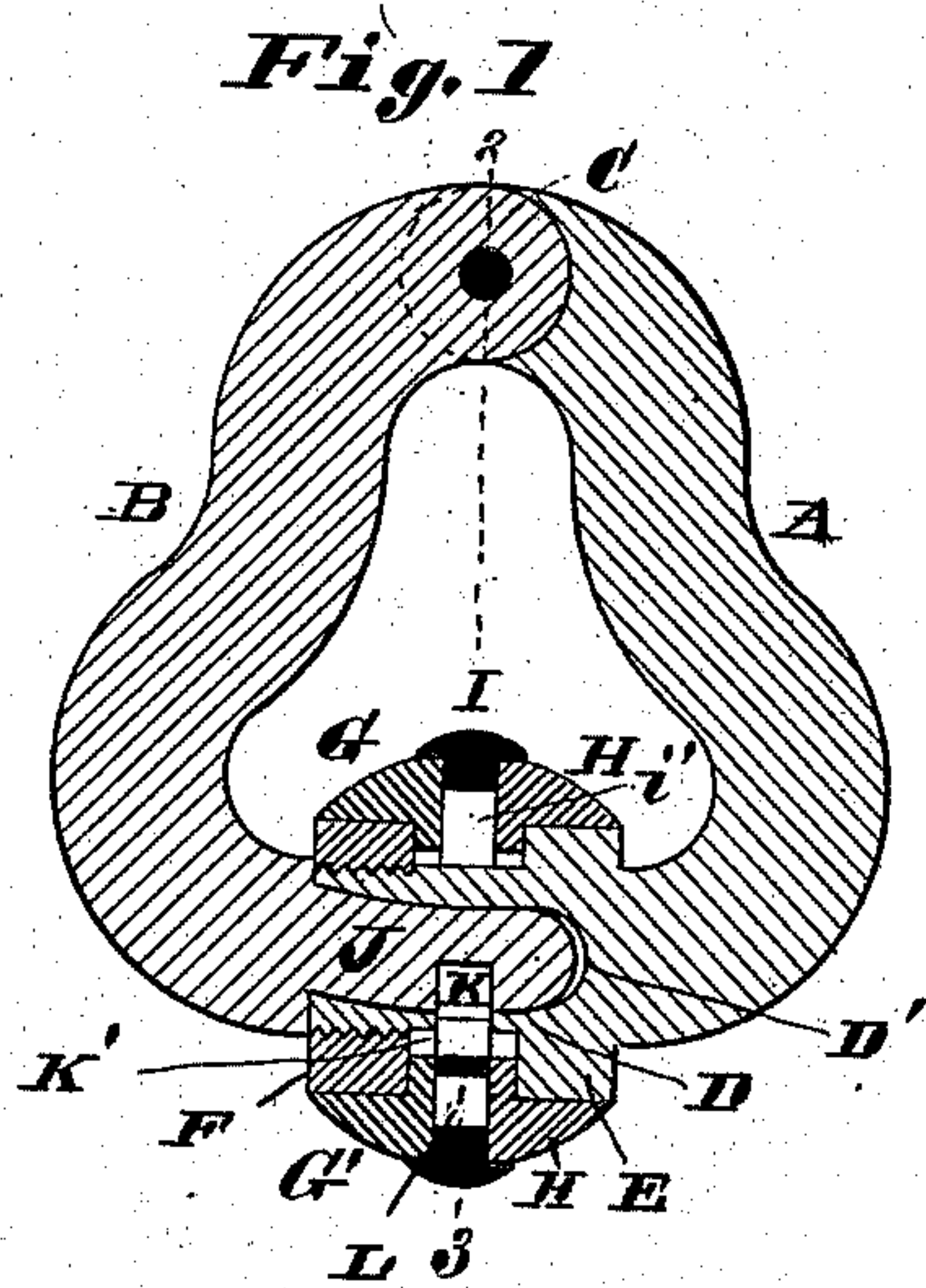


(Model.)

