(No Model.)

2 Sheets—Sheet 1.

M. B. KELLOGG.

MECHANICAL MOVEMENT.

No. 383,577. Patented May 29, 1888.

Fig. 1.

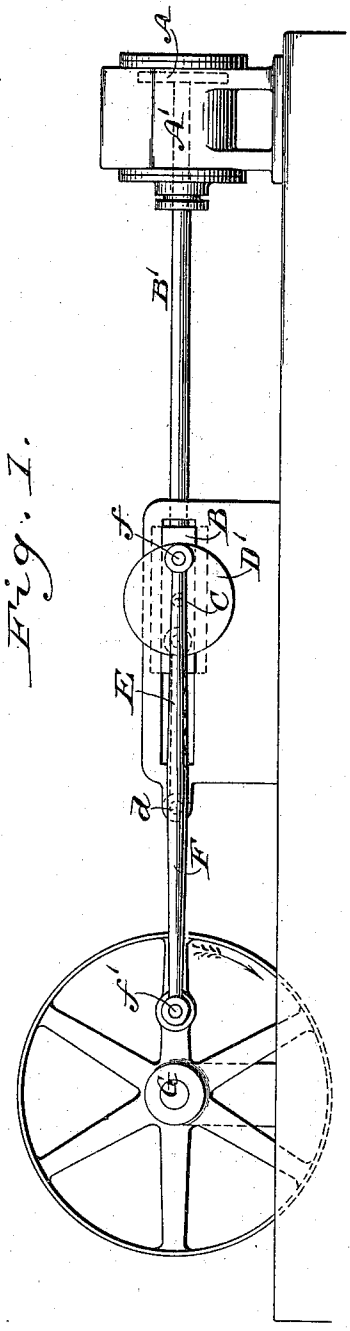
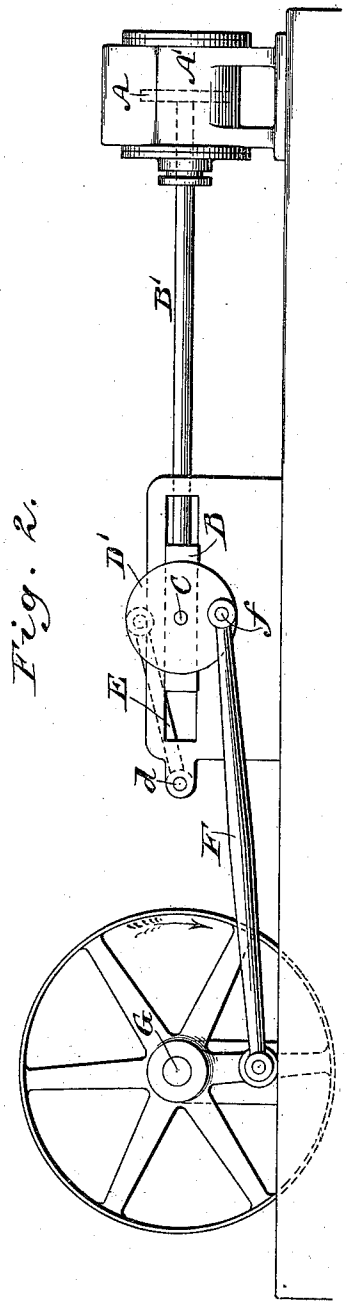


Fig. 2.



WITNESSES:

John W. Deemer

C. M. Clark.

INVENTOR:

M. B. Kellogg.

BY Munn & Co

ATTORNEYS.

N. PETERS, Photo-Lithographer, Washington, D. C.

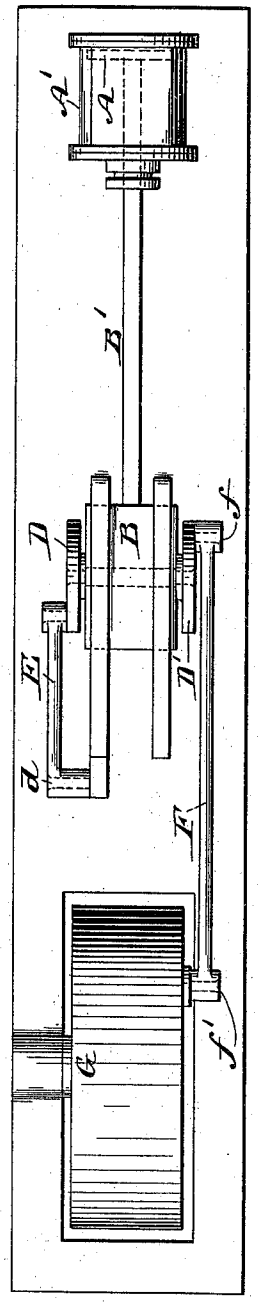
(No Model.) 2 Sheets—Sheet 2.

M. B. KELLOGG.

MECHANICAL MOVEMENT.

No. 383,577. Patented May 29, 1888.

Fig. 5.



WITNESSES:

John W. Deemer

E. M. Clark.

INVENTOR:

M. B. Kellogg.

BY Munn & Co.

ATTORNEYS.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

MARMADUKE B. KELLOGG, OF SAN FRANCISCO, CALIFORNIA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 383,577, dated May 29, 1888.

