

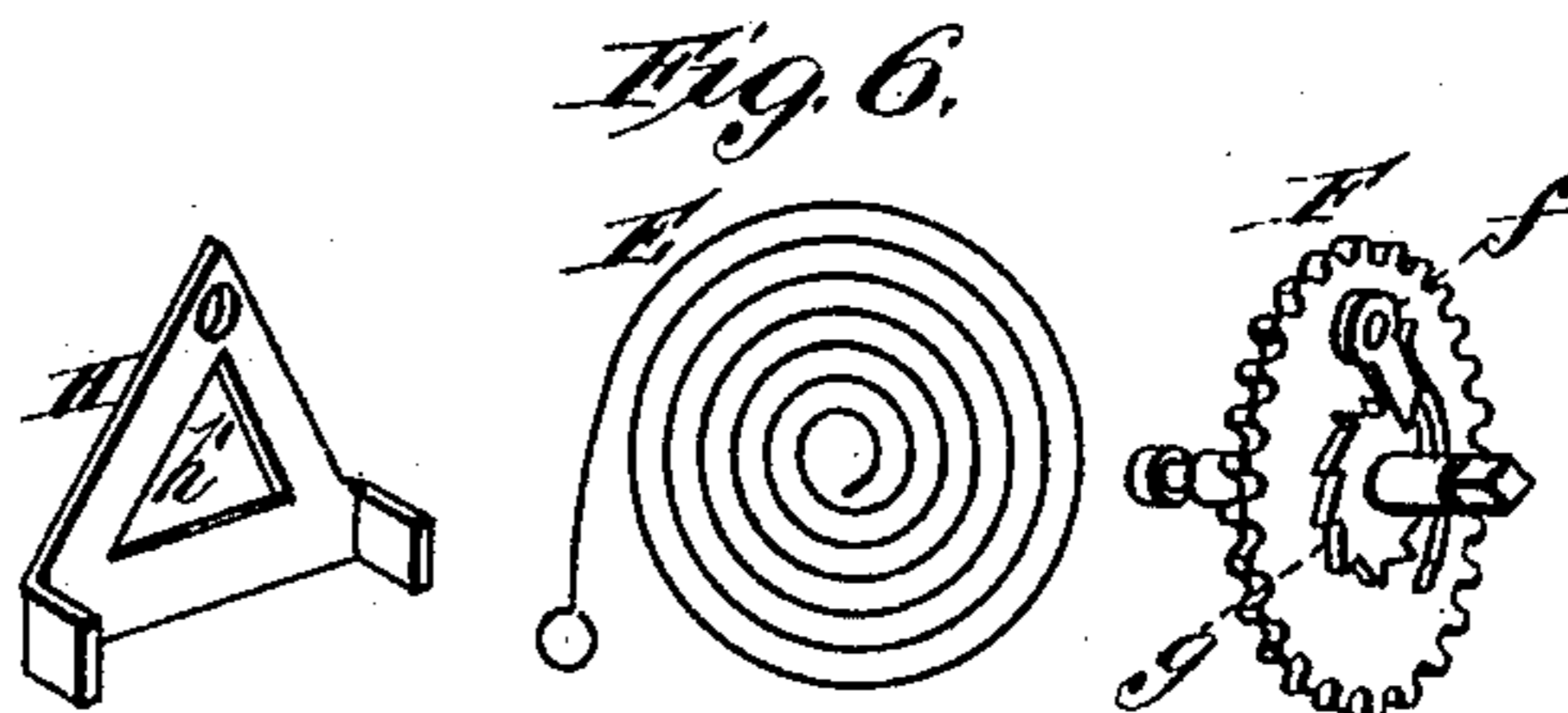
