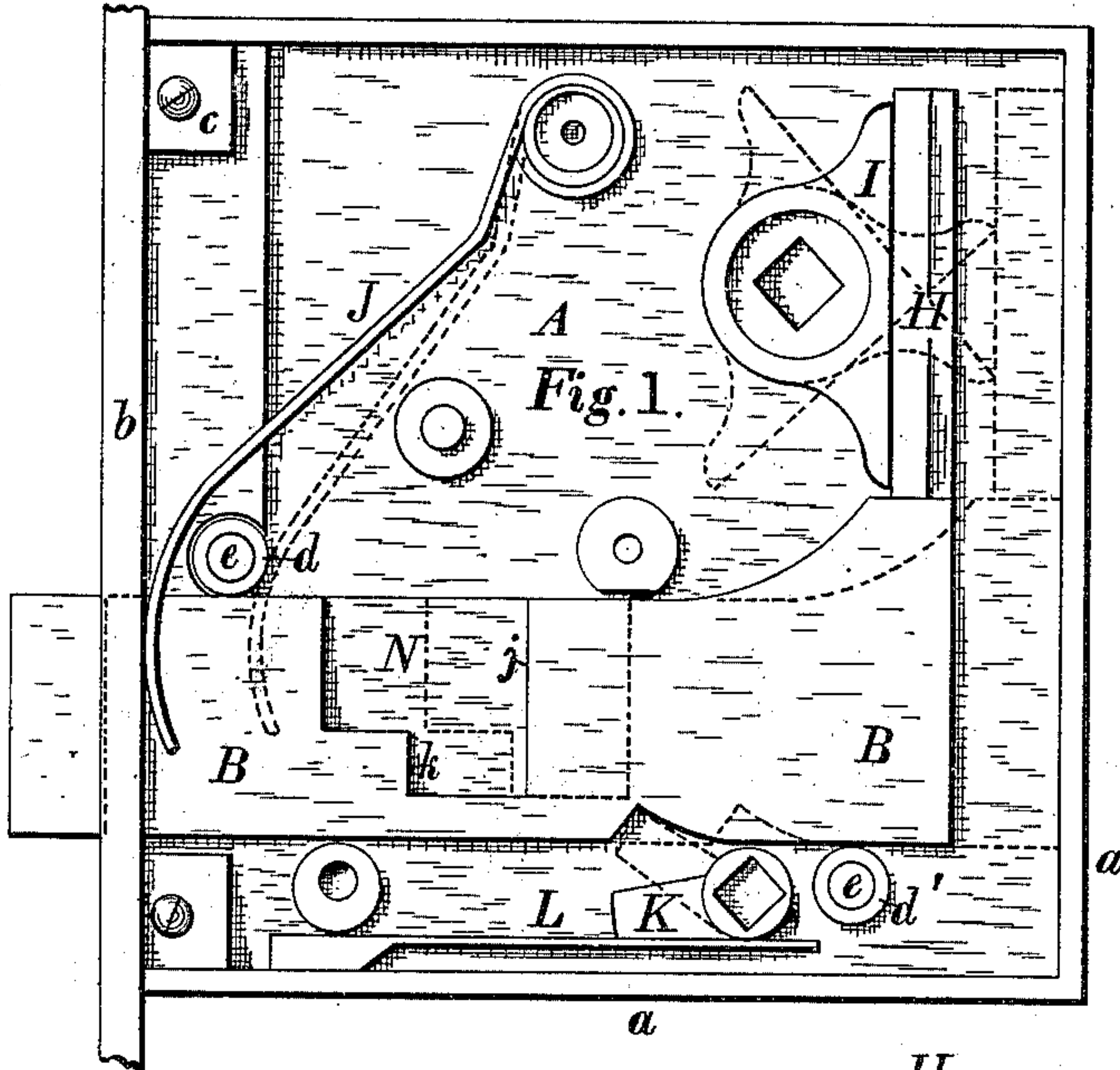
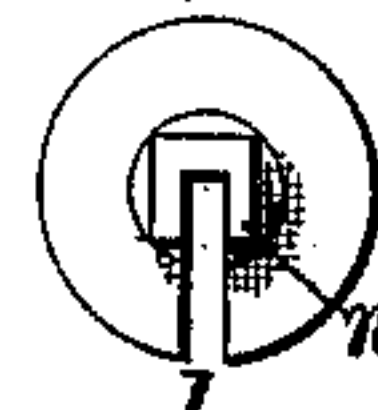


Fig. 7.



