

(No Model.)

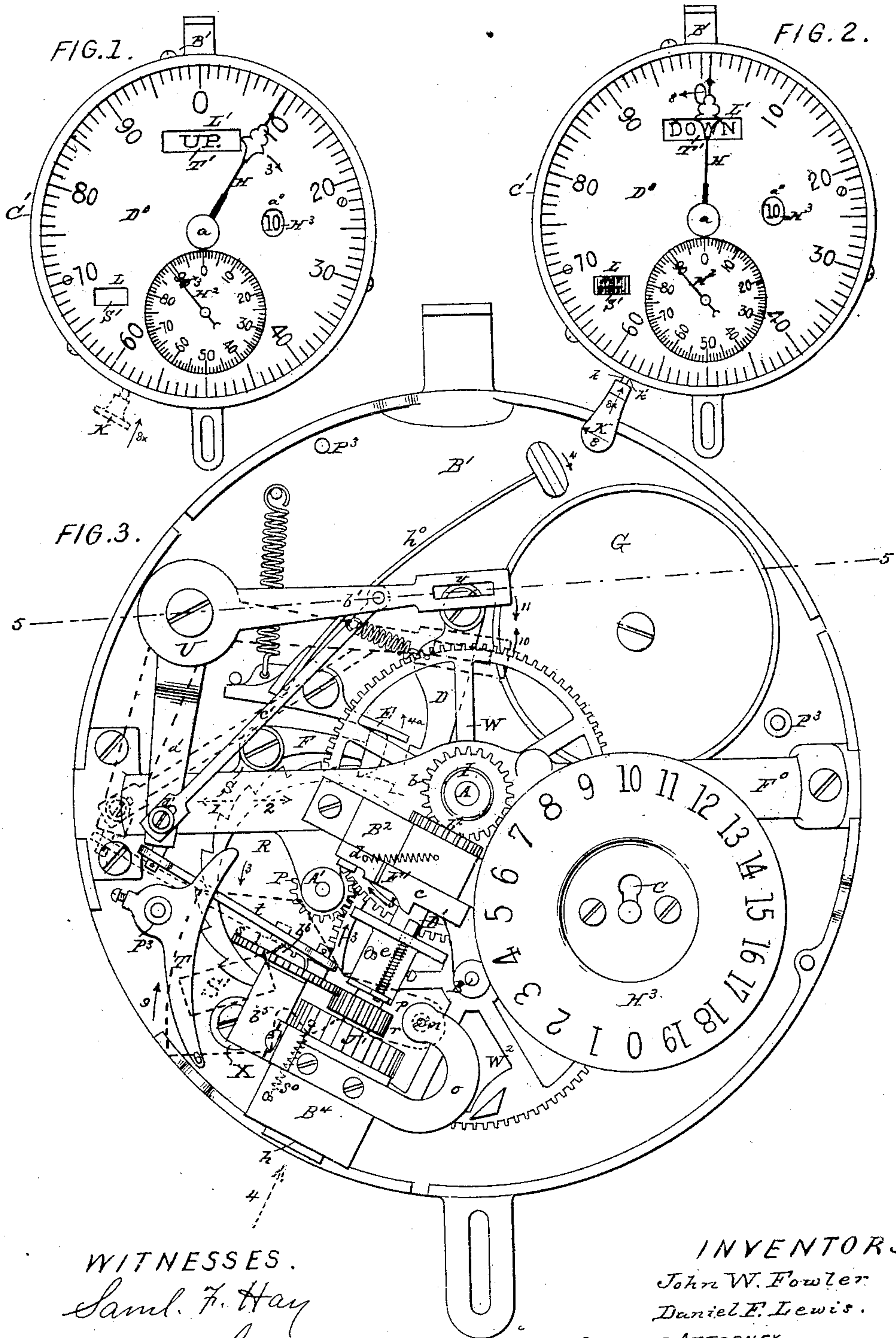
2 Sheets—Sheet 1.

J. W. FOWLER & D. F. LEWIS.

FARE REGISTER.

No. 273,675.

Patented Mar. 6, 1883.



WITNESSES.  
Saml. F. Hay  
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FIG. 4.

