

(No Model.)

5 Sheets—Sheet 1.

E. F. SPAULDING.
CASH REGISTER AND INDICATOR.

No. 500,164.

Patented June 27, 1893.

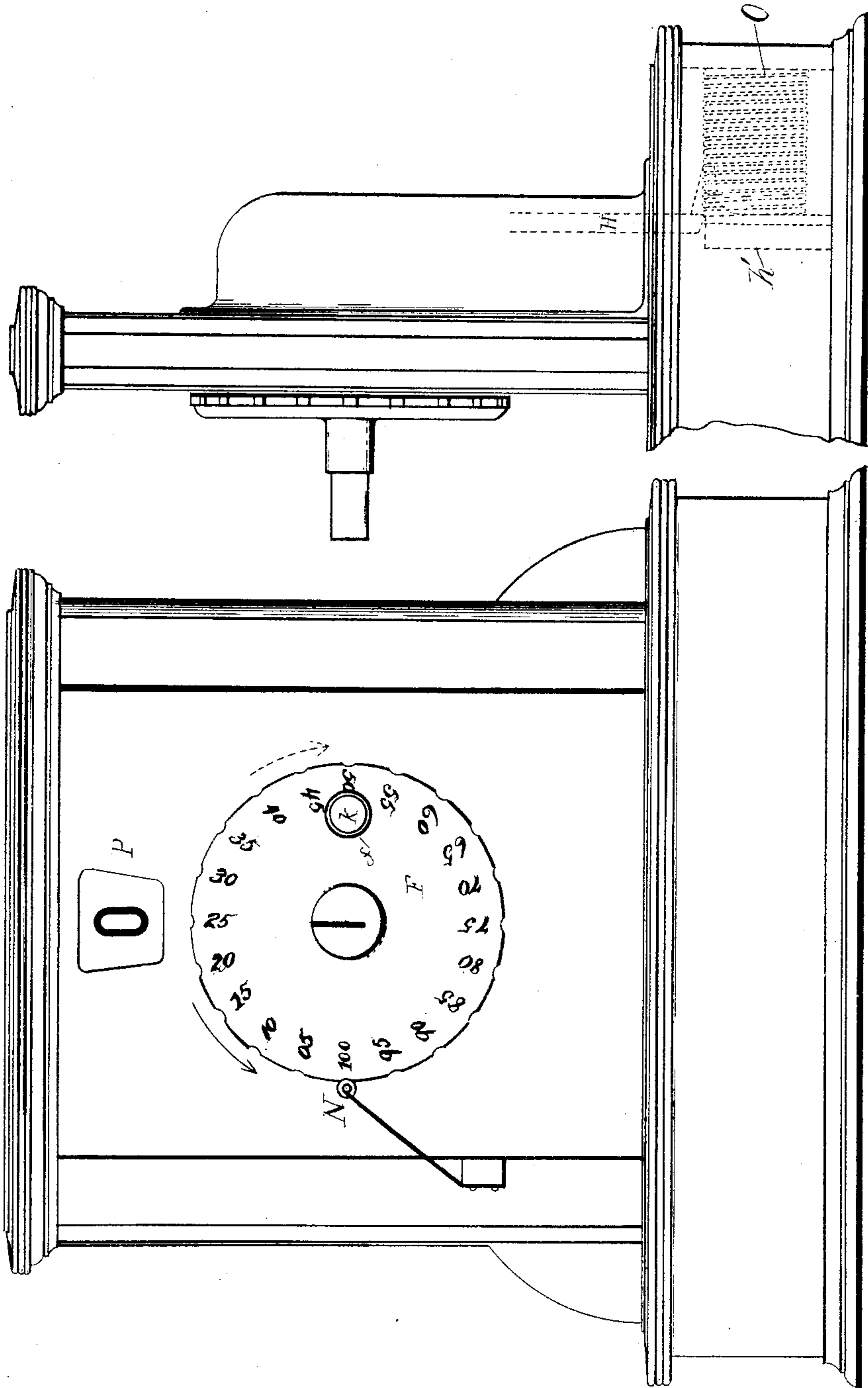


Fig 2

Fig 1

WITNESSES:

S. B. Daugherty
W. H. Garsell

INVENTOR

Elyah F. Spaulding

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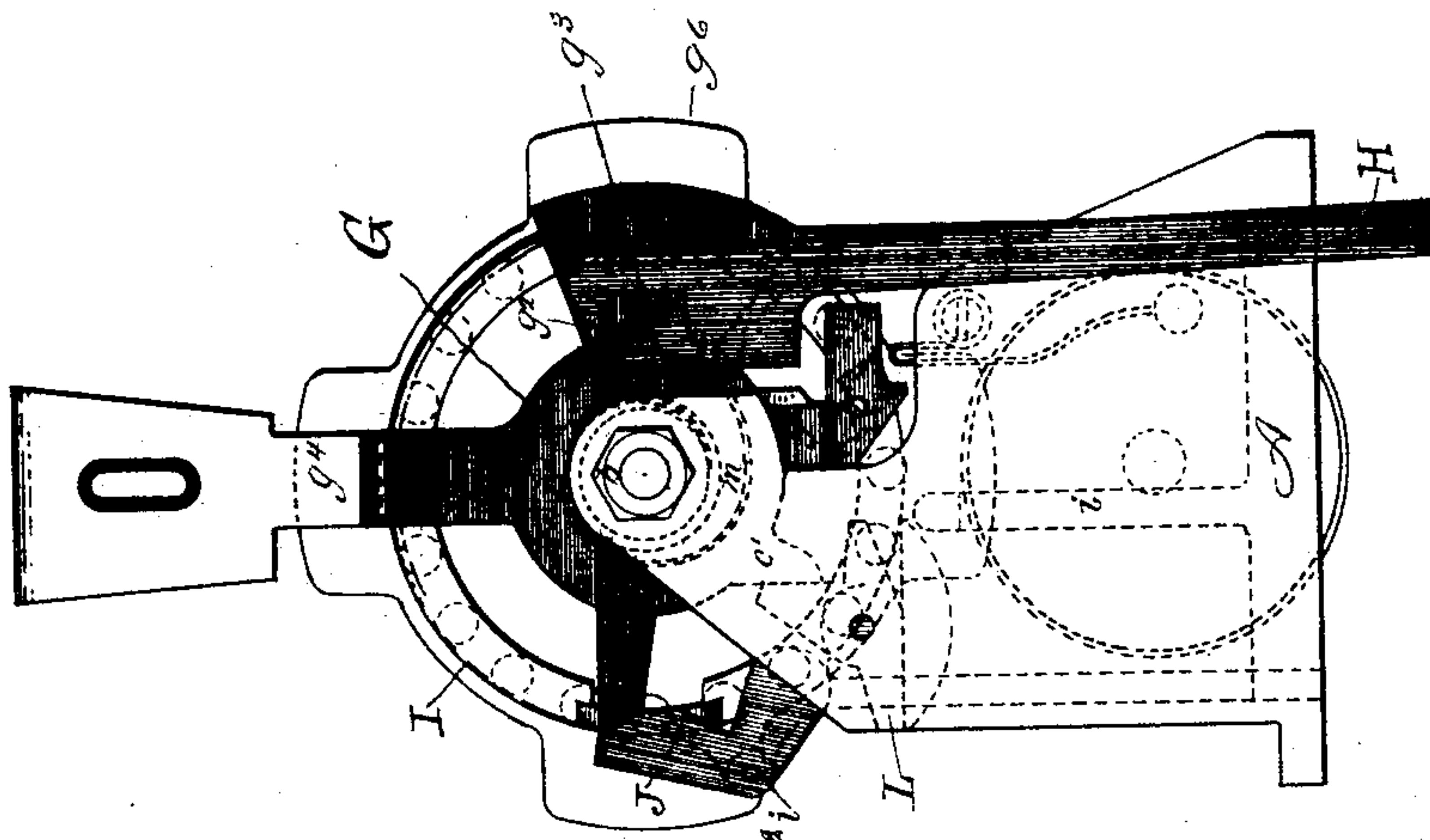


Fig. 4.

