

H. C. GRAWE.  
 Pendulum-Adjustment for Clocks.

No. 203,263.

Patented May 7, 1878.

FIG. 1.

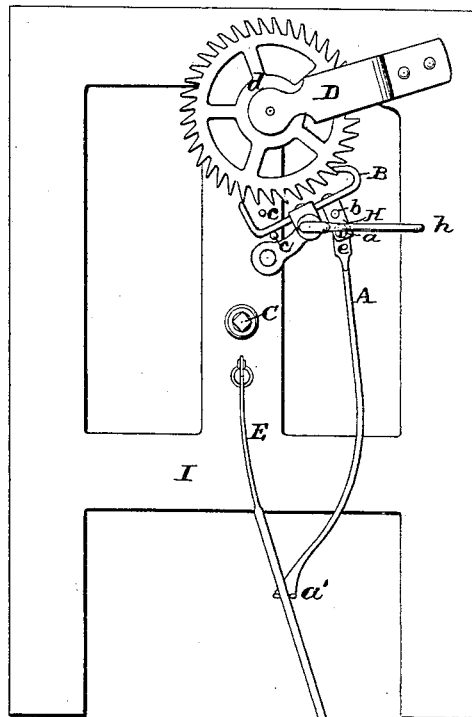


FIG. 3.

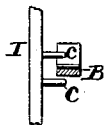


FIG. 2.

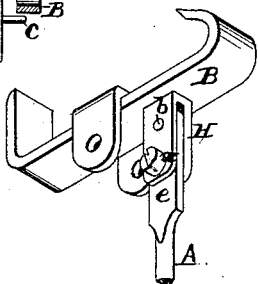


FIG. 4.



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HERMAN C. GRAWE, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN PENDULUM-ADJUSTMENTS FOR CLOCKS.

Specification forming part of Letters Patent No. **203,263**, dated May 7, 1878; application filed March 29, 1878.

*To all whom it may concern:*

Be it known that I, HERMAN C. GRAWE, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Clocks and Regulators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in devices for the correction of irregularities in the running, beat, and time of pendulum clocks and regulators through their defective horizontal or vertical setting.

It has been an almost absolute necessity heretofore, in the use of pendulum clocks and regulators, that tedious adjustment should attend the setting up of a clock, the ledges or mantels on which they are usually placed being rarely true enough for a basis without wedging or underlaying. The most common defect in setting of clocks upon a false basis is irregular beating. A very frequent annoyance from the same cause is frequent stoppages.

Several devices have been introduced toward providing a remedy for so widely-existing an evil with very unsatisfactory results. The remedies offered have either been imperfect or too costly for general application.

In view, therefore, of achieving correct movement of the pendulum through a simple and cheap contrivance, regardless of vertical position, I have, by a simple principal attachment to the ordinary clock or regulator, removed the difficulty in the way of correct beating and regularity in clock-running, and which is applicable, at small cost, to new or old clocks.

I will now proceed to describe my invention fully.

In the accompanying drawing, Figure 1 shows a front elevation of a clock-frame, which exhibits only such parts as relate to seconds vibration—to wit, the escapement, escape-ment-bridge, anchor and anchor-bridge, the anchor wire, and pendulum-rod, in which connection I also show my improved devices and

their application. Fig. 2 is an enlarged view, in perspective, of the anchor, its pivot-strap, and the manner of attachment to the anchor of my jointed anchor-wire. Fig. 3 is a view, in section, of my device for the purpose of bringing pendulums rapidly into beat.

The pins shown are checkers, to act upon the anchor and anchor-wire, which I joint, and which reduces the anchor-wire to a sensitive flexible connection between the anchor and the pendulum-rod, which yields at every irregular vibration of the pendulum. These pins are only necessary when the escapement is of a peculiar cut of teeth.

Compared with the usual method, which can only meet irregularities of vibration by bending the wire, the function of my jointed anchor-wire is to meet these irregularities by a slight yielding, and thus permit perfect seconds beating regardless of unlevel basis. These joints, when worn loose, can at any time be tightened by the adjusting-screw.

Fig. 4, by the strap in part removed, shows the manner of attachment of the joint of the anchor-wire with its pivot; also the curved adjustment-slot, which is radial to its pivot-center.

In specific detail, the anchor-wire A has on its upper end the flattened part *e*, and is connected with the pendulum F and rod E by the fork *a'*. The anchor B, to which the said anchor-wire A connects at pivot *b*, has on its under side, and riveted thereto, the strap H, through which are bored the holes for the center pivot *b* and the hole for the adjustment-screw *a*. In the flattened plate on the head of the said anchor-wire A is the segmental slot *g*. To attach the said strap to the said anchor-wire and adjust it for correct performance, it is only necessary to insert the flattened end of said wire into the said strap H, and, by the passage of the pin or screw *b* through the strap H and *b'*, the said screw-pin *b*, having a thread thereon, enters the tapped lower hole *b'*, and thus forms a free joint. The screw *a* regulates the degree of stiffness of the movement of the anchor-wire, which only is required to act until the clock gets in beat.

The remedy provided by the flexible anchor-wire is obvious and complete. A clock twenty degrees out of horizontal standing can perfectly run therewith. When the said screw *a*

is properly set up, the movement of the pendulum as a seconds-beater is defined by the pins *c* in drawing.

The operation of my invention is principally confined to the proper adjustment of the anchor-joint, and requires, as preliminary to such adjustment, a knowledge of the disturbing cause, and the stiffness or looseness of the anchor-joint may be accordingly regulated.

I claim as my invention—

In the anchor-wire of a pendulum clock or regulator, the joint composed of the following parts: the strap *H* as attached to the anchor

*B*, pivot *b*, adjustment-screw *a*, together with the radial slot *g* in the flattened and center-hung anchor-wire head *e*, as intermediate to the anchor *B*, and the pendulum *F*, combined with check-pins *cc*, for the purposes set forth, and as described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

HERMAN C. GRAWE.

Witnesses:

THEODORE MARTEN,  
JOSEPH E. WARE.