

(No Model.)

2 Sheets—Sheet 2.

E. R. MALMBORG.
DATE AND TIME STAMP.

No. 438,166.

Patented Oct. 14, 1890.

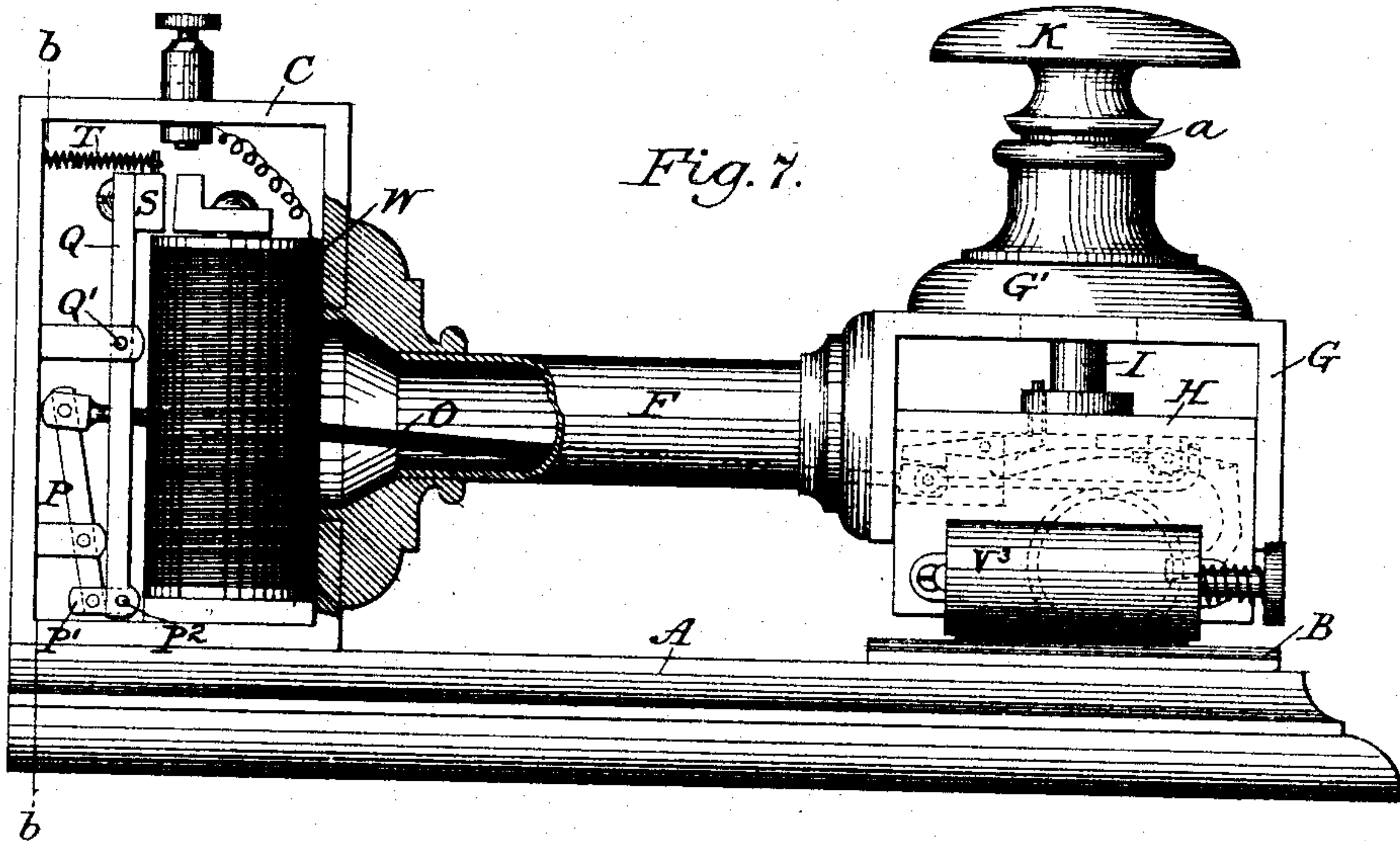


Fig. 8.

