

(No Model.)

2 Sheets—Sheet 1.

C. E. EGAN & H. F. GRAY.
WATCHMAN'S TIME RECORDER.

No. 426,438.

Patented Apr. 29, 1890.

Fig. 1

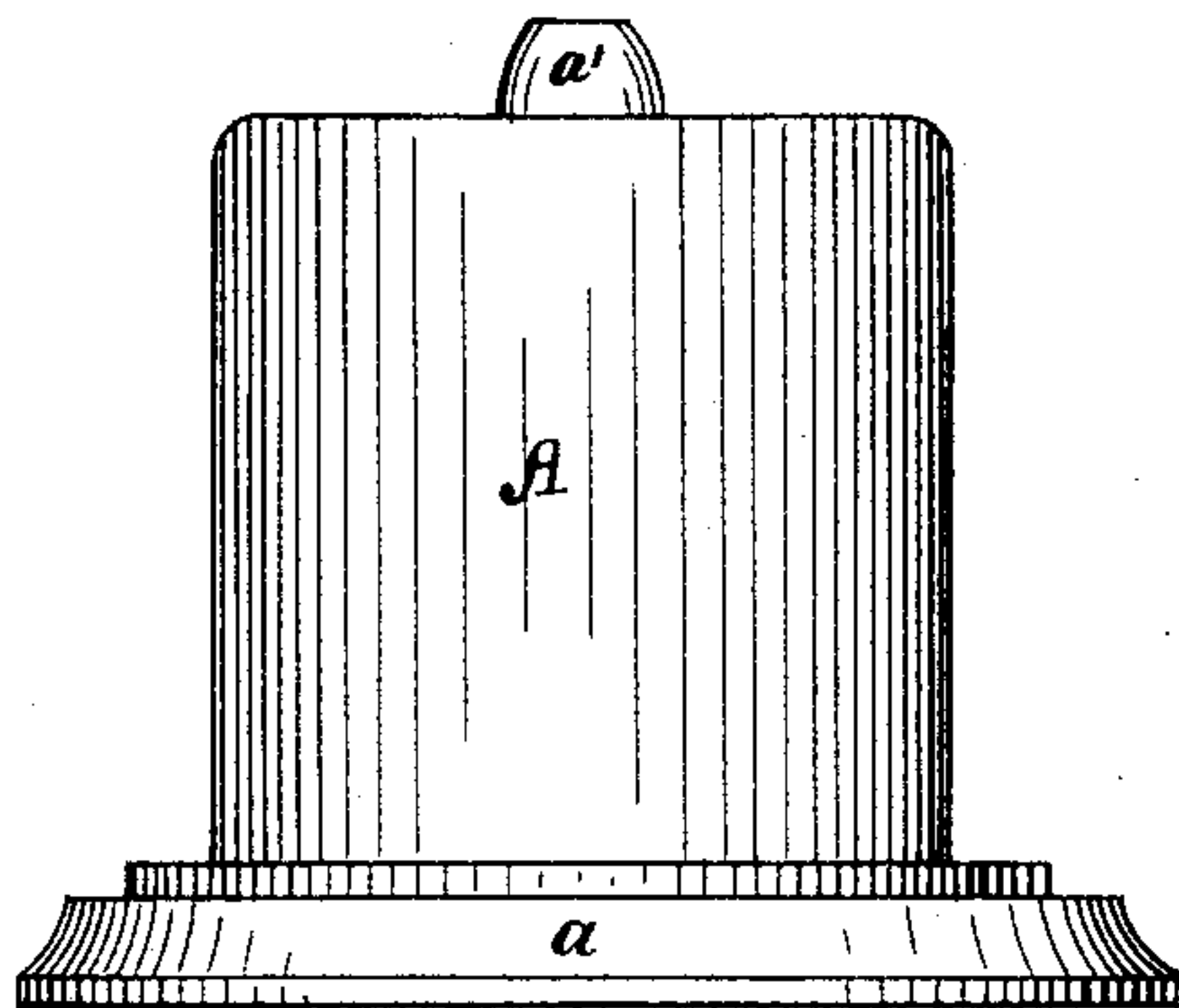


Fig. 2

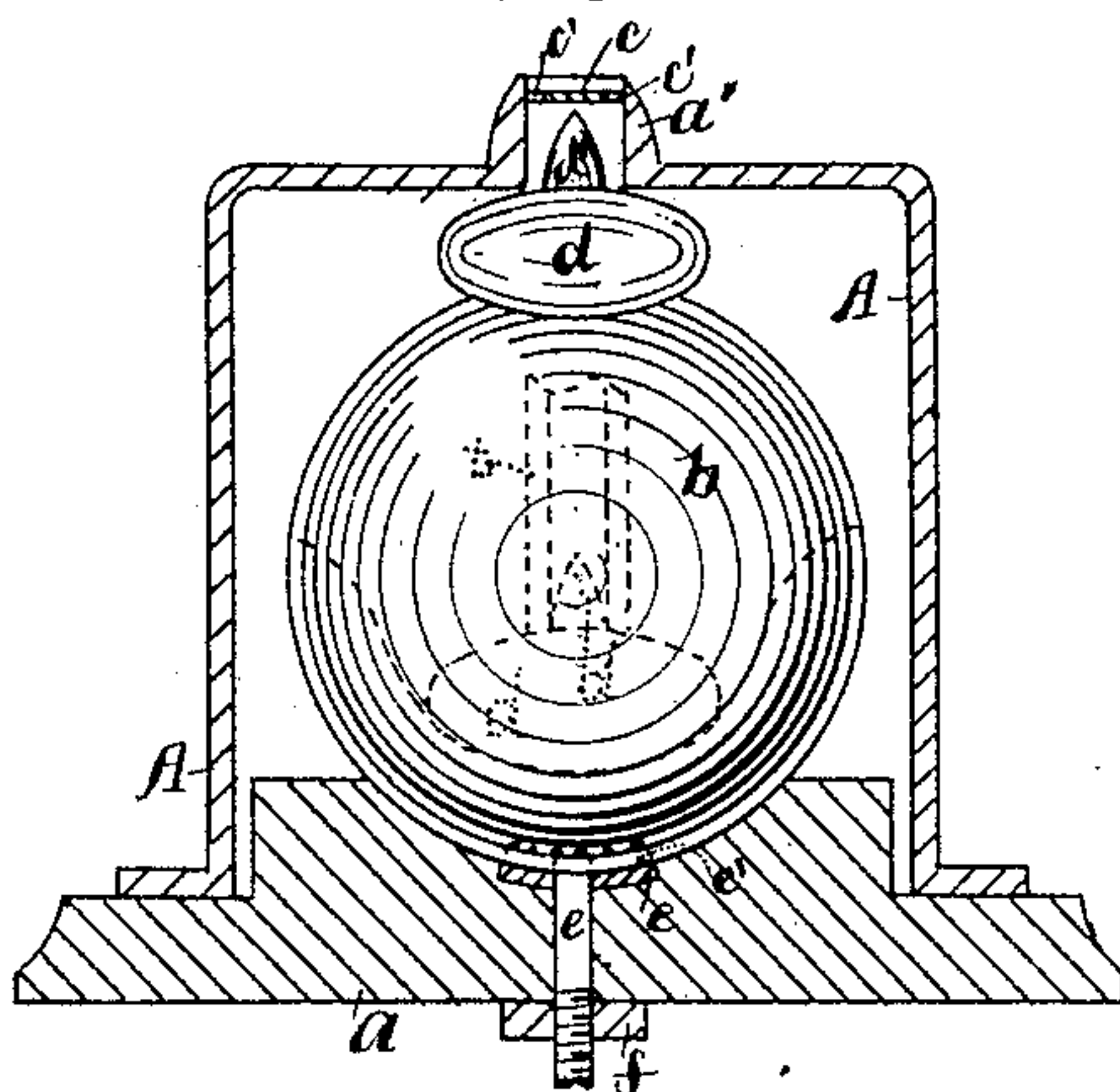


Fig. 3

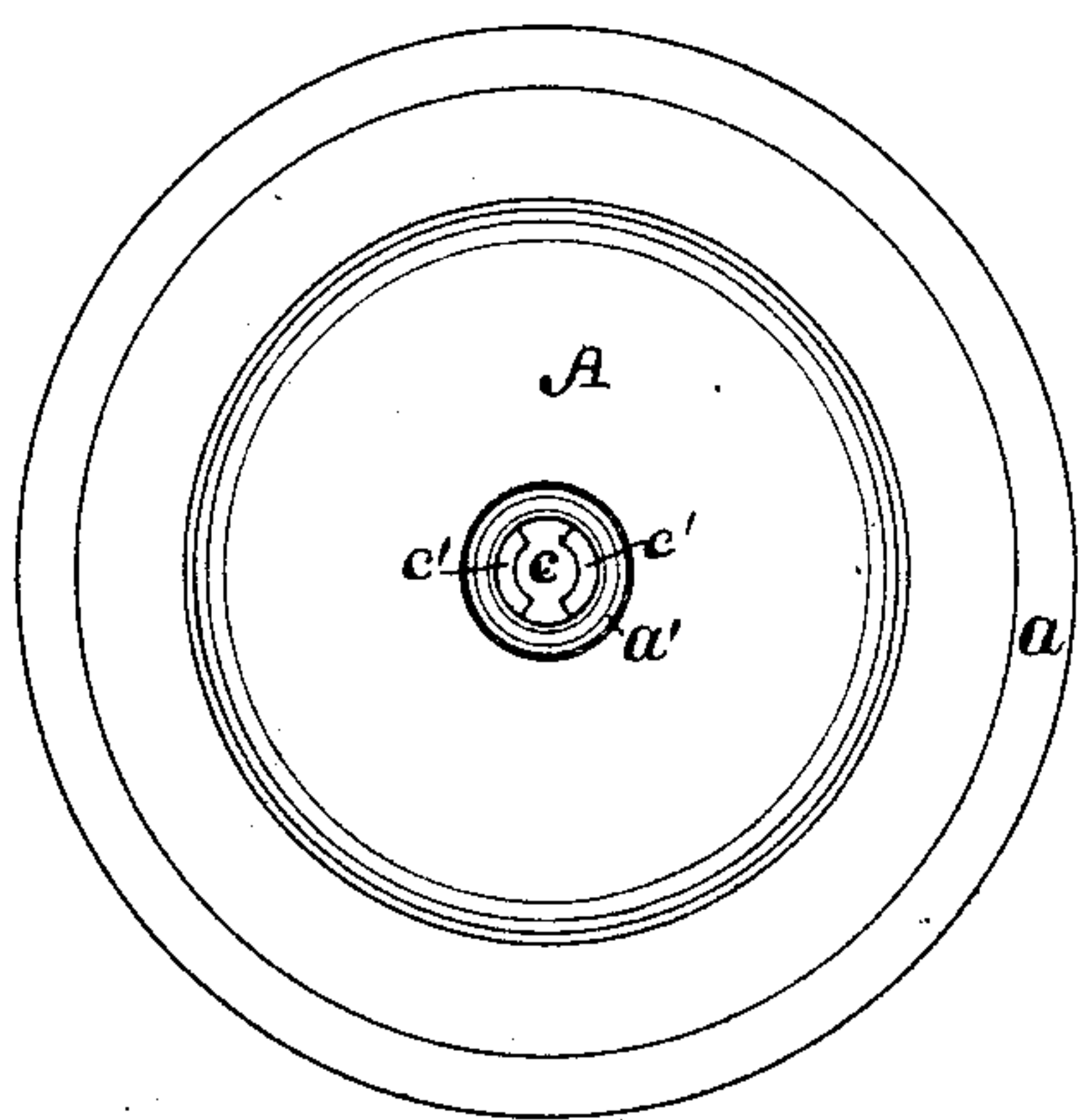


Fig. 4

