(No Model.) 2 Sheets—Sheet 1.

I. B. WOODRUFF, G. B. OWEN, & H. W. BEECHER.

CLOCK PENDULUM.

No. 287,604. Patented Oct. 30, 1883.

FIG. 1.

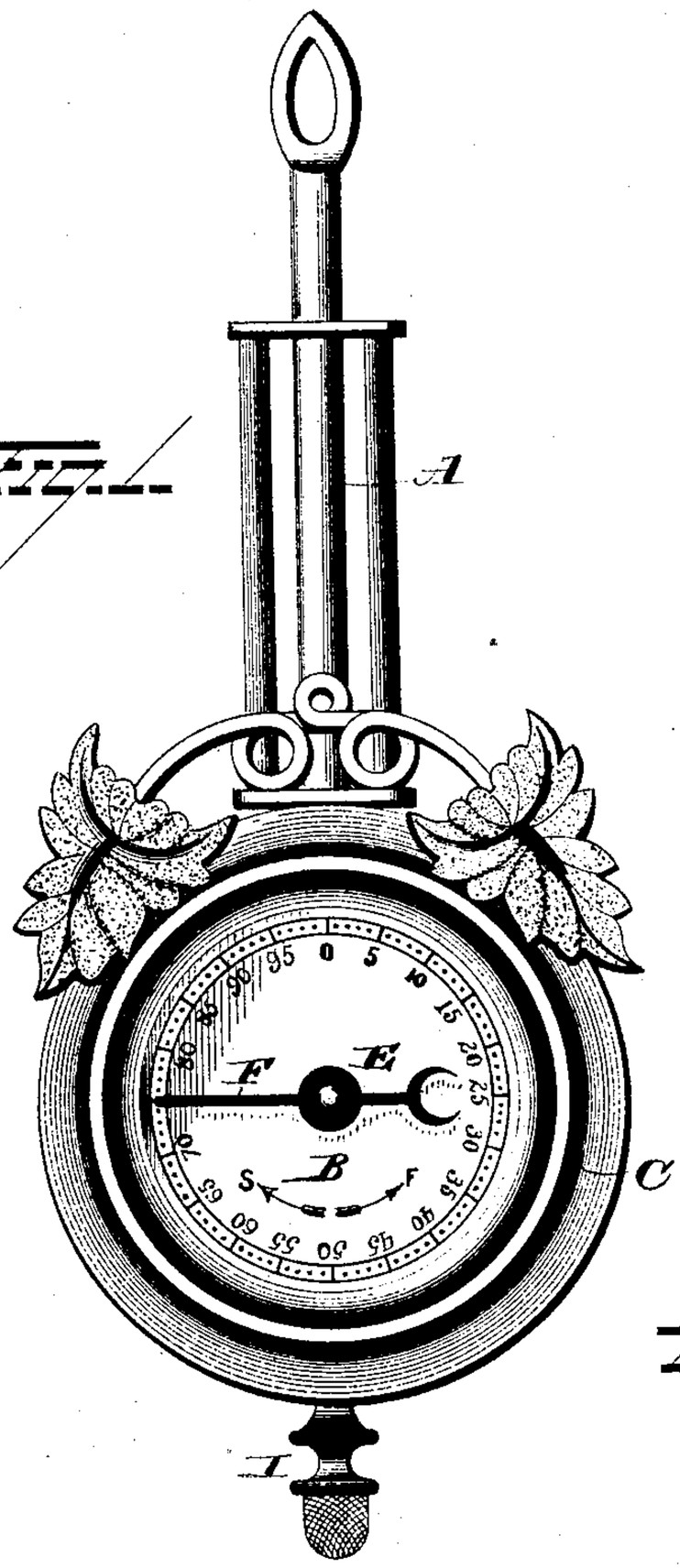


FIG. 2.