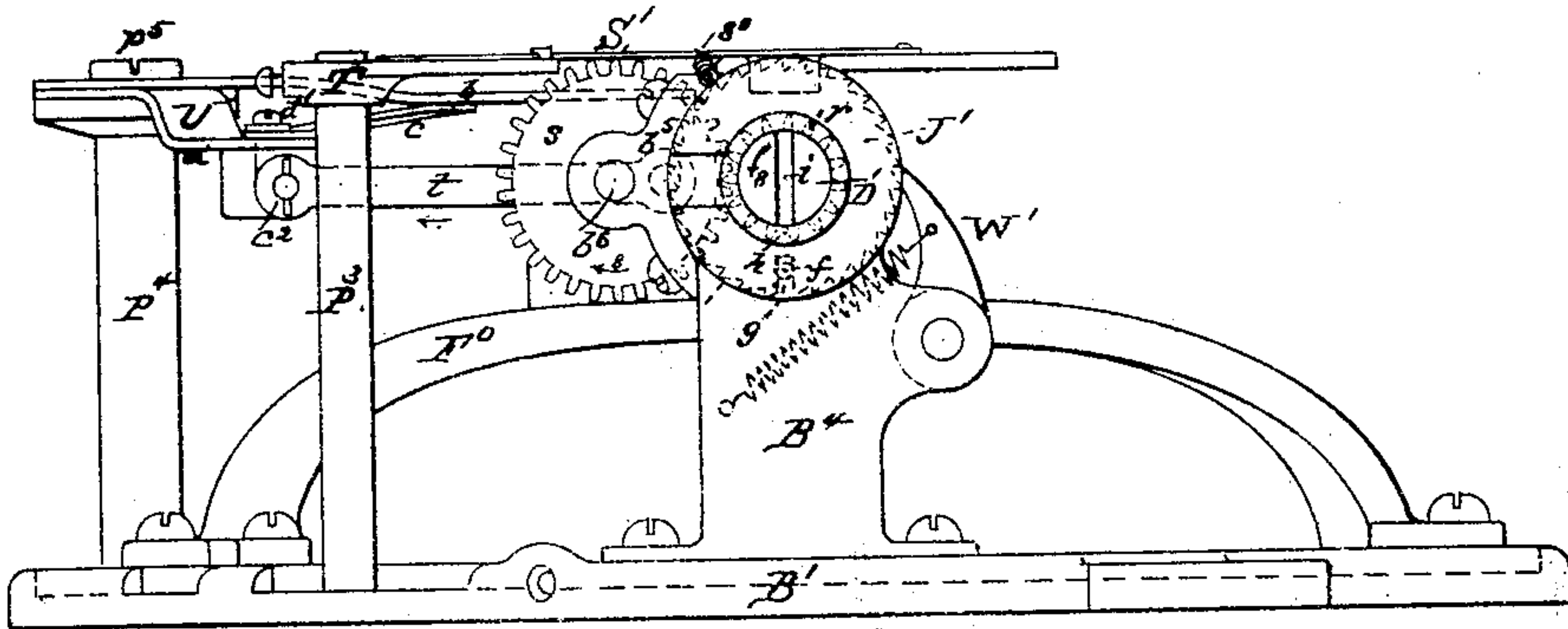


FIG. 5.

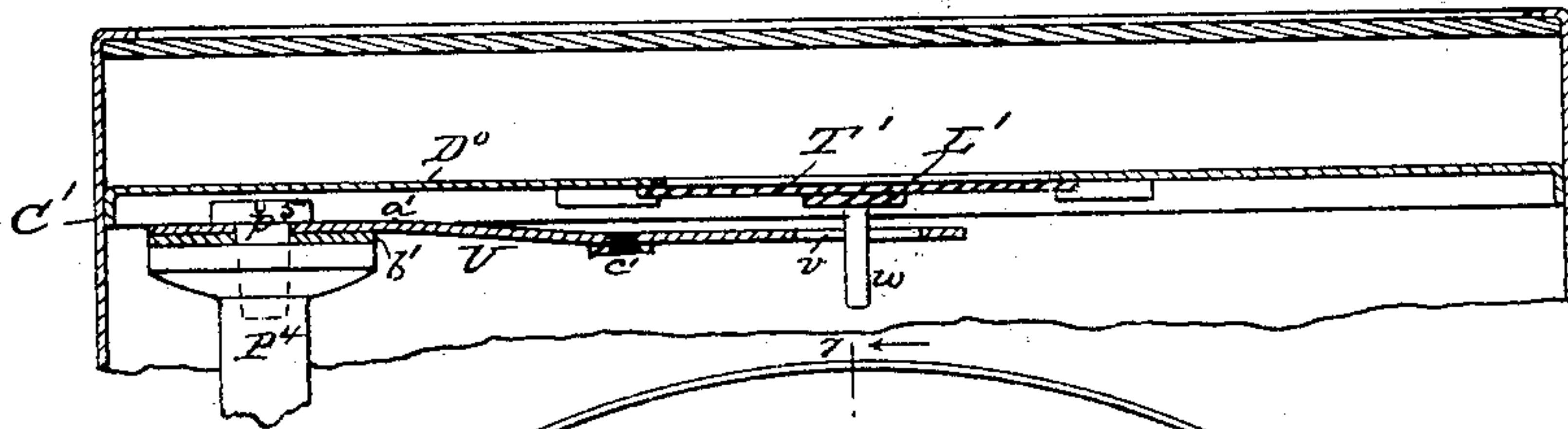


FIG. 6.