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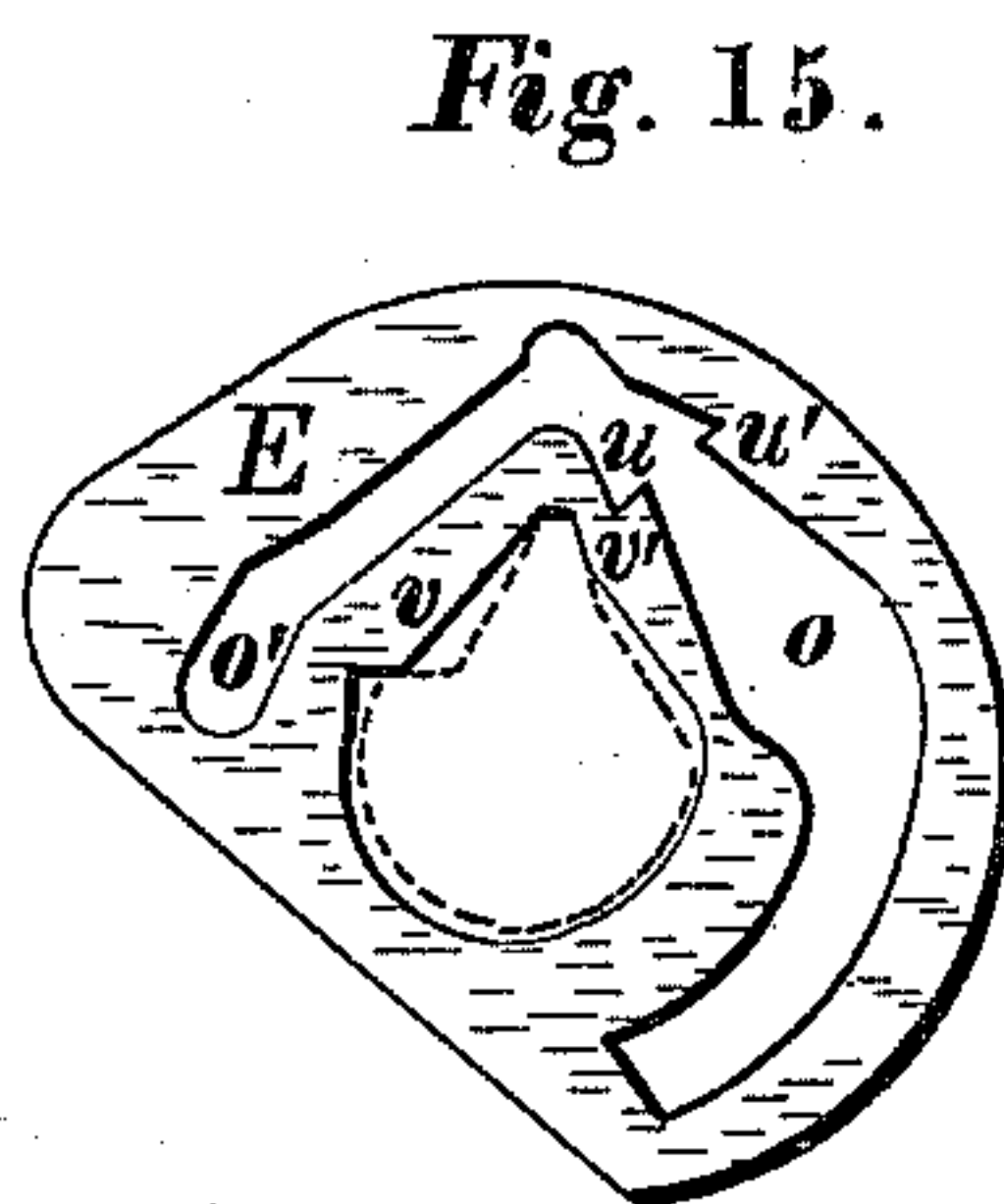
