

No. 789,938.

PATENTED MAY 16, 1905.

J. P. ROSENDAHL.
COMBINATION LOCK.

APPLICATION FILED MAY 25, 1904.

3 SHEETS—SHEET 1.

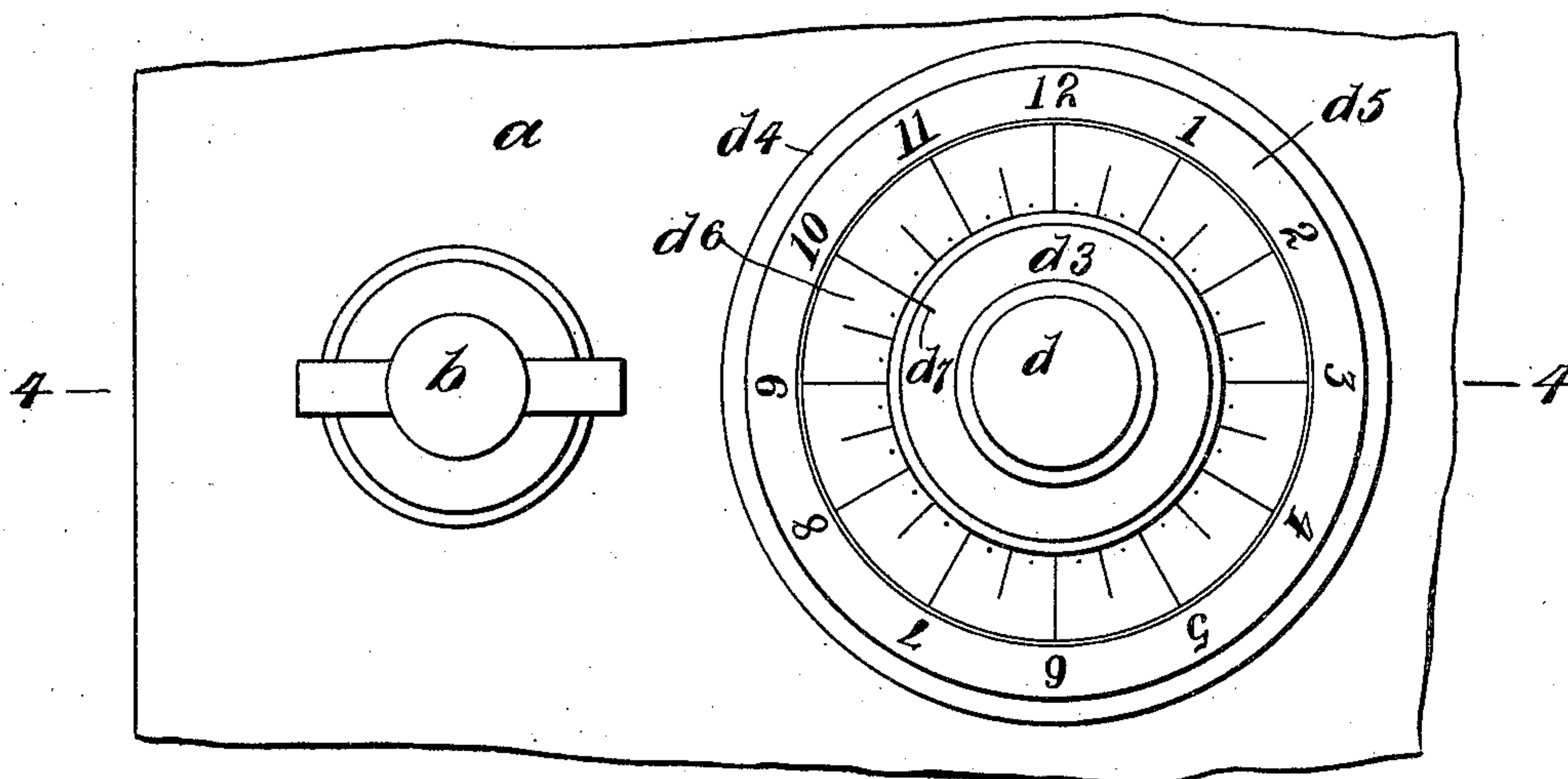


Fig. 1.