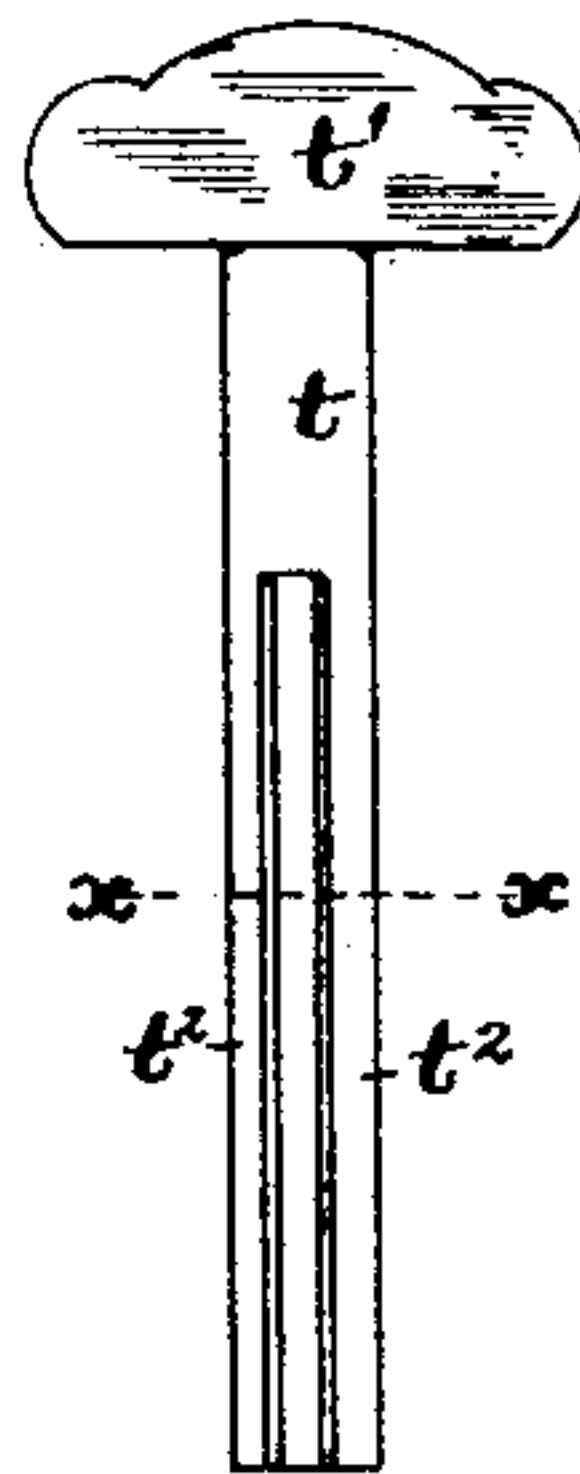
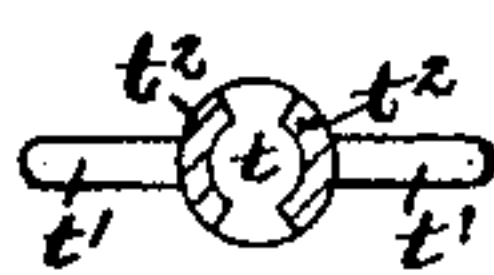


Fig. 5



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(No Model.)