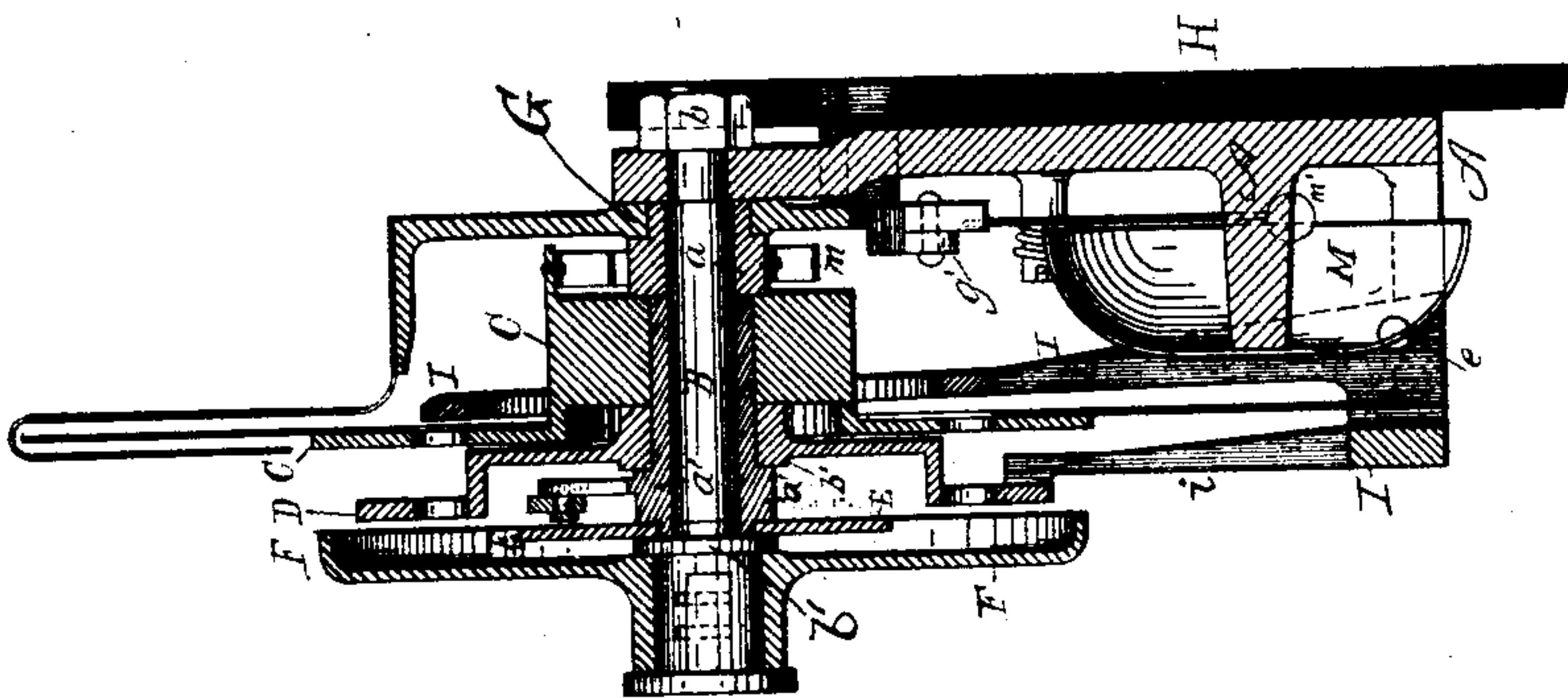


Fig. 5.

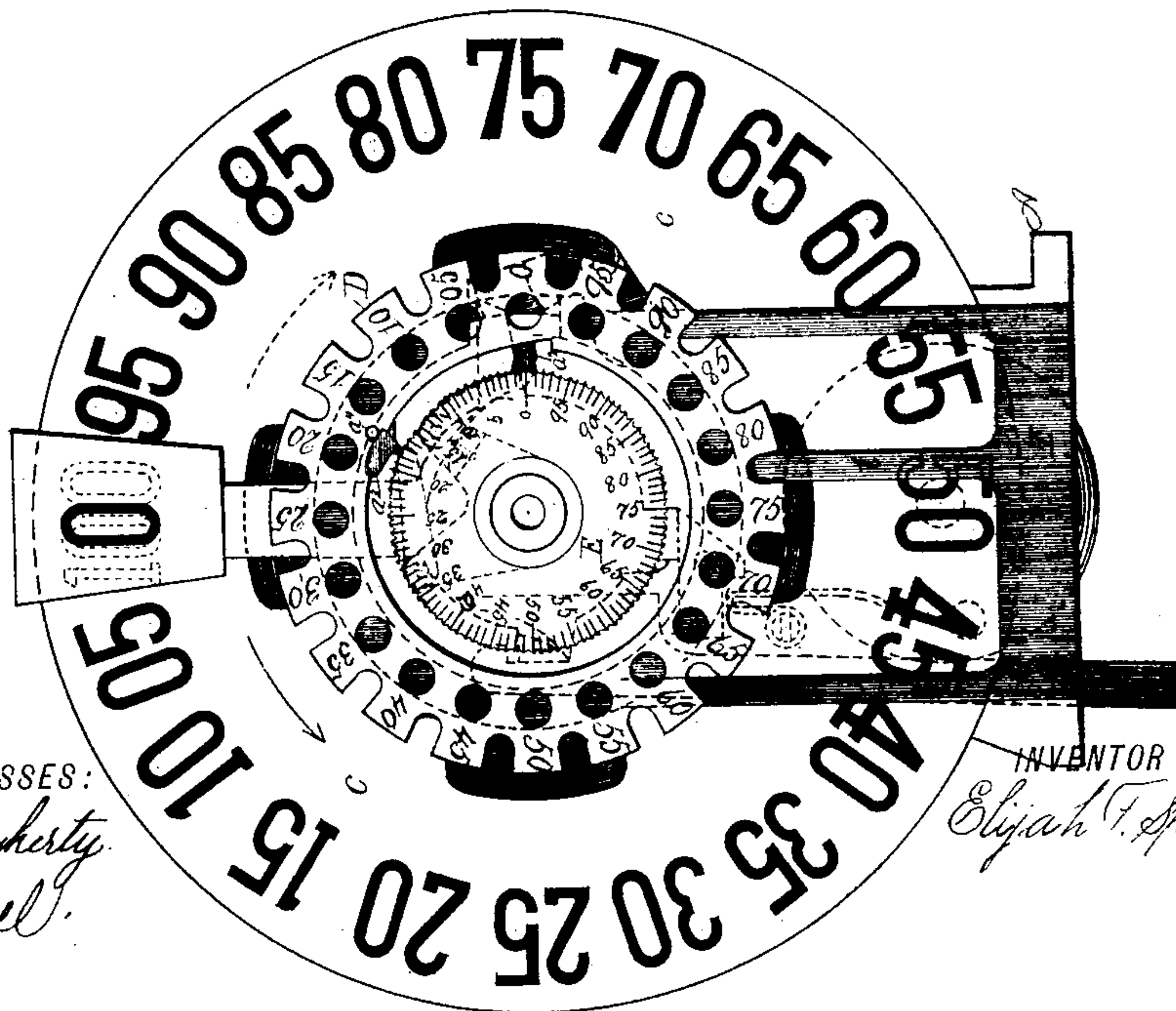


Fig. 3.

