(Model.) 2 Sheets—Sheet 1.

J. K. SEEM.

CLOCK CALENDAR.

No. 250,682. Patented Dec. 13, 1881.

Fig.1

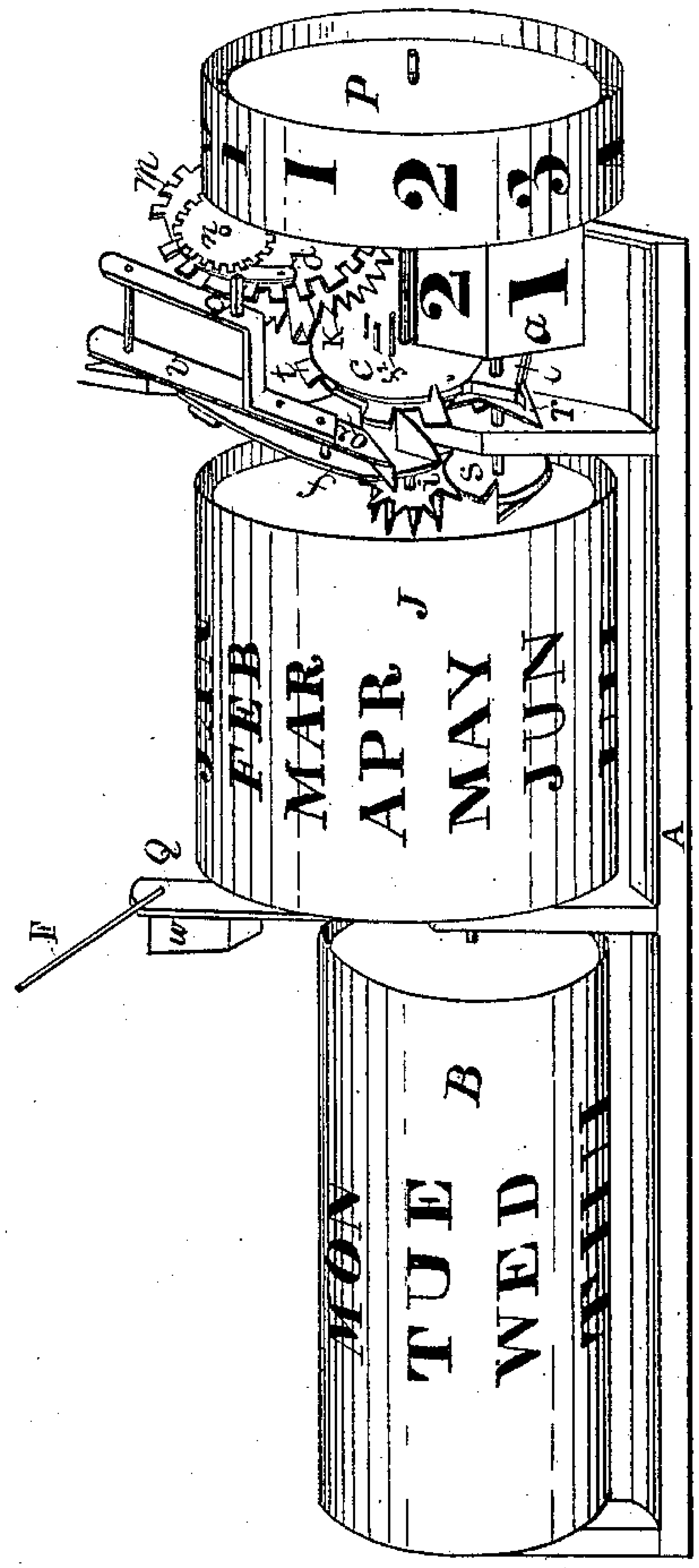
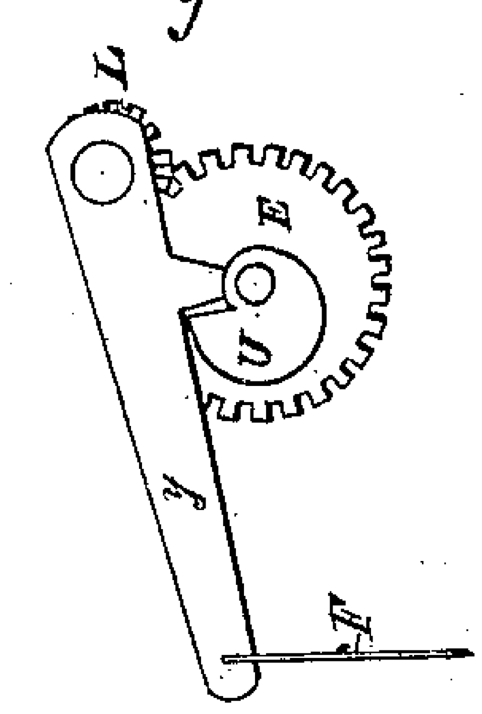