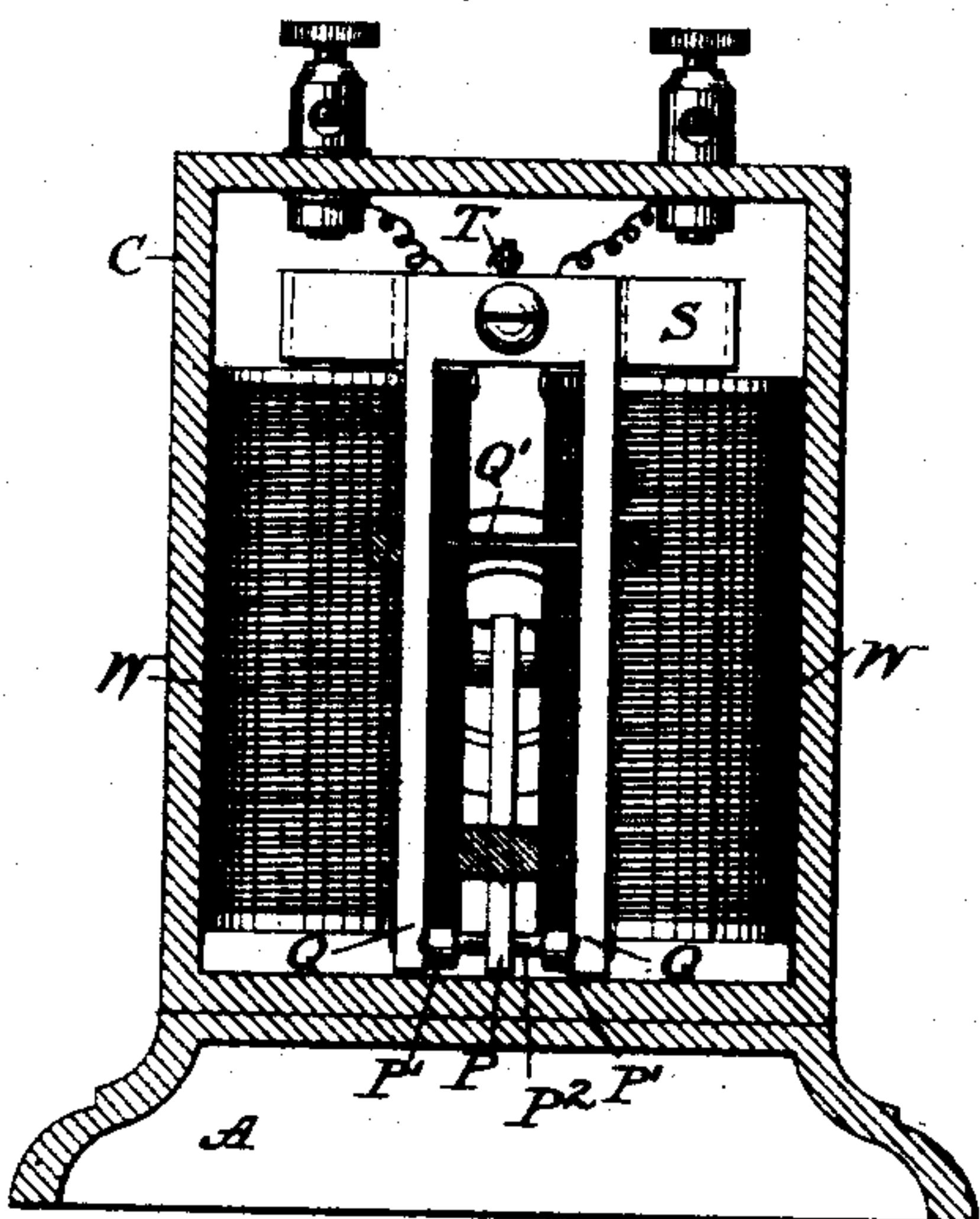