WITNESSES:

J. B. Daugherty
W. H. Harsell

INVENTOR

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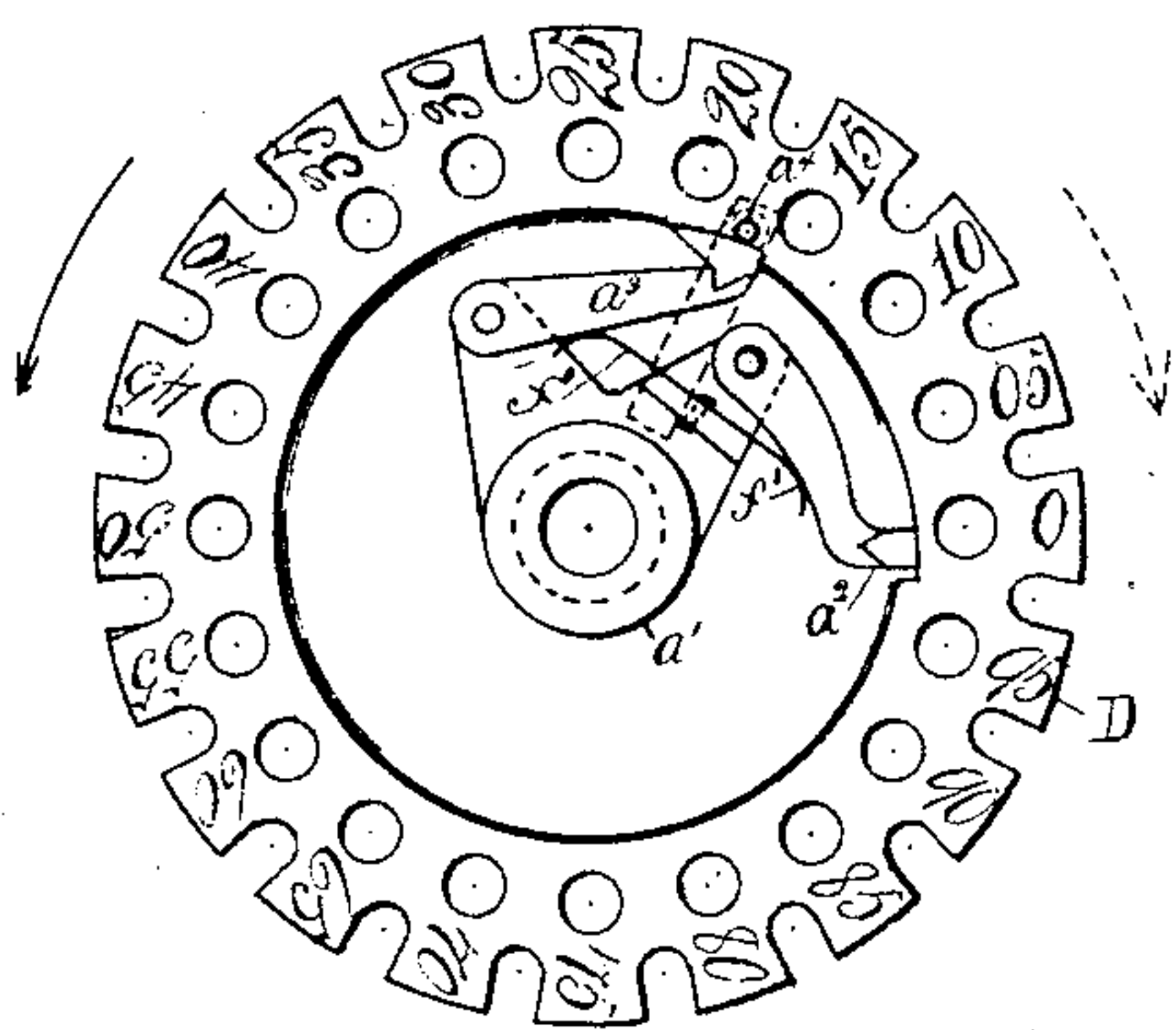


