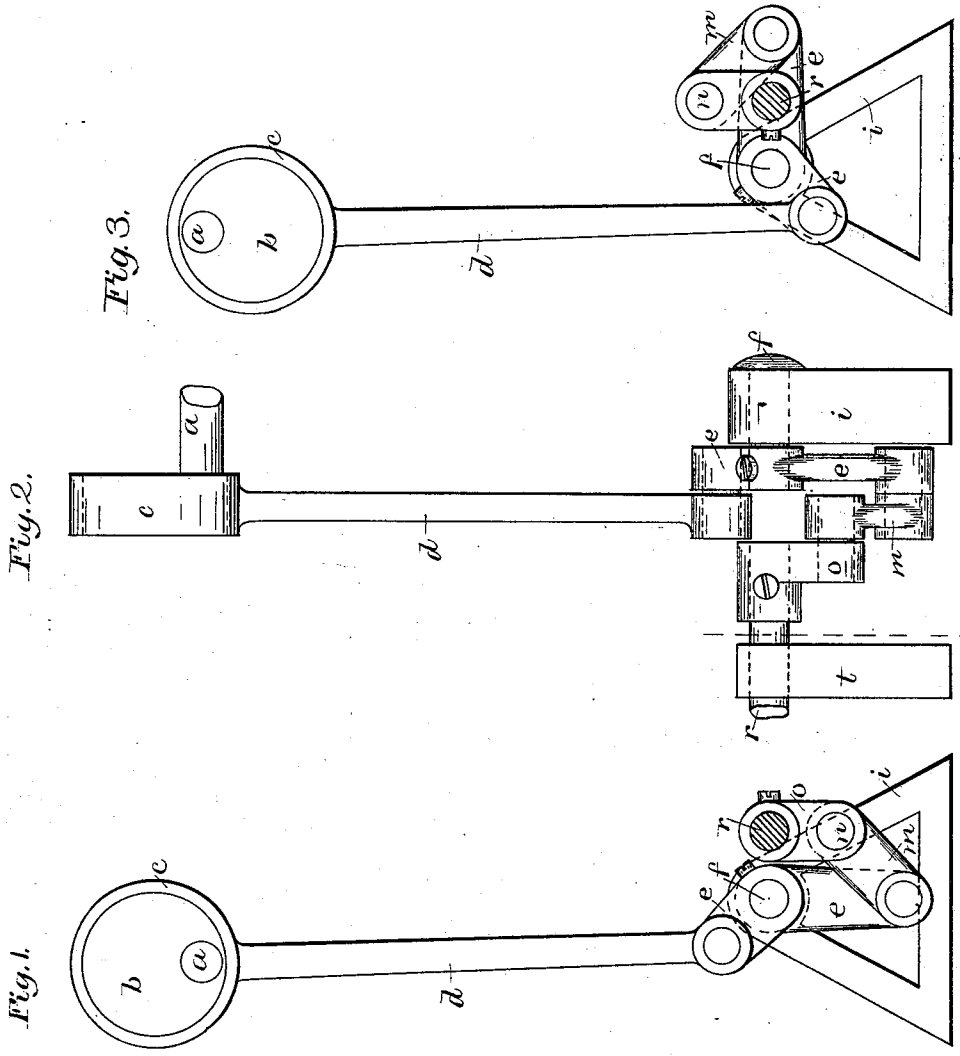
(No Model.)

H. W. HADLEY & W. L. GROUT.

MECHANICAL MOVEMENT.

No. 277,025. Patented May 8, 1883.



Attest
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UNITED STATES PATENT OFFICE.

HORACE W. HADLEY AND WILLIAM L. GROUT, OF ORANGE, MASS.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 277,025, dated May 8, 1883.

Application filed March 26, 1883. (No model.)

To all whom it may concern:

Be it known that we, HORACE W. HADLEY and WILLIAM L. GROUT, both of Orange, county of Franklin, State of Massachusetts, have invented an Improvement in Mechanical Movements, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Our invention relates to a mechanical movement or mechanism for transmitting motion, shown as arranged to produce an oscillating or rocking movement in a shaft, such movement being derived from a rotating shaft. The oscillating or rock shaft is provided with a crank, connected by a link with one arm of a lever, the other arm of which is connected with a link or pitman actuated by an eccentric or crank on the rotating shaft, to thus impart a rocking movement to the said lever, which in turn imparts an oscillating movement to the rock-shaft. By varying the lengths of the lever-arms and the relative positions of the various pivotal or connecting points the amount of oscillating movement may be varied, and it is also possible to vary the relative speed of different parts of the oscillating movement.

Figure 1 is a front elevation of a mechanical movement embodying this invention, the parts being shown in the position occupied by them when at one extreme of the oscillating movement, the bearing of the oscillating shaft not being shown; Fig. 2, a side elevation thereof; and Fig. 3, a front elevation similar to Fig. 1, but with the parts in their other extreme position.

The main or actuating shaft *a*, supported in suitable bearings, (not shown in the drawings,) is provided with an eccentric, *b*, the strap *c* of which is connected with an eccentric-rod or pitman, *d*, the other end of which is connected with one arm of a lever, *e*, (shown as mounted on a pivot or fulcrum pin, *f*, having a bearing in the frame-work *i*.) The lever *e* is thus rocked or oscillated back and forth on its fulcrum at each rotation of the shaft *a*, and its other arm is connected with a link, *m*, itself connected with the crank-pin *n* of a crank, *o*, fixed upon the shaft *r*, to which a rocking or oscillating movement is thus imparted, the said shaft being supported in any suitable bearings, one of which is shown at *t*, Fig. 2.

It will be readily understood that by varying the relative length of the crank *o* and arms of the lever *d* and throw of the eccentric *b*, or amount of movement of the pitman *d*, the actual length of oscillating movement of the shaft *g*, as well as its amount relative to that of the lever *e*, may be varied. As shown in this instance, the arm of the lever *d* connected with the crank *o* is about double the length of the said crank, and also of the other arm of the said lever connected with the pitman *d*, and the throw of the eccentric is such as to give the lever *e* an oscillating movement of about ninety degrees, and it in turn imparts an oscillating movement of about one hundred and eighty degrees to the shaft *r*. It is also possible by varying the relative position of the shaft *r*, fulcrum *f*, and points of attachment of the link *m* and pitman *d* to the lever *e* to produce a variable speed in the oscillation of the shaft *r*. In the arrangement shown the link *m* is somewhat nearer a position at right angles to the crank *o* in Fig. 3 than in Fig. 1, and consequently the movement of the shaft *g* is more rapid when arriving at and starting from the position shown in Fig. 3 than when arriving at and starting from the position shown in Fig. 1; or, in other words, there is a slight dwell at and near the position shown in Fig. 1.

It is obvious that the pitman or connecting rod *d* may be actuated from the shaft *a* by a crank, cam, or equivalent device constituting the means for actuating the rocking lever.

We claim—

1. The combination, with a rocking lever and means to actuate it, of the oscillating shaft having a crank and crank-pin, and a link connecting the latter with the said rocking lever, substantially as described.

2. The combination of the main shaft *a* and rocking lever actuated thereby with the oscillating shaft and its crank, and the link connecting the latter with the rocking lever, substantially as described.

3. The shaft *a*, eccentric *b*, or equivalent thereon, and pitman, combined with the rocking lever, link, crank, and shaft *r*, all to operate as described, whereby an oscillating movement is imparted to the said shaft.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

H. W. HADLEY.
WM. L. GROUT.

Witnesses:
ABIJAH FRENCH,
M. C. FRENCH.