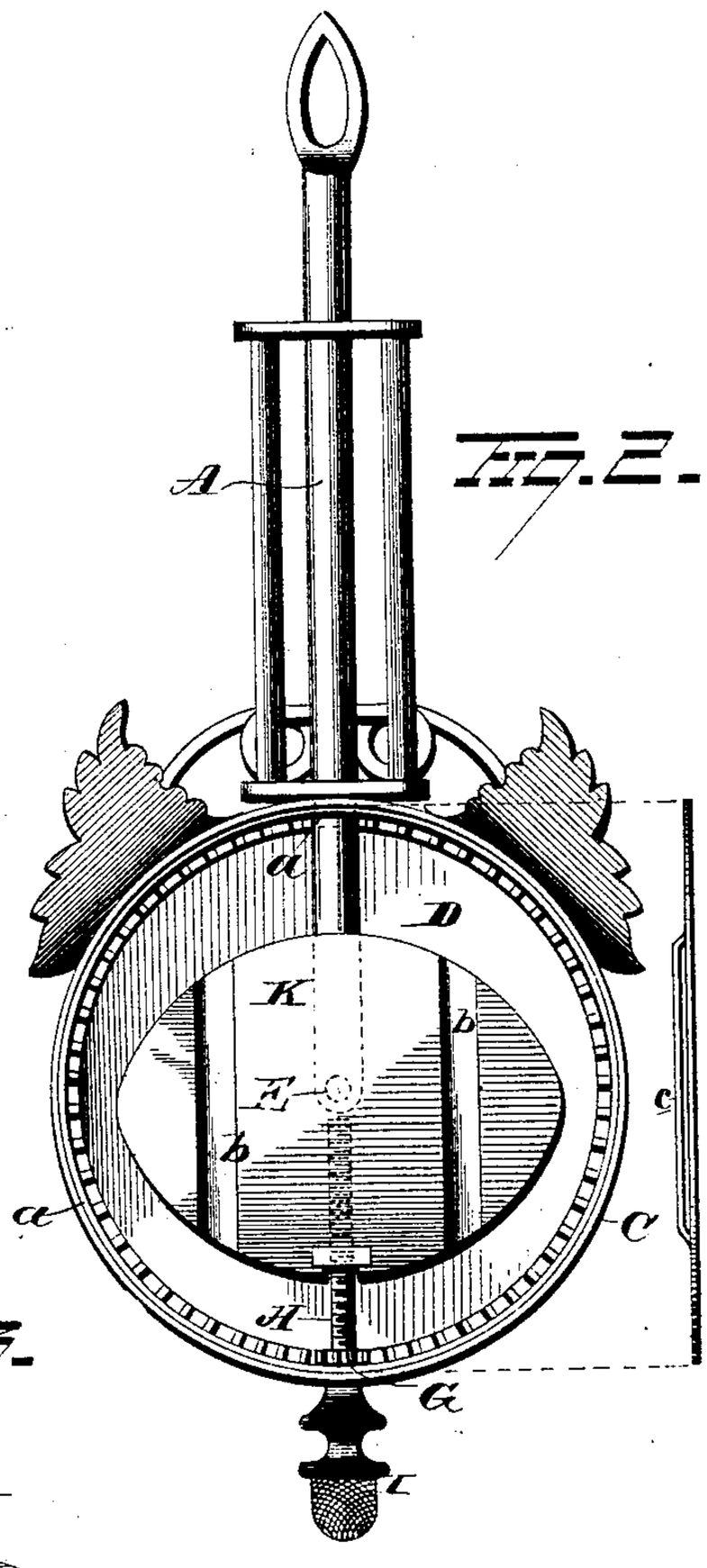
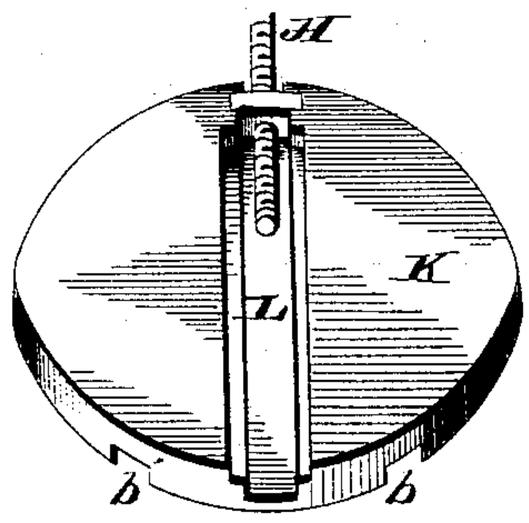


FIG. 3.



WITNESSES

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Fig. 4.

