

E. WARE.
Movements for Watches and Clocks.
No. 223,417. Patented Jan. 6, 1880.

Fig. 2

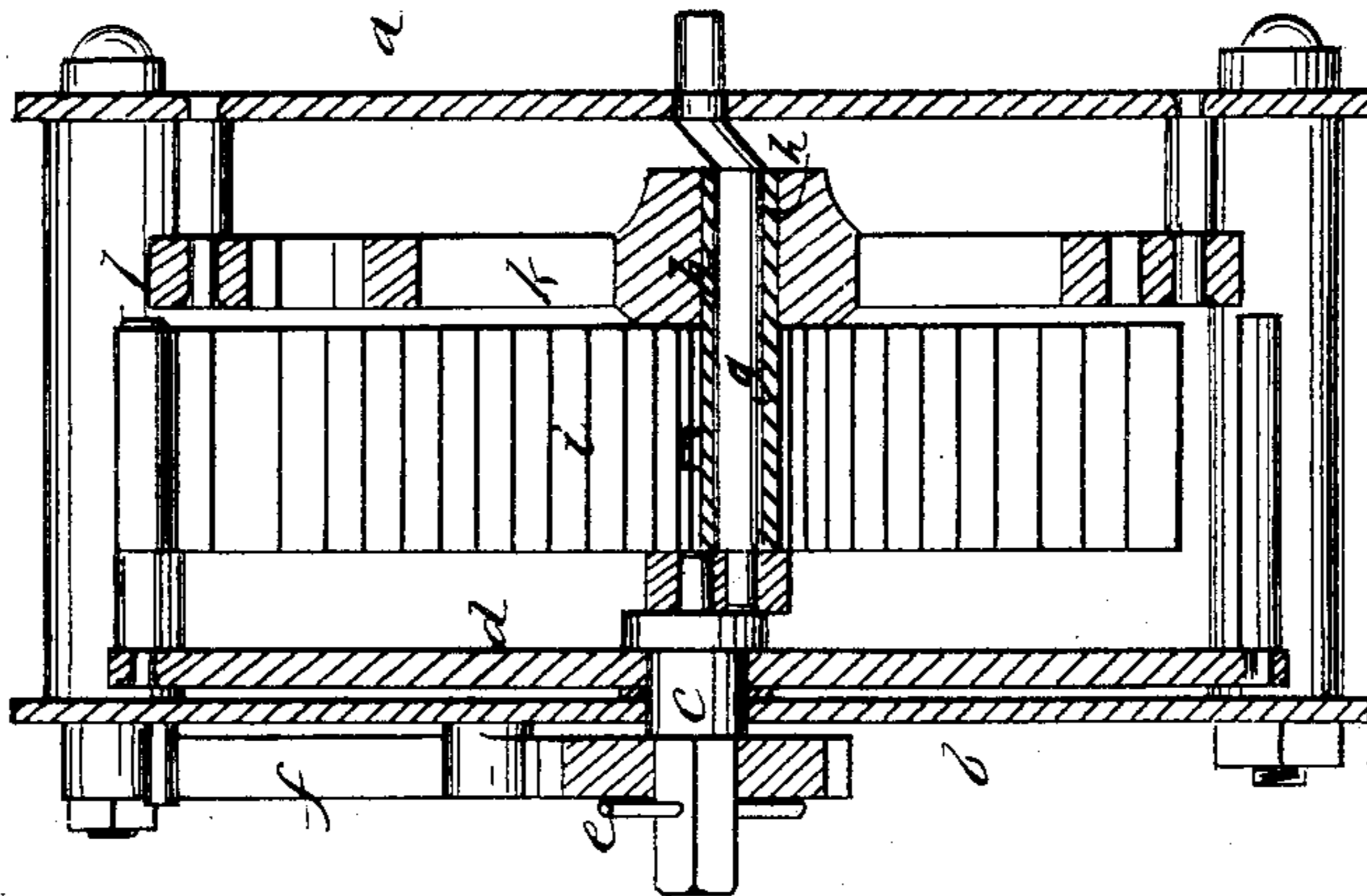