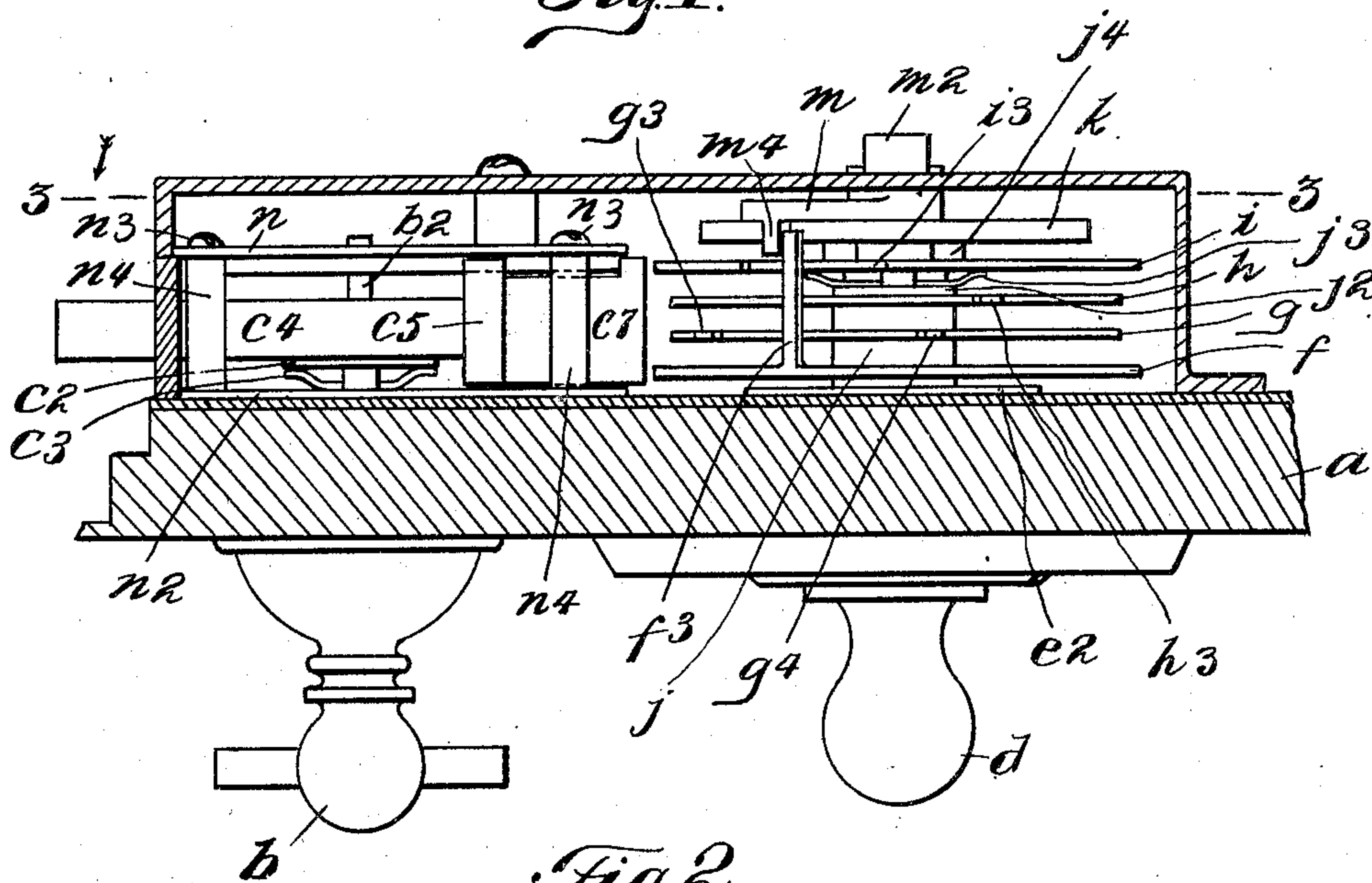


Fig. 2.

WITNESSES

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3 SHEETS—SHEET 2.

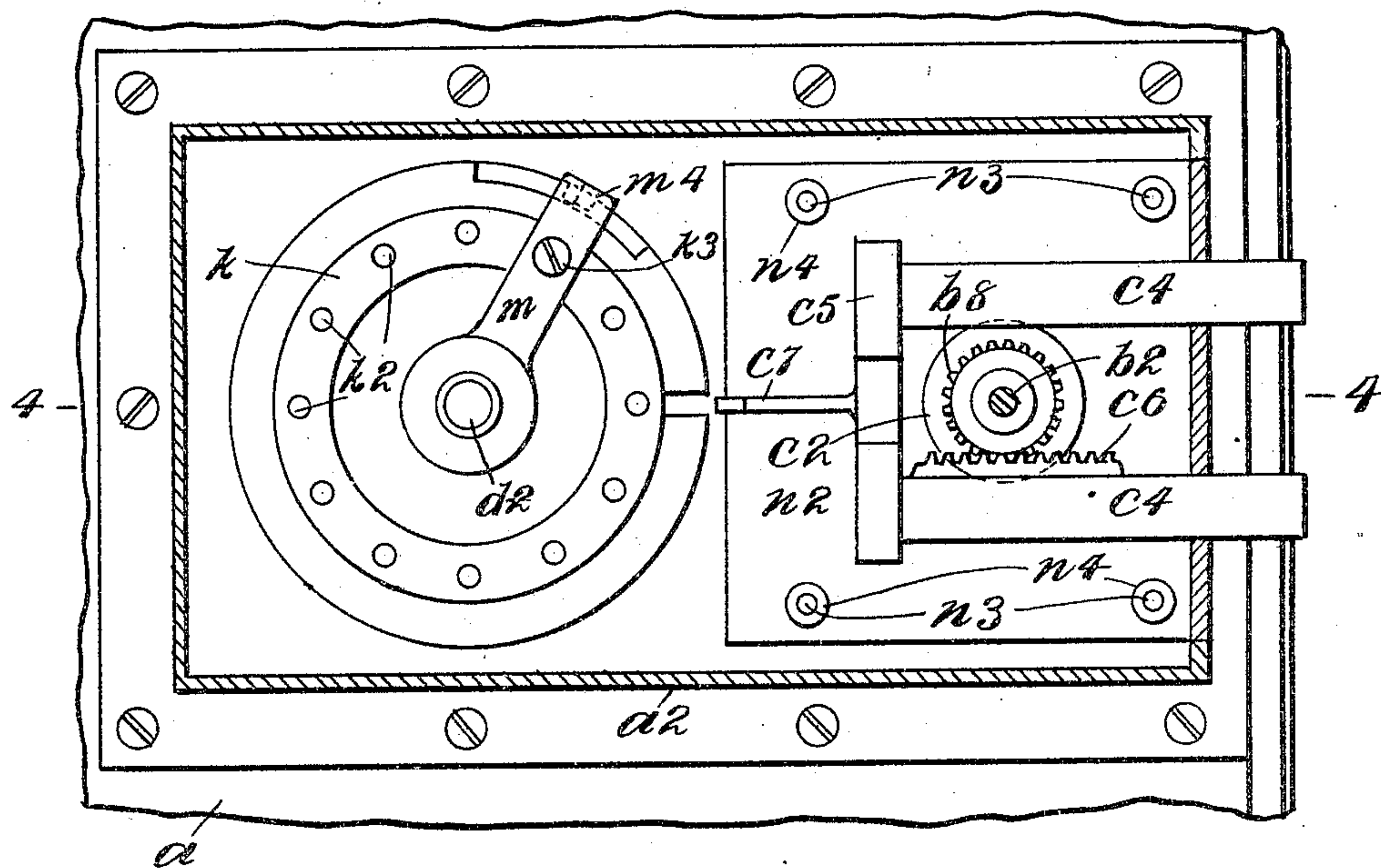


Fig. 3.

