

(Model.)

I. ROSENFELD.  
INDICATING DEVICE.

No. 553,427.

Patented Jan. 21, 1896.

Fig. 1.

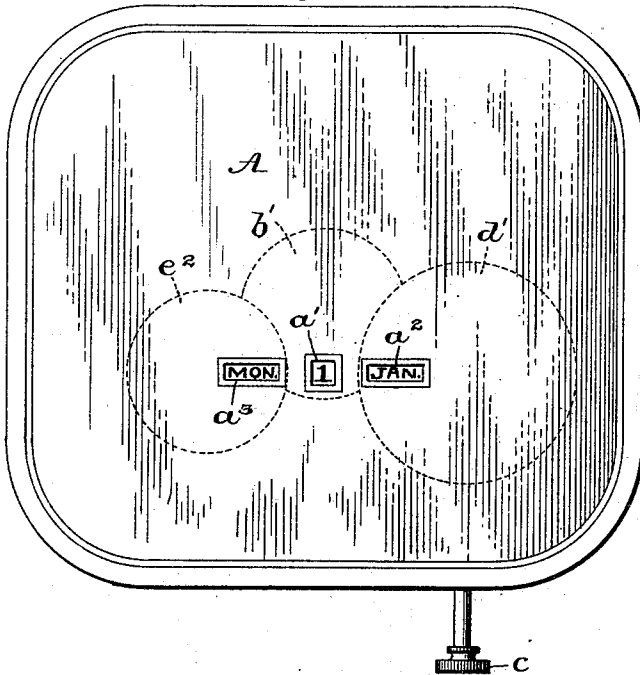


Fig. 2.

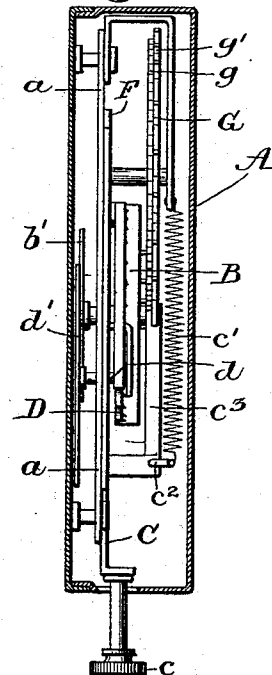


Fig. 3.

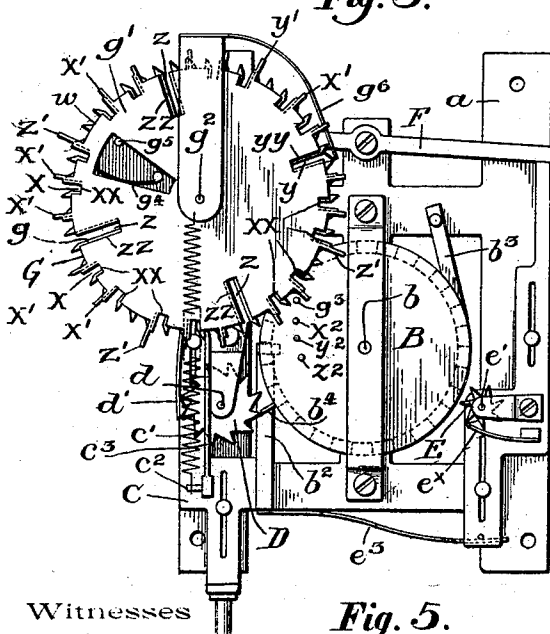


Fig. 4.

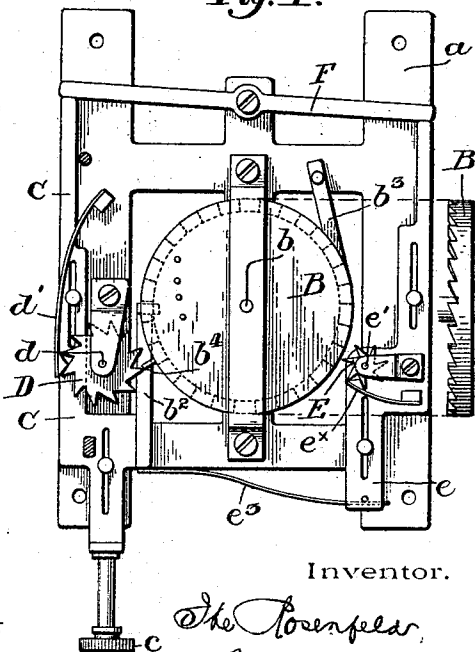


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## INDICATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 553,427, dated January 21, 1896.

