

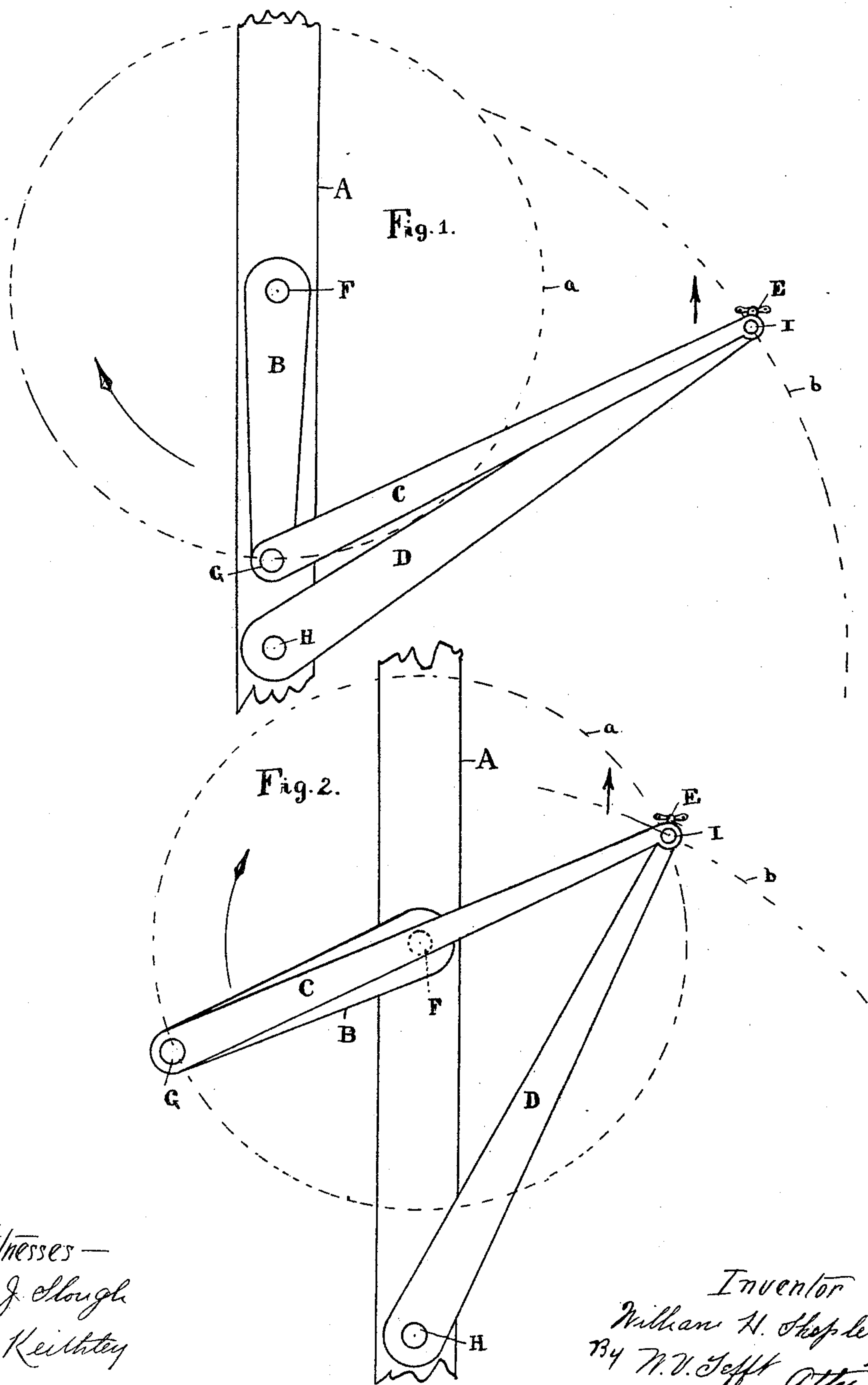
(No Model.)

3 Sheets—Sheet 1.

W. H. SHEPLER.
LEVER AND CRANK MECHANISM.

No. 461,055.

