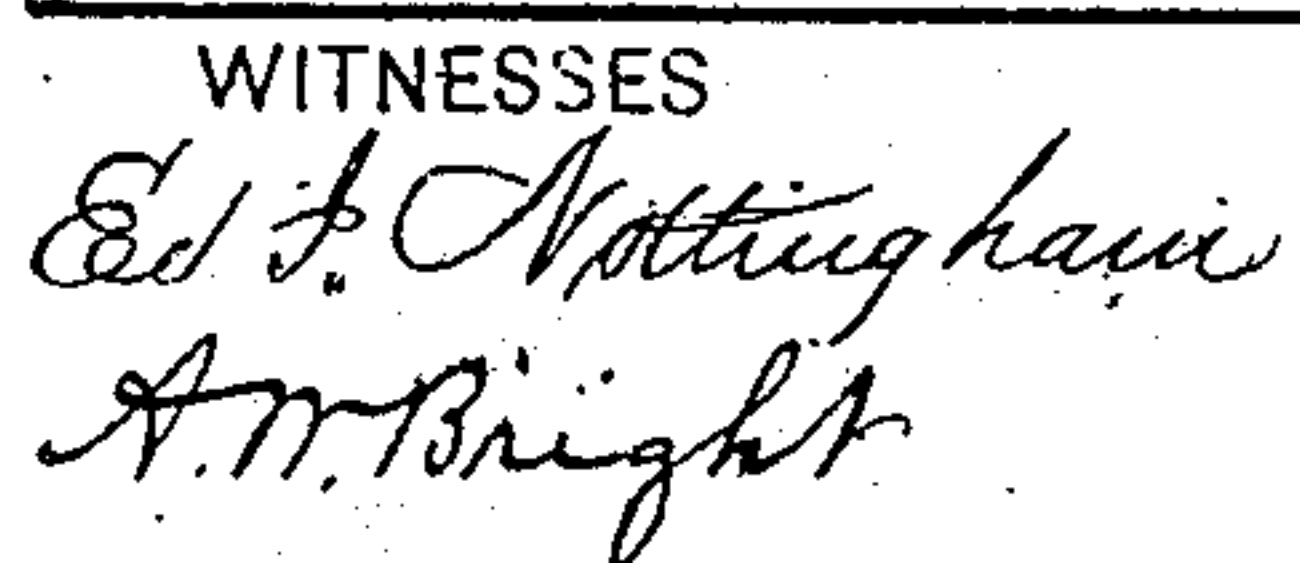


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Patented June 18, 1878.



INVENTOR

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# UNITED STATES PATENT OFFICE.

GILBERT H. BLAKESLEY, OF BRISTOL, CONNECTICUT.

## IMPROVEMENT IN CLOCKS.

Specification forming part of Letters Patent No. **205,037**, dated June 18, 1878; application filed April 1, 1878.

*To all whom it may concern:*

Be it known that I, GILBERT H. BLAKESLEY, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Rotary-Pendulum Clocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in rotary-pendulum clocks.

Heretofore rotary-pendulum clocks have been constructed in such a manner that the pendulum operates as the sole regulator for the train of gearing, and to accomplish this result the pinion which actuates the pendulum by means of the arm attached thereto must be moved at a very high rate of speed. Again, in clocks of this class, as heretofore constructed, the movement is arranged in a horizontal position, with the pendulum located over the same, thus requiring considerable space, and also necessitating a particular form of clock-case to cover the movement.

The object of my invention is to provide rotary-pendulum clocks of such construction that the pendulum and the means employed for driving the same shall together operate to govern and regulate the train of gearing, whereby a lower rate of revolution of the pendulum will insure equally as good results as is now secured by the ordinary rotary-pendulum movements, and also admit of a much more simple and economical construction of parts to attain that end.

Again, another object of my invention is to provide a rotary-pendulum clock of such construction that the movement may be placed in a vertical position, the same as the movements of ordinary pendulum-clocks, and thus render the finished clock of as compact form as is possible, and render it adapted for the ordinary form of case, or for flat-sided glass covers that occupy little width of space.

My invention consists, in a rotary-pendulum clock, of the combination, with a crown-wheel, of a worm located parallel with the frame of the clock-movement, whereby the latter is

adapted to be arranged in a vertical position, and impart a rotary movement to the pendulum by means of an arm attached to the upper end of the worm-shaft.

My invention further consists, in a rotary-pendulum clock, of the combination, with a crown-wheel, of a worm adapted to be adjusted to or from said crown-wheel, and thereby allow of the relative adjustment of said parts to secure the desired escapement.

