

(No Model.)

A. KOHLHOF.

LOCK.

No. 311,992.

Patented Feb. 10, 1885.

Fig. 1.

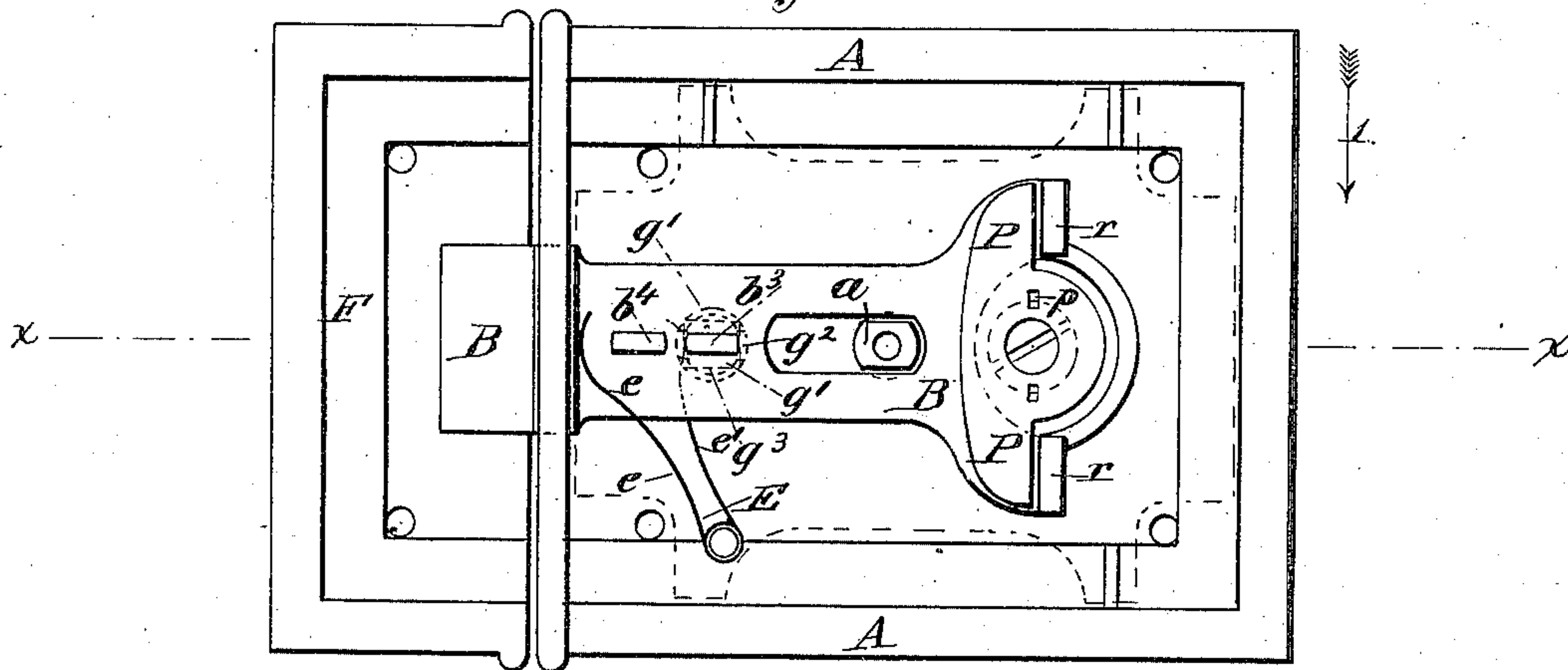


Fig. 10.

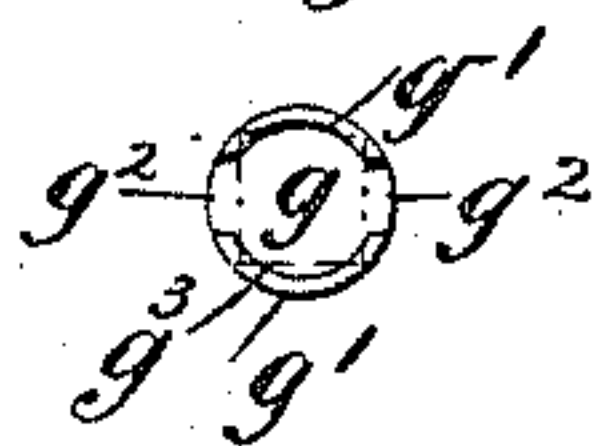


Fig. 2.

