

W. A. FRERET, JR.

CRYPTOGRAPHIC TYPE WRITING MACHINE.

(Application filed Nov. 21, 1898. Renewed Aug. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.

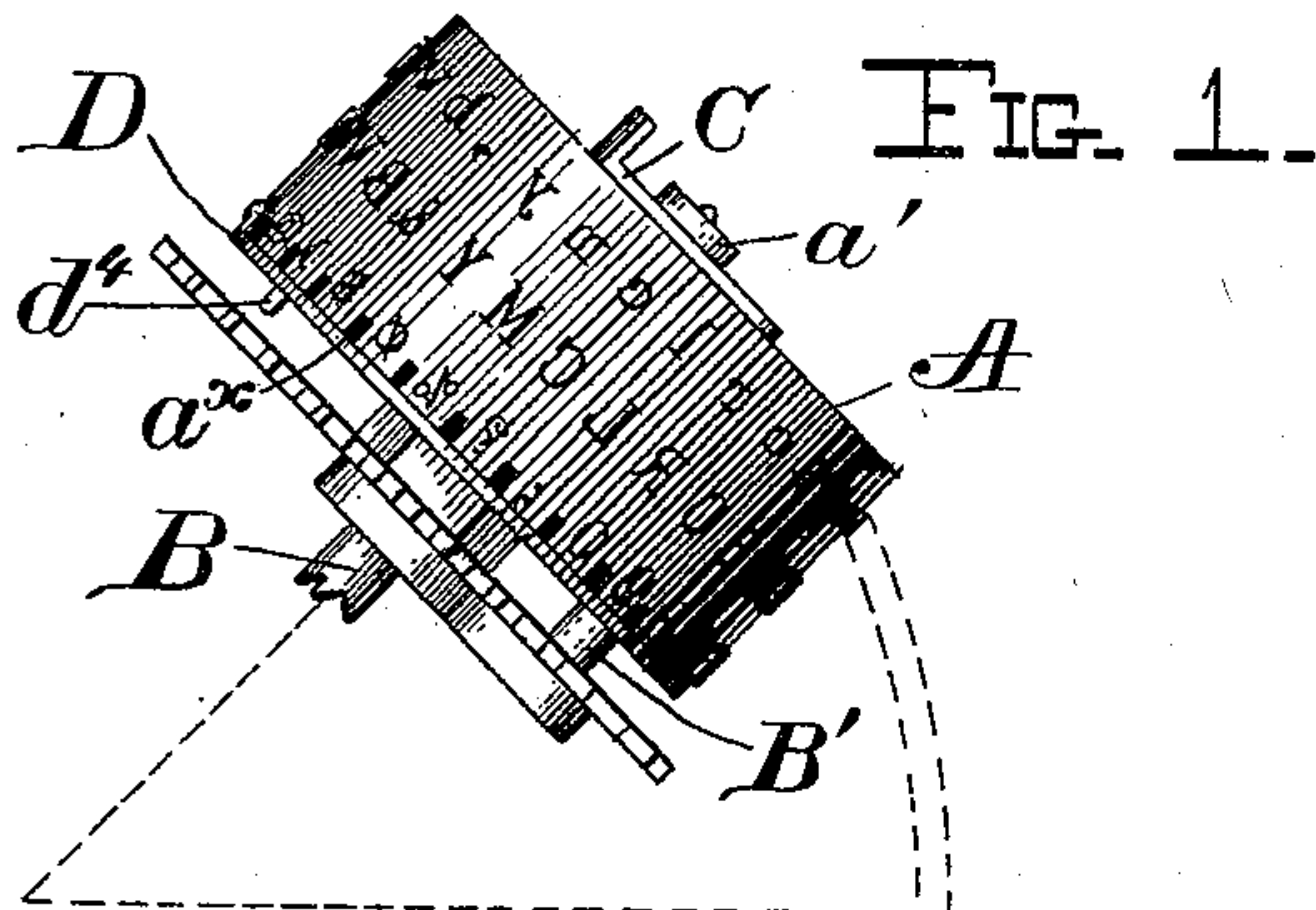


FIG. 2.

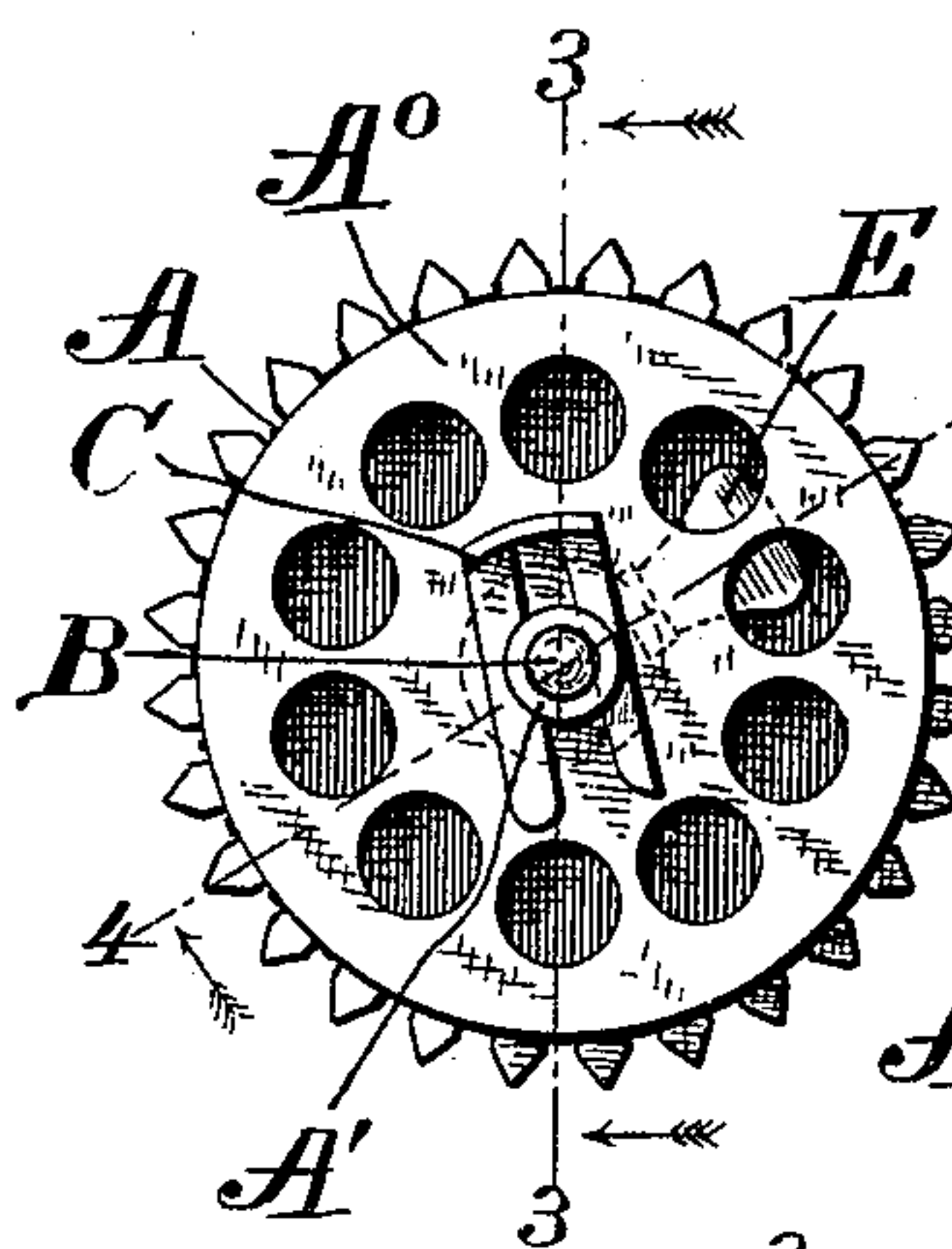


FIG. 3.

