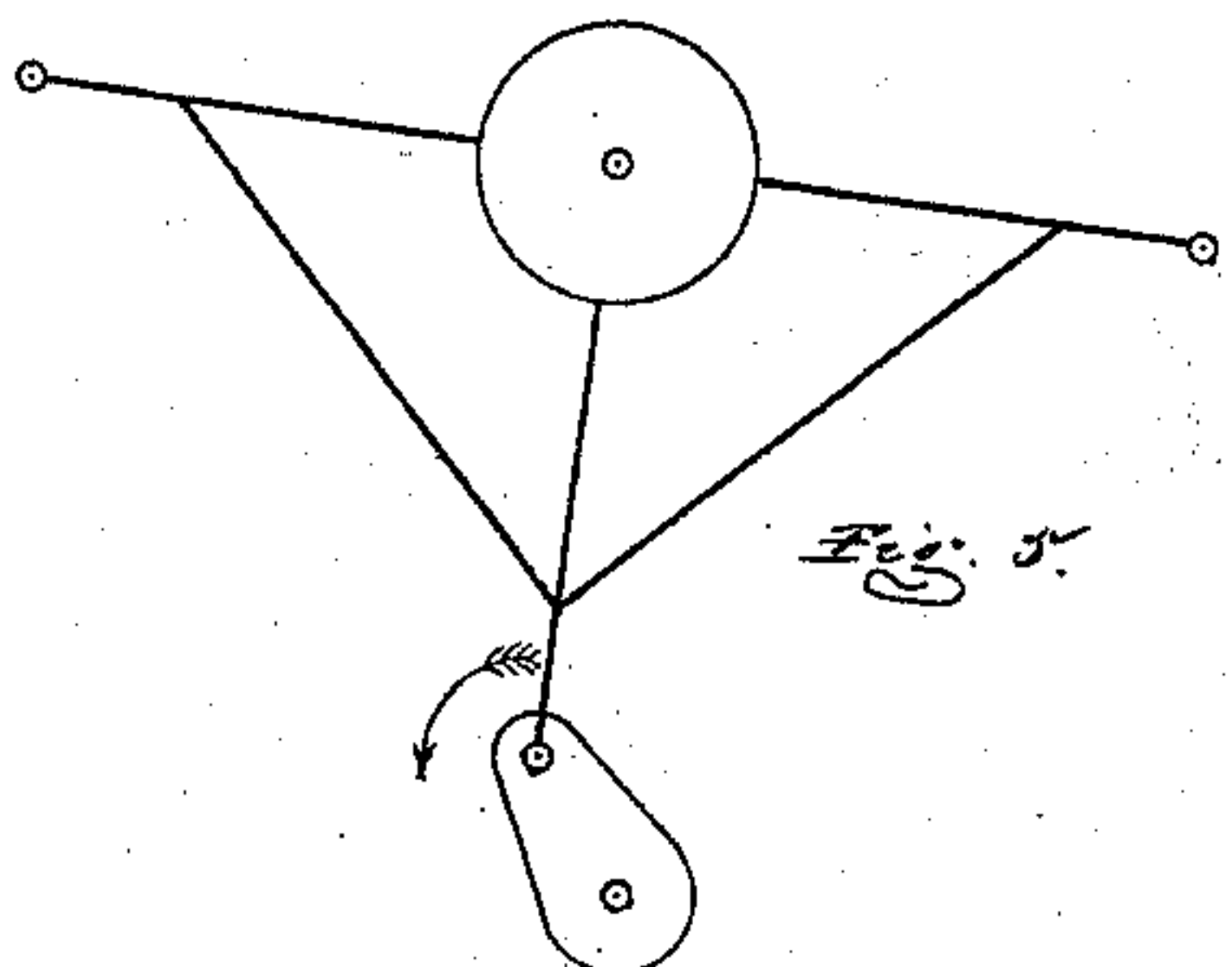