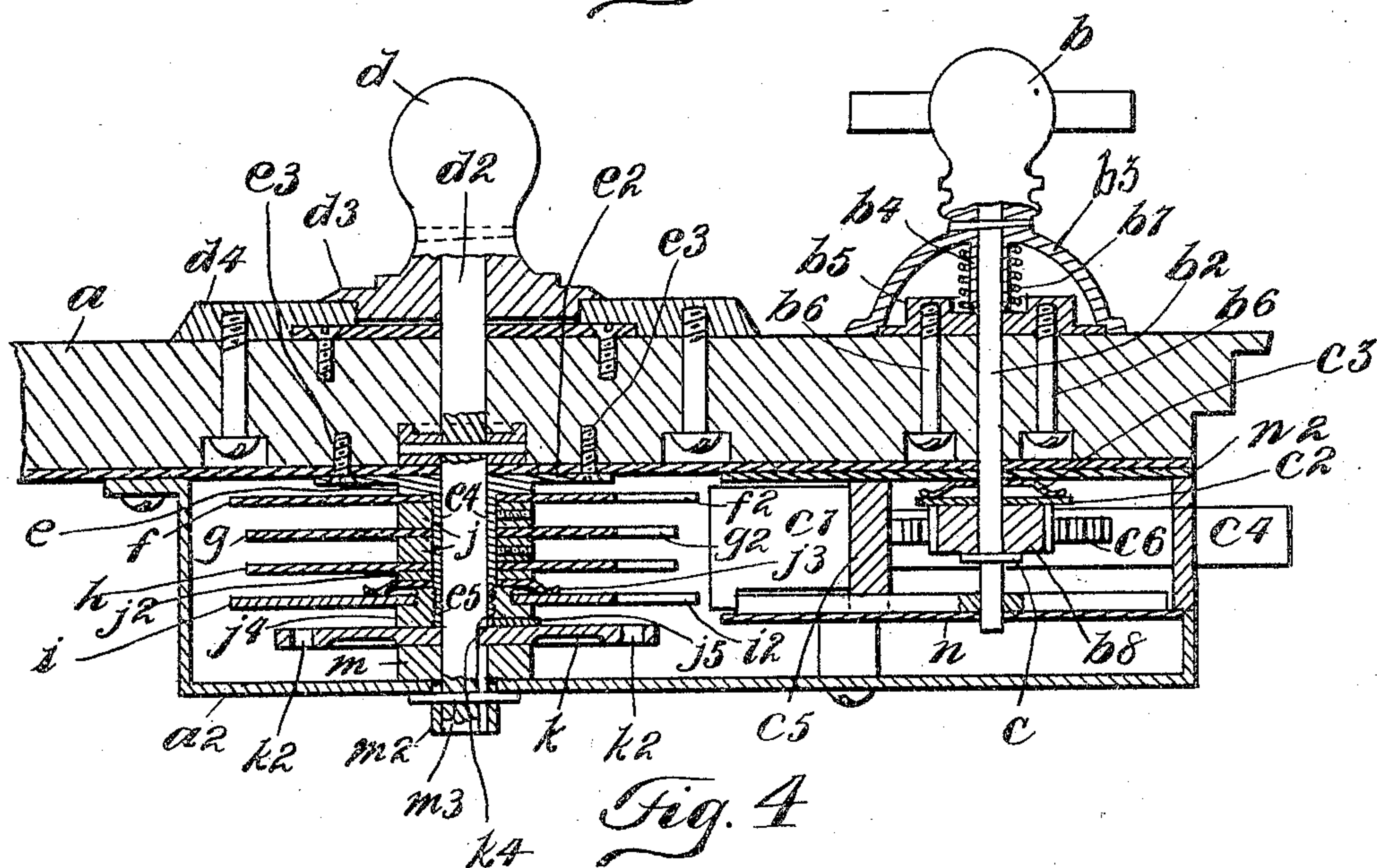


Fig. 4

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3 SHEETS—SHEET 3.

Fig. 5.

