

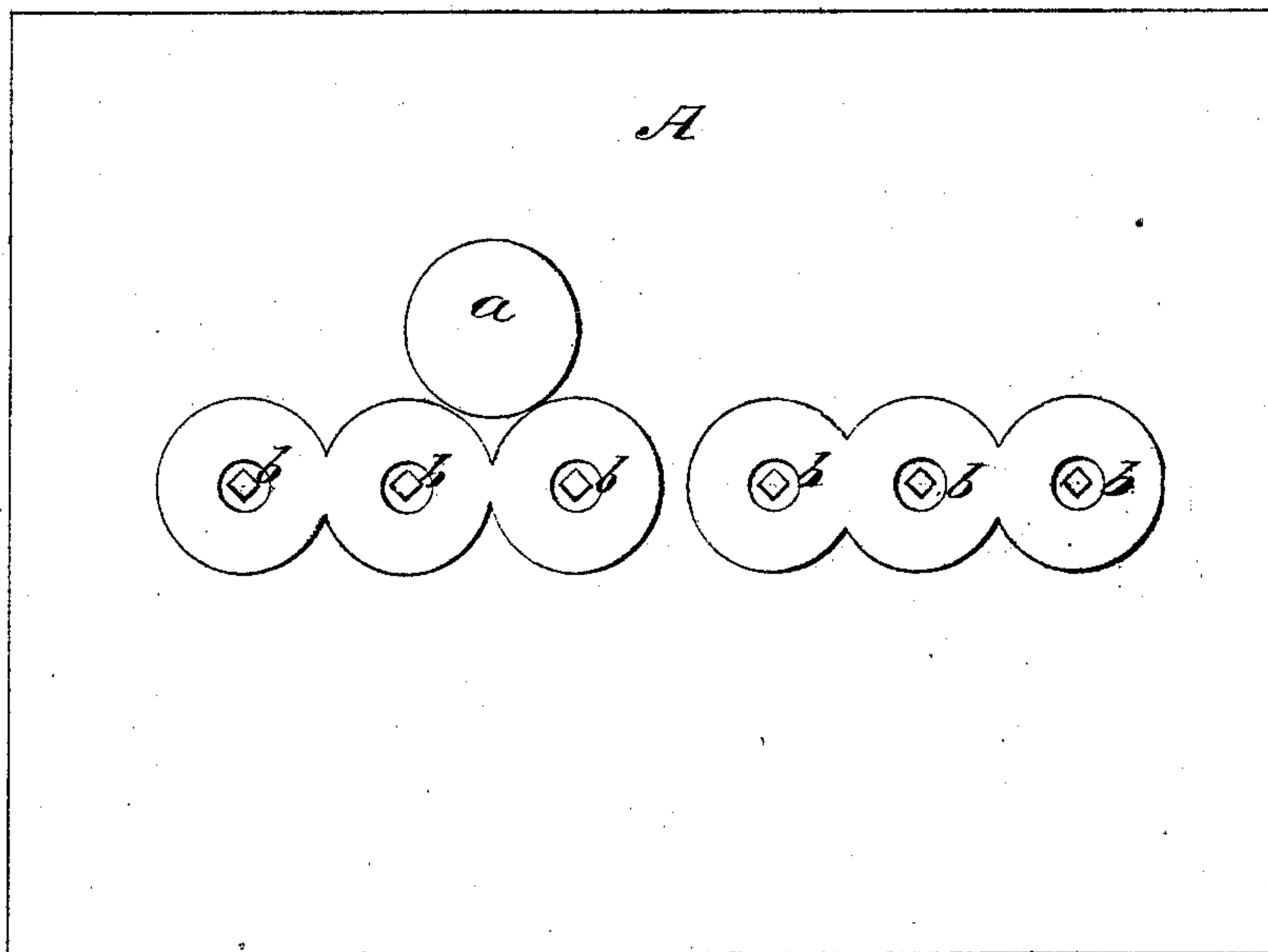
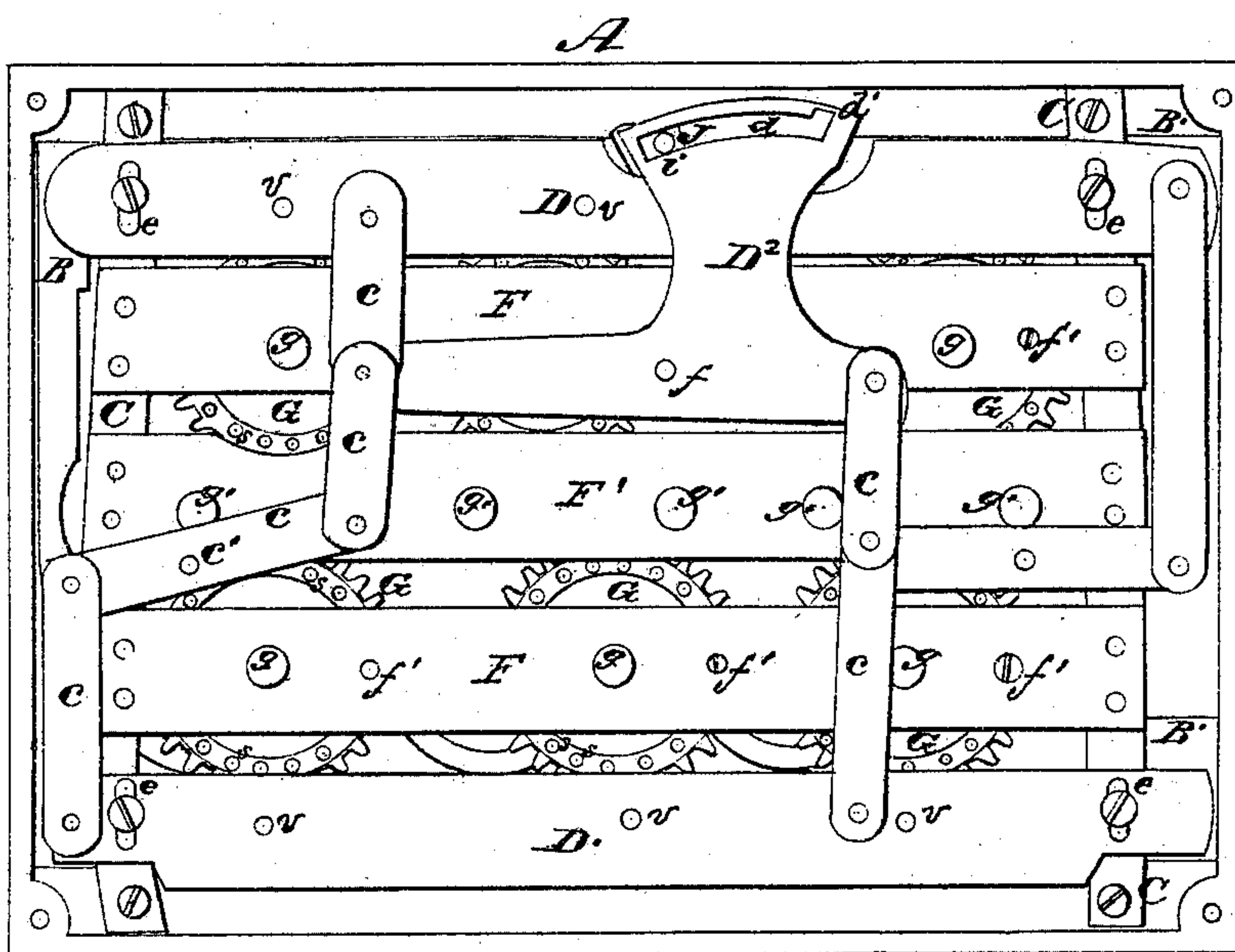
FRANKLIN P. MARSDEN.