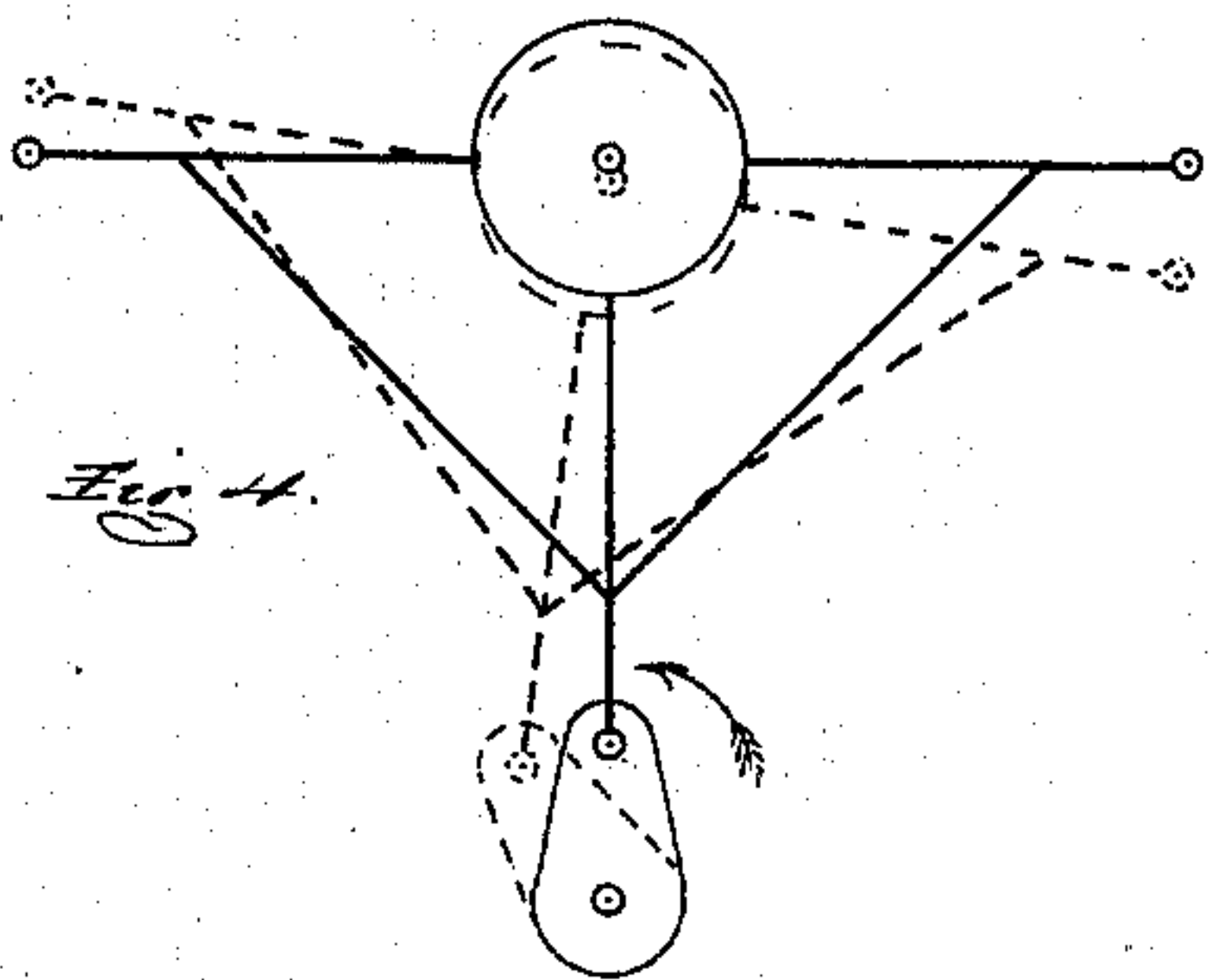