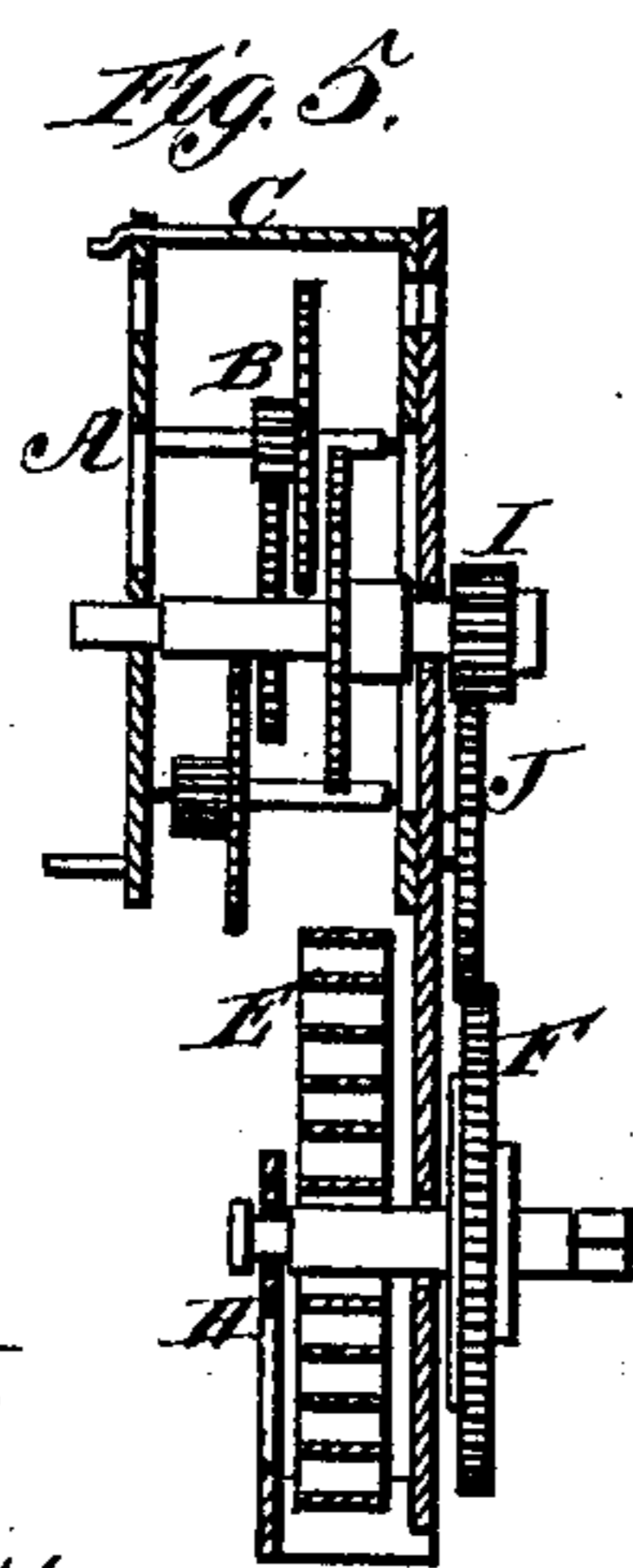
