No. 647,727. Patented Apr. 17, 1900.

M. J. RUDERT.

AUTOMATIC BEAT ADJUSTER ATTACHMENT FOR CLOCKS.

(Application filed Mar. 21, 1899.)

(No Model.)

FIG. 1

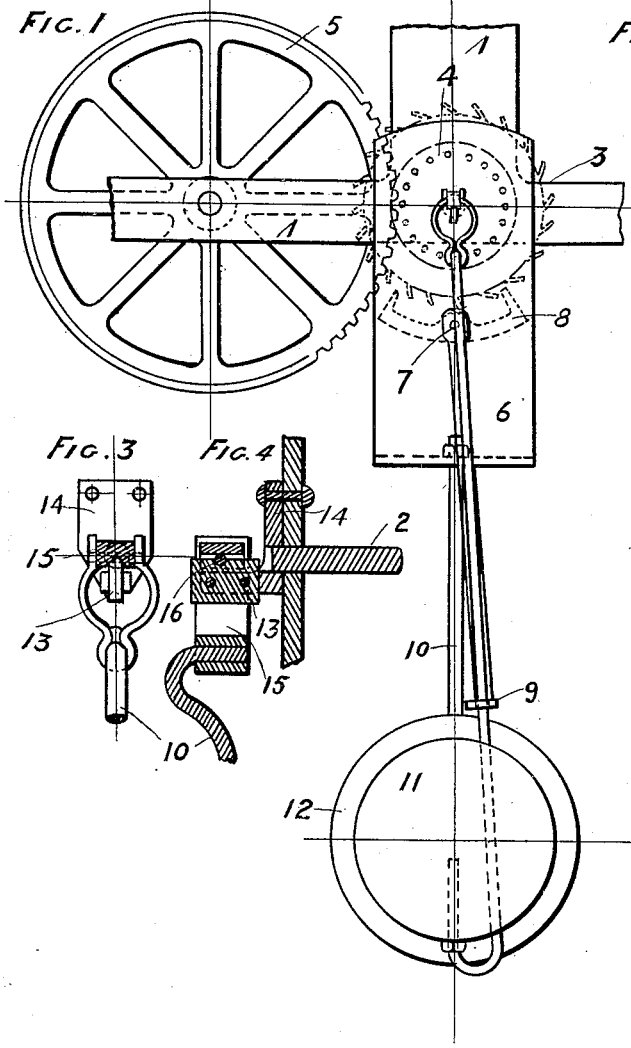

FIG. 2

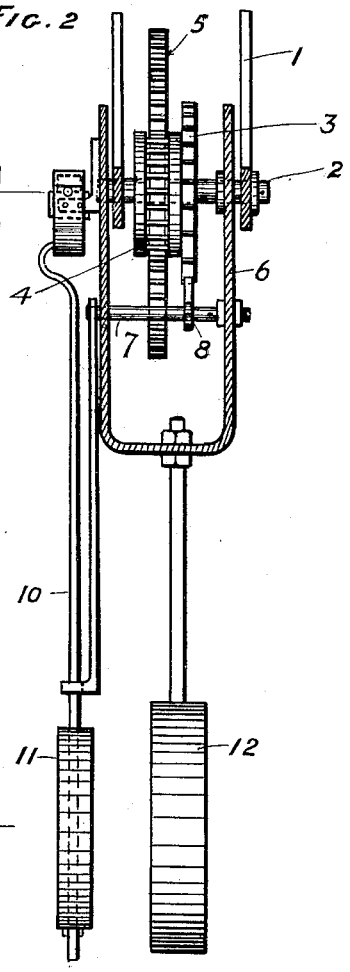

FIG. 3

FIG. 4

WITNESSES:

C. C. Lear

Byron Robertson

INVENTOR

M. J. Rudert

BY

Jno. M. Nesbit.

ATTORNEY.

UNITED STATES PATENT OFFICE.

MAX J. RUDERT, OF TARENTUM, PENNSYLVANIA.

AUTOMATIC BEAT-ADJUSTER ATTACHMENT FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 647,727, dated April 17, 1900.

Application filed March 21, 1899. Serial No. 709,962. (No model.)

To all whom it may concern:

Be it known that I, MAX J. RUDERT, a citizen of the United States, residing at Tarentum, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Automatic Beat-Adjuster Attachments for Clocks, of which the following is a specification.

Pendulum clocks as now generally constructed require careful leveling on their supports in order to maintain regular beat, while many clocks, particularly those of finer make, will not run at all if out of true. Others will continue to run, though indifferently, at various degrees of inclination.

