UNITED STATES PATENT OFFICE.

FREDERICK CHESEBROUGH, OF ITHACA, NEW YORK, ASSIGNOR TO THE ITHACA CALENDAR CLOCK COMPANY, OF SAME PLACE.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 283,568, dated August 21, 1883.

Application filed February 15, 1882. (Model.)

To all whom it may concern:

Be it known that I, FREDERICK CHESEBROUGH, a citizen of the United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Calendar-Clocks, of which the following is a specification.

My invention relates to that class of calendar movements which run in any position, such movements being commonly designated by the term "marine movements;" and the objects of my improvements are, first, the provision of mechanism whereby the pointer on the central or month shaft can be turned forward indefinitely without disconnecting the calendar-movement from the time-movement, and without affecting the continuity of the action of the other parts of the calendar; second, the simplification of the mechanism whereby the changes incident to leap-year and the months which have less than thirty-one days are brought about. These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the calendar-movement with the front plate of the frame removed. Fig. 2 is a side elevation of the operating mechanism, the day-cylinder being removed. Fig. 3 is a vertical section of the central or month shaft. Fig. 4 is a longitudinal section of the twenty-four-hour shaft. Figs. 5 and 6 are detail views of specific parts of the movement, and Fig. 7 is a view in perspective of a cam on the rear end of the central shaft.

Similar letters refer to similar parts throughout the several views.

The back plate, A, its arms B B, connecting-rods *c c c c*, and front plate, C, constitute the frame-work in which the operating parts of the movement are mounted. The plates A and C are provided with bearings, in which is mounted the twenty-four-hour shaft D. The rear end of this shaft projects through the plate A, and to the projection is secured a beveled-gear wheel, which meshes with another beveled-gear wheel of the same size and character, which is attached to a rod leading to the time-movement of the clock, by which movement, through the medium of appropriate gearing, the rod is revolved once in twenty-four hours, thereby causing a like revolution of the shaft D.

Mounted loosely on the shaft D is a sleeve, *d*, which carries a staple or loop, *e*. This staple *e* projects diagonally downward from the sleeve *d* and rides in a slot formed in a bracket, *f*, which is attached to the plate A. (See Fig. 7.) By this arrangement the sleeve *d* is kept from turning and the staple *e* is held in the desired position. A bell-crank lever, E, is mounted on a spur, *g*, projecting from the bracket *f*, and one arm of this lever is arranged to bear against the peripheral surface of a cam, F, which is loosely mounted near the rear end of the shaft G. The other arm of the lever E enters the staple *e*, and, as the lever is rocked by the rotation of the cam F, the sleeve *d* will be moved to and fro on the shaft D. A three-toothed pinion, H, is mounted on the shaft D by means of a groove and feather, so that it will revolve with the shaft, but will be free to be moved forward and back as the position of the sleeve *d* is changed. The hub of the pinion H is elongated, and the teeth project therefrom in radial succession; but each tooth occupies a distinct plane at right angles to the shaft D. This pinion is held against the sleeve *d* by means of a spiral spring, *h*, as shown in Fig. 4, and the relative position of the pinion upon the shaft D is subject to certain desired changes brought about by the action of the cam F upon the lever E, as will hereinafter be more particularly described.

A single-toothed spur-wheel, I, is rigidly attached at or near the center of the shaft D, and at each revolution of the shaft its tooth engages with the thirty-one-day wheel K on the central shaft, G, and causes said thirty-one-day wheel to move forward the one thirty-first part of an entire revolution, and as the wheel K is rigidly attached to the central shaft, G, the shaft makes a like part of a revolution, and carries forward the pointer L, so that the same indicates the next succeeding day upon the dial. The changes of the cylinders which carry the names of the days of the week and of the several months are brought about by the use of mechanism which is fully described in Letters Patent of the United States No. 128,854, granted Clinton and Mood on the 9th day of

(Model.)

F. CHESEBROUGH.

CALENDAR CLOCK.

No. 283,568. Patented Aug. 21, 1883.

Fig 1.