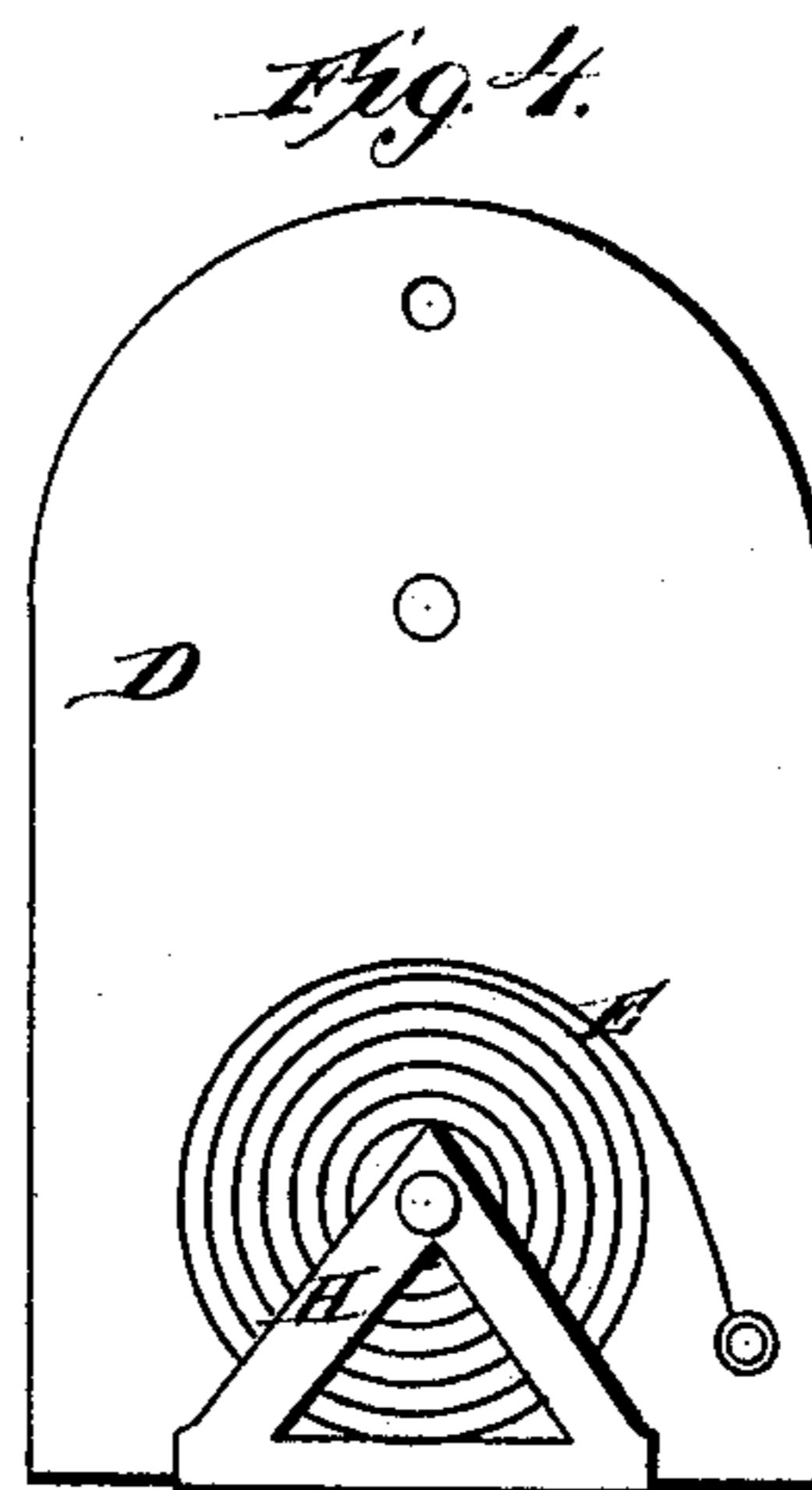
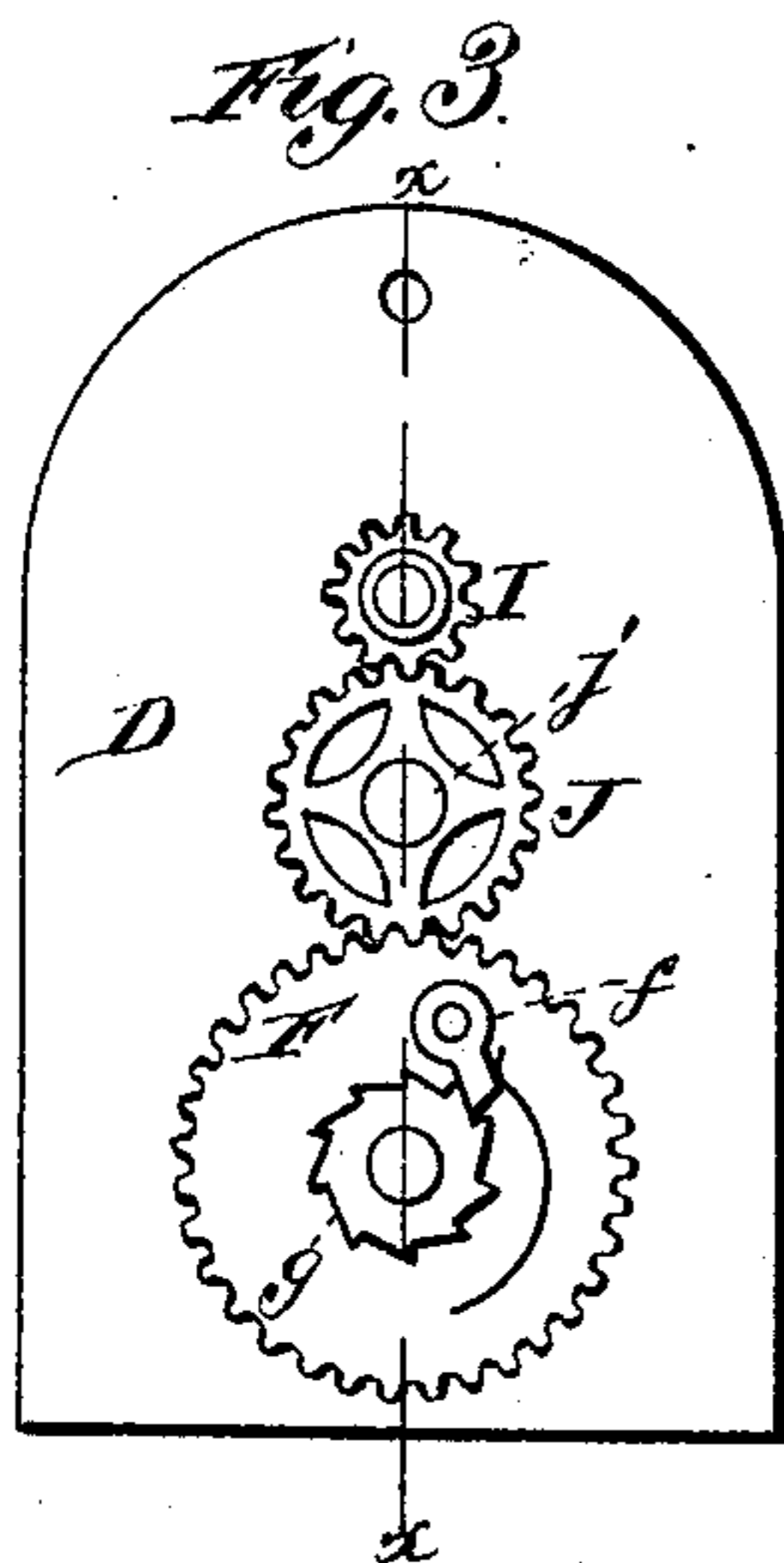