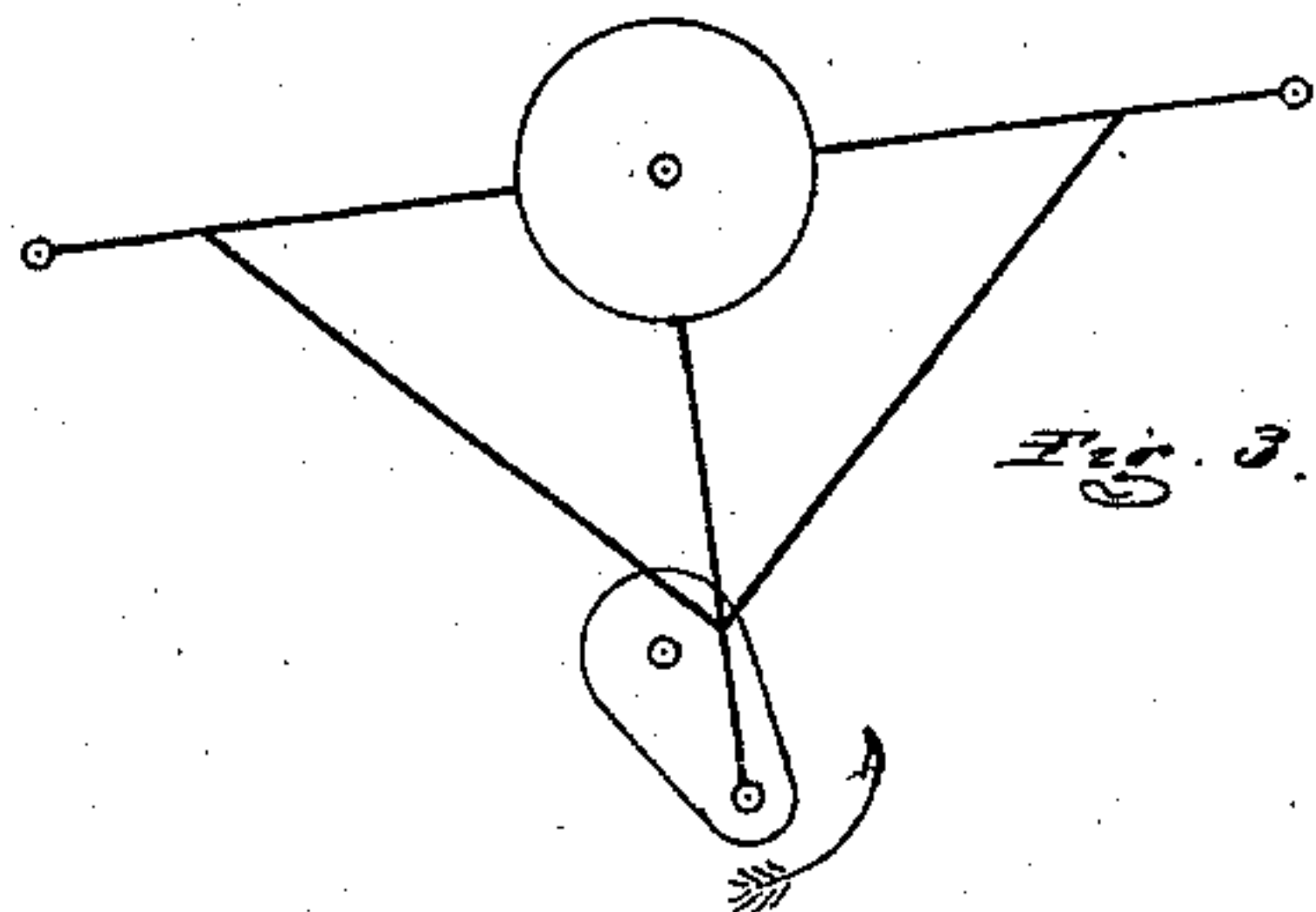