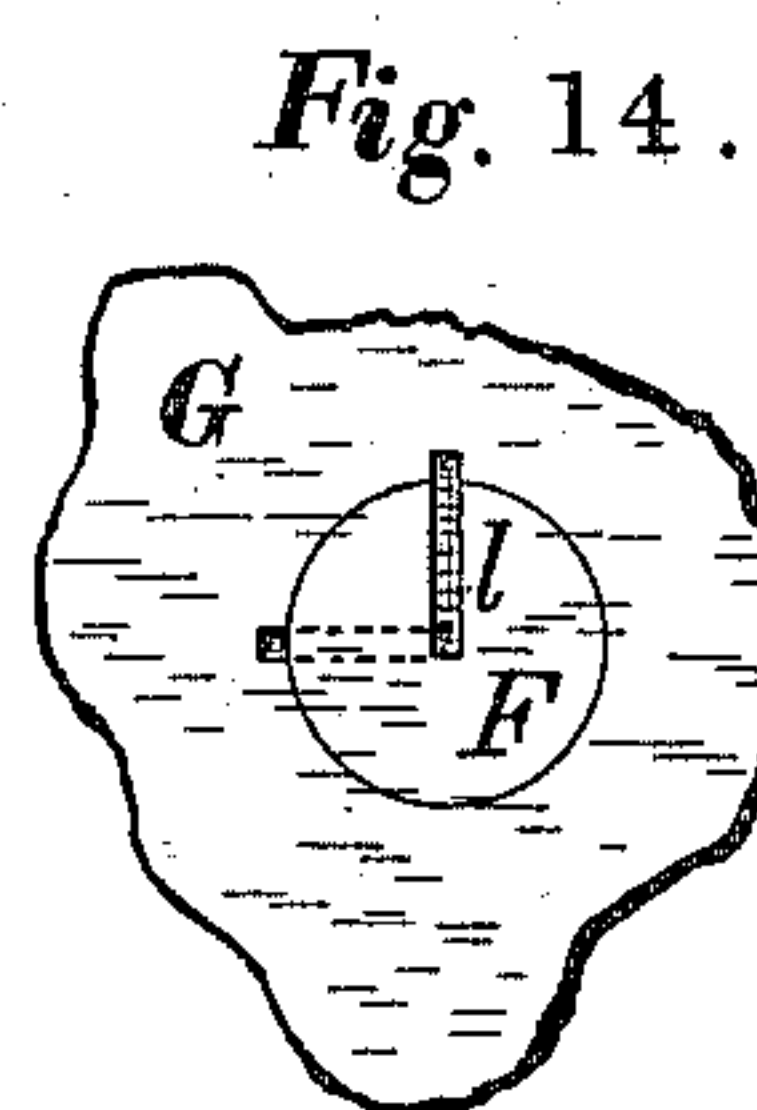
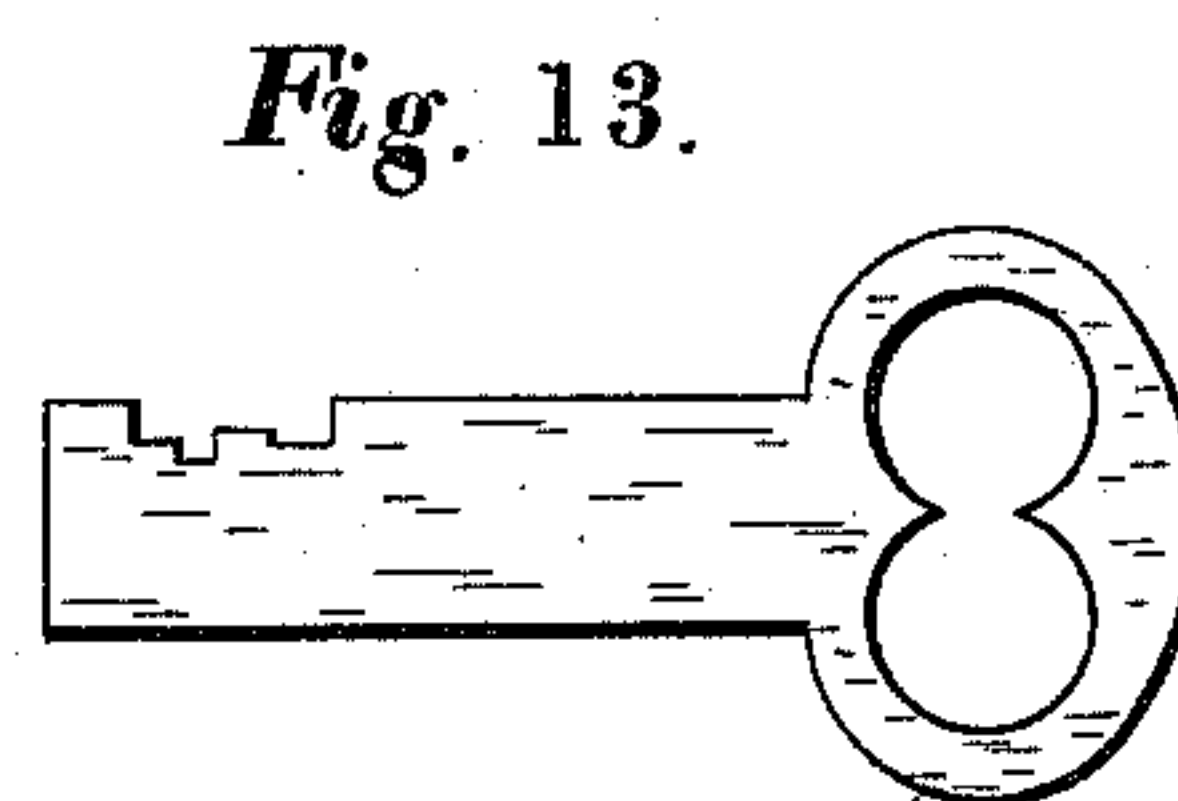