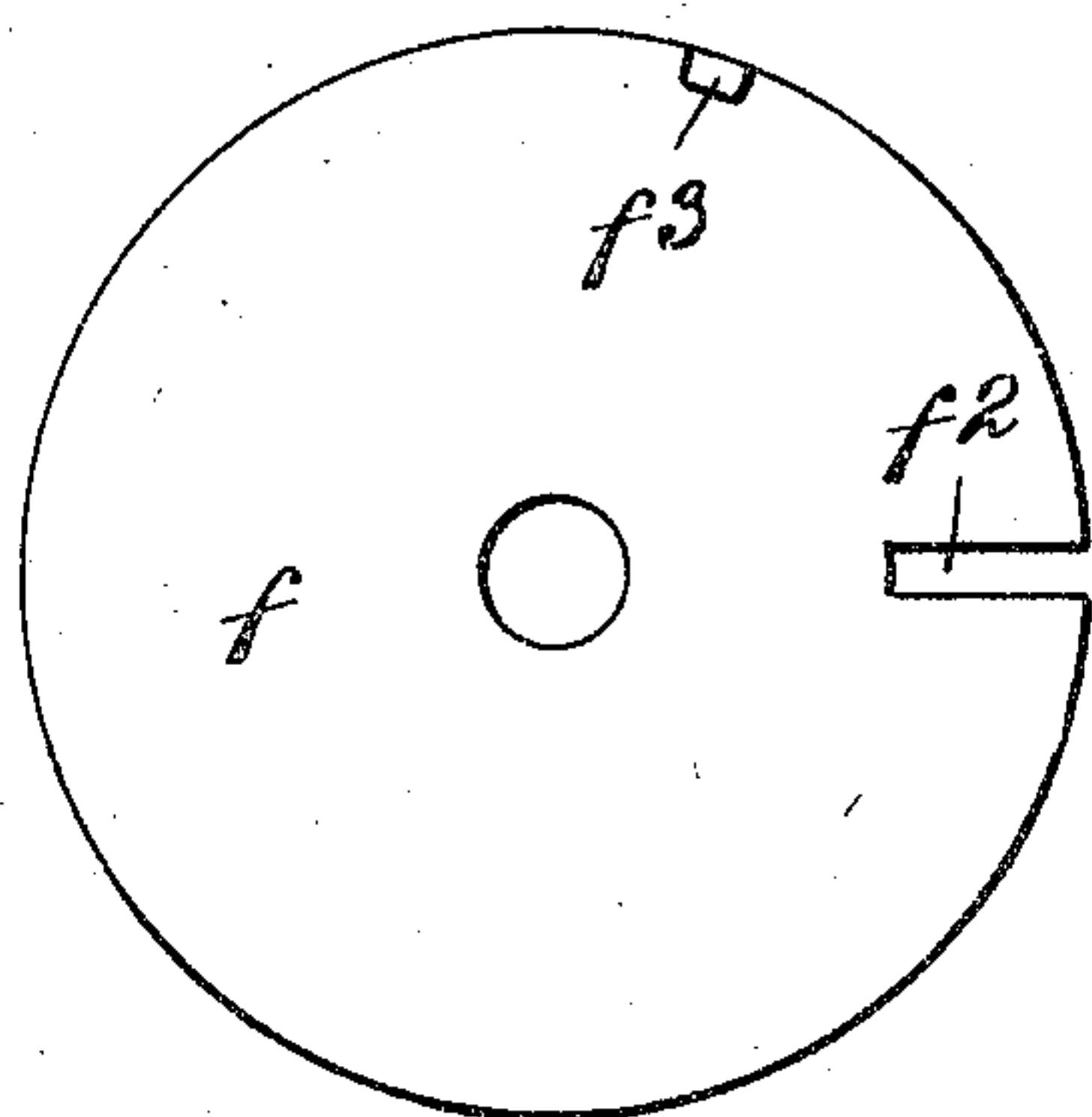


Fig. 6.

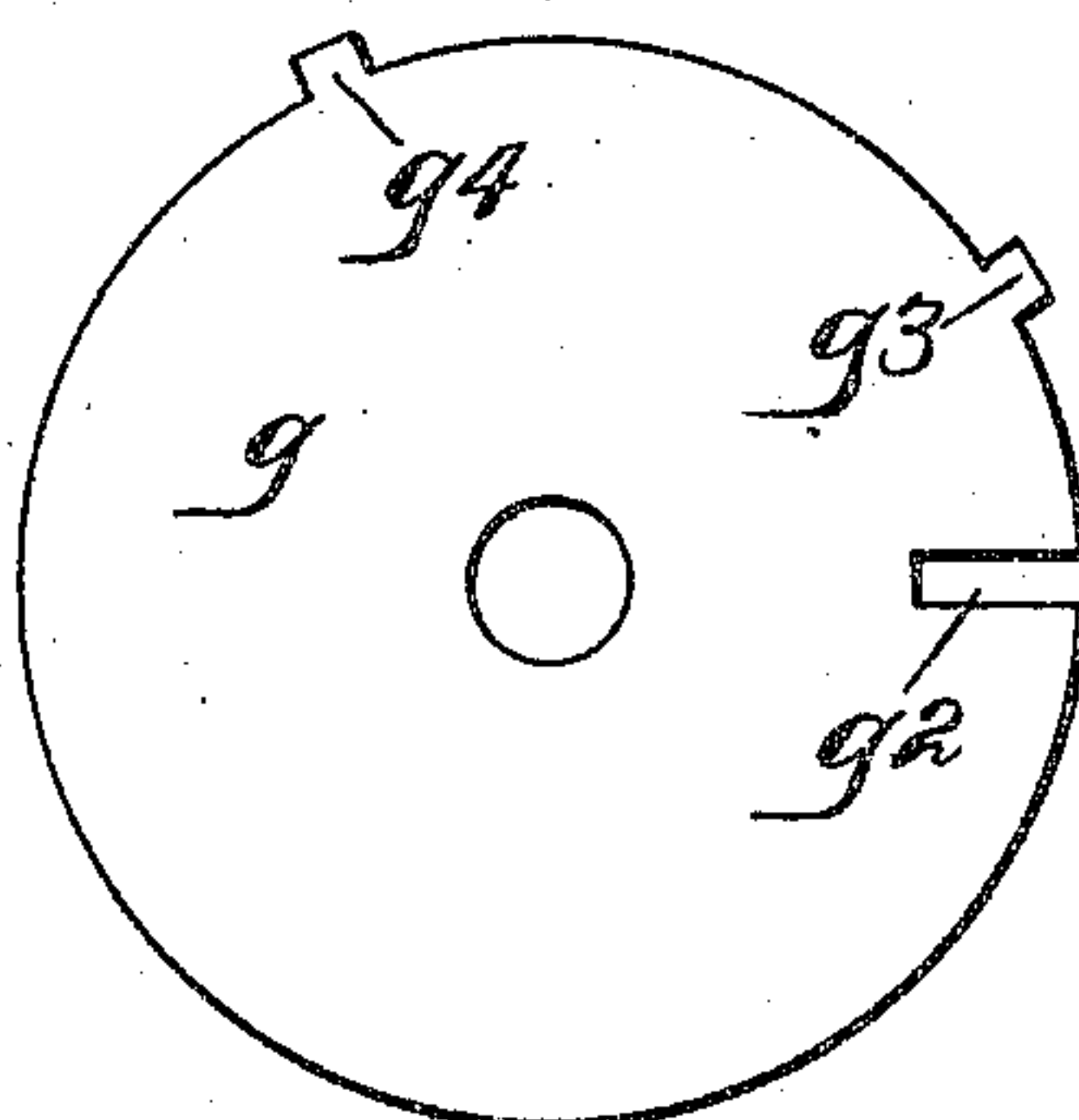


Fig. 7.