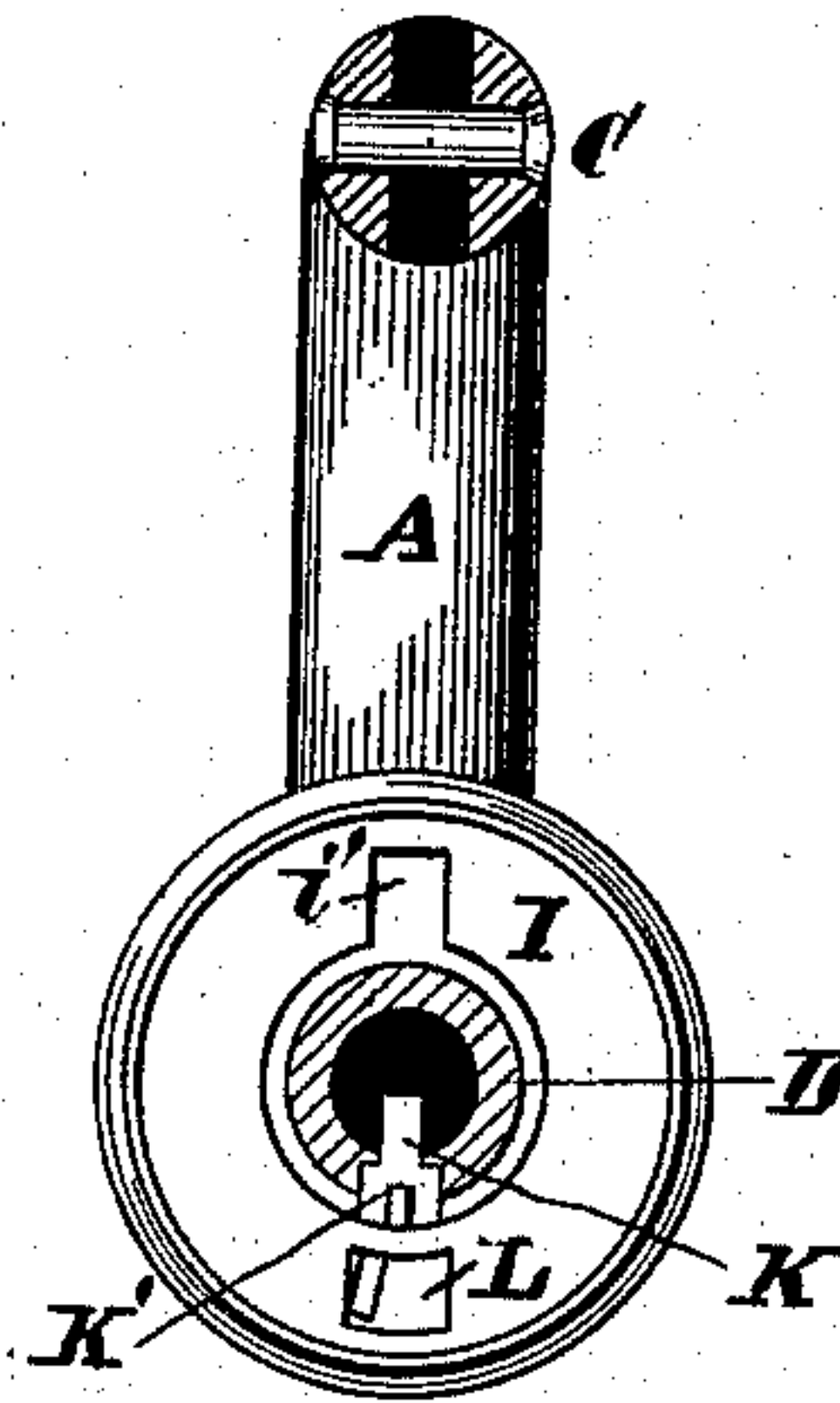
M. A. EKL, V. SKALA, A. HOYDA & M. CIZEK.  
PERMUTATION PADLOCK.

No. 288,559.

