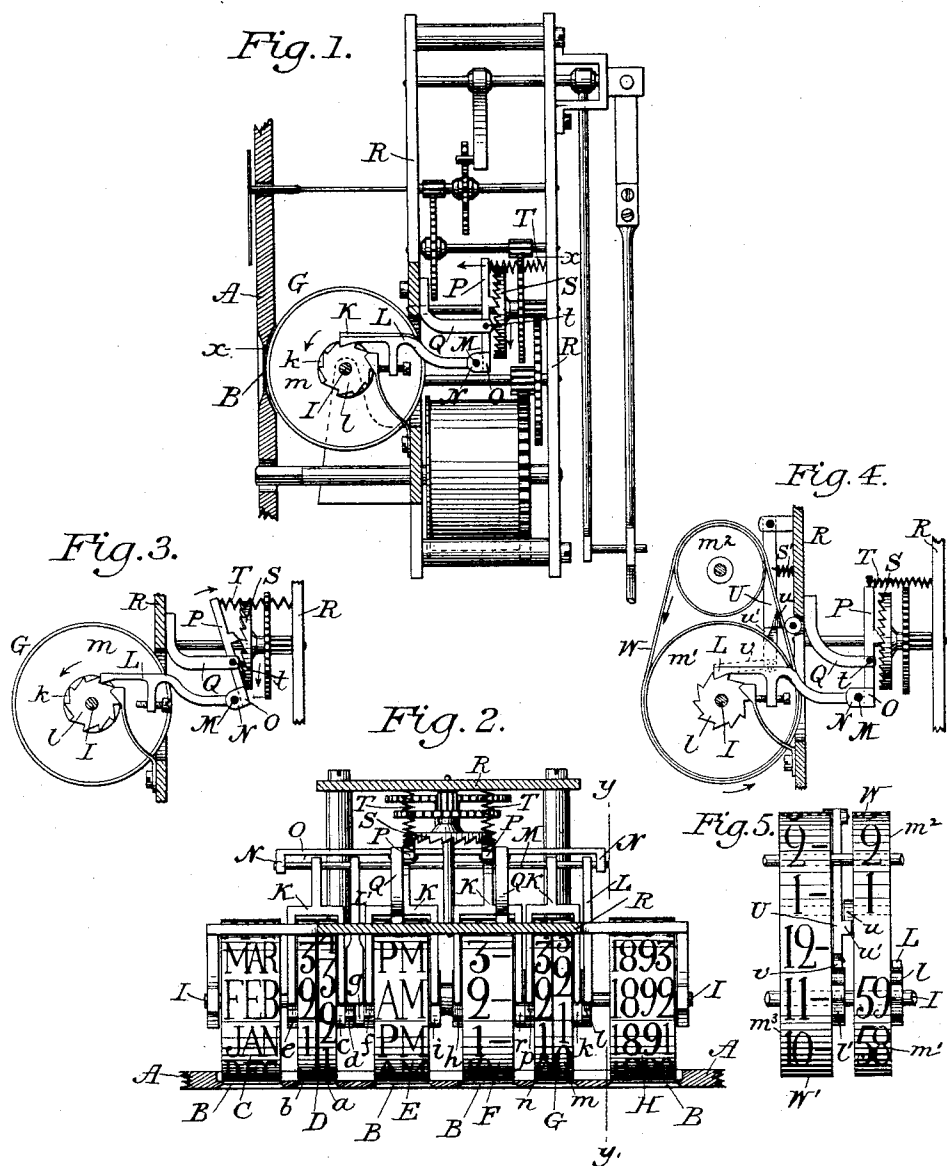


(No Model.)

W. B. MARTINDALE & E. R. MALMBORG.
CALENDAR CLOCK.

No. 472,952.

Patented Apr. 12, 1892.



WITNESSES:

A. K. Jester
E. M. Watson

INVENTORS:

Warren B. Martindale
E. R. Malmberg
BY *David A. Burr*

ATTORNEY.

UNITED STATES PATENT OFFICE.