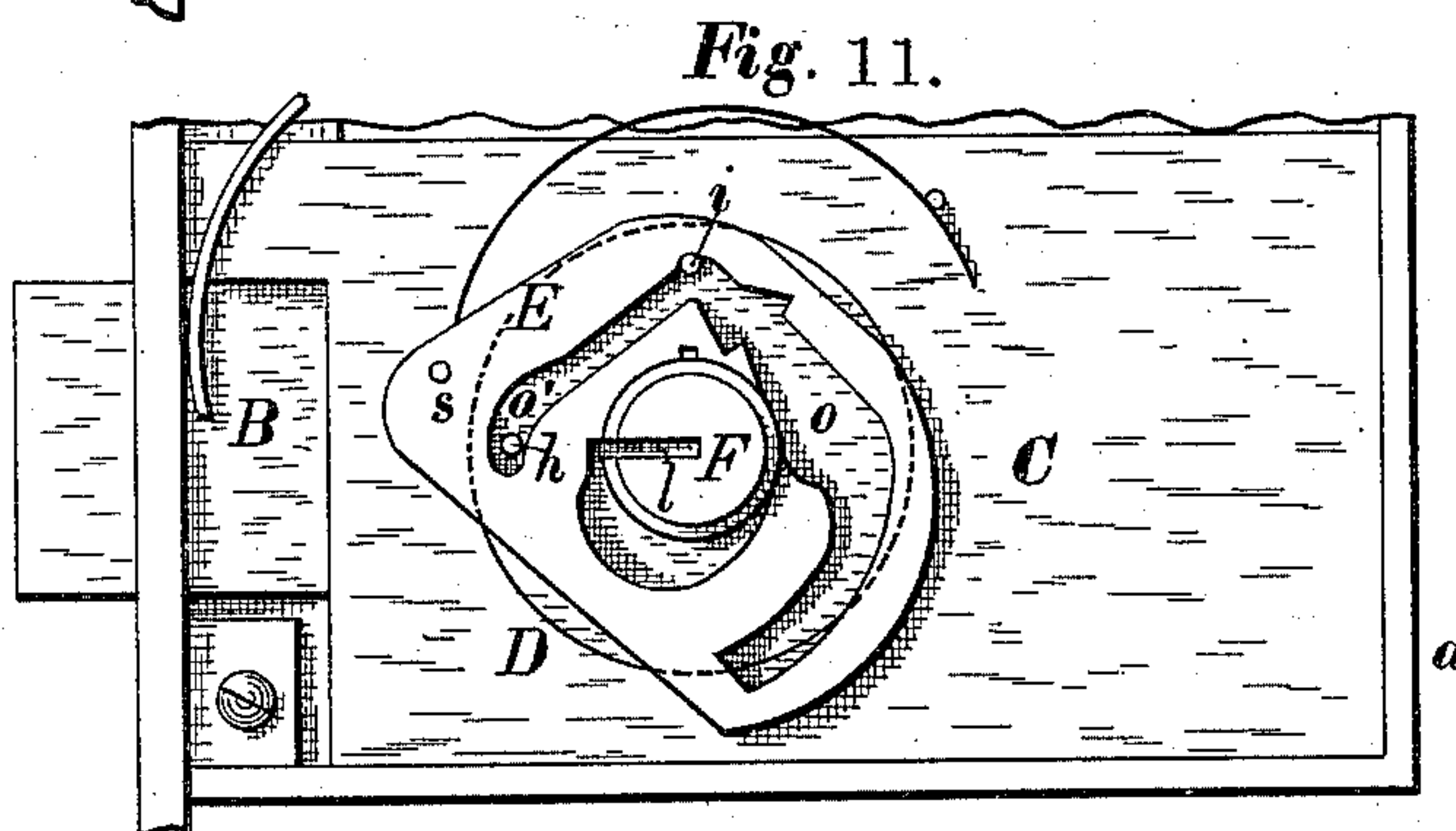
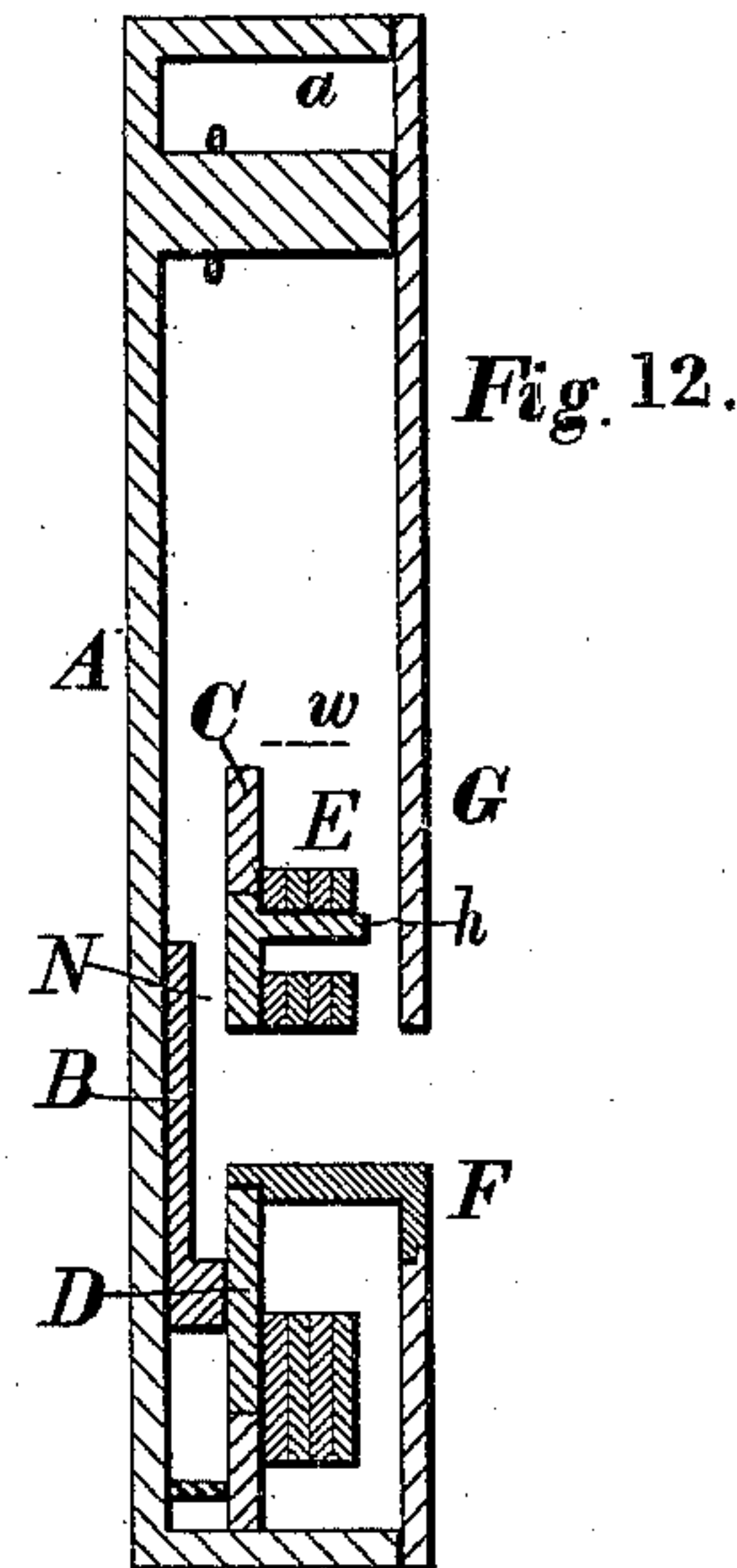
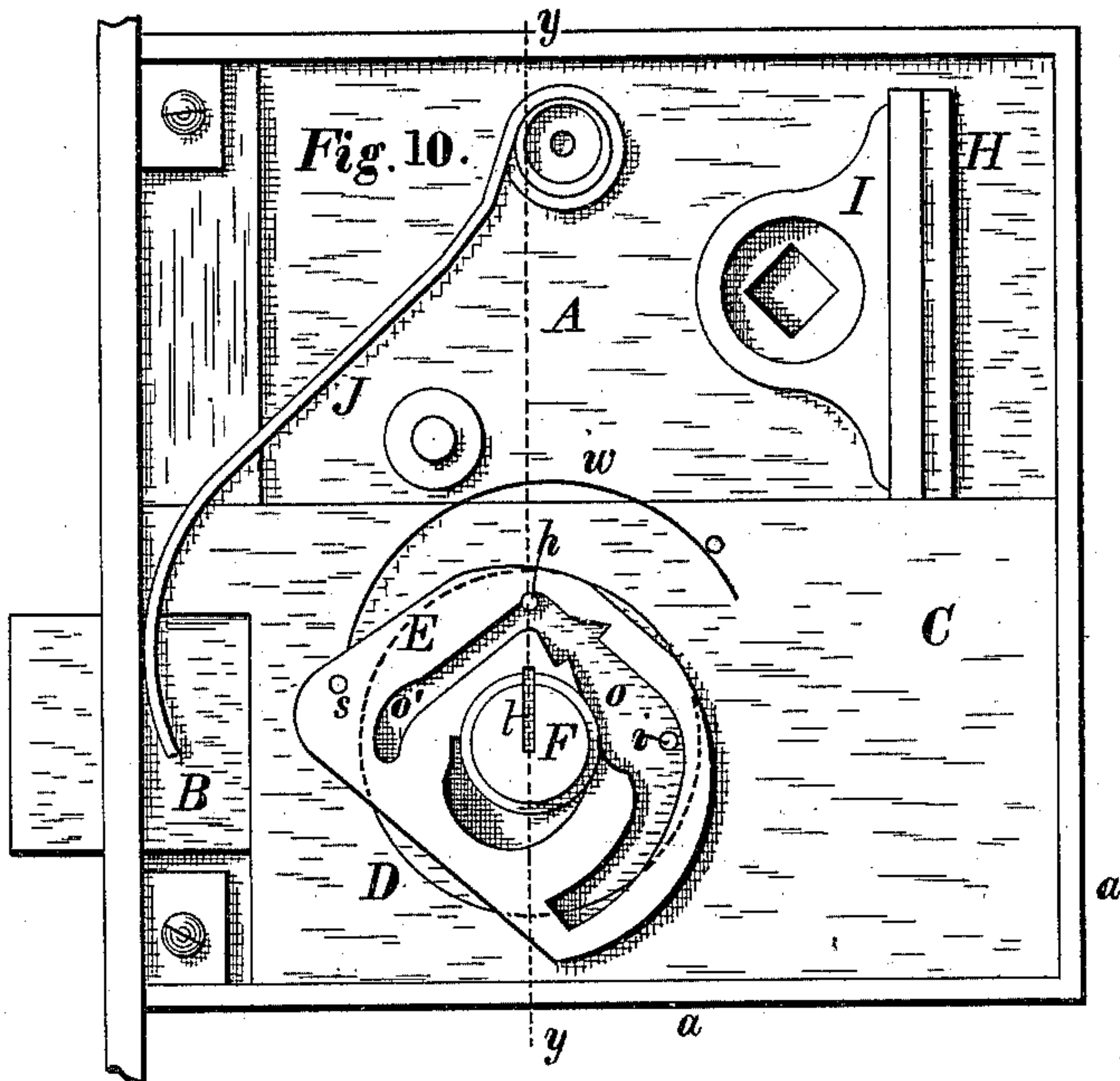
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# UNITED STATES PATENT OFFICE.

