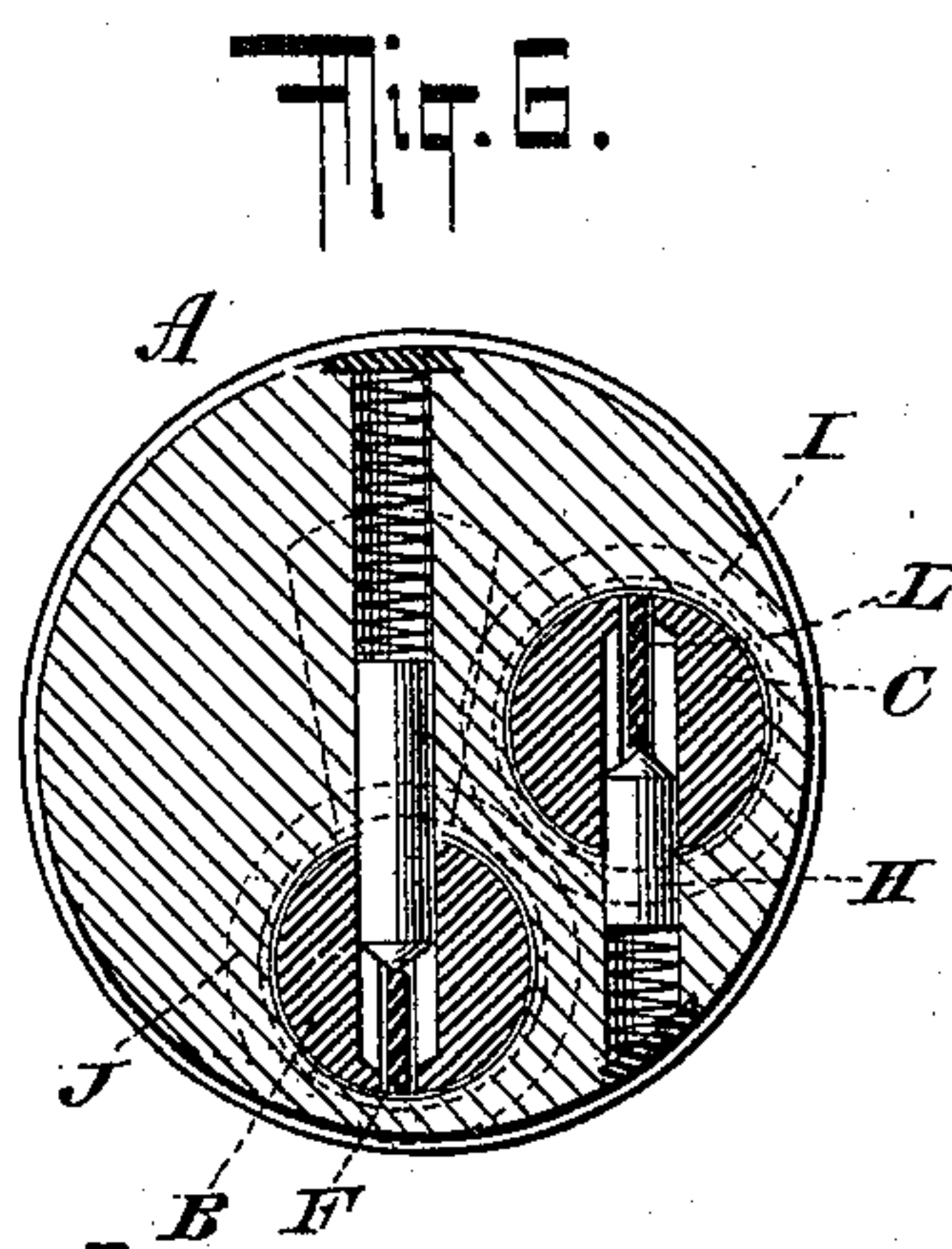