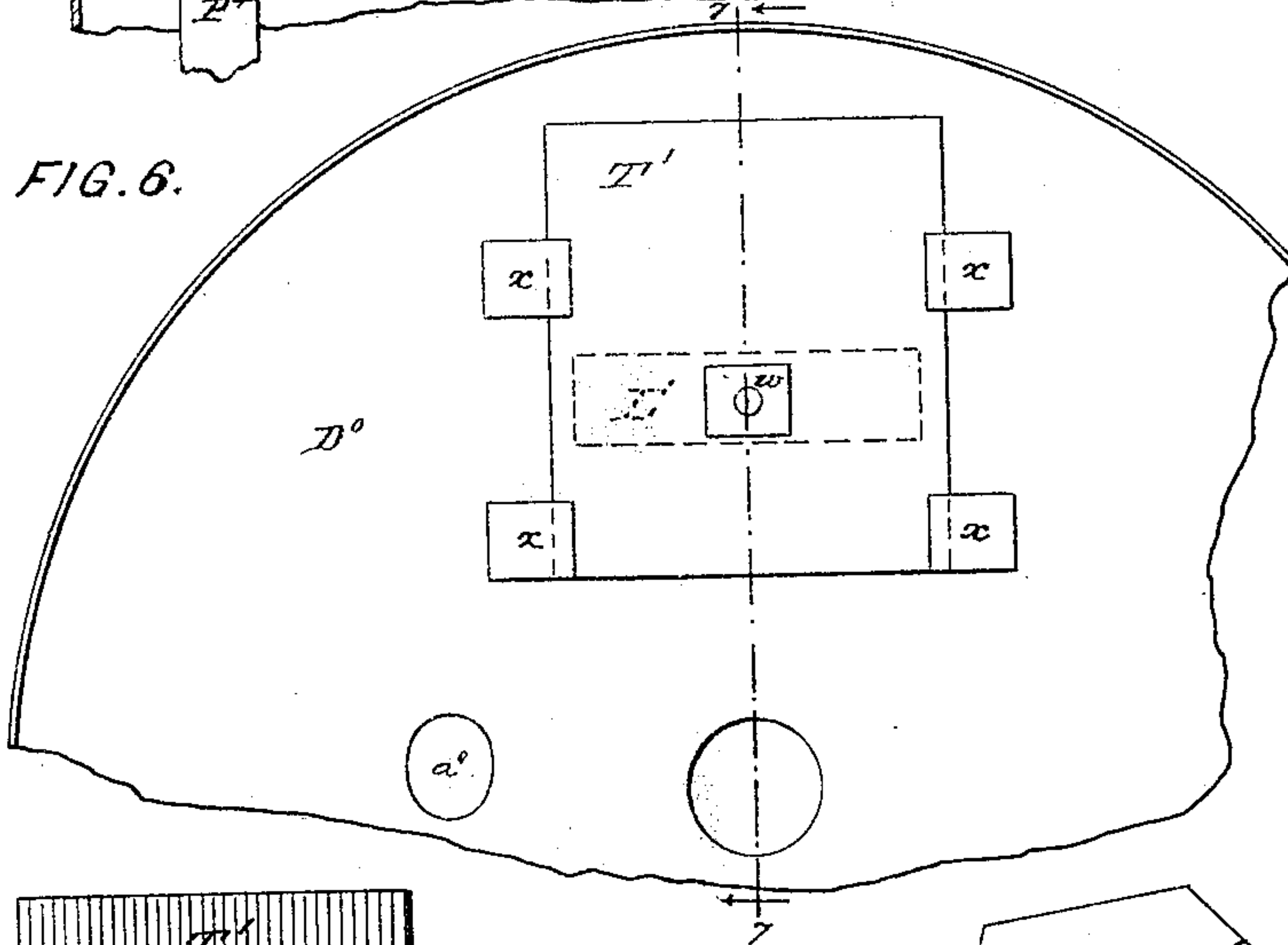


FIG. 7.