Patented Oct. 13, 1891.



Witnesses—
E. J. O'Rough
A. Keithley

Inventor
William H. Shepler
By W. V. Jefft Atty.

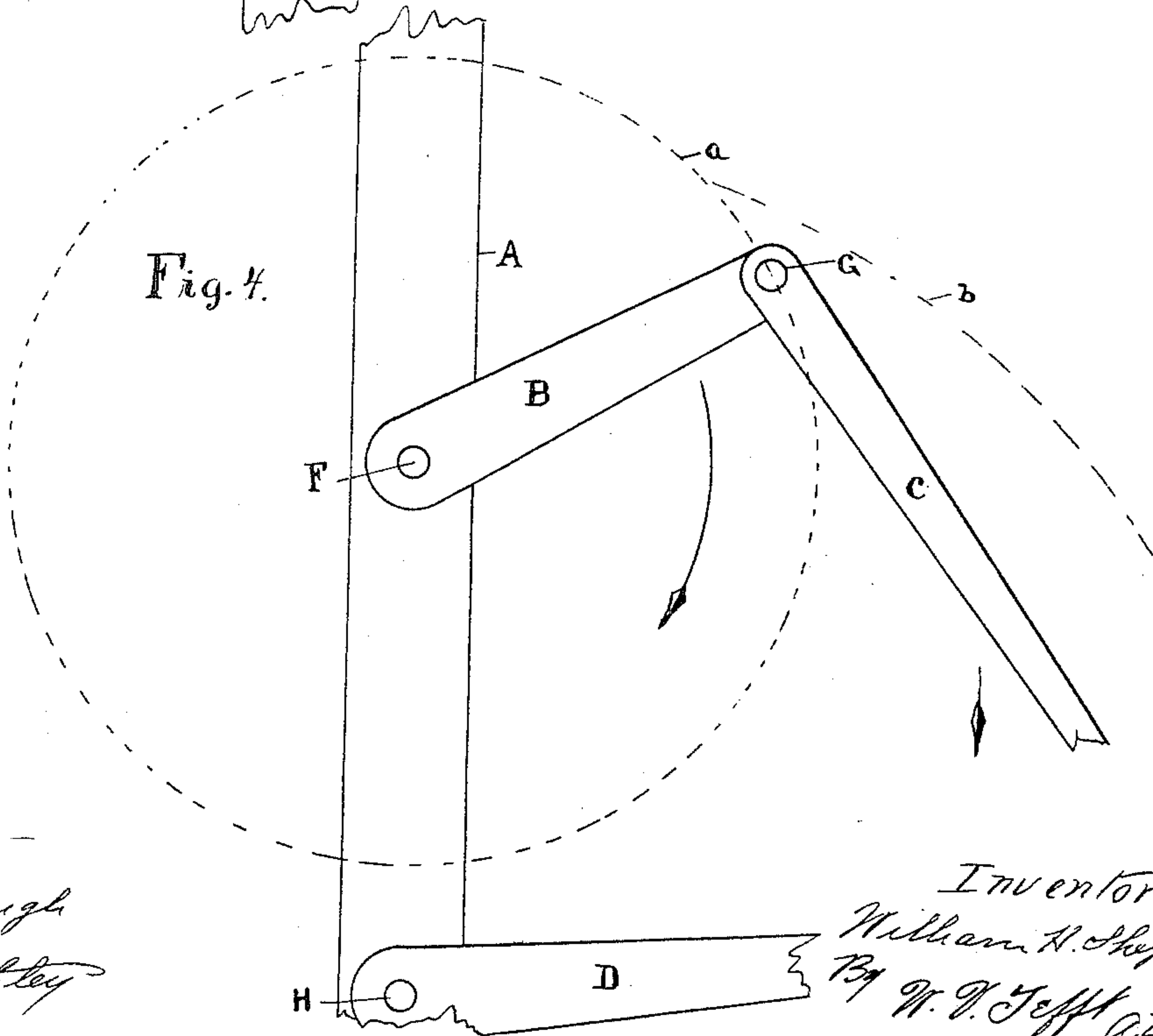
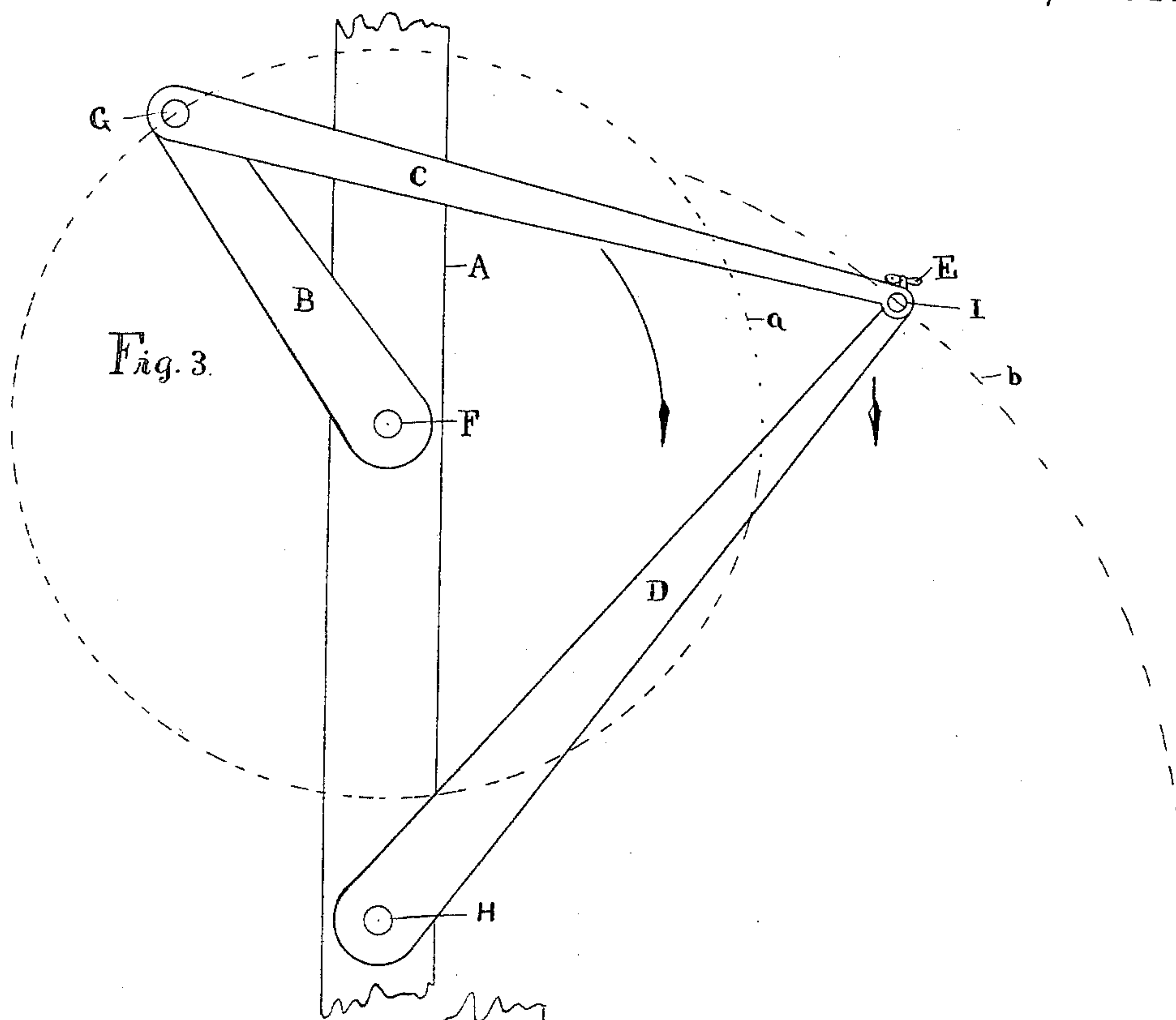
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