(No Model.) 2 Sheets—Sheet 1.

H. H. HAM, Jr.

SUSPENDING CLOCK PENDULUMS.

No. 251,360. Patented Dec. 27, 1881.

Fig. 1.

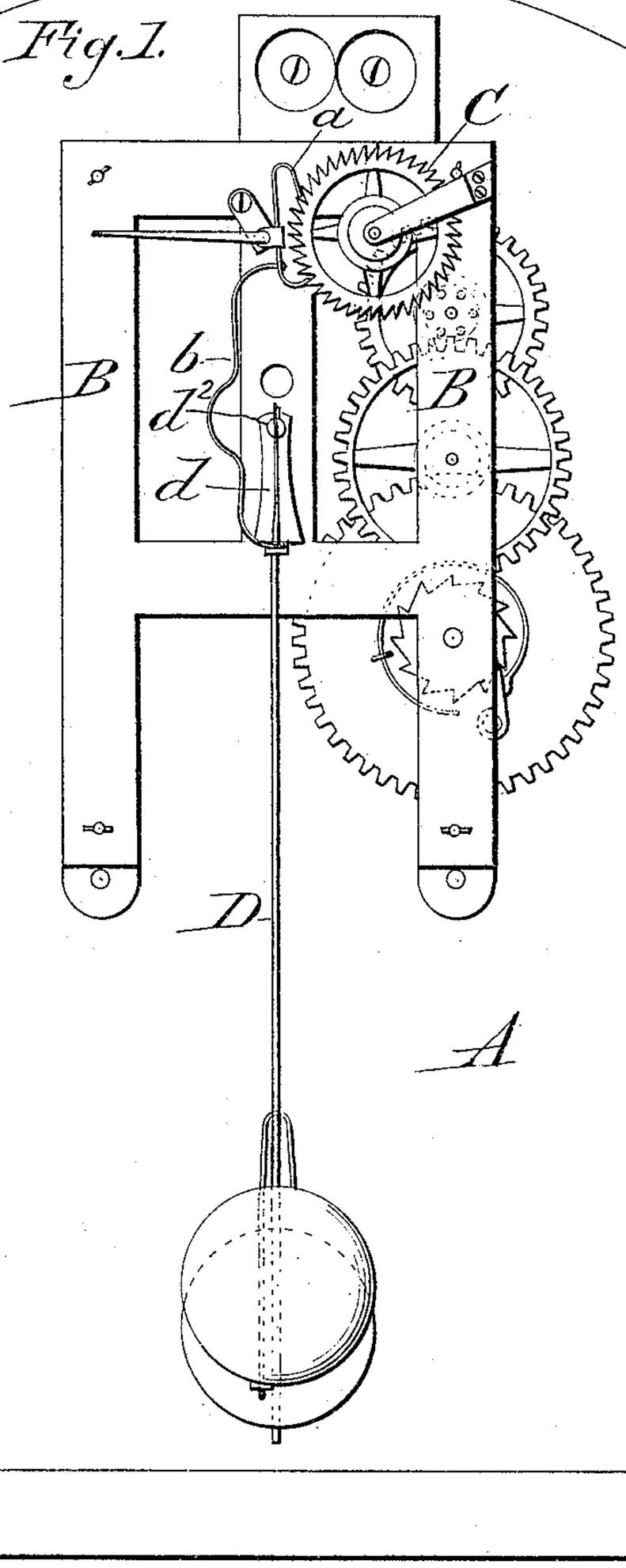


Fig. 2.

