L. BEACH.

Clock Spring,

No. 6,739. Patented Sept. 25, 1849.

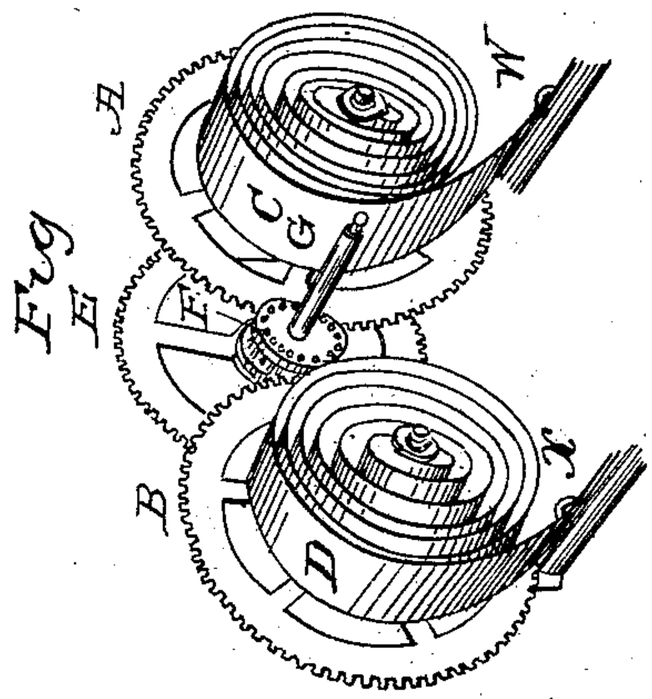
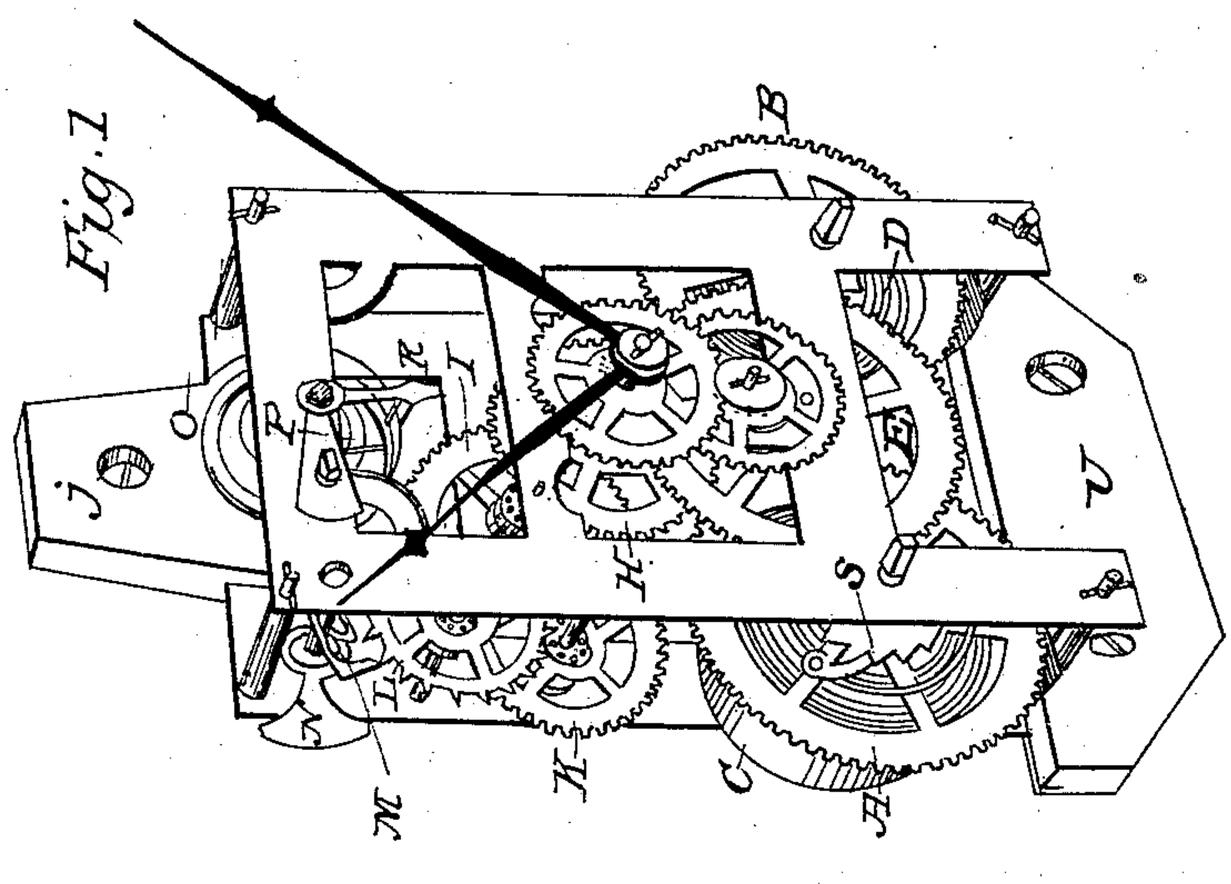


Fig. 1



UNITED STATES PATENT OFFICE.