Application filed July 29, 1887. Serial No. 245,652. (No model.)

To all whom it may concern:

Be it known that I, MARMADUKE B. KELLOGG, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Mechanical Movement, of which the following is a full, clear, and exact description.

My invention consists of a device or machine for converting reciprocating into rotary motion, and designed for the piston-rods and cross-heads of engines and motors of all descriptions, whereby with a short piston-stroke I am enabled to multiply the stroke without decreasing the power transmitted.

The object and purpose of my invention are to shorten the stroke of the piston cross-head and piston-stroke, and thereby also shorten the cylinder in engines, both locomotive and stationary, and in other appliances where like cross-heads are used, without decreasing the leverage on the drive-wheel or crank-shaft to which the power is to be transmitted and without lessening the distance of the crank-pin from the center of such wheels, but increasing such leverage and distance, if desired, whether the same be used for locomotive-engines or in any class of engines or applied power.

The principle of such invention consists in applying the initial power in a direct line to a slide or cross-head fixed solidly to the end of the piston-rod opposite the piston. In the center of the slide an axis is provided, which revolves within the slide, and to each extremity of this axis—to wit, on each side of the slide—a crank-wheel or crank is firmly fixed; or, if desired, where cranks are used, they may both be on the same side of the slide. One of these crank-wheels or cranks will have the diameter in revolution equal to the length of the stroke of the piston, and will be connected at the crank-pin or crank with a rod, the other extremity of which will be fixed to an immovable axis, so that by means of this rod and its said connection, as the piston-slide moves either backward or forward, the axis in its center will be caused to revolve. The other crank-wheel or crank may be of a diameter equal to the length of the piston stroke, or, as desired, may be either of larger or smaller diameter. There will be connected with it at the crank-pin or crank a connecting-rod, the other extremity of which will be connected with the crank-pin of the drive-wheel or other wheel to which the power is to be transmitted. These crank-wheels or cranks are to be so located and firmly fixed on the axis in the center of the slide that they shall be at the opposite extremities of the diameter of each. Thus if the piston-head be at the starting-point farthest from the drive wheel or pulley the crank-pin of the first-mentioned crank-wheel will be at the farthest extremity of its diameter from the piston-head and in a straight line with the piston, and the crank-pin of the second-mentioned crank-wheel will be at the nearest extremity of the diameter from the piston-head and in a straight line with the piston. As the piston now moves, the first-mentioned crank-wheel or crank by its said rod revolves its crank-pin going toward the piston and causes the axis in the piston-slide to revolve, and thereby causes the second-mentioned crank-wheel or crank to revolve its crank-pin moving in the same direction with the piston. If, for example, the diameter of the second-mentioned crank-wheel or crank equals the length of the stroke of the piston, then by one movement of the piston-slide its crank-pin is carried a distance equal to the length of the stroke of the piston, and by its half-revolution, made at and in the same time in manner above described, its crank-pin is carried another distance of the same length, or in all a distance equal to twice the length of the stroke of the piston.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the machine. Fig. 2 is a similar view showing the parts in the position of one-half stroke, and Fig. 3 is a plan view.

The machine to be connected with a piston, A, in a cylinder, A′, or other like power to be applied, as the case may be, consists of a cross-head, B, connected by rod B′ to the piston A and provided with a revolving axis, C, in its center, to the extremity of which crank-wheels D D′ are firmly fixed, or cranks, in which latter case they may be on the same side. A link,

E, is attached at one end to the wheel or crank D and fixed at the other extremity on a firm axis, *d*, and attached to the wheel by crank-pin or the crank by boxing. A connecting-rod, F, is attached at one end to the other wheel, D′, by crank-pin *f*, or to the crank by boxing, the other extremity of which rod F is attached to the crank-pin *f′* of the drive-wheel or crank-shaft G, or other device to which the motive power is to be applied.

In Fig. 2 the machine is represented in the position of one-half stroke of the piston—that is, a half of the length of the stroke of the piston from its starting-point at the end of the cylinder farthest from the drive wheel or pulley.

While the piston-head A moves from the right-hand end of the cylinder to the left the axis C is moved the same speed and direction. The link E causes the axis to revolve, which carries the crank-pin *f* forward, moving the connecting-rod F a distance equal to the thrust of the cross-head B added to the peripheral movement of the crank-wheel D′. The out movement of the piston A being completed, the crank-pin *f* will stand in a position opposite to that shown in Fig. 1, and upon the return-stroke the crank-pin *f* and connecting-rod F will be carried over and returned to the position shown in Fig. 1, having thus made a complete revolution.

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

1. The sliding cross-head B, provided with crank-wheels or cranks D D′, connected to a revolving axis, C, carried by the cross-head, in combination with the link E and connecting-rod F, pivoted to the crank-wheels or cranks D D′ on opposite sides of the axis C, substantially as described.

2. The sliding cross-head carrying two crank-wheels or cranks, combined with the connecting-rod of a motor connected to the cross-head, and the connecting-rod F, all arranged to operate substantially as described.

3. The sliding cross-head B, operated directly from the motor and provided with the revolving axis C, having two cranks projecting in opposite directions, substantially as described.

MARMADUKE B. KELLOGG.

Witnesses:
H. A. WEST,
EDGAR TATE.