Application filed June 25, 1895. Serial No. 553,968. (Model.)

*To all whom it may concern:*

Be it known that I, IKE ROSENFELD, a subject of the Czar of Russia, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Indicating Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to indicating devices, having reference, more especially, to mechanical calendars which accurately indicate the date, day, and month, and which calendars are operated from day to day either manually or automatically.

The invention comprehends novel features of construction and arrangement of parts, which will be hereinafter particularly described and claimed.

In the drawings, Figure 1 is a face view of a mechanical calendar embodying my invention. Fig. 2 is a vertical section through the case adjacent to the operating-slide. Fig. 3 is a rear elevation of the operating mechanism as removed from the case. Fig. 4 is a similar elevation with the regulating-wheel removed for clearness. Fig. 5 is a detail of the regulating-wheel.

A designates a suitable case of appropriate shape and size for its intended purpose. Inclosed in this case is a frame *a*, upon which the working mechanism is supported. On the frame is an arbor *b*, upon which is mounted a crown ratchet-wheel B, having thirty-one teeth which correspond with the days of the month, and upon which arbor is supported a disk *b'*, on the face of which are printed in circular order, at regular intervals apart, the numerals 1 to 31, inclusive, indicating the days of the month. In the face of the case is an opening *a'*, which is so disposed that during the intermittent rotation of the ratchet-wheel the numerals are successively presented to the opening. Engaging with the teeth of the ratchet-wheel is a spring-pawl *b''*, which is attached to a vertical slide C on the frame, whereby when the slide is drawn down, by means of an exteriorly-projecting knob *c* thereon, the wheel is advanced one tooth. The slide is retracted by means of a spring *c'*, which is secured to a stud *c''* thereon and to

the frame. There is also provided a spring stop-pawl *b'''*, which engages the ratchet-wheel and prevents backward movement thereof.

On the frame adjacent to the ratchet-wheel B is an arbor *d*, upon which is mounted a ratchet-wheel D having twelve teeth, which correspond with the months in a year, and upon which arbor is supported a disk, on the face of which are printed in circular order, consecutively, the names of the months. Suitably located in the face of the case is an appropriate opening *a''*, to which the names of the months are successively presented during the step-by-step movement of the ratchet-wheel. On the periphery of the wheel B is a stud *b<sup>4</sup>*, which is so disposed that during each revolution of said wheel the stud impinges against a tooth of the month-wheel D and advances it one step, and in consequence the date-wheel B makes twelve revolutions to each revolution of the month-wheel. A spring stop-pawl *d'* engages the teeth of the wheel D and prevents its backward movement.

On the frame is a vertical slide *e* on which is journaled an arbor *e'*. This arbor carries a small ratchet-wheel E having seven teeth which correspond with the days of the week. The disposition of the parts is such that when the slide is in its raised or normal position the teeth of the wheel are successively engaged by those of the date-wheel, so as to impel the wheels concertedly. Upon the arbor *e'* is a disk *e''* on the face of which are printed, in circular series, consecutively, the days of the week, which are successively presented to an appropriate opening *a'''* in the face of the case. A suitably-disposed stop-pawl *e<sup>x</sup>* coacts with the wheel E to check its backward movement.

The slide *e* is maintained in the normal or active position by means of a flat spring *e''*, one end of which is secured to the frame while its free end bears upon a lateral stud on the slide. This slide has an upward extension upon which bears one arm of a horizontally-disposed lever F that is fulcrumed to the frame. The other arm of the lever rests upon a vertical extension of the operating-slide C, the parts being so constructed that when said latter slide is in the raised or normal position the slide *e* is pressed downward by the action of the lever so as to maintain the day-wheel out

of active position, and that when the operating-slide is moved downward, the pressure thereof being removed from the lever, the slide  $e$  is raised by its spring to engage the teeth of the day-wheel with those of the date-wheel.

