

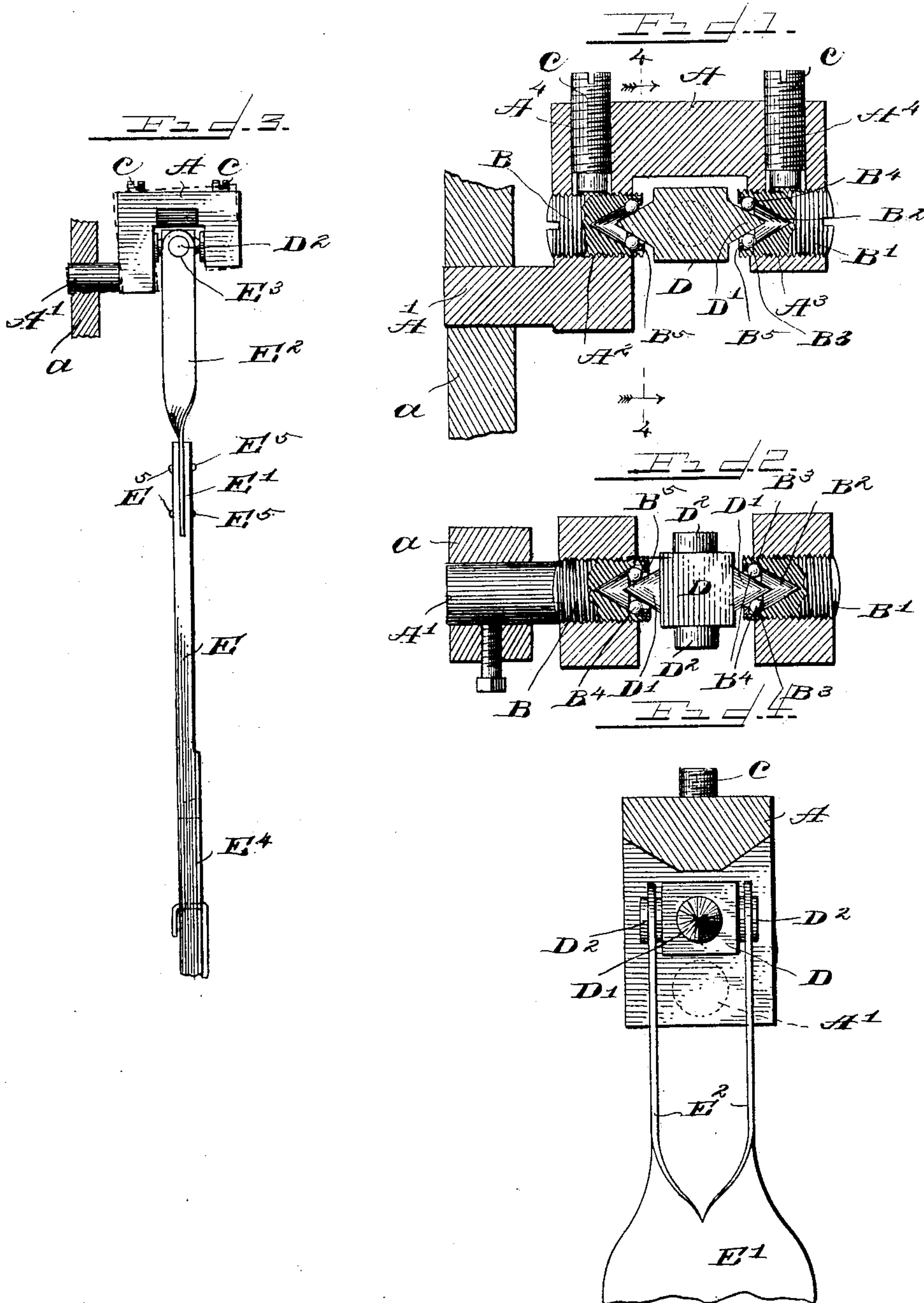
No. 703,020.

Patented June 24, 1902.

D. W. THOMPSON.  
CLOCK PENDULUM.

(Application filed Sept. 30, 1901.)

(No Model.)





# UNITED STATES PATENT OFFICE.

DAVID W. THOMPSON, OF CHICAGO, ILLINOIS.

## CLOCK-PENDULUM.

SPECIFICATION forming part of Letters Patent No. 703,020, dated June 24, 1902.

Application filed September 30, 1901. Serial No. 77,049. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID W. THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Clock-Pendulums, of which the following is a specification.

One of the objects of this invention is to improve the means for suspending a clock-pendulum.

A further object of the invention is to produce a pendulum whose axes of suspension and vibration are in the same plane.

A further object of the invention is to provide a firm, strong, yet almost frictionless bearing-support for pendulums of large clocks, such a support as will resist shocks and strains without injury or misadjustment.

In the accompanying drawings, Figure 1 is a vertical central section through the supporting-bearings of a clock-pendulum embodying the features of my invention. Fig. 2 is a horizontal central section through the supporting-bearings of this pendulum, the suspending-block for the pendulum being shown in elevation. Fig. 3 shows in side elevation my improved pendulum-suspending device; and Fig. 4 illustrates said device in a sectional view taken on dotted line 4 4 of Fig. 1, the pendulum being shown in position.

Like letters of reference indicate corresponding parts throughout the several views.

In the production of this improved pendulum-suspending device I provide a yoke A, having a cylindrical integral stem A', adapted to enter a suitable opening in the clock-framework *a* to hold the yoke in position. Two alined openings A<sup>2</sup> and A<sup>3</sup> are provided in the yoke A, both of which openings are internally screw-threaded and each of which is intersected by one of the two internally-screw-threaded openings A<sup>4</sup>, extending substantially at right angles with said openings A<sup>2</sup> and A<sup>3</sup>.