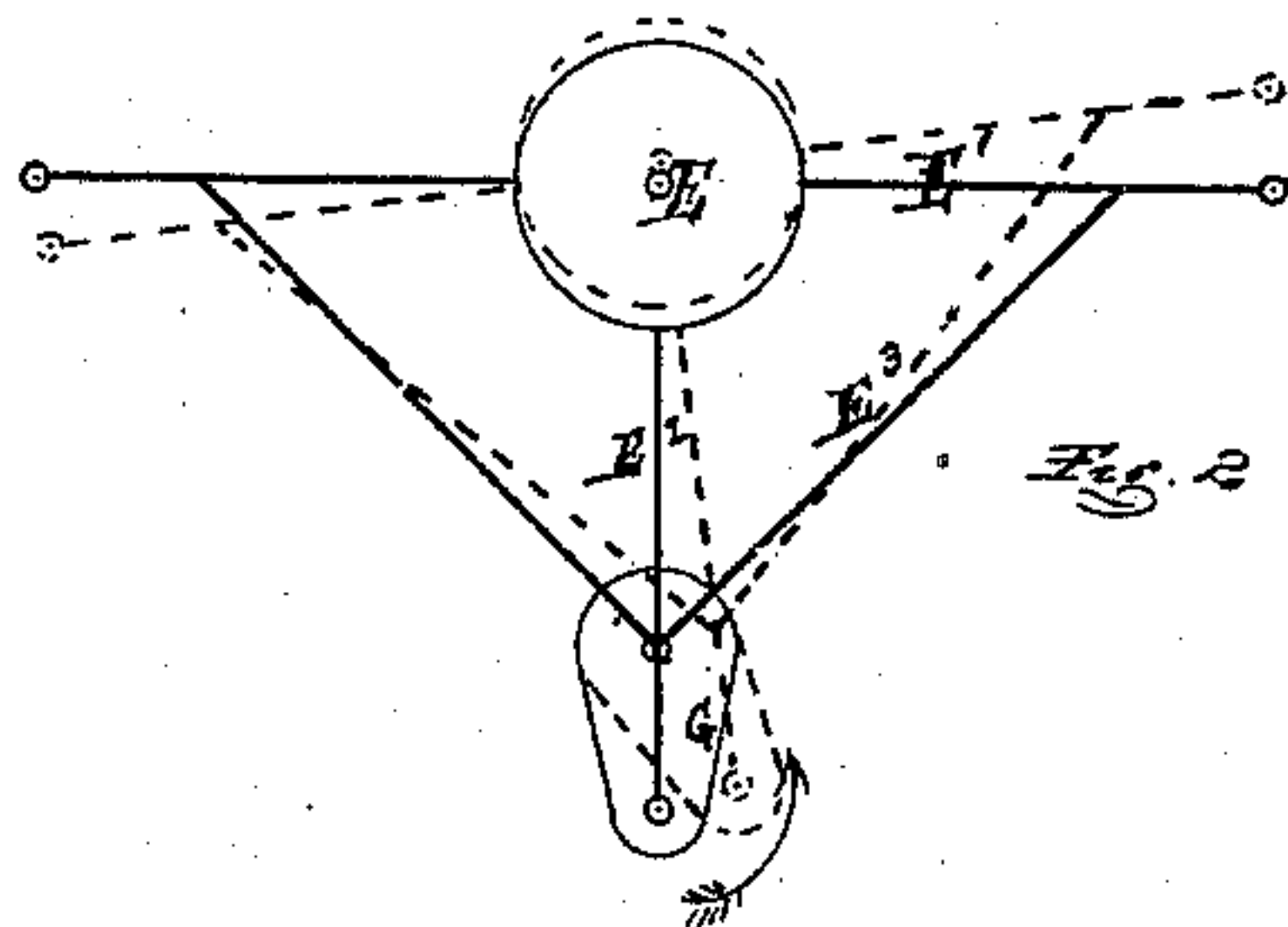