The movement of the day-wheel into and out of action is governed by the number of days in each month—that is to say, in a thirty-one-day month the date-wheel in its revolution makes thirty-one regular steps, and the day-wheel is acted upon by the successive teeth, and in a thirty-day month the date-wheel, in its revolution, makes thirty steps, being moved a distance of two teeth at the end of the revolution, the day-wheel being moved only one step during the last stroke of the date-wheel. On the 28th day of February the date-wheel is moved a distance of four teeth at the end of the revolution to one step of the day-wheel, and on the 29th day of February (in a leap-year) the date-wheel in its final stroke is moved a distance of three teeth to one of the day-wheel.

The length of the stroke of the operating-slide and its pawl determines the respective movements of the "date" and "day" wheels, as I have termed them. Normally the stroke is such that in each reciprocation of the slide the ratchet-wheel is advanced tooth by tooth. By proportionately increasing the stroke of the slide at stated periods said wheel is moved a distance of two, three, or four teeth, as required.

The stroke of the slide and its pawl is governed by an automatically-operated wheel  $G$ , termed the "regulating-wheel," which is constructed and arranged to make a complete revolution in four years. This wheel is mounted on the supporting-frame in proximity to the operating-slide and the date-wheel, the slide being provided with a projection or plunger  $c^3$ , that registers with peripheral notches or indentations of varying depths in the wheel  $G$ . The wheel is made in two parts  $g$   $g'$ , one part,  $g$ , being fixed to an arbor  $g^2$  and the other part,  $g'$ , being loosely mounted on the arbor and having a yielding connection with the other part. Part  $g$  is provided with forty-eight notches, (and consequently a like number of teeth,) which correspond with the forty-eight months in four years. Those notches for the thirty-one-day months are indicated at  $w$ , being comparatively shallow. Those for the thirty-day months are indicated at  $x$ , being slightly deeper. The notch for the February month with twenty-nine days (in the leap-year) is indicated at  $y$ , being still deeper, and the notches for the three February months with twenty-eight days are indicated at  $z$ , being the deepest.

Suitably located on the back of the date-wheel is a pin  $g^3$ , which is adapted during each revolution of the date-wheel to impinge against one of the teeth of the wheel-section  $g$  and move it at a distance of one tooth. Hence the wheel  $G$  makes one revolution in four years. The part  $g'$  of the regulating-

wheel has twenty shouldered teeth, of which sixteen,  $x'$ , corresponding with the thirty-day months in four years, are the same length, one,  $y'$ , corresponding with the February month of twenty-nine days, being somewhat longer, and the remaining three,  $z'$ , corresponding with the three February months of twenty-eight days, being still longer. The peripheral edge of the wheel-section  $g'$  is flush with the bottoms of the notches  $w$  in the section  $g$ , and such edge is provided at proper points with notches  $xx$ ,  $yy$  and  $zz$ , corresponding with the notches  $x$ ,  $y$  and  $z$ , respectively, in said section  $g$ . Normally the position of the section  $g'$  upon the section  $g$  is such that the shoulders of the teeth  $x'$  overlap the edges of the notches representing the thirty-day months, being held yieldingly in that position by means of a flat spring  $g^4$ , that is secured to the face of the section  $g$  in a manner to bear against the edge of a suitable opening in the face of the section  $g'$ , whereby the latter may be turned against the pressure of the spring to bring such shoulders in line with the edges of the respective notches. A suitable stop  $g^5$  is provided to determine the movement of section  $g'$ . On the back of the date-wheel are three pins  $x^2$   $y^2$   $z^2$ , which are arranged in such positions relative to each other and to the wheel  $G$  that the pin  $x^2$  will act upon the teeth  $x'$ , the pin  $y^2$  upon the teeth  $y'$ , and the pin  $z^2$  upon the teeth  $z'$ , such pins in each impact moving the spring-controlled wheel-section to effect the alignment of the teeth or notches, as above stated.

The parts are so relatively arranged that in a thirty-one-day month the plunger moves into the notches  $w$ , so as to effect the regular intermittent revolution of the date-wheel and the corresponding movement of the day-wheel. In a thirty-day, twenty-eight-day or twenty-nine-day month the plunger acts upon the opposed shoulder of one of the shouldered teeth until the last day of the month, whereupon the upper section  $g'$  of wheel  $G$  is moved laterally, as above explained, so that the plunger escaping the shoulder will pass into the proximate notch, the depth of which will determine the succeeding stroke of the plunger to effect the requisite movements of the date and day wheels, as will be readily understood.