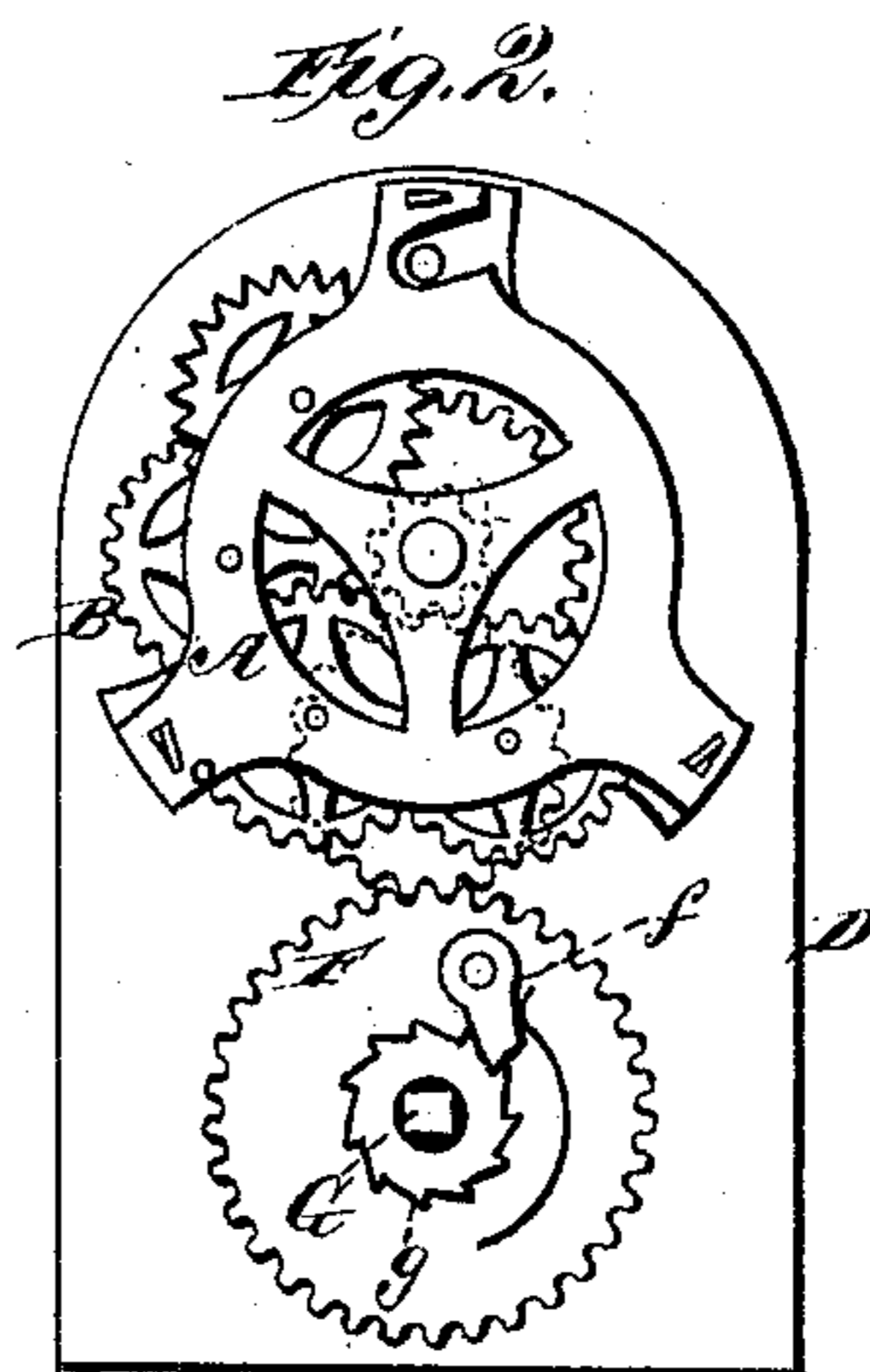