WARREN B. MARTINDALE, OF KENOSHA, WISCONSIN, AND ERNST R. MALMBORG, OF ST. LOUIS, MISSOURI, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE NEW YORK ELECTRICAL DEVICE COMPANY, OF VIRGINIA.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 472,952, dated April 12, 1892.

Application filed December 30, 1889. Renewed October 14, 1891. Serial No. 408,654. (No model.)

To all whom it may concern:

Be it known that we, WARREN B. MARTINDALE, of Kenosha, in the county of Kenosha and State of Wisconsin, and ERNST R. MALMBORG, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Calendar-Clocks; and we do 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 an improvement in calendar-clocks, and has for its object to provide at low cost in a neat simple form a time-calendar which will indicate and clearly expose to view in proper order and in the same right line the year, the month, the day of the month, and the time of day.

It consists in the novel combination and arrangement of devices, substantially as hereinafter described and claimed, for actuating a series of date and time indicating wheels, all mounted to revolve independently and in proper order upon the same horizontal axis.

In the accompanying drawings, Figure 1 is a vertical section in line *y y* of Fig. 2, representing a side elevation of the time mechanism and indicating-wheels with the casing, excepting a portion of the front plate, broken away. Fig. 2 is an irregular section in line *x x* of Fig. 1 with a portion of the time mechanism omitted; Fig. 3, a detached view of one end of the indicating-wheels in same section as Fig. 1, illustrating the movement of the mechanism operating the same. Fig. 4 is a detached view similar to Fig. 3, illustrating a modification of the invention, in which endless bands are substituted for the indicating-wheels; and Fig. 5, a front view of said bands.

Similar letters indicate like parts in all the figures.

A represents the front plate of a case of any suitable form and design to inclose the improved mechanism; B B B, a series of sight-openings pierced in a straight horizontal line through said front plate.

C D E F G H are the date and time indicating wheels for the calendar, all of which are

mounted to revolve freely and independently on a horizontal shaft I, fixed in the case parallel with its front plate and in position to permit the characters on the periphery of each wheel to be read through one of the sight-openings B. The outer wheel C at the left in the series (see Fig. 2) bears upon its periphery the names of the months and the outer wheel H at the right bears upon its periphery a corresponding series of figures indicating a succession of years. These two wheels are adapted to be turned by hand for adjustment, as required. Of the intermediate wheels the date-wheel D, next to the right of the month-wheel C, is formed in two divisions *a* and *b*, revolving independently closely side by side, the first *a* being divided into ten peripheral spaces bearing thereon the nine digits and a cipher, and the second *b* into twelve peripheral spaces bearing the numbers "1" "2" "3" repeated in three series with blank spaces between each series. The first division *a* carries at its right, to revolve with it, first, a disk *c*, having a single peripheral notch, and, second, a ratchet-wheel *d*, of like diameter, having ten teeth, and the division *b* carries upon its left to revolve with it, a ratchet *e*, having twelve teeth. The periphery of the meridian-wheel *e*, mounted next to the right, 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 *f*, having twelve teeth, and next a disk *g*, of like diameter, having six peripheral notches. The hour-wheel F 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 *h*, having twelve teeth, and a disk *i*, of same diameter, having a single peripheral notch. Lastly, the minute-wheel G, between the hour-wheel F and year-wheel H, is formed in two divisions *m n*, revolving independently closely side by side, like the date-wheel D. The first division *m* on the right carries upon its periphery in ten equal spaces the nine digits and a cipher, and the second division *n* 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 m carries upon its hub, to revolve with it on the right, first, a disk k , having a single peripheral notch, and, second, a ratchet-wheel l , of the same diameter, having ten teeth, while the second or tens division n carries upon its hub, to revolve with it on the left, first a ratchet-wheel p , having twelve teeth, and next a disk r , of the same diameter, having two peripheral notches.

The disks and ratchets carried by the indicating or calendar wheels all correspond in diameter.