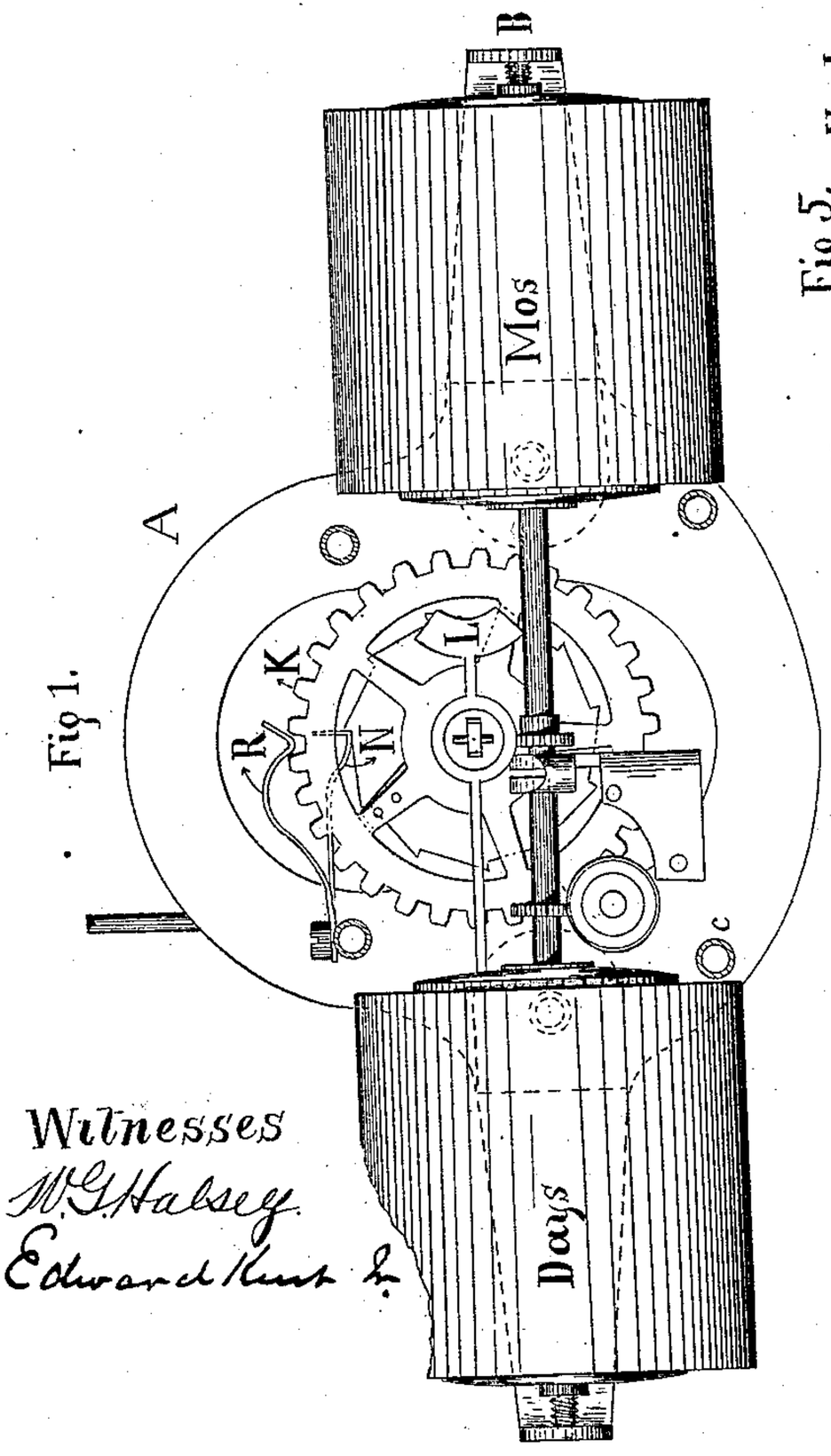


Fig 2.