WILBUR J. MANDEVILLE, OF ROCHESTER, NEW YORK.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 331,073, dated November 24, 1885.

Application filed December 26, 1884. Serial No. 151,150. (Model.)

*To all whom it may concern:*

Be it known that I, WILBUR J. MANDEVILLE, of Rochester, New York, have invented certain Improvements in Locks, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to certain improvements in locks, which improvements are fully described in the following specification, and the novel features thereof specified in the claims hereunto annexed.

My improvements in locks are represented in the accompanying drawings, in which Figure 1 is a side elevation of the case, showing the sliding bolt in position therein. Fig. 2 is a partial side elevation of the case, showing the division-plate and the revolving disk. Fig. 3 is a partial side elevation showing the position of the disk when the bolt is dead-locked. Fig. 4 is a horizontal section on the line *x x*, Fig. 2. Fig. 5 represents the revolving disk as seen from the inside, showing the cam or eccentric thereon. Fig. 6 represents the slotted key-stud in plan and elevation. Fig. 7 represents the key-stud as seen from the inside end. Fig. 8 is a partial side elevation of the division-plate, representing also the tumblers. Fig. 9 is a partial side elevation representing by dotted lines the movement of the tumblers when the key is turned. Fig. 10 is a side elevation of the lock, the cover being removed. Fig. 11 is a partial side elevation of the lock, showing the position of the tumblers and disk when the bolt is dead-locked. Fig. 12 is a vertical section of the lock on the line *y y*, Fig. 10. Fig. 13 represents the key designed to be employed in my improved lock. Fig. 14 represents an exterior view of a portion of the cover, showing the slotted key-stud. Fig. 15 represents in full lines one of the tumblers detached, indicating also in dotted lines the outline of a tumbler of different shape.