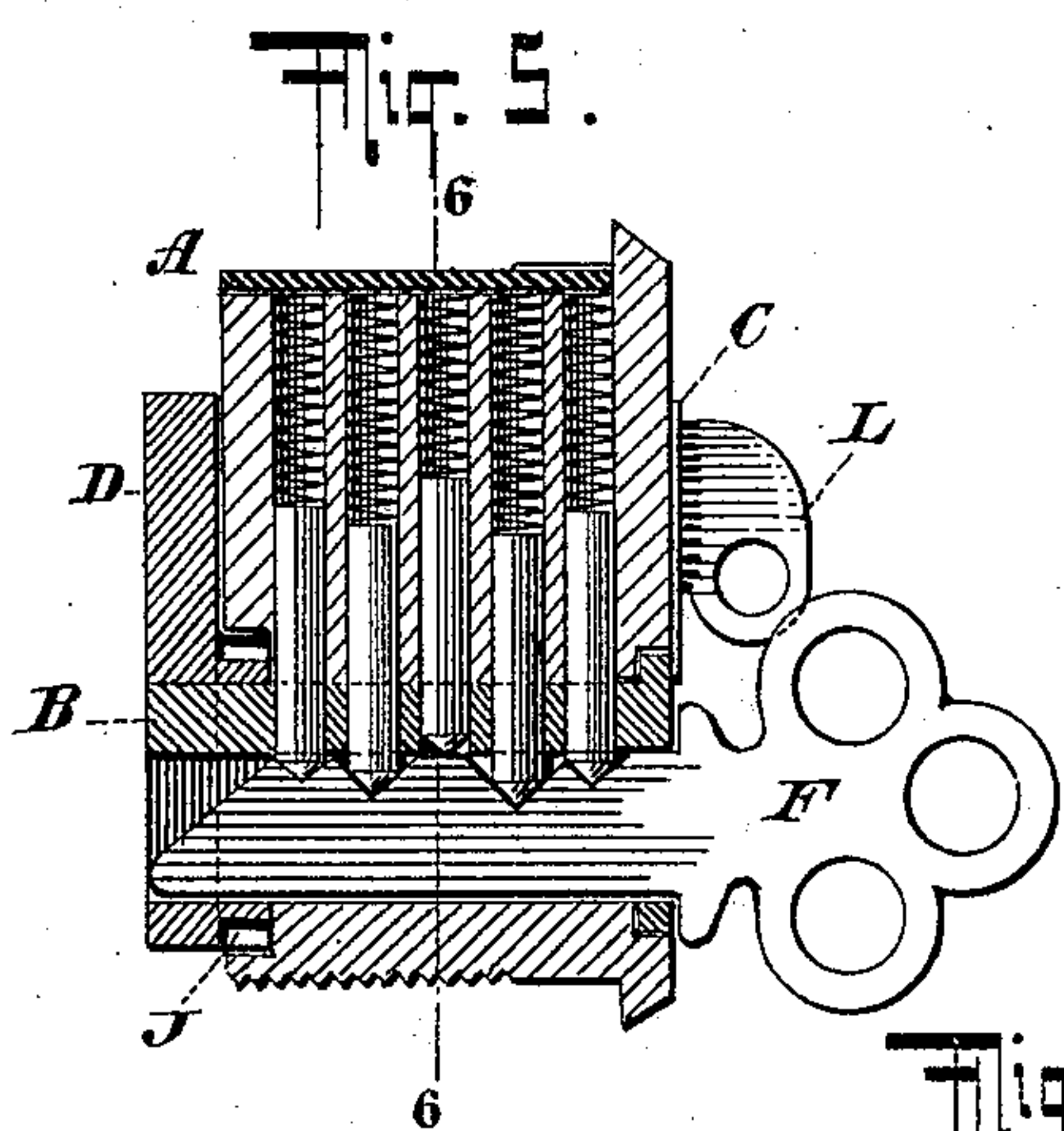