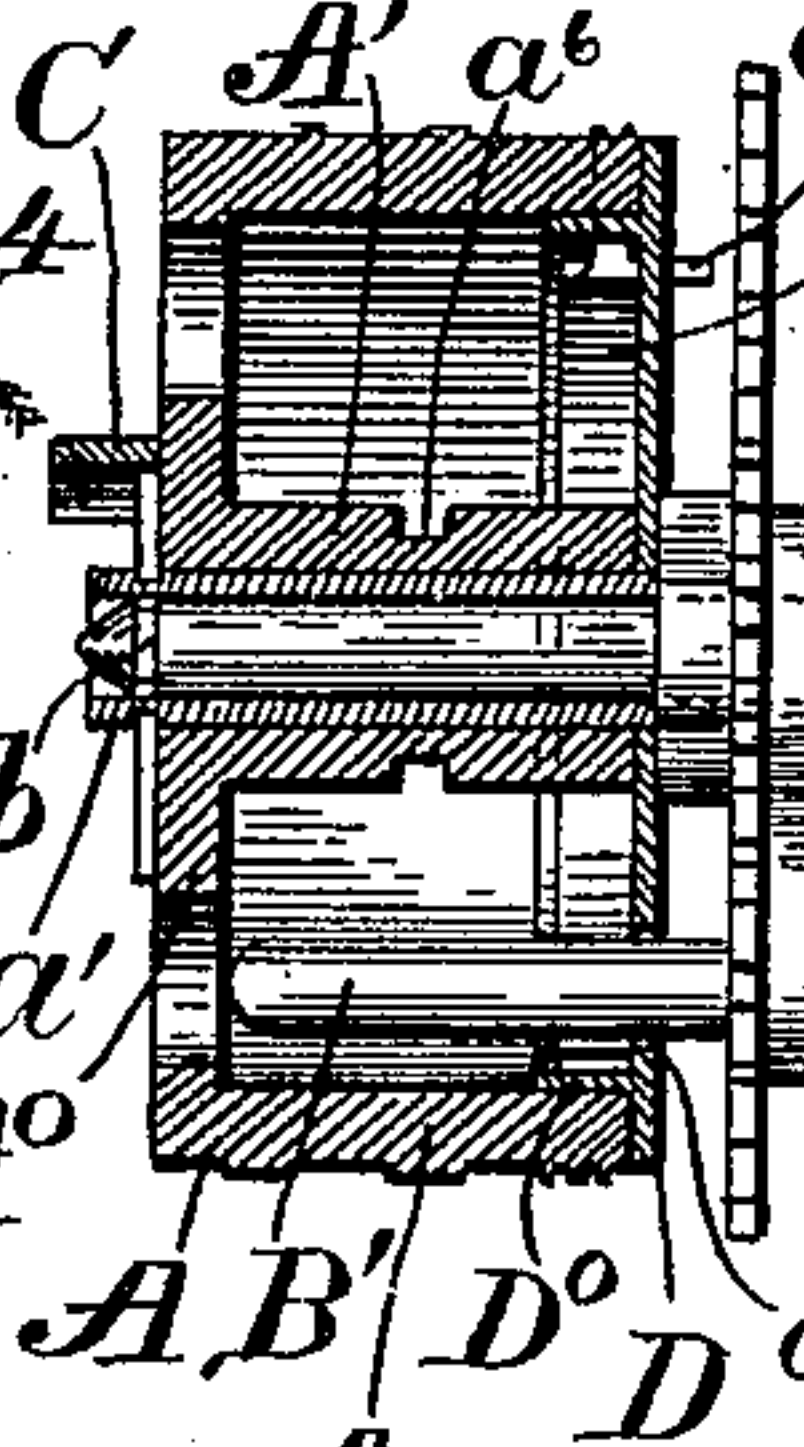


FIG. 4.

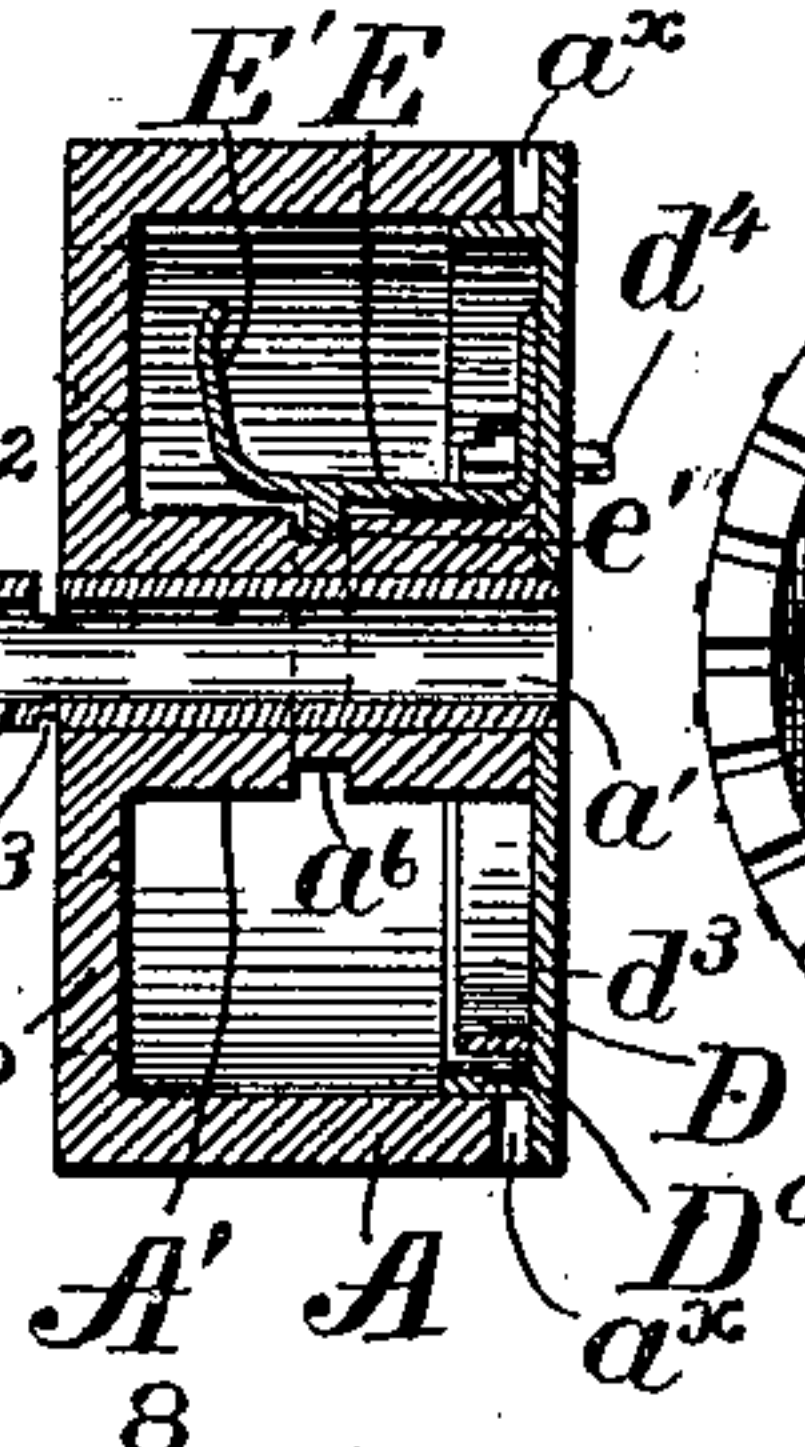


FIG. 5.

