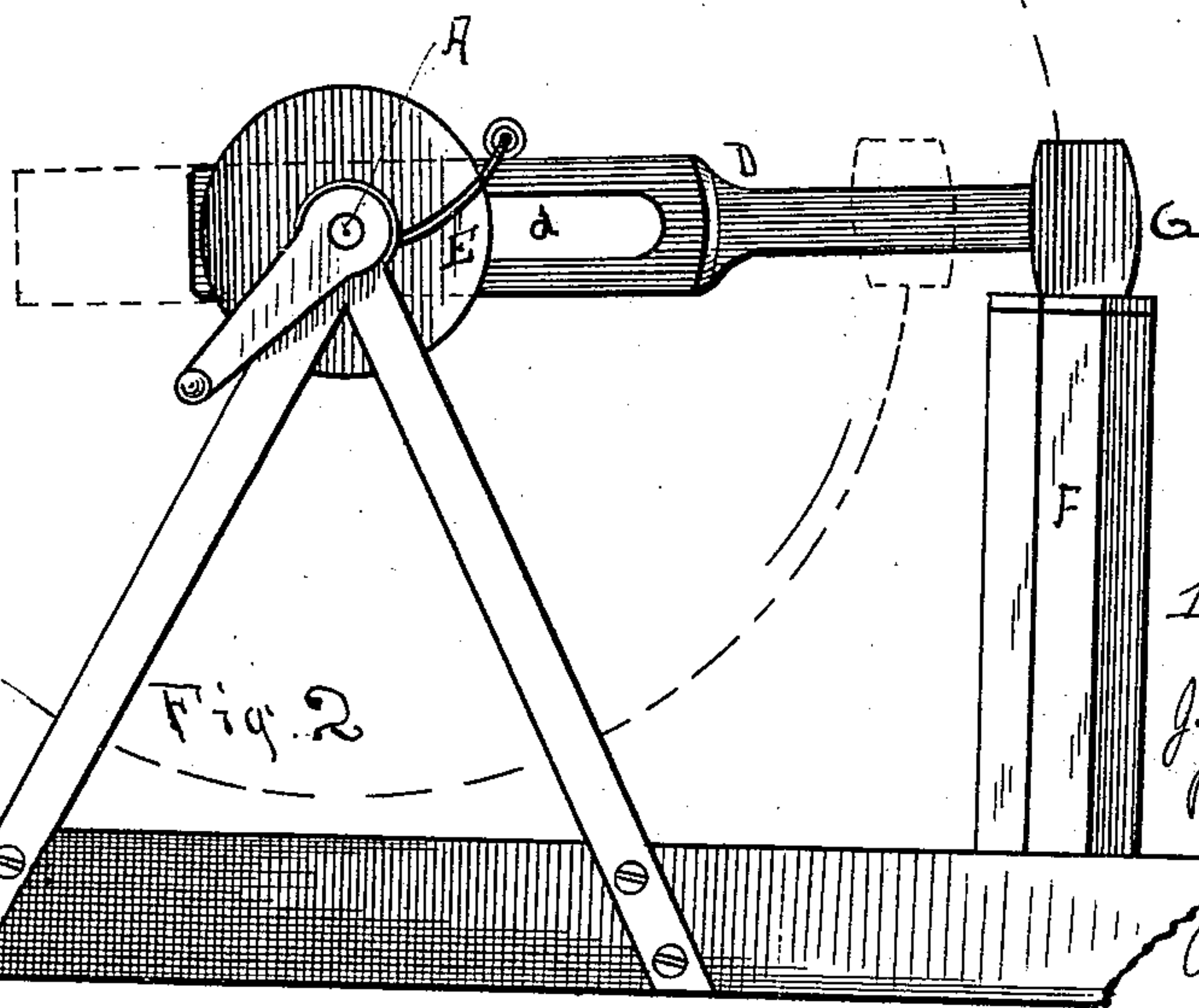