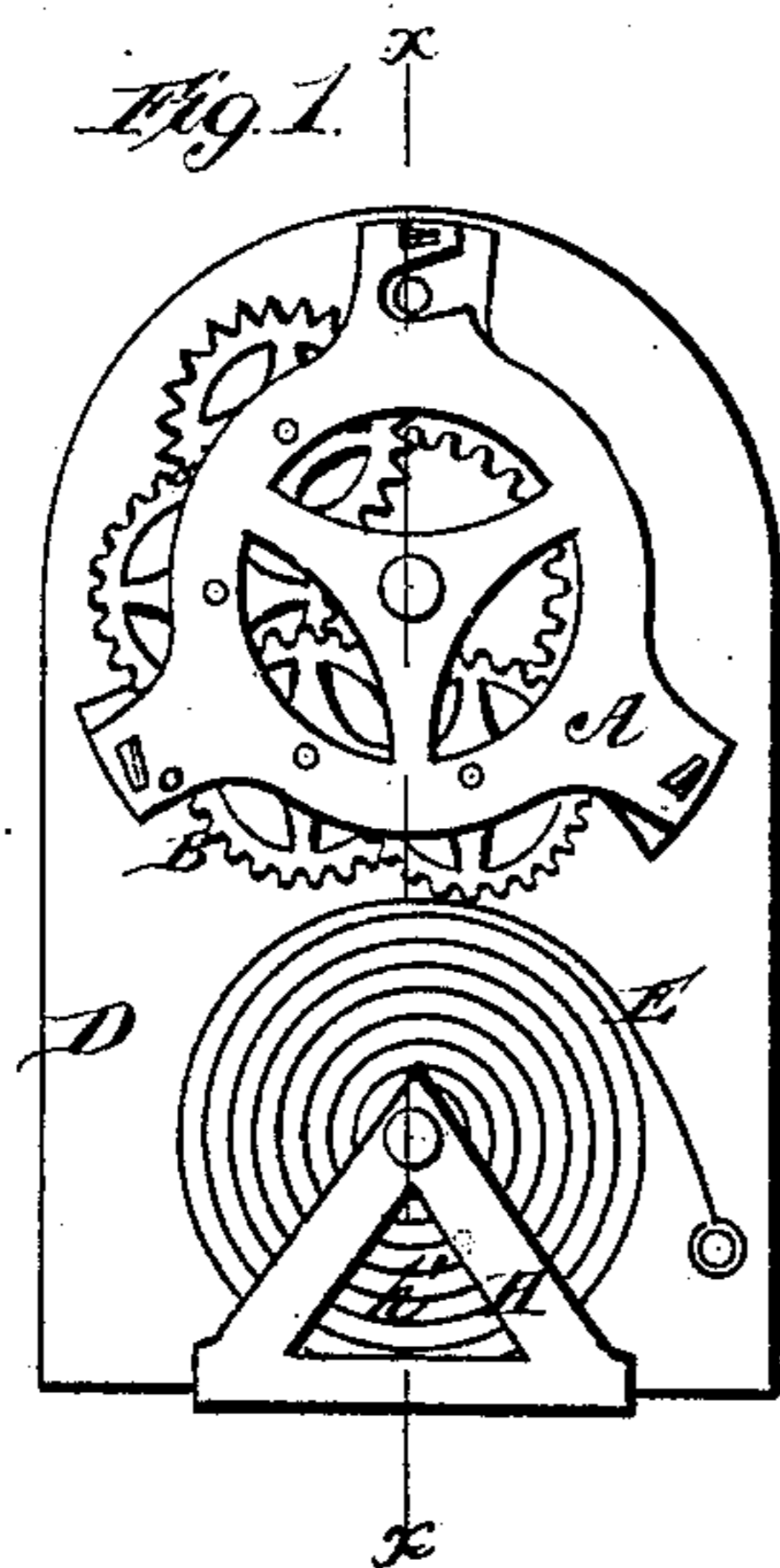
(Model.)