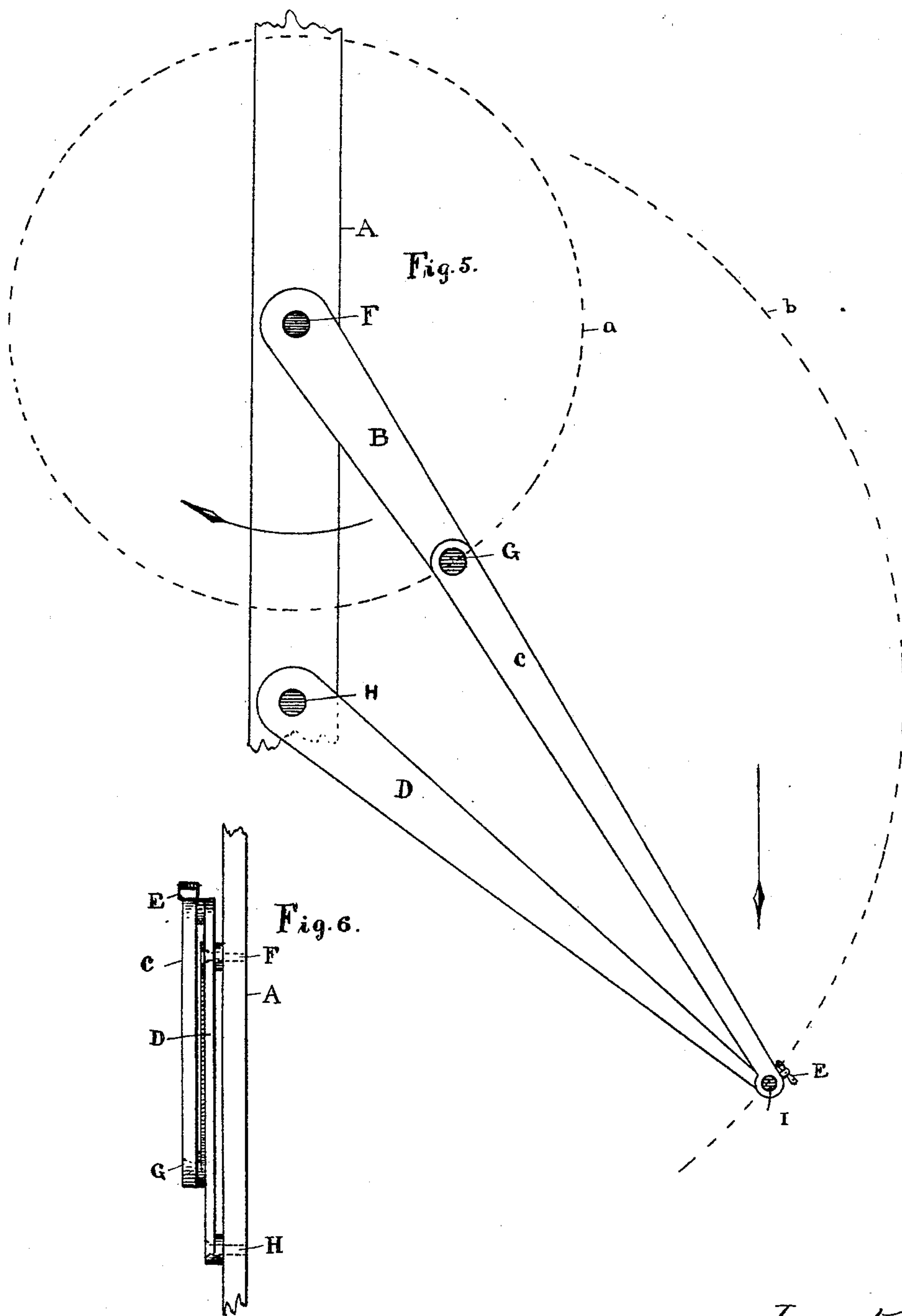
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UNITED STATES PATENT OFFICE.