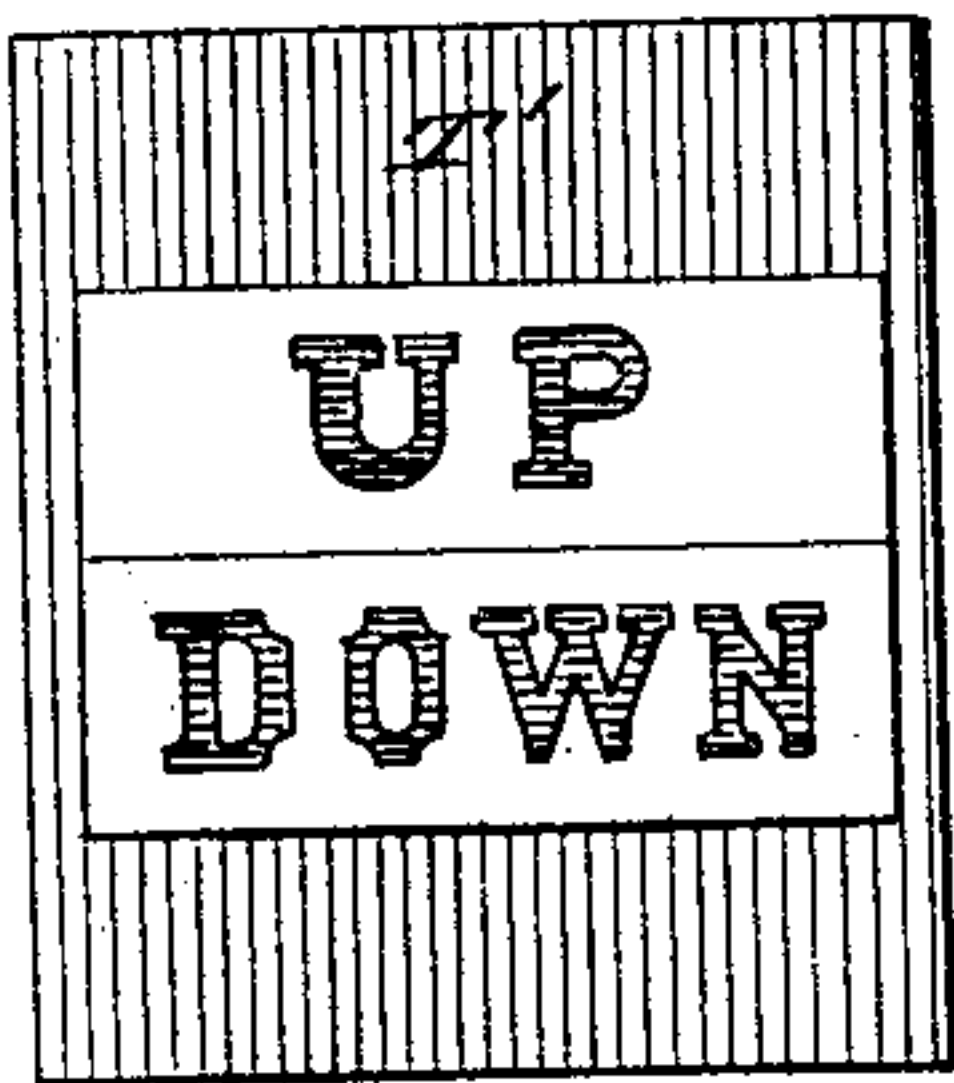
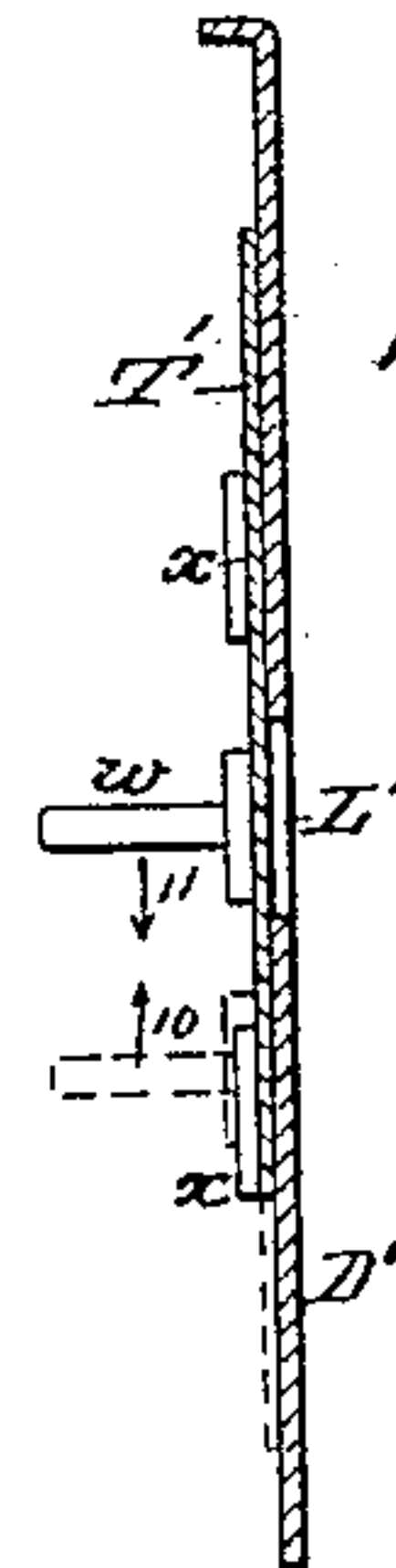


FIG. 8.

