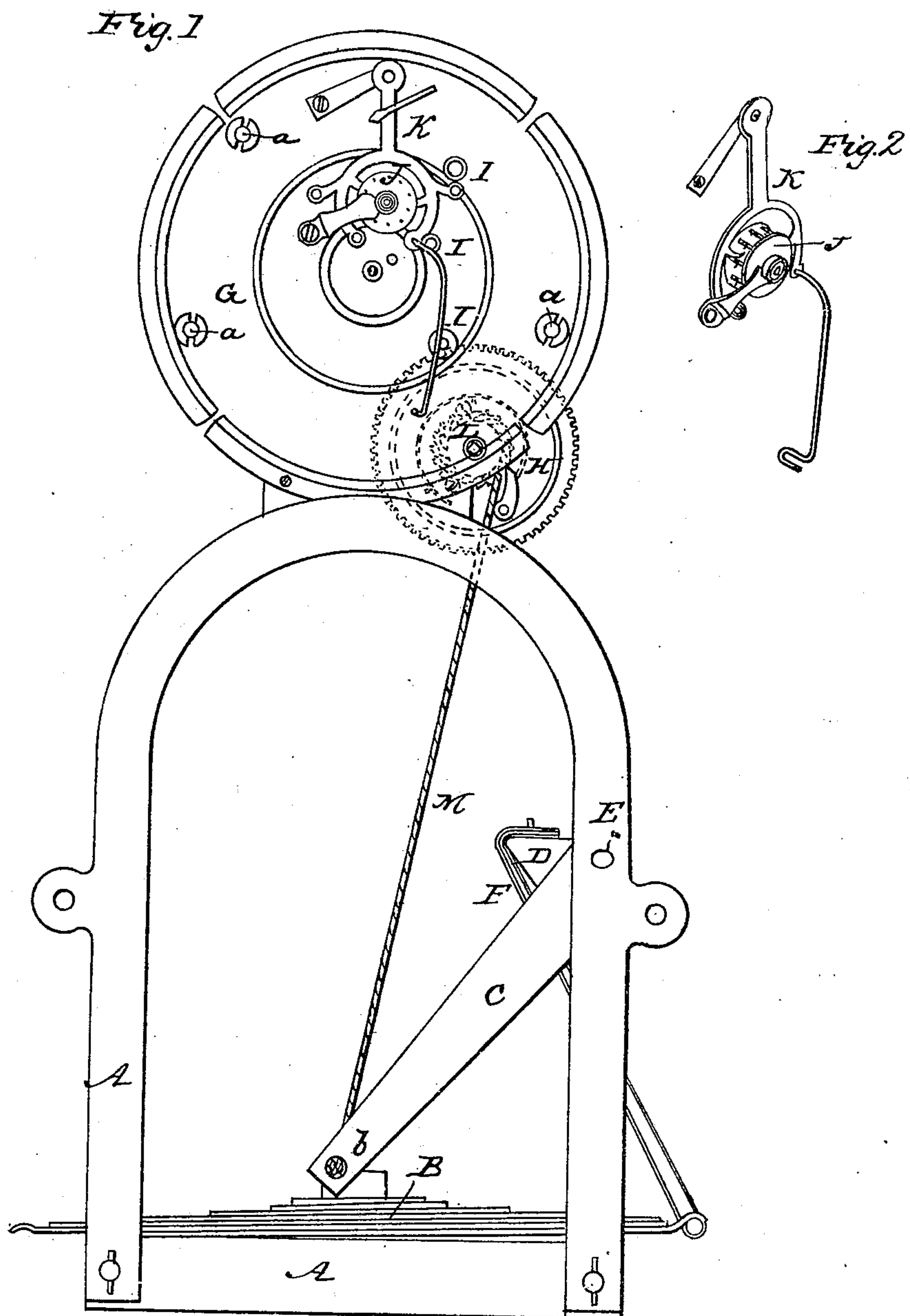


J. IVES.
Watch.

No. 25,934.

Patented Oct. 25, 1859.



WITNESSES
Samuel P. Newell
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INVENTOR
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UNITED STATES PATENT OFFICE.

JOSEPH IVES, OF BRISTOL, CONNECTICUT.

WATCH.

Specification of Letters Patent No. 25,934, dated October 25, 1859.