Improvement in Combination Locks.

No. 122,124.

Fig. 1

Patented Dec. 26, 1871.

*Fig. 2*

Witnesses.

R. Humphrell
J. A. Campbell

Inventor

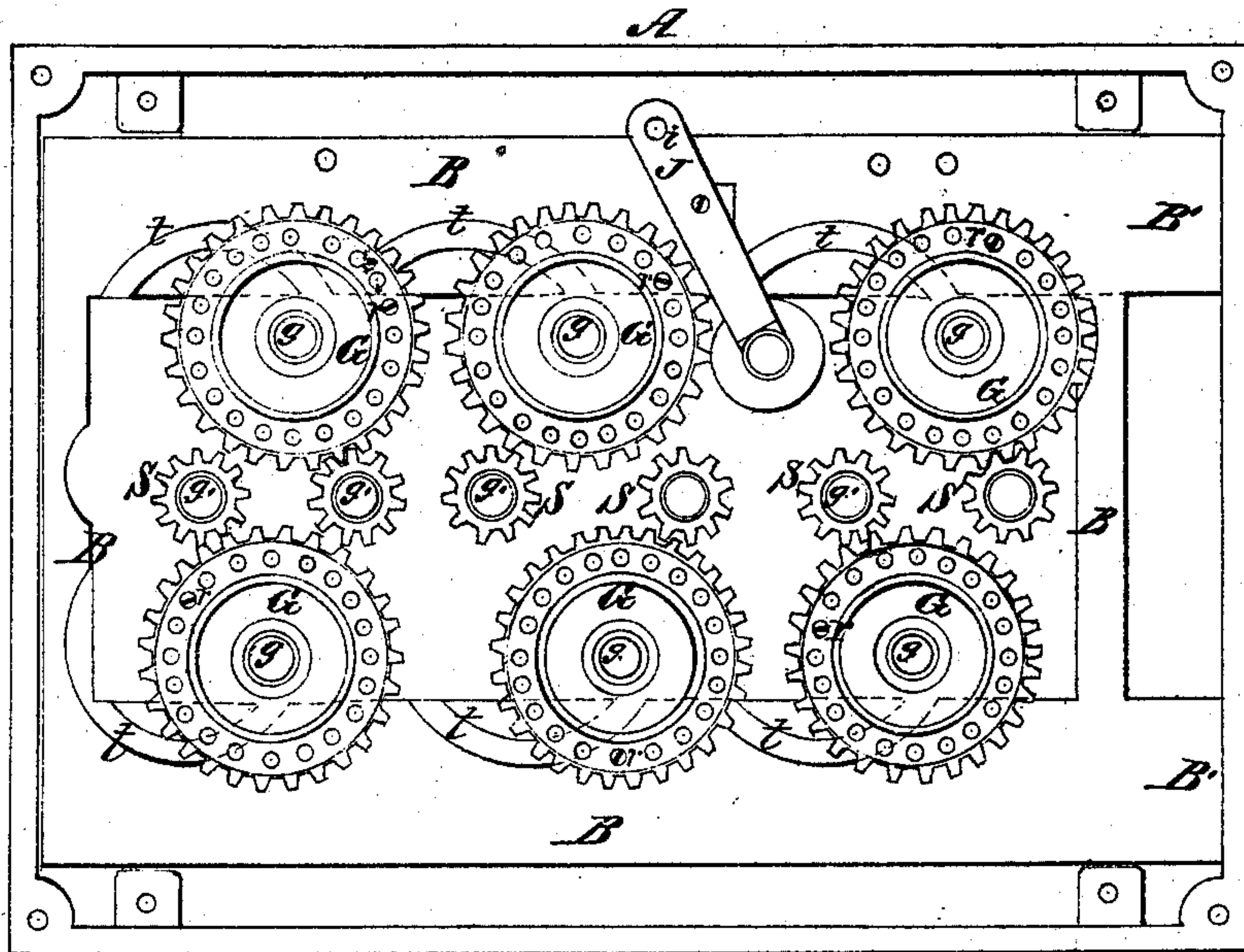
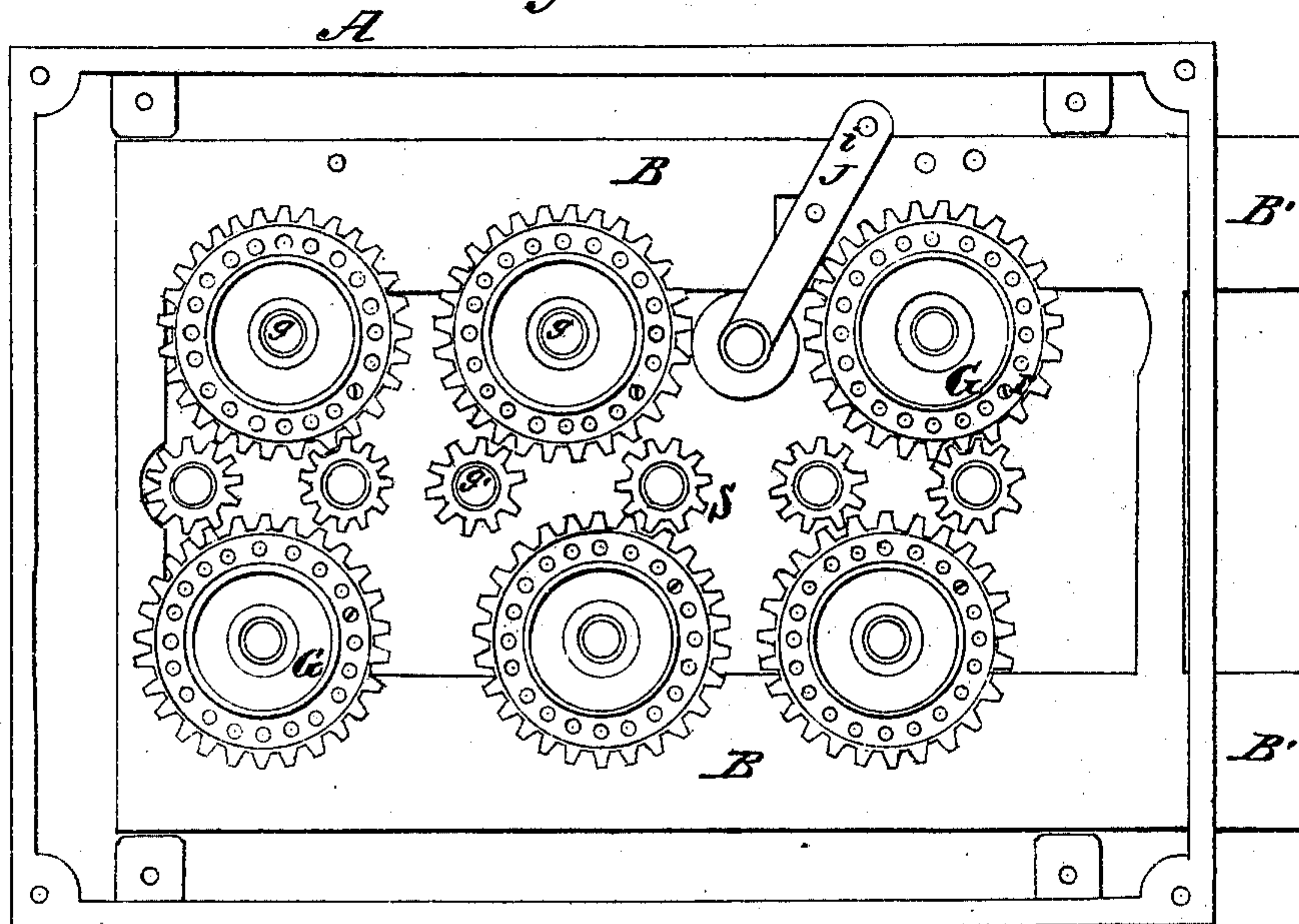
Franklin P. Marsden
by his Atty
Mason Fenwick Lawrence