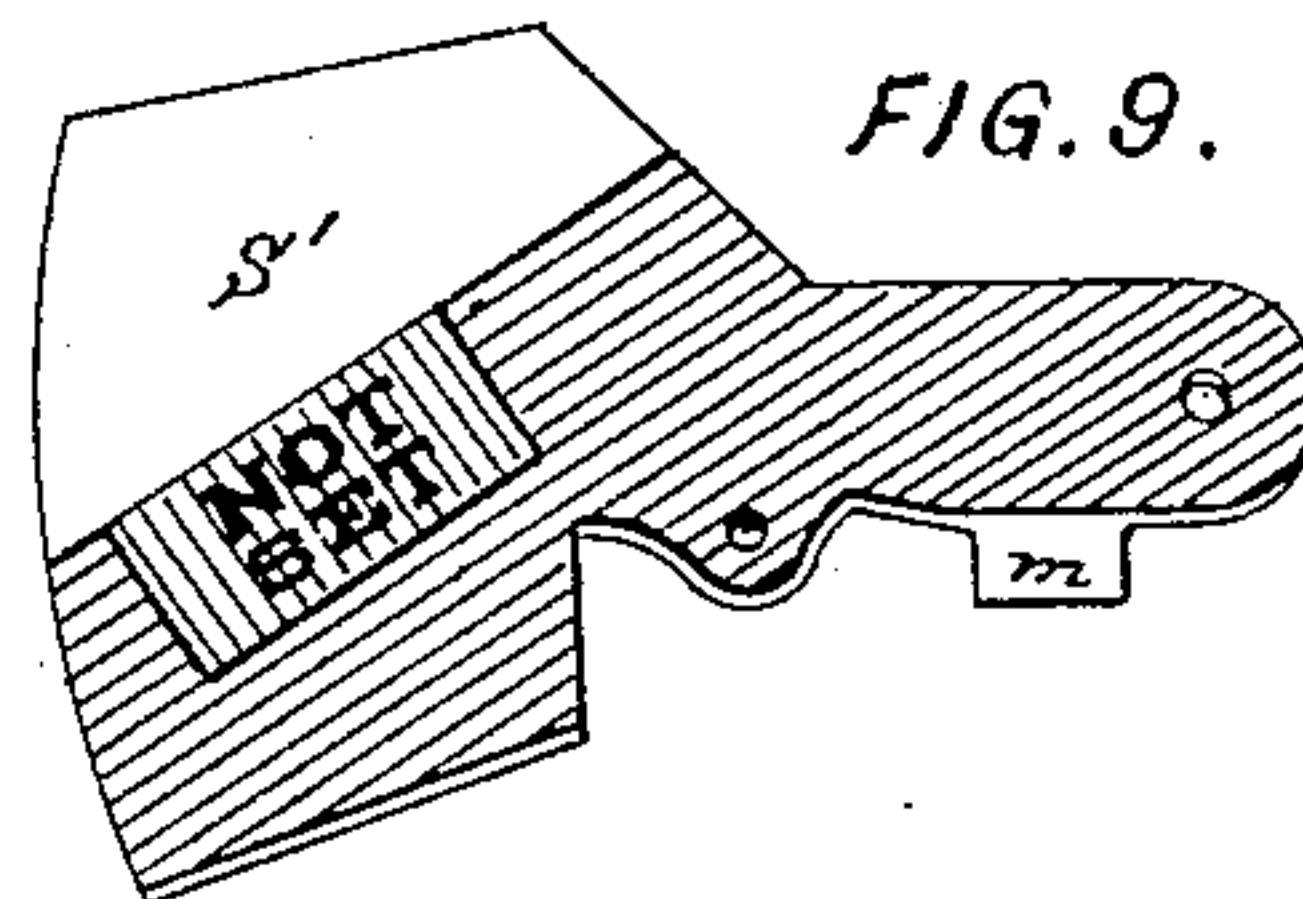


FIG. 9.

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# UNITED STATES PATENT OFFICE.

JOHN W. FOWLER AND DANIEL F. LEWIS, OF BROOKLYN, NEW YORK.

## FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 273,675, dated March 6, 1883.

Application filed January 15, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN W. FOWLER and DANIEL F. LEWIS, citizens of the United States, residing at Brooklyn, in the State of New York, have invented a new and useful Improvement in Passenger-Registers, of which the following is a specification.

This invention is additional to the series of inventions embodied in our "alarm-registers" of different patterns, and described and claimed in United States Patents No. 185,740, dated December 26, 1876; No. 190,021, dated April 24, 1877; No. 206,558, dated July 30, 1878; No. 207,728, dated September 3, 1878; No. 231,161, dated August 17, 1880, and Nos. 247,552 and 247,553, dated September 27, 1881, and in two applications for United States Patents now pending, No. 76,853, filed November 15, 1882, and No. 79,193, filed December 13, 1882. (See Patent No. 271,977, granted February 6, 1883, on said application No. 79,193.) It is more especially additional to our inventions relating to the use of "trip-signals," described and claimed in said Patent No. 247,553, and said application No. 76,853, filed November 15, 1882, and our invention relating to our improved construction of our rotary radial "key-setting" mechanism, and to the combination therewith of a "setting-signal," described and claimed in said application No. 79,193, filed December 13, 1882, Patent No. 271,977.