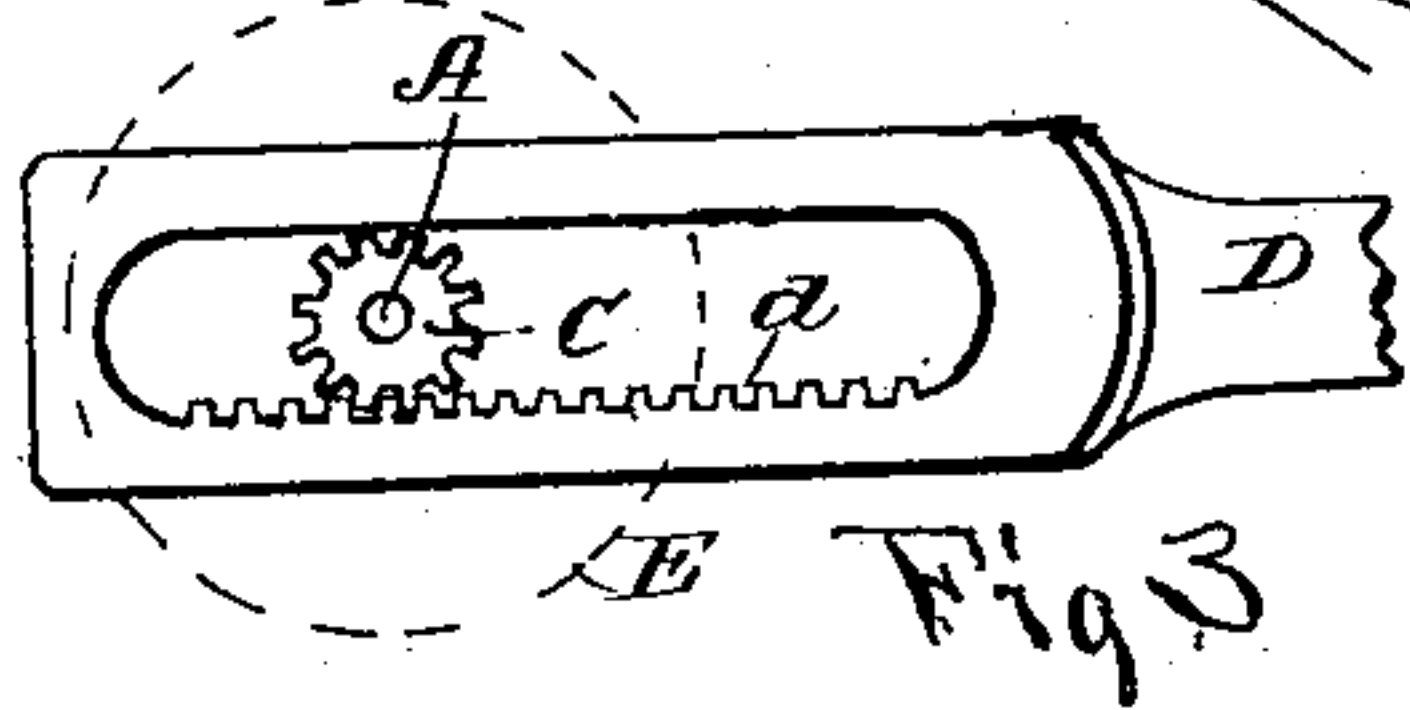
