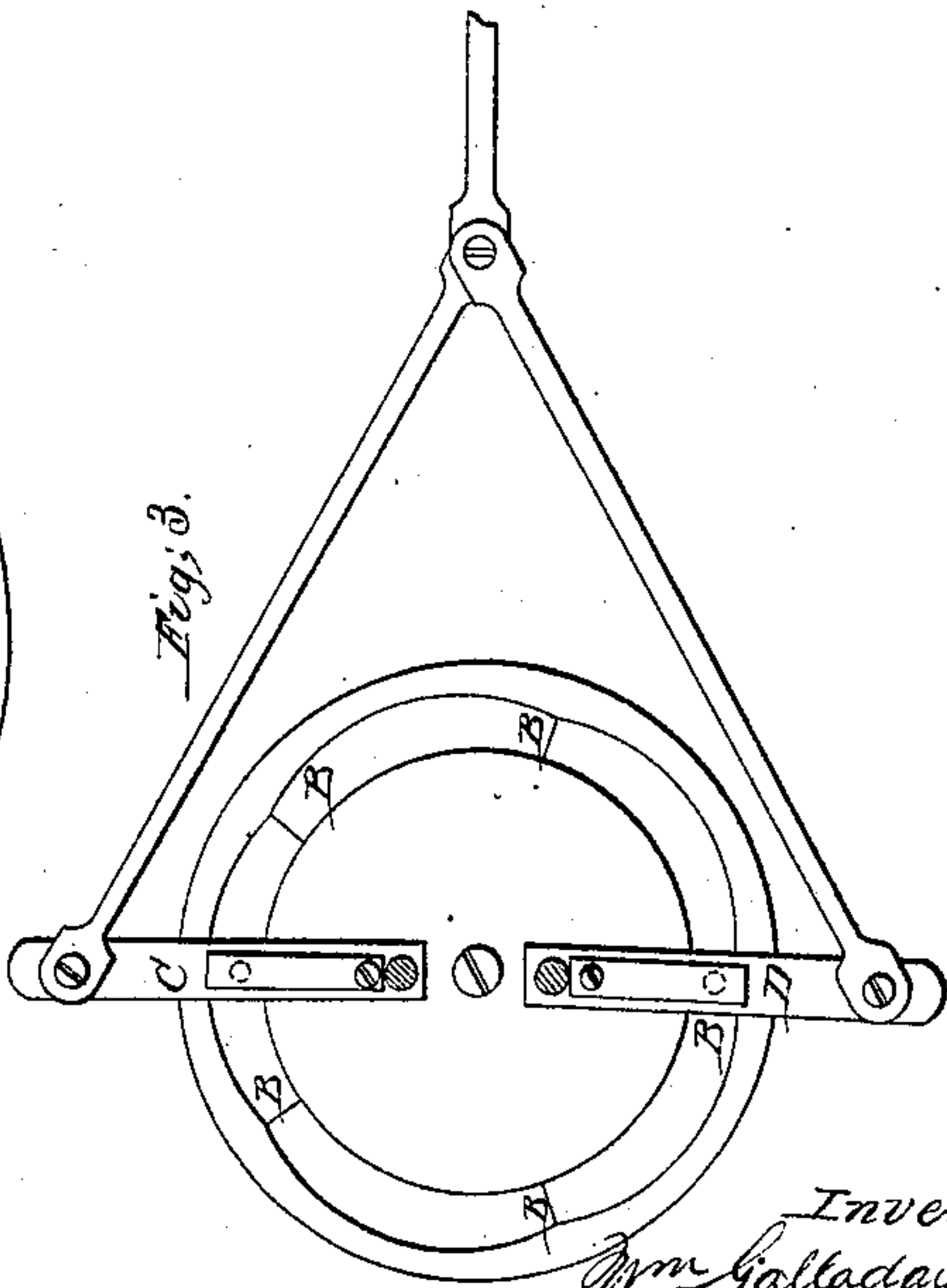
