L. PHILLIPS.

CLOCKS.

No. 183,019. Patented Oct. 10, 1876.

Fig. 1.

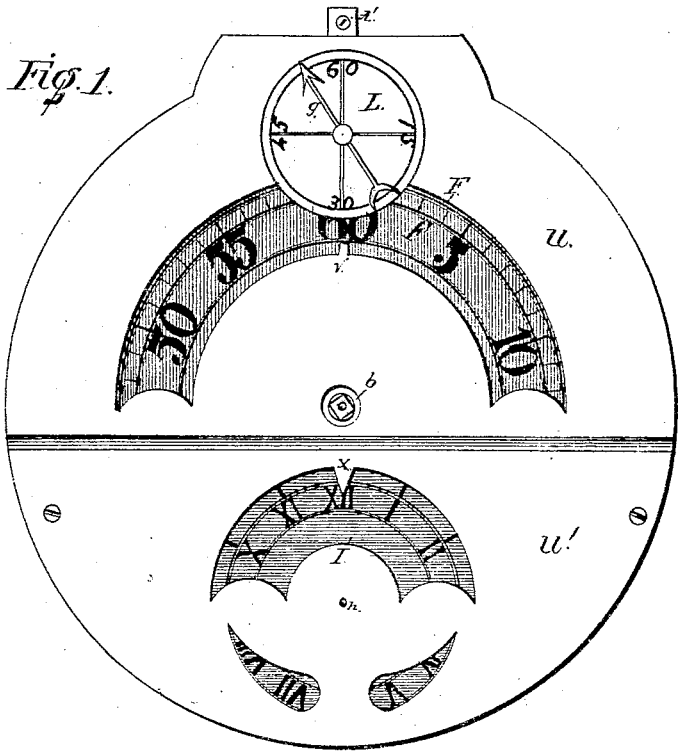


Fig. 2.

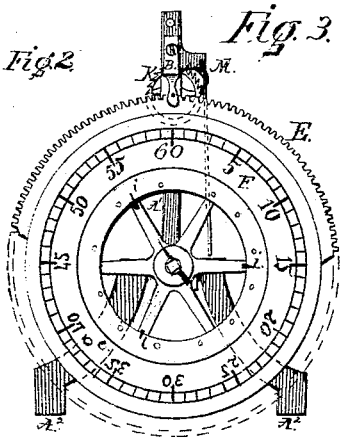


Fig. 3.

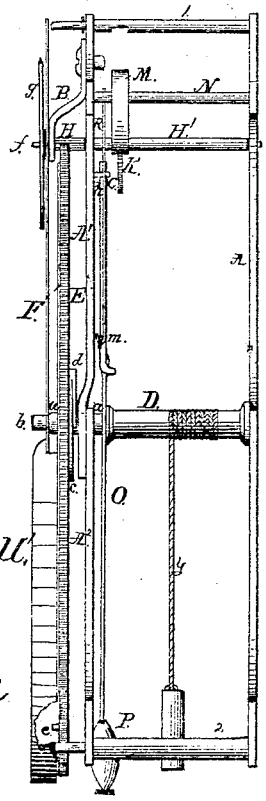
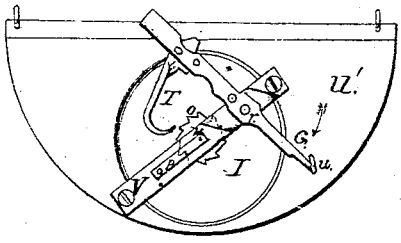


Fig. 4.



Witnesses;

Walter S. Fowler.

William McFarland

Inventor;

Leopold Phillips

by [illegible]

UNITED STATES PATENT OFFICE.

LEOPOLD PHILLIPS, OF TIPTON, MISSOURI.

IMPROVEMENT IN CLOCKS.

Specification forming part of Letters Patent No. **183,019**, dated October 10, 1876; application filed June 30, 1876.

To all whom it may concern:

Be it known that I, LEOPOLD PHILLIPS, of town of Tipton, in the county of Moniteau, State of Missouri, have invented certain new and useful Improvements in Watches and Clocks; and do hereby declare that the following is a full, clear, and exact description thereof, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention is intended to simplify the construction of time-keepers, and at the same time preserve their accuracy, and to produce something less liable to get out of repair, all of which will be more fully pointed out hereafter.

Figure 1 is a front or face elevation of my clock, showing the hour, minute, and seconds dials and indicators. Fig. 2 is a perpendicular cross-section of my clock, taken after removing the dial-plates, showing the main or driving wheel escapement, detent, and frame. Fig. 3 is a side view of the same, showing the works and their arrangement. Fig. 4 is an elevation of the back side of the hour-dial, showing the ratchet-wheel and lever.

The same letters of reference indicate corresponding parts.