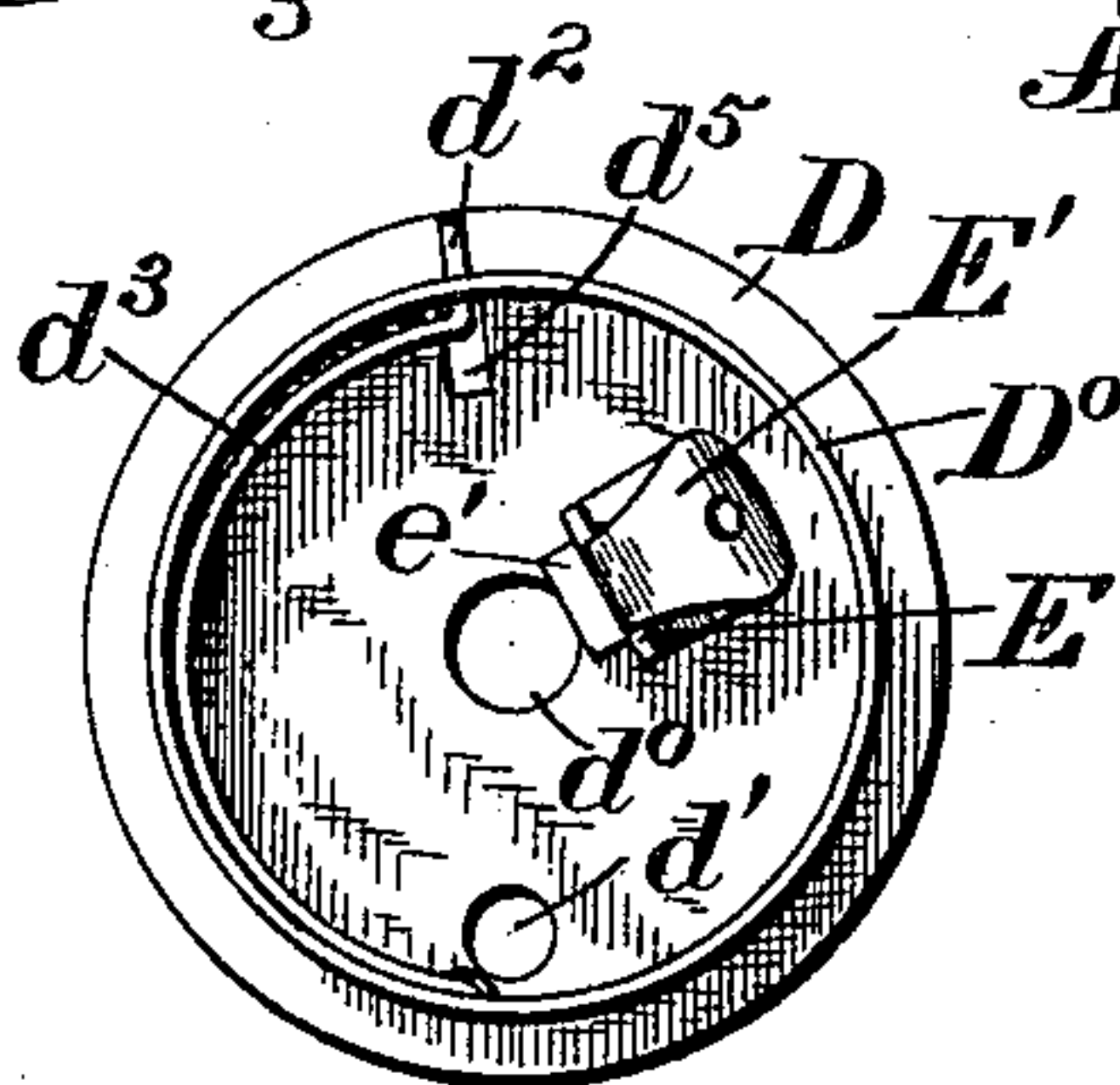
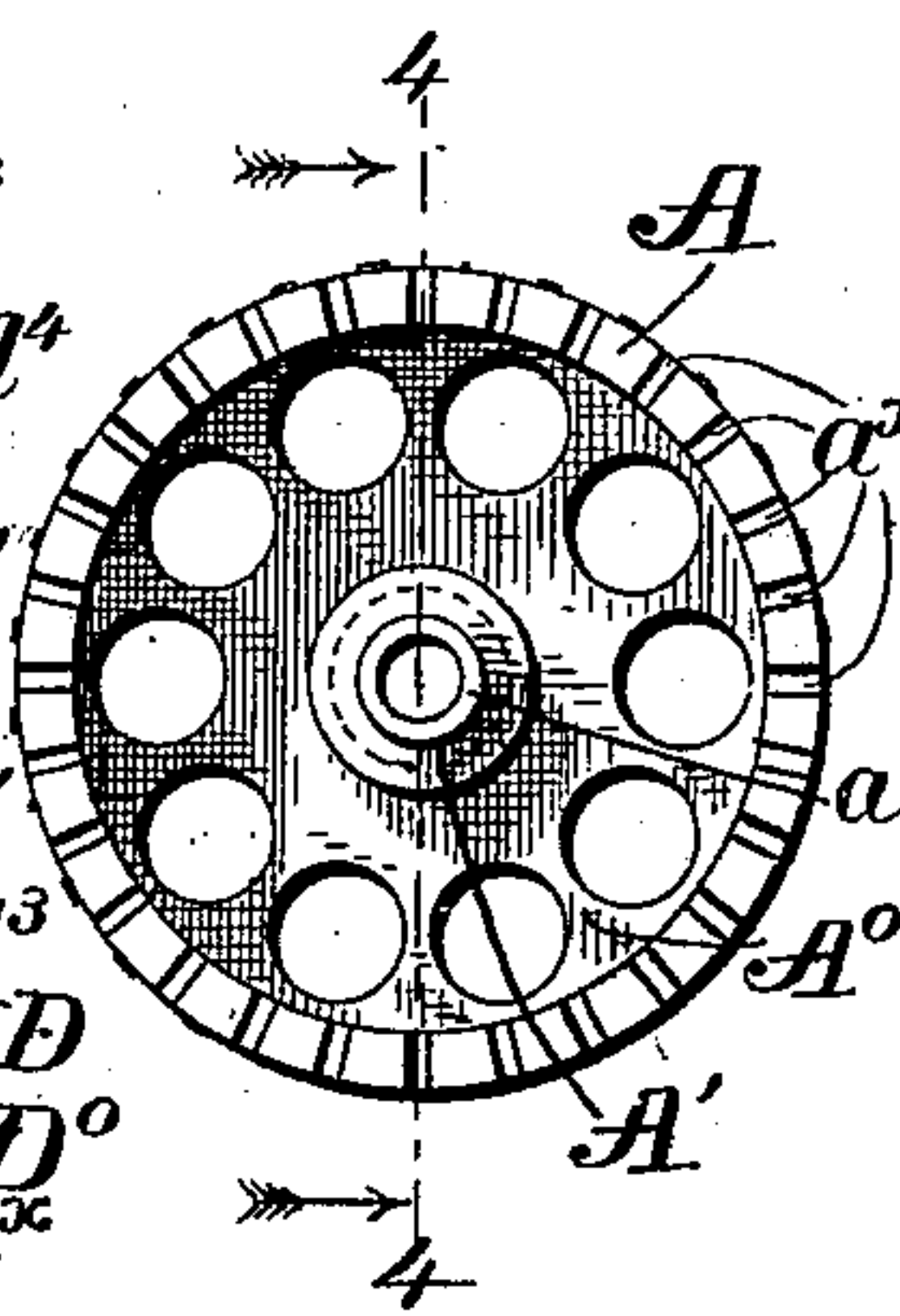


FIG. 6.

