(No Model.)

G. E. HART.

WATCH DIAL WHEEL.

No. 345,589. Patented July 13, 1886.

Fig. 1

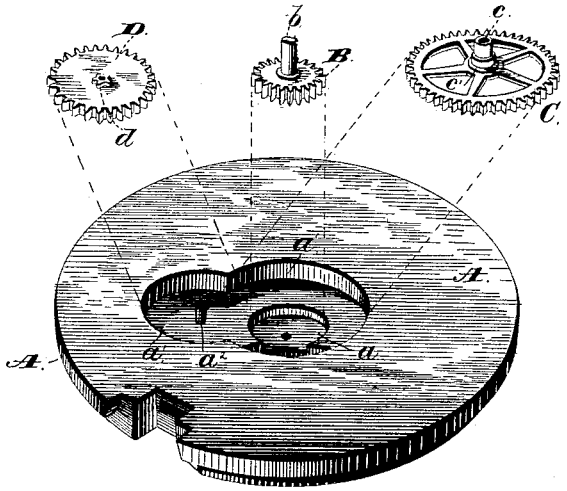


Fig. 2.

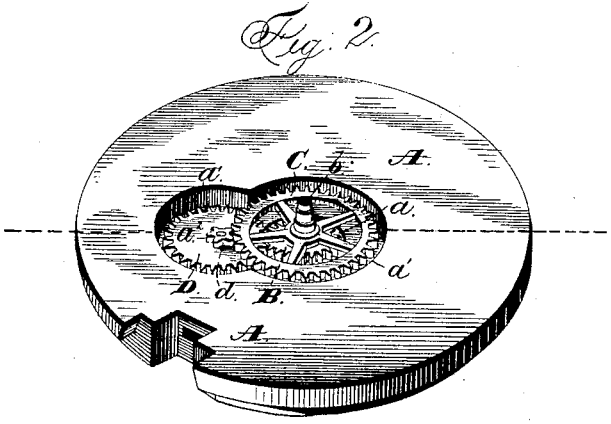
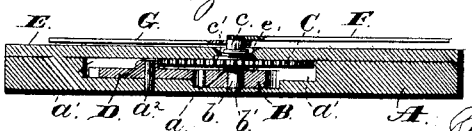


Fig 3.



Witnesses
Jas. E. Hutchinson
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Inventor
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UNITED STATES PATENT OFFICE.

GEORGE E. HART, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE WATERBURY WATCH COMPANY, OF SAME PLACE.

WATCH DIAL-WHEEL.

SPECIFICATION forming part of Letters Patent No 345,589, dated July 13, 1886.

Application filed July 8, 1885. Serial No. 171,002. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HART, of Waterbury, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Dial-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my pillar-plate and dial-wheels separated from each other. Fig. 2 is a like view of the same combined; and Fig. 3 is a central section of said plate, the dial-plate, and said dial-wheels as combined for use.

Letters of like name and kind refer to similar parts in each of the figures.

In the construction of certain kinds of watches in which the dial-wheels were not driven from a central arbor it has been customary to journal the cannon-pinion or minutes-hand pinion upon a stud that projected from the pillar-plate, and to pin or otherwise secure said pinion in longitudinal position upon said stud. Such construction is, however, open to many serious objections, which are sought to be obviated by my invention, which consists, principally, as an improvement in watches in which the dial is superimposed upon the pillar-plate, in a minutes-hand pinion having an arbor journaled in the pillar-plate and extending out through the dial-plate, in combination with the hours-wheel having a sleeve surrounding the minutes-wheel arbor and journaled in the central spring in the dial-plate, substantially as and for the purpose hereinafter specified.

It consists, further, as an improvement in watches in which the dial-plate is superimposed upon the pillar-plate, in the recessed pillar-plate, in combination with the dial-plate, the minutes-hand pinion in the recess of the pillar-plate having an arbor journaled at one end in such plate and extending up through the central spring in the dial-plate, and the hours-wheel having a sleeve surrounding and supporting the minutes-hand pinion-arbor and journaled in the central opening of the dial-plate, substantially as and for the purpose hereinafter shown.

It consists, further, as an improvement in the dial-train of a watch, in a minutes-hand pinion contained between the pillar-plate and the dial-plate and carried by an arbor which is journaled at one end in the pillar-plate and at the other supported by and journaled in the hours-wheel sleeve, and which is connected with the time-train only through said pinion, substantially as and for the purpose hereinafter set forth.

It consists, further, as an improvement in the dial-train of a watch in which the dial-plate is superimposed directly upon the pillar-plate, in a minutes-hand pinion and an hours-wheel between and journaled wholly in such plates, substantially as and for the purpose hereinafter described.