FRANKLIN P. MARSDEN.

Improvement in Combination Locks.

No. 122,124.

Patented Dec. 26, 1871.

Fig. 3*Fig. 4*

Witnesses.

R. H. M. Kell.
J. A. Campbell.

Inventor

Franklin P. Marsden
 by
Mason Fenwick Lawrence

(93.)

3 Sheets--Sheet 3.

FRANKLIN P. MARSDEN.

Improvement in Combination Locks.

No. 122,124.

Patented Dec. 26, 1871.

Fig. 5

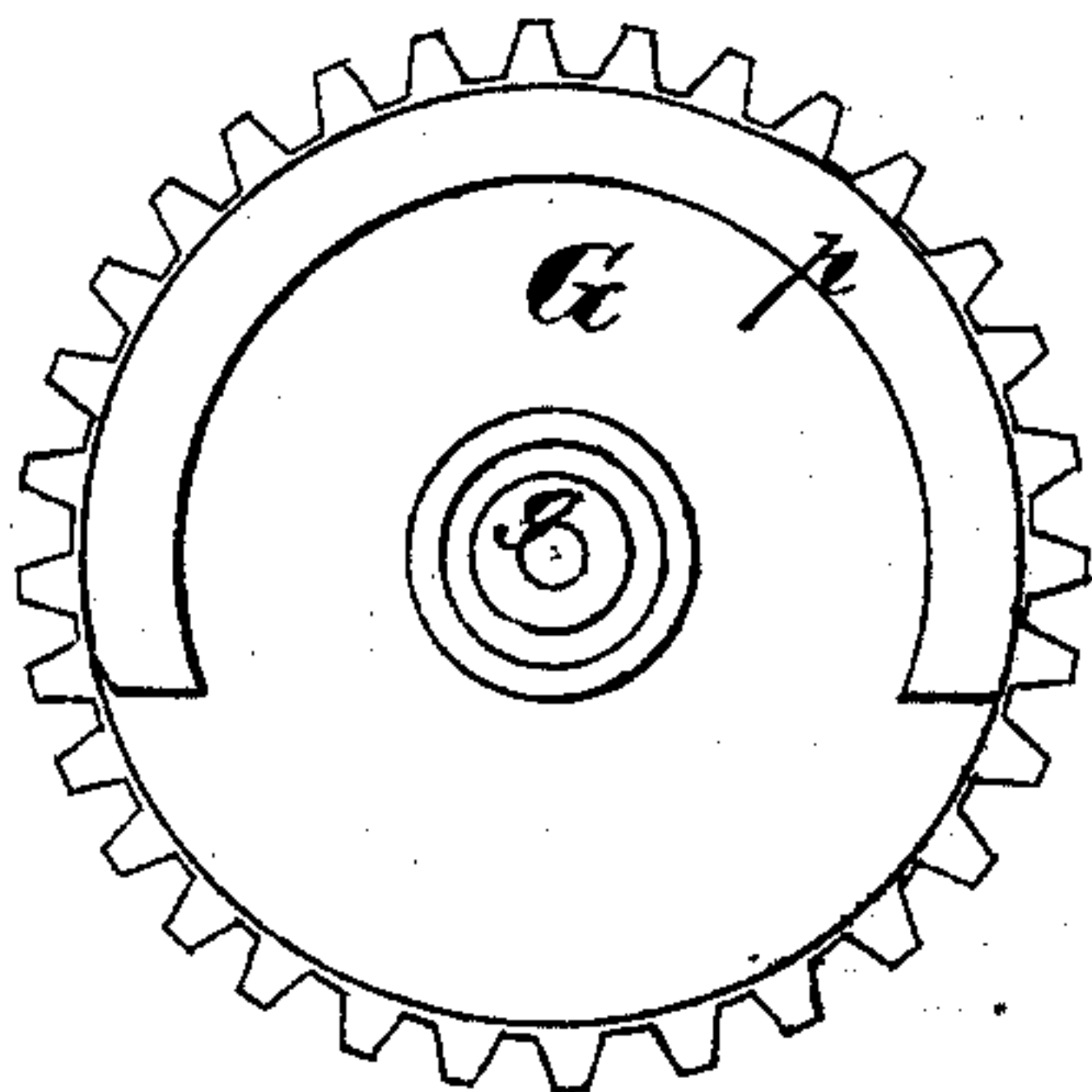
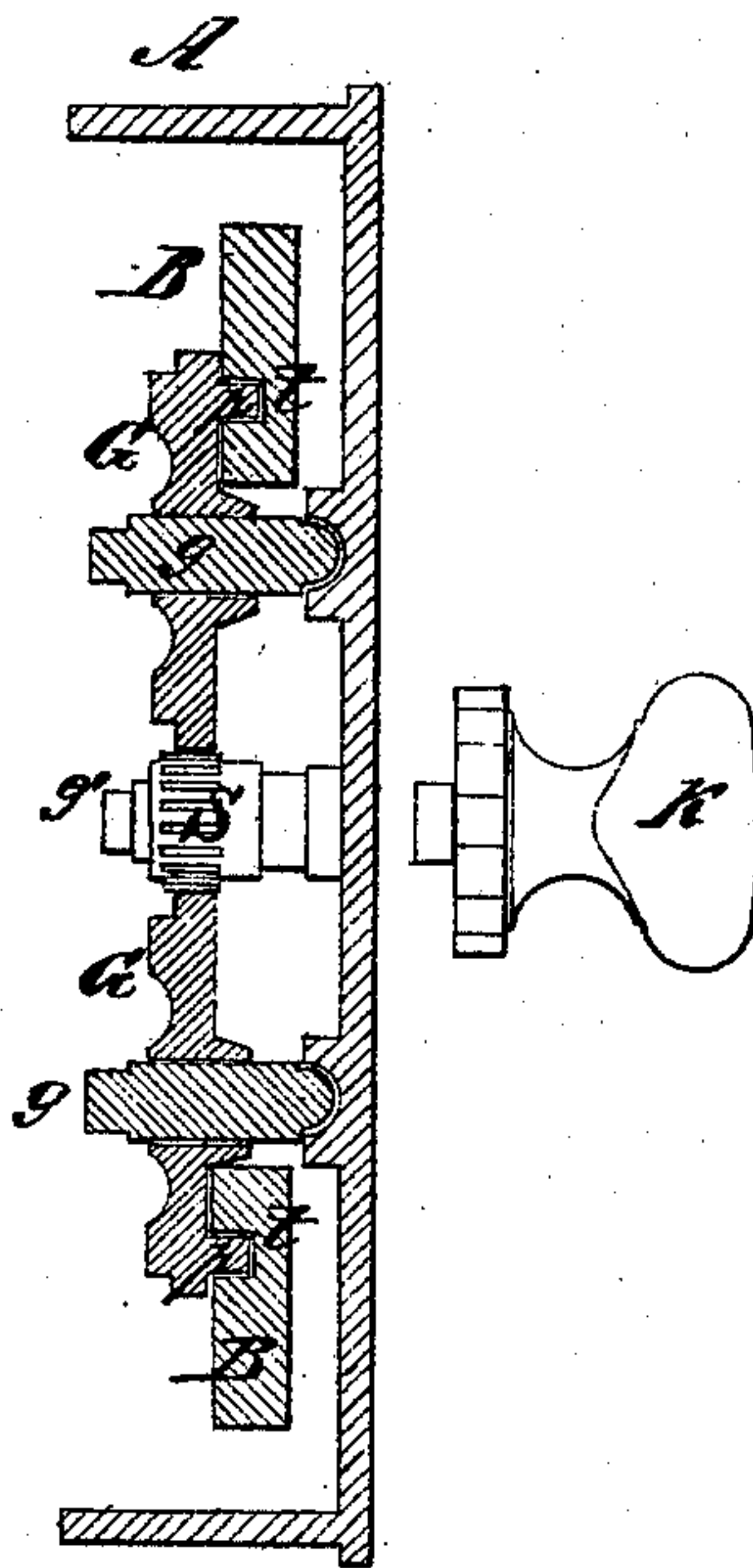