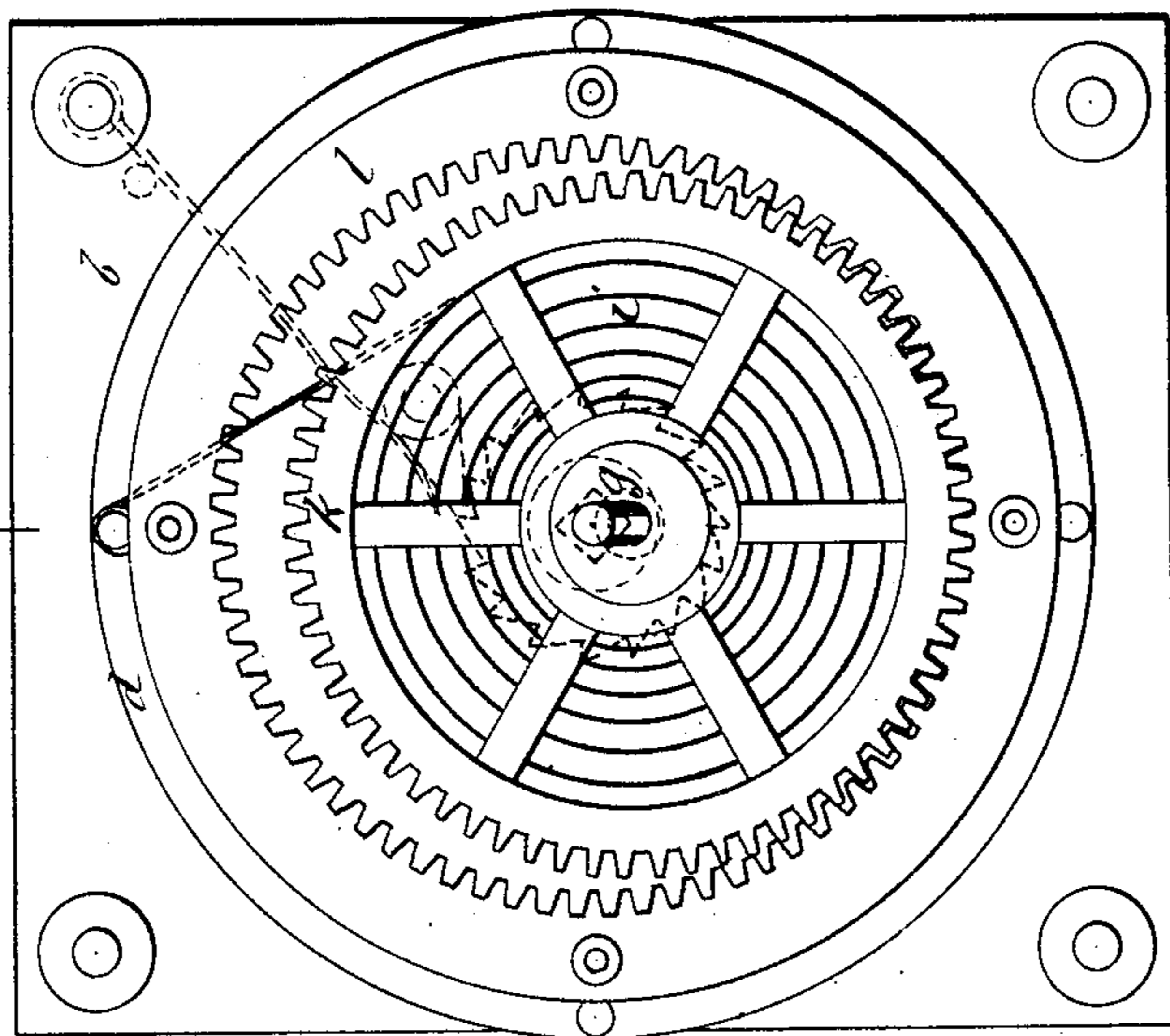


Fig. 1



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ELIJAH WARE, OF OMAHA, NEBRASKA.