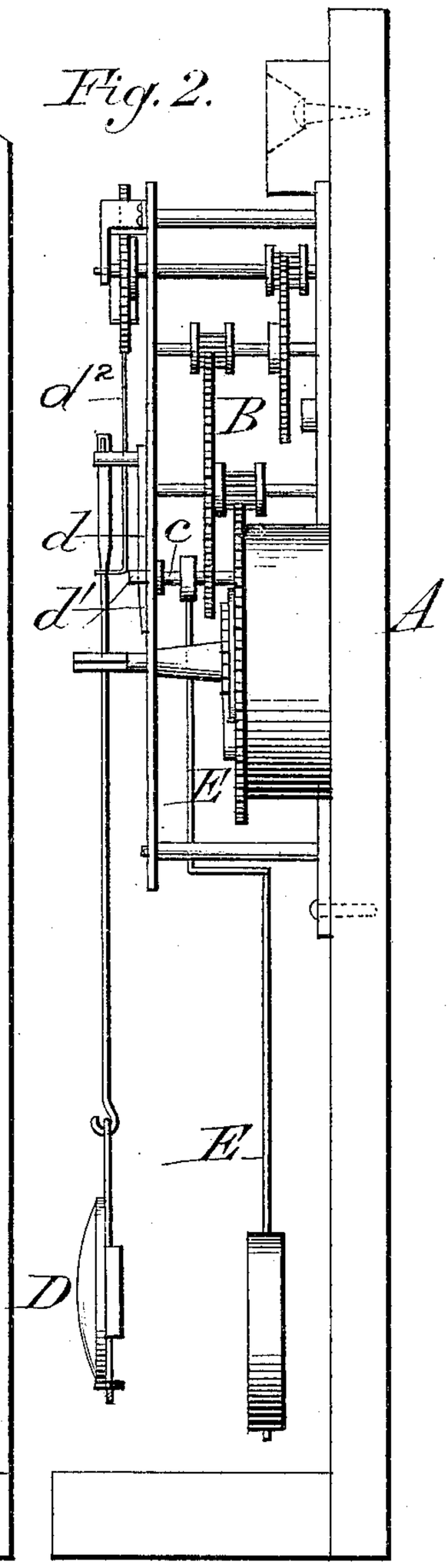
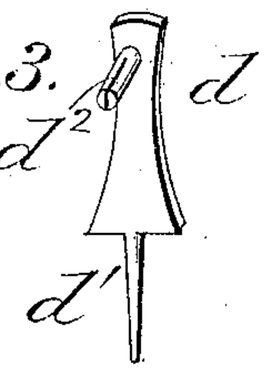


Fig. 3.



Attest:
H. H. Schott.
A. R. Brown.

Inventor:
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(No Model.) 2 Sheets—Sheet 2.

H. H. HAM, Jr.

SUSPENDING CLOCK PENDULUMS.

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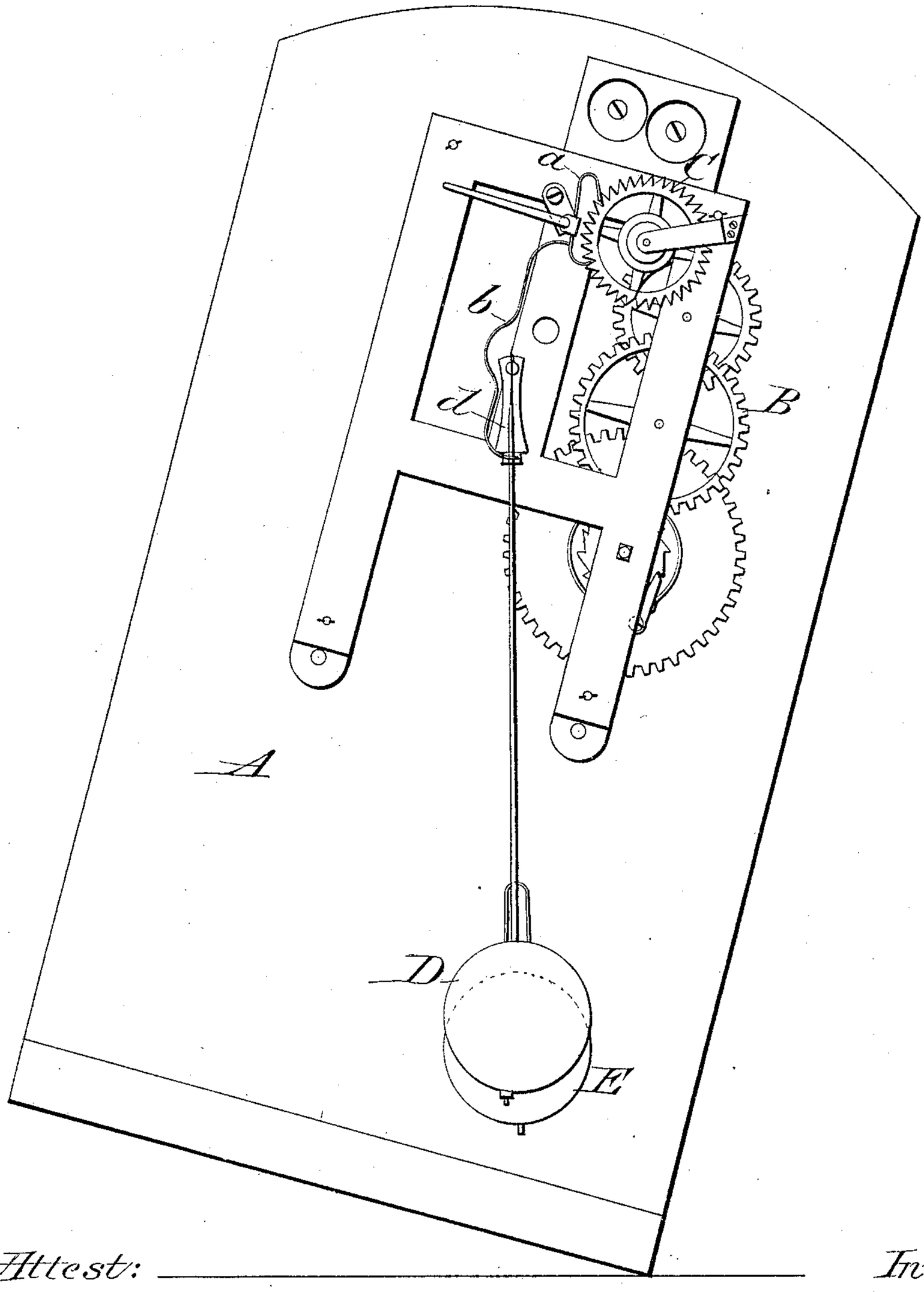
Fig. 4.