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Fig. 6

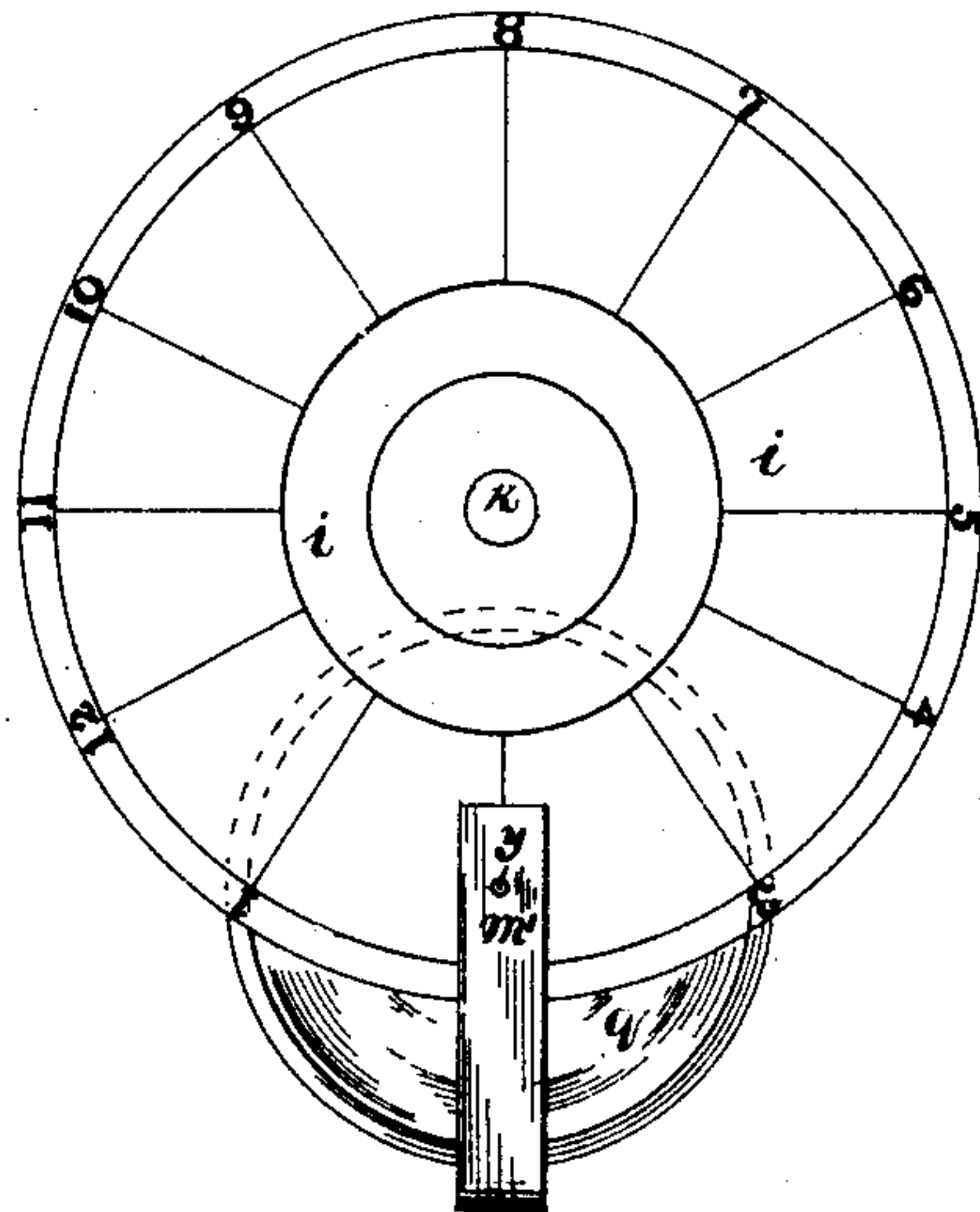