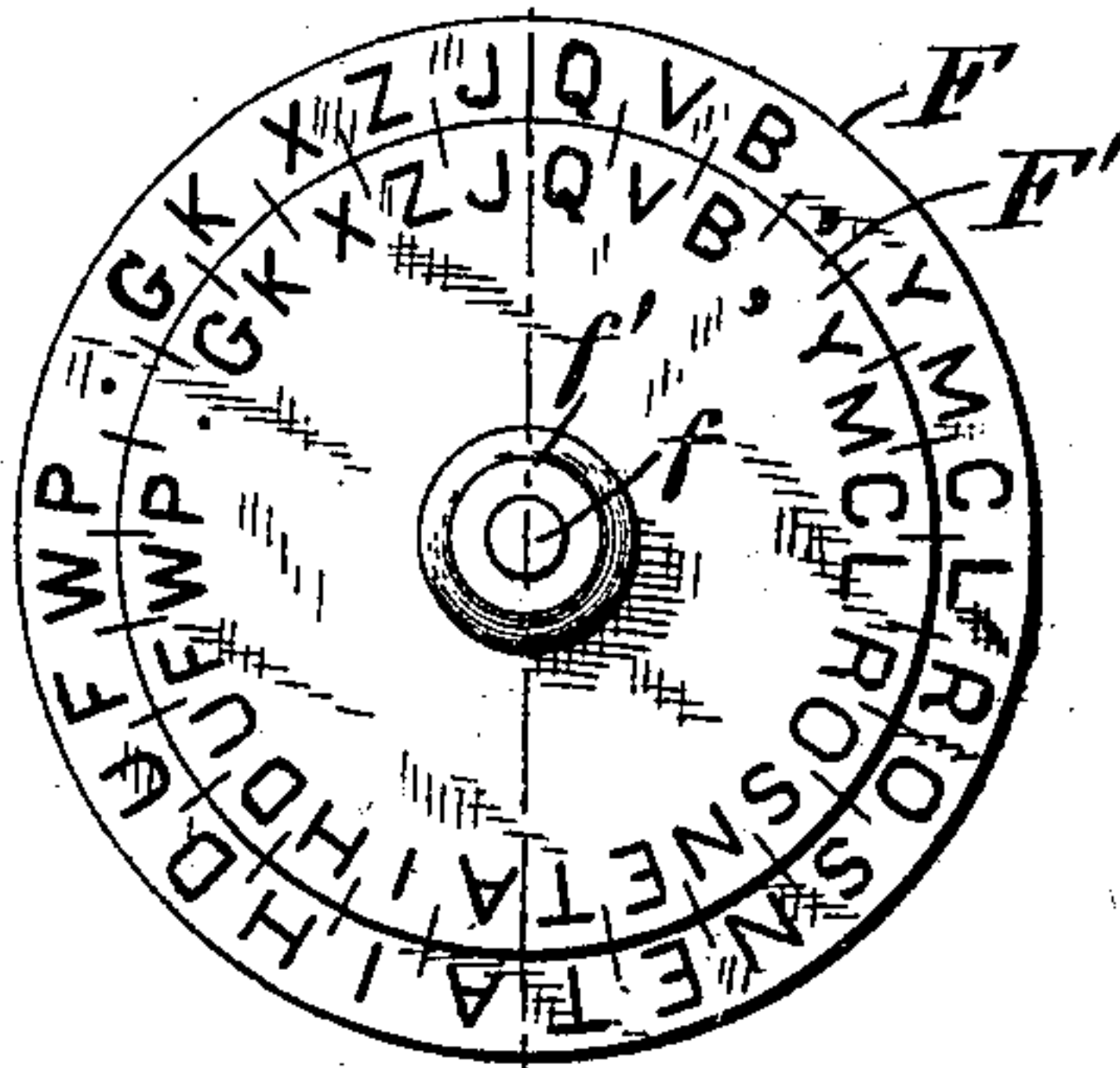


FIG. 7.

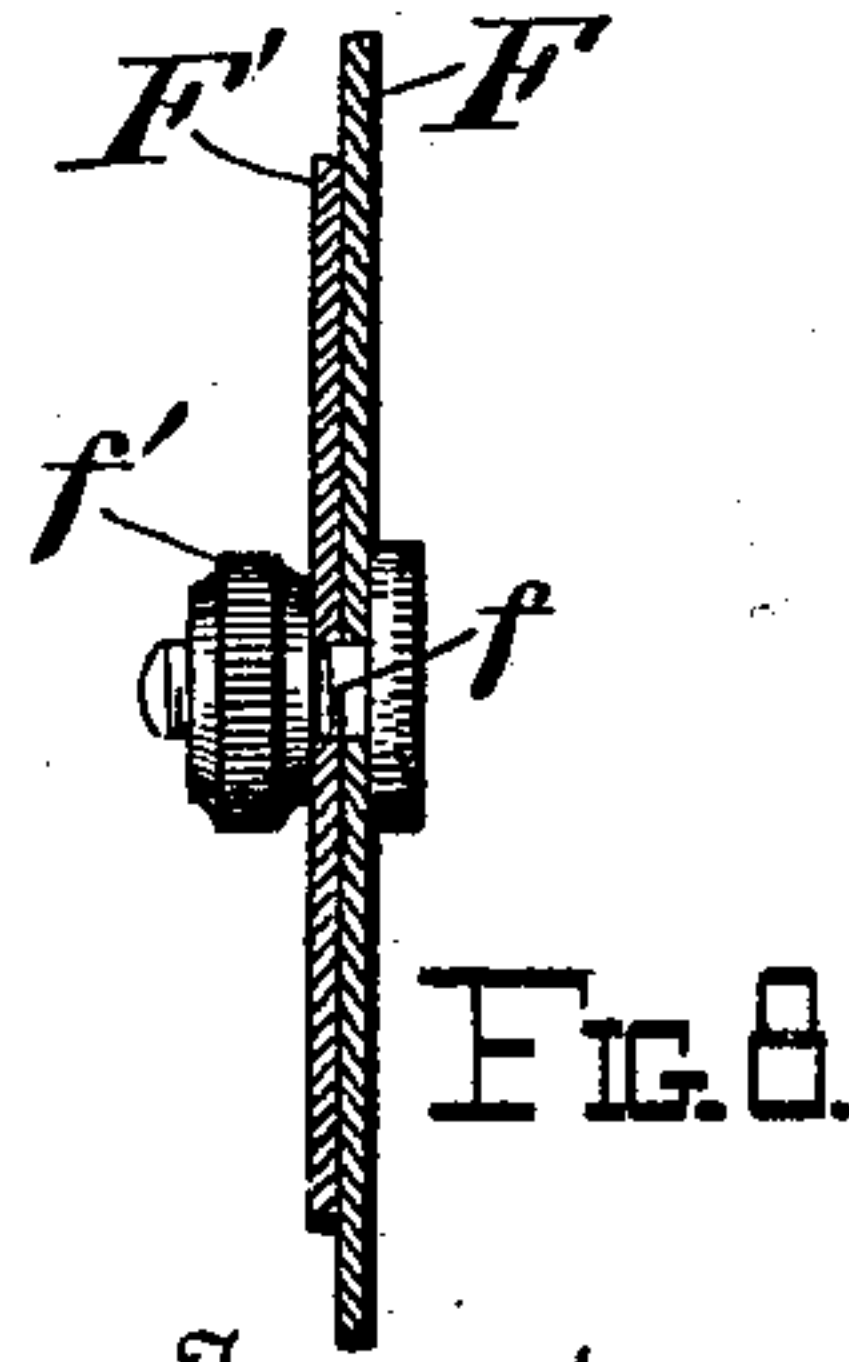


FIG. 8.