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Inventor:

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UNITED STATES PATENT OFFICE.

HENRY H. HAM, JR., OF PORTSMOUTH, NEW HAMPSHIRE.

SUSPENDING CLOCK-PENDULUMS.

SPECIFICATION forming part of Letters Patent No. 251,360, dated December 27, 1881.

Application filed May 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. HAM, Jr., a citizen of the United States, residing at Portsmouth, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in Suspending Clock-Pendulums; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a simple means of so suspending a pendulum that it will be capable of automatic adjustment to the position necessary for its proper operation, whether the clock stands upon a level base or is inclined therefrom. When a clock is in proper condition to run the pallets will be found to have a certain position relative to that of the escapement-wheel while the pendulum is at rest. By my improved construction this relation of positions is maintained, whether the clock stands level or not.

In the annexed drawings, which fully illustrate my invention, Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a view of the arm to which is affixed the stud that supports the pendulum. Fig. 4 shows the clock in an inclined position.

Like letters indicate like parts in the several views.

A represents the back casing of a clock, to which the movement B is secured. The escapement-wheel C acts upon the pallets *a*, which are attached to the fixed support, causing an oscillating movement to be given to them in the usual manner. These pallets are connected with the pendulum D by means of a guide or lever, *b*, and the peculiar adjustment of this guide or lever constitutes an essential feature of my invention. The end of the balance-lever shaft *c* projects through the front plate of the clock, and is perforated for the reception of a tapering pin, d', on the lower end of the arm *d*. At the upper end of this arm is a forward-projecting stud, d^2, which is split to accommodate the flattened end of the pendulum. To the shaft *c* is rigidly attached a balance-lever, E.

In order to enable the clock-train of a pendulum-clock, when furnished with my improved devices, to move equally well whether the clock-frame stands plumb or is inclined considerably to either side, it is necessary that the guide or lever *b* should be so adjusted that its lower end, or the loop thereon which engages with the pendulum, will coincide in the center of its line of motion with the axis of the balance-lever shaft. Heretofore a similar result has been attained by suspending the balance-lever concentrically with the verge of the escapement-wheel, and by arranging the pallets so that they will move around the escapement-wheel to maintain their necessary relative position therewith when the clock is tilted. This construction, however, is more complicated, involves a greater expense, and is also extremely liable to derangements from wear of the parts.

Referring to Fig. 1, where the pendulum is shown in a state of rest, it will be seen that it is parallel with the balance-lever, and that the lower end of the connecting guide or lever *b* is opposite the axis of the balance-lever shaft. This point is the center of the line of motion of the lower end of said guide when the pendulum is oscillated, and being always coincident with the axis of the balance-lever shaft, by reason of the construction above described, it is evident that when the pendulum is at rest it will always be parallel with the balance-lever, even when the clock is tilted or inclined, as shown in Fig. 4, and therefore when the pendulum is vibrated the clock will run equally well in either position.

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

1. In a clock-movement adapted to adjust itself to operate in either an inclined or level position, the combination, with the escapement-wheel and pallets vibrating on a fixed support, of a guide or lever connecting the pallets and pendulum, and having the center of the line of motion of its lower end opposite to and coincident with the axis of the balance-lever shaft, substantially as shown and described.

2. In a clock-movement, the combination, with the balance-lever shaft, of an arm having a tapering pin, by which it is firmly secured in an aperture at the end of said shaft, and provided with a stud for the attachment and support of the pendulum, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY H. HAM, JR.

Witnesses:
A. R. BROWN,
PHILIP MAURO.