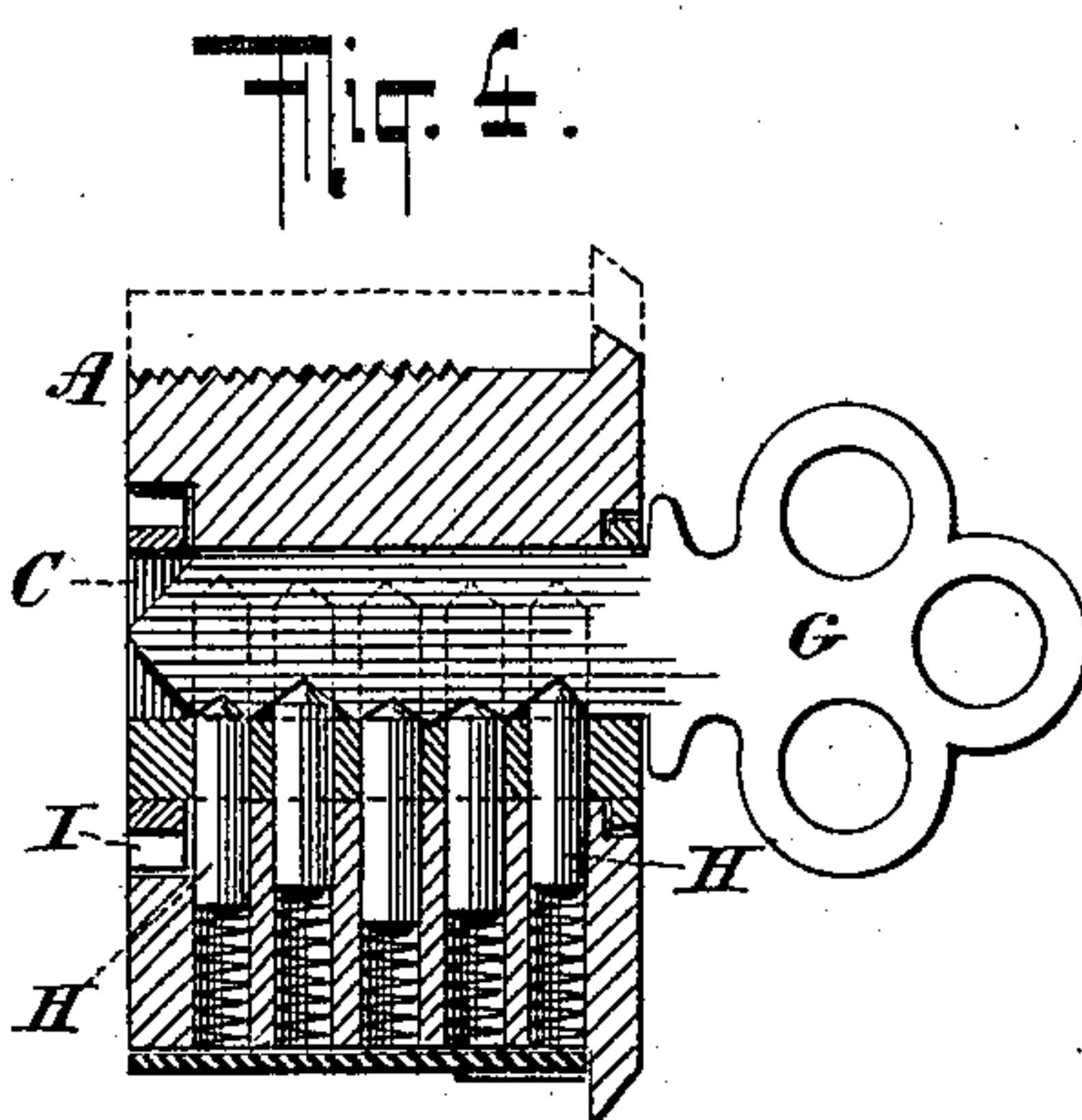
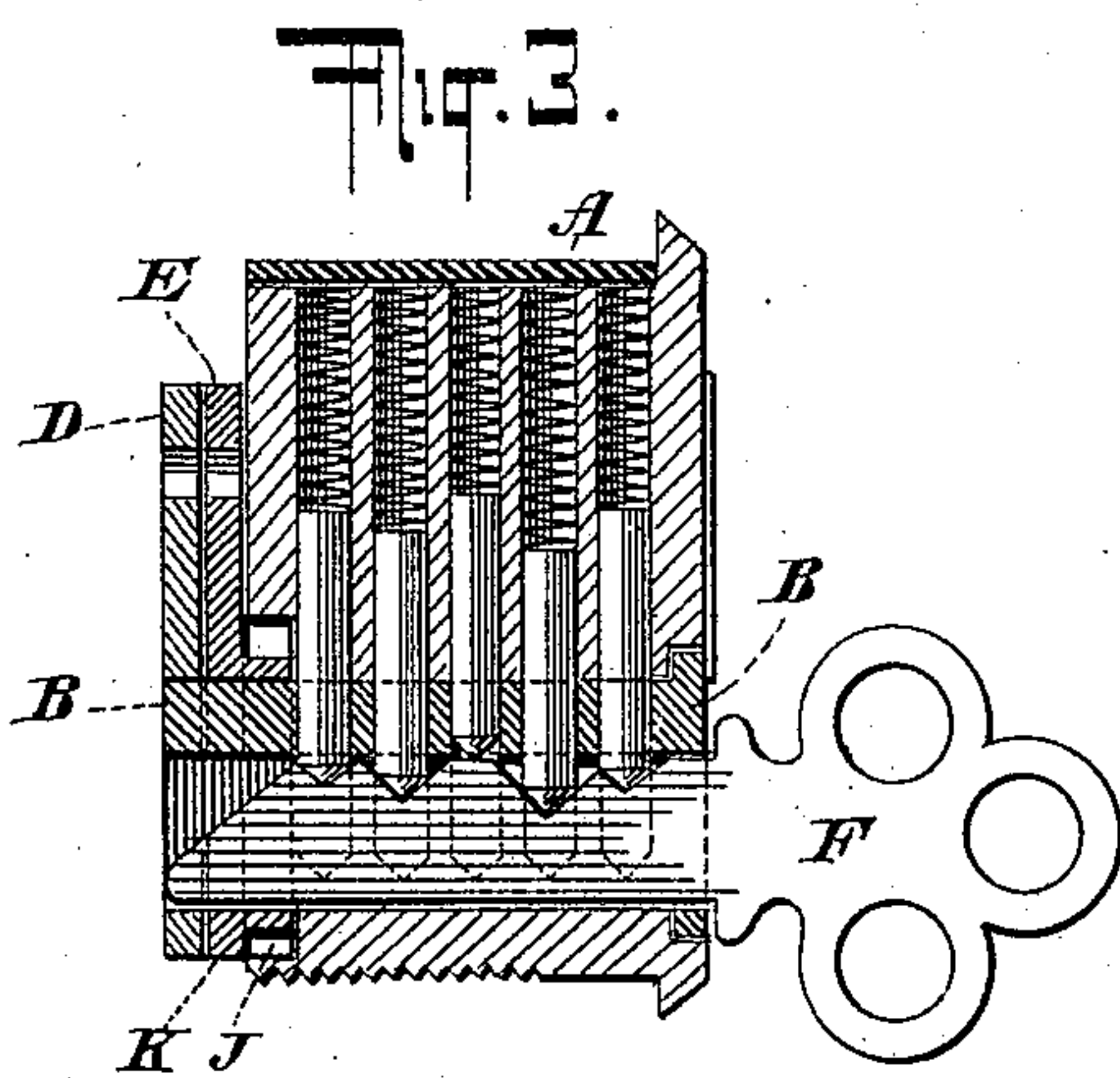
