

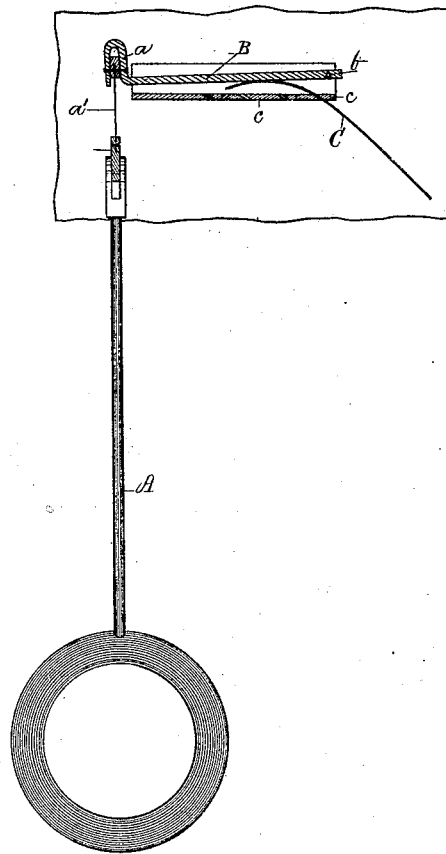
(No Model.)

A. T. WILLIAMS.

PENDULUM.

No. 301,195.

Patented July 1, 1884.



Witnesses.

G. B. Maynard
John R. Snow.

Inventor.

Allen T. Williams
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UNITED STATES PATENT OFFICE.

ALLEN T. WILLIAMS, OF TAUNTON, MASSACHUSETTS.

PENDULUM.

SPECIFICATION forming part of Letters Patent No. 301,195, dated July 1, 1884.

Application filed October 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALLEN T. WILLIAMS, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Pendulums, of which the following is a specification.

The object of my invention is to so suspend the pendulum that it will not be affected by the usual movement or tremor so common in all buildings, especially when heavy loads on wheels pass near them.

To attain this object my invention consists in a pendulum having its point of suspension elastically or yieldingly supported, substantially as hereinafter fully described, reference being had to the accompanying drawing, which illustrates a method of carrying out my invention in the simplest and best way now known to me.

Clock-pendulums have heretofore, so far as I am aware, been suspended from a rigid support, and consequently any tremor of the building in which the time-piece was would so derange the movements of the pendulum as to affect the rate of the time-piece. This, while especially true of compensated pendulums—such as the mercurial pendulum and the pendulum described in my Patent No. 248,541, dated October 18, 1881—is also a well-known cause for uneven rates in all pendulum time-pieces. Time-regulators in railway-stations where trains are constantly arriving and departing have had serious trouble with their accuracy, caused by the tremor produced by the moving trains.

In the drawing I have shown a pendulum, A, connected at its axis of oscillation to its support *a*, in the usual way, by means of the flat spring *a'*. The support *a*, instead of being rigidly fixed, as heretofore, is attached to one end of a bar, B, pivoted at *b'* near its

other end to the support for the clock-work. The bar B rests, at a point between the pendulum-support *a* and the pivot *b'*, on a suitable spring adapted to have its tension delicately adjusted. In this instance I have shown a plate-spring, C, inserted through a slit in a plate, *c*, and pushed into a bearing in the bar B. The force of the spring C may be accurately adjusted by moving it in or out through the slit, or by inserting it through one of a series of slits in the plate C, nearer to or further from the pendulum-support *a*.

It will be obvious that a spiral or other spring may be used instead of the plate-spring, and that the details of the arrangement may be considerably varied, the invention residing in the use of a spring or its equivalent as a support for the point of suspension of the pendulum, and not in the special devices shown in the drawing.

I am aware of English Patent No. 2,644 of 1859, which shows a pendulum having its point of suspension above its axis of oscillation, and on a support adapted to vary by expansion and contraction from heat and cold, the object being to maintain what is called the active length of the pendulum always the same. In my pendulum the point of suspension and the axis of oscillation are identical, and the movements of the point of suspension have no effect on the active length of the pendulum, but serve only to counteract jars or tremors.

I claim as my invention—

A pendulum having its axis of oscillation supported by a spring or its equivalent, substantially as and for the purpose set forth.

ALLEN T. WILLIAMS.

Witnesses:

G. B. MAYNADIER,
JOHN R. SNOW.