The present invention consists in certain novel combinations of parts and features of construction, hereinafter more particularly set forth, having the following objects, namely: first, the combination of a trip-signal, showing alternately "Up" and "Down," or the like, with our said rotary radial key-setting mechanism or any other setting mechanism having a rotary key or knob; second, to insure the correct exposure of a trip-signal through our dial-plate or its equivalent by mounting the signal in or on guides attached to the back of said dial-plate or its equivalent, in proper relation to the aperture through which the signal is seen, and providing its back with a stud-pin, or its equivalent to engage with the trip-signal mechanism; third, to combine with our improved rotary radial key-setting mechanism, or any other setting mechanism having a rotary key or knob, with like movements, a slow-motion trip-signal,

utilizing the rotation of the key or knob, and a setting-signal, which is retracted instantaneously when the key or knob is withdrawn or thrown outward at the end of the setting operation, when the trip-hand or its equivalent is at zero, and not before, whereby the use of springs to supplement the mechanism of the former is obviated and excessive wear and tear is avoided, while the convenience afforded by both indications is obtained at a trifling additional cost.

Two sheets of drawings accompany this specification as part thereof. On Sheet 1, Figs. 1 and 2 are small face views of a small-dial alarm-register embodying said present invention, the respective figures illustrating the registering operation and the setting operation; and Fig. 3 is a large face view, showing the internal mechanisms at rest, with the trip-hand at zero, as seen by removing the case, hands, dial-plate, and setting-signal, the outline of the latter and that of the trip-signal lever in its alternative position being added in dotted lines. On Sheet 2, Fig. 4 represents an edge view of the "stripped" register (indicated as to direction by dotted arrow 4 in Fig. 3) with the main actuating mechanism, registering mechanism, and bell mechanism omitted, showing an end view of the setting mechanism, and a corresponding view of the setting-signal mechanism and trip-signal mechanism. Fig. 5 represents a horizontal section through the front of the case and the dial-plate in the plane of the trip-signal, showing parts above the plane of section. Fig. 6 is a half back view of the dial-plate with the trip-signal thereon. Fig. 7 represents a section on the line 7 7, Fig. 6. Fig. 8 is a face view of the trip-signal detached; and Fig. 9 is a like view of the setting-signal.

Like letters of reference indicate corresponding parts in the several figures, and the principal motions of the moving parts are indicated by arrows numbered alike in all places, and the same letters and numbers are used as upon the drawings of our said application for patent filed December 13, 1882, Patent No. 271,977, as regards all those parts which are alike or substantially alike in form or function, as shown in both drawings.

The back plate, B', case C', and dial-plate



D<sup>o</sup> of the "small-dial" machine selected for illustration, and consequently the dials on the latter and the hands H H<sup>2</sup>, with the spider-frame F<sup>o</sup>, and main gearing P W W<sup>2</sup>, Figs. 1, 3, and locations and proportions of other parts depending upon the size of the main units-dial, lack those peculiarities set forth in our previous specification, of which the aforesaid drawings of our said application for patent filed December 13, 1882, form part, and the minor peculiarities which were merely shown in said drawings. As to these parts and features said small-dial machine is substantially similar to our previous alarm-registers.

Those parts which are alike or substantially alike in construction and mode of operation, as shown in the said drawings forming part of our present specification and those forming part of said previous specification, may be briefly referred to as follows, viz: First, the shafts A', A, B, and C, Fig. 3, apart from the location of said shaft B; second, the rotary hundreds-dial H<sup>3</sup>, Figs. 1, 3, and hundreds mechanism with the springs of the latter; third, the main slide S, pawl F, ratchet-wheel R, and main detent-pawl X, Fig. 3, with the springs of said slide and pawls constituting the main actuating mechanism; fourth, the bell G, Fig. 3, and the parts which coact with said pawl F as the bell mechanism—namely, the bell-lever E and the bell-guard D with the bell-hammer h<sup>o</sup>, carried by the former, and their springs; fifth, the frictional setting-hub I, Fig. 3, which carries the trip-hand H, Figs. 1 and 2, with the frictional hub a of the latter, and the bevel-gears b b<sup>2</sup>, Fig. 3, which transmit the setting motion to said hub I and the pillow-block B<sup>2</sup>, in which said gear b<sup>2</sup> is mounted; sixth, the setting-key K, Fig. 2, with its simple straight bit k and its key-hole k' in the case, and the setting mechanism or the remainder thereof, which coacts with said key K or an attached knob, K', Fig. 1, as its equivalent, and with said gear b<sup>2</sup>—namely, the radial shaft D', Figs. 3 and 4, containing the key-socket i, as used in connection with said key and the ratchet, pawl, and zero-guard J' W' F' with the bracket B<sup>4</sup>, outer collar, h, socket g, locking-stud f, clutch e c, detent-pawl d, and the springs which complete this mechanism; seventh, the setting-signal S', Figs. 1, 4, and 9, with its aperture L in the dial-plate, its white and red "faces," the latter bearing the words "Not set," and its "projection" m, pivotal screw n, supporting-piece o, and light retracting-spring s<sup>o</sup>, the dial-supporting posts P<sup>3</sup>, and the signal-support T, modified as to form, attached to one of these posts.

