2 Sheets—Sheet 1.

M. KAEFER.

Converting Motion.

No. 208,397. **Patented Sept. 24, 1878.**

Fig. 1.

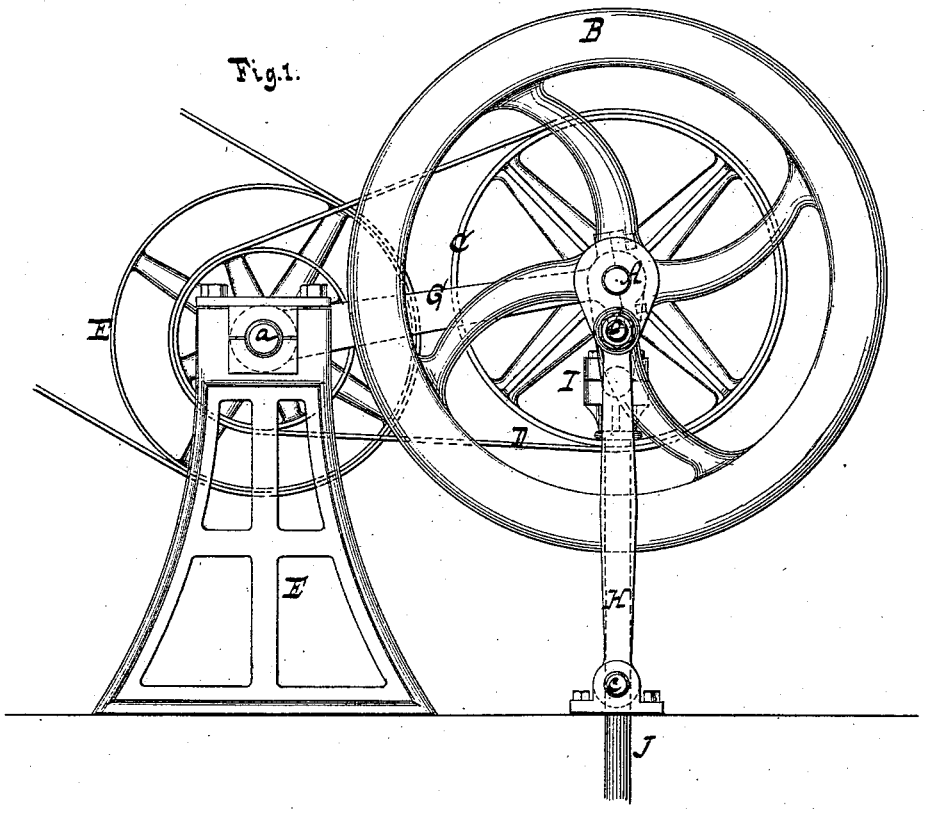
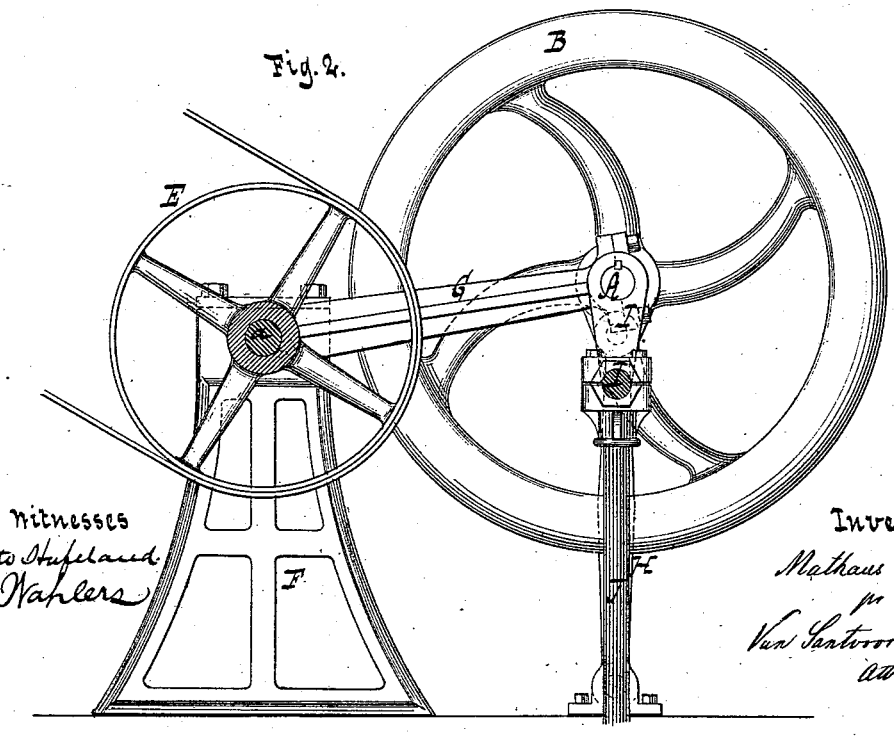


Fig. 2.



Witnesses
Otto Hufeland
C. Wahlers

Inventor:
Mathaus Kaefer
per
Van Santvoord & Hauff
attys

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Fig. 3.