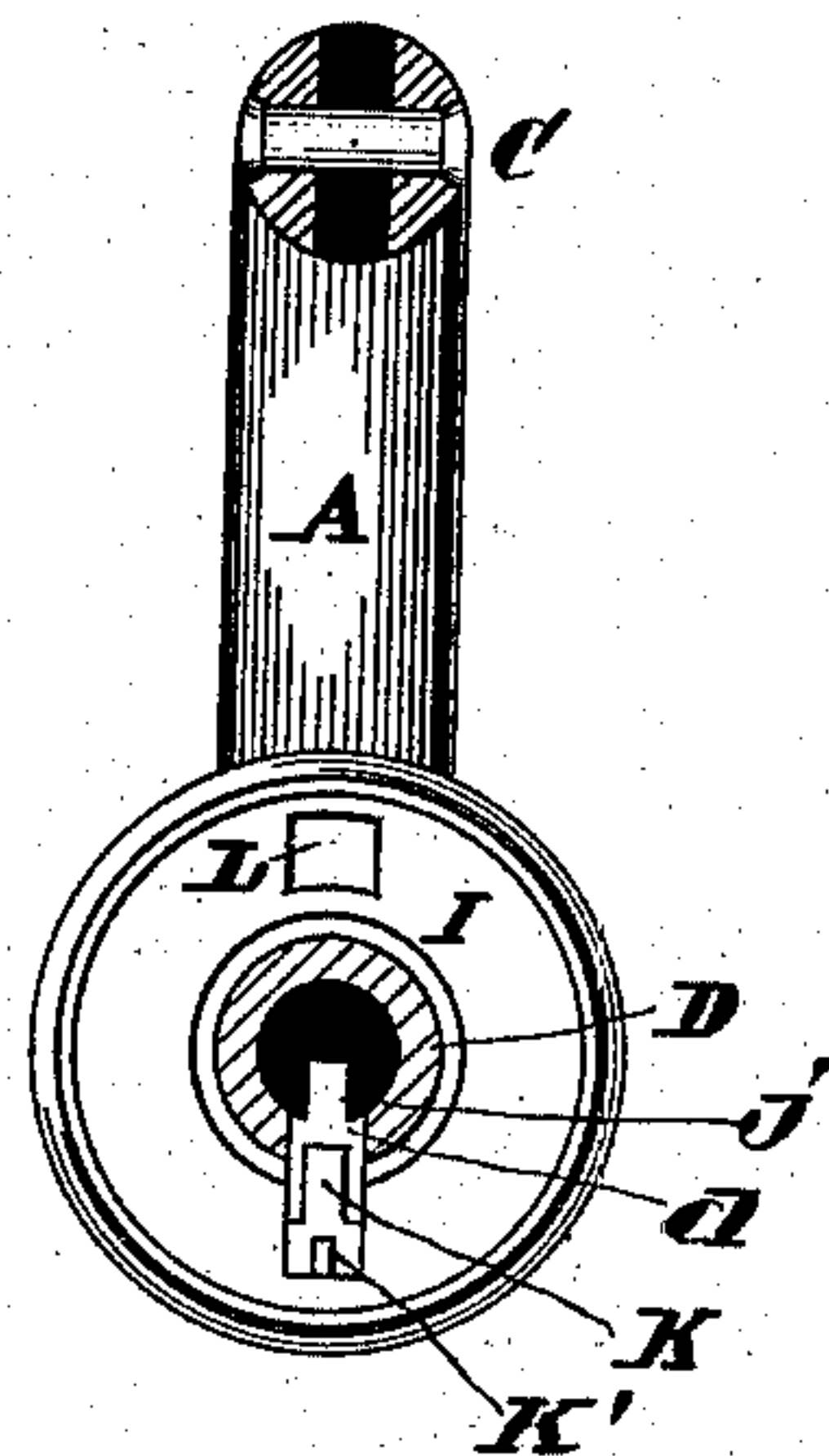
Patented Nov. 13, 1883.