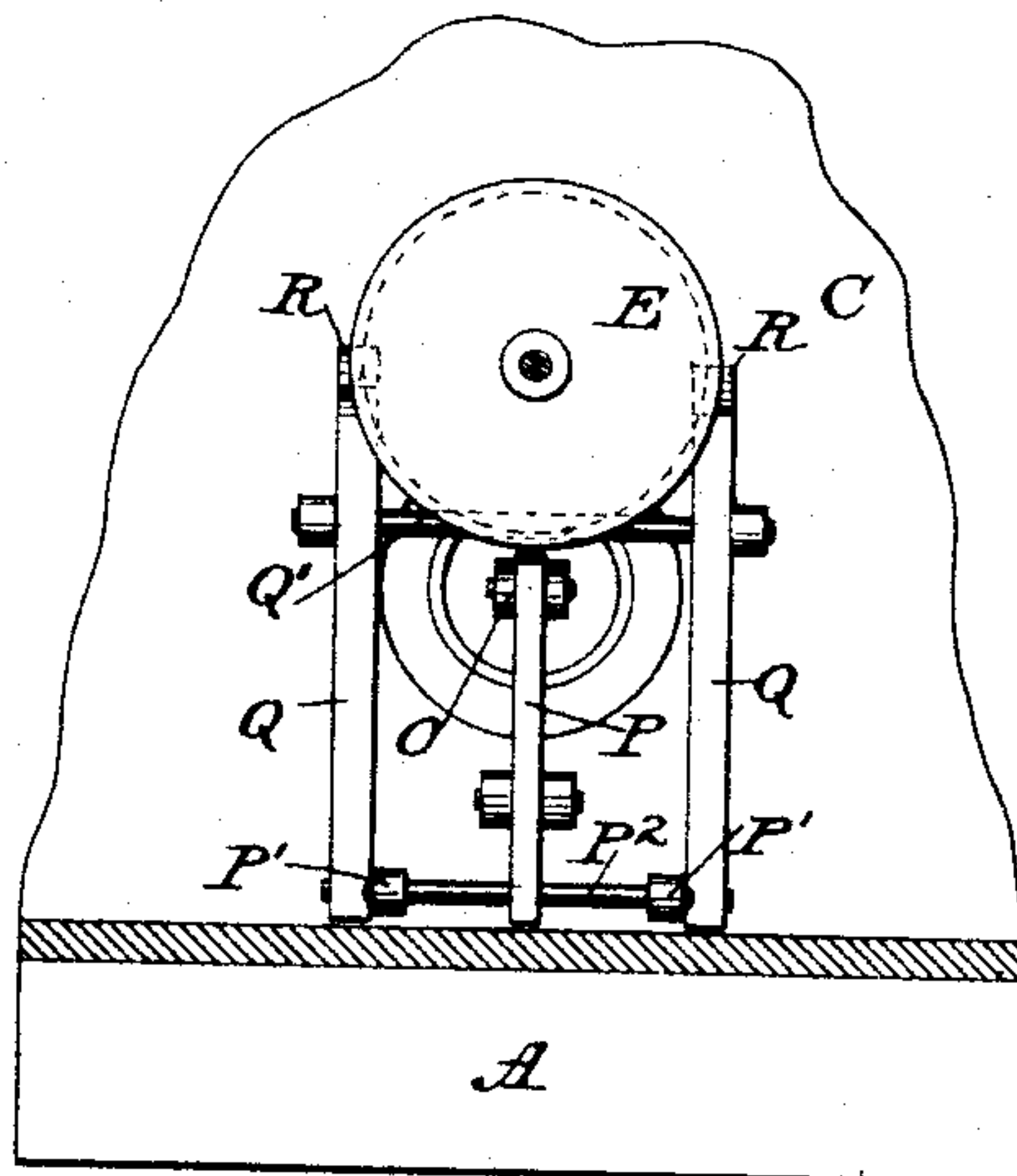