To all whom it may concern:

Be it known that I, JOSEPH IVES, of Bristol, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Timekeepers; and I do hereby declare that the same is described and represented in the following specification and drawings; and to enable others skilled in the art to make and use my improvement I will proceed to describe its construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of this improvement is as follows, and constitutes a new and useful feature in the manufacture of time keepers, and first, improvement in the propelling power, by combining the spring, lever, and cam, so as to produce an equalized power to the movements at all times; second, by the substitution of planished or unplanished tin, a heretofore unknown material in the manufacture of the running gear of clocks, in combination with the rolling pinions, and third, the employment or introduction of the rolling escapement into the crown wheel.

In the accompanying drawings, Figure 1 is a front elevation showing the mode of combining the spring, lever and cam, to produce an equalizing motive power to propel the movements of a clock and also showing the mode of proceeding in the manufacture of clocks whereby I am enabled to substitute planished or unplanished tin for other metals in making the plates, between which the running gear is arranged and the plates for the wheels or gears showing partly by dotted lines, and in Fig. 2 is shown an isometrical view of the crown wheel with the application of the rolling escapement.

In Fig. 1, A is the frame work which supports the clock movements and to which the actuating or motive power is secured. B is a spring composed of one or more metallic levers, and is secured firmly to the frame work A. C is a lever. D is a cam. Said lever and cam are secured firmly together upon a shaft E. F is a connection from the end of the spring B to the toe end of the cam D. Now it will be observed that by a proper shaped and arrangement of the cam D, with the lever C and spring B, I produce an equalized motive power. The running gear or movements of the clock is arranged between or on two plates, of which

G is one. H is one of the gears shown partly by dotted lines. The peculiarity of the plates G, H, &c., consists in the making or in the substitution of planished or unplanished tin (for other metals) in making said plates, gears, &c., for clocks. I am aware that a feeling of absurdity will at first strike the mind of the observer, but a moment's careful reflection will show that the invention is not an indigenous product of the mind, but that the inventive mind has been called into careful exercise. I first make these plates much in the same way the other metal plates are made, by punching, &c. I then sink or raise or both, a bead or beads on the surface of said plates which trues and stiffens the plates. The teeth are made much in the ordinary way. For bearings I make and secure in the plates G, bushings I made of durable and lubricating material, so that I am not dependent upon the thickness of the stock for bearings. I also use the rolling pinion, thereby doing away with friction to a very great extent, without the use of which (rolling pinions) the substitution of planished or unplanished ribbed or corrugated tin plate for other metals for running gear, would not be of any use, for the reason that it cannot be used in the common method of making clocks, with the fast leaf pinion. The stock also is much cheaper. It is estimated that a box of planished or unplanished tin which costs ten dollars will make five hundred clocks (while the cost of material for a brass clock, is twenty five cents to forty five cents each, or one hundred and twenty five to two hundred and twenty five dollars for the same number of clocks) and requiring less expenditure for labor, is stronger, less liable to bend or break, will not corrode, and is susceptible of a high finish. The propelling power and running gear are connected by a cord M or chain as desired, and by three turns of the drum L, will produce an eight day movement of the clock.

In Fig. 2, J is the crown wheel. K is the verge escapement having fingers, " ' are the rolling pinions in the crown wheel J which roll on the fingers " in their vibratory motion, thereby greatly relieving the friction and necessity of lubricating. Experiments have been made which have shown that where a clock would not run at all without the rolling pinion, the application

of it (the rolling pinion) to the same clock gave immediate action thereto without any other change.

5 I believe I have thus clearly stated the nature, application, construction, and operation so that a person skilled in the manufacture can make the same therefrom.

10 The advantage to be derived by this improvement over others now in use are believed to be very great and beneficial to the public, first, a superior time keeper in regard to accuracy, durability and liability of getting out of order; second, they are far cheaper of manufacture and a more desirable article for use and trade.

15 What I claim therefore and desire to secure by Letters Patent is—

1. The combination of the spring B lever C cam D substantially in the manner as and for the purpose described. 20

2. I claim the substitution of ribbed or corrugated, planished or unplanished tin plate for running gear, &c. (for other metals) when used in combination with the rolling pinions substantially as and for the 25 purpose described.

3. And I claim making a crown wheel with rollers instead of teeth, to prevent slide and friction upon the verge or pallet, in the manner as and for the purpose described.

JOSEPH IVES. [L. S.]

Witnesses:

SAMUEL P. NEWELL,
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