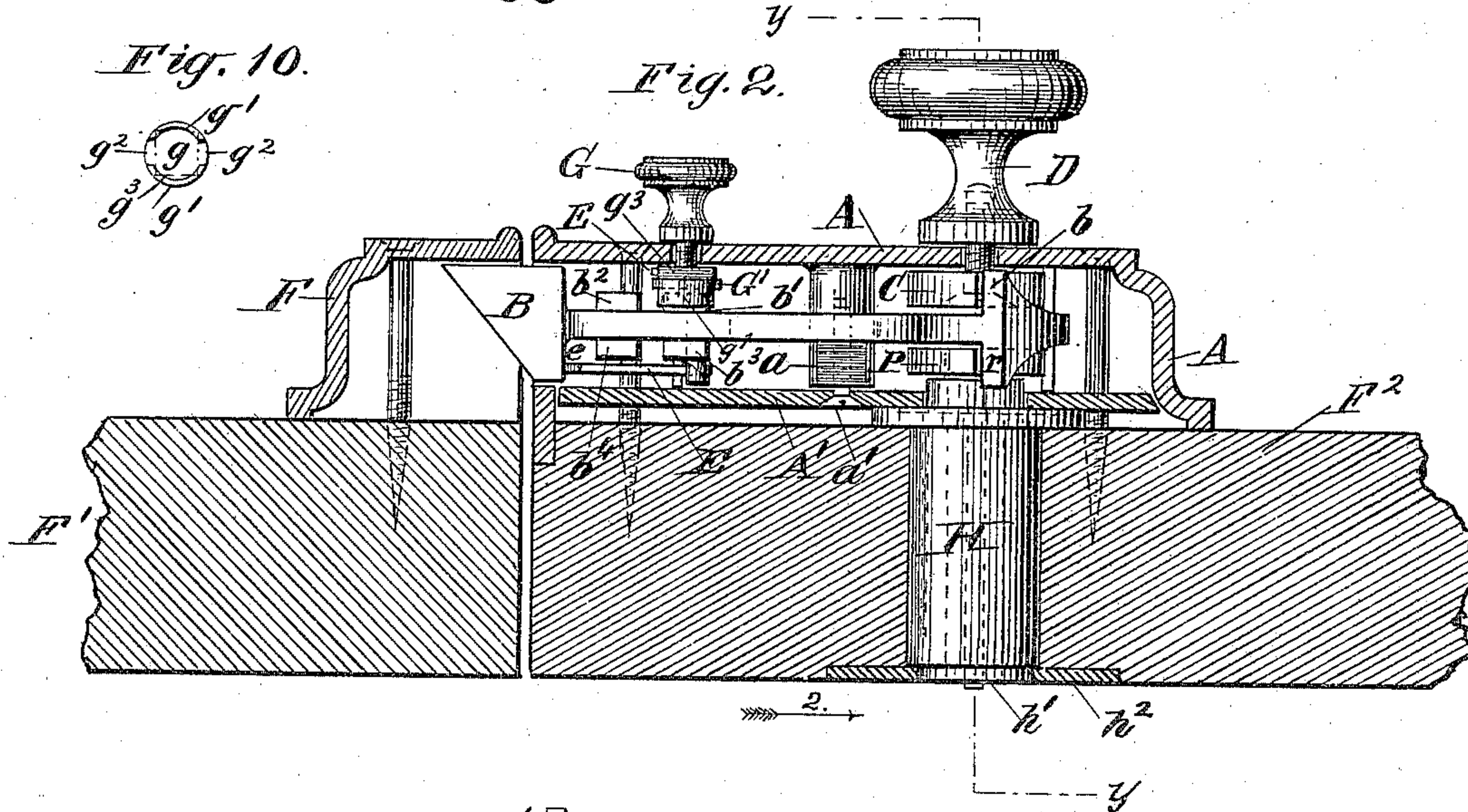


Fig. 4.