A. E. HOTCHKISS.

CLOCK MOVEMENT.

No. 251,050.

Patented Dec. 20, 1881.



Witnesses.

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UNITED STATES PATENT OFFICE.

ARTHUR E. HOTCHKISS, OF CHESHIRE, CONNECTICUT.

CLOCK-MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 251,050, dated December 20, 1881.

Application filed January 22, 1881. (Model.)

To all whom it may concern:

Be it known that I, ARTHUR E. HOTCHKISS, a citizen of the United States, residing at Cheshire, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Clock-Movements; 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.

This invention is an improvement on the clock-movement described and shown in the patent granted to me November 4, 1879. The object of said improvement is to lessen the thickness of said movement and of the clock as a whole by utilizing space within the case which has hitherto been wasted. In said patent the spring is shown as arranged behind the train of wheels, so that the clock necessarily is nearly twice as thick as it would be if the spring were located elsewhere, while the lower part of the clock contains nothing except the pendulum. In the present improvement I utilize this space in the lower part of the clock by placing therein the mainspring and the main wheel, one of these parts being attached to the front of the back plate and the other to the rear thereof, and the upper part of the case containing only the train of smaller wheels, the pillars, and the necessary arbors and plates, with a part of the pendulum-rod.

My invention consists in the construction and combination above indicated and herein-after more fully set forth and claimed.

In the accompanying drawings, Figure 1 represents a front view of the clock-movement, the mainspring being shown as attached to the front of the back plate. Fig. 2 represents a front view of the clock-movement, the main wheel being attached to the front of the back plate. Fig. 3 represents a rear view of the back plate which supports the clock-movement, showing the main wheel attached thereto. Fig. 4 represents a rear view of said back plate, showing the mainspring attached thereto. Fig. 5 represents a vertical section through the clock-movement on the line xx of Figs. 1 and 3; and Fig. 6 represents a detail perspec-

tive view of the mainspring, main wheel, the shaft to which they are attached, and the bracket which serves as one of its bearings, the arrangement of these parts being as in Figs. 1 and 3.