Witnesses

Percy C. Bowen
John Chalmers Wilson.

Inventor

William A. Freret, Jr.
by Wilkinson & Fisher
Attorneys.

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2 Sheets—Sheet 2.

FIG. 9.

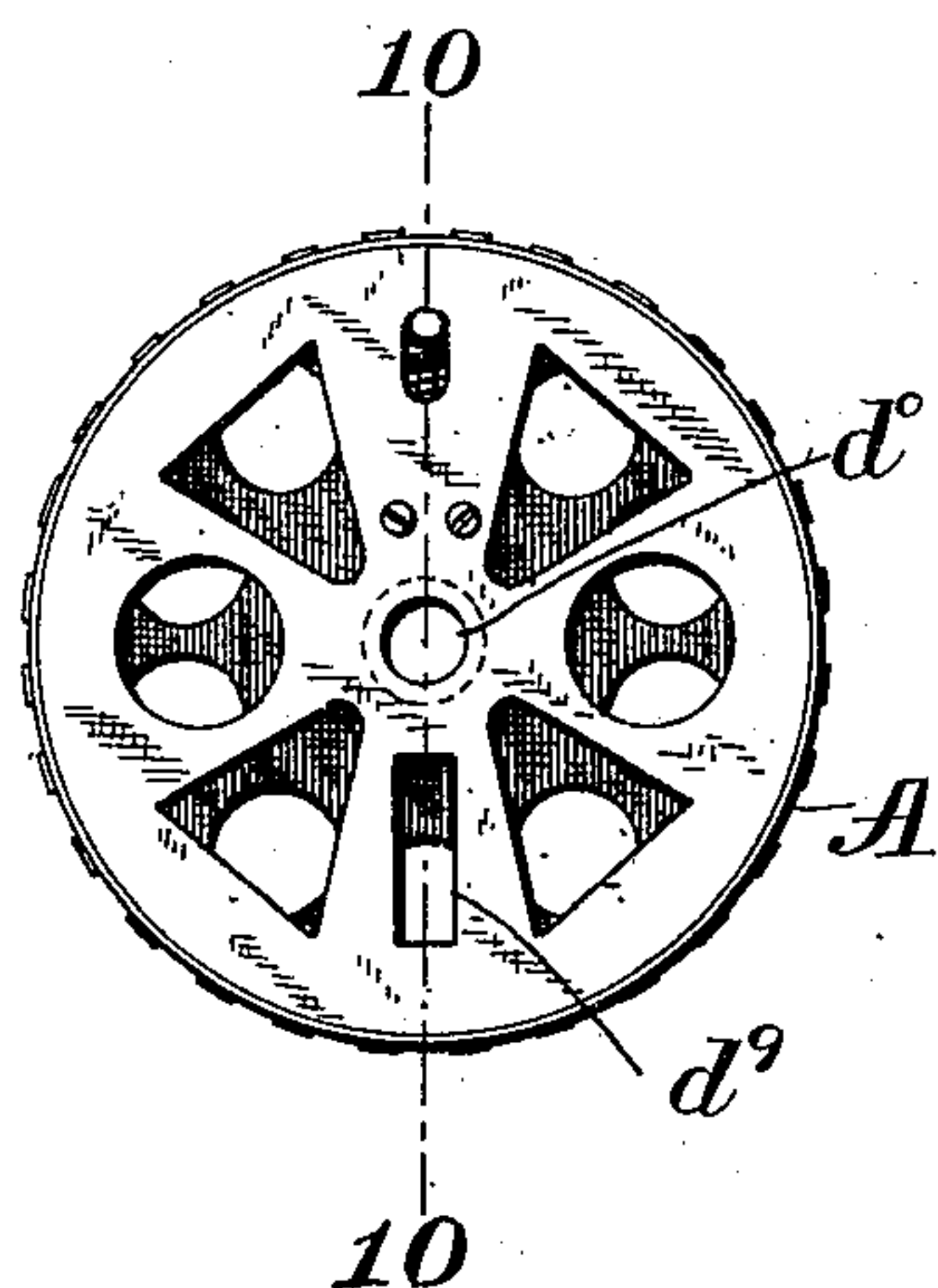


FIG. 10.