Fig.2.



WITNESSES.

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Wm. J. Price,

INVENTOR.

J. K. Seem

N. PETERS. Photo-Lithographer, Washington, D. C.

(Model.) 2 Sheets—Sheet 2

J. K. SEEM.

CLOCK CALENDAR.

No. 250,682. Patented Dec. 13, 1881.

Fig. 3.

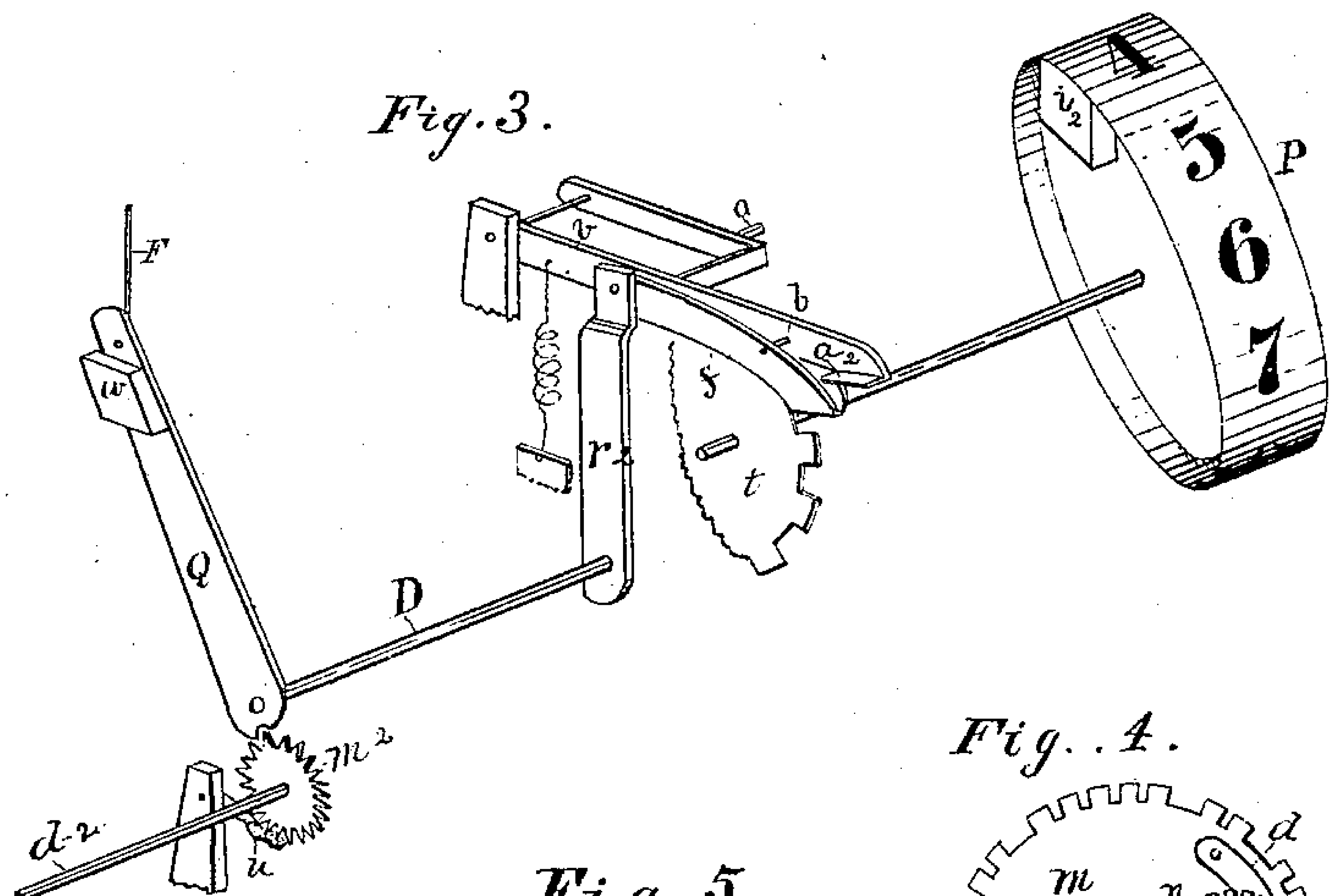


Fig. 4.

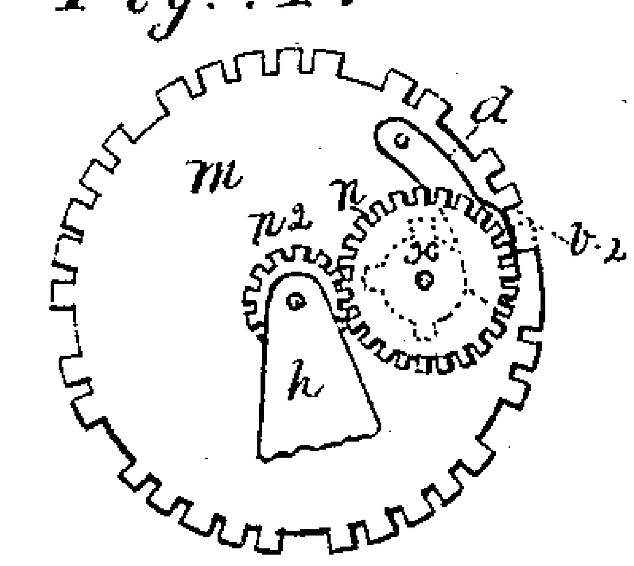


Fig. 5.

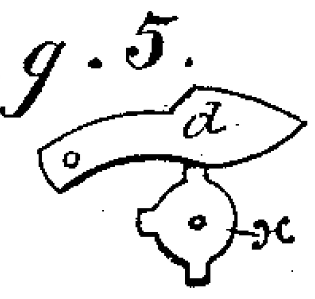


Fig. 6.

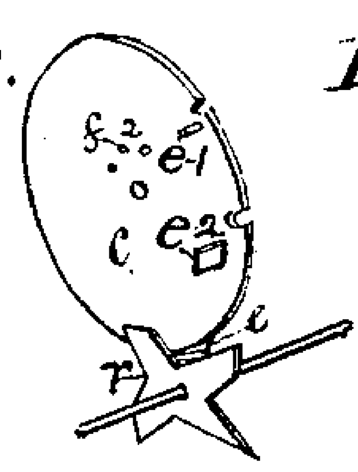
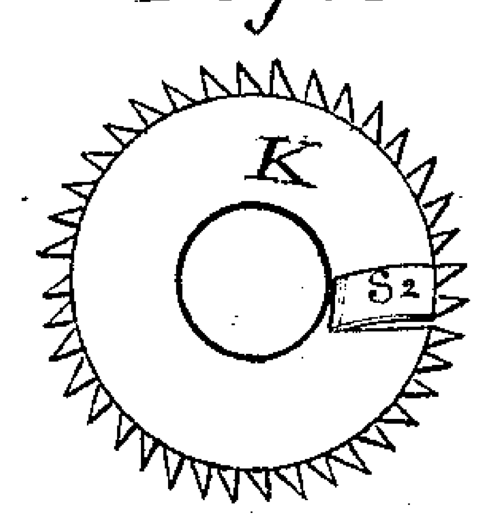


Fig. 7

Fig. 8



WITNESSES.

