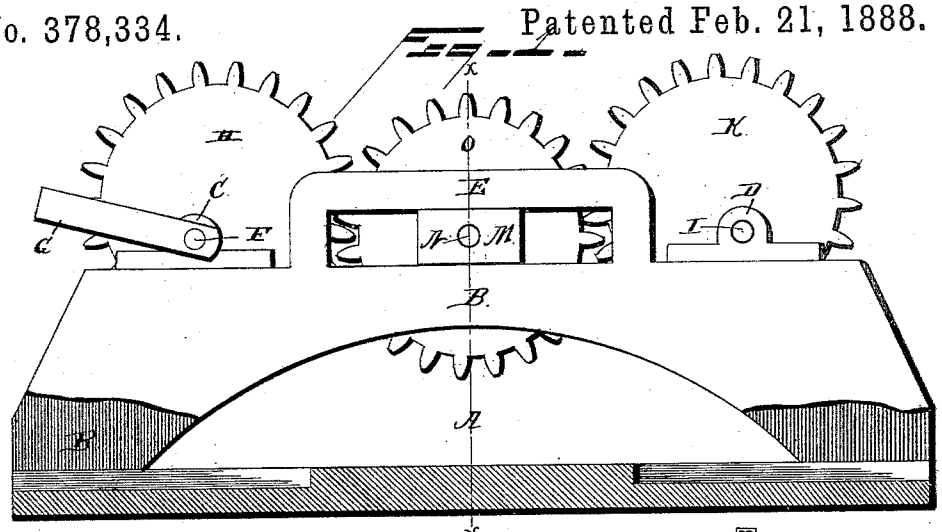
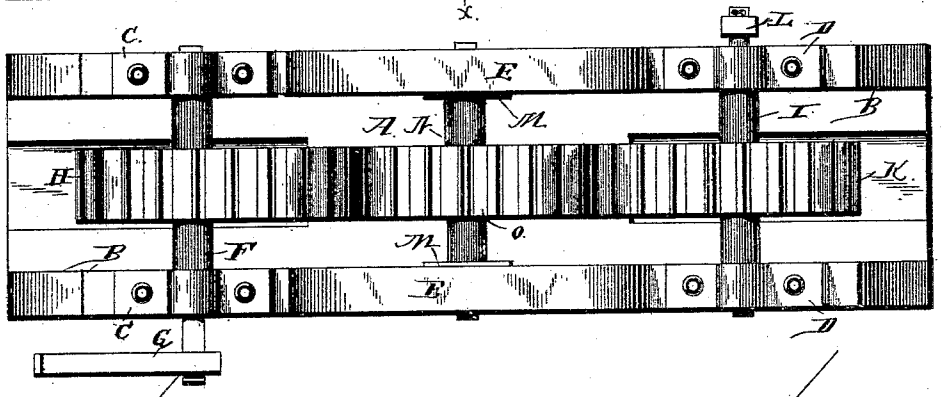
(Model.)

J. H. PEMBERTON.

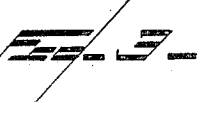
DEVICE FOR CONVERTING MOTION.

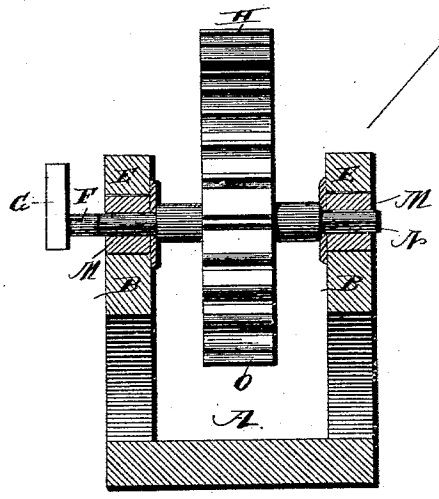
No. 378,334. Patented Feb. 21, 1888.











Witnesses
Geo. Gleason.
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UNITED STATES PATENT OFFICE.

JOHN H. PEMBERTON, OF LOS ANGELES, CALIFORNIA.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 378,334, dated February 21, 1888.

Application filed October 18, 1887. Serial No. 252,738. (Model.)