The object of this invention is to construct a pendulum-escapement which is unaffected by tilting or inclining the clock-case and which will maintain regular beat regardless of the plane in which the clock stands, provided, of course, the range or swing of the pendulum is not interrupted.

The invention consists in the novel features of construction and combination and arrangement of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is an elevation of the escapement. Fig. 2 is an edge view. Figs. 3 and 4 are detail views of the pendulum-hanger.

1 represents the movement-plates; 2, the escape-wheel arbor; 3, the escape-wheel, and 4 and 5 the initial pinion and spur-wheel, respectively, of the train. These parts are all of usual construction.

6 is a support in the form of an upturned yoke, which is pivotally sustained concentrically with arbor 2, and, as here shown, arbor 2 forms its pivot. In the yoke frame or support is arbor 7, carrying pallet 8. Depending arm 9 is secured to one end of arbor 7 and embraces hanger-rod 10 of pendulum 11.

Suspended from support-yoke 6 is weight 12, which maintains same in perpendicular plane.

13 is a knife-edge secured by plate 14 to one face of frame 6, with its edge alining with the center of arbor 2 to constitute a bearing for pendulum bearing-block 15. This block is pivoted centrally at 16 to the upper forked end of pendulum-hanger 10 and is grooved longitudinally on its under edge. The block-pivot intersects this groove and drops in a notch in the surface of the knife-edge, thus holding the hanger securely on the latter without interfering with the pendulum responding to transverse inclination of the clock-case.

The counterweighted frame-yoke 6 and the pendulum being adapted to swing concentrically with the escape-wheel, they maintain perpendicular position relative to the said wheel-center, and any movement thereof is concentric to the wheel. As the pallet is carried by the frame-yoke, its arbor is always in a line perpendicular with the escapement-wheel center. Thus the coöperation of these parts is unaffected by inclination of the mantel, shelf, or other support, and the clock will not only run under conditions which previously would cause it to stop, but also will maintain a beat as regular and uniform as though its support were level.

I do not desire to restrict myself to the adaptation of the invention here shown and described, as it may be varied in many particulars and adapted to the many and varied types of pendulum-escapements without departing from the spirit or scope of my invention; nor is it essential that the pendulum be sustained at a point concentric with the escape-wheel, as it is only necessary that the vibration thereof be controlled or governed at such point, for if arranged to swing from a point above or below or at one side of the wheel-center the vibrations of the pendulum disturb the equilibrium of the counterweighted frame 6, and the motion of the frame thus caused prevents an even regular beat. With the pendulum vibrating concentrically with the wheel the frame 6 may be maintained absolutely still by a very light weight, as the resistance occasioned by the engagement of the pallet with the escape-wheel is insufficient to disturb the suspended frame or to render irregular the beat.

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

1. An improvement of the character described, comprising an escape-wheel, a frame or support for the pallet sustained pivotally and concentrically with the wheel, a bearing in line with the wheel-center, and a pendu-

lum suspended from the bearing, substantially as shown and described.

2. The combination of an escape-wheel, a counterweighted frame suspended concentrically with the wheel, a pallet carried by the frame, a knife-edge bearing carried by the frame with the top plane of the bearing in line with the axial center of the wheel, and a pendulum suspended from said knife-edge bearing and connected to the pallet, substantially as shown and described.

3. An improvement of the character described comprising a clock-frame, an escape-wheel having its arbor journaled in the frame, pendent U-shaped frame 6 embracing the escape-wheel with its extremities journaled on the arbor thereof, arbor 7 having its ends journaled in opposite sides of frame 6, pendent arm 9 secured to one end of shaft 7, and a pendulum having its hanger connected to one end of arm 9, substantially as shown and described.

4. The combination of a pendulum, a hanger, a bearing-block to which the hanger is pivoted, whereby the latter is adapted to swing at right angles to its plane of normal vibration, the block being grooved on its under side, a pin arranged transversely in the block which intersects the groove, and a knife-edge bearing having a notch for engaging the bearing-block pin, substantially as shown and described.

5. An improvement of the character described, comprising an escape-wheel, a pallet, means for maintaining the wheel and pallet centers in vertical plane, and a pendulum adapted to vibrate in an arc concentric with the wheel, substantially as shown and described.

6. An improvement of the character described, comprising an escape-wheel, a counterbalanced frame oscillatory concentric with the wheel, a pallet mounted on the frame, and a pendulum adapted to vibrate concentrically with the said wheel and frame.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MAX J. RUDERT.

Witnesses:
E. ALBERT HILL,
HENRY K. WILLSON.