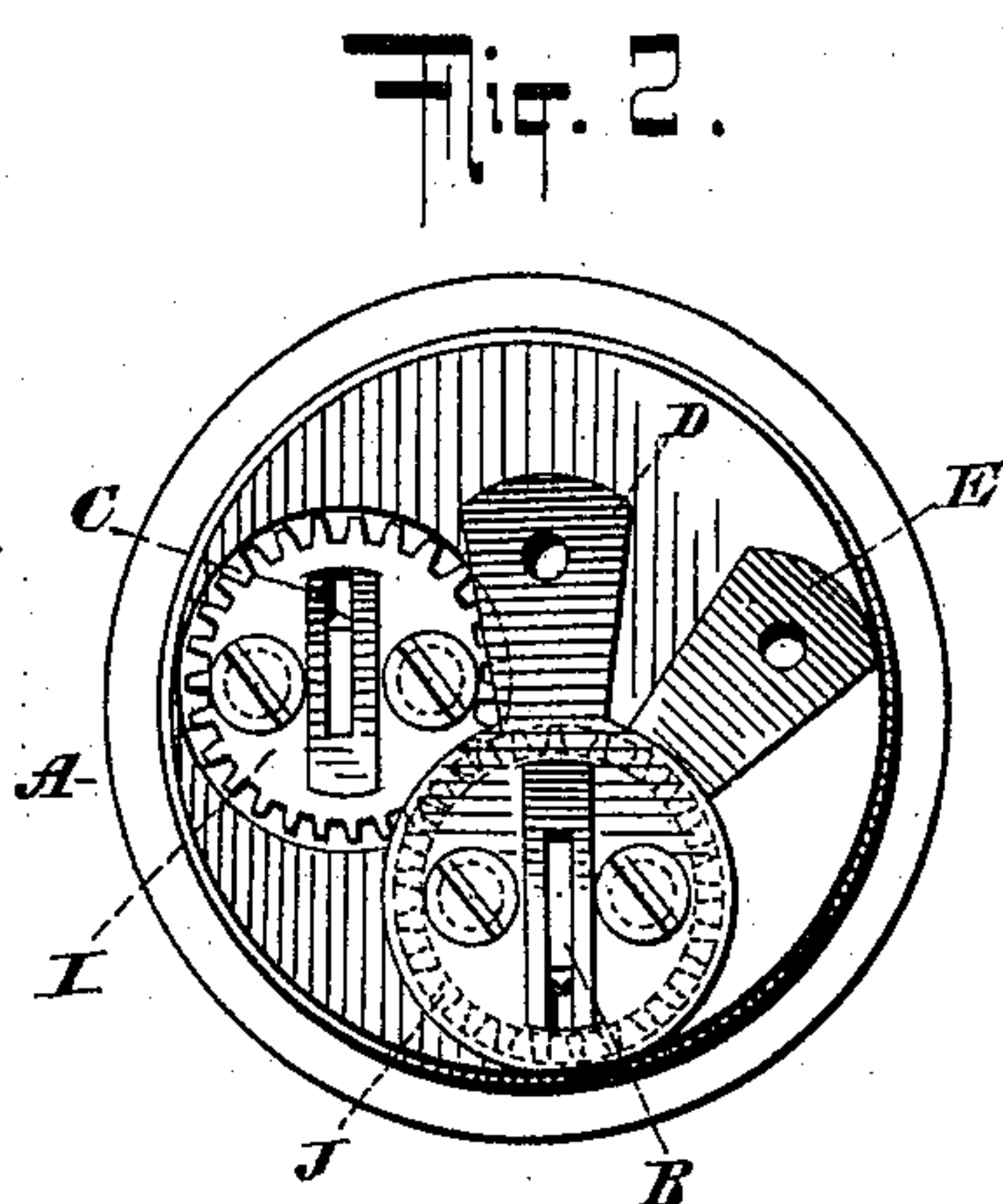