The ratchets of the wheels E, F, and G are severally engaged each by one arm of a bifurcated pawl K, 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 $L L'$ are in constant engagement, the one with the ratchet l of the first or units division m of the minute-wheel G and the other L' with the disk g of the meridian-wheel, said second pawl being made to overlap, also, and engage, as permitted, the ratchet d of the first division of the date-wheel. These single pawls, together with the several bifurcated pawls K K, are all pivoted upon a transverse rod M, extending parallel with the axis of the indicating-wheels at the rear thereof. The ends of this rod M are pivoted between ears or lugs N N, projecting from a parallel bar O, which is carried upon the lower ends of two vertical levers P P, pivoted at t to brackets Q Q, projecting from the frame-work R, in which the time mechanism is mounted. Hence the oscillation of these levers, by causing the rod M to swing back and forth to and from the indicating-wheels, will cause the pawls to reciprocate in manner to actuate said wheels. The rod M and the pawls pivoted thereto are thus oscillated once each minute by means of a crown ratchet-wheel S, having sixty teeth, against which a counterpart tooth on the upper arm of each lever P is held by means of a suitable spring T. This crown ratchet-wheel S revolves once in every hour, being fixed upon the shaft carrying the hour-wheel in a clock-movement of any approved construction, having a spring of special strength adapted to actuate the several movements, as above described.

In the operation of the device the revolution of the contrate-wheel S in the clock-movement will produce each minute a reciprocating movement of the pawls L and K K, actuating the time-indicating calendar-wheels. The pawl L, being in constant engagement with ratchet l of the units-division m of the minute-wheel G, will cause it to move one step each minute and at the tenth minute the single notch in the periphery of the disk k , revolving with said ratchet, will permit the bifurcated pawl K of the second or tens division n of the minute-wheel G to drop into

engagement with its ratchet, whereby it will be moved one step at the next movement of the pawls, so as to bring the appropriate tens figure for the second place in the minutes into sight. In like manner, when the tens minute-wheel n has made a revolution, the notch on the periphery of the disk r , revolving therewith, will be brought into position to allow the bifurcated pawl for the hour-wheel F to engage the ratchet on said wheel and move it one step, and thereby indicate the change in the hour, and by similar means, as described, the meridian-wheel E will be moved one step each twelve hours and the date-wheel D once every twenty-four hours.

To avoid complication in the mechanism, the date-wheel may be adjusted by hand on the first day of each month.

As a modification of our calendar, an endless band W, of sufficient length to admit of bearing clearly upon its surface the sixty numbers indicating the minutes, may be carried over a wheel m' (see Fig. 4) to be actuated by means of the reciprocating movement of the pawl L, engaging the ratchet-wheel l , secured laterally to said wheel m' , the upper end of the band being carried over a suitable idle-roller m^2 , mounted above it. In such case similar bands W' (see Fig. 5) are provided for the hours, the meridian-signs, and the days of the month, each being actuated at the appropriate interval by means of an inclined-faced lug u , (see Figs. 4 and 5,) adapted to engage a counterpart inclined-faced lug u' upon the proximate face of a pendulous pawl-lever U, carrying a pawl v , (see dotted lines, Fig. 4,) engaging a ratchet l' on the proximate band-wheel m^3 , so that the ratchet shall be pushed forward to move the wheel as the two lugs are made to slide one over the other, as is illustrated in Fig. 4, in which said lugs are shown at the moment they are about to separate, the pawl v having been pushed forward to the extreme length of its stroke. The pawl is retracted automatically by the stress of a spring S', attached to the pawl-lever U.

We claim as our invention—

The combination, in a calendar-clock, of a time-train, a contrate ratchet-wheel upon its hour-spindle, a pivoted lever having a beveled tooth on one arm engaging the inclined teeth of the ratchet, a spring enforcing said engagement, a pawl pivotally connected to the opposite end of said lever to reciprocate with it, and a date and time indicating device actuated by said reciprocating pawl, substantially in the manner and for the purpose herein set forth.

In testimony whereof we have hereto signed our names in the presence of two witnesses.

WARREN B. MARTINDALE.
ERNST R. MALMBORG.

Witnesses:

C. C. LOGAN,
B. F. GRAY, Jr.