Fig 8

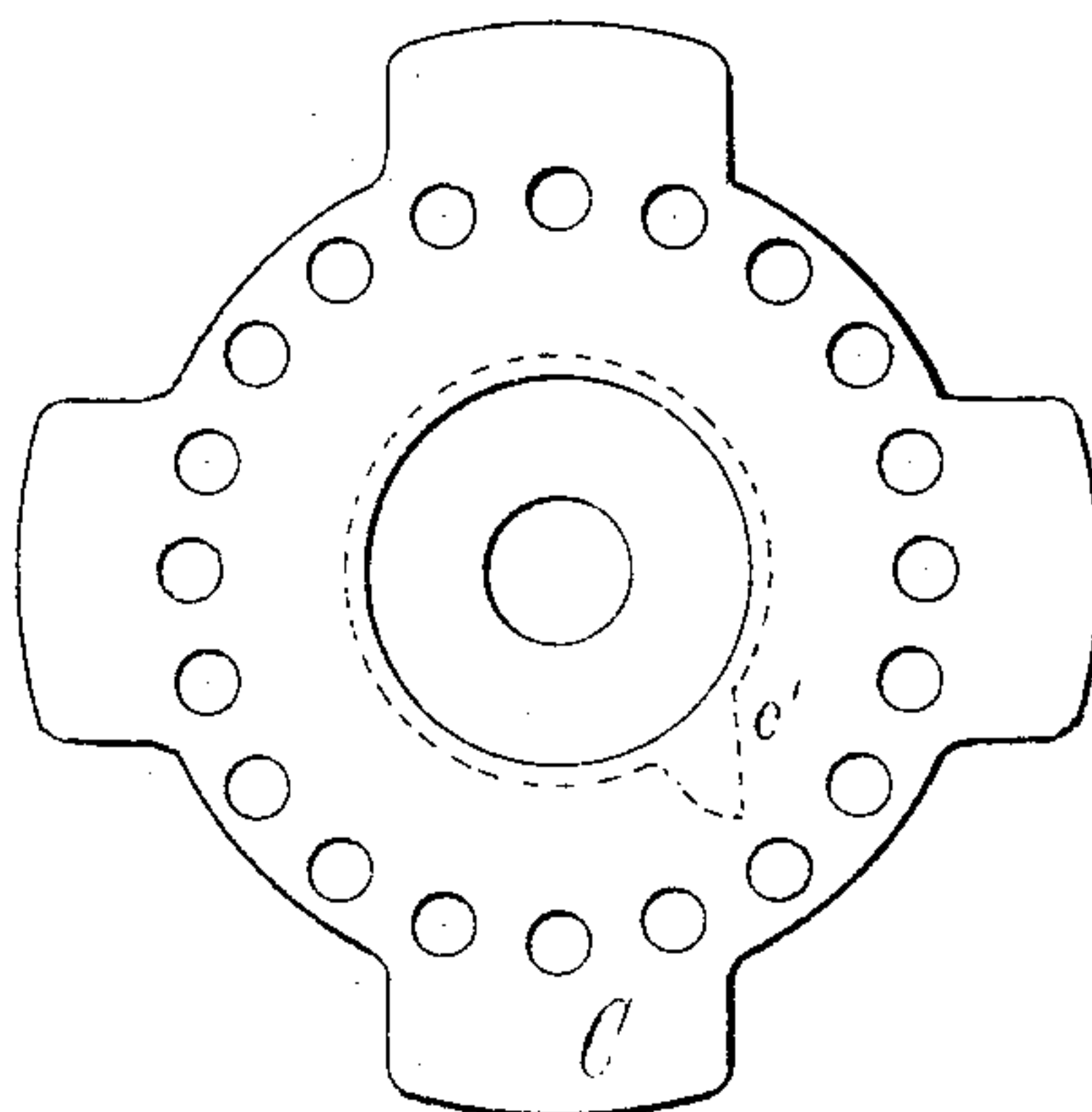


Fig. 9

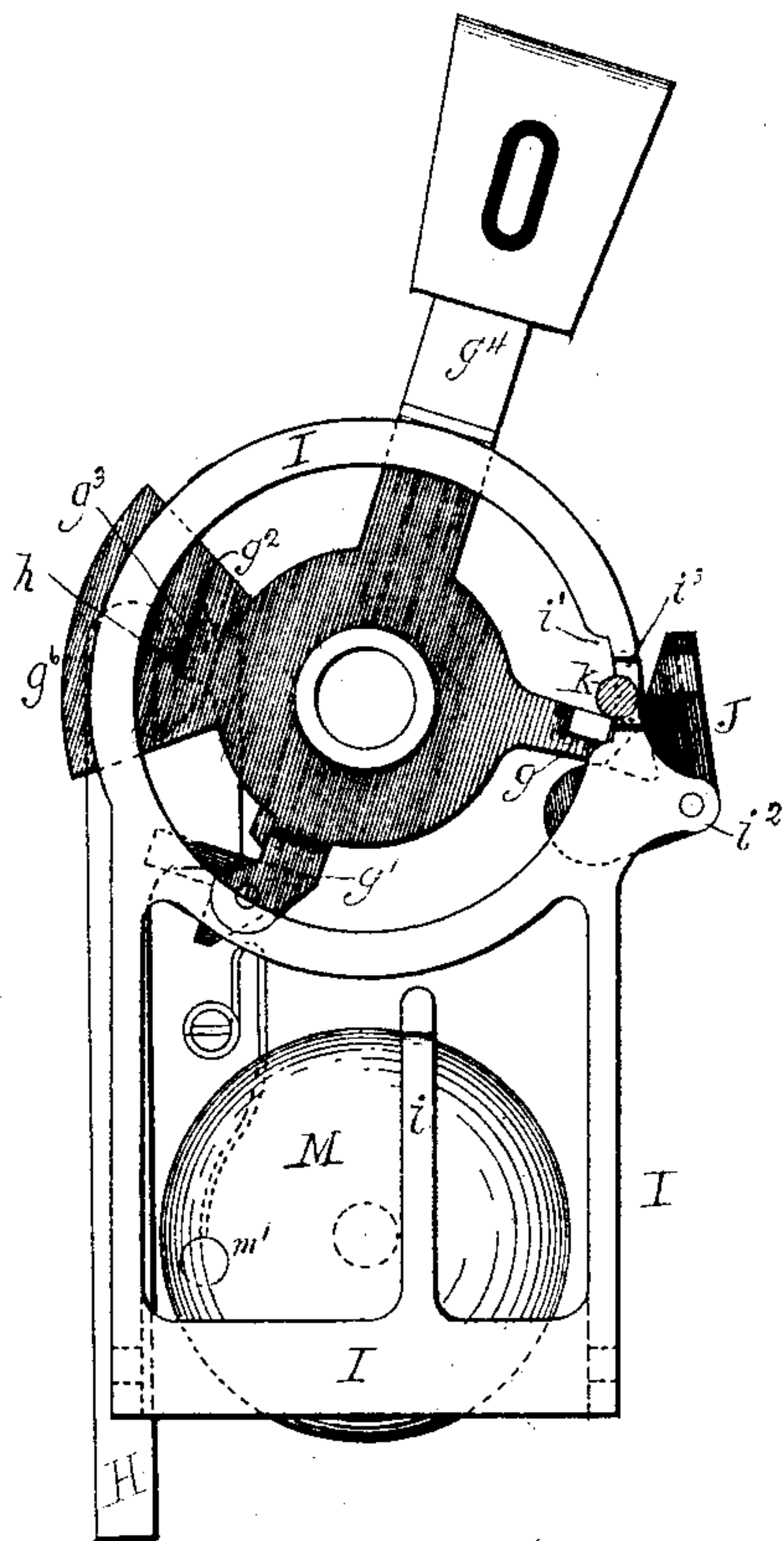


Fig 7

WITNESSES: *L. B. Daugherty.*
W. H. Garsel.