MOVEMENT FOR WATCHES AND CLOCKS.

SPECIFICATION forming part of Letters Patent No. 223,417, dated January 6, 1880.

Application filed October 21, 1879.

To all whom it may concern:

Be it known that I, ELIJAH WARE, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful
5 Improvement in Movements for Watches and Clocks, of which the following is a specification.

The object of my invention is to dispense with the train of gearing generally employed
10 in clocks and watches, and thereby simplify the construction and reduce friction.

I make use of a crank-shaft fitted with a loose sleeve, to which the driving-spring is connected, and on which sleeve is a gear-wheel,
15 that meshes with the internal gear of a surrounding ring, the ring being larger in its internal diameter than the gear-wheel to the extent of the throw of the crank-shaft, whereby, as the gear-wheel is turned by the spring, its
20 contact with the internal gear causes the movement of the crank-shaft. The difference in the two movements is regulated by the difference in the number of teeth between the two gears, so that without further gearing a
25 speed of twelve to one may readily be obtained.

This movement is shown in the accompanying drawings, forming part of this specification, wherein Figure 1 is a front elevation of
30 the gearing, and Fig. 2 is a cross-section on line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

The front and back plates are represented, respectively, at *a* and *b*. In the back plate, *b*,
35 is journaled the winding-stud *c*, which carries at the inner side of plate *b* a circular disk, *d*, and at the outside of plate *b* a ratchet-wheel, *e*, which is engaged by a pawl, *f*.

40 The main shaft *g* has bearings by its crank ends in the front plate, *a*, and upon a pin at the inner end of the winding-stud *c*. Upon the central portion of shaft *g* is a loose sleeve, *h*, around which the spring *i* is coiled, one end
45 of the spring being connected to the sleeve and the other end to an arm that projects from disk *d*. Upon the sleeve *h* is fixed a gear-wheel, *k*, around which is a ring, *l*, that is attached rigidly to the front plate, *a*, and
50 formed with internal gear-teeth, that mesh

with wheel *k*. The ring *l* is concentric with the axis of shaft *g*, and its internal diameter is longer than the external diameter of wheel *k*, the difference being the throw of the shaft *g*.

The operation of these parts is as follows: 55
The spring will be wound by turning the stud *c*, which revolves independently of shaft *g*, and turns the disk *d*, that carries the outer end of the spring. The recoil of the spring tends to revolve the sleeve *h* and wheel *k* on
60 shaft *g*, and the teeth of *k* acting on the internal gear causes the rotation of shaft *g* in the opposite direction, the wheel *k* swinging with the shaft. In this movement, if the wheel has the same number of teeth as the internal
65 gear there would be no revolution of the wheel on the shaft; but by reducing the teeth of *k* in number a continuous backward movement or slip of the wheel will be obtained. Thus, if ring *l* has seventy-two teeth and wheel *k* 70
sixty-six teeth, the backward movement of *k* would be six teeth at every revolution of shaft *g*, the result being one revolution of *k* to twelve of *g*.

The escapement may be applied directly to 75
the projecting axis of shaft *g* or to a wheel on a second arbor geared to *g*. The minute-hand will also be driven directly from the shaft *g*, and the hour-hand by a pinion on the hub of wheel *k*. These connections will be readily
80 understood and need not be particularly described.

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

1. The improved mechanical movement adapted for clocks, consisting of the crank-shaft *g*, loose gear-wheel *k* on shaft *g*, spring
90 *i*, connected to wheel *k*, and internally-gearred ring *l*, all combined for operation substantially as described.

2. In combination with the crank-shaft *g* and spring *i* of the clock-movement, the winding-stud *c*, fitted with the ratchet *e*, and disk
95 *d*, connected with the spring, substantially as described and shown.

ELIJAH WARE.

Witnesses:

MARTHA A. WARE,
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