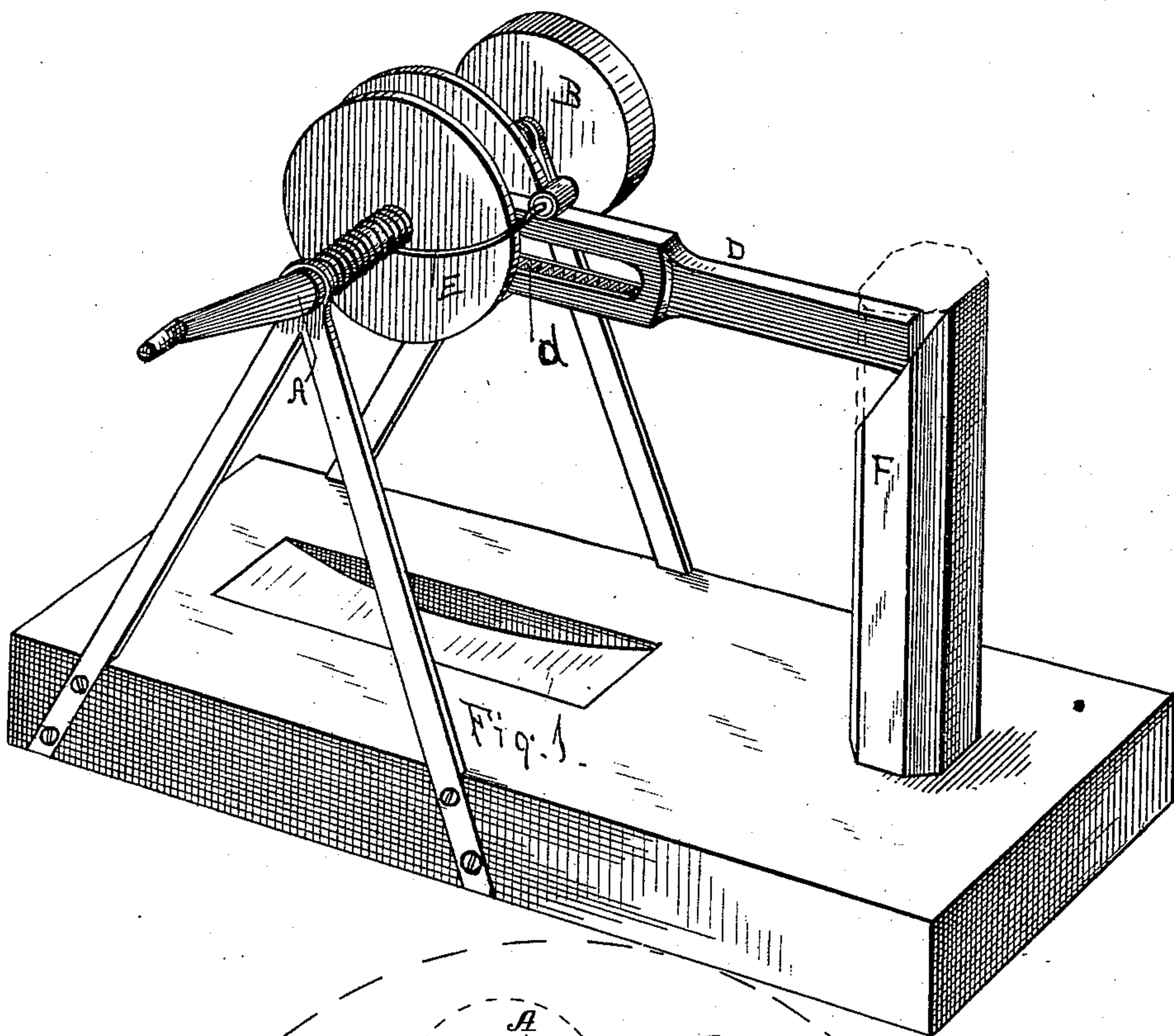