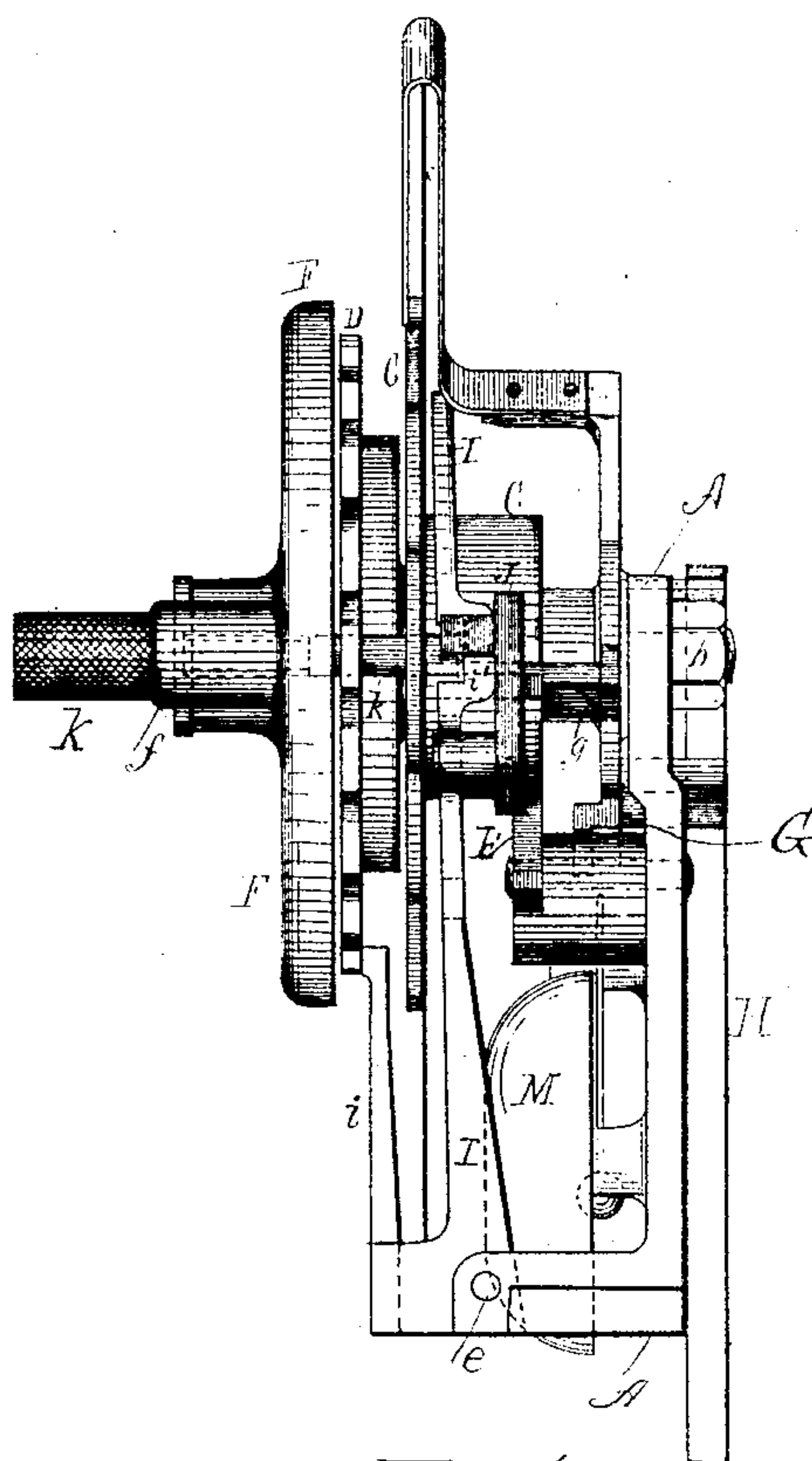


Fig 6.

INVENTOR

Elijah T. Spaulding

(No Model.)

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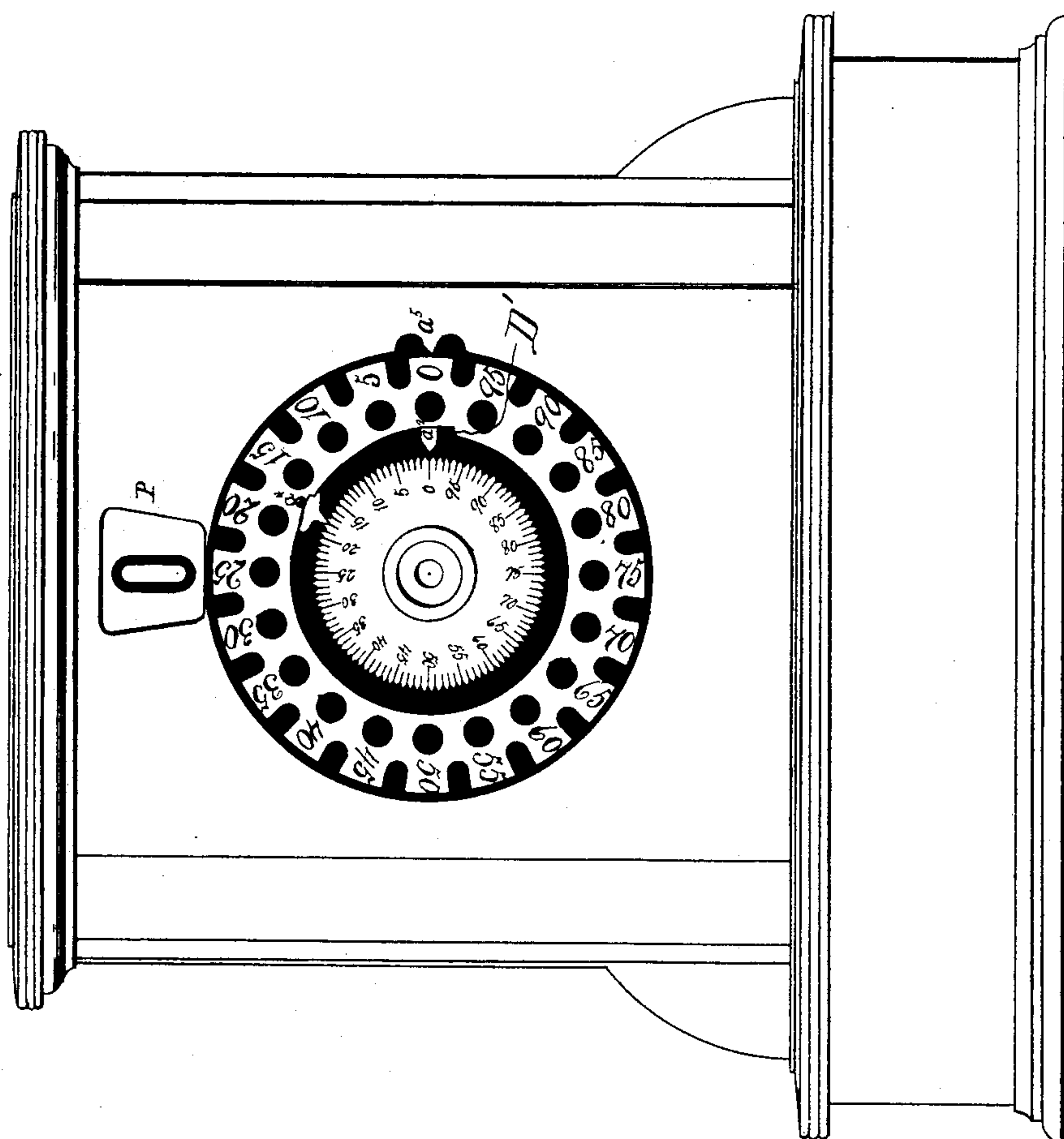


Fig 10

WITNESSES:

S. B. Daugherty
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(No Model.)

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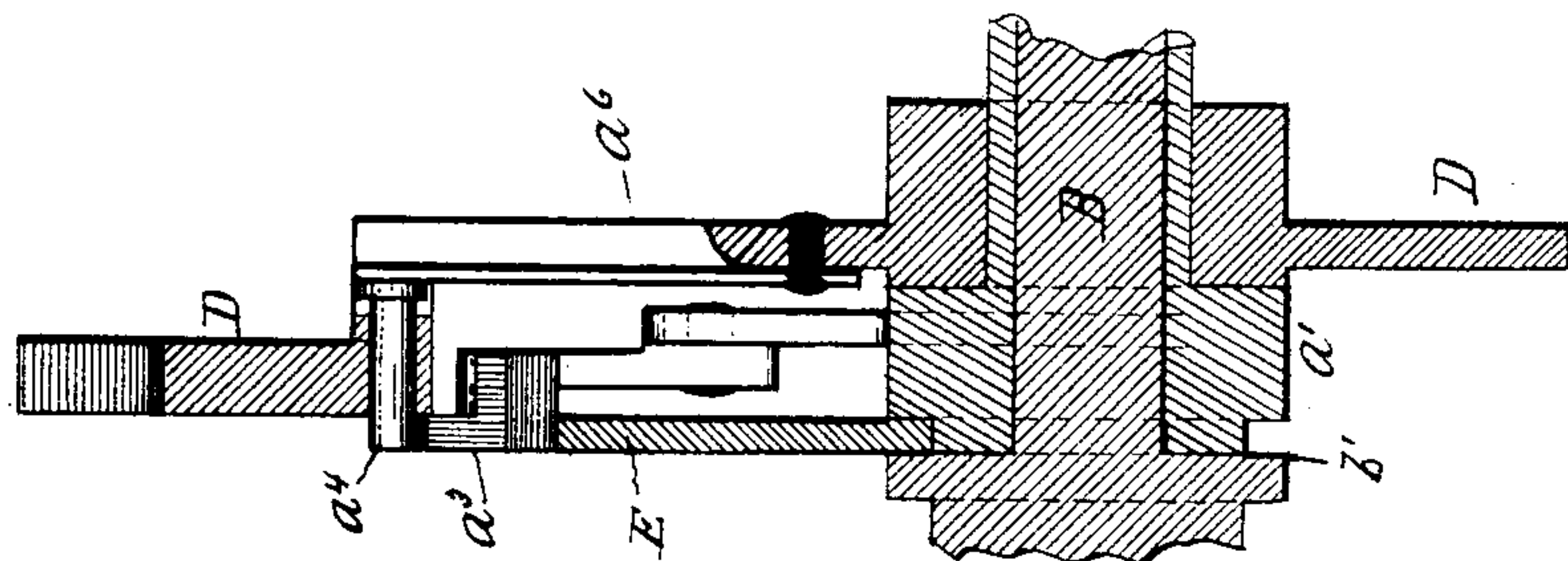


