(No Model.)

P. G. GIROUD.

TIME INDICATOR.

No. 410,967. Patented Sept. 10, 1889.

Fig. 2

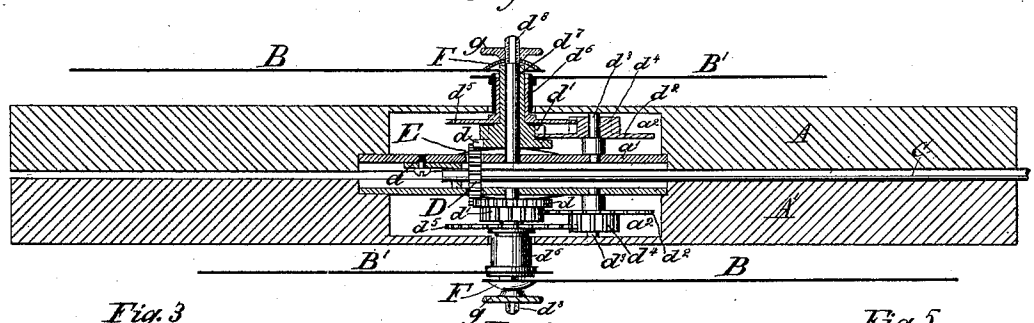


Fig. 3

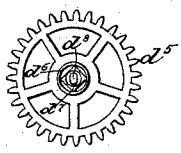


Fig. 4

Fig. 5

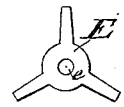
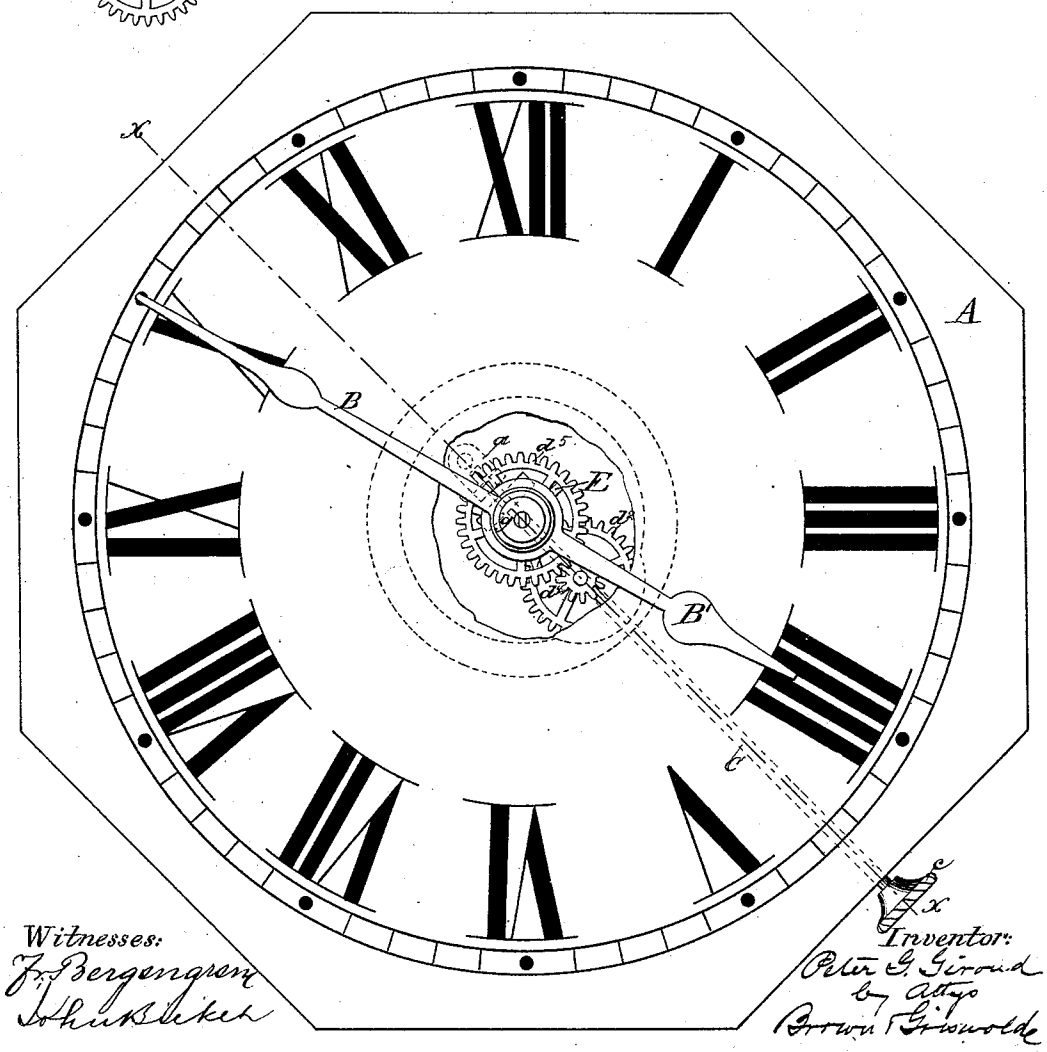


Fig. 1



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UNITED STATES PATENT OFFICE.