LEVI BEACH, OF BRISTOL, CONNECTICUT.

IMPROVEMENT IN THE MODE OF APPLYING SPRINGS TO TIME-PIECES.

Specification forming part of Letters Patent No. **6,739**, dated September 25, 1849.

To all whom it may concern:

Be it known that I, LEVI BEACH, of the town of Bristol, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Marine Time-Pieces; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, which make a part of this specification, in which—

Figure 1 is a perspective view of the whole time-piece, showing the kind of escapement, the train of wheels, and the two springs which propel the two wheels which drive the main pinion. Fig. 2 is a perspective view of the posterior side of the first three wheels, showing how the first two work in and drive the pinion of the third, and also the springs which propel them.

My improvement consists in so constructing the movement that two wheels propelled by springs may operate on opposite sides of the main pinion in such a manner as to essentially reduce the friction, (which is very considerable when one spring sufficient to move the work for eight days with a dead beat and lever is used,) and so that one of the springs may be exerting its full force while the other is being wound up, thus operating as a maintaining-power in the most efficient manner. I make the movement in its general construction in the ordinary way for spring-and-balance time-pieces designed to run eight days with once being wound up, with what is commonly called the "detached-lever escapement," as seen in Fig. 1.

I make two driving-wheels A and B, Figs. 1 and 2, to the arbors of which I attach two springs C and D in the common form, as seen in Figs. 1 and 2, which propel both of the wheels in the same direction, and I place these two wheels A and B on opposite sides of the wheel E, Figs. 1 and 2, in such a position that the force of the wheel A on the pinion F, Fig. 2, of the wheel E will be downward, and the force of the wheel B on the same pinion will be upward, as shown in Fig. 2, so that the force of the two wheels A and B on the pinion F, being in opposite directions, will very essentially lessen the friction of the pivots of the arbor G of the wheel E, Fig. 2.

The wheel E drives the pinion of the center wheel H, Fig. 1, the extension of the arbor of which carries the minute-hand, and the hour-hand is carried by the ordinary face-wheels.

All the wheels, pinions, &c., above the center wheel H are made, arranged, and operate in the ordinary way of time-pieces with detached-lever escapements, with balance and hair springs—that is, I is the third wheel, (so called;) K, the fourth wheel; L, the crown, pallet, or escapement wheel; M, the pallets; N, the outer end of the lever; O, the balance; P, the hair or balance spring, and R the regulator, all arranged as seen in Fig. 1.

The two mainsprings C and D, Figs. 1 and 2, which propel the movement, are attached to the pillars of the frame in the usual way, as seen at W and X, Fig. 2, and when wound up are held by a ratchet-wheel and click, in the usual way, as represented at S, on the wheel A, Fig. 1.

The frame-work of the movement is made in the ordinary way, and the movement is secured in the case by blocks or clamps screwed on, as seen at T and U, Fig. 1.

The advantages of my improvement over all others heretofore used or known consist in the use of two wheels propelled by two springs to drive the main pinion, so arranged or located that the two wheels will act on opposite sides of the main pinion, and therefore in opposite directions, whereby the friction will be much less than where one driving-wheel only is used.

I have found by repeated experiments that two thin or weak springs will communicate a more uniform motion to the whole movement than one thick or strong spring, and will be less liable to break; and that the driving-power, being thus equally applied to the opposite sides of the main pinion and acting in opposite directions, will cause much less friction than when the whole power is applied on one side of the pinion only; and that by using two springs one will be exerting its full force while the other is being wound up, thus supplying an efficient maintaining-power at all times; and, if greater accuracy should require it, one spring may be wound up when the other has run half down, so that by winding up one spring at the commencement of the week and the other in the middle of the week the propelling force would be very nearly equal at all times. By all which means

a greater uniformity in time will be insured than has ever before been attained by any time-piece propelled by a spring or springs, without a fusee, and regulated by a balance and hair spring, when calculated to run eight days with being wound up but once.

I am aware that time-pieces have been propelled by springs and regulated by means of a balance and hair spring, and that two springs have been used in connection with chains or cords and a fusee, and that maintaining-powers have been used by means of the mainspring being wholly attached to the main wheel and its attachments, and also by a separate spring for that purpose. I therefore do not claim either of these, as such, as my invention; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The using of two driving-wheels A and B, propelled by two springs C and D, and so arranged as to exert their driving force on opposite sides of the main pinion F to lessen the friction, to communicate a uniform motion and to supply an efficient maintaining-power while each spring is being wound up for what is called "eight-day marine time-pieces," when the whole is constructed and arranged substantially as herein described.

LEVI BEACH.

Witnesses:
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