A. WEBSTER.

Mechanical Movement.

No. 218,844. Patented Aug. 26, 1879.

FIG. 1.

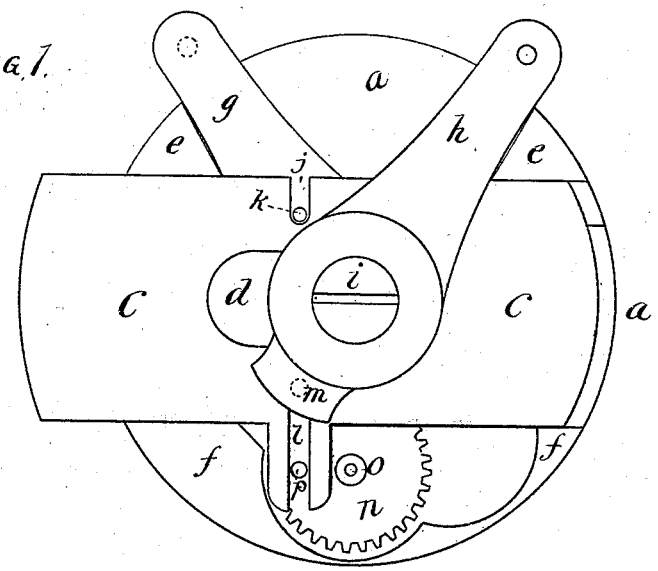
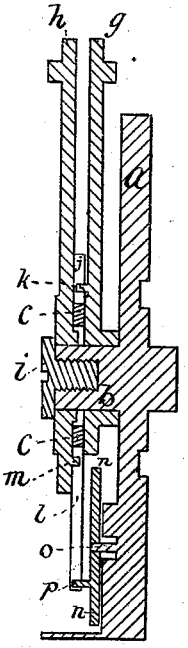


FIG 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

AMBROSE WEBSTER, OF WALTHAM, MASSACHUSETTS.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **218,844**, dated August 26, 1879; application filed January 21, 1879.

To all whom it may concern:

Be it known that I, AMBROSE WEBSTER, of Waltham, State of Massachusetts, have invented a Mechanical Movement, of which the following is a specification.

This invention relates to a device the arms of which are reciprocated through the arc of a circle by a movement not uniform, but accelerating, in a portion of their path, and diminishing in an inverse ratio in the other portion of their movement.

The invention consists in a pair of arms pivoted upon a common center, a reciprocating slide arranged between such arms, and slotted or otherwise arranged to move past such center in fixed ways, such slide being connected, upon opposite sides of the center, with such arms respectively, so that the reciprocation of the slide shall thereby vibrate said arms in alternate and opposite directions relatively to each other, such slide being connected with a wrist-pin in the plane of a uniformly-revolving wheel, which pin, acting in a slot in such slide, will impart thereto (in each direction of its reciprocation) both an accelerating and diminishing motion, all as will, by the aid of the accompanying drawings, be herein fully described.

Figure 1 is a top or plan view, showing the vibrating arms at the point of greatest divergence or movement. Fig. 2 is a section taken transversely to the slide and longitudinally through the vibrating arms, which are shown as coincident in position.

In these drawings, *a* is a bed or disk, to which the operative parts are attached. *b* is a pivot secured or formed centrally in disk *a*. *c* is the slide, in which is the slot *d*, through which center *b* passes. This slide is arranged to move freely endwise, but is held in exact lateral position by the raised guides *e e* and *f f*, which, for convenience of construction, are formed on bed *a*.

g h are the vibrating arms, which are pivoted on stud *b*, being held in position by screw *i*. Arm *g* is arranged behind slide *c*, or between it and the disk *a*. *k* is a pin inserted in this arm at a certain distance from its pivotal center. This pin acts in slot *j*, formed in slide *c*.

In the reverse or short end of arm *h* is a pin, *m*. (Shown by dotted lines in Fig. 1.) This pin acts in slot *l*, formed in the opposite edge of slide *c*.

n is a small toothed wheel, arranged to be revolved by any suitable means on its axis *o*, secured in disk *a*.

p is a wrist-pin secured in the plane of the wheel, and which engages in slot *l*, which, by means of a projection on slide *c*, extends outward far enough to insure the contact of the pin throughout the circuit of motion of the wheel.

It will be apparent that while wheel *m* has a uniform movement upon its axis, yet slide *c* will receive therefrom a constantly-varying movement; for, supposing pin *p* in the position indicated in Fig. 1, which is a dead-point, the slide is then momentarily motionless; but as the pin advances the motion of the slide will be a constantly-accelerated one until the pin has traversed ninety degrees of its circuit, when a decreasing movement, of inverse ratio, will take place for the same distance, and the same movements will be repeated in the several quarters of the circuit of the wheel.

While the slide is thus reciprocated at a constantly-varying speed, as described, the arms *g h* (whose pins *k m* are equidistant from pivot *b*) will be equally vibrated as compared with each other; but their movement will be at a greater or less velocity as the wrist-pin *p* shall be at a dead-point, as shown in Fig. 1, or at full stroke when the arms are passing each other.

It will be further apparent that various modifications may be made in the mechanical devices by which the several material parts of my movement are connected with each other without departing from the spirit of my invention, and that thereby the free ends of the vibrating arms may not only be moved at a regularly increasing and decreasing rate of speed, but that for any purpose such movements may be otherwise varied or rendered irregular in their changes.

I claim as my invention—

In a mechanical movement, the combination of the driving-wheel, the slide, and the pivoted arms in such manner that by the rotation of the wheel the slide will be reciprocated with an alternately increasing and diminishing velocity, and the arms will, by the action of the slide, be vibrated upon their pivotal center with a corresponding variation of movement, substantially as set forth.

AMBROSE WEBSTER.

Witnesses:

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