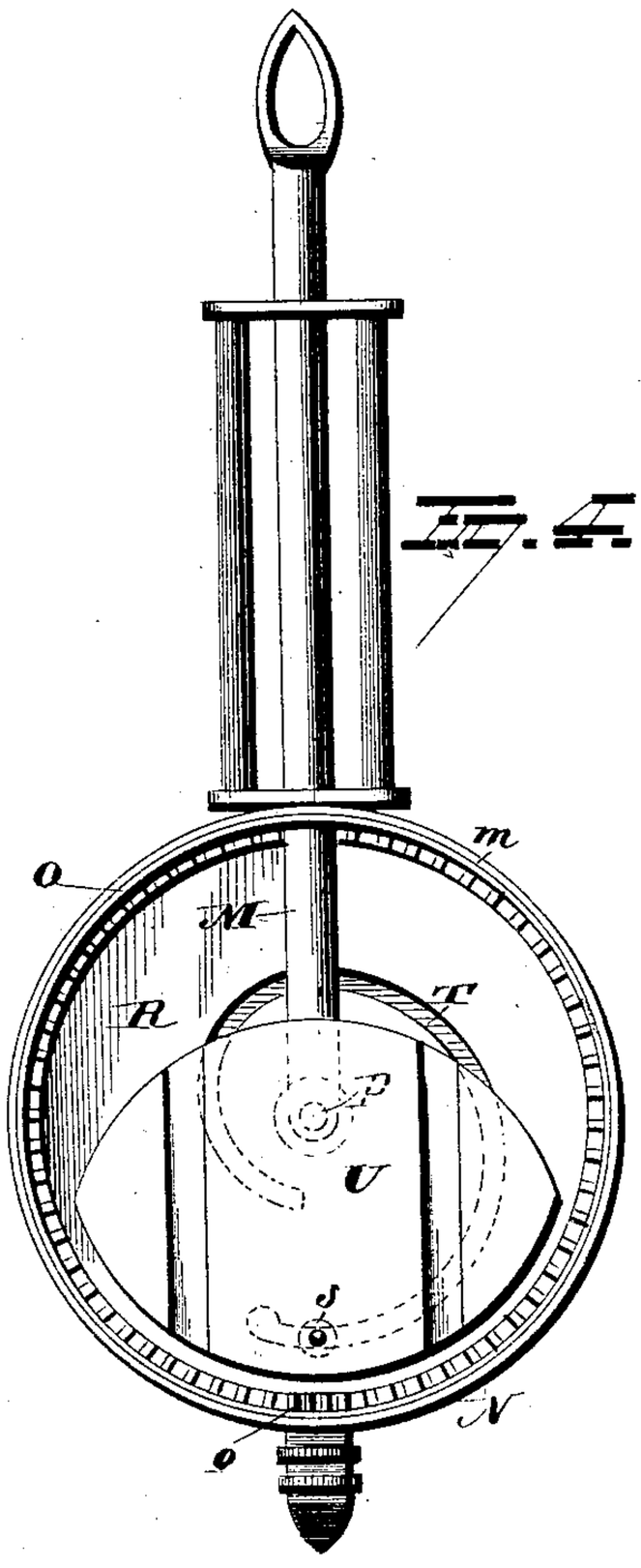
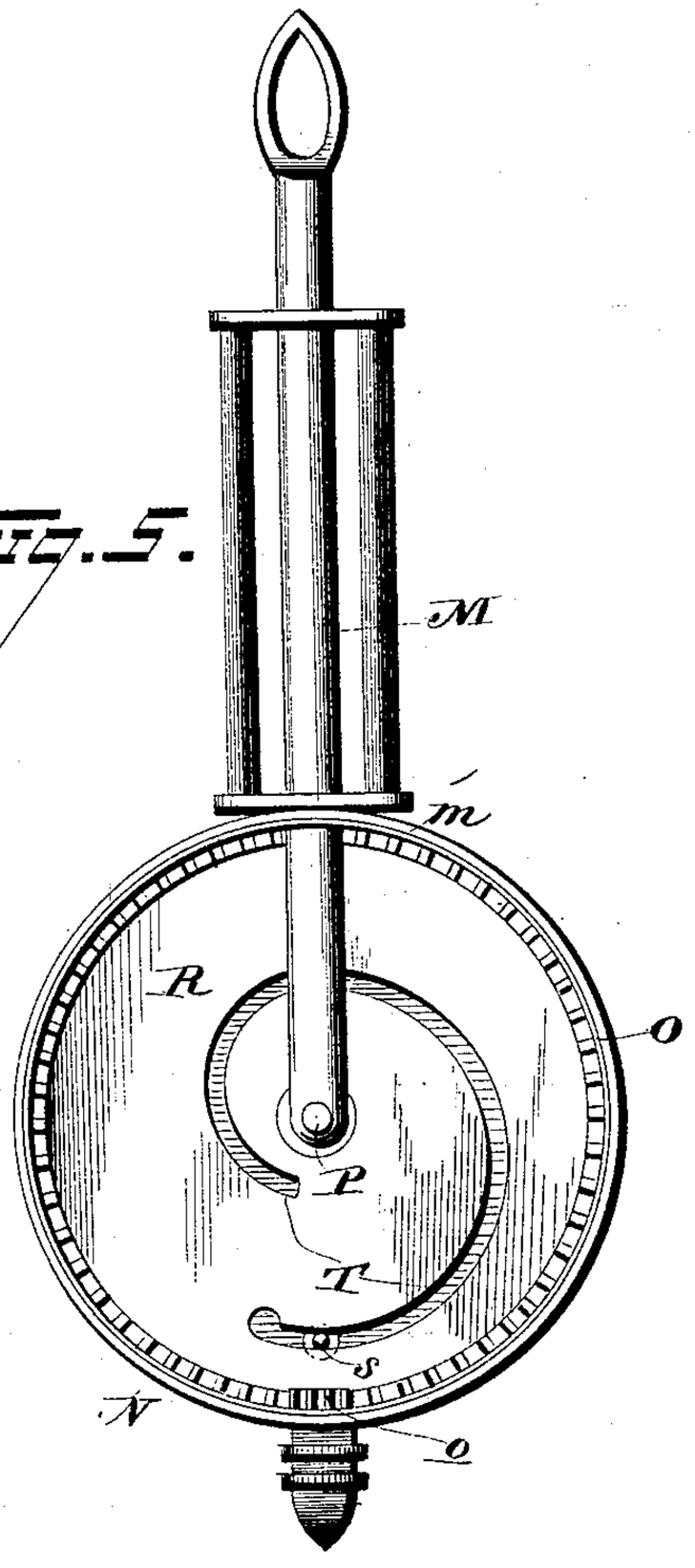