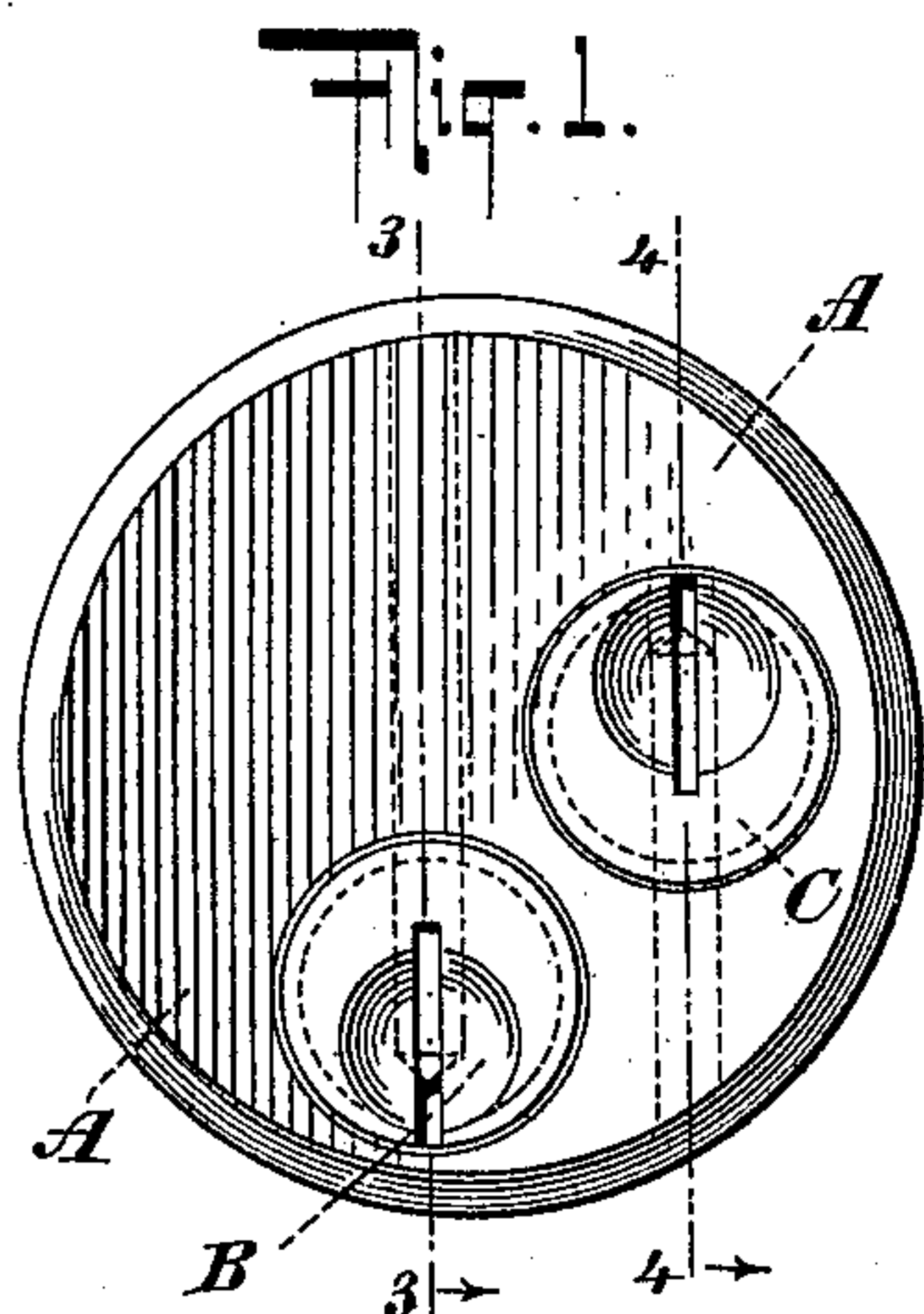