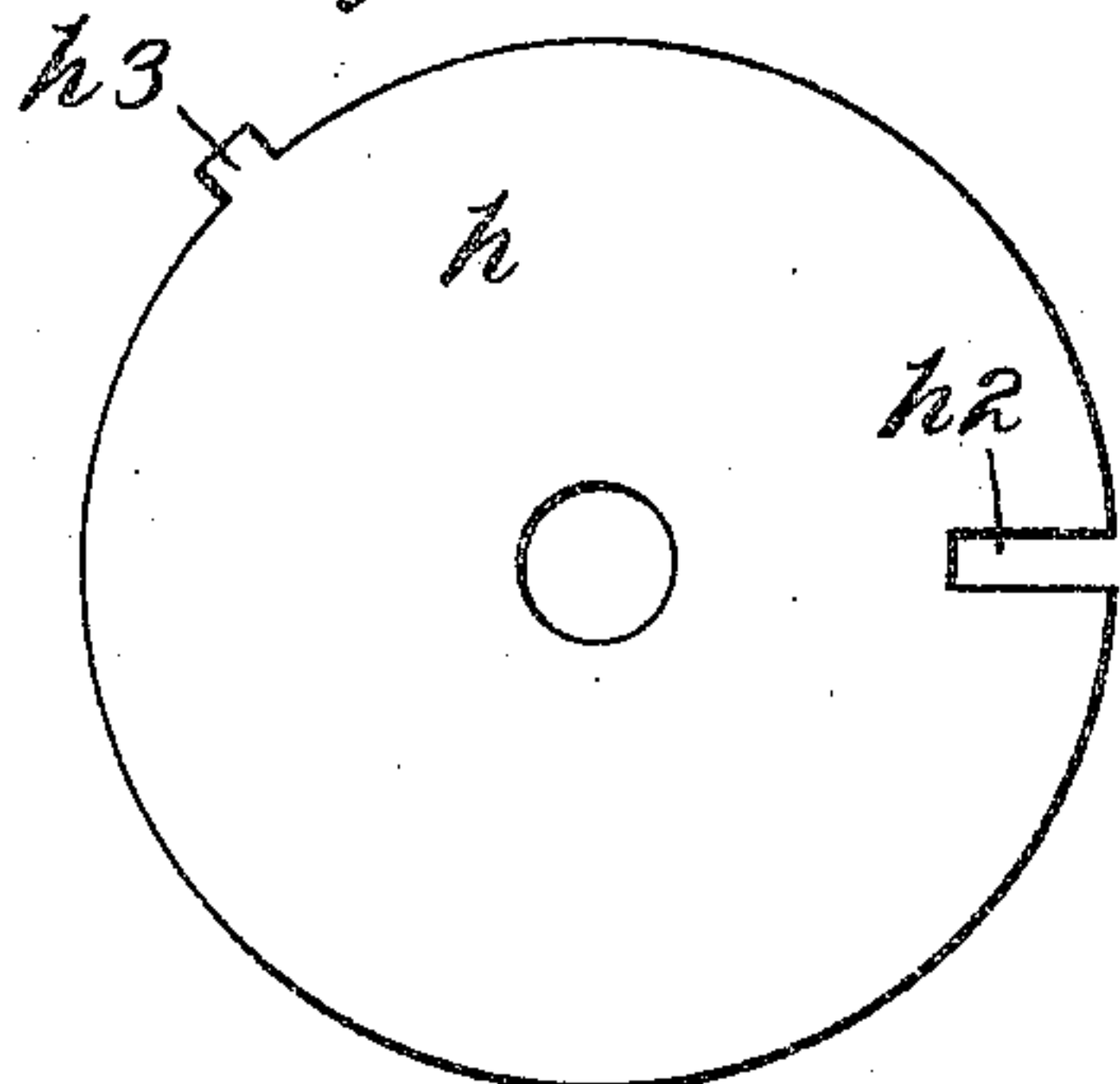


Fig. 8.

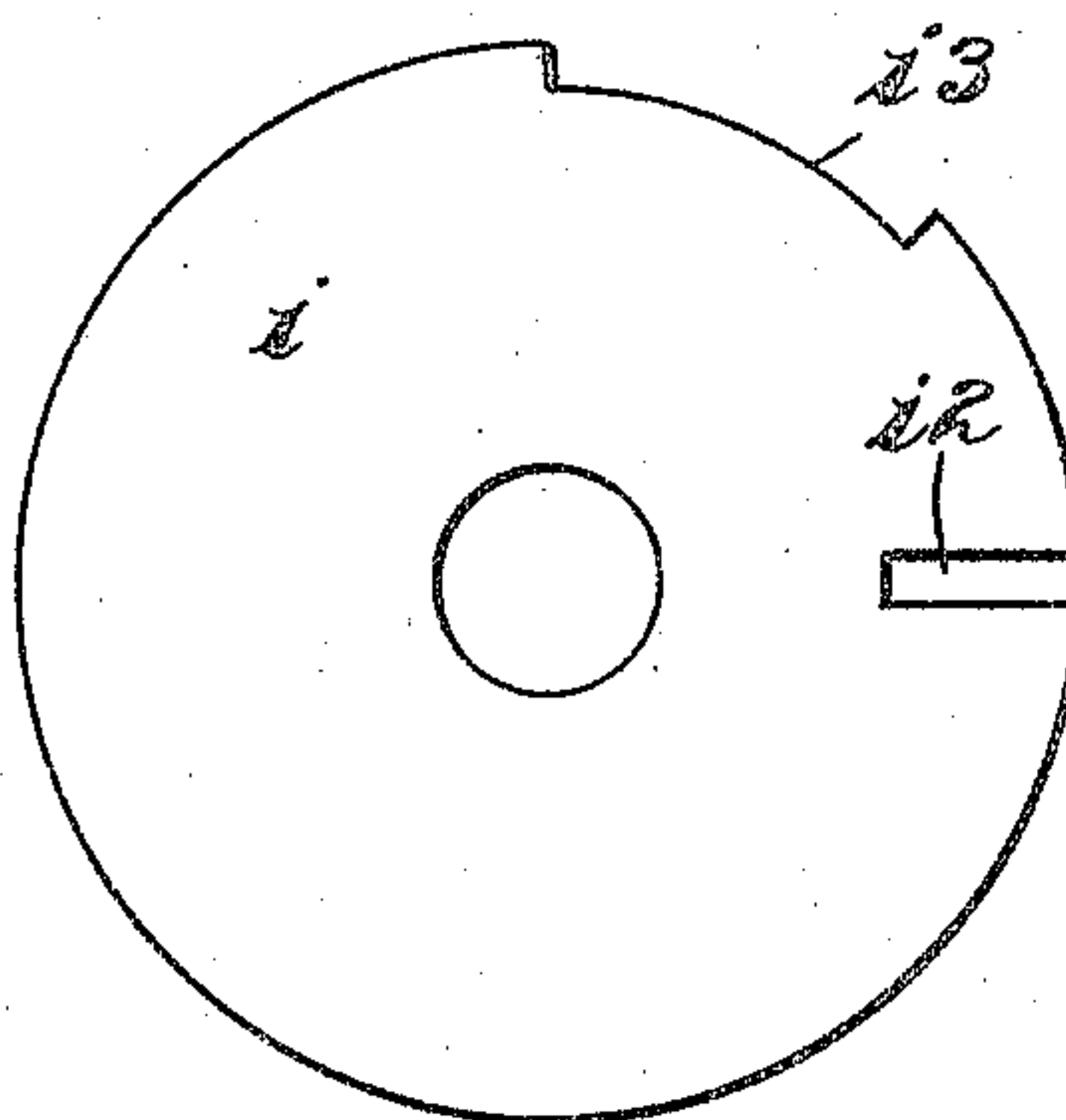


Fig. 9.