Fig. 6.



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DATE AND TIME STAMP.

SPECIFICATION forming part of Letters Patent No. 438,166, dated October 14, 1890.

Application filed December 26, 1889. Serial No. 334,958. (No model.)

To all whom it may concern.

Be it known that I, ERNST R. MALMBORG, a resident of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Date and Time Stamps; and do I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to stamps for automatically indicating and printing the date and time of imprint; and has for its object to simplify the construction and reduce the cost of the machines of this class.

It consists in combining with a fixed arm extending over a suitable base and platen from a vertical case or standard at one end of the base-plate, and with a spring-actuated stamping device mounted to reciprocate vertically above the platen in the end of the arm, of a series of levers mounted in the case or standard and actuated mediately by a time-keeper, and a time-printing mechanism placed in the stamping device and connected with said actuating-levers, so as to be moved thereby without interfering with or being affected by the movements of the stamping device in producing an imprint, all substantially as is hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section of the improved time-stamp in line *xx* of Fig. 3; Fig. 2, a horizontal section in line *yy* of Fig. 1; Fig. 3, a vertical section in line *zz* of Fig. 1; Figs. 4 and 5, detail views illustrating the movement of the locking device for the time-wheels; Fig. 6, a section in line *ww* of Fig. 1, showing the actuating-levers in elevation from the rear; Fig. 7, a side elevation, partly in section, of a modification in the construction of the stamp to adapt it to be actuated by a clock controlling an electric circuit; and Fig. 8 a vertical section in line *bb* of Fig. 7.

Similar letters indicate like parts in all of the figures.

The improved stamp is constructed with an extended base A, having at its front end a

platen B and at its rear end an upright case 50 or standard C mounted thereon. Within this case is placed either a clock-movement D of any approved description adapted to actuate a vertical contrate-wheel E, as shown in Fig. 1, or, as an equivalent, an electro-magnet W 55 in a circuit which is opened and closed intermittently by means of a suitable time-keeper.

An arm F, preferably tubular in form, is fixed rigidly to the case or standard C to project therefrom over the base A, and to support at its outer end over the platen B a head G, adapted to contain a vertically-reciprocating frame H, moving freely between the ends of the head G, which serve as guides therefor.

The frame H is fitted with a central stem 65 I, (see Figs. 1 and 7,) screwing centrally into the top thereof to project up into a central recess J in the top piece G' of the head. A knob K is made to screw upon the top of the stem and is provided with a cylindrical extension or flange *a*, projecting from its inner end to fit neatly in the recess, the length thereof being such as to permit the frame H to drop upon the platen B, as shown in Fig. 7. The frame H is automatically upheld by 75 means of a spiral spring *c*, encircling the stem I, (see Fig. 1,) and which is interposed between the lower end of the knob K and the bottom of the recess J.

The date and time wheels for the stamp are 80 all mounted to revolve independently upon a common axial shaft L, fitted in the frame H transversely to the axis of the sustaining-arm F, and they may be arranged in the order illustrated in the drawings, (see Figs. 2 and 3,) 85 although the order of arrangement may be varied and the number of wheels changed without departing from my present invention. In the arrangement shown in the drawings the month-wheel *d* is placed at the left in the series (see Figs. 2 and 3) and the year-wheel *d'* at the right, these two wheels being left free for independent adjustment by hand. 90 The date-wheel next to the right of the month-wheel *d* is formed in two divisions *e f*, revolving independently in close proximity side by side, the first *e* being divided into ten peripheral spaces bearing thereon the nine digits