Fig. 7

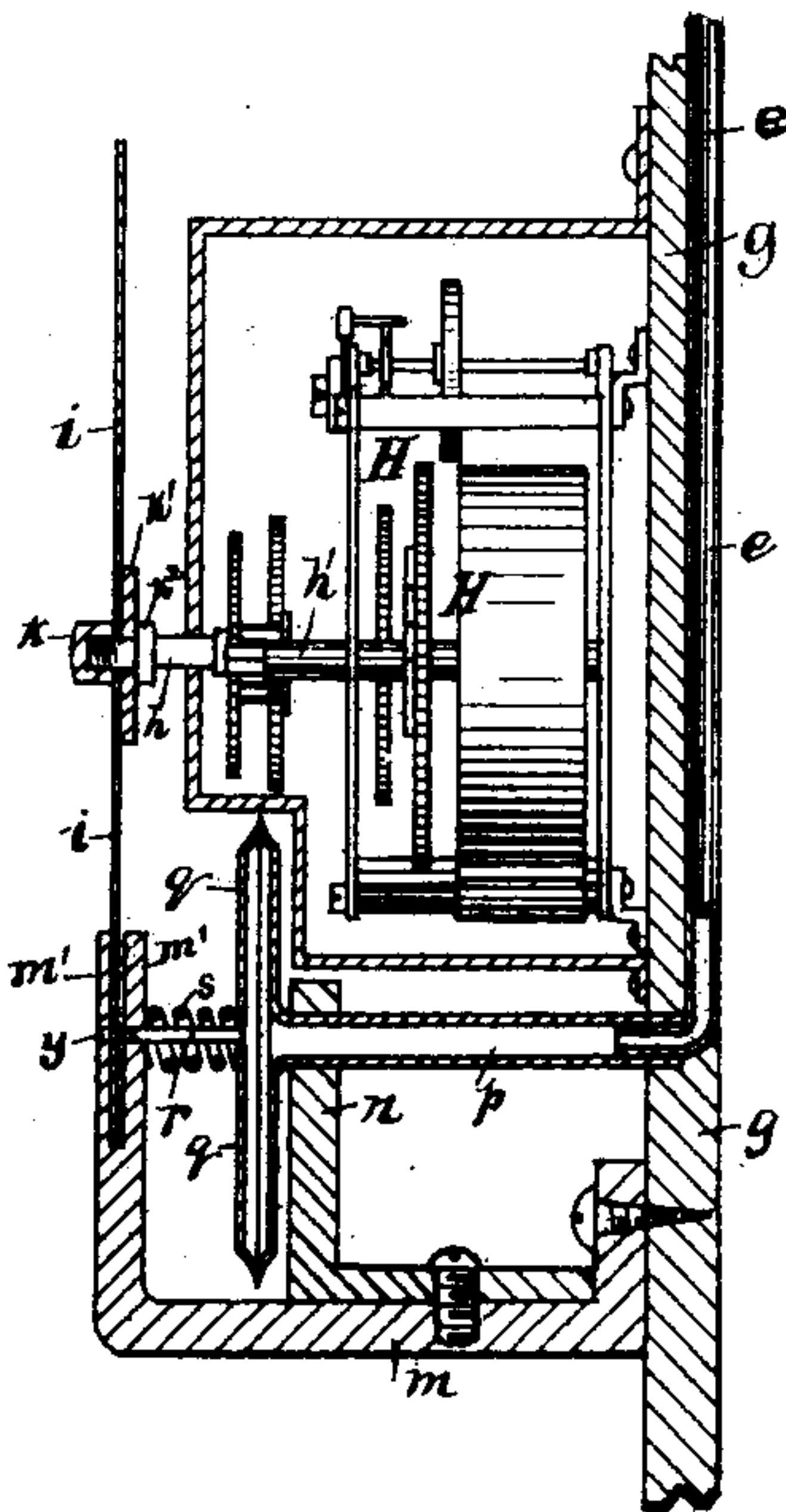
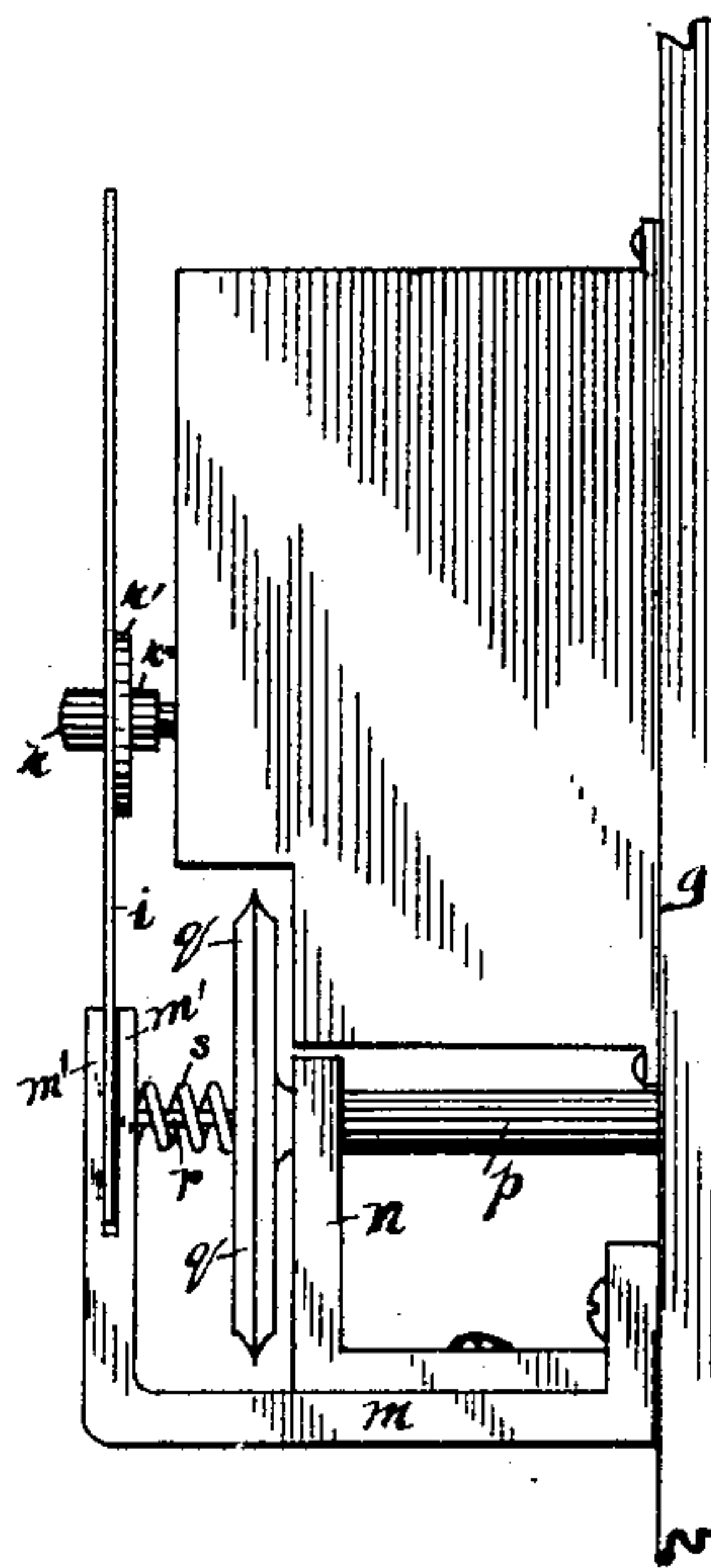


Fig. 8



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UNITED STATES PATENT OFFICE.