Referring to said specification of our said application for patent filed December 13, 1882, (Patent No. 271,977,) and our previous specifications therein referred to, for full descriptions of the parts and devices above referred to, with their modes of operation and advantages, we shall confine the remainder of this specification to our said trip-signal, which

is represented by T', Figs. 1 and 2 and 5 to 8, and its actuating mechanism, (shown in Figs. 3 to 7,) its coaction with said setting mechanism and said setting-signal, as illustrated by Figs. 3 and 4, the operation of the improved machine; and, finally, the claims which we base on said trip-signal, and its combination and with said setting mechanism and setting-signal. Motion is transmitted to said trip-signal T' from said radial shaft D' of the setting mechanism by a wide-faced pinion, r, Figs. 3 and 4, of fifteen teeth, fast on said shaft between its ratchet-disk J' and its clutch-collar e, so as to rotate therewith, a toothed crank-wheel, s, of thirty teeth, in constant mesh with said pinion r, so as to be rotated thereby once in every two rotations of said shaft D', a connecting-rod, t, extending from the crank-wrist of said wheel s, a large bell-crank lever, U, Figs. 3 to 5, oscillated by said wheels s through said rod t, and having a slot, v, in its transmitting-arm, and a stud-pin, w, Figs. 5 to 7, which projects from the back of said signal T', Figs. 1 and 2 and 5 to 8, and occupies said slot v when the parts are assembled in working condition, as shown in Fig. 5. Said wheels of said trip-signal mechanism has been supported by an extension, b<sup>5</sup>, of said bracket B<sup>4</sup>, attached thereto by screws, the spindle on which the wheel rotates being formed by a pivot-screw, b<sup>6</sup>, which the bracket-extension is drilled to receive. Loose rocking connections c<sup>2</sup>, have been formed at the respective ends of the connecting-rod t. Said bell-crank lever U is mounted for steadiness upon the enlarged front end of a post, P<sup>4</sup>, solidly attached to the back plate, B', and a pivot-screw, p<sup>5</sup>, received by said post, forms its fulcrum; and said lever, as shown, is composed of three main parts, a' b' c', constituting, respectively, its two arms, each having a disk-hub through which said pivot-screw passes, and a slotted brace for adjusting the transmitting-arm, with a clamping-screw, d', to loosen the parts for adjustment and to retighten them. The object of this construction is to provide for rectifying the exposure of the trip-signal should this be necessary. We find, however, that in our machines as we make them it is unnecessary, and we therefore propose to use a one-part bell-crank lever, of simple form; and we consider all such details of construction immaterial and unessential details of this mechanism, including the number and form of teeth on the pinion r and on the wheel s, which may vary so long as the proper relation of one to the other is preserved, also the said slot and pin v w, which may be transposed or give place to any suitable connection.

The trip-signal T', Figs. 1 and 2 and 5 to 8, is a slide having a rectilinear motion imparted to it by the means above described. It works in guides x, formed on the back of the dial-plate D<sup>o</sup>, as seen in Figs. 5 to 7, and its face, (seen in Figs. 1, 2, and 8,) and exposed by an



aperture,  $L'$ , in said dial-plate, is provided with horizontal paper strips, (which may be combined in one,) cemented thereto and having the words "Up" and "Down" printed thereon. The body of the trip-signal, being by preference made of sheet-zinc, like the setting-signal and dial-plate, is thus provided in like manner with the appropriate marks and coloring; but the distinctive feature of our said trip-signal is its attachment to the dial-plate  $D'$  in fixed relation laterally to said aperture  $L'$ , which materially facilitates adjustment, while it economizes space within the machine and harmonizes with simplicity of construction. Other appropriate words or numbers or contrasting colors may be substituted for "Up" and "Down" to suit purchasers, and the signal may be pivoted, so as to oscillate, if preferred, by any. The motion of said trip-signal so actuated is slow, which is advantageous, as hereinbefore set forth; but, owing thereto, this trip-signal with its described mechanism does not take the place of our said setting-signal as used in connection with our said improved rotary key-setting mechanism. We therefore combine the three, and said setting-signal takes the place of supplementary springs, by which the motion of the trip-signal might be expedited toward the ends of its movements, while it more intelligibly indicates to passengers that the register is not set, and adds very little to first cost.

We propose as modifications of the first part of our invention to combine the said trip-signal mechanism and a suitable signal with our previous rotary key-setting mechanism, guarded by preventing the withdrawal of the key until the trip-hand is fully set; or to make the pinion and wheel  $r s$  of one and the same diameter, and to use with the modified transmitting mechanism our rotary signal  $V$ , and sufficient of its appurtenances described and shown in our said Patent No. 247,553, and application No. 76,853.