The shoulders of the teeth in part  $g'$  of the regulating-wheel are shown as extended outwardly beyond the bottoms of the notches  $w$  in the part  $g$  merely for the purpose of reinforcing said teeth; but if such shoulders be flush with or in the same plane as the bottoms of the notches  $w$  the action of the shoulders in determining the position of the plunger  $c^3$  in respect to the notches  $x$ ,  $y$  and  $z$  in wheel part  $g$  will be the same—that is to say, in either case each stroke of the plunger will operate the pawl  $b^2$  sufficiently to move the ratchet-wheel  $B$  a distance of one tooth, there being sufficient play of the slide to enable the pawl  $b^2$  to grasp one tooth even when the

shoulder is opposed to the plunger *c*. When a notch is in line with the plunger the plunger has a greater movement, but still not sufficient to grasp two teeth. The shouldered teeth corresponding to the notches *y y* and *z z* are removed therefrom farther than those corresponding to the notches *x x*, for the reason that the disk *g'* has a greater play or movement when a shouldered tooth corresponding to one of these deep notches is opposite the plunger than when a shouldered tooth corresponding to one of the notches *x x* is opposite the plunger. This greater play of disk *g'* is caused by the prolonged contact of one of the long teeth *z'* or *y'* with pins *z<sup>2</sup>* or *y<sup>2</sup>* at this time.

*g<sup>6</sup>* is simply a stop-pawl that engages the teeth of the wheel-section *g* and prevents backward movement thereof.

Although the invention has been shown and described as applied to a calendar, it will be obvious that it may be applied to other indicating devices.

I claim as my invention—

1. In an indicating device, the combination, with a supporting frame, of a main ratchet wheel provided with a peripherally-projecting stud, actuating means for said wheel, a ratchet wheel adjacent to said main wheel and adapted to be engaged by the peripheral stud during each revolution of the main wheel, a third ratchet wheel adjacent to the main wheel, and means for bodily moving said third wheel into and out of the path of the teeth of the main wheel, substantially as described.

2. In an indicating device, the combination, with a supporting frame, of a main ratchet wheel, a slide provided with a pawl engaging the ratchet wheel, a ratchet wheel adjacent to the said main wheel adapted to be actuated thereby at predetermined intervals, a spring-controlled slide adjacent to said main wheel, a ratchet wheel on said latter slide, and a lever fulcrumed on the main frame in such manner that its arms bear upon the respective slides, substantially as described.

3. In an indicating device, the combination, with a main wheel provided with relatively arranged studs or projections, and means for

actuating said wheel, of a two-part wheel adjacent thereto, one part of which is affixed to the arbor and is provided with a number of peripheral teeth and radial slots at predetermined points, and the other part of which wheel is loosely mounted on the arbor and is yieldingly connected with the other part, said loosely mounted part being provided with radial slots corresponding with those in the other part and with teeth which are adapted to be actuated by the studs or projections on the main wheel at predetermined periods, together with a ratchet wheel adjacent to said main wheel adapted to be actuated thereby at predetermined intervals, a spring-controlled slide adjacent to said main wheel, a third ratchet wheel adjacent to the main wheel, and means for bodily moving said third wheel into and out of the path of the teeth of the main wheel, substantially as described.

4. In an indicating device, the combination, with a main wheel provided with relatively arranged studs or projections, and means for actuating said wheel, of a two-part wheel adjacent thereto, one part of which is affixed to the arbor and is provided with a number of peripheral teeth and radial slots at predetermined points, and the other part of which wheel is loosely mounted on the arbor and is yieldingly connected with the other part, said loosely mounted part being provided with radial slots corresponding with those in the other part and with teeth which are adapted to be actuated by the studs or projections on the main wheel at predetermined periods, a slide adjacent to the main wheel, a ratchet wheel on said slide, and operative connections between said slide and the means for actuating the main wheel, whereby the said slide with its wheel is moved to throw the wheel bodily into and out of the path of the teeth of the main wheel, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

IKE ROSENFELD.

Witnesses:

ANDREW T. GROUPE,  
JOHN R. NOLAN.