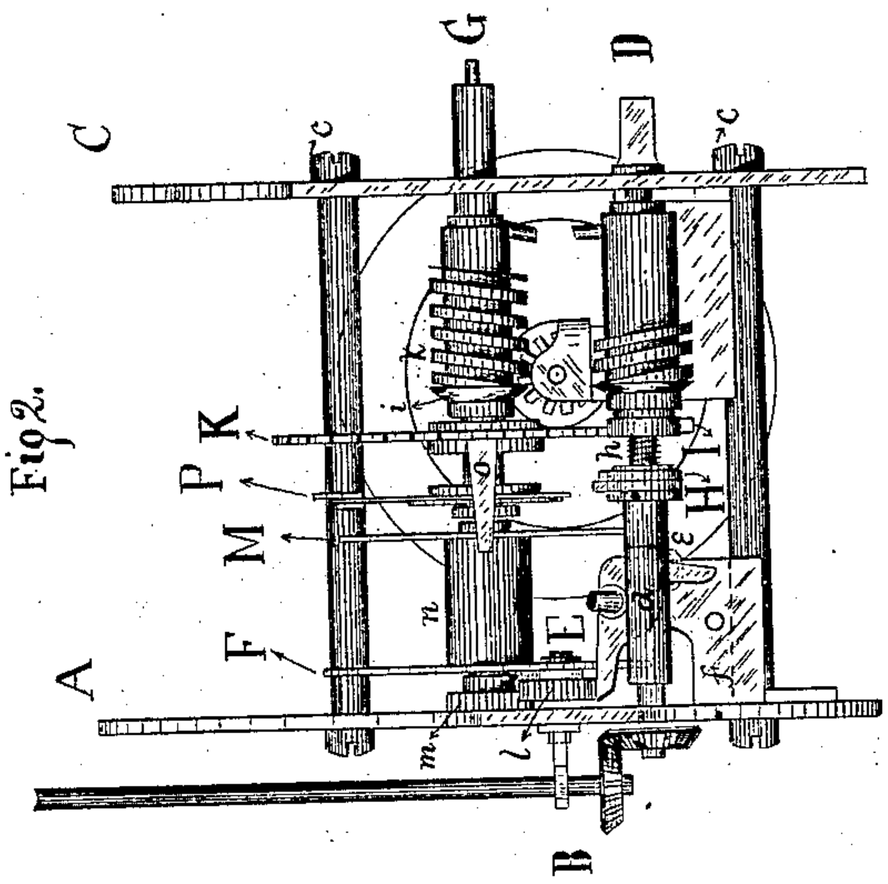


Fig 3.

Fig 4.

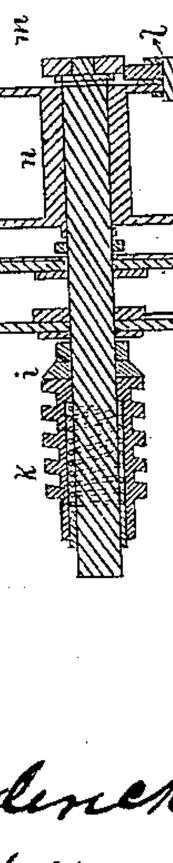


Fig 5.

Fig 6.

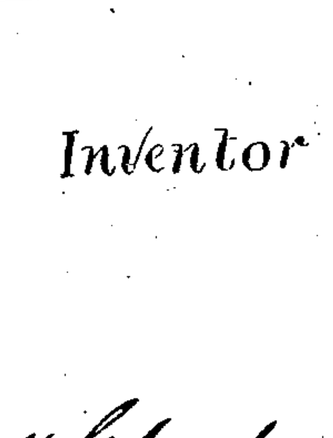
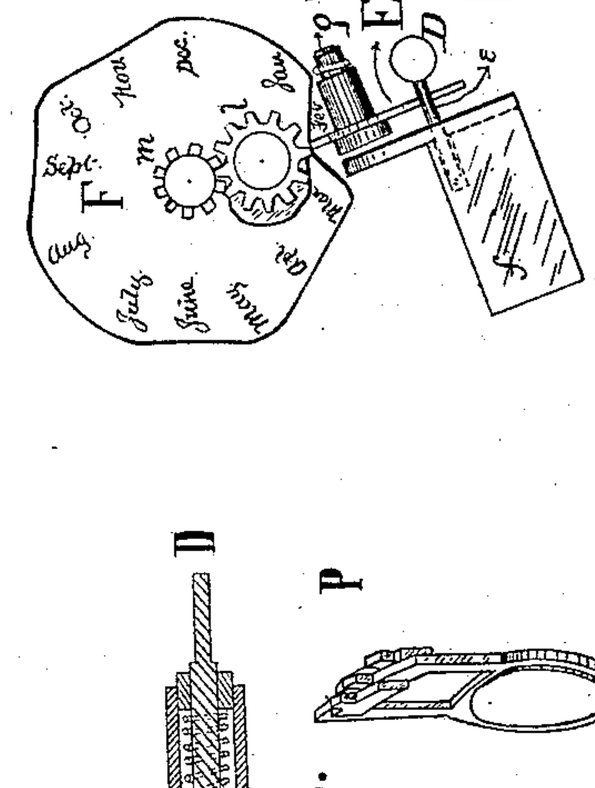


Fig 7.