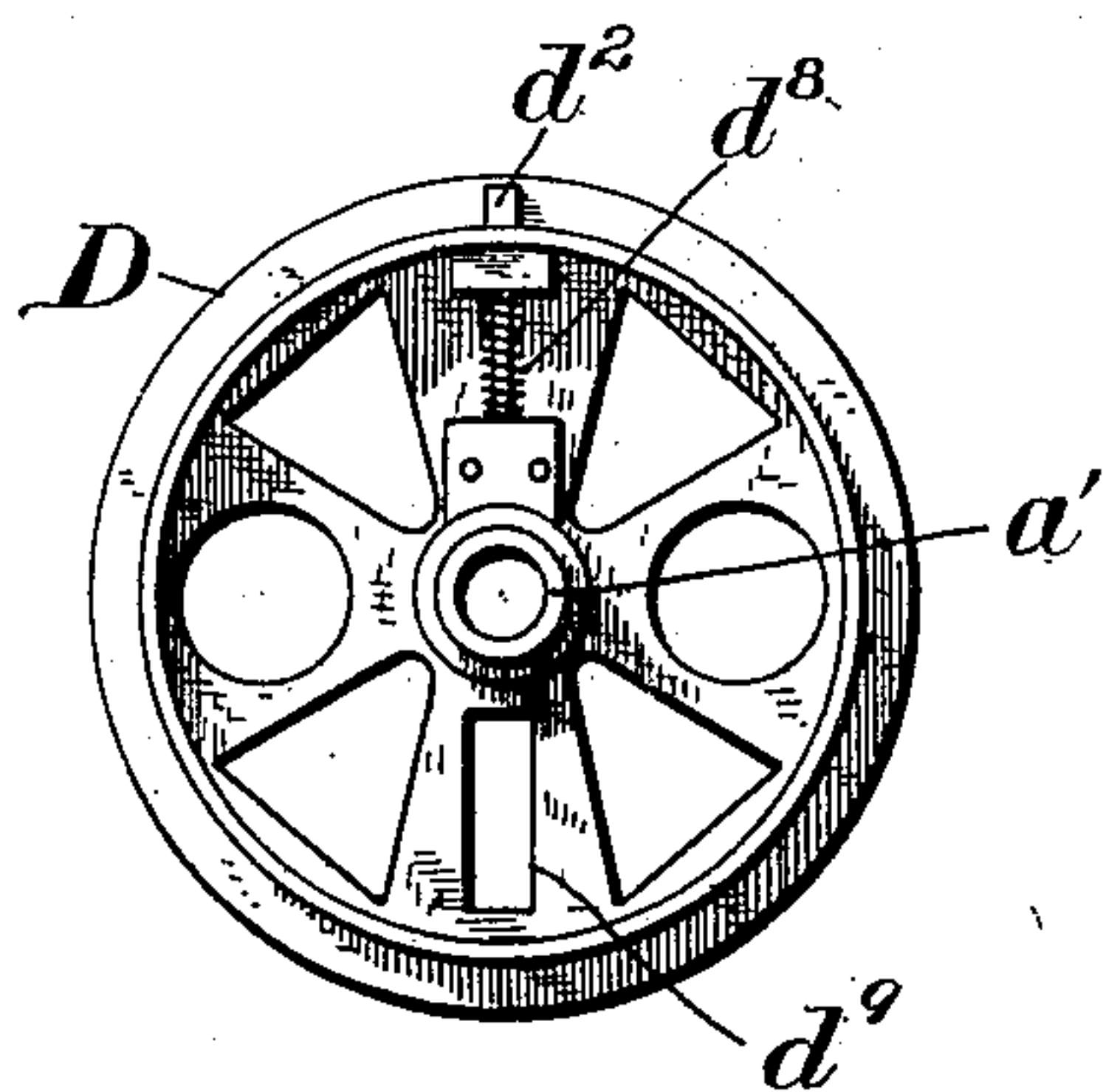
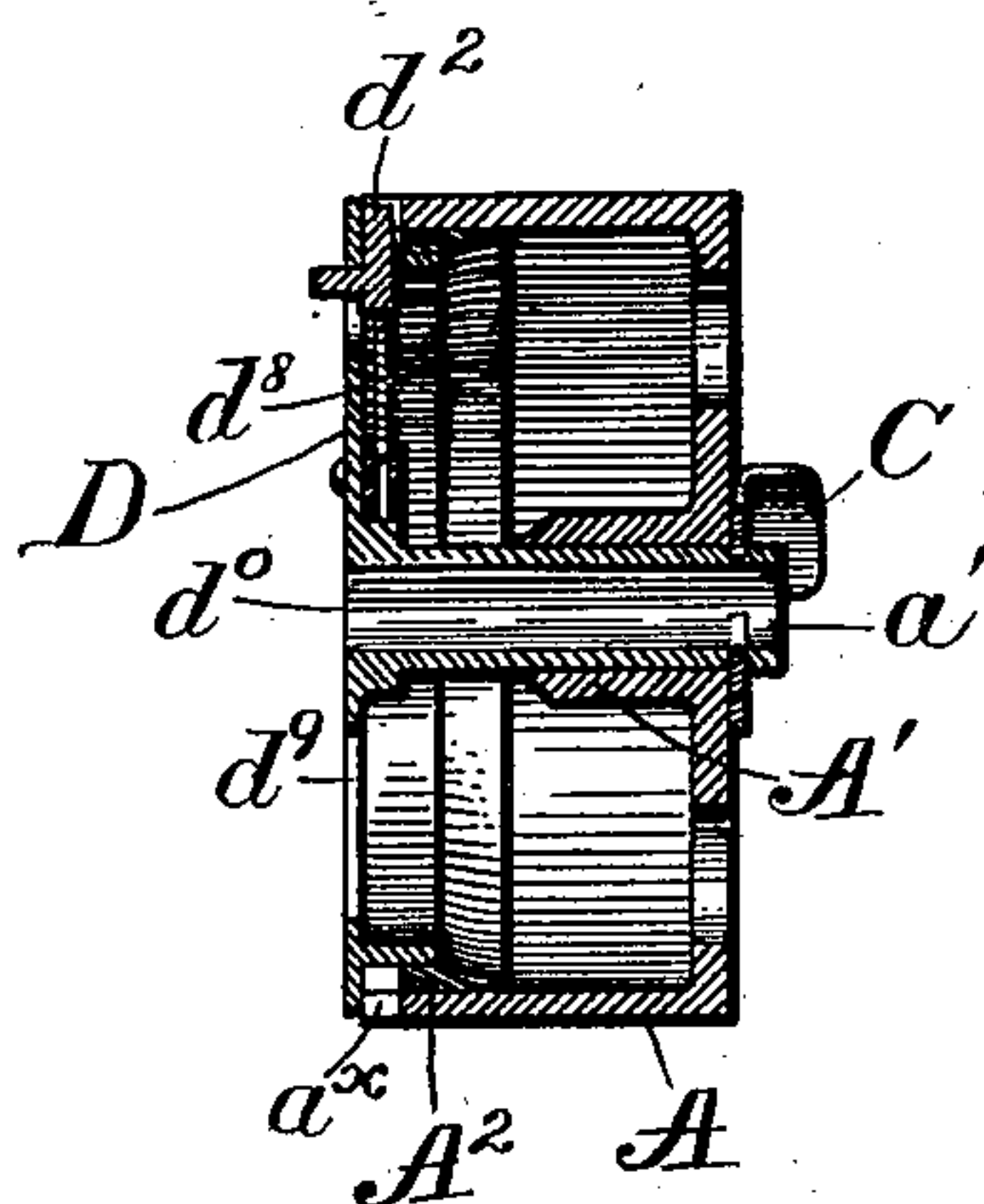


FIG. 11.