Thos. J. Price

Wm. J. Price

INVENTOR.

J. K. Seem

UNITED STATES PATENT OFFICE.

JOSIAH K. SEEM, OF MACOMB, ILLINOIS.

CLOCK-CALENDAR.

SPECIFICATION forming part of Letters Patent No. 250,682, dated December 13, 1881.

Application filed February 15, 1881. (Model.)

To all whom it may concern:

Be it known that I, JOSIAH K. SEEM, of Macomb, in the county of McDonough and State of Illinois, have invented certain useful Improvements in Clock-Calendars, of which the following is a specification.

The nature and the object of this invention is to simplify and construct a perpetual calendar which can be attached to all descriptions of clocks, either old or new; and its novelty consists in certain combinations of its mechanisms, which are so fully explained in the following description, and so specifically designated in the claims, as to require no detail or preliminary statement.

Figure 1 is a perspective view of the calendar, the case being removed to show its mechanism. Figs. 2, 3, 4, 5, 6, 7, and 8 are detached parts of the mechanism, which will be fully described and their operation pointed out in the following description.

Letters referring to like parts are the same in each figure.

The mechanism of the calendar is inclosed in a suitable clock, shelf, or bracket with three slots or windows, behind which are the several wheels for indicating. The names of the week days are printed upon the rim of the wheel B, those of the months upon the rim of the wheel J, and for the numerical designation of the days of the month a unit-wheel, P, and a decimal-wheel, *a*, are employed, the former being divided into four equal spaces upon its surface, one of which is left blank, while the others contain, respectively, the numerals 1, 2, 3.

The surface of the unit-wheel is divided into eleven equal spaces, designated by the numerals 1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, the two 1's being used to enable the unit-wheel to register the 1st of the month after having, in connection with the decimal-wheel, indicated the 31st.

The calendar is set in motion by means of the rod F, which is attached at the lower end to the lever Q. The upper end is attached to the lever *y*, which is pivoted to the pinion-wheel L, which is rigidly attached to the hour-wheel of the clock (not shown) and gears into the wheel E, which is rigidly attached to the eccentric U. This eccentric, by means of the wheels L and E, is turned once around in twenty-four hours, raising up the lever *y* and letting it drop at precisely midnight. This raising and dropping movement operates all the mechanism of the calendar in the following manner: The rod F is attached at the lower end to the lever Q, which has a weight, *w*, attached to it for the purpose of causing it to drop quickly. The inner end of this lever is rigidly attached to the shaft D, and has a projecting tooth, which catches into the teeth of the wheel m^2. Every time the lever drops this wheel is turned one-seventh of its circumference, and is kept in its position by means of the spring *u*, which is bent so as to fit in between the teeth to form a lock and keep the wheel from turning except when the lever Q acts upon it.

The shaft d^2, to which the wheel m^2 is attached, has also attached to it the day-wheel B; consequently when the wheel m^2 is turned one-seventh of its circumference it revolves the day-wheel the same distance, which brings another day to view. At the opposite end of the shaft D the arm r^2 is rigidly attached, and at the upper end of this arm the pawl *f* is loosely pivoted. Whenever the lever *y* is raised up by the mechanism heretofore described, the pawl *f* runs forward, the stud *b* strikes the incline plane a^2 on the outward end of a projecting bar of the frame *v*, and raises the pawl high enough to pass over the next tooth in the wheel *t*, and when the stud *b* passes out to the end of the inclined plane a^2 the pawl *f* drops down a space lower on the wheel *t* and catches the next tooth. This movement takes place just before the lever *y* drops, and when said lever drops the wheel *t*, by means of the pawl *f*, is moved one-eleventh of its circumference. The disk *c* and unit-wheel P, being attached to the same shaft, are likewise moved the same distance; consequently the unit-wheel P registers another numeral. The disk *c* has three projecting pins, f^2, one being one-third longer than the others, and at every revolution of said disk the long pin catches into the teeth of the wheel K and moves it forward one thirty-sixth of its circumference, except in the month of February, in which month, the two teeth s^2 being bent out of the line traveled by the others, the two short pins f^2 catch into those teeth and the wheel is advanced the distance of three teeth. This is the chief movement that gives February twenty-eight and twenty-nine days.