(No Model.)

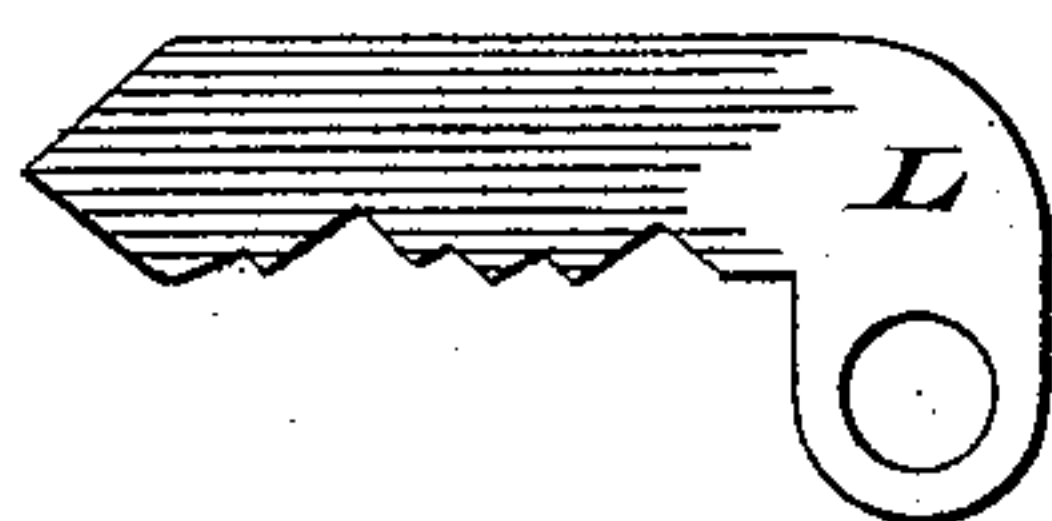
E. J. O'KEEFE.  
LOCK.

