

H. E. MARCHAND.
Devices for Converting Motion.

No. 146,925.

Patented Jan. 27, 1874.

Fig. 1

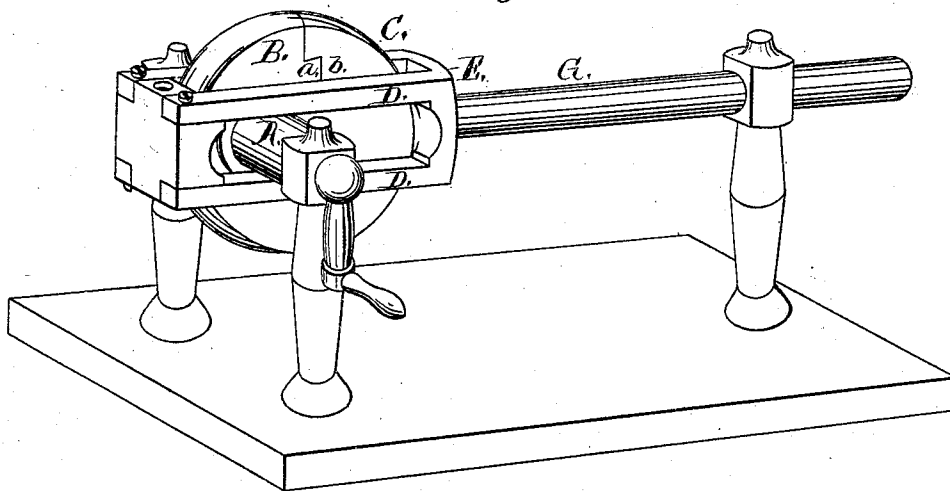
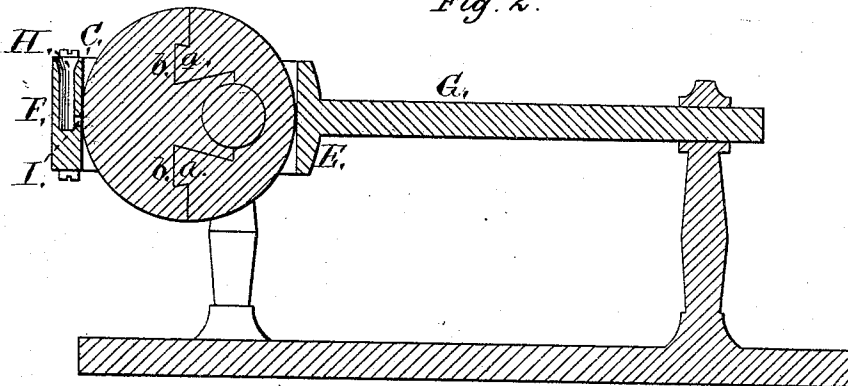


Fig. 2.



Witnesses
A. C. Norris.
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UNITED STATES PATENT OFFICE.

HENRY E. MARCHAND, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN DEVICES FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **146,925**, dated January 27, 1874; application filed January 14, 1874.

To all whom it may concern:

Be it known that I, HENRY E. MARCHAND, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Mechanical Movement, of which the following is a specification:

This invention has reference to a simple and effective mechanism or mechanical movement for converting rotary into rectilinear reciprocating motion. To this end it consists in the combination of an eccentric made in sections, and mounted on a revolving-power shaft, with an embracing-yoke or open frame, which is provided with slotted sides for the passage of the eccentric shaft, the rotation of the eccentric serving to impart a reciprocating motion to the frame by exerting pressure on the front or rear inner walls of the same, and the movement of said frame is in a regular direct line, all jars or concussions being entirely avoided.

In the drawings, Figure 1 is a perspective view of a mechanical movement constructed according to my invention, and Fig. 2 is a longitudinal vertical section thereof.

In devices heretofore known in which an eccentric is employed to convert rotary into reciprocating motion the movement of the eccentric is transmitted by a closely-fitting yoke to a jointed connecting-rod, the throw of which is very apt to be irregular or unsteady. In order to avoid these defects, and to obtain from an eccentric a true rectilinear reciprocating motion which is regular and in a direct line, whether the mechanism be arranged in a horizontal, vertical, or other position, I propose to employ mechanism of the description hereinafter explained.

The shaft A, represented in the drawing as carrying the eccentric B, is connected with a suitable prime motor for imparting a rotary motion to the same. The eccentric is constructed in two sections or halves, the contiguous faces of which are provided with dovetail tongues and grooves *a b*, in order that they may be interlocked together. This construction of eccentric is resorted to with shafts running in boxes at their ends, so as to enable the eccentric to be applied in position without removing said shaft from its bearings. Suitable fastening devices, such as screws inserted at

the junction of the sections of the eccentric, may be employed for obviating any lateral movement of the same; but, as a general rule, no such result occurs when a slotted yoke or frame, C, is employed in connection with the eccentric, as proposed by me. Said yoke or frame is designed to receive a rectilinear reciprocating motion in reverse directions from the eccentric, the latter being for this purpose located or arranged within said yoke or frame in such a manner that during the rotation of the shaft A it will bear on or come in contact with the opposite ends of the frame for accomplishing the result mentioned. The frame or yoke C is composed of two slotted side bars, D, provided with a closed or solid end, E, and with a detachable block, F, at its opposite end, a power-transmitting stem or rod, G, being formed with or connected to the front end of the frame. The frame is provided with slotted sides, so as to enable the rotary shaft to pass through the same in such a manner as not to come in contact with the ends of the frame during the movement. The sectional eccentric arranged within the frame C bears first against one end wall of the frame as it is descending, and gradually rides or glides over the same, and then, when it rises to finish its revolution, it bears on the opposite end wall of the frame, thus imparting a perfect, smooth, uniform, and true movement to the frame and its stem or rod. The block F, which closes the rear of the frame C, is provided with a vertical opening or channel, H, and with a lower horizontal passage, I, communicating with the same, for the purpose of supplying lubricating-oil to the eccentric and the adjacent parts. An oil-cup of any approved fashion may, for this purpose, be attached to the block F, for insuring a regular supply of oil.

A mechanical movement of the nature described is regular and precise in its action, and thus it is eminently adapted for operating air and other pumps, steam-engine valves, sewing-machine mechanism, and machinery of every description which requires a reciprocating motion.

The eccentric frame is guided in its movement, and supported in a true horizontal, vertical, or other position, by causing the upper portion of the side bars of the same to rotate

with the axis of the eccentric, or slide or glide over the same, and as said shaft or axis revolves or turns, but little friction occurs, either between the shaft and the yoke or the eccentric and the yoke.

In certain instances where the mechanism described by me, or its substantial equivalent, is employed in connection with running-gear or movable machinery, such as railroad-cars, I propose to attach the power-transmitting stem to its frame, or to a stem connected with the yoke, by a hinged connection or universal joint, so as to permit the same to conform to the motion of the cars when turning curves, or when exposed to lateral jars.

I claim as my invention—

The combination of the sectional eccentric B and its shaft embraced by the yoke C, the end walls of the yoke being brought in bearing contact with the periphery of the eccentric for imparting a rectilinear reciprocating motion to the yoke and its stem.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of January, 1874.

HENRY E. MARCHAND.

Witnesses:

JAMES L. NORRIS,
ALBERT H. NORRIS.