Witnesses
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year this cam is moved upward to a line concentric to and equally distant from the line of the twenty-eight and thirty day depressions, and in that position supports the lever-arm. Such being the operation of the cam F, it will readily be seen that through its action in the bell-crank lever E the three-toothed pinion H is forced to occupy one of four positions on the shaft D—viz., one position for months having thirty-one days, one for thirty-day months, one for twenty-nine-day months, and one for twenty-eight-day months. When in position for thirty-one-day months, all of the pinion-teeth clear the teeth on the three-toothed sectional gear-arm attached to the central shaft, G; but when the position is that occupied for thirty-day months, the revolution of the shaft D causes one of said pinion-teeth to engage with one of the teeth on the sectional gear-arm, and the shaft G is turned forward the one thirty-first part of a revolution. This engagement of the pinion may be before or after the single spur-wheel engages with the thirty-one-day wheel K; but I prefer that it should be before. In twenty-eight-day months all of the pinion-teeth engage with the teeth on the sectional gear, and the shaft G is turned forward three points. In twenty-nine day months two of the pinion-teeth engage with two of the sectional gear-teeth and the shaft G is turned forward two points.

The thirty-one-day wheel K is held in position by a spring-arm, R, attached to one of the frame-rods *c*, which arm is so curved at its outer end as to slightly enter the depression between the two uppermost teeth of the wheel. By this arrangement the wheel K is steadied; but when it is necessary to set the calendar the wheel can be turned in either direction. Any number of forward turns can be made, and it will be seen that each of such forward turns produces a change in the month-cylinder without affecting the day-cylinder, and that, as at each revolution the arm *o* changes the position of the wheel M, a corresponding change is made in the position of the cam F. The range of motion backward is limited by the spring-arm N.

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

1. The combination of the central shaft, G, bearing the day-pointer, and adapted to actuate the month-cylinder, as described, the cam-wheel F, loosely mounted on said shaft, and the three-toothed sectional gear-arm fixed to said shaft, with the bell-crank lever E, actuated by the cam-wheel F, the twenty-four-hour shaft G, and the sliding sleeve *d*, and shifting three-toothed pinion H, mounted on said last-mentioned shaft, substantially as described.

2. The combination of the central shaft, G, the cam-wheel F, loosely mounted thereon, and bearing the cam-pinion *l*, operated as described, the thirty-one-day wheel K, fixed to said shaft G, with the bell-crank lever E, the twenty-four-hour shaft D, the sliding sleeve *d*, the shifting three-toothed pinion H, and the single-toothed fixed spur-wheel I, all said parts being arranged and adapted to operate substantially as described.

3. The combination of the central shaft, G, the thirty-one-day wheel K and its spring-arm *o*, the three-toothed sectional gear-arm P, the sleeve *n*, bearing the ratchet-wheel M and cam-wheel F, with the twenty-four-hour shaft and its shifting three-toothed gear, substantially as described, for the purpose specified.

4. The combination of the central shaft, G, the thirty-one-day wheel K and its spring-arm *o*, the three-toothed segmental gear-arm, the loose sleeve *n*, bearing the ratchet-wheel M and cam-wheel F, the spring-arm N, engaging with wheel M, the twenty-four-hour shaft, and its three-toothed pinion, substantially as described.

5. The combination of the central shaft, G, the thirty-one-day wheel K and its spring-arm *o*, the three-toothed segmental gear-arm, the loose sleeve *n*, bearing the ratchet-wheel M and cam-wheel F, the twenty-four-hour shaft, the single-toothed pinion fixed thereto, and the sliding sleeve and shifting three-toothed pinion thereon, actuated by the cam-wheel and bell-crank lever, substantially as described, for the purpose specified.

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