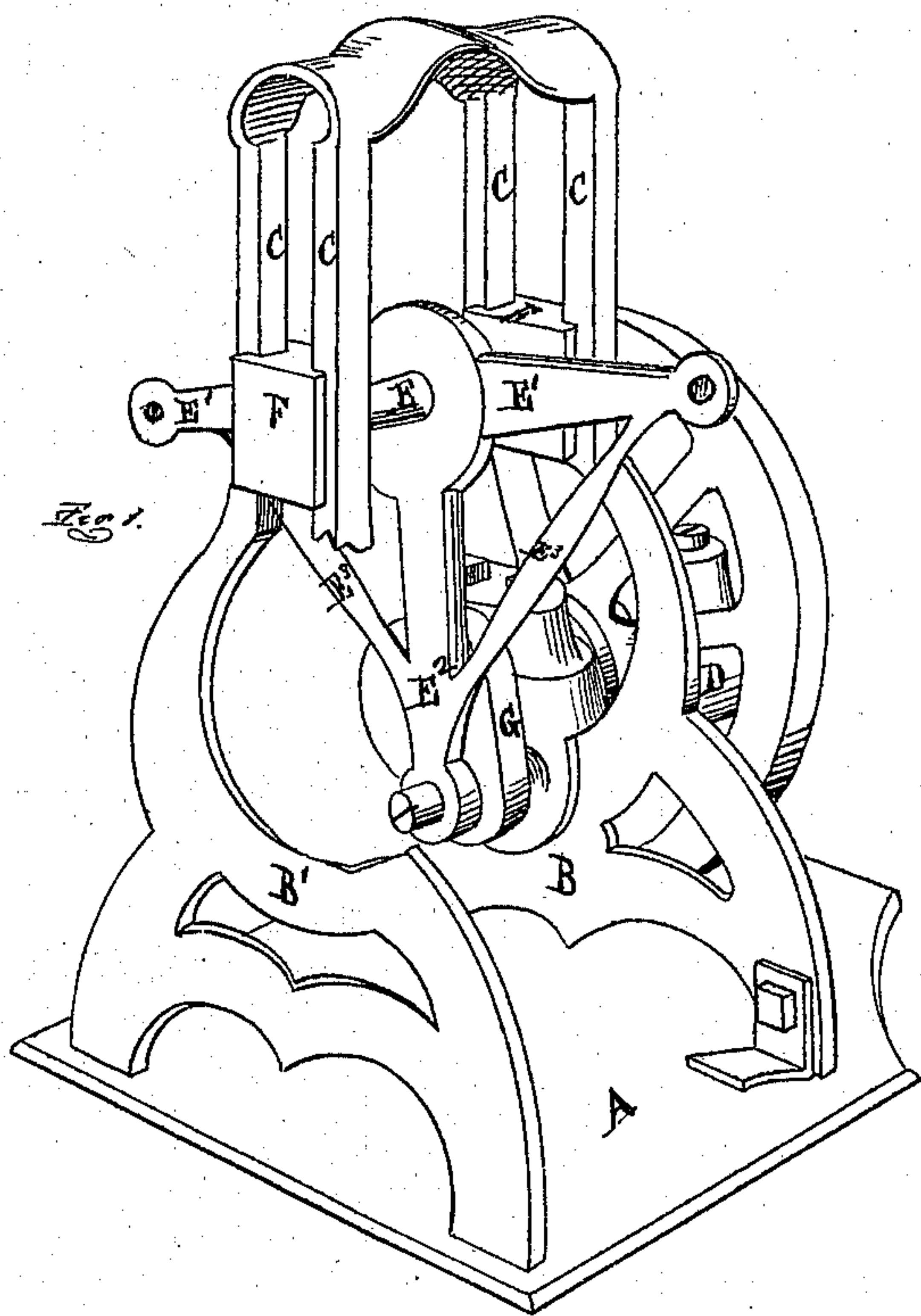