In the accompanying drawings, A represents the case of my improved lock; B, the sliding bolt; C, the division-plate; D, the revolving disk; E, the tumblers; F, the slotted key-stud, and G the cover. The case is provided with the flanges *a a a*, and the front *b* may be formed in one piece with the case, or attached thereto by means of lugs and screws,

as at *c c*, Figs. 1 and 2. The cover G is attached to the open side of the case in any convenient manner, thereby forming an inclosure within which the working parts of the lock are placed. The bolt B is arranged to slide backward and forward within the case, as indicated by the full and dotted lines in Fig. 1, friction-rollers being applied to its sides at *d d'*, Fig. 1, in order to secure ease of motion and relieve the friction caused by the action of the knob-lever I on the arm H, extending sidewise from the bolt.

The knob-lever is of the ordinary construction, being arranged to be turned by a spindle provided with knobs on one or both sides of the door and passing through the lock-case. The arm H may be formed in one piece with the bolt, or it may be attached thereto in any suitable manner. The anti-friction rollers *d d'* are arranged to revolve on studs *e e*, which may be either cast on the case and finished or inserted therein.

As indicated in the drawings, the roller *d* is located near the outer edge of the case and on the same side of the bolt with the arm H, while the roller *d'* is placed on the side of the bolt away from the arm, and nearly opposite it, so that the friction is relieved and the bolt slides easily, notwithstanding the action of the knob-lever on the projecting arm H. The bolt is constantly pressed outward by the spring J, which may be applied in any preferred manner. A swivel or divided spindle may be used to operate the knob lever or levers, and any usual or preferred means may be employed for locking the knob-lever connected with the outside knob. A catch, K, may be employed to fasten the bolt, when desired, being arranged to engage with a notch in the bolt, as indicated by the dotted lines in Fig. 1, and provided with a spring, L, which holds the catch in either position. Within the case, and between the bolt and the tumblers, is placed the division-plate C, the function of which is to sustain the revolving disk D, so that any force or strain applied to the outer end of the bolt is prevented from reaching the tumblers. The division-plate C is secured to the case by screws *f*, and it may be attached by means of the screws which are used to fasten on the cover, which pass through



lugs on the inner side of the cover long enough to come in contact with the division-plate. The division-plate is provided with a circular opening, within which rotates the disk D, carrying on its side next the bolt the cam or eccentric *g*, by the action of which the bolt is moved and secured in place when dead-locked, and carrying on the other side the pin or pins *h i*, which engage with the pivoted tumblers E, operated by the key in the slot *l* in the key-stud F. A recess, N, is formed in the bolt B, into which the cam *g* projects, so that when the disk D is turned toward the right hand in Fig. 2, the cam striking against the edge *j*, Figs. 1 and 4, of the recess throws the bolt to the right hand while moving from *g* to *g'*, Fig. 2, thereby unlocking the lock. On turning the disk D to the left hand the cam will be moved to the position indicated by the dotted lines *g''*, Fig. 3, without moving the bolt, when its outer extremity will come in contact with the edge *k*, Fig. 1, of the recess N in the bolt and prevent the bolt from being forced inward. In this position the bolt is dead-locked, and cannot possibly be forced inward by any force insufficient to crush the parts or entirely destroy the lock.

It remains to describe the tumblers and mechanism by which a suitable key is allowed to turn the disk in either direction, as may be desired. On the side of the disk away from the cam and bolt are located the pins *h* and *i*, which may be either formed integrally with the disk or inserted therein. As the disk rotates, the pins *h i* move in the grooves *o o'* in the tumblers E. The disk is turned by the inner end of the key, which, when inserted in the slot in the key-stud, projects into the slot in the disk, although the arrangement may be such that the disk is turned by the key-stud, the inner end, *n*, Figs. 6 and 7, thereof being squared or otherwise shaped, so that when fitted into a hole, *r*, of a corresponding shape in the disk, the stud and disk will turn together. This arrangement also serves to steady the inner end of the key-stud, the outer end of which is formed by a flange, *p*, Figs. 4 and 6, fitted to an opening in the cover. The flange is recessed, so that the key-stud is held in place in the lock by the cover. The tumblers E are pivoted on a pin, *s*, inserted in the division-plate, so that they can swing upward, as indicated by the dotted lines in Fig. 9, whether the key be turned to the right or left hand. The key, being inserted in the slot of the key-stud and turned in either direction, tends to turn the disk and move the pin *h*, Figs. 8, 9, and 10, in the slots *o o'* in the tumblers; but the pin cannot move either way in these slots unless the tumblers be swung upward by the key acting on the edges *v v'*, Figs. 8, 9, and 15, of the opening in the tumblers through which the key passes.