No. 582,367.

Patented May 11, 1897.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

EDWARD J. O'KEEFE, OF NEW YORK, N. Y.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 582,367, dated May 11, 1897.

Application filed December 8, 1896. Serial No. 614,888. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD J. O'KEEFE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The invention relates to improvements in locks, and more especially to pin-tumbler cylinder-locks of the Yale general type.

The invention consists of the novel features of construction and combinations of parts pointed out in the claims and which will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a face view of a Yale cylinder having key-hubs and other features constructed in accordance with and embodying the invention. Fig. 2 is a rear elevation of same. Fig. 3 is a longitudinal section of same on the dotted line 3 3 of Fig. 1 and showing the usual key in position in the usual key-hub provided in this class of locks. Fig. 4 is a longitudinal section of same on the dotted line 4 4 of Fig. 1 and illustrating the master-key in position within the new or additional hub applied within the cylinder. Fig. 5 is a view corresponding with Fig. 3, but showing the safe-deposit key within the new or additional key-hub and the usual key within the usual key-hub, this figure showing a slightly-modified form of the invention. Fig. 6 is a vertical transverse section of same on the dotted line 6 6 of Fig. 5, and Fig. 7 is a face view of the safe-deposit key detached from the lock.

In the drawings, A designates a cylinder of the Yale pattern; B C, respectively, key-hubs applied to revolve within the said cylinder, and D E, respectively, the arms at the inner end of said cylinder and adapted to be moved by the action of the keys to throw the usual bolt in the manner hereinafter described.

The key-hub B is the usual revoluble hub for Yale locks and is provided with the customary key-slot and used in connection with the customary spring pin-tumblers, as shown in Fig. 3. Upon the inner end of the hub B is rigidly secured the usual arm D, which upon the rotation of said hub B by means of the key F is adapted to throw the bolt in the ordi-

nary manner. The key-hub B, key F, arm D, and spring pin-tumblers for use in connection with said hub B (shown in Fig. 3) are of usual form and construction, and the arm D may be operated by means of the key F in the manner customary with all Yale locks.

Within the cylinder A is provided the key-hub C, having the customary key-slot to receive the master-key G, as shown in Fig. 4, and which hub is used in connection with the customary form and arrangement of spring pin-tumblers H. (Shown in said Fig. 4.)

The key-hub C, except at its inner end, is of well-known form, construction, and operation, and said hub C in the present instance is at its inner end provided with the gear or toothed wheel I, which is rigid with said hub C, and the teeth of which are in engagement with the circular rack J, formed on the hub K, which is integral with the arm E and rests within a recess formed in the inner outer wall of the cylinder A. The gear-wheel I forms simply a circular rack, and it is likewise confined within a recess formed in the outer vertical wall at the inner end of the said cylinder A. The circular racks I on the hub C and J on the hub K are in permanent engagement with one another, and one cannot turn without the other. The arm E, having the hub K and rack J, is located upon the inner end of the hub B, but is free to turn upon said hub, and hence when the key F is employed to throw the arm D the arm E will remain at rest, and when the key G is made use of for the purpose of turning the gear or rack I, and through said rack and the rack J to throw the arm E, the arm D and hub B will remain inactive. In the form of construction illustrated in Figs. 1 to 4, inclusive, the key F will be the usual key made use of for all of the tenants in a building employing the locks, and, as usual, the edge of these keys F will vary for each room of the building, while the key G will be a master-key adapted to open all of the locks in the building, the one key G being adapted for all of said locks. The key F will throw the arm D only and the key G will throw the arm E only.