E. COURTRIGHT.

Improvement in Mechanical Movements.

No. 131,940.

Patented Oct. 8, 1872.



ATTEST:

H. F. Everts.

N. S. Sprague

INVENTOR:

Edgar Courtwright

per attorney

N. S. Sprague

UNITED STATES PATENT OFFICE.

EDGAR COURTRIGHT, OF PARTELLO, MICHIGAN, ASSIGNOR TO HIMSELF AND
ENOCH M. WINSLOW, OF SAME PLACE.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. 131,940, dated October 8, 1872.

To all whom it may concern:

Be it known that I, EDGAR COURTRIGHT, of Partello, in the county of Calhoun and State of Michigan, have invented a new and useful Mechanical Movement; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is a perspective view of my improvement as arranged to transmit the motion of a pair of steam-engines to a shaft, a portion of the front part of the frame being broken away to show the crank; and Figs. 2, 3, 4, and 5 are diagrams, showing the relative positions of the vibrating beam to the crank at various points in the revolutions of the latter.

Like letters refer to like parts in each figure.

This invention relates to a new mechanical movement having for its object to utilize the full power of the motor to propel a crank past the dead-centers; and it consists in a cross-head moving in slides above or below the crank of the driven shaft. This cross-head forms the center stud for an oscillating beam, to each end of which a steam-engine or other reciprocating motor is attached, the valves of one of the engines being set so as to give it a "lead" of about one quarter in advance of the other. A pendulum at a right angle with the beam is strapped to the wrist of the crank, the effect of which is that both motors are exerting their power to carry the crank past the dead-centers, and thus utilize the full power applied or developed, less the constant coefficient of friction.

In the drawing, A represents a bed plate, on which are erected two upright frames, B B', the upper parts of which terminate in the vertical guides C. In the lower part of the frame B is the end plumper-block or bearing of the shaft D, which is to be driven. E is a cross-head, or, more properly, the center stud of the vibrating beam E¹. The ends of the stud are stepped in the slides F, which have a vertical movement in the guides. A reciprocating

engine is connected with each end of the beam through links or a connecting-rod. The valves of one engine are so set as to give it an advance or lead over the other one, as hereinafter described. Pendent from the center of the beam, and perpendicular thereto, is a pendulum, E², which has the wrist *a* of the crank G journaled in its lower end, said crank being keyed on the end of the shaft D. E³ are two diagonal braces between the lower end of the pendulum and the beam ends, to strengthen the former.

The beam is moved bodily up and down in the reciprocation of the engines which are connected thereto; and, as before explained, the valves of the engines are set so as to give one of them a lead, which gives the beam an oscillating movement as the crank-centers are passed. At this time one of the engines has not completed its up stroke, while the other will have completed the up stroke and commenced the down stroke. At the upper and lower centers of the crank the beam will be in a horizontal position, but at no other time. By referring to the diagrams of the annexed drawing it will be seen that while the crank is on the lower center, as in Fig. 2, the right-hand engine is pushing up its end of the beam, while the left-hand engine has yet to complete its down stroke and shift the positions of the beam and crank, as shown in dotted lines in said figure and in Fig. 3, both engines exerting their power to carry the crank past the center.

Figs. 4 and 5 show the relative positions of the parts at the upper center of the crank and at the commencement of the down stroke of both engines.

The cylinders may be placed under the beam or inverted above it, or they may be inclined in position, as circumstances may require, without changing the principles involved in the application of the new movement, or one motor alone may be used at one end of the beam, but in this case the dead-centers in the engine are not overcome, while those of the crank will be in the positions shown in Figs. 3 and 4. This movement is applicable in very

many cases, such as in hand-cars, or in similar situations where manual labor is used for rotating a shaft.

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

As a new mechanical movement for overcoming the dead-centers in cranks, the slides F moving in the guides C, the beam E¹ having power applied at its ends, as herein de-

scribed, its center stud E journaled in the said slides, and its pendulum E² strapped to the wrist of the crank G, all arranged and operating substantially as herein shown and described.

EDGAR COURTRIGHT.

Witnesses:

H. F. EBERTS,

H. S. SPRAGUE.