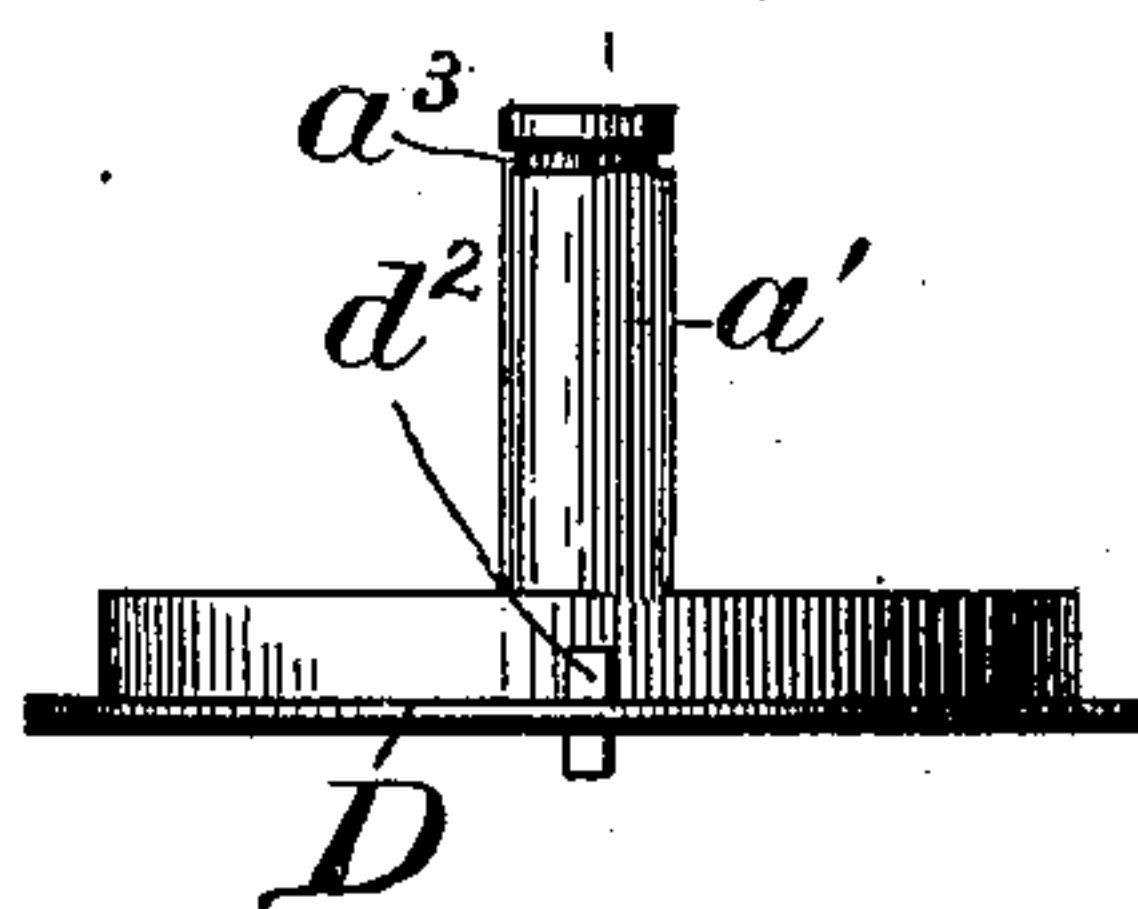


FIG. 12.

Witnesses

Percy C. Bowen.
John Chalmers Wilson.

Inventor
William A. Freret, Jr.,
by *Wilkinson & Fisher,*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM A. FRERET, JR., OF NEW ORLEANS, LOUISIANA.

CRYPTOGRAPHIC TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 644,165, dated February 27, 1900.

Application filed November 21, 1898. Renewed August 4, 1899. Serial No. 726,208. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. FRERET, Jr., a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Cryptographic Type-Writing Machines and Systems of Writing; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in cryptographic systems and means for adapting such a system for practice with type-writing machines, the object being to produce an attachment adapted to be fitted to a type-writing machine to facilitate its use in writing and transposing cipher messages.

My invention consists in a type wheel or cylinder constructed so as to be adjusted with respect to its carrying-stem and locked irrespective of the keyboard, and also includes a "key" or "guide" by which the proper adjustment of the type-cylinder is determined in setting the machine for transposing cipher.

My invention will be understood by reference to the accompanying drawings, wherein the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a side elevation of a type-cylinder constructed according to my invention. Fig. 2 represents an axial view of the cylinder shown in Fig. 1 looking in the direction of the arrow in said figure. Fig. 3 is a section taken on the line 3 3 in Fig. 2. Fig. 4 is a section taken on the line 4 4 in Figs. 2 and 5. Fig. 5 represents an axial view of the type-cylinder as seen from the right in Fig. 4, the adjusting-disk being removed. Fig. 6 represents an interior side view of the adjusting-disk. Fig. 7 represents a plan view of the adjustable key or guide by means of which the proper adjustment for the type-cylinder is determined in setting the same for transposing cipher into intelligible words. Fig. 8 represents a section taken on the line 8 8 in Fig. 7, illustrating the adjustability of the disks. Fig. 9 represents an end elevation of a modified form of cylinder and disk. Fig. 10 represents a section taken on the line 10 10 in Fig. 9. Fig. 11 represents a plan

view of the disk removed from the cylinder, and Fig. 12 represents a side elevation of the said disk.

A represents the type-cylinder, which for the sake of rendering my invention more easily understood is shown as being of the construction used with the "Blickensderfer" type-writing machine, and is shown and described in United States Patent No. 583,840, dated June 1, 1897; but I wish it to be understood that I do not limit myself to any particular make of type-cylinder segment or bar or type-writing machine, as my invention is equally applicable to any type-writing machine which employs a wheel-cylinder segment or bar carrying a full set of type.

One end of the type-cylinder A may be provided with a permanent head A^0 , as shown in Figs. 2 to 5, or an equivalent spider rigidly fixed therein, to which is formed or rigidly connected a hollow central tube or hub A' , fitting upon the carrying-spindle B, fitted to and forming part of the permanent operating mechanism of the machine. The said central hub A' is fitted with a bearing-sleeve a' , which projects outwardly beyond the head A^0 and has tangential grooves formed therein adjacent to the outer face of the said head, as at a^2 and a^3 , for the reception of a bifurcated key C. The groove a^2 at one side of this sleeve a' is cut entirely through, as shown in Fig. 4, and the spindle B has a surrounding groove b of a uniform depth cut therein near its outer end, which groove b in the spindle coincides with the grooves in the said sleeve when the cylinder is in position upon said spindle, as shown in Fig. 3, and one leg of the cylinder engages in this groove b in the spindle, as indicated by the dotted line in Fig. 2, thus locking the cylinder upon the spindle B.

The end of the type-cylinder opposite the head A^0 is provided with no permanent head or equivalent, but is fitted with a separate disk or head D. (Seen in Fig. 6.) This separable disk or head D fits accurately upon the open end of the cylinder and has an annular flange D^0 thereon, which fits closely within the end of the cylinder, as seen in Figs. 3 and 4. The said disk D has a central circular opening d^0 , which fits over the end of the sleeve a' , which latter extends a short dis-

tance beyond the corresponding end of the hub A', but has its extreme end flush with the outer surface of the disk D when the latter is in position, as shown in Figs. 3 and 4. The disk D has also an opening d' near the annular flange D^0 for the passage of the stem B', which forms a part of the operating mechanism of the machine and by which, through suitable mechanism, (not herein shown,) the necessary partial rotary motion in either direction is given to the type-cylinder during the operation of the machine. When the machine is at rest, the disk D has a fixed relation with respect to the mechanism for operating the type-cylinder; but the cylinder itself may be adjusted about its axis with respect to the said disk at the will of the operator. The disk D is fitted with a catch d^2 , normally held extended by a spring d^3 , connected thereto, and operated by means of a stem or lug d^4 , extending beyond the outer face of the said disk through a slot d^5 therein. The edge of the open end of the cylinder A is provided with a series of notches a^x at proper distances apart and at intervals corresponding to the distance between the type on the periphery of the cylinder, and the catch d^2 of the disk D is adapted to be made to engage in any one of these notches a^x , according to the adjustment desired.

Although not essential to the successful operation of my invention, yet for convenience in holding the parts together when the cylinder is detached from the machine I provide a spring-arm E, fixed to the inner face of the disk D and extending into the cylinder along the hub A', which spring-arm is provided with a catch-lug e' , which engages in an annular groove a^6 , cut in the hub A', and allows of the rotation of the cylinder with respect to the disk, as seen in Fig. 4. In order to provide for the ready disengagement of the said catch-lug when it is desired to separate the disk from the cylinder, the spring-arm E has an inclined extension E' , which when it is desired to disengage the said catch-lug may be pressed upon by any suitable instrument, such as the point of a pencil, inserted through one of the openings in the permanent head A^0 and by causing the spring-arm E to bend away from the said hub will cause the disengagement of the catch-lug e' from the annular groove a^6 , as will be readily understood.

It will be seen from the foregoing description that the type-cylinder A, carrying the type with which the letters are formed, may be adjusted about its axis with respect to the disk D and locked at any one of the notches a^x , but that when placed in operative position upon the machine the said disk D must always occupy the same relation to the operative mechanism, and therefore the desired adjustment of the type-cylinder is readily effected while the parts are detached from the machine or, if desired, without detaching the type-cylinder from the machine.

