J. CAMICHEL.

Clock for Utilizing Watch-Movements.

No. 214,362. Patented April 15, 1879.

Fig. 1.

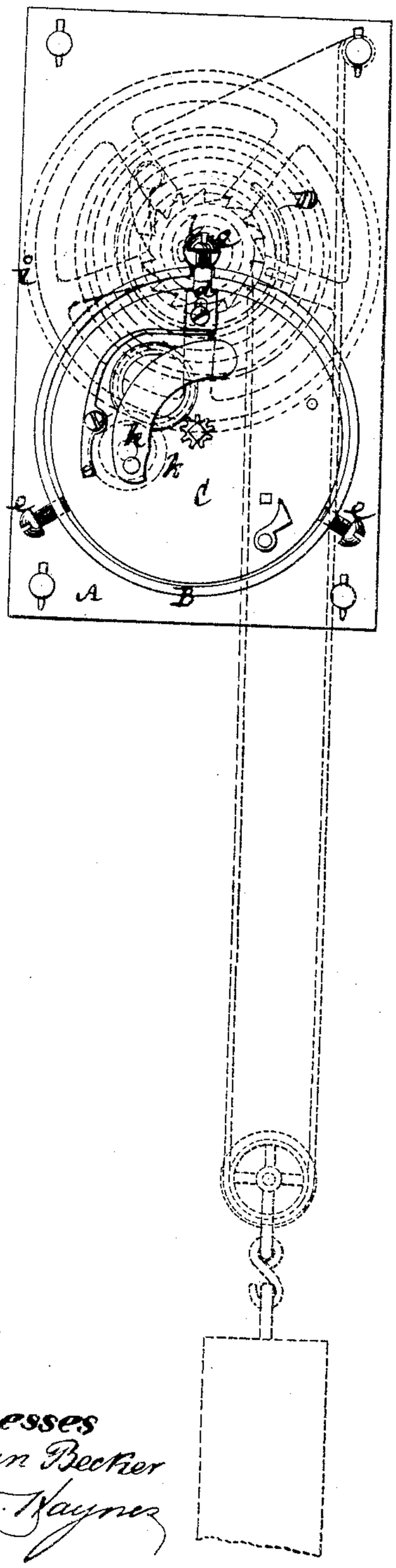


Fig. 2.