Fig. 5.



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UNITED STATES PATENT OFFICE.

ISAAC B. WOODRUFF, GEORGE B. OWEN, AND HENRY W. BEECHER, OF WINSTED, CONNECTICUT, ASSIGNORS TO THE WILLIAM L. GILBERT CLOCK COMPANY, OF SAME PLACE.

CLOCK-PENDULUM.

SPECIFICATION forming part of Letters Patent No. 287,604, dated October 30, 1883.

Application filed June 16, 1883. (No model.)

To all whom it may concern:

Be it known that we, ISAAC B. WOODRUFF, GEORGE B. OWEN, and HENRY W. BEECHER, of Winsted, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Clock-Pendulums; and we 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.

Our invention relates to an improvement in clock-pendulums, the object of the same being to provide a pendulum which shall, from its peculiar construction, be adapted to regulate the movement of the clock; and with this object in view our invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view of our improvement. Fig. 2 is a rear view with the rear plate removed. Fig. 3 is a detached view, showing the rear side of the bob. Fig. 4 is a rear view of a modification, showing the rear plate removed. Fig. 5 is a view of the same with the bob removed.

A represents the pendulum-rod, B the dial, and C the casing. The dial B may be made integral with the casing C, or may be provided with a flange, *a*, around which snugly fits the said casing C and holds the dial in place, said dial being made of metal, paper, or other suitable material. Within the casing C, and on the inner side of the dial B, fits the disk D, to which is secured the shaft E, which passes through the dial, and is provided on the outer end with a hand, F. This disk is provided on its edge with cog-teeth, with which meshes a pinion, G, secured on the screw H, the latter being secured to the knob I. It will be seen that by turning the knob I the pinion G, meshing with the cog-teeth on the disk D, will rotate the latter, and also the hand F, by means of the shaft E.

K represents the bob, which is provided with a female screw-thread, in which is adapted to fit the screw H, which is preferably provided with a double thread. By turning the knob I it will be observed that the bob K is made to travel up or down, the same being guided by the pendulum A, fitting within the groove L, said pendulum passing through a hole or perforation in the flange *a* and casing C, and provided on the end with a perforation, in which loosely fits the inner end of the shaft. By this construction and arrangement of parts the bob K is made to travel in a vertical line simultaneous with the rotation of the hand, the bob K traveling across the casing while the hand makes one revolution. To facilitate in guiding the bob, two grooves, *b*, may be formed in the rear face thereof, and two guides, *c*, formed in the rear plate by simply slitting and bending the same down so that they will fit in the said grooves *b*, as shown in Fig. 2; but these may be dispensed with, if desired, the screw and pendulum being sufficient.