The index-wheel *m* is attached to the same shaft with the wheel K, and consequently has the same movement on its circumference. This wheel makes one revolution only in twelve months. Attached to this wheel is a leap-year wheel, *n*, which makes only one revolution every four years. It receives its motion by passing around the pinion n^2, which is rigidly attached to the standard *h*, which is a sufficient distance from the index-wheel to allow the leap-year wheel *n* to pass between the standard *h* and said index-wheel as it travels around its circle.

Attached to the leap-year wheel, on the inner side, is a pinion, *x*, with three cogs placed at quarter distances of the circumference, leaving one-quarter blank. This arrangement is for the purpose of adding one day to the month of February every four years, or leap-year, to give it twenty-nine days, which is accomplished in the following manner: The frame *v* has a projecting pin, *o*, which acts as a lock on the index-wheel *m*. (See Fig. 1.) This pin has to be raised out of the notch in the index-wheel before it can turn, which is accomplished by means of the pin *b* in the pawl *f*. This pin, in its rearward movement, passes under the incline plane a^2 on the projecting bar of the frame *v*, (see Fig. 3,) which raises up the said frame sufficiently to allow the index-wheel to turn until another space is ready for the pin *o* to drop into. When the index-wheel has commenced the month of February in leap-year the pinion *x* has its blank side under the pawl *d*, (shown in dotted lines in Fig. 4;) consequently the space v^2 in the index-wheel is not so obstructed as to prevent the pin *o* from dropping in said space and remaining there until February receives twenty-nine days. In other years, when the month of February approaches on the index-wheel, the pinion *x* and pawl *d* are in position, as shown in Fig. 5, the pawl being raised up, obstructing half of the space v^2; consequently the month of February is cut short one day, making only twenty-eight, which will be further explained hereinafter. The decimal-wheel *a*, toothed wheel *e*, and disk *s* are all attached to the same shaft and receive their motion from the disk *c*. In the periphery of this disk *c* are two nicks, and in the rear of each of those nicks are placed studs e' e^2. One of those studs is round and the other is flat, with about one-eighth of an inch surface. (See Fig. 6.) This disk makes three revolutions each month, and in so doing it gives four revolutions to the decimal-wheel *a*, which is in the following manner: The short teeth on the wheel *e* act as a lock to keep the decimal-wheel from turning, except when the stud e' comes in contact with one of the long teeth *r* on the wheel *e*, and at that instant the nick in the disk *c* receives the short tooth and allows the decimal-wheel to revolve one-quarter of its circumference. Three of the long teeth on the wheel *e* are cut off, so they will not come in contact with the broad stud e^2; but the long tooth *r* in Fig. 7 comes in contact with this stud in making the fourth or full revolution of the decimal-wheel with only three revolutions of the disk *c*. (See Fig. 6.) The disk *s*, being attached to the shaft of the decimal-wheel, consequently makes one revolution each month, and it is provided with a projecting tooth on its outer surface, and at every revolution the projecting tooth catches on the bent teeth on the wheel *i*, which turns the month-wheel J, which is loosely fitted to the shaft D, one-twelfth of its circumference, and brings another month to view.

The wheel *i* (see Fig. 1) has twenty-four teeth. Every alternate tooth is bent out at right angles. The straight teeth act as a lock for the month-wheel J, by pressing against the disk *s*, and only allowing the month-wheel to turn when the projecting tooth on the disk *s* catches on one of the bent teeth on the wheel *i*, the notch in the disk *s* being in proper position to allow the straight tooth to enter and turn the month-wheel at this time only.