WILLIAM H. SHEPLER, OF PEORIA, ILLINOIS.

LEVER AND CRANK MECHANISM.

SPECIFICATION forming part of Letters Patent No. 461,055, dated October 13, 1891.

Application filed March 6, 1891. Serial No. 384,060. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SHEPLER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Lever and Crank Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in means for conveying motion and power; and it consists, essentially, of the ordinary crank-arm keyed upon a shaft which it is designed to rotate and of an arm, pivoted to the frame-work in which the shaft to be rotated is journaled and at a point below, and with a connecting bar or arm pivoted upon the extremities, thus forming a compound lever, the operation of which will be hereinafter more particularly described.

That my invention may be more fully understood reference is had to the accompanying drawings, in which—

Figures 1, 2, 3, 4, and 5 are side views of my improvement, in its various adjustments, while in operation to rotate a shaft. Fig. 6 is an end view.

In Fig. 1, F is a shaft, which is designed to be rotated, and is journaled in the perpendicular frame-piece A. B is a crank-arm keyed upon the shaft. D is an arm or lever pivoted, as at H, to the frame-piece A. C is a bar or arm pivotally connected, as at I and G, with the extremities of the arms B D. E is a foot-pedal designed to receive the application of the power.

In operation, as a means of conveying power and motion, the power being applied to the treadle E or other attachment to receive the application of such power at the time when the respective parts of my improvement are in the adjustment shown in Fig. 3, the pivotal point I of the arms C D, which is at the point of application of the power, is depressed through the line *b*, and the arms B C D, while the pedal is being so depressed, are thrown, respectively, into the positions shown in Figs. 4 and 5, which imparts rotation to the shaft F, and when depressed into the position shown in Fig. 5 the power would be

equalized, the action being equal to the reaction, thus staying the operation, were it not for the momentum created by the depression of the said arms, which said momentum throws the pivotal point G beyond the point where the power will be equalized, thus tending to continue the rotation, when power being applied to draw the arms upward, or by depressing a corresponding combination of arms to those here shown, adjusted as opposites in action and secured to the same shaft, the operation is continued, throwing the arms into the respective positions shown in Figs. 2 and 1, the momentum created preventing the equalization of power at any point, and one complete rotation of the shaft F is accompanied by a corresponding and simultaneous revolution of the pivotal point G of the arms C B through the circle *a*.

In Fig. 2 is shown the maximum of elevation of the pivotal point I and the treadle E, and the depression begins at this point, and by observing the space that is traveled by the pivotal point G, or the arc described while the complete depression is being made it will be seen that a direct application of power is had through two-thirds of the entire rotation, which is an advantage possessed over all crank-arms or combination of crank-arms, which is the element of advantage and the point gained over all others by my improvement.

It will be seen from the description that general application may be made of this mode of conveying power and motion by means of the arms or levers with a view of rotating a shaft, not only where power is applied to one combination of levers, as here shown, to operate them both downward and upward, but may be also applied to rotate a shaft when but one direction of power is applied, by the use of a corresponding combination adjusted to operate as opposites upon the same shaft, so that a depression of levers on one side throws the opposites into the reverse position and ready to receive the application of power and to be depressed in the same manner. This application could be made very successfully in connection with the operation of a bicycle and other mechanical devices as well.

The particular advantages derived from the use of my improved combination of arms or

levers as a mode of conveying power and motion are that a direct application of power is had through two-thirds of the entire rotation, that a greater leverage is gained, and also
5 that there is no point in the operation where the power is equalized by reaction. Thus every particle of power applied is utilized without any loss.

Having thus fully described my invention
10 what I claim, and desire to secure by Letters Patent, is—

In a mechanical movement, the combination of the following elements: the shaft F, journaled in a suitable frame-work, the arm

B on said shaft, the connecting-bar C, the 15 oscillating lever D, said connecting-bar C pivoted, as at I G, to the ends of the arm B and lever D, and said lever D pivoted to the frame in close proximity to and in alignment with the shaft F, and a pedal mounted at the junction of the bar C and lever D, substantially
20 as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. SHEPLER.

Witnesses:

JOSIE TEFET,

R. N. M'CORMICK.