*Fig. 2.*

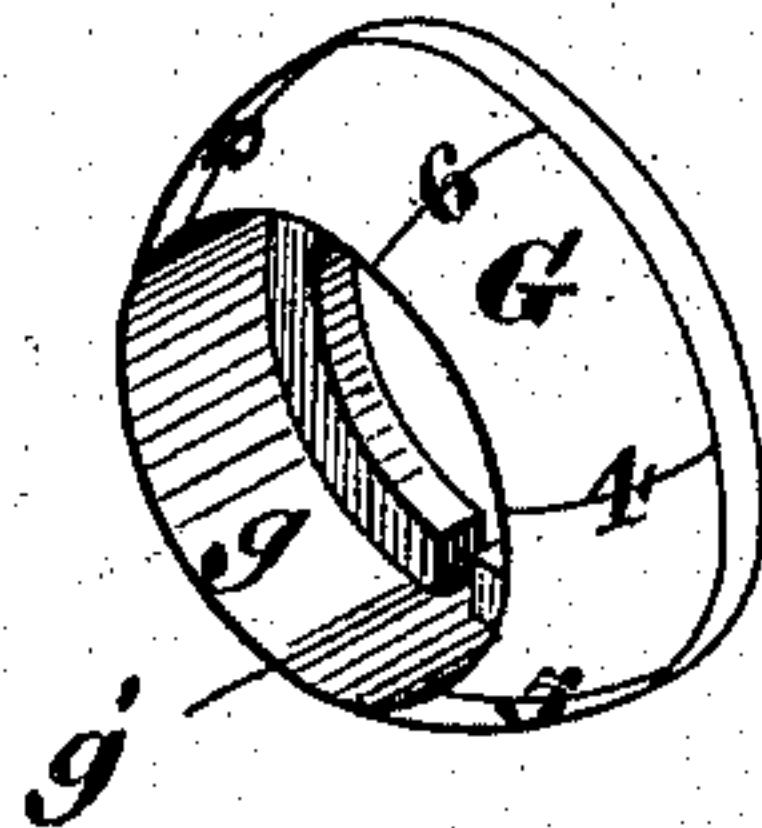


*Fig. 3.*

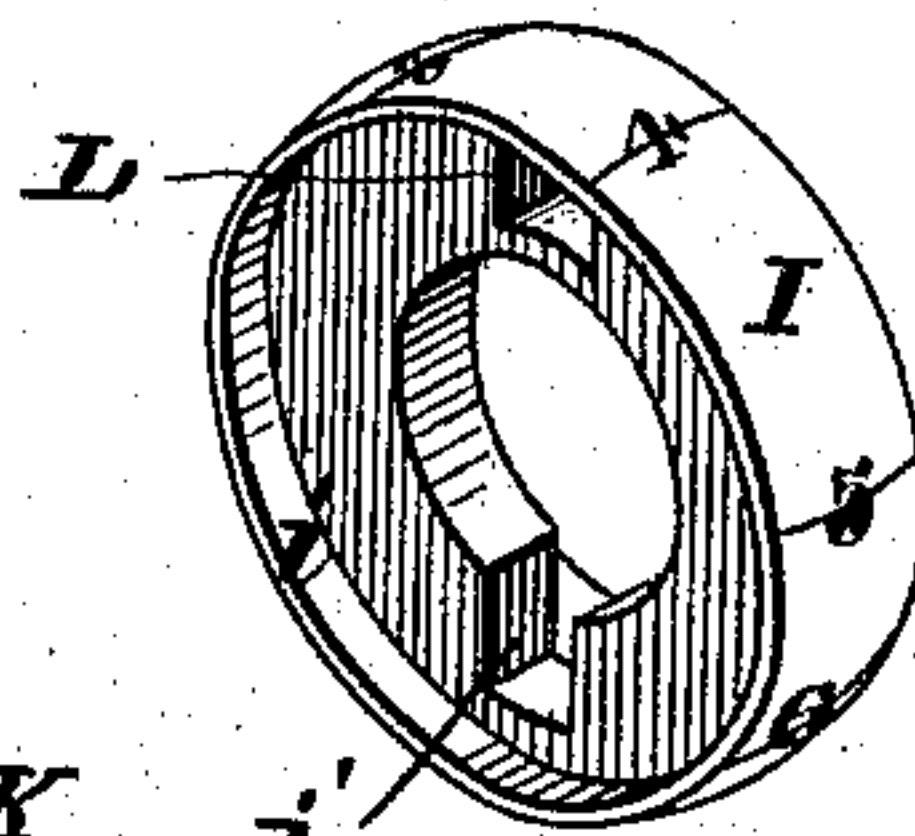


*Fig. 4.*

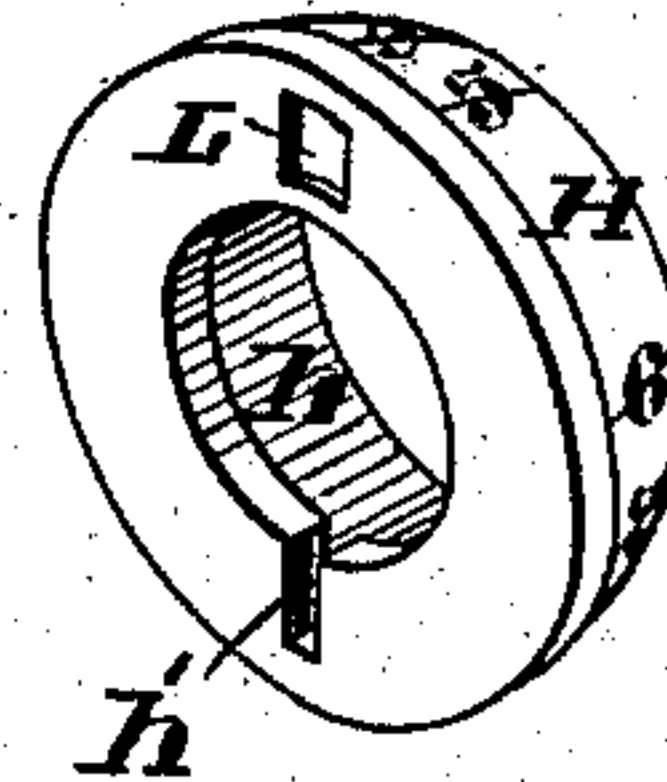
*Fig. 4.*



*Fig. 6.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

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## PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 288,559, dated November 13, 1883.

Application filed March 16, 1883. (Model.)

*To all whom it may concern:*

Be it known that we, MARTIN A. EKL, VENZL SKALA, ANTON HOYDA, and MARTIN CIZEK, all of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Combination-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our improvement applies to that form of lock in which the tumblers surround an axle into which the catch-pin fits, the tumblers being operated by direct contact of the hand.

Our invention is set forth in the description and claim.

In the drawings, Figure 1 is a longitudinal sectional view of our improvement applied to a padlock. Fig. 2 is a transverse view of the lock at 2 3, Fig. 1, showing the parts in locked position. Fig. 3 is a similar section, except that the parts are in the unlocked position. Figs. 4 and 7 are perspective views of the two outer tumbler-rings. Fig. 6 is a perspective view of the central tumbler-ring. Fig. 5 is a perspective view of the locking key or pin.

A and B are the two side bars, hinged together at C. The lower ends of the bars are bent toward each other. The end D of the bar A is tubular, and carries two collars, E and F, that constitute the bearings upon which turn the two side tumbler-rings G and H. The tumblers G and H are made with annular recesses *g* and *h*, fitting the collars E and F. The middle tumbler, I, has bearing on the tumblers G and H, in the same manner that these tumblers have bearings on the collars, the tumbler I having side recesses, *i*, in which the inner ends of the side tumblers fit. The tumblers have transverse lines upon their peripheries that are marked with numbers to give means for the arrangement of the tumblers in the proper position for the unlocking of the parts. The end D has an axial socket, D', to receive the catch-pin J, forming the end of the bar B. At one side of the tubular end D is an aperture or key-hole, *d*, in which fits a pin or key-block, K, that in its inner position (see Figs. 1 and 2) enters a recess, *j*, in the pin J, and serves to lock the pin J in the socket D'. The key K is held in the locked position by the tumbler-rings, except when all the rings are in such a position that the