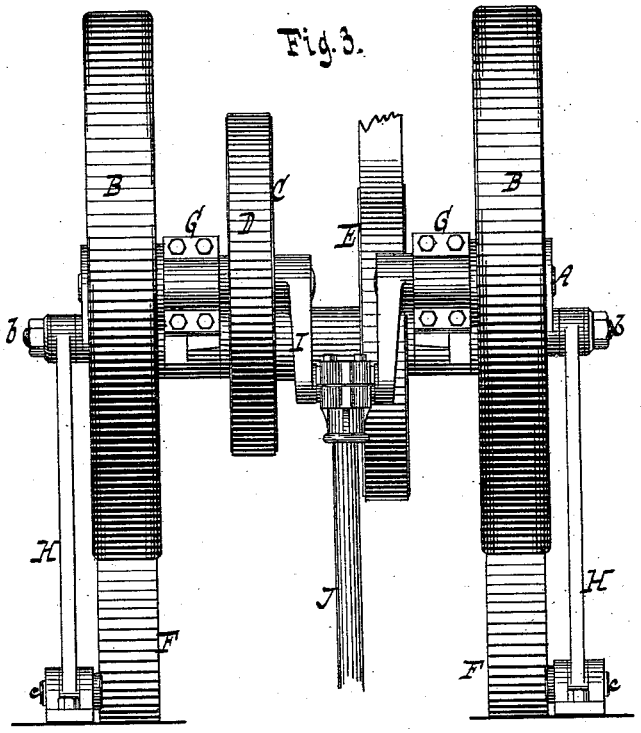
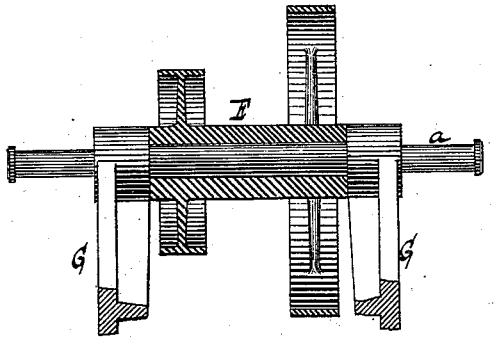


Fig. 4.



Witnesses.
Otto Hufeland
Chas. Wahlers.

Inventor.
Mathaus Kaefer
by Van Santwood & Hauff
Attys

UNITED STATES PATENT OFFICE.

MATHAUS KAEFER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CONVERTING MOTION.

Specification forming part of Letters Patent No. **208,397**, dated September 24, 1878; application filed April 10, 1878.

To all whom it may concern:

Be it known that I, MATHAUS KAEFER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Devices for Transmitting Motion, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a side elevation of a device embracing my invention. Fig. 2 is a vertical section thereof. Fig. 3 is an end view of the same. Fig. 4 shows the rock-shaft and its appendages, partly in section.

Similar letters indicate corresponding parts.

This invention relates to that class of devices for which Letters Patent of the United States were granted to me March 5, 1861, No. 603, (31,607;) and its object is to permit of applying the driving-power directly to the fly-wheel shaft with the least motion of the part by which the driving-power is applied.

It consists in the combination, with a fly-wheel shaft, which has its bearings in oscillating arms, and is connected to swinging rods or standards by means of eccentric wrist-pins, as described in my said patent, of a crank which is mounted on the fly-wheel shaft, and has a larger radius than the wrist-pins, while it extends in a parallel direction to the wrist-pins relatively to the axis of the fly-wheel shaft, so that when the crank is connected to the piston of a steam-engine or to any other driving-power, the fly-wheel shaft is thereby revolved on its own axis, and also caused to oscillate, together with the arms supporting the same, while the rod by which the crank is connected with the driving-power travels through the smallest possible space, by reason of the oscillating movement of the shaft, the movement of such rod being reduced in proportion to the difference between the radius of the crank and the wrist-pins, as hereinafter more fully set forth.

In the drawing, the letter A designates the fly-wheel shaft, to which are secured two fly-wheels, B B, the same being situated at or near the ends of the shaft. C is a pulley secured on the shaft A, and D is a belt by which this pulley is connected with a double pulley, E, running loosely on a rock-shaft, *a*, which is mounted in standards F.

On the rock-shaft *a* are secured two arms, G, which are provided with journal-boxes at their outer ends, forming the bearings for the shaft A.

The fly-wheels B B are each provided with a wrist-pin, *b*, which is connected to the upper end of a rod or standard, H, which swings at its lower end on a pin, *c*, these two rods or standards thus forming a support for the shaft A and its appendages.

The letter I designates a crank, which is secured to a suitable part of the shaft A, and which is connected to the piston of a steam-engine, to a treadle, or to any other driving-power, by means of a rod, J. This crank I has a different radius from the wrist-pins *b*, but extends in a parallel direction thereto with relation to the axis of the shaft A, and, in the example shown, the radius of the crank I is twice that of the wrist-pins. By this arrangement the shaft A is caused to describe an oscillating movement equal to the length or radius of the crank I when it is revolved; and inasmuch as the crank partakes of this oscillating movement, the motion of the rod J, in operating the crank, is reduced one-half with respect to the movement which the same would describe if the shaft A were mounted in fixed bearings.

I prefer, for various reasons, to arrange the wrist-pins *b* and the cranks I in the proportions stated; but they can also be arranged in other proportions to each other without departure from my invention.

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

In a device for transmitting motion, the combination, with a fly-wheel shaft, which has its bearings in oscillating arms, and is connected to swinging rods or standards by means of eccentric wrist-pins, of a crank which is mounted on the fly-wheel shaft, and has a larger radius than the wrist-pins, while it extends in a parallel direction to the wrist-pins relatively to the axis of the fly-wheel shaft, the whole being adapted to operate substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 9th day of April, 1878.

MATHAUS KAEFER. [L. S.]

Witnesses:

W. HAUFF,

CHAS. WAHLERS.