In Fig. 5 the lock there shown differs from the lock shown in Figs. 1 to 4, inclusive, sim-



ply in the fact that in Fig. 5 but one arm D is employed upon the inner end of the key-hub B and that said arm carries the toothed rack J, while in Fig. 3 two arms (lettered D E) are mounted upon the inner end of the key-hub B and the circular rack J is carried by the arm E.

The inner end of the key-hub C in Fig. 5 is provided with the gear wheel or rack I, as shown in Fig. 2, and said rack I engages the rack J, which in Fig. 5 is shown applied to the inner end of the key-hub B.

In the employment of the lock illustrated in Fig. 5 it will be evident that neither the key F alone nor the key lettered L alone could throw the arm D, for the reason that the pin-tumblers of the key-hub C and the pin-tumblers of the key-hub B must both be set at one time in order that both key-hubs B C may be free from the cylinder A and in condition to rotate therein before the arm D could be moved in either direction. The key F, although setting the pin-tumblers of the key-hub B, is incapable of rotating said key-hub of the lock shown in Fig. 5, since, owing to the interengaging racks I J, the key-hub C with its pin-tumblers would lock the key-hub B rigidly and with it the arm D.

The absence of the key F from the key-hub B shown in Fig. 5 would prevent the key L in said figure from being able to move the arm D, for the reason that the pin-tumblers of the hub B would lock the latter against any motion being communicated to it from the key-hub C through the intermeshing racks I J. Thus it is apparent that in order to operate the lock illustrated in Fig. 5 both of the keys F L must be introduced into their respective key-hubs B C, and when thus introduced the key F will set the pin-tumblers for the key-hub B and the key L will set the pin-tumblers for the key-hub C, and at such time, both key-hubs being free to rotate, the turning of the key F will impart a revoluble motion to the key-hub B and arm D, the rack J on the said key-hub B at the same time acting through the rack I on the key-hub C to revolve the latter. The freeing of the key-hub C by the key L, so as to revolve under the action of the key F, is simply for the purpose of freeing the key-hub B, so that it may rotate. The key-hub C acts as a safeguard and will constantly lock the key-hub B, except when upon the introduction of a proper key F it is desired that the hub B be permitted to throw the arm D.

The lock illustrated in Figs. 5 and 6 will prove especially valuable in safe-deposit

vaults, where the keeper in charge of said vaults will retain the key L and the owner of a vault or box will hold the key F. It will be apparent that the keeper of the vault could not open the private box by means of the key L and that the owner of the box could not open the same by means of the key F, and hence that the opening of the box will require the presence in the key-hubs of both the keys F L at one and the same time.

It has been indicated above that the key F of the lock shown in Fig. 5 would be held by the owner of the box, but the reverse condition could well exist, since when both of the keys F L are within the cylinder A either key may be used for throwing the arm D.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The lock comprising the cylinder, the key-hub B therein, the arm D rigid on said hub by which to throw the bolt, and the set of tumblers for said hub, combined with the hub C in said cylinder, the arm E swiveled on said hub B adjacent to the arm D, the toothed rack J connected with said arm E, the toothed wheel I on said hub C and being in constant engagement with said rack, and the independent set of tumblers for said hub C; substantially as set forth.

2. The lock comprising the cylinder, the key-hub B therein, the arm operated by said hub by which to throw the bolt, and the set of tumblers for said hub, combined with the hub C in said cylinder, the set of independent tumblers for said hub C, and means connecting said hubs, whereby one hub locks the other against rotation until both keys are within their respective hubs; substantially as set forth.

3. The lock comprising the cylinder, the key-hub B therein, the arm operated by said hub by which to throw the bolt, and the set of tumblers for said hub, combined with the hub C in said cylinder, the set of independent tumblers for said hub, and intermeshing toothed racks connecting said hubs and serving as a means of communicating motion from one of said hubs to the other when both keys are in their respective hubs; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 4th day of December, A. D. 1896.

EDWARD J. O'KEEFE.

Witnesses:

CHAS. C. GILL,  
E. JOS. BELKNAP.