Similar letters indicate similar parts in the said figures.

A designates the front plate of my clock-movement, B the train of wheels just behind the same, and C the pillars supporting said front plate, the construction and arrangement of said parts being as in my patent before mentioned.

D designates the back plate, which is simply an extension or enlargement of the pillar-plate, corresponding closely in size and shape to the back of the clock-case, but quite independent thereof. This back plate constitutes in effect a vertical partition within the clock-case, dividing a thin or shallow rear space from a thicker or broader front space. This back plate may be stamped out as a separate piece, to which the pillar-plate and pillars may be attached, instead of making both plates in one. The form of said back plate may be considerably changed, and also its position above stated within the clock-case.

The mainspring E and the main wheel F are supported on opposite sides of back plate, D, and near the lower end of said plate, by a short shaft or arbor, G, which extends through the back of the clock-case to receive a key, and which constitutes the winding-arbor of the clock. This shaft or arbor has its bearings partly in said back plate and partly in a bracket, H, which is secured thereto. This bracket consists of a triangular plate supporting said arbor at or near its apex and arranged parallel to said back plate, the metal of the two lower corners being bent at right angles to the main body of said plate and extended to form feet or claws $h h$, whereby the said bracket is secured to said back plate. The mainspring E is held between said bracket and said back plate and braced and guided thereby. A central opening, h' , in the said bracket, together with the open space between the bottom of said bracket and the back plate, will allow inspection of all parts of said spring, which said bracket would otherwise hide. Of course, the shape of this bracket may be considerably varied without impairing its usefulness for the broad purposes

above mentioned; but I prefer the construction shown.

When the mainspring E is on the front side of the back plate and the main wheel F is on the rear side of said plate, Figs. 1 and 3, the center pinion, I, is necessarily on the rear side of said plate also. Said main wheel may be made very large to gear directly with said pinion; but in practice I find it more convenient to interpose between them an idle-wheel or transmitting-wheel, J, journaled on a stud, j, fixed to said back plate. When the mainspring E is on the rear side of said back plate, Figs. 2 and 4, pinion I and idle-wheel J, as well as main wheel F, are necessarily on the opposite side of said plate; but their arrangement is not changed in any other respect.

The main wheel F is loose upon arbor G, and is connected thereto by means of a spring-click, f, on said wheel, which takes into the teeth of ratchet-wheel g, that turns with said shaft or arbor G. The winding end of said arbor extends through or into the back of the clock-case, so that the clock may be wound from the outside of said case; but it has no bearing in said back. The plates A and D, with the little bracket aforesaid, are the sole supports of the clock-movement, so that the works are quite independent of the case, and the removal of the large rear plate, D, takes them all with it.

By the construction above stated I am able to get the full advantage of having the mainspring and the main wheel near the bottom of the clock with the least possible expenditure of material in the way of supports.

The pendulum is not shown, as its illustration would be useless in view of the fullness of the description and drawings in my aforesaid patent. The arrangement and operation of it are similar thereto. Its plane of vibration is sufficiently far forward of the back plate to leave a considerable space available for the mainspring or main wheel in the lower part of the clock. I am thus enabled to considerably reduce the thickness of the clock, as stated.

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

1. A plate supporting the entire movement and readily removable from the clock-case, in combination with a train of wheels attached to its upper part and a mainspring and main wheel on opposite sides of its lower part.

2. The combination of a winding-arbor and a main wheel mounted thereon with a mainspring and a back plate and bearing-bracket, said main wheel and mainspring being on opposite sides of the lower part of said back plate.

3. The combination of mainspring E and main wheel F, arranged on opposite sides of the lower part of the back plate, with said back plate and a triangular bracket, H, which aids in supporting, guiding, and protecting said spring, substantially as set forth.

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

ARTHUR E. HOTCHKISS.

Witnesses:

WM. H. BABCOCK,

EDWARD G. SIGGERS.