and a cipher and the second *f* into twelve peripheral spaces bearing the numbers 1 2 3, repeated in three series, with blank spaces between each series. The first division *e* carries at its right, to revolve with it, first, a disk *g*, having a single peripheral notch, and, second, a ratchet-wheel *h* of like diameter having ten teeth, and the division *f* carries upon its left, to revolve with it, a ratchet *i*, having twelve teeth. A meridian-wheel *j* is mounted next to the right of the day-wheels and is divided into twelve peripheral spaces bearing thereon the letters "a. m." and "p. m." alternately, and said wheel carries on its left, to revolve with it, first a ratchet *k*, having twelve teeth, and next a disk *l* of like diameter, having six peripheral notches. The hour-wheel *m* next to the right is divided peripherally into twelve spaces, bearing, respectively, the numbers 1 to 12, each followed by a dash, and it carries upon its hub to the left a ratchet-wheel *n*, having twelve teeth, and a disk *o*, of same diameter, having a single peripheral notch. Lastly, the minute-wheel between the hour-wheel *m* and year-wheel *d'* is formed in two divisions *r s*, revolving independently closely side by side similarly to the date-wheel *e f*. The first division *r* on the right carries upon its periphery in ten equal spaces the nine digits and a cipher and the second division *s* is divided peripherally into twelve spaces, bearing, respectively, the figures 1 to 5 and a cipher repeated in two series. The first or units division *r* carries upon its hub, to revolve with it on the right, first, a disk *t*, having a single peripheral notch, and, second, a ratchet-wheel *u*, of the same diameter, having ten teeth, while the second or tens division *s* carries upon its hub, to revolve with it, on the left, first, a ratchet-wheel *v*, having twelve teeth, and next a disk *w*, of the same diameter, having two peripheral notches. The disks and ratchets carried by these indicating-wheels all correspond in diameter.

The ratchets of the meridian and time wheels are severally engaged, each by one arm of a horizontally-moving bifurcated pawl *M*, whose other arm rests upon the periphery of the disk revolving with the next wheel to the right, so that each pawl is held out of engagement with its ratchet until the arm thereof, resting upon a disk, drops into a peripheral notch on said disk. Single pawls *N N'* are in constant engagement, the one with the ratchet *u* of the first or units division *r* of the minute-wheel, and the other *N'* with the disk *l* of the meridian-wheel, said pawl *N'* being made to overlap also and engage, as permitted, the ratchet *h* of the first division *e* of the date-wheel. These single pawls *N N'*, together with the several bifurcated pawls *M M*, are all pivoted upon a transverse bar *M'*, (see Fig. 1,) extending parallel with the axis of the indicating-wheels at the rear thereof, and whose ends are supported to slide freely in suitable ways *M²* in the upper part of the frame *H*.

The sliding cross-bar *M'*, to which the pawls *M M N N'* are pivoted, is coupled by means of a connecting-rod *O*, extending longitudinally through the hollow arm *F*, to the upper longer arm of a pivoted lever *P*, Figs. 1, 6, 7, and 8, whose lower shorter arm is coupled by a link *P'* to a cross-bar *P²*, connecting the lower longer ends of two parallel upright levers *Q Q*, which are both pivoted to oscillate upon a cross-pin *Q'*. (See Figs. 6 and 8.)

When the time-wheels in the stamp are to be actuated immediately by a time-keeper mounted in the case *C*, the upper shorter ends of the joint-levers *Q Q* are fitted with beveled teeth *R* (see Figs. 1 and 6) to engage the inclined faces of the beveled teeth in the contrate-wheel *E*, actuated by the time mechanism, and are held in contact with said teeth by a spring *T*. The contrate-wheel *E* is preferably formed with sixty teeth and made to revolve once in an hour. Each movement of the wheel will cause its teeth to force the upper ends of the levers *Q Q* from it, and thereby oscillate the lever *P*, so as to cause it to move the rod *O*, the cross-bar *M'*, and the pawls pivoted thereto forward, and so soon as the levers *Q* are relieved from pressure by the disengagement of the teeth as they pass beyond them the spring *T* will by its stress draw back the levers and retract the pawls.

Where it is preferred to actuate the time-wheels in the stamp by means of a time-keeper which is separate from the stamp, the upper shorter ends of the two levers *Q Q* are united to the armature *S* of the electro-magnet *W*, mounted in the case, substantially as shown in Figs. 7 and 8, said magnet being connected in a circuit which is opened and closed each minute by a suitable time-keeper, in the customary manner well known to the art and which need not herein be described. The armature *S* is normally withdrawn from the magnet by a spring *T*. When attracted toward the magnet, it will operate to oscillate the levers *P Q*, and thereby cause the bar *M'* to slide forward so as to carry the pawls *M N* forward (see Fig. 4) for a new engagement with the ratchets. So soon as the armature is released the stress of the spring *T* will operate, through the intervention of said levers *P Q* to retract the pawls engaging the ratchets, (see Fig. 5,) and consequently produce a movement of the time-wheels.