To all whom it may concern:

Be it known that I, JOHN H. PEMBERTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Devices for Converting Motion, of which the following is a specification.

My invention relates to an improvement in devices for converting motion; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal sectional view taken on the line *x x* of Fig. 1.

A represents a frame having the parallel vertical sides B, which are provided on their upper edges near their ends with two pairs of bearing-boxes, C D. On the central portions of the upper edges of the sides B are longitudinal guideways E.

F represents the driving-shaft, which is journaled in the boxes C and is rotated at a steady regular rate of speed by means of a suitable motor or engine.

For the purpose of illustration the shaft F is shown provided with a crank, G, at one end, whereby it may be turned; but it will be understood that the said shaft F is designed to be rotated by a suitable motor, as before stated.

H represents a circular gear-wheel having parallel teeth and secured eccentrically to the shaft F.

I represents a shaft which is journaled in the bearings D and is provided with a circular gear-wheel, K, which is similar in size to the wheel H and has the same number of teeth. The wheel K is secured eccentrically to the shaft I, and the pitch or throw of the eccentric wheel K on its shaft is equal to that of the wheel H on the shaft F. The shaft I is provided at one end with a crank or lever arm, L, adapted to be connected to a pump-rod or other device which it is desirable to move more rapidly in one direction than in the contrary direction.

M represents a pair of vertical bearing-blocks which work longitudinally in the guides E. In these blocks is journaled a shaft, N, to which is attached an elliptical-shaped wheel, O, having peripheral teeth which correspond in number with the teeth of the eccentric wheels H and K and engage the same.

The operation of my invention is as follows: The rotation of the shaft F is imparted to the shaft N through the eccentric wheel H and the elliptical wheel O, and the latter by meshing with the eccentric wheel K causes the latter to rotate the shaft I. The eccentricity of the wheels H and K causes the elliptical wheel O, which meshes with them, to move longitudinally back and forth and thereby reciprocate the bearing-blocks M in the guideways E. Owing to the eccentricity of the wheel H the same causes the wheel O, which meshes therewith, to move faster during one portion of its rotation than during the remaining portion thereof, while the speed of the wheel H is the same at all times. This irregular rotary motion of the elliptical wheel O is transmitted to the wheel K, and is augmented in the latter owing to its eccentricity, and consequently the shaft I is caused to rotate much more rapidly during one portion of its rotation than during the remaining portion thereof. The pump-rod or other device attached to the crank L must be so timed that it will be caused to move slowly when loaded, when the leverage exerted on the wheel K is greatest, and to move more rapidly when emptied, while the speed of the wheel K is greatest and while the leverage exerted on the said wheel K is necessarily at its minimum. A mechanical movement for converting motion thus constructed will be found of great value for operating pumps, printing-presses, and other mechanisms which perform work only at one period of their movement and are unloaded at other times.

In some instances it will be found desirable to put two of the gear-wheels hereinbefore described on each shaft instead of one wheel on each shaft, as here shown, and to form the cranks in the shafts between the wheels, so as to avoid side strain.

Having thus described my invention, I claim—

1. The combination of the eccentric wheels H and K, having their axes journaled in stationary bearings, and the intermediate ellipti-

cal wheel, O, engaging the wheels H and K and having its axis movable back and forth in suitable guideways, substantially as described.

2. The combination of the shaft F, journaled in stationary bearings, the gear-wheel H, secured eccentrically to the said shaft F, the shaft N, movable back and forth in suitable guideways, the elliptical gear-wheel O, meshing with the eccentric wheel H, the shaft I, journaled in stationary bearings, and the eccentric gear-wheel K, meshing with wheel O, substantially as described.

3. The combination of the shaft F, journaled in stationary bearings, the gear-wheel H, secured eccentrically to the shaft F, the guideways E, the blocks M, movable longitudinally in the said guideways, the shaft N, journaled in the said blocks, the elliptical gear-wheel O, secured to the shaft N and meshing with the wheel H, the shaft I, journaled in stationary bearings, and the eccentric gear-wheel K, secured to the said shaft and meshing with the gear-wheel O, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN H. PEMBERTON.

Witnesses:

ROBERT G. CUNNINGHAM,

W. R. WHITTHORNE.