The operation of the improved machine and of its various parts may be described as follows: The main slide  $S$  is reciprocated, as indicated by arrows 1 2. This may be accomplished by means of our rod-ringing device described in our said application filed December 13, 1882, (Patent No. 271,977,) or by any other approved actuating device, with the aid of its retracting-spring. At each completed outward stroke of said slide (indicated by said arrows 1) motion is transmitted by said pawl  $F$  and ratchet-wheel  $R$  to said shaft  $A'$ , and therefrom through said gearing  $P W W^2$  to said shaft  $A$ , setting-hub  $I$  and trip-hand  $H$ , and to said shaft  $B$  and second units-hand,  $H^2$ , as indicated by arrows 3. During each return-stroke of said slide (indicated by said arrows 2) said bell-lever  $E$  and bell-guard  $D$  are actuated by the coaction of said pawl  $F$  with the former, and by their springs, and at the conclusion of this stroke the bell  $G$  is effectively struck by the bell-hammer  $h^o$ , carried by

said bell-lever, as indicated by arrows 4<sup>a</sup> 4. Said units-hands  $H H^2$  are so rotated synchronously in front of the respective dials on the dial-plate  $D^o$ , as illustrated by Fig. 1, and the bell is rung after each unit is fully registered and not before. The successive hundreds counted by said second units-hand,  $H^2$  are registered by said hundreds-dial  $H^3$  in connection with its aperture  $a^o$  in the dial-plate  $D^o$ .

To set or reset the trip-hand to zero (0) at the end of the "trip" of a street-car, for example, as illustrated by Fig. 2, supposing 9 or 109 to have been registered during the trip, as indicated in Fig. 1, the knob  $K'$ , Fig. 1, or the key  $K$ , Fig. 2, and therewith said radial shaft  $D'$  is pushed inward, as indicated by arrows 8<sup>x</sup>, and then turned to the left, as indicated by arrows 8. Said ratchet-disk  $J'$  is by said first movement of the knob or key disengaged from the locking-stud  $f$ , and the spring-pin of said clutch-collar  $e$  is caused to project in the plane of the matching projection on said collar  $c$ . By the same movement said setting-signal  $S'$  is thrown, as indicated by arrow 9, Fig. 3, into its effective position, exposing "Not set" through said aperture  $L$  in the dial-plate, as seen in Fig. 2. The said parts  $D' J' e$  now turn freely in the direction of arrows 8, being immediately locked by said stud  $f$  against retraction. As the rotation of the knob or key (indicated by said arrows 8) progresses, motion is transmitted from said shaft  $D'$  through said trip-signal mechanism  $r s t U v w$ , to said trip-signal  $T'$ , as indicated by arrows 10 or 11. Finally, said clutch  $e c$  becomes effective, and motion is transmitted through said gears  $b^2 b$  and hubs  $I a$  to the trip-hand  $H$ , and the latter is turned backward to zero, while at the same time the exposure of a new indication of said trip signal  $T'$ , "Down" in the example, is completed. Owing to the said preferred slow motion of the latter, however, the setting operation might not be fully completed, without the fact being observed immediately. This is illustrated in Fig. 2, where the trip-hand is shown at 1 instead of 0; but, as shown in this figure, the said setting-signal  $S'$  exposes "Not set" (or its chosen equivalent) until the setting operation is fully completed, and thus guards both the setting mechanism and said trip-signal mechanism. When the setting operation is fully completed the mechanism is locked by said ratchet and pawl and zero-guard  $J' W' F'$ , and said shaft  $D'$  is projected by its spring, and said setting-signal by its independent light spring  $s^o$ , leaving the setting mechanism, setting-signal, and trip-signal mechanism in the condition of rest illustrated by Fig. 3. At the end of the next trip the trip-hand is again set, and "Up" indicates the direction of the succeeding trip, a single movement of the trip-signal back or forth being produced at each setting operation.

Having described said improved machine as a whole, we hereby disclaim in favor of our said previous patents and applications for pat-



ents all the parts and combinations therein patentable to us which are described and claimed or shown in said previous patents and applications for patents; and, also, as old  
 5 the use of a trip-signal, broadly considered, as set forth in our said Patent No. 247,553.

We claim as our invention, and desire to patent under this specification—

1. The combination, in a register, of a ro-  
 10 tary setting-shaft, carrying a pinion, *r*, a toothed crank-wheel *s*, in mesh therewith, making a semi-rotation during each rotation of said setting-shaft, a connecting-rod, *t*, a lever, *U*, and a trip-signal, *T'*, connected with said lever so  
 15 as to receive motion therefrom, substantially as herein specified, for the purpose set forth.

2. In a register having a dial-plate provided with an aperture, *L'*, a trip-signal, *T'*, provided on its face with indications or sym-  
 20 bols for exposure successively through said

aperture, and mounted in or on guides attached to the back of said dial-plate, substantially as herein specified, for the purposes set forth.

3. The combination, in a register, of a ro- 25  
 tary setting mechanism, a trip-signal with mechanism for transmitting a slow motion thereto from said setting mechanism during the setting operation, and a setting-signal, ex-  
 30 posing the indication "Not set," or its equivalent, until the setting operation is fully completed, and then instantaneously retracted, substantially as herein specified, for the purpose set forth.

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 DANIEL F. LEWIS.

Witnesses:

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