(No Model.)

J. H. ARMSTRONG.
MECHANICAL MOVEMENT.

No. 310,016.

Patented Dec. 30, 1884.



Attest.

Robert Smith
J. C. Turner

Inventor.

J. H. Armstrong
By his atty

Row Smith

UNITED STATES PATENT OFFICE.

JOHN H. ARMSTRONG, OF DUQUOIN, ILLINOIS.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 310,016, dated December 30, 1884.

Application filed November 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ARMSTRONG, of Duquoin, in the county of Perry and State of Illinois, have invented a new and useful
5 Mechanical Movement Applicable to Hammers and for other Purposes; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

10 Figure 1 is a perspective of my device in typical form. Fig. 2 illustrates its application to a hammer. Fig. 3 represents the rack and pinion.

My invention relates to a device wherein,
15 on a constantly-revolving shaft, a body is mounted and has the same number of revolutions, but with varying rate, and, if desired, intervening periods of rest. Thus the shaft may revolve with uniform velocity, and may
20 be caused to transmit motion, which varies in speed during each revolution, and may at a certain period of each revolution come to rest, but without varying from the driving-shaft in the whole number of revolutions.

25 Without attempting to describe the various mechanical relationships into which this invention may enter, it will be sufficient that in Fig. 1 I show the revolving shaft and a transmitting pulley or wheel fitted with my device
30 and adapted to be retarded or to come to rest at a certain point during each revolution, and in Fig. 2 I show my invention applied to a power-hammer.

A is the main shaft, to which rotation may
35 be imparted by any suitable prime mover. A hub, B, which may be a pulley or other transmitting-wheel, is mounted upon said shaft. A pinion, C, is rigidly secured to said shaft, and an arm, D, provided on one of its
40 surfaces with a rack, *d*, is attached to the shaft A in such a manner that it may slide thereon in a radial direction. The rack *d* is in engagement with the pinion C, and said radial movement is thereby determined. Rotation of the
45 hub B and arm D with and in equal number with the shaft A is compelled by the strong spring E, which therefore must have a tension superior to the resistance or load to be carried. The action of these parts is as follows: If, during the revolution of the device,

the arm D encounters resistance, as in the post or abutment F, so that the speed of the shaft A begins to be greater than the speed of the arm D, the pinion C will instantly commence
55 to move the rack *d* and arm D radially inward, so as to withdraw said arm from the source of resistance to its motion, and will so continue to move it until said arm is liberated from said resistance, when the spring E, which
60 has been flexed during the period of resistance, immediately causes the arm and hub to move more rapidly than the shaft until its lost ground has been recovered, and in so doing the rack *d* travels over the pinion with
65 a motion greater than the axial rotation of the shaft, and is thereby thrust out again to its initial position.

In the case of the hammer shown in Fig. 2, the arm D is prolonged and constitutes the
70 helve or handle of the hammer G, and the resisting object F becomes an anvil. With this hammer a blow may be struck at each revolution of the continuously-revolving shaft, and with a force greater than that due to the velocity of revolution by as much as the velocity
75 of the hammer exceeds that due to the revolution of the shaft.

It is evident the rack and pinion may be replaced by other equivalent mechanical expedients—such as a belt or strap wound around
80 the shaft and fastened at its ends to the arm D—and that the resistance F may be anything which temporarily retards or arrests said arm, and that such changes will not involve any
85 change in the invention or its mode of operation. It is also apparent that a spring different from the spring E may be employed—as, for instance, a torsion-spring, or direct-acting spiral connected to the shaft by a strap, &c.

Having described my invention, I claim as
90 new—

1. The herein-described new mechanical movement, consisting, essentially, of a continuously-revolving shaft, A, an arm, D, capable of radial reciprocation on said arm, a
95 rack and pinion or other connection between said shaft and arm, whereby when the shaft revolves faster than the arm the latter will be moved radially inward, and when it revolves
100 at a less speed said arm will be moved radially

outward, and a spring, E, whereby said arm may be retarded or arrested and caused to recover its position, as set forth.

2. The shaft A, provided with the pinion C and the spring E, combined with the arm D, having a rack, *d*, in engagement with said pinion, whereby when said arm is retarded or arrested it will be moved radially inward until released from arrest or retardation, and will then recover its initial position, as set forth.

3. The shaft A, provided with the pinion C and the spring E, combined with the arm D, slotted to ride on said shaft, and provided with the rack D and hammer G, and the anvil, substantially as described.

4. The shaft A, provided with the pinion C and the spring E, combined with the arm D, capable of an axial movement as to said shaft, and provided with the rack *d* and the wheel or transmitter B, and a resistance, F, substantially as set forth.

5. The shaft A, provided with the pinion C and spring E, combined with the wheel B, arm D, arranged to slide axially thereon, and provided with the rack *d* and hammer G, and the resistance F, substantially as shown.

JOHN H. ARMSTRONG.

Witnesses:

GEO. E. PECK,

CHAS. G. NEELY.