Fig 12

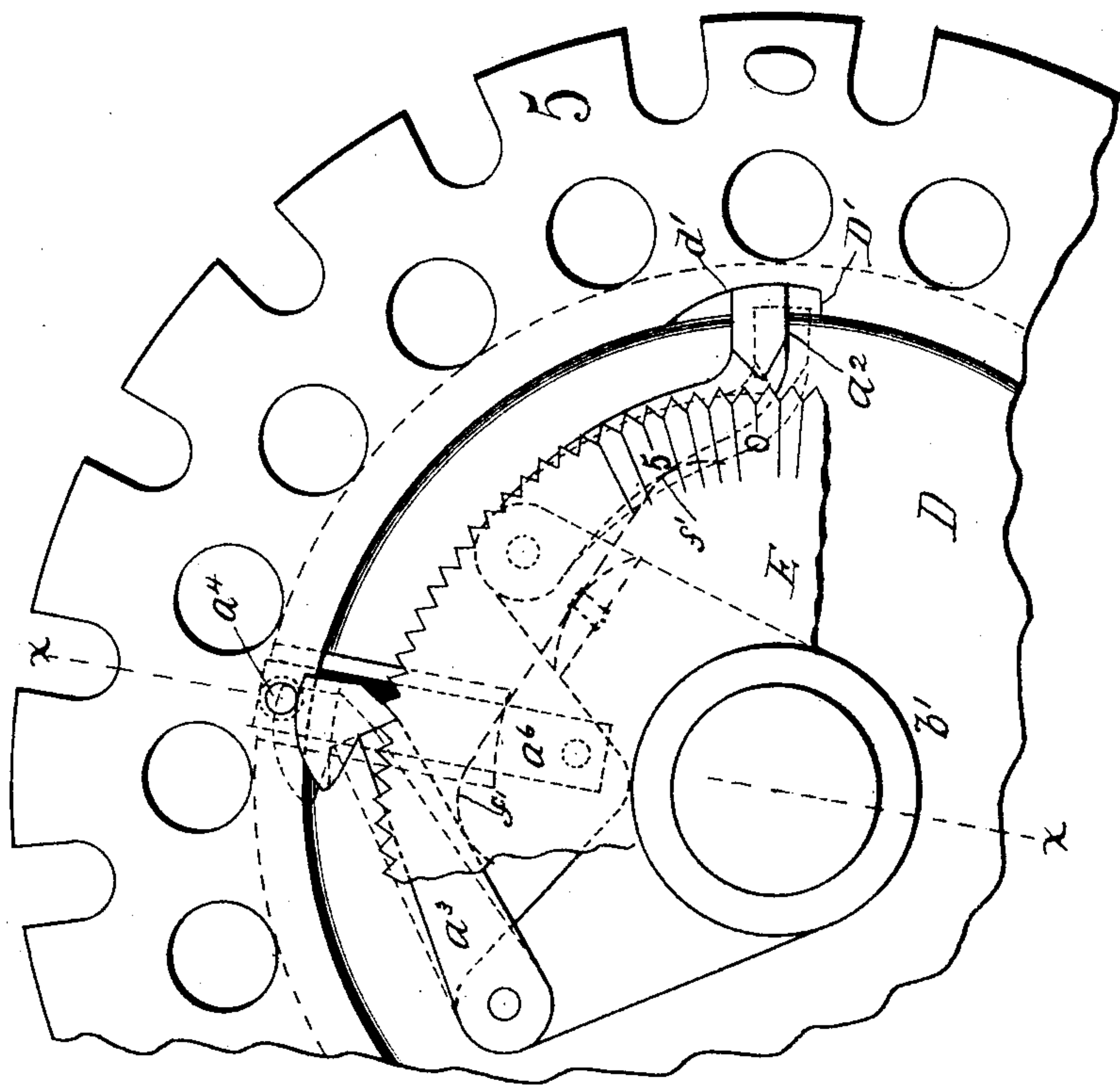


Fig 11

WITNESSES:

S. B. Daugherty.
Albert S. Peckham.

INVENTOR

Elijah F. Spaulding

UNITED STATES PATENT OFFICE.

ELIJAH F. SPAULDING, OF BOUND BROOK, NEW JERSEY, ASSIGNOR OF
ONE-HALF TO ELMER S. SMITH, OF SAME PLACE.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 500,164, dated June 27, 1893.

Application filed July 20, 1892. Serial No. 440,702. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH F. SPAULDING, a citizen of the United States, residing at Bound Brook, in the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Cash-Registering Machines, of which the following is a specification.

My invention relates to that class of cash registering and indicating machines that is known as "rotating indicators," and consists in certain improvements in the construction thereof, as will be hereinafter fully set forth and pointed out in the claims.

My invention is illustrated in the accompanying drawings as follows:

Figure 1 is a front elevation of my machine. Fig. 2 is a side elevation. Fig. 3 is a front elevation of the works with the case removed. Fig. 4 is a rear elevation of the works with the dial removed. Fig. 5 is a transverse vertical section through the works with the central shaft in elevation. Fig. 6 is a side elevation of the works. Fig. 7 is a detail front elevation of the devices by which the drawer is released, the gong sounded, the cent register wheel locked, and the zero indicator moved out of view. Fig. 8 is a detail of the cent register wheel and the pawls that act upon the dollar register wheel. Fig. 9 is a detail of the central part of the dial wheel. Fig. 10 is a front elevation of the machine as it appears when the operating dial, F, is removed to set or read the registering wheels. Fig. 11 is a detail view, on an enlarged scale, of a segmental part of the cent and the dollar registering wheels, and shows the pawl mechanism by which the dollar wheel is moved from the cent-wheel, and also the means by which said pawl mechanism can be thrown out of action and the wheels be set to zero. Fig. 12 is a section on the line X—X in Fig. 11.

The registering and indicating mechanism is contained in a vertical case that is mounted on a base cabinet containing a drawer, which is moved outward by a spring shown by dotted lines in Fig. 2 and marked O. A vertically acting bolt, H, connected with and operated by the registering mechanism passes from the upper case to the lower case, and engages a catch, h', on the drawer. These are

minor features and not novel, and need no further description. There is also a gong bell, M, as is common in this class of machines, the hammer of which is actuated by the mechanism. In the upper case, the works proper are contained, and A marks the frame work that sustains said works.