Fig. 6



Witnesses

R. W. Campbell.
J. A. Campbell.

Inventor

Franklin P. Marsden
by his Atty
Mason Fenwick Lammie

UNITED STATES PATENT OFFICE.

FRANKLIN PETER MARSDEN, OF GALENA, ILLINOIS.

IMPROVEMENT IN COMBINATION LOCKS.

Specification forming part of Letters Patent No. 122,124, dated December 26, 1871.

To all whom it may concern:

Be it known that I, FRANKLIN PETER MARSDEN, of Galena, in the county of Jo Daviess and State of Illinois, have invented a new and Improved Lock; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1, Plate 1, is a view of the face of the lock. Fig. 2, Plate 1, is a view of the interior of the lock as seen by removing the back plate. Fig. 3, Plate 2, shows the wheel-work and the bolts unlocked. Fig. 4 is a similar view of the same parts shown in Fig. 3, indicating the bolts locked. Fig. 5, Plate 3, is a view of the back of one of the flanged spur-wheels. Fig. 6, Plate 3, is a section taken transversely through the lock.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to improvements on locks of the permutation kind, which are designed for bank-safes, jail-doors, and other purposes.

In carrying out this invention I employ a groove-bolt frame, flanged spur-wheels, which are provided with adjustable stops; also, fixed stops on part of the lock-frame, against which the adjustable stops on the wheels abut in certain positions of these wheels on key-posts for moving the flanged spur-wheels; also, a contrivance whereby the spur-wheels are locked by turning backward the knob which moves the bolt-frame, all of which will be hereinafter more particularly described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the lock-case, which has a removable back plate and a number of elevations formed on its front plate, which are centrally perforated to allow the introduction of a key, K. There is also projecting from the face plate of the case A a knob, *a*, for moving the bolt-frame B back and forward. On the inside of the lock-case, and screwed fast to lugs cast therein, are two bars, C C, to which are permanently secured three bars, F F' F, which afford back bearings for the shaft *g g'* of spur-wheels G and S. The front bearings for the shafts of these wheels are in the face plate of the lock-case. The larger wheels G are rotated back and forth by