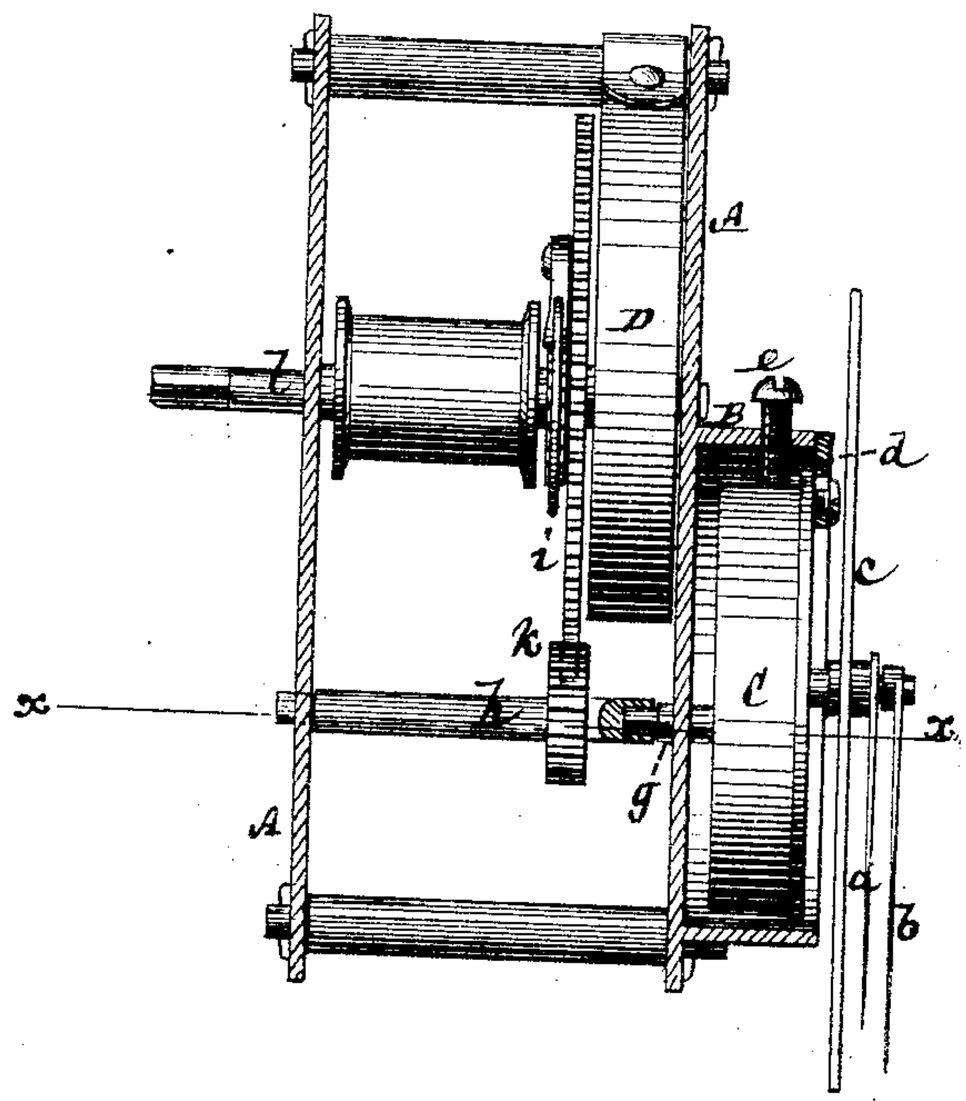
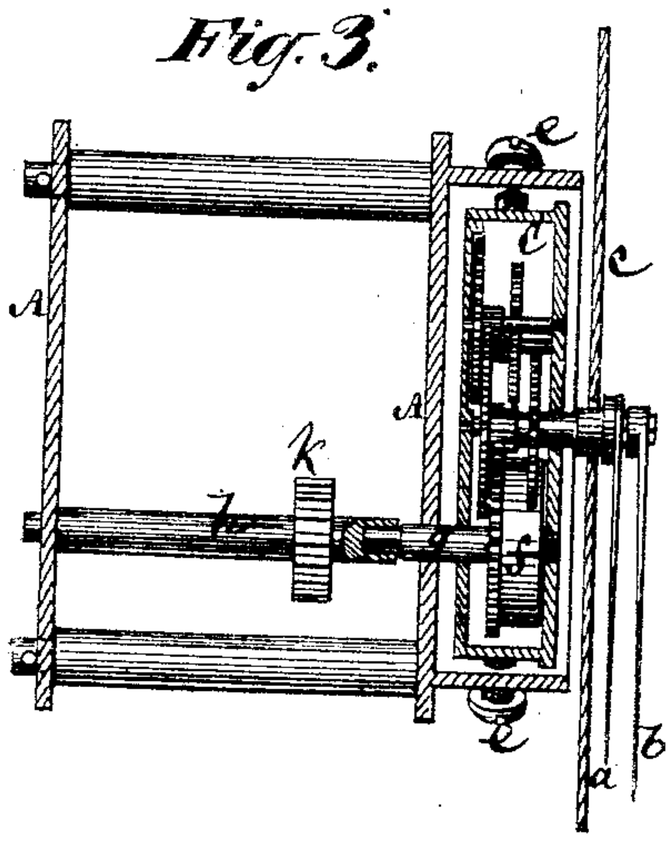


Fig. 3.



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IMPROVEMENT IN CLOCKS FOR UTILIZING WATCH-MOVEMENTS.

Specification forming part of Letters Patent No. **214,362**, dated April 15, 1879; application filed January 24, 1879.

To all whom it may concern:

Be it known that I, JOHN CAMICHEL, of the city and State of New York, have invented new and useful Improvements in Clocks, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to utilize in clocks the entire movements of watches, both old and new, for which, owing to a variety of circumstances, there may be no demand as watch-movements, and whereby clocks combining cheapness with durability and neatness may be produced, which shall keep better time and will run for a much longer period with a mainspring of given strength or length, or operating-weight of given fall, than clocks as ordinarily constructed. In thus utilizing watch-movements it is important, not only as a point of economy, but to do away with any impairing of the movement, that there should be but little or no alteration of it to adapt it to a clock; and this my invention most effectually provides for.