In Figs. 9 to 12 I have shown a modified

construction of type-cylinder and adjustable disk, which may be used as a substitute for the forms hereinbefore described, if preferred. In the cylinder shown in Fig. 10 the hub A' is cut off shorter and the sleeve a' is secured to the disk D concentric with the central opening d^0 therethrough and is removable from the hub A', wherein it is held when in use, by means of the bifurcated key C, which also secures the cylinder upon the spindle B, as hereinbefore described. The cylinder shown in Fig. 10 is also fitted with a reinforcing-ring A^2 , provided with notches at its outer edge to correspond with the notches in the cylinder itself, which ring will serve to prevent the breaking of the edge of the frail cylinder from constant adjustment of the disk. The locking-catch d^2 on the disk is in this form held extended by means of a coil-spring d^8 as a substitute for the bent spring shown in Fig. 6, and instead of the circular opening d' for the passage of the stem B', as shown in Figs. 3 and 6, a slot d^9 may be provided, as shown in Figs. 9, 10, and 11. The operation of adjusting the disk in this modified form is precisely the same as with the form shown in Figs. 1 to 6, and need not be further described.

From the foregoing it will be obvious that many variations might be made in the details of the cylinder and disk without departing from the spirit of my invention.

In writing "cipher" the type-cylinder may be set to any possible desired adjustment and the operator strikes the keys representing the letters and figures which he would desire to make were he writing ordinary English; but inasmuch as the type will strike letters corresponding to the letters struck on the keyboard in but one adjustment of the type-cylinder the combinations of letters printed will be unintelligible when the type-cylinder is set to any other than that one proper adjustment, and the result is a cipher message. According to my invention the letters or combinations of letters of the cipher message have in themselves no significance or special meaning, which permits of their being transposed by reference to a fixed printed table or index, and this transposition is effected by purely-mechanical means, as hereinafter described. When the original cipher message is written, the operator strikes the cipher-key letter before adjusting the cylinder for cipher writing, and this cipher-key letter, which is simply the letter on the cylinder which is adjusted to the position ordinarily occupied by some other letter, is to serve as a guide to the person transposing the cipher message into clear English. Thus for ordinary writing each letter on the cylinder occupies a fixed relation to the operating mechanism, and the cylinder is set by the letter which is most conveniently in view. For instance, the letter "J" is used for setting the cylinder for ordinary writing, and when it is desired to write a message in cipher some

other letter—for instance, “Y” or “M” or “S”—is adjusted to the position ordinarily occupied by the letter “J” and the cylinder is replaced upon the machine with the chosen letter, whatever it may be, which I call the “cipher-key” letter, taking the place of the letter “J” and the other type-letters occupying correspondingly different positions with respect to their normal positions. It will therefore be obvious that the ordinary manipulation of the keyboard will produce unintelligible combinations of letters and characters, each of which, written by one predetermined adjustment of the type-cylinder, bears the same relation to the letter of the key struck in forming it as the cipher-key letter bears to the letter by which the cylinder is set for intelligible writing from intelligible copy, and will be found to occupy positions upon the type-cylinder bearing such relations.

In order to transpose, by the operation of a machine carrying a cylinder constructed according to my invention, the unintelligible combinations of letters into intelligible words when the letters of such unintelligible combinations are struck on the keyboard, the type-cylinder used for this purpose must therefore be set to an adjustment bearing an inverse relation to the adjustment for intelligible writing, the same as the adjustment at which the cylinder was set in producing the unintelligible combinations of letters, or, in other words, the cylinder must be turned and set as many letters or spaces to the opposite side of the “ordinary-key” letter for intelligible writing as it was set to one side of such ordinary-key letter for producing the unintelligible combinations of letters. The cipher-key letter or character being given, as hereinbefore stated, the “transposing-key” letter or character may be determined by counting the number of letters or characters from the ordinary-key letter or character in the shorter direction to this known cipher-key letter or character and with this knowledge as a guide count an equal number of letters or characters in the opposite direction from the ordinary-key letter, and such number as corresponds will be the proper transposing-key letter or character.

For convenience in determining the proper letter or character by which to set the type-cylinder in transposing the unintelligible message I provide a mechanical device consisting of two superimposed disks, a larger disk F and a smaller disk F', arranged concentrically with respect to each other and held together by a central headed screw *f*, provided with a milled nut *f'*, as seen in Figs. 7 and 8, and upon each of these disks is displayed an arrangement of letters and characters corresponding to the arrangement of similar letters and characters upon the type-cylinder. The person writing the cipher message originally may select any letter or character as the cipher-key letter or character and may set the cylinder by that letter or character,

and he may write the whole message by such adjustment or he may readjust the cylinder to other cipher-key letters or characters as often throughout the message as he sees fit. The cipher-key letter or character may be printed immediately preceding each separate adjustment or in any other predetermined relative position, and also by a predetermined signal—such as a printed character, a sounding device upon the machine, or an attachment upon one of the keys of the keyboard or other suitable contrivance—warning should be given to the operator when the cipher-key letter is about to change, inasmuch as a readjustment of the cylinder in transposing is required every time the cipher-key letter changes.

In determining the transposing-key letter by means of the mechanical device shown in Figs. 7 and 8 the disks are turned with respect to each other until the ordinary-key letter by which the cylinder is set for intelligible writing—for instance, “J”—on one disk falls opposite the cipher-key letter or character on the other disk. The disks being then clamped together by means of the screw and nut, the transposing-key letter or character will be found on the first disk opposite the ordinary-key letter “J” on the other disk, and the cylinder when set by this transposing-key letter or character will write intelligible words forming the original message when the keyboard of the machine is manipulated according to the letters of the cipher message.

Many modifications in the means for adjusting and securing the type-cylinder might be made which could be used without departing from the spirit of my invention, and I therefore do not wish to be understood as limiting myself to the precise arrangement and construction hereinbefore described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a type-writing machine, the combination with a hollow cylinder, and a disk fitting said cylinder and having its axis common therewith, the said disk and cylinder being adjustable about their common axis with respect to each other, and the said cylinder having a continuous annular groove therein; of a spring-catch connected to said disk and adapted to engage said groove in the cylinder and hold said disk and cylinder together in rotative relation, and means for locking said disk and cylinder at any predetermined adjustment, against rotation with respect to each other, substantially as described.

2. In a type-writing machine, the combination with a type-cylinder, of a disk fitting one end of said cylinder; said disk and said cylinder being each centrally apertured; an axial sleeve attached to the one member concentric with the opening therethrough, fitting the opening of the other member, and centering the two members upon each other in rotative relation with respect to each other; means for

holding the two members together in rotative relation, and means for locking said members against rotation with respect to each other, substantially as described.

5 3. In a type-writing machine, the combination with a type-cylinder, of a disk fitting one end of said cylinder; said disk and said cylinder being each centrally and axially apertured; an annular flange on said disk fitting
10 closely within said cylinder in rotative relation therewith; means for holding the said disk and cylinder together in rotative relation; and means for locking said disk and cylinder at any predetermined adjustment,
15 against rotation with respect to each other, substantially as described.

4. In a type-writing machine, the combina-

tion of a non-rotative shaft; a type-cylinder which is mounted upon said shaft and movable therewith; a disk fitting one end of said 20 cylinder over said shaft; means for locking said cylinder and disk upon said shaft to allow of rotation thereon; said disk and cylinder being capable of rotation with respect to each other about a common axis; and means 25 for locking said cylinder and disk against rotation with respect to each other, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. FRERET, JR.

Witnesses:

JAMES J. McLOUGHLIN;

HARRY S. LEWIS.