The operating mechanism consists of an operating disk, F, which carries an operating bolt, K; a cent or units registering wheel, D, a hundreds or dollar registering wheel, E, an indicating wheel, C, and a tumbler, G, together with locking devices, operating pawls and pawl carriers, an indicating-dog and drawer bolt. Of these devices, the operating disk, the cent-wheel, the dollar-wheel, the indicator disk and the tumbler are mounted on a common shaft, B, that is secured to the frame work, A, by a nut, b. This shaft has shoulder, b' see Figs. 5 and 12, and between it and the frame piece, A, are clamped the sleeves, a and a', which form bearings for the several wheels above named, except the operating disk, and shoulders on the said sleeves hold the said wheels against lateral movement, and on the sleeve, a', there are arms rigid with said sleeve which support the pawls, a² and a³. The operating disk is journaled to the shaft, B, outside of the shoulder b', is removable to obtain access to the registering wheels and is held in place by a locking device that is operated by a key in the manner of a common "Yale" drawer lock, said key being intended to be carried by the owner of the machine so that the attendants cannot tamper with the registering mechanism, which is wholly protected and secured by said disk.

As represented in the drawings, the machine is designed to register and indicate five cents, and multiples of five cents, and, hence, the operating disk, the cent wheel and the indicating wheel are divided into twenty spaces, and as I have, in the machine shown, limited the scope of the machine to one hundred dollars, there are one hundred spaces on the dollar wheel, but it should be understood that these limitations are purely elective and not essential, for, if desired, I could, without changing the machine essentially, design it to register and indicate from one cent to hundreds of thousands of dollars or more, the

whole matter depending on the size of the wheels and the number of spaces thereon.

As before stated, the operating disk carries the operating pin, K. This pin is carried in
5 a boss, *f*, on said wheel F, and it has a longitudinal action limited in one direction by the outer head thereof and in the other by a shoulder (see dotted lines in Fig. 6). The disk, F, has, in this instance, twenty spaces,
10 represented by twenty notches on its periphery and designated by numbers from 5 to 100.

On the frame is a spring-dog and pointer, N, which engages said notches, and holds the wheel or disk lightly against movement, but
15 does not unduly resist its movement, and to afford ease of action I have used a roller at its engaging end. The units or cent wheel, D, and the indicator wheel, C, have holes opposite each space, and these holes and the op-
20 erating pin are all equally distant from the centers of the several wheels, so as to be brought into line, so that the pin can be passed through the cent-wheel and the indicator-wheel, and move them rotatively simultane-
25 ously with the operating disk. To make a registration and indication, the operator will draw the pin, K, toward him to the limit of its movement in that direction, and then he will turn the disk, F, in the direction of the
30 full line arrow in Fig. 1 until the indicating dog, N, is in the notch opposite the number to be indicated; he will then push the pin, K, in, to the extent of its limit, in that direction. This brings the pin into engagement with the
35 cent-wheel and the indicating wheel. He will then turn the operating disk in the direction of the dotted line arrow, and by so doing, he will turn the said wheels simultaneously, and he will continue the movement until stopped
40 by means hereinafter to be described. The pin, K, at its inner end contacts with the locking frame, I, which locks and holds the unit wheel, D, against action at all times, except when the said locking frame is held out of ac-
45 tion by said pin. The locking frame is pivoted to the frame work, A, at *e* (see Fig. 6) and its upper portion is in the form of a ring (see Fig. 7) that is concentric with the shaft, B, and is directly opposite to the pin, K, at
50 all times, and hence as said pin is pushed in to its inner limit, it contacts with, and pushes back said frame, I, and thereby withdraws the finger, *i*, carried by said frame from the notch in the periphery of the wheel, D, with which
55 it was engaged, and thereby allows the said wheel, D, to be moved by the pin. All registrations are completed, when the pin reaches the position shown in Fig. 1; and opposite this point on the ring of the locking frame, I, there
60 is a depression or notch, *i*³, in the outward face of the ring, and when the pin reaches this point, the said depression allows the frame to move back, and the finger, *i*, to engage the wheel, D, before the pin is withdrawn. It
65 will, therefore, be seen, that the wheel, D, is instantly locked as soon as the registration is completed.

On the tumbler, G, there is an arm, *g*, that has a lateral extension that reaches forward past the circular part of the frame, I, so as to
70 come in contact with the pin, K, just as it is reaching the finishing point, there being a recess, *i*¹, in the frame, I, to allow the said extension to extend past the frame. The pin, therefore, not only moves the register wheel, 75 D, and the indicator wheel, C, on their axes, but also the tumbler, G, for a short distance, and just at the close of the registration movement, and as the finger, *i*, at the same time engages the register wheel, all the revoluble parts are
80 held against reaction until the pin is withdrawn, when the indicator wheel will be reacted by a spring, *m* (shown by dotted lines in Fig. 4) and the tumbler, G, will be reacted by the counter weight, *g*⁶, which is on the arm, 85 *g*², but the register wheel, D, will be held by the locking frame until it is again pushed back at the beginning of a registration. When the machine is to register hundreds of units, it is necessary that the operating disk, the
90 register and the indicating wheel shall make a complete revolution, and, hence, the beginning point and the ending point are the same. Now as there is a notch, *i*³, in the locking frame opposite the ending point to allow the
95 locking frame to fall forward at the finish, as above stated, it is necessary that means be provided for bridging or closing that notch when the pin is withdrawn, so that when the pin is entered to begin a full revolution, it
100 will contact with a bearing surface and push back the locking frame. To effect this purpose, I provide a swinging bridge, J, which is pivoted on a lug, *i*², that extends from the frame, I. This swinging bridge is in the na-
105 ture of a weighted button, and swings into position by gravity, and is swung out of position by a beveled lug on the end of the arm, *g*, of the tumbler, which, it will be recalled, is moved by the pin K, just before the regis-
110 tration is completed. So it will be seen that in beginning a complete revolution, the pin K, pushes against the side of the bridge, J, as it is in position over the notch, *i*³, and there-
115 by pushes back the frame, I, and releases the register wheel, and at the close of said revolution, the said pin, just before it reaches the finish, strikes the arm, *g*, of the tumbler and moves it, and the said arm, *g*, throws the
120 bridge, J, out of the notch, *i*³, and the frame, I, swings forward and locks the register wheel as at the finish of all registrations. The indicator wheel is, as has been said, reacted by a spring, and necessarily there must be
125 a stop to stop it at zero or normal when reacted, and when it is necessary for it to make a full revolution, it must be able to pass said stop at the finish, and, hence, said stop must be depressible when the wheel, C, is re-
130 volving forward, and resume its normal position so as to catch the wheel when it is reacting. As one means of effecting this desired result, I have placed on the hub of the indicator wheel a lug, *c*¹ (seen in dotted lines in

Fig. 9) and on the frame, A, of the machine, I have placed a tilting stop, L, (seen in dotted lines in Fig. 4.) It will be seen that the tilting stop L will be displaced by the lug c' when the wheel is moved to a full revolution, but that the said stop L will always engage the lug c' when the wheel is moved backward by its returning spring.

On an arm, g^4 , extending from the tumbler is a shutter or zero indicator that is in the form of a loop, and embraces the dial part, c , of the indicator wheel, C, and like said dial has on both front and rear, a character representing zero, if desired, and if not desired, it may be left blank. Hence, I call it a shutter or zero indicator. It is a shutter because, when the parts are at normal, it covers and screens the numerals on the indicator dial, and it is a zero indicator, because it shows, whether marked with a naught or not, that the machine is at normal.