The several time-wheels are prevented from moving independently of their ratchet-wheels and are locked each by means of a dog *V*, pivoted to the under side of the top plate of the frame *H* and bent to extend to the front of each ratchet and engage the teeth thereof, as shown in Figs. 1 and 4. This engagement is enforced by means of a spring *V'*, in manner as shown in Figs. 1, 4, and 5. A bent finger *U* is made to project from the front end of each pawl *M* or *N*, so as to pass alongside of the upper end of each proximate dog *V*, and

the extremity of the finger is fitted with a lateral inclined-faced offset U' , adapted to slide over a counterpart offset U^2 on the inner face of the dog as the finger moves outwardly when the pawl is pushed forward, as illustrated in Fig. 4, and on the return movement of the pawl to pass under said offset, as illustrated in Fig. 5, the opposed inclined faces of the two offsets operating in said last movement to lift the dog V, so as to release it from the ratchet and leave the latter free to be moved by the pawl.

The retraction of the pawls to move the time-wheels is prevented whenever the wheels are depressed for printing by means of a pivoted lever Y, whose front end is hooked to form a catch, which will drop automatically into engagement with the cross-bar M' when the bar is pushed forward. This engagement is prevented, however, when the frame H, carrying the wheels, is in its elevated position, by means of a finger Y' , projecting upward from the rear end of the lever Y far enough to strike against the head when the frame is lifted, and thereby so far oscillate the lever as to lift its hooked end or catch clear of the cross-bar M' , as shown in Fig. 1.

In the operation of my improved stamp the movement of the lever Q each minute, produced by the operation of the central wheel E or of the armature of the electro-magnet W as its equivalent, will, by the intervention of the lever P, arm O, cross-bar M' , and pawls M and N, connected as described, produce a regular intermittent movement of the minute, hour, and meridian wheels mounted in the reciprocating frame H, so that said wheels shall present constantly at line of print over the platen B in a single right line the correct time of day, the day of the month being indicated by a daily adjustment of the date-wheel. By a blow or suitable pressure upon the knob K of the frame H (carrying the wheels whose proper adjustment is made and automatically maintained in manner as described) an imprint of the date and time is readily produced upon a piece of paper placed upon the platen B, the impression being marked on the paper in the customary manner by means of a suitable inked ribbon led over the face of the wheels from a spool V^2 on one side of the head to a corresponding spool V^3 on the opposite side, as shown in Fig. 3. As the frame H descends to produce

the imprint the finger Y' is released, so as to permit the hooked end of the lever Y to drop in position to engage automatically the cross-bar M' , should it move forward while the frame is depressed, and the return of said bar and a consequent retraction of the pawls to produce a movement of the printing-wheels is thereby prevented until the stroke of the stamp is completed by the return of the frame H to its normal position.

I claim as my invention—

1. In a time-stamp, the combination, with a suitable base having a platen at one end and a case at the other, of a fixed arm extending from the case over the base and platen, a reciprocating stamping-frame mounted in the end of said arm above the platen, time-printing wheels mounted in said frame, reciprocating pawls actuating said wheels, a lever pivoted in said case, means, substantially as described, producing an intermittent movement of said lever in synchronism with the movement of a time-keeper, and a coupling-rod connecting said lever with the pawls actuating the time-wheels, substantially in the manner and for the purpose herein set forth.

2. The combination, in a time-stamp, with its bed-plate, a case mounted thereon, a fixed arm extending from said case over the bed-plate, a stamping-frame mounted to play in the end of the arm, time-indicating wheels revolving in said frame, and reciprocating pawls actuating said wheels, of the pivoted lever Q, the second pivoted lever P, whose shorter arm is linked to the longer arm of the first, the coupling-rod O, connecting the longer arm of said second lever with the reciprocating pawls of the time-wheels, the spring T, operating by its stress to move the lever Q in the direction to cause it to retract the rod O and connected pawls, and means, substantially as described, for moving said lever O in the opposite direction intermittently in synchronism with the movements of a time-keeper, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNST R. MALMBORG.

Witnesses:

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E. M. WATSON.