As represented in the drawings, Fig. 15, the edges *v v'* are of different shapes on the different tumblers, each corresponding to a notch

in the key designed to be used in the particular lock under consideration. By varying the shape and order of the tumblers at *v v'* an indefinite number of locks, each requiring a different key, may be made. The key and the tumblers at *v v'* must be of such shape and dimension that the tumblers will be raised just enough to permit the pin in the disk to pass through the slots in the tumblers. No key other than the one designed for the lock in question can turn the disk and slide the bolt, as the tumblers prevent the movement of the pin on the disk unless they are raised the proper distance by the turning of the key. The construction admits of great accuracy in the fitting of the key, and the slot *o* is provided with the recesses *u u'*, Fig. 8, into which the pins *h* or *i* will enter and be held in case the key or any one of the notches in it should be very slightly too long or too short. If the notch be too long, the tumblers will be raised too high, and the pin will engage in the recess *u*. If, on the contrary, the notch be too short, the pin will be caught in the recess *u'*, because the corresponding tumblers will not be moved sufficiently far upward. When the disk is turned to the left hand, as represented in Figs. 3, 9, and 11, into the position in which the bolt is dead-locked, the pin *i* occupies the same position and performs the same functions as already described with reference to the pin *h* when it is desired to turn the disk to the right—that is, it will engage with one or other of the recesses *u u'*, and prevent the turning of the disk unless the key is of exactly the proper shape to give the proper movement to the tumblers.

As indicated in Fig. 15, the key may be withdrawn from the lock when the disk is in either of the two positions represented by Figs. 2 and 3—that is, when the lock is used as an ordinary night-latch or is dead-locked.

Any preferred number of tumblers may be used in connection with my improved lock. Each tumbler is provided with a spring, *w*, bearing against a pin, *x*, Figs. 8 and 9, to hold them down on the pins. One or more of the tumblers may be provided with a recess, *z*, Fig. 8, which prevents the locking of the door without the proper key. The lower part, *y*, of the tumblers may be dispensed with, although I prefer to use it on account of the additional strength thereby imparted to them.

While I have herein shown my improvements as applied to an ordinary mortise door-lock, it is obvious that they can be used in connection with locks of other kinds—as, for instance, rim-locks, drawer-locks, and, in fact, almost any form of lock where great security is desired. It is obvious also that my improvements may be used without the dead-lock arrangement as herein described.

My improved lock possesses the advantages over any other form of lock at present in use of greater simplicity in construction, security from breakage on account of the use of the di-



vision-plate, freedom from friction and accidental derangement, and it is, moreover, cheaper to construct.

The advantages possessed by my improved lock will be readily understood from a consideration of the nature of the inventions herein described. The division-plate protects the tumblers from being injured by supporting the disk in place against any force applied to the bolt, or by the insertion of a lever into the key-stud to twist it around. It also holds the sliding bolt securely in place in the lock-casing. The disk serves to adapt the lock to be used either as a night-latch, or, by turning it to the left hand in the drawings, to be used as a dead-lock, in which case the bolt is sustained against any power tending to force it inward by the whole strength of the disk and plate.

My improved lock may also, in consequence of the arrangement of the arm H and the knob-lever, be used as an ordinary latch without moving the tumblers, and as a night-latch and a dead-lock, being very much more simple and cheaper in construction than any other lock in which all the same functions are performed.

I claim—

1. The combination, with the bolt B, provided with the recess N, of the revolving disk D, having cam *g* and means for turning the disk in either direction, whereby when turned in one direction it may move said bolt, and when turned in the other direction it may lock the same, substantially as described.

2. The combination, with a suitable lock-casing, of the sliding bolt B, provided with offset-arm H, knob-lever I, and the anti-friction rollers *d* and *d'*, arranged to operate substantially as described.

3. The combination, with a suitable lock-casing, of the sliding bolt B and the division-plate C, provided with an opening sustaining the disk D, having cam *g*, projecting into a recess in the bolt and provided on its outer side with suitable means for turning the disk, substantially as described.

4. The combination, with the sliding bolt B, division-plate C, rotating disk D, provided with cam *g*, pin *h*, and suitable tumblers, E, located on the side of the disk opposite the bolt, substantially as described.

5. The combination, with the sliding bolt B, division-plate C, rotating disk D, provided with cam *g*, and pins *h i*, of two or more tumblers located on the side of the disk opposite the bolt, and arranged to permit the turning of the key in opposite directions, substantially as and for the purposes specified.

6. The combination, with the sliding bolt B, of the division-plate C, disk D, provided with cam *g*, pin *h*, and slot *m*, the slotted tumblers E, and the slotted key-stud F, substantially as described.

WILBUR J. MANDEVILLE.

Witnesses:

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