On the arm, g^2 , of the tumbler, G, which carries the counter weight, is a lug, g^3 , which engages a notch or catch, h , on the drawer bolt, and as the tumbler is moved by the pin, K, at the finish of a registration, the bolt H, is lifted to release the drawer. On another arm, g' , extending from the tumbler is a lug, which as soon as the bolt, H, is lifted, contacts with said bolt and pushes it off of the lug, g^3 , and allows it to drop by gravity, so as to be in position to lock the drawer whenever it is shoved back. On the said arm, g' , is also carried a tripping catch which engages the bell hammer lever, so as to ring the bell when the tumbler is moved, which, as before stated, is at the completion of a registration.

I have thus far described the primary action of the machine. The dollar or hundred wheel is moved secondarily from the cent or unit wheel, D. This is a common method, and whatever is new with me, relates to the details of construction.

On the sleeve, a' , on the shaft, B, is journaled the dollar or hundreds wheel, E, which has in this instance one hundred spaces, and each space is represented by a "V" formed tooth, the apex of which is the intermediate point between said spaces. The pawls that move said wheel are also, "V" formed at their working faces, and they move the wheel by crowding it forward, as they press upon the inclined sides of the teeth. Hence, the pawls have no circumferential movement upon the wheel, beyond the slight forward movement they get in swinging on their pivots, said pawls, a^2 a^3 , being pivoted on the said arms extending from the sleeve, a' , and, hence, having a slightly forward movement in addition to their movement from and toward the center of said wheel, E. Figs. 8 and 11 fully illustrate the position, construction and operation of said pawls. Said pawls acting in the manner described, it necessarily follows, that one of them will move the wheel half a space and the other the remaining half.

Hence they act consecutively, and they are so timed in their movements that one of them must be in position to prevent any undue movement of the wheel. For example, the pawl, a^2 , is in engagement with the wheel, E, at all times, except when the notch, D' , is in register with it, and then it is raised, as shown in Fig. 11, by the spring, f' (shown by dotted lines in Fig. 11 and by full lines in Fig. 8). Just before the pawl, a^2 , is thus raised from the wheel, E, the pin, a^4 , on the wheel, D, has contacted with the inclined upper face of the pawl, a^3 , and started that pawl down, and just before the pin, a^4 , leaves the pawl, a^3 , the inclined side or cam face, d' , of the notch, D' , has begun moving the pawl, a^2 , back upon the wheel, E.

In order to set the machine at zero for a new start, the following proceeding should be had: The operating dial is removed from the shaft, and the inner parts are then in view, as in Fig. 10. Then insert a pencil or any pin, in the hole contiguous to zero, and push it in so as to move the frame, i , back so as to release the wheel, D, and then turn the parts forward by using the pencil or other pin the same as the pin, K, until the finishing point is reached. This brings zero opposite the point, a^5 , in the case (see Fig. 10), and as the notch, D' , is also opposite said point, it releases the pawl, a^2 , from the dollar wheel. The pin, a^4 , which will be holding the pawl, a^3 , in engagement with the wheel, E, is movable longitudinally and is held in its outward position by the spring, a^6 , which presses against its inward end. Now by pushing in the pin, a^4 , with a pencil point or other device, so as to clear the pawl, a^3 , that pawl will fly up by the action of the spring, f' . The wheel, E, is then free to be revolved, and its zero mark can be brought into coincidence with zero on the wheel, D, and by then pressing down the pawl, a^3 , into action, the pin, a^4 , will resume its rider position on top of said pawl, and the machine will be ready for action as soon as the operating disk, F, is in place.

What I claim as new is—

1. In a cash register and indicator, the combination of a frame having a shaft, B, thereon, an indicating dial-wheel on said shaft, a units register wheel on said shaft, an operating disk on said shaft, an operating pin carried by said operating disk and movable longitudinally through the same and when pushed in engages the said units wheel and indicating dial wheel, in a manner substantially as shown, whereby, when said operating disk is moved rotatively the said register and indicating wheels will be moved coincidently therewith.

2. In a cash register and indicator, the combination of a frame, A, having a shaft, B, thereon, a tilting locking frame pivoted on said frame, A and serving to lock the units register wheel, said tilting frame having a circular part that is concentric to said shaft, B,

an indicating dial wheel on said shaft, a units registering wheel on said shaft, an operating disk on said shaft, an operating pin carried by said operating disk and movable longitudinally through the same, and when pushed in engages the said units wheel and indicating wheel and contacts with said tilting locking frame and moves it out of engagement with said units wheel.

3. In a cash register and indicator, the combination of a frame having a shaft, B, thereon, a tumbler on said shaft that operates the drawer bolt and the bell hammer and carries the zero indicator, an indicating dial wheel on said shaft, a units registering wheel on said shaft, an operating disk on said shaft, and an operating bolt or pin that is carried by said operating disk, is movable longitudinally and when pushed inwardly engages said register wheel and indicator or dial wheel and is in position to contact with said tumbler and serves to move said wheels and tumbler rotatively substantially as and for the purposes set forth.

4. In a cash register and indicator, the combination of a frame, A, having a shaft, B, thereon, a tilting frame pivoted on said frame, A, and serving to lock the units registering wheel, said tilting frame having a circular part that is concentric with said shaft, B, a tumbler movable on said shaft that operates the drawer bolt and the bell hammer and carries the zero indicator, an indicating dial wheel on said shaft, a units register wheel on said shaft, an operating disk on said shaft, and an operating pin that is carried by said operating disk, is movable longitudinally and when pushed inwardly, engages said register wheel and indicator wheel, contacts with said tilting frame and moves it back and is in position to contact with said tumbler and move it.

5. In a cash register and indicator, the combination of a primary or units wheel mounted on a shaft, a secondary or hundreds wheel mounted on the same shaft, two pawls, a^2 and a^3 , that act upon said secondary wheel alternately, each pawl moving the wheel a half space, the notch D' in the primary wheel for

moving the pawl a^2 , the pin, a^4 , on the primary wheel for moving the pawl a^3 , said pin being movable longitudinally, and a spring, a^6 for acting upon said pin substantially as and for the purposes set forth.

6. In a cash register and indicator, the combination with the wheel, D, the operating pin, K, and the locking frame, I, having the pin-stopping notch, i^3 , of the pivoted bridging piece, J, and the tumbler G having means on the arm, g , for moving said bridge piece substantially as set forth.

7. In a cash register and indicator substantially as herein shown, the combination with the indicator wheel C having a stop lug, c^8 , thereon, of a tripping stop device on the frame work, A, for the purposes mentioned.

8. In a cash register and indicator substantially as herein shown, the combination with the indicator wheel C, having a dial rim, c , a reacting spring, m , and a stop device for stopping the wheel when reacted, of a tumbler G, having a shutter or zero indicator carried by its arm, g^4 , and means for normally holding said shutter in front of the figures 100 on the dial of the indicator wheel when said wheel is in normal position.

9. In a cash register and indicator substantially as herein shown, the combination with the operating disk having spaces corresponding with the spaces of the register and the indicating wheels and notches opposite said spaces, of indicating dog, N, on the case of the machine and contacting with said wheel and engaging the notches thereof.

10. In a cash register and indicator, substantially as shown, the combination with the drawer bolt, H, having the catch notch, h , at its upper end, of the tumbler, G, having a lug for engaging said catch, h , and lifting said bolt, and a following lug for pushing the bolt so as to disengage it from the tumbler and allow it to drop.

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

ELIJAH F. SPAULDING.

Witnesses:

WILLIAM S. BROWN,
THOMAS HALE, Jr.