means of the key K applied on the square end *b* of posts *g'*. The wheels G have semicircular flanges or ribs *p* on their outer sides, which are concentric to the axes of their respective wheels, and which are designed to enter corresponding grooves *t* formed in the back side of the bolt-frame B when the bolts B' are shot out, thus securely locking the bolt-frame in said position. To unlock the bolt-frame the several wheels G must be turned until their flanges or ribs *p* are out of the grooves *t* and free from the bolt-frame B. Each one of the flanged spur-wheels has a number of holes in its back side which are arranged concentrically to its axis, which holes are properly numbered and adapted for receiving a screw-threaded stop, *r*, shown in Figs. 3 and 4, Plate 2. On the front sides of two movable bars, D D¹, are stop-pins *v*, which, when these bars are caused to approach each other, will engage with the teeth of all the spur-wheels G and prevent them from being turned either to the right or left hand. On the front side of the permanent bars F F are stop-pins *f'*, which are arranged so that the pins *r* on the wheels G will strike them when these wheels are turned around to certain predetermined points. The bars D D¹ are connected to the bars C C by screws passed through slots *e*, and these bars are moved by means of joints *c*, which are pivoted to the extremities of an oscillating lever, D², whose fulcrum is at *f*. The lever D² has a curved slot, *d*, through it, which terminates at one end in a short straight slot, *d'*, and in this slot plays a pin, *i*, which is on the free end of a lever, J, attached to the stem of the knob *a*. When the pin *i* on lever J enters the straight portion *d'* of slot *d*, the bars D D¹ can be made to recede from each other and release the wheels G; and when the pin *i* leaves the straight slot *d'* and enters the curved slot *d* the bars D D¹ will approach each other, and the wheels G will be locked by the pins *v*. The lever J is connected by a pin and slot (not shown) to the bolt-frame, so that this frame can be moved endwise by turning the knob *a*. It will be seen that when the wheels G are all turned so that their flanges are freed from the bolt-frame this bolt-frame may be moved by knob *a*, so as to lock or unlock the bolts. When the bolts are "shot" and the knob *a* is turned a little further, the pin *i* on lever J will cause the bars D D¹ to recede from the wheels G, and thus release these wheels from their lock

ing-studs V. The wheels G may then be turned freely either to the right or left hand by means of the key K applied to the posts g' . When the knob is turned in the opposite direction to retract the bolts, the pin i on lever J will operate on the bars D D¹ through the medium of lever D² and joints c , and cause said bars to approach each other and engage their studs v with the teeth of wheels G, thus locking these wheels and preventing them from being turned by the key K. The bolts can now be moved back and forth at pleasure by turning the knob a . When the bolts are shot they are locked by simply turning the wheels G and engaging the flanges p with their grooves t in the bolt-frame. Then, unless a person knows exactly how to turn the said wheels to release the said bolt from the flanges p , he cannot unlock the bolts. The holes in the backs of the wheels G are all numbered in regular order, commencing from any one of them, and the combinations are made by changing the pins r from one hole to another, carefully noting the number of the hole into which each pin r is inserted. Then, when the wheels are turned until their pins strike the fixed pins f' on the bars F F, starting points are obtained from which to commence turning the wheels G. The wheels are then turned certain distances in the proper directions to release the bolt-frame. There are marks on the hub of the key, and also on the peripheries of the circularly-

raised positions around the key-holes, which will aid in calculating the number of times to turn the key in each hole.

In the drawings I have represented six locking-wheels, G; but it is obvious that a greater or less number of these wheels may be employed, according to the number of combinations required and the object for which the lock is designed.

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

1. The segment-groove t in the side of the bolt-frame, as shown, in combination with the segment-flange or rib p on the toothed wheel G, as shown, and pinion S in a permutation lock, all substantially as described.

2. In combination with the subject-matter embraced in the first claim, the perforations s in the back sides of the segmental flanged wheels G, adjustable stop-pins r , and fixed stop-pins f' , all substantially as shown and described.

3. The movable bars D D¹, with locking-pins v , in combination with wheels G, joints c , slotted lever D², and the pin i on the end of knob-lever J, substantially as described.

FRANKLIN PETER MARSDEN.

Witnesses:

JOHN WESTWICK,
F. STRYKER.

(93)