K. VOGEL.

MECHANICAL-MOVEMENT.

No. 178,212. Patented May 30. 1876.

Fig.1.

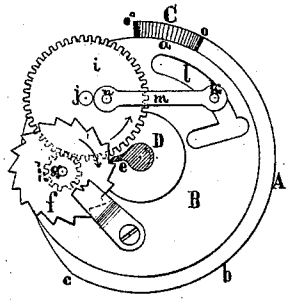


Fig.2.

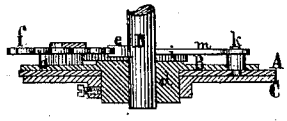


Fig.3.

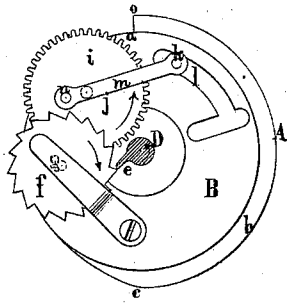
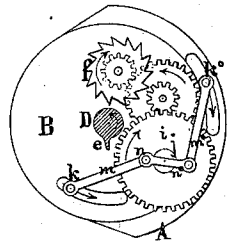


Fig.4.



Witnesses.

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UNITED STATES PATENT OFFICE.

KASIMIR VOGEL, OF CHELSEA, MASSACHUSETTS.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **178,212**, dated May 30, 1876; application filed March 4, 1876.

To all whom it may concern:

Be it known that I, KASIMIR VOGEL, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Mechanical Movement, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a plan or top view, showing the device in one of its extreme positions. Fig. 2 is a vertical central section. Fig. 3 is a plan or top view of the same, showing the device in its other extreme position.

Similar letters indicate corresponding parts.

This invention consists in the combination of two disks or indices, one of which has a motion independent of the other, and a shaft, which is provided with a tooth to impart a step-by-step motion to a gear-wheel which connects, by means of an eccentric wrist-pin and a pitman-rod, with the movable disk or index, either the shaft or the disks or indices being made to revolve, so that an irregular step-by-step motion is imparted to the movable disk or index, whereby various results can be accomplished.

In the example shown in the drawing, the letter A designates a cam-disk, which is provided with a low section, *a*, and with a high section, *b*, the radius of the low section being made to increase gradually until at the point *c* said radius becomes equal to the high section, while the high section joins the low section by a shoulder, *o*. The disk A turns freely on the hub *d* of a plate, B, and on said hub is securely fastened a stationary cam-disk, C, which corresponds in shape and size to the movable cam-disk A. The hub *d* of the plate B is bored out to receive the shaft D, which extends through the plate and the two cam-disks, and revolves freely in the same. Said shaft is provided with a tooth, *e*, which engages with a ratchet-wheel, *f*, that turns freely on a stud, *g*, secured in the plate B, and to which is firmly attached a pinion, *h*, which gears in a cog-wheel, *i*, mounted on a stud, *j*, secured in the plate B. From the movable cam-disk A projects a stud, *k*, through a segmental slot, *l*, in the plate B, and said stud connects, by a rod or link, *m*, with an eccentric wrist-pin, *n*, fastened in the cog-wheel *i*.

In the position shown in Fig. 3 the movable cam-disk A covers the stationary cam-disk C, the shoulder *o* of the former being situated exactly over the shoulder o^0 of the latter. As the shaft D revolves the movable disk A gradually recedes to the position shown in Fig. 1, while the point *c* of said movable cam-disk approaches the shoulder o^0 of the stationary cam-disk, and when the motion of the shaft D proceeds the movable disk A advances again toward the position shown in Fig. 3.

It will be seen from this description that by my device the continuous rotary motion of the shaft D is converted into an oscillating or reciprocating rotary motion of the disk A; but this motion of the disk takes place step by step, and it is not uniform. Said disk reaches its extreme positions (shown in Figs. 1 and 3) when the eccentric wrist-pin *n* passes through a right line drawn through the studs *j* and *k*. As the motion of the cog-wheel *i* progresses from either of these extreme positions, the motion imparted by the successive impulses of the cog-wheel *i* gradually increases, until the eccentric wrist-pin comes to such a position that a line drawn through it and the stud *j* is at right angles with the line *j k*, and then the steps of the disk A decrease again, until it reaches again one of its extreme positions.

It is obvious that the same result is produced if the shaft D remains stationary and the disks are caused to revolve.

My mechanical movement may be used to produce a variable cam, or to produce an index, whereby the variations in the length of day and night are shown; or it may be used to indicate the variations in the motion of the moon, or for any other purpose where it is desirable to convert a continuous rotary motion into a graduated rotary step-by-step motion.

When two disks or two indices are to be combined, which move in opposite directions, the connection is such as indicated in Fig. 4 of the drawing. In this case a small crank, n^0, is secured to the eccentric wrist-pin *n*, and the outer end of this crank connects, by a rod, m^0, with a stud, k^0, attached to the second

disk, while the stud *k* is secured to the first disk. When the cog-wheel *i* is turned, the two studs *k k°*, and, consequently, the disks to which the same are attached, move in opposite directions.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of two disks or indices, one of which has a motion independent of the other, a shaft which is provided with a tooth to impart a step-by-step motion to a gear-wheel that connects, by an eccentric wrist-pin and pitman-rod, with the movable disk or index, either the shaft or the disks or indices being made to revolve, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 28th day of February, 1876.

KASIMIR VOGEL. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.