The invention consists in a combination, with a clock-frame, and with a clock mainspring or actuating-weight, and an arbor directly controlled by said spring or weight, of a watch-movement, an arbor directly connected with the winding-arbor of said movement, and gears connecting the arbor of the mainspring or actuating-weight with the arbor, which is directly connected with the winding-arbor of the watch-movement.

The invention also consists in a novel construction and combination of parts for connecting the watch-movement with the clock-frame and operating mechanism, and for detachably securing said movement to its place to facilitate removal and repair.

Figure 1 of the accompanying drawings represents a clock-frame and its contained mechanism with my invention applied; Fig. 2, a partly-sectional side view of the same, and Fig. 3 a transverse section thereof on the line *x x* in Fig. 2.

A is a clock-frame of any suitable construction, but having attached or formed on its face with a projecting chamber or holder, B, for reception or retention of a full or complete watch-movement, C, to which the hour and minute hands *a b* are attached for movement outside of a clock-dial, *c*. Said watch-movement, which may be secured in the chamber or holder B by means of a spring-bolt, *d*, and centering and holding screws *e*, or otherwise, to facilitate removal and repair, may be of any suitable kind, including not only those descriptions in which the barrel *f*, containing the mainspring of the watch, is on the winding-arbor *g*, but also those descriptions in which the winding-arbor has applied to it a fusee, which is connected by a chain with the barrel containing the mainspring.

Fitted within the clock-frame A, and constructed and arranged so as to engage, by means of a socket or otherwise, directly with the key end of the winding-arbor *g* of the watch-movement, is an arbor, *h*, which is connected by two or more speeding-up gears, *i k*, with an arbor, *l*, that becomes the winding-arbor of the clock, and has attached to it the end of a coiled mainspring, D, of a strength or length such as is used in clocks; or, instead of said spring D, the driving-power may be a weight connected by a pulley and cord with a barrel, *m*, on the arbor *l*, as shown by dotted lines in Fig. 1. Said winding-arbor *l* is provided with a ratchet and click to prevent its moving backward; and in applying the watch-movement to a clock in accordance with this invention it will be necessary to liberate the click from the ratchet which holds the winding-arbor of said movement, and so that the mainspring of the watch-movement will simply become an elastic driving-connection instead of the driver itself, as when used in a watch.

When the watch-movement is one which employs a fusee and chain connecting the fusee with the mainspring-barrel, then the chain connecting the fusee and barrel should also be liberated or disconnected. With these exceptions, the full or complete watch-movement does not require to be interfered with or changed.

By the combination, as herein described, of a watch-movement with a clock mainspring or actuating-weight, either latter, operating as a prime mover, will cause the movement to run a much greater length of time than when driven by the mainspring within its barrel, and much longer than a clock having an or-

dinary clock-movement would run. Thus the spring D may only be of such a length or strength as would keep a clock with an ordinary movement running for a single day, whereas the same spring, when applied to drive a watch-movement, will keep the latter running two weeks. Such advantage may be extended either by using a stronger or longer mainspring, or by using a series of mainsprings and arbors outside of the arbor which connects with the winding-arbor of the watch-movement, and two or more speeding-up gears connecting the arbor or arbors of said spring or springs with the arbor which directly connects with the winding-arbor of the watch-movement. In this way or by these means the watch-movement may be made to run one year (more or less) with a single escapement, as in tower-clocks; and the invention may be applied to tower-clocks having several pairs of hands.

If desired, it may have a striking and alarm attachment, or either, and be incased as a chronometer.

I am aware that a portion of a watch-train has heretofore, and prior to my invention, been supported upon the front plate of a clock, and the center-pinion geared with the third wheel of a clock-train located for that purpose outside of the front plate; but this arrangement necessitates the taking apart of the watch-movement, the rearrangement of a portion thereof, and the rejection of the remainder, while the object of my invention is mainly to utilize old-fashioned watch-movements with the least possible alteration.

I claim—

1. The combination, with a clock-frame, and with a clock mainspring or actuating-weight, and an arbor directly controlled by said spring or weight, of a watch-movement, an arbor directly connected with the winding-arbor of said movement, and gears connecting the arbor of the mainspring or actuating-weight with the arbor which is directly connected with the winding-arbor of the watch-movement, substantially as specified.

2. A clock-frame having on its front plate a holder adapted to receive a watch-movement, means for detachably securing the watch-movement in said holder, and an arbor adapted to clutch or engage with the winding-arbor of the said watch-movement when secured in said holder, substantially as described.

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