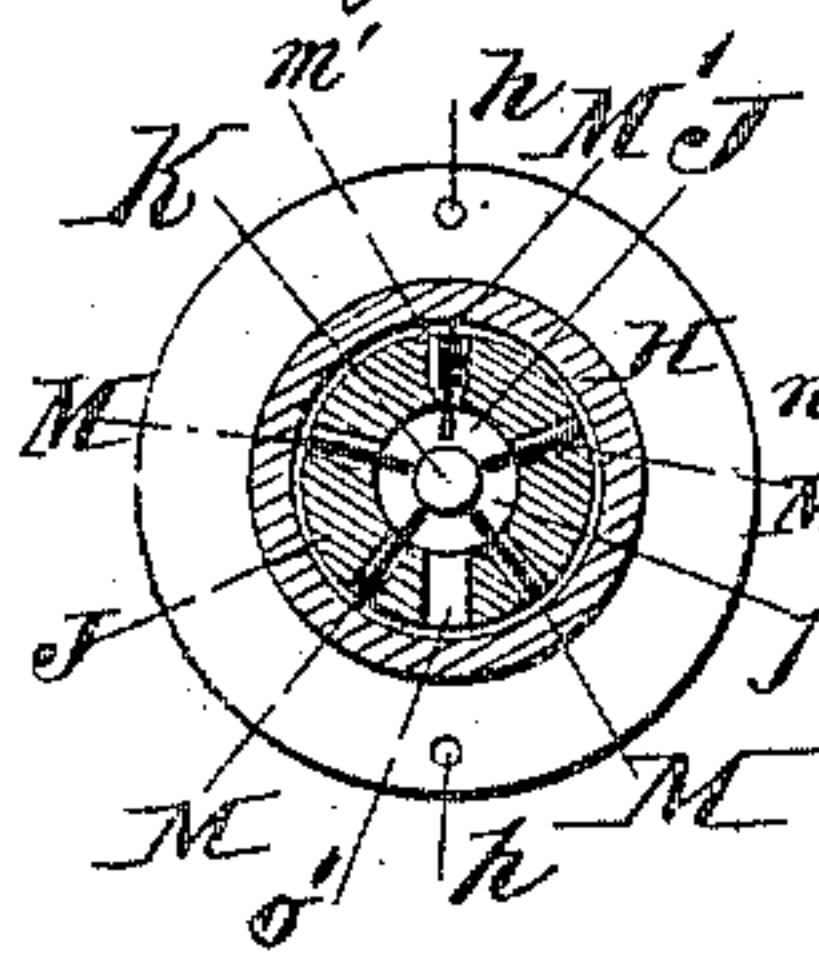


Fig. 5.

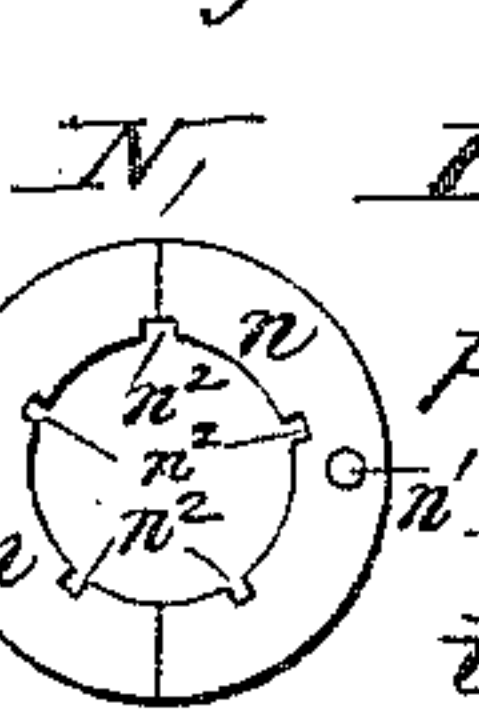


Fig. 3.