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TIME-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 410,967, dated September 10, 1889.

Application filed January 23, 1889. Serial No. 297,251. (No model.)

To all whom it may concern:

Be it known that I, PETER G. GIROUD, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Time-Indicators, of which the following is a specification.

My improvement relates to a class of time-indicators adapted to indicate time when manipulated by hand.

I will describe in detail a time-indicator embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a face view of a clock-dial and certain portions of mechanism for indicating time which I employ. Fig. 2 is a section thereof taken on the plane of the line *x x*, Fig. 1. Figs. 3, 4, and 5 are detail views of certain parts.

Similar letters of reference designate corresponding parts in all the figures.

A A′ designate plates, which plates may be made of wood or other suitable material. Upon them are lineated clock-dials.

B B′ designate, respectively, minute and hour hands. In the example shown in Fig. 2 the minute and hour hands B B′ move over clock-dials upon each of the plates A A′, and they are adapted to be operated in unison.

As the mechanism for operating each set of hands is like the other, I will describe but one.

C designates a shaft, which shaft extends parallel with the clock-dials, and in this instance between the plates A A′, where two are used. Where only one is used, the shaft will extend along the rear side of the plate. The shaft is journaled in suitable bearings near its outer end in the plate, and near its inner end in a plate *a*, secured to a back plate *a′* for the movement, the back plate being in turn secured to the plate. The back plate incloses a recess a^2, in which is arranged the movement. Mounted upon the shaft C, near its inner end, is a gear-wheel D, which gear-wheel gears with a layer-pinion *d*, formed upon or connected with a cannon-pinion *d′*. The cannon-pinion *d′* gears with a minute-wheel d^2, mounted upon a pin or stud d^3. Formed with or secured to the minute-wheel d^2 is an hour-pinion d^4, which pinion gears with an hour-wheel d^5, formed upon or connected with a tubular arbor d^6. The arbor d^6 surrounds the cannon-pinion sleeve d^7. The cannon-pinion is mounted upon a fixed stud d^8, which is rigidly secured upon the back plate *a′*. The hour-hand B′ is friction-tight upon the arbor d^6 upon the hour-wheel. The outer extremity of the cannon is squared to receive the minute-hand. When the shaft C is rotated, as may be done by a hand-piece *c*, motion is transmitted from the gear-wheel D to operate the minute and hour hands, the gearing being such that each time the minute-hand completes a circuit of the dial the hour-hand will move a distance between two of the hour-figures upon the dial.

I have shown a spring E more clearly in Fig. 5, and which is shown as three-armed, arranged between the back plate *a′* and the cannon-pinion, which operates to hold the latter in operative position. The stud d^8 passes through an aperture *e* in the spring E. The outer end of the stud d^8 is flattened and screw-threaded. The flattened portion receives a disk-spring F, (shown more clearly in Fig. 4,) and is provided with a suitable aperture *f* for this purpose. The disk-spring bears against the minute-hand B. Screw-threaded to the stud d^8, outside the spring F, is a nut *g*, which maintains the spring in proper position, the whole operating to properly maintain the minute-hand upon the cannon. By flattening the portion of the stud d^8 which receives the spring F the latter cannot be turned upon the stud by the movement of the minute-hand, and the nut *g* cannot therefore be unscrewed.

Where two sets of indicators are to be used, as will sometimes be found to be advantageous, the gear-wheel D operates to cause movement of the minute and hour hands upon one side in a reverse direction to those upon the other side, so that the time will be properly indicated upon both sides.

It will be seen that by my improvement very few parts are employed, and the arrangement in such that no rotation of the central arbors is required.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with the said dial,

a gear-wheel on said shaft, a cannon-pinion operated from said gear-wheel, a fixed stud upon which said cannon-pinion is loosely mounted, a minute-hand deriving motion from said cannon-pinion, and a train of gears operated from the cannon-pinion to operate an hour-hand, substantially as specified.

2. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with said dial, a gear-wheel on said shaft, a layer-wheel with which said gear-wheel engages, a cannon-pinion connected to said layer-wheel, a fixed stud upon which said layer-wheel and cannon-pinion are mounted, a minute-hand deriving motion from said cannon-pinion, an hour-hand, and a train of gears operated from the cannon-pinion to operate the hour-hand, substantially as specified.

3. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with said dial, a gear-wheel on said shaft, a cannon-pinion operated from said gear-wheel, a fixed stud upon which said cannon-pinion is mounted, a spring placed upon said stud, so as not to be capable of rotation, said spring being outside the minute-hand and bearing against the same, and a nut engaging said stud outside said spring, substantially as specified.

4. In a time-indicator, the combination, with a back plate, of a shaft extending to the exterior of the indicator, a gear-wheel mounted on said shaft, a stud rigidly secured in said back plate, a cannon-pinion loosely mounted on said stud and with which said gear-wheel engages, a minute-hand deriving motion from said cannon-pinion, an hour-hand, a train of gears operated from the cannon-pinion to operate the hour-hand, and a spring arranged intermediate of said cannon-pinion and back plate, substantially as and for the purpose specified.

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