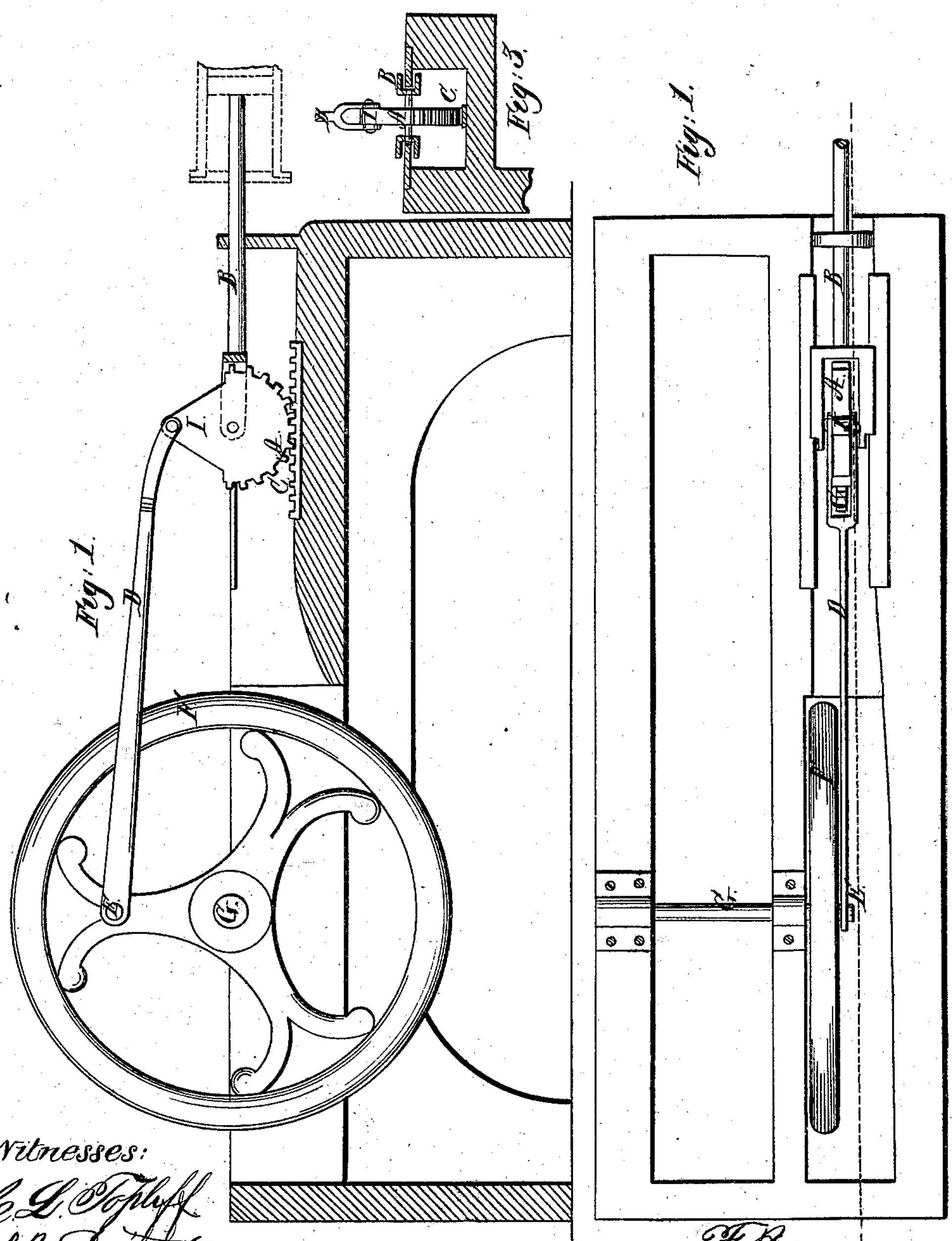
F. Brewer,

Converting Motion.

No 48,360. Patented June 27, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

F. BREWER, OF COLLINSVILLE, ILLINOIS.

IMPROVEMENT IN DEVICES FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **48,360**, dated June 27, 1865.

To all whom it may concern:

Be it known that I, F. BREWER, of Collinsville, in the county of Madison and State of Illinois, have invented a new and Improved Device for Converting Motion; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a sectional side elevation of this invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a transverse vertical section of the same.

Similar letters of reference indicate like parts.

This invention consists in the employment or use of a toothed segment which gears into a stationary toothed rack, and connects at its center with the piston-rod of a steam-cylinder, or with another equivalent part of a motor or other machine, whereas an arm extending from said segment beyond its center connects, by means of a pitman, with the fly-wheel or other equivalent device secured to the shaft to which a rotary motion is to be imparted in such a manner that the reciprocating mo ion of the piston-rod or other equivalent part is converted into a rotary motion of the fly-wheel shaft by the combined action of the toothed segment, rack, and pitman, and the full power exerted by said piston-rod, or other equivalent device, is transmitted to the fly-wheel shaft without loss.

A represents a toothed segment, which connects at its center *a* with the piston-rod B of an ordinary steam-cylinder, or with another equivalent part of a motor or other machine the reciprocating motion of which is to be converted into a rotary motion. In order to steady the segment and to keep the piston-rod in line, I have constructed the end of said piston-rod so that it forms a cross-head, which straddles the segment and catches over guides secured permanently to the frame or bed that supports the engine, although it must be remarked that this part of my device will have to be changed according to the place where the toothed segment is to be applied, and forms by no means a part of my invention. The toothed segment A gears into a rack, C, which is provided with cogs corresponding to the teeth of the segment, and permanently secured to the bed, which supports the whole mechanism. If the piston-rod reciprocates, therefore, the segment rolls back and forth on the rack, its radius being adjusted according to the stroke of the piston.

From the segment A extends an arm, I, which connects by a pitman, D, with an eccentric wrist-pin, E, secured in one of the arms of a fly-wheel, F, which is firmly keyed to the shaft G, to which a rotary motion is to be imparted. The distance of the eccentric wrist-pin from the center of the shaft G is so adjusted in relation to the distance of the pivot connecting the pitman to the arm of the segment from the center of said segment that the oscillating, or, more properly speaking, the rolling motion of said arm will produce a rotary motion of the fly-wheel and fly-wheel shaft. By this arrangement the position of the pitman, which is attached to the arm extending from the segment, is constantly changing, increasing or decreasing the resistance to the motive power, so as to give a uniform motion to the machinery, and, furthermore, the full power of the motor is transmitted to the shaft G, since at the point of the greatest resistance—namely, when the eccentric wrist-pin or crank is at right angles with the piston-rod—the power is exactly equal to that of the common engine, while the leverage gained by the lowering of the attachment of the pitman and the length of crank, (or greater diameter of cylinder, as may be preferred,) the power is maintained at the maximum throughout the whole revolution of the fly-wheel shaft.

It is obvious that this device can be readily substituted in all engines or other machines for the mechanism generally used for converting reciprocating into rotary motion.

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

The employment or use of a toothed segment gearing into a stationary toothed rack, in combination with the piston-rod of an engine or other equivalent part, and with the pitman and shaft to which a rotary motion is to be imparted, all constructed and operating substantially as and for the purpose set forth.

F. BREWER.

Witnesses:
JOHN H. KUHLENBECK,
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