CHARLES E. EGAN AND HENRY F. GRAY, OF COLUMBUS, OHIO, ASSIGNORS,
BY DIRECT AND MESNE ASSIGNMENTS, OF PART TO HERBERT D. BEN-
NETT AND ALBERT G. GAULT, OF SAME PLACE.

WATCHMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 426,438, dated April 29, 1890.

Application filed November 23, 1889. Serial No. 331,399. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. EGAN and HENRY F. GRAY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Watchmen's Time-Recorders, of which the following is a specification.

Our invention relates to the improvement of watchmen's time-recording devices, and has particular relation to the construction of a device wherein the visits of a watchman are recorded by air-pressure.

The objects of our invention are to provide a simple and inexpensive device of this class by means of which an accurate and reliable record of the time at which a watchman visits a given station may be produced, to so construct the same as to obviate the use of electricity in producing the desired record, and to provide air-forcing mechanism at the sending-station, by means of which the necessary power may be easily imparted to the recording mechanism at the recording-station. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our improved sending-station box. Fig. 2 is a vertical section of the same, showing the inclosed air bulb or ball in elevation, and showing in dotted lines the position of said bulb or ball when the same is compressed. Fig. 3 is a plan view of said sending-station box. Fig. 4 is a side elevation of the key by which the ball is compressed. Fig. 5 is a transverse section taken on line *xx* of Fig. 3. Fig. 6 is a face view of the recording-station. Fig. 7 is a central vertical section of the same, showing the clock-work in elevation; and Fig. 8 is a side elevation of the same with the clock-work incased.

Similar letters refer to similar parts throughout the several views.

A represents a case, which, as shown, incloses the sending-station mechanism. This case, which is preferably formed of metal, has its rear open end secured to a similar base-block *a*. The inner face of this base-block *a* is provided with a concave depression, which

forms, as shown, a seat for the rear side of an ordinary hollow rubber ball *b*, which is incased within said case A. Formed in the center of the forward end of the case A is an outwardly-projecting keyway-neck *a'*, through which is formed a key-hole, which communicates with the interior of the case. This key-hole is partially closed near its outer end by a transverse plate *c*, extending across the center of the hole or keyway and of such width as to leave on each side thereof narrow openings *c'*.

d represents a button, which bears between the outer end of the case A and the air-ball *b*, said button slightly depressing the said ball to form a seat therein. The forward side of the button *d* is provided with a short forwardly-projecting tongue *d'*, which projects within the neck *a'* of the case A and is of a circumference somewhat less than the hollow of said neck.

e represents a metallic tube, which, passing through a pipe or tube hole formed in the base-block *a*, has its end passing through and projecting slightly within the rear side of the ball *b*. This end of the tube *e* is preferably secured in its connection with the ball *b* by means of washers *e'* *e''* closely surrounding the tube *e* and bearing, respectively, against the outer and inner surface of said ball. The tube *e* is further secured in its position by means of a nut *f*, which is screwed thereon and made to bear against the rear side of the block *a*. The tube *e* is connected at its remaining end, as hereinafter described, with the recording mechanism.

Referring to the drawings in Figs. 6, 7, and 8, *g* represents a vertical frame-plate, which may form the back of a suitable case, if desired. Secured to the face of this frame-plate in any desired manner is the frame of an ordinary clock-work mechanism II, the latter being supported within its frame in the usual manner. Of this clock-work mechanism, *h* represents the outwardly-projecting hand-post, and *h'* the winding or spring post. Supported centrally upon the outer portion of the hand-post *h* is a thin paper disk *i*, which is clamped between a cap *k*, screwed upon the outer end of the hand-post, and a washer *k'*,