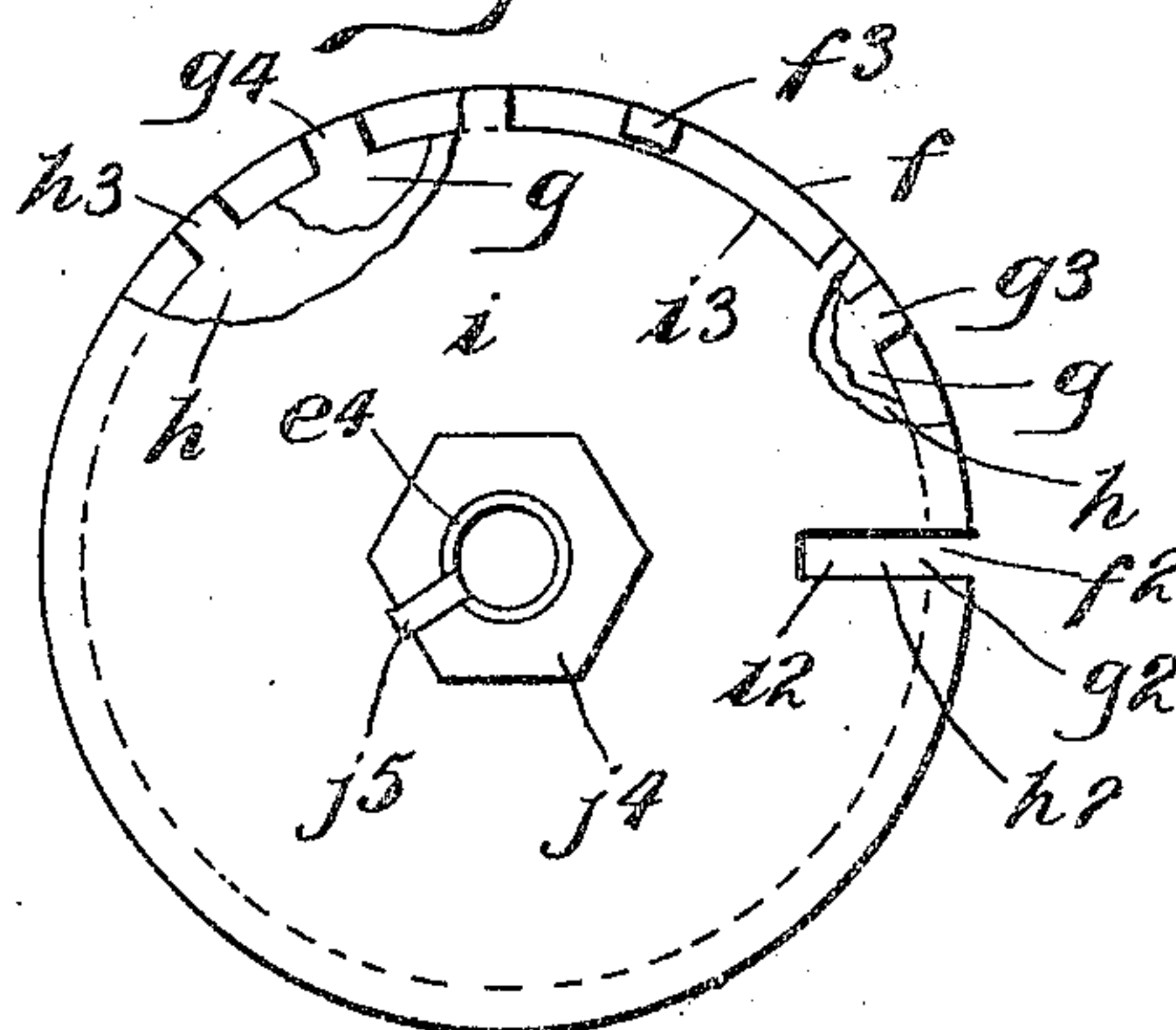
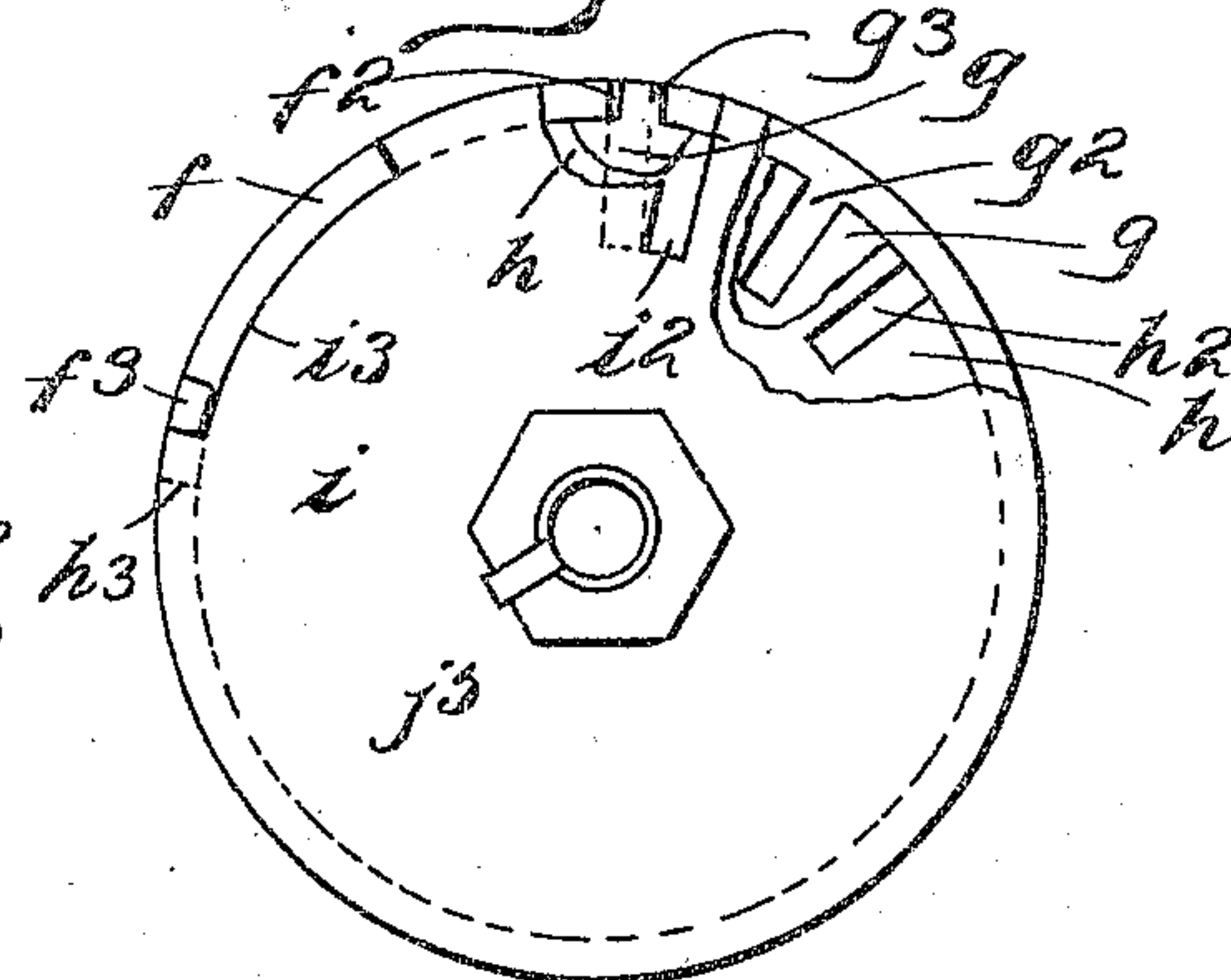