head K' of the pin K can move outward into recesses in the tumblers, and thus its point is withdrawn from the recess *j* in the pin. In this case the pin J can be drawn out of the socket D'. The recesses in the tumblers are shown at *g'*, *h'*, and *i'*, each tumbler having a single recess. It will be seen that the key K is loose and acts by gravity when taking its locking and unlocking positions, and consequently the lock must be held in the proper position, even after the tumblers have been properly arranged, to allow either the locking or unlocking of the device, for the orifices *d* and *j* must be held at bottom to allow the key to fall out of recess *j* and unlock, and, on the other hand, these orifices must be held upward, and the lock thus inverted to allow the key to fall into the locking position. In addition to knowing which side to hold downward, it is necessary, to enable the unlocking, that the person shall know the combination of numbers in the disks, indicating when all the recesses *g' h' i'* are in line.

The manipulation is as follows: The tumblers are all turned into the proper relative position to bring all the recesses *g' h' i'* in line. Then the recesses are turned in line with the key K and the lock turned so that the recesses and key are upon the lower side. Then on tapping the lock the key falls into the recesses and the catch-pin may be drawn out. Reverse movements are made to lock the device.

We have shown the device with three tumblers; but it is obvious that it is not confined to the use of only three, for the same principle may be carried out with a greater number. At L are shown recesses made in the tumblers to balance them by counteracting the effect of the recesses *g'*, *h'*, and *i'* upon the other sides.

We claim as our invention—

The combination of a locking-pin, J, with recess *j*, socket D D', with orifice *d*, a gravitating key, K, and annular tumblers turning on the socket end D, and having recesses to allow the outward movement of the key K.

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Witnesses: MARTIN CIZEK.

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