A A^1 A^2 and 1 and 2 indicate parts of the clock-frame; it can be made in any form suitable to the purpose, and of metal or other material that will give good journal-bearings for the works, (metal is preferable.) B is a clasping-bracket screwed onto frame A^1, and is used for furnishing one of the bearings for the escapement-wheel shaft. C is a slotted pin fixed to the inside of frame A^1, in which the spring end *h* of the pendulum-rod O is inserted and held, and from which the pendulum-ball P is suspended. D is a spring-drum, or the spool on which the weight-cord *y* is wound, fixed on shaft *a*, and operated between the frame A A^1. One end of shaft *a* takes its bearings in and passes through frame-piece A^1, forming a shaft, on which ratchet-wheel *c* is fixed and main wheel *e* is adjusted, and then terminates in a squared key-staff, *b*, by which the clock is wound. E is the main or motive wheel in the time-keeper, which should have three hundred (300) teeth on its periphery, and is so adjusted on the spool-shaft *a* that the shaft can be turned one way (when winding) without disturbing it; but by a spring-controlled pawl, *d*, pivoted to the inside of the wheel E, falling into the teeth of ratchet-wheel *c*, it is revolved with the drum-shaft, carrying with it the entire clock-train. F is a minute-dial, so keyed on the face of wheel E that it rotates with it, and by passing a stationary finger indicates the minutes in computing time. This dial is so secured in its place by keys *i* that it may be moved only by hand in setting the clock. The minutes are shown thereon by figures and lines. Fixed on this minute-dial between the figures 35 and 40 is a catch-pin, *e*, that, with each revolution of wheel E, comes in contact with and moves lever G, that revolves the hour-dial plate I and marks the hour. H is a five-leaved pinion on and forming part of the escapement-wheel shaft H′, that meshes into the teeth on wheel E, revolving the escapement-wheel K and the seconds-indicator *g*, adjusted on the end *f* of shaft H′, after it has passed through the seconds-dial L sufficiently far to receive and hold it. To secure and make it run more evenly, pinion H is placed between the frame A^1 and bracket B, having a bearing in both. K is an escapement-wheel with forty-two (42) teeth on its periphery, that revolves with shaft H′ between the frame-pieces A A^1, and receives its motion and power, through pinion H and driving-wheel E, directly from the weight or spring-power applied to drum D, and is governed and checked by a reciprocating detent, M, of any of the forms, &c., in use or known, fixed on a rock-shaft, N. From rock-shaft N is suspended a lever, R, connected by an adjustable catch, *m*, to pendulum-rod O, that regulates the motion. I is an hour-dial plate, with the hours in figures arranged on one side, and a ratchet-wheel, *o*, fixed to the other; it is embedded and revolves on pin *n* in the half-section of the clock-face U′, and is held in check by a pressure-spring, *p*, acting on pin *n*. G is a reciprocating lever, that works on a pivot, *r*, on bar V, with a hooked catch, *u*, at one end, and a clasping-pawl, T, pivoted near the other. This lever is so balanced that when free the end to

which the pawl is attached, being heavier, falls by its own weight into place, throwing the hooked edge of pawl T under a tooth of ratchet-wheel *o*, so that when the pin *e* on the minute-dial comes in contact with the catch *u* on lever G, the lever is thrown forward in the direction of the arrow, thereby throwing dial-plate I forward one point and marking. The pin *e* passing the hook *u* releases the lever G, which again falls into place.

The parts U U′ form the full face of the time-piece. The part U is slotted to uncover a portion of the minute-dial plate F, and is provided with a minute-indicator, *v*, and a seconds-dial plate, L. The part U′ is slotted to expose a portion of the hour-dial plate I, and is provided with an hour-indicator, *x*. To this part the lever G, that moves the hour-dial, is attached. P is a pendulum-ball, so adjustable by screws or other contrivances on the pendulum-rod O that it may be raised or lowered, as is desired, to regulate the stroke and speed of the clock.

When the clock is wound up and started, by moving the pendulum, driving-wheel E moves forward, conveying motion to the minute-plate F, that commences immediately to indicate or mark the minutes, and through pinion H to the escapement-wheel K and shaft H′, that carries the seconds-indicator *g*, which begins at once to mark the seconds, while the escapement, under the vibrations of the pendulum, puts a healthy and governing check upon the other parts. As the minute-dial plate F marks the sixty (60) minutes or one revolution, pin *e* comes in contact with lever G, the hour-dial is thrown forward one point, one hour shown, and so on.

It is understood that I do not confine myself to the arrangement of the parts as here given, as other arrangements or groupings may give the same result; hence I adopt any grouping of parts that is an equivalent of the foregoing.

The advantages of my invention are obvious. It is simple, can be made more substantial, hence is less liable or likely to get out of repair or be affected by the elements or by external disturbances. There being but few parts employed, there is but little friction to overcome, and it may be produced very cheap.

Having now described my invention so that those skilled in the art can manufacture it, what I believe to be novel, and ask to protect by Letters Patent, is—

1. Combination of revolving hour-dial I, stationary hour-indicator *x*, journal-pin *n*, and check pressure-spring *p*, substantially as shown, and in the manner set forth.

2. Lever G, ratchet *o*, and pawl T, in combination with revolving hour-dial plate I, substantially as shown, and for the purposes set forth.

3. In combination with motive power D, main driving-wheel E, minute-dial plate F, the catch-pin *e*, lever G, ratchet *o* and pawl T, and hour-dial plate I, substantially as shown, and for the purposes set forth.

4. In combination with adjustable pendulum-ball P, pendulum-rod O, escapement K, pinion H, seconds-hand *f*, propelling-wheel E, minute-dial plate F, the catch-pin *e*, drop-lever G, revolving hour-dial I, ratchet *o* and pawl T, and stationary hour-indicator, substantially as shown, and for the purposes set forth.

5. In combination, the revolving hour-dial I, stationary indicator *x*, revolving minute-dial F, stationary indicator *v*, with seconds-dial L, and revolving seconds-indicator *g*, substantially as shown, in the manner and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 3d day of June, 1876.

LEOPOLD PHILLIPS.

Witnesses:

A. D. FITSCHEN,

B. F. REAVIS.