Fig. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN P. ROSENDAHL, OF BROOKLYN, NEW YORK.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 789,938, dated May 16, 1905.

Application filed May 25, 1904. Serial No. 209,631.

To all whom it may concern:

Be it known that I, JOHN P. ROSENDAHL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Combination - Locks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

10 This invention relates to combination-locks; and the object thereof is to provide an improved device of this class which is particularly designed for use in connection with the doors of safes, deposit-vaults, and for similar
15 purposes, a further object being to provide a lock of this class which is simple in construction and operation and which cannot by any possibility be operated except by one familiar therewith; and with these and other objects in
20 view the invention consists in a lock of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

30 Figure 1 is a front view of a part of a door provided with my improved combination-lock; Fig. 2, a plan view thereof; Fig. 3, a section of the lock-casing on the line 3 3 of Fig. 2 and showing a part of the inner framework removed; Fig. 4, a section on the line 4 4 of Fig. 1 and also on the line 4 4 of Fig. 3; Fig. 5, a
35 combination-disk which I employ; Fig. 6, a similar view showing another of said disks; Fig. 7, a similar view showing another of said disks; Fig. 8, a similar view showing another
40 of said disks; Fig. 9, a view similar to Fig. 1, but showing all the locking-disks connected and in position to unlock a door; and Fig. 10, a view similar to Fig. 9, but showing the combination-disks out of position, so that the door
45 cannot be unlocked.

In the drawings forming part of this specification I have shown at *a* a part of a door with the back or inner side of which is connected a casing *a*², which incloses all that part of the
50 lock on the inner side of the door, including

the plungers or bolts, the combination-disks, and other parts of the operative mechanism.

In the practice of my invention I provide a plunger or bolt knob *b*, having a spindle *b*², which passes through the door *a* and is rigidly
55 secured to said knob *b*, and said knob is also provided with a cup-shaped washer *b*³, having a hub *b*⁴, and within the cup-shaped washer *b*³ is a plate *b*⁵, rigidly secured to the door by bolts or screws *b*⁶, which are passed therethrough, and on the hub *b*⁴ is placed a spring *b*⁷, which
60 operates to force the knob *b* outwardly.

Mounted on the inner end of the spindle *b*² within the casing *a*² is a gear-wheel *b*⁸, and said spindle is provided at the inner side of said
65 gear-wheel with a collar *c* and at the outer side of said wheel with a washer *c*², between which and the door *a* is a spring-washer *c*³, which bears on the washer *c*², and mounted in the end of the casing *a*² adjacent to the free edge of the
70 door are two parallel plungers or bolts *c*⁴, connected at their inner ends by a vertically-arranged cross-head *c*⁵, and the bottom plunger or bolt *c* is provided with a gear *c*⁶, in connection with which the gear-wheel *b*⁸ operates, and
75 the cross-head *c*⁵, which connects the plungers or bolts *c*⁴, is provided centrally with a horizontally-arranged locking-tongue *c*⁷, which projects in a direction opposite to that of the plungers or bolts *c*⁴, and the parts *c*⁴, *c*⁵, and *c*⁷
80 are formed integrally and cast from steel or other suitable metal.

The plungers or bolts *c*⁴ and the parts connected therewith are mounted in a supplemental frame or support within the casing *a*²,
85 consisting of plates *n* and *n*², connected by pins, bolts, or screws *n*³, having sleeves *n*⁴; but this framework or support may be of any desired construction.

At the right of the plunger or bolt knob *b* is
90 placed the combination-knob *d*, which is provided with a spindle *d*², which passes through the door *a* and which is rigidly secured to the knob *d*, and said knob is also provided with a base flange-rim *d*³, which overlaps an annular
95 dial-plate *d*⁴, the face of which is provided at the perimeter thereof with the numerals from "1" to "12," arranged in a circle thereon, as shown at *d*⁵ in Fig. 1, and within which is an
annular scale *d*⁶, divided into twelve equal
100

parts, which are subdivided into four equal parts, representing, respectively, counting from the right to the left, a one-fourth, a one-half, and three-fourths.

5 The spindle d^2 passes entirely through the casing a^2 , and mounted thereon within the casing a^2 and adjacent to the door a is a collar e , having a flange e^2 rigidly secured to the door a by bolts or screws e^3 , and said collar is
10 provided centrally with a hub e^4 , the end of which is screw-threaded, as shown at e^5 .