The operation of the unit and decimal wheels is as follows: At the first of each month the decimal-wheel *a* presents its blank side; the unit-wheel P then registers the dates from 1st to 9th; then the decimal-wheel, by means of the disk *c*, heretofore explained, receives one-quarter turn, bringing the numeral 1 to view. At the same instant the unit-wheel brings to view 0, and the two register 10th. The decimal-wheel is not acted upon again until the unit-wheel has registered 19th; then the decimal-wheel is again turned, as before, and brings to view the numeral 2. The unit-wheel, as before, shows 0, registering 20th, and the same movements are made until 30th is registered in all the months except February. On the index-wheel *m* (see Fig. 4) there is provision made for all the months that have thirty-one days, by leaving at such months' index a double length of space between the cogs, except for February. These spaces allow the index-wheel to move sufficiently to register thirty-one days without coming in contact with the pin *o*, that keeps it locked. In those months that have only thirty days, indicated on the index-wheel *m* by five cogs, when the thirty days are registered, the lock-pin *o* is just in front of the third cog, and it is arranged so that the next movement is not sufficient to allow the pin *o* to drop in the next space; consequently it strikes the top of the third cog, and by so doing prevents the foot o^2 on the frame *v* from locking the wheel *t*, which leaves the unit-wheel free to turn, and by means of the weight *i* the wheel P is allowed to turn to second numeral 1, and registers the 1st of next month, and at the same instant the long pin f^2 catches into the teeth of the wheel K, and turns it sufficiently to allow the pin *o* to drop into the next space on the index-wheel and lock it.

As the movement that gives February twenty-eight and twenty-nine days is already partially explained, I will refer more particularly to the movements not explained—that is, when the unit and decimal wheels have registered twenty-eight days, as heretofore explained, the lock-pin o is in the space v^2, and if it is leap-year the pawl d does not obstruct the space v. The next movement the unit-wheels will register 29, and at next movement the lock-pin o will fall on top of the broad-faced cog, which leaves the wheel t unlocked, which allows the unit-wheel, by means of the weight i, to turn three spaces, and at the same instant the three pins f^2 on the disk c catch into the teeth of the wheel K and turn it three times—its usual movement. The unit and decimal wheels then register the 1st of March. The movements that only register twenty-eight days in February are just the same, except that the pawl d is raised, as shown in Fig. 5, which obstructs half the space v^2; consequently one day is cut off the index-wheel, and the unit-wheel then is allowed by its weight i to turn four spaces and register the 1st of March. The movements of the day-wheel B, month-wheel J, and unit-wheel P all act simultaneously.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement and combination of the unit-wheel P, having weight i^2, decimal-wheel a, wheel e, having long teeth r, disk s, and wheel i, all constructed and operated substantially as shown and described.

2. The arrangement and combination of the frame v, the pawl f, having pin b, arm r^2, shaft D, weighted lever Q, all constructed and operated substantially as shown and described.

3. The disk c, having three pins, f^2, studs e' and e^2, and corresponding notches in its circumference, in combination with the wheel e, disk s, and decimal-wheel a, substantially as shown and described.

4. The combination and arrangement of the frame v, having incline plane a^2, and pin o, pin b on pawl f, wheel t, disk c, having three projecting pins, f^2, studs e' and e^2, and corresponding notches in its circumference-wheel K, index-wheel m, having leap-year wheel n, pawl d, and three-cog wheel x attached, all operating substantially as shown and described.

5. The combination and arrangement of the lever Q, having weight w, and projecting tooth on its inner end, wheel m^2, lock-spring u, day-wheel B, shaft D, arm r^2, and pawl f, having pin b, all operating jointly together as and for the purpose set forth.

J. K. SEEM.

Witnesses:
WM. T. PRICE,
S. J. PRICE.