B is a headless machine-screw adapted to be turned into the opening A<sup>2</sup>, and B' is a similar screw adapted to enter the opening A<sup>3</sup>. Each of the screws B and B' is slotted at its outer end to receive a screw-driver and on its inner end is provided with the pocket B<sup>2</sup>, having a raceway B<sup>3</sup>, adapted to receive the antifriction-balls B<sup>4</sup>. To hold these

balls in place, I provide the ball-retainer B<sup>5</sup> of annular form and adapted to be set within the outer end of the pocket B<sup>2</sup>.

C represents locking-screws adapted to enter the screw-threaded openings A<sup>4</sup>, their purpose being to prevent the machine-screws B and B' from accidental displacement.

D represents the pendulum-supporting block, having the oppositely-extending conical trunnions D', intended to enter the pockets B<sup>2</sup> of the screws B and B' and there to bear upon the antifriction-balls B<sup>4</sup>. The block D is substantially rectangular in form and is provided with the cylindrical integral studs D<sup>2</sup>, projecting from the sides of said block at right angles to an axial line passing through the conical trunnions, the axial line of the cylindrical studs D<sup>2</sup> lying in the same plane as that of the conical trunnions D'.

E represents a pendulum-rod of common construction, split at its upper end to receive the web E' at the base of the metallic supporting-arms E<sup>2</sup>. These arms are formed integral with the web E' and are twisted so that their faces extend at right angles therewith. The upper ends of the arms E<sup>2</sup> are rounded off and are provided with the alined openings E<sup>3</sup>, adapted to fit over the cylindrical studs D<sup>2</sup> of the pendulum-supporting block D.

E<sup>4</sup> is the usual opening in the pendulum-rod for receiving the vibrating wire from the pallet of the escapement of the clock mechanism. The web E' is secured within the opening at the upper end of the pendulum by the rivets E<sup>5</sup>, extending through said web and said pendulum-rod.

In practice the yoke A is attached in any suitable manner to the clock-frame, as by inserting the stem A' within a suitable opening in said frame. Great care is not required in the mounting of the yoke, as the pendulum swinging upon its axis of suspension—to wit, the cylindrical studs D<sup>2</sup>—will swing in a perpendicular plane upon its axis of vibration—to wit, the conical trunnions D'. A proper adjustment of the trunnion-bearings is made by turning up the screws B and B' until the bearing is tight and then unscrewing one of said screws until an easy movement of the pendulum is obtained. The screws B and B' are held in their proper position by the lock-



ing-screws C. The ball-retainer B<sup>5</sup> in the outer end of the pocket B<sup>2</sup> in each of the screws B and B' holds the balls within their raceway and permits the removal of said  
5 screws without displacing the balls.

In clocks having the ordinary form of pendulum it is necessary that the pendulum be suspended from an axis exactly horizontal. With my improved means of suspension this  
10 is not at all necessary, as the pendulum will always seek the perpendicular whether or not its axis of oscillation is exactly horizontal. Looseness of the joint between the arms E<sup>2</sup> of the pendulum-rod E and the cylindrical  
15 studs D<sup>2</sup> of the supporting-block D may occur without causing inaccuracy in the movement of the pendulum, for the reason that the axis of suspension and the axis of vibration are both in the same plane.

20 I claim as my invention--

1. In a clock-pendulum, in combination, a supporting-block having oppositely-extending trunnions upon which said block is intended to oscillate; bearings for said trunnions;  
25 studs extending from opposite sides of said supporting-block and at right angles with said trunnions, the central axis of said studs being in the same plane with the oscillatory axis of said supporting-block; and a  
30 pendulum-rod pivotally suspended upon said studs.

2. In a clock-pendulum, in combination, a supporting-block having conical bearing-trunnions projecting from opposite sides  
35 thereof; a bearing for said trunnions; studs projecting from opposite sides of said supporting-block at right angles to the axial line of said trunnions; and a pendulum-rod pivotally suspended upon said studs, the axis  
40 of suspension of said pendulum-rod being on the same plane with its axis of vibration.

3. In a clock-pendulum, in combination, a yoke; a supporting-block pivotally mounted in said yoke; and a pendulum-rod pivotally  
45 connected with said supporting-block, the

oscillatory axis of the block and that of its pivotal connection with the pendulum-rod being in the same plane.

4. In a clock-pendulum, in combination, a yoke having alined bearings therein; a supporting-block mounted to oscillate upon said bearings; a pendulum-rod pivotally connected with said supporting-block, the oscillatory axis of the block and the axis of the pivotal connection between the block and the pendulum-rod being in the same plane; and means  
55 for securing the yoke in position with relation to a clock mechanism.

5. In a clock-pendulum, in combination, a yoke; two alined bearings in said yoke; a supporting-block having oppositely-extending conical trunnions adapted to lie within the bearings in said yoke, said block also being provided with studs extending from opposite sides thereof and at right angles to said trunnions; and a pendulum-rod having perforated arms adapted to engage said studs, the axial center of said studs being in the same plane with the axial center of said trunnions.  
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6. In a clock-pendulum, in combination, a yoke; two oppositely-extending alined bearing-screws in said yoke; a supporting-block adapted to oscillate between the ends of said bearing-screws; and a pendulum-rod having a pivotal connection with said supporting-block.  
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7. In a clock-pendulum, in combination, a yoke having two oppositely-extending cup-bearing screws provided with ball-bearings; a bearing-block having oppositely-extending trunnions adapted to lie within said ball-bearings; two studs projecting from opposite sides of said supporting-block at right angles to an axial line extending through said trunnions; and a pendulum-rod having perforated arms adapted to engage said studs.  
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Witnesses:

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