Mounted on the hub e^4 adjacent to the collar e is a locking-disk f (shown in detail in Fig. 5) and provided at one side with a radial slot
15 or opening f^2 and at a predetermined distance therefrom and at the perimeter thereof with an arm f^3 , which ranges parallel with the spindle d^2 .

Mounted on the hub e^4 adjacent to the disk f are two other combination-disks, g and h ,
20 separated from each other and from the disk f by collars j . The disk g is provided at one side thereof and in the perimeter thereof with a radial slot or opening g^2 and at predetermined distances therefrom with radial lugs
25 or projections g^3 and g^4 , while the disk h is provided with a similar slot or opening h^2 and at a predetermined distance therefrom with a radial lug or projection h^3 , and these
30 disks g and h are shown in detail in Figs. 6 and 7.

Adjacent to the disk h is a washer j^2 , adjacent to which is a spring-washer j^3 , and these parts are all held in position on the hub e^4 of
35 the collar e by a nut j^4 , having a hub on which is placed a combination-disk i , which is shown in detail in Fig. 8 and is provided near its perimeter with a radial slot or opening
40 i^2 , at a predetermined distance from which is a segmental and elongated recess i^3 , and mounted on the spindle d^2 adjacent to the end of the hub e^4 and the nut j^4 is a disk k , adjacent to which is an arm m , also mounted on the spindle
45 and provided with a hub m^2 , which passes through the back of the casing a^2 and through which is passed a pin m^3 . The end of the arm
50 m is provided with a finger m^4 , in connection with which the arm f^3 of the disk f operates, and the plate or disk k is provided with a circular row of holes k^2 , adapted to receive a pin or screw k^3 , which is passed through the arm
55 m . The nut j^4 when it is screwed up in proper position is prevented from turning by a radially-arranged pin j^3 , which engages the hub e^4 , and the disk k is secured to the spindle
60 d , as shown at k^4 in Fig. 4, and cannot be turned independent of said spindle.

It will be observed that the intermediate combination-disks g and h are of less diameter than the outer combination-disks f and
65 the inner combination-disk i in the form of construction shown, and the lugs or projections g^3 and g^4 on the disk g and the lug or projection h^3 on the disk h project to the perimeters of the disks f and i and are operated

upon, as hereinafter described, by the arm f^3 of the disk f .

In the position of the parts shown in the drawings the combination-disks f , g , h , and i will be in the position shown in Fig. 10 when
70 the door is locked and in the position in Fig. 9 when the door is to be unlocked. The base flange or rim d^3 of the bolt or plunger knob d is provided with a gage-mark d^7 , which operates in connection with the scale-marks of
75 the annular scale d^6 on the dial-plate d^5 , and the operation of unlocking the door when the said combination-disks are in the position shown in Fig. 10 is as follows: The bolt or
80 plunger knob d is first turned to the left through two complete revolutions and until the gage-mark d^7 on the flange or rim d^3 of the knob d registers with the scale-mark
85 "12 $\frac{1}{4}$ " of the scale d^6 , and this operation places the slot h^2 of the combination-disk h in direct line with the locking-tongue c^7 of the cross-head c^8 of the bolt c^4 . The knob d is
90 then turned to the right through one complete revolution and then on until the gage-mark d^7 registers with the scale-mark "10 $\frac{3}{4}$ " of the scale d^6 , and this operation places the slot g^2 of the combination-disk g also in line
95 with the locking-tongue c^7 . The knob d is then turned to the left through a complete revolution and on until the gage-mark d^7 registers with the scale-mark "9 $\frac{3}{4}$ " of the scale
100 d^6 , and this operation places the slot i^2 of the disk i also in line with the locking-tongue c^7 . The knob d is then turned through one complete revolution to the right and on until the
105 gage-mark d^7 registers with the scale-mark "9 $\frac{1}{4}$ " of the scale d^6 , and this places the slot f^2 of the disk f also in line with the locking-tongue c^7 . When all the disks f , g , h , and i are in the above position, it will be apparent that
110 by turning the knob d to the left the bolts c^4 will be forced inwardly, the locking-tongue c^7 entering the notches or recesses f^2 , g^2 , h^2 , and i^2 in the combination-disks f , g , h , and i , and in this position of the parts the door may be
115 opened. In order to lock the door, the latter is closed and the knob d is turned to the right. This operation forces the bolt c^4 outwardly in the usual manner, and the knob d may then be turned in either direction, so as to throw the
120 disks f , g , h , and i out of the position shown in Figs. 4 and 9, and in this operation it is immaterial to what extent or in what direction the knob d be turned.

It will be understood that the disks g , h , and i are all turned in the above-described operation by the arm f^3 of the disk f , and in order to change the combination at any
125 time the pin or screw k^3 , which connects the arm m with the disk or plate k , is taken out and said arm is turned in either direction and again connected with the disk or plate k by means of the pin or screw k^3 .

My improved combination-lock is simple in construction and operation and may be
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employed wherever devices of this class are required, and my invention is not limited to the exact details of the construction herein shown and described, and I reserve the right
5 to make all such alterations thereof as fairly come within the scope of the invention.

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

10 In a lock of the class described, a bolt-knob provided with a spindle, bolts adapted to be moved in both directions by said spindle, a combination-knob provided with a spindle, a stationary hub through which said spindle
15 passes, a plurality of combination - disks mounted on said hub and adapted to turn thereon, the inner and the outer combination-disks being of greater diameter than the intermediate combination-disks, the inner com-
20 bination-disk being also provided with an elongated recess in the perimeter thereof, the outer combination-disk being provided at its perimeter with an arm which projects parallel with said hub, the intermediate disk or

disks being also provided at their perimeters 25 with radial projections, and all of said disks being provided in their perimeters with a radial slot, a plate secured to said spindle adjacent to the inner combination-disk, an arm mounted on said spindle adjacent to said plate 30 and provided with a finger which operates in connection with the arm on the outer combination-disk, means for connecting said arm with said plate at different points, and a locking member connected with said bolts and 35 adapted to engage said combination-disks by entering the radial slots in the perimeter thereof when said disks are in a certain position, substantially as shown and described.

In testimony that I claim the foregoing as 40 my invention I have signed my name, in presence of the subscribing witnesses, this 24th day of May, 1904.

JOHN P. ROSENDAHL.

Witnesses:

F. A. STEWART,
C. J. KLEIN.