If it is desired to regulate the clock-movement, it is simply necessary to turn the knob I, thus raising or lowering the bob K and lengthening or shortening the pendulum, according as it is desired to hasten or lessen the speed of the clock, which at the same time turns the hand which registers on the dial the extent of the movement of the bob K, the said dial being divided and regularly numbered, and thus allowing the adjustment to be calculated very accurately. In Fig. 4 of the drawings M represents the pendulum-rod, N the casing, and O the dial, the latter being provided with the flange *m*, around which snugly fits the casing N and keeps the same in position. Through the casing N and the flange *m* of the dial passes the pendulum-rod M, the inner end of which is provided with a hole or perforation, in which loosely fits the inner end of the shaft P, which latter passes through the dial O and the cam-disk R, and is rigidly secured to the latter. On the outer end of this shaft P is secured the hand F, as in ordinary clocks. The cam-disk R is provided on its outer edge with cog-teeth, with which engages the pinion *o*, secured to the knob. By turning this knob it will be seen that the cam-disk is made to rotate, and at the same time the hand F, by means of the shaft P, rigidly secured to the said cam-disk. The disk

R is provided with the cam-slot T, in which is adapted to travel a projection, *s*, on the bob U, the said projection *s* being provided on the end with a head, to prevent the same from leaving the cam-slot. This bob U is also provided with a groove, in which is adapted to fit the pendulum-rod M. It will now be seen that by turning the knob I the disk R is rotated, and by means of the projection on the bob traveling in the cam-slot the bob is moved either up or down, the same being kept from rotating by fitting on the stationary pendulum, which guides the bob in its movements. The hand attached to the cam-disk moves simultaneously with the latter, and registers on the dial the rotation of the same and the extent of the travel of the bob in the casing.

It is evident that many slight changes in the construction and relative arrangement of the several parts might be resorted to without departing from the spirit of our invention; and hence we would have it understood that we do not limit ourselves to the exact construction shown and described, but consider ourselves at liberty to make such changes and alterations as may fairly be considered to fall within the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a pendulum-rod and a pendulum-rod casing provided with a dial, of a bob located in rear of said casing, a hand or pointer and devices for imparting vertical adjustment to the bob independent of the pendulum-rod casing, and simultaneously rotating the hand or pointer and register on the dial the extent of movement of the bob, substantially as set forth.

2. The combination, with the pendulum-rod, of a stationary casing and dial, a bob adapted to be vertically adjusted within the casing and guided by the pendulum-rod, and a hand adapted to register on the dial the extent of the movement of the bob, substantially as set forth.

3. The combination, with a pendulum-rod, of a stationary casing and dial secured thereto, a disk located in the casing, a bob, and means to vertically adjust the bob and simultaneously register the extent of the movement on the dial by means of a hand secured to the disk, substantially as set forth.

4. The combination, with a pendulum-rod, a non-adjustable pendulum-bob casing or shell attached to the pendulum-rod, and a dial and hand or pointer, of a pendulum-bob located within said casing, a screw for imparting vertical adjustment to the pendulum-bob, and a toothed wheel and pinion for rotating the hand or pointer, substantially as set forth.

5. The combination, with a pendulum-rod, of a stationary casing and dial secured thereto, a bob fitting within the casing and provided with a female screw-thread, and also a groove in which fits the stationary pendulum-rod, the bob being guided thereby, a screw adapted to fit in the bob and vertically adjust the same, and means to register the extent of the movement of the bob on the dial, substantially as set forth.

6. The combination, with a stationary casing and a dial secured thereto, of a disk provided on its edge with cog-teeth, and at its center with a shaft passing through the dial, the shaft being provided on its outer end with a hand, a pendulum-rod passing through the casing, and provided on its lower end with a perforation in which loosely fits the inner end of the said shaft, a bob provided with a female screw-thread, and a groove in which fits the pendulum-rod, and is guided thereby, a screw adapted to fit in the bob, and provided with a pinion to engage with said cog-teeth, and with a knob, all of the above parts being combined and adapted to operate as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

ISAAC B. WOODRUFF.
GEORGE B. OWEN.
HENRY W. BEECHER.

Witnesses:
HENRY B. ABEL,
FRANK D. HALLETT.