It consists, further, in combining with the pillar-plate and the dial-plate the minutes-hand pinion between the plates, having the lower end of its arbor journaled in the pillar-plate, the hours-wheel also between the plates having the sleeve surrounding and supporting the arbor of the minutes-hand wheel and journaled in the dial-plate, and the intermediate combined wheel and pinion, substantially as and for the purpose hereinafter specified.

It consists, finally, as an improvement in watches, in the dial-plate, the hours-wheel having the sleeve journaled in such plate, and the minutes-hand pinion having the arbor journaled in and passing through the sleeve of the hours-wheel, so that the dial-train can be detached from and connected with the movement by the removal and replacement of the dial-plate, substantially as and for the purpose hereinafter shown.

In the application of my invention to a watch-movement the pillar-plate A is provided at its center with a recess, *a*, for the reception of a minutes-hand pinion, B, and with a second more-shallow recess, *a'*, for the reception of an hours-wheel, C, and an intermediate wheel, D, and pinion *d*, for connecting said hours-wheel and cannon-pinion. The pinion B is provided with an arbor, *b*, which, at its inner end, has a pivot, *b'*, that fits into a corresponding bearing in the plate A, while above said pinion said arbor is straight, and has such length as to cause it to project through a dial, E, a

distance sufficient to enable it to receive a minutes-hand, F, upon its end. The hours-wheel C is journaled interiorly upon the arbor *b* of the minutes-hand pinion B, and exteriorly near the outer end of its sleeve *c*, within the center opening, *e*, of the dial E, and said end projects through said opening a sufficient distance to enable it to receive an hours-hand, G, by which arrangement the outer end of said arbor is effectively journaled and held in lateral position. The intermediate wheel and pinion, D *d*, are journaled in the usual manner upon a stud, a^2, that is secured within and projects from the plate A. The minutes-hand pinion B is engaged by one of the wheels of the time-train and caused to revolve once each hour, and through the intermediate wheel, D, and pinion *d* causes the hours-wheel C to revolve in the same direction, but with but one-twelfth the velocity. The end-shake of said minutes-hand pinion and hours-wheel is determined by the space between the upper end of the hub *c'* of said wheel and the lower face of the dial E, and may be varied by increasing or diminishing the height of said hub, or by recessing the contiguous portion of the face of said dial. When the hands F and G are in position upon the arbor of pinion B and sleeve of hours-wheel C, the pinion and wheel are held connected with the dial E, and may be placed in or removed from position with said dial, by which means the removal of said hands is avoided when taking down the watch-movement. As there is no axial opening required for said minutes-hand pinion, its arbor or barrel may be made much smaller than would otherwise be possible, and its size renders available a smaller sleeve or barrel for the hours-wheel.

Having thus fully set forth the nature and merits of my invention, what I claim is—

1. As an improvement in watches in which the dial is superimposed upon the pillar-plate, a minutes-hand pinion having an arbor journaled in the pillar-plate and extending out through the dial-plate, in combination with the hours-wheel having a sleeve surrounding the minutes-wheel arbor and journaled in the central opening in the dial-plate, substantially as and for the purpose specified.

2. As an improvement in watches in which the dial-plate is superimposed upon the pillar-plate, the recessed pillar-plate, in combination with the dial-plate, the minutes-hand pinion in the recess of the pillar-plate, having an arbor journaled at one end in such plate and extending up through the central opening in the dial-plate, and the hours-wheel having a sleeve surrounding and supporting the minutes-hand-pinion arbor and journaled in the central opening of the dial-plate, substantially as and for the purpose shown.

3. As an improvement in the dial-train of a watch, a minutes-hand pinion contained between the pillar-plate and the dial-plate, and carried by an arbor which is journaled at one end in the pillar-plate, and at the other supported by and journaled in the hours-wheel sleeve, and which is connected with the time-train only through said pinion, substantially as and for the purpose set forth.

4. As an improvement in the dial-train of a watch in which the dial-plate is superimposed directly upon the pillar-plate, a minutes-hand pinion and an hours-wheel between and journaled wholly in such plates, substantially as and for the purpose described.

5. In combination with the pillar-plate and the dial-plate, the minutes-hand pinion between the plates, having the lower end of its arbor journaled in the pillar-plate, the hours-wheel also between the plates, having the sleeve surrounding and supporting the arbor of the minutes-hand wheel and journaled in the dial-plate, and the intermediate combined wheel and pinion, substantially as and for the purpose specified.

6. As an improvement in watches, the dial-plate, the hours-wheel having the sleeve journaled in such plate, and the minutes-hand pinion having the arbor journaled in and passing through the sleeve of the hours-wheel, so that the dial-train can be detached from and connected with the movement by the removal and replacement of the dial-plate, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of June, A. D. 1885.

GEORGE E. HART.

Witnesses:
GEO. S. PRINDLE,
HENRY C. HAZARD.