surrounding said hand-post and abutting against a collar h^2 , formed thereon. This paper disk or dial i has its face divided by twelve (12) printed lines. Each space between two of said lines represents the distance which said dial will be forced to travel, owing to its connection with the hand-post, during one hour's time. If desired, the spaces between said hour-lines may be so printed or lined as to represent the desired fractions of an hour. The hour represented by each line is indicated by a printed figure upon the dial opposite said line. Secured to the frame-plate g at a point beneath the clock-work mechanism is the rear end of a guide-arm m . This arm extends outwardly to a point vertically beneath the lower edge and center of the dial i , at which point it is bent upwardly, said upwardly-bent portion being divided to form two upwardly-extending parallel arms m' , which loosely embrace the lower portion of the dial i . Extending upwardly from the horizontal portion of the arm m , near the center of the length thereof, is an arm n , which terminates at a point horizontally opposite the vertically-divided portion of the arm m . Supported by the upper portion of said arm n and passing therethrough is a short horizontal tube p , the rear end of which extends into a hole formed in the frame-plate g and communicates, as shown, with the remaining end of the tube e . The forward end of the tube p is connected with the rear side of and made to communicate with the interior of a flattened disk-shaped air-chamber q , the faces or diaphragms of which are preferably formed of thin metal. Secured to the center of the front face of this air-chamber is the rear end of a needle r , the forward end of which extends within a transverse needle-hole y , which passes through the guide-arms m' . Said forward end of the needle r is pointed and normally terminates in the rear of the dial i . Surrounding said needle and having its ends bearing between the rear face of the rear arm m' and the front face of the air-chamber q is a coiled spring s .

t represents the key, by means of which the bulb b is compressed, as hereinafter described. This key consists, as shown, of a head t' and a cylindrical stem, the greater part of which is divided by a vertical slit to form two parallel prongs of such form as to admit of their insertion through the opening c' of the key-way.

The operation of my device is as follows: The herein-described recording-station mechanism (shown in Figs. 6, 7, and 8 of the drawings) may be located at the office of the factory or other building where it is to be used, or at any other convenient point which is not accessible to the watchman, and said mechanism may, if desired, be provided with a suitable case having a lock. The sending-station (shown in Figs. 1, 2, and 3 of the drawings) may be located at the point in the building to be visited by the watchman. The dial

is so set that the line which represents the time corresponding with the actual time of the day is immediately opposite the needle-hole of the guide-arm m' , and the clock-work mechanism in rear is so adjusted as to cause said dial to make a complete revolution every twelve hours. The watchman visiting the sending-station inserts the key t into the key-hole of the neck a' , the prongs t^2 of the said key entering the openings c' and coming in contact with the button d on opposite sides of the tongue d' . He then presses upon said key, which pressure, through the consequent inward movement of the button d , will operate to compress the ball or bulb b , as shown in dotted lines of Fig. 2 of the drawings. The compression of said ball will result in forcing the air contained therein out through the tubes e and p into the air-chamber q at the recording-station. Owing to the faces of the latter being of thin material, the increased volume of air thus forced therein will cause an expansion or outward movement of the air-chamber face, which, through its connection with the needle r , will operate to draw the latter sufficiently forward to cause its point to penetrate the paper disk or dial. The key being withdrawn from the sending-box, the bulb or ball will be allowed to return to its normal position, the air forced therefrom returning to fill the same. The return of the air, together with the tension of the spring s , which is necessarily slightly compressed when the face of the air-chamber is expanded, will cause the said air-chamber to resume its usual form, and will draw the needle from the dial.

By the herein-described construction it will be seen that the needle-hole formed, as above described, in the dial will be in line with the figure or mark on said dial representing the hour of the day, thus indicating to an observer the hours at which the watchman visited said station.

The herein-described recording device, although simple of construction, is at once accurate and reliable and can be manufactured at a comparatively low cost.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a watchman's pneumatic time-recorder, the combination, with an ordinary clock-work mechanism H , a paper clock-dial carried, as described, by the hand-post, and the divided guide-arm m , having needle-hole y and loosely embracing the lower portion of said dial, of the thin-faced air-chamber q , having projecting needle r , adapted to enter the needle-hole y , and inlet-tube p , communicating with said chamber, substantially as set forth.

2. In a watchman's time-recorder, the combination, with the sending-station mechanism consisting of the case A , having a key-way therein, elastic hollow ball b , inclosed within said case, pressure-button d , supported

against said ball and keyway, and outlet-tube
e, of the recording mechanism consisting of
the clock-works H, dial i, supported upon the
hand-post, guide-arm m, having needle-hole
5 y and loosely embracing the lower portion of
said dial, the thin-faced air-chamber q, hav-
ing projecting needle r, adapted to enter the
needle-hole y, and inlet-tube p, communi-
cating with the interior of said air-chamber,

and a tube e, connecting the interior of said
ball b and tube p, substantially as and for
the purpose specified.

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HENRY F. GRAY.

In presence of—

C. C. SHEPHERD,
NELLIE PERKINS.