In the accompanying drawings, Figure 1 represents a front elevation of a clock embodying my invention, the upper portion of the dial being removed to clearly show the arrangement of the escapement. Fig. 2 is an edge view of the same, and Fig. 3 is a detached view of the crown-wheel and worm with the pendulum-arm removed.

A represents the front plate or frame of an ordinary clock-movement. The train may be of the ordinary kind, or it may be arranged in any desired manner, as my improvement is adapted for application to any form or style of clock-movement. B is the crown-wheel, the pinion of which is supported at its forward end by means of the ordinary bridge C.

To the frame A is secured a triangular bridge, D, by means of a stud or rivet, *a*, the latter being located above or below the center of the bridge, for a purpose hereinafter described. E is a worm-shaft, and is pivoted in the arms *b b'* of the triangular bridge D.

The worm F may be turned out from a solid shaft, but is preferably formed by twisting a polished piece of steel wire spirally about the shaft E, and rigidly securing it thereto. The upper pivot *c* of the worm-shaft E is made of sufficient length to extend above the arm *b* of the bridge, to permit of the attachment of a socket, G. An arm, H, formed with a return bend, is secured to said socket G. The rotary pendulum I is suspended from any suitable support, J, by a thread or cord, K, and by means of said cord the pendulum may be vertically adjusted.

The pendulum may be of any fanciful design, form, or style, the lower portion being provided with a pendant, *d*, which is inserted within the loop formed on the arm H, and, as the arm is revolved, it operates to impart a rotary movement to the pendulum.



the triangular bridge D, which carries the worm, may be adjusted or turned on its stud to carry the worm either toward or away from the center of the crown-wheel, and thus admit of the adjustment and regulation of the mesh of the teeth of the crown-wheel with the worm.

It will be observed that the train does not necessitate high-numbered pinions, as every tooth of the crown-wheel imparts a complete revolution to the worm-shaft, and consequently a complete revolution of the pendulum. The worm is noiseless in operation, and, in connection with the pendulum, serves the important function of a regulator to the train of gearing, and thus allows of the employment of the ordinary low-numbered pinions, which is a great desideratum, both in the manufacture and in the actual wear of the parts of a clock-movement.

A rotary-pendulum clock embodying my invention is simple and of economical construction, and of great durability in actual operation. These clocks occupy the minimum amount of space, and any of the ordinary cases may be employed in connection with said movements; or flattened glass covers may be used to cover the movements. As the movement is adapted to be arranged in a vertical position, dust and dirt are not liable to lodge on the frames and collect around the pivots, as is the case with rotary-pendulum clocks as ordinarily constructed. Again, the weight of the several pinions and wheels of the movement is equally distributed on the opposite pivots of the several parts, thereby insuring a more equable wear of the running parts of the clock than is the case when the parts of the clock are supported on end, as in the ordinary flat clocks, heretofore referred to.

The clock-movements may be constructed at a small initial cost, as a comparatively slow motion is amply sufficient to impart sufficient velocity to the pendulum, the latter acting in conjunction with the worm to regulate the train of gearing.

After the clock has been in operation for

quite a length of time, and the escapement becomes slightly worn, by simply setting up the worm toward the crown-wheel the mesh between the worm and the teeth of the crown-wheel is readily adjusted and made perfect.

Instead of employing a cord, K, to suspend the pendulum, I may use a rod of fanciful design, and connect the same with its support and the pendulum by means of a cord or other flexible connection, and yet secure a perfect and reliable pendulum attachment.

It is evident that many slight changes, both in the construction and arrangement of the several parts of the clock, and especially of the escapement, may be resorted to without departing from the spirit of my invention, and hence I do not limit myself to the exact construction and arrangement of parts shown and described; but

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

1. The combination, with the crown-wheel of a clock, of a worm-shaft arranged parallel with the frame or plate of the clock movement, said worm-shaft provided with an arm for imparting a rotary movement to the pendulum, substantially as set forth.

2. The combination, with the crown-wheel of a clock, of a worm adapted to be laterally adjusted relative to said crown-wheel, substantially as set forth.

3. The combination, with the crown-wheel of a clock, of a worm-shaft supported in a bridge adjustably secured to the clock-frame, substantially as set forth.

4. The combination, with the crown-wheel of a clock-movement, of a worm pivoted within the arms of a triangular bridge, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

GILBERT H. BLAKESLEY.

Witnesses:

SILAS M. NORTON,  
GEO. A. GOWDY.