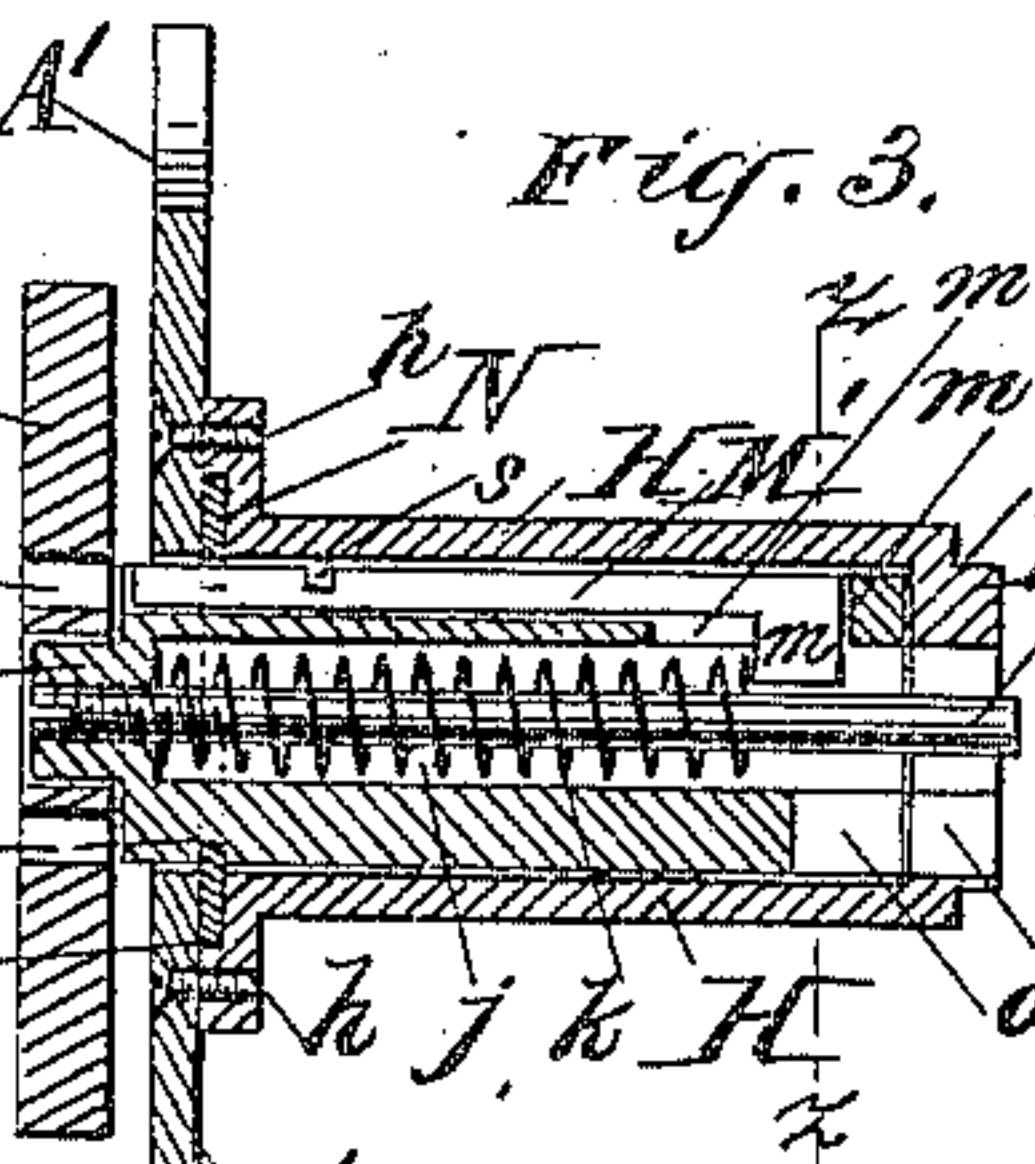
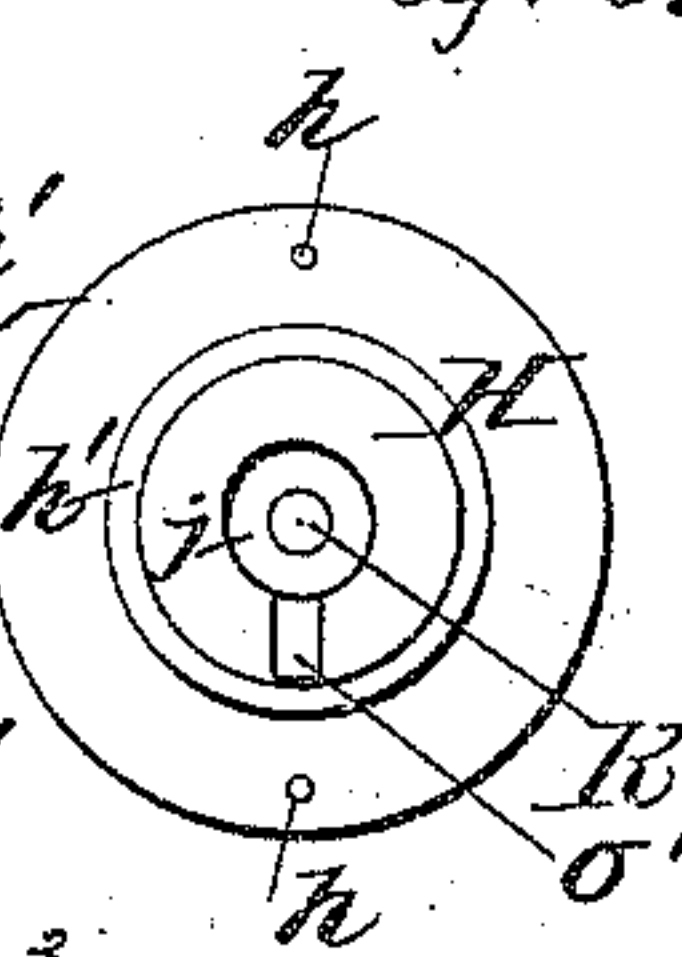
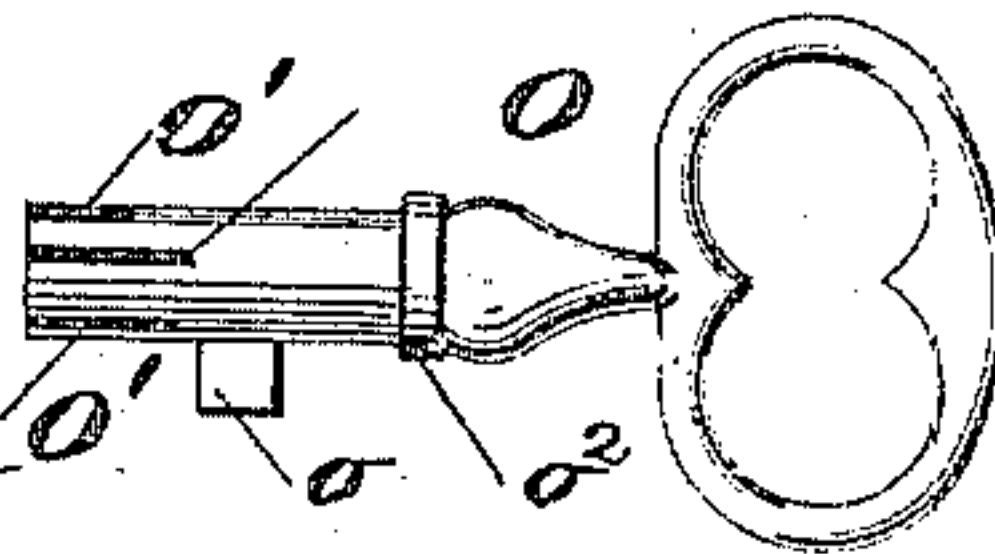


Fig. 6



Fia a



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UNITED STATES PATENT OFFICE.

ANDREAS KOHLHOF, OF NEW YORK, N. Y.

LOCK.

SPECIFICATION forming part of Letters Patent No. 311,992, dated February 10, 1885.

Application filed May 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, ANDREAS KOHLHOF, a citizen of Germany, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The principal object of my invention is to provide a lock of strong and simple construction, which cannot be picked or be unlocked except by its own key.

The invention consists in a construction of the lock-bolt with studs, and of a knob with a socketed head having a slotted flange adapted to engage the studs to lock the bolt against endwise movement, or to be set to permit the bolt to slide in the lock-case.

The invention consists, also, in a cylinder held in the key-barrel of the lock, and containing edge-slotted bits adapted to be moved lengthwise by the slotted key to bring the bit-slots in line with a fixed notched collar held in an annular groove of the bit-cylinder, to permit the cylinder to be turned by the key for throwing the lock-bolt by the end of one of the bits entering a cam-plate which acts on the bolt, and the bits being forced back by a spring to cause the collar to interlock with the bits to hold the cylinder against turning when the key is withdrawn.

The invention consists, also, in special constructions and combinations of parts of the lock, all as hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is an inside view of the lock, with the key and bit-holding cylinder and barrel removed, and with the inside plate of the lock shown in dotted lines. Fig. 2 is a sectional plan view of the lock as applied to a door, and with the parts in section on line $x x$, Fig. 1, looking in the direction of arrow 1. Fig. 3 is a cross-section on line $y y$, Fig. 2, looking in the direction of arrow 2. Fig. 4 is a cross-section on line $z z$, Fig. 3, looking in the direction of arrow 3. Fig. 5 is a side elevation of the split-notched collar of the bit-cylinder. Fig. 6 is a face view of the key-barrel and bit-cylinder. Fig. 7 is a side elevation of the bit-cylinder. Fig. 8 is an edge view of the bolt-throwing bit,

removed from the bit-cylinder. Fig. 9 is an elevation of the key, and Fig. 10 is an inner end view of the bolt-locking stud.

A is the lock-case; B, the lock-bolt, and C the cam fixed to the knob D, to act against the lugs b of the bolt on turning the knob either way to carry the bolt back for opening the door from the inside. The bolt is slotted to work over a stud, a , on the case A, into which stud the screw a' , for holding the back plate, A' , of the case passes. A spring, E, by its arm e throws the bolt B outward into the nose or striking plate F, fixed to the door-casing F'.

G is a finger-knob, having a head, G' , rigidly fixed to it to work within the lock-case. This head G' has a central circular socket, g , in its end of about the same diameter as the length of the studs $b' b^2$, formed on the shank of the bolt B, and the flange g' around the socket g is cut through or slotted diametrically at opposite sides, as at g^2 , said slots g^2 being wide enough to permit the studs $b' b^2$ to pass freely through them when they are brought, by turning the head G' , to coincide with the studs to permit the bolt B to be thrown either by the knob D or by the lock-key, and when the slots g^2 are turned out of line with the studs the bolt will be held by the flange g' against endwise movement. When the flange g' confines the inner stud, b' , the bolt B will be held within the nose-plate F, and the door F² will be locked from both sides; and when the flange g' confines the outer stud, b^2 , the bolt will be held within the case A and clear of the plate F, so that the door may freely be swung open or shut, as desired. The arm e' of spring E acts against the squared side faces, g^3 , of the head G' , for holding the head steadily when set by the knob G. Duplicate studs $b^3 b^4$ are provided on the reverse side of the bolt-shank, to act with the head G' in like manner as the studs $b' b^2$, when the bolt may be reversed in the lock-case to fit the lock in any special place, as may sometimes be required. The inner stud, b' , or studs b' and b^3 may alone be used to hold the bolt B in locking position.

H is the barrel for holding the key-bit cylinder J, said barrel being preferably secured to the inner lock-plate, A' , from the inside

of the plate by screws h before the plate is screwed to the stud a . The barrel H passes through the door to the outside, and has a shoulder or rabbet, h' , on which to center the escutcheon-plate h^2 before fastening said plate to the door, as in Fig. 2. The bit-cylinder J is made to turn easily in the barrel H , and has a center-pin, K , rigidly fixed in its central inside end stud, L , and extending outward through the center of the bore j of the cylinder, and a spring, k , around the pin, acts against the inwardly-projecting shoulders m of the bits $M M'$ —which latter are fitted in longitudinal grooves m' in the surface of the cylinder—to force the bits back against the ends m^3 of the grooves, which grooves are cut through to form slots m^2 to afford the requisite longitudinal movement of the bit-shoulders m , which rest on the pin K for support of the bits at their outer ends. (See Figs. 3 and 4.) There may be as many of the bits M as desired, four being shown in connection with the bit M' , which is made sufficiently strong to throw the bolt B back by the key O when the inner end of the said bit M' enters a hole, p , in the cam-plate P , the ends of which plate act against shoulders r on the bolt B , (or the shoulders b , should the bolt be reversed,) to throw the bolt back by the key. Said plate P is of the same general form as the cam-plate C , connected to the knob D , and is laid loosely against the bolt B , and is held in position by the stud L of the cylinder J . (See Fig. 3.) The bits $M M'$ are made in different lengths, and have transverse slots s in their back edges. The slots s of the bits M are all cut the same distance from the inner ends of the bits, which distance corresponds with the length of that portion S of the inner end of the cylinder J , back of the annular groove t , cut in the outer surface of the cylinder, while the slot s of the bit M' is cut back from the inner end of said bit as much farther as the bit enters the cam-plate P to throw the bolt. The key O has a tongue, o , which enters recesses o' in the barrel H and the cylinder J , to cause the slots O' made in the key to register properly with the shoulders m of all the bits as the key is passed into the barrel H . The slots O' of the key are of different lengths or depths, to correspond with the lengths of the bits $M M'$, so that when the key is forced in until its shoulder o^2 comes against the end of the barrel H the slots s of all the bits will be carried inward to register perfectly with a collar, N , placed in an annular groove, t , of the cylinder J , and the end of the bit M' will be carried back into a slot, p , of cam P . The collar N is made in halves $n n$, and is secured rigidly to the inner face of the barrel H by screws passed through holes $n' n'$ in the collar, which has notches n^2 in its inner edge, corresponding in radial position with the bits $M M'$. The central opening of the collar N fits the bottom of the groove t of the cylinder J , and the notches n^2 of the collar

normally interlock with the bits $M M'$, to prevent the cylinder J from being turned by the key until all the notches s of the bits are brought by pushing in the key to register with the collar N , which being done, and the bit M' at the same time forced back into the cam-plate P , the cylinder J may be turned freely by the key, as the bottoms of the notches s will then clear the inner edge of the collar N , as will readily be understood, and on withdrawing the key the spring k will act to carry the bits $M M'$ back to again interlock with the notches n^2 of the fixed collar and prevent a turning of the bit-cylinder.

I make the bits $M M'$ in a split construction lengthwise to provide spring-tongues v at their sides, (see Fig. 8,) which tongues by their elasticity cause the bits to hug the side walls of the bit-slots of the cylinder, to prevent movement of the bits except by the action of the key O or spring k , as above described. I prefer to make the thinner bits M by doubling over in the middle suitable strips of light spring metal and to make the heavier bolt-throwing bit M' by splitting it, as shown in Fig. 8.

It is evident that the relative lengths of the bits $M M'$ and of the key-slots O' may be varied indefinitely, so that no two locks need be made to open by the same key, whereby great safety in the use of the locks is assured.

I am aware of United States Patent No. 95,865, and I disclaim anything therein shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the bolt B , having a stud, b' , or studs $b' b^2$, of the knob G , having a head, G' , provided with an end socket, g , and a flange, g' , slotted at g^2 , whereby the bolt may be locked against endwise movement or be permitted to slide in the lock-case, substantially as shown and described.

2. The combination, with the bolt B , having shoulders r , of the cam-plate P , having slot p , the bit-cylinder J , grooved annularly at t and carrying the bits $M M'$, having back slots, s , and shoulders m , the spring k , acting on the shoulders m , and the fixed collar N , interlocking with the bits to prevent turning of the bit-cylinder to throw the bolt by the bit M' until all the bit-slots s are brought by the slotted key O to coincide with the collar N , substantially as shown and described.

3. The bits $M M'$, provided with spring-tongues v , in combination with the slots m' of the cylinder J , substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in the presence of two witnesses, this 26th day of April, 1884.

ANDREAS KOHLHOF.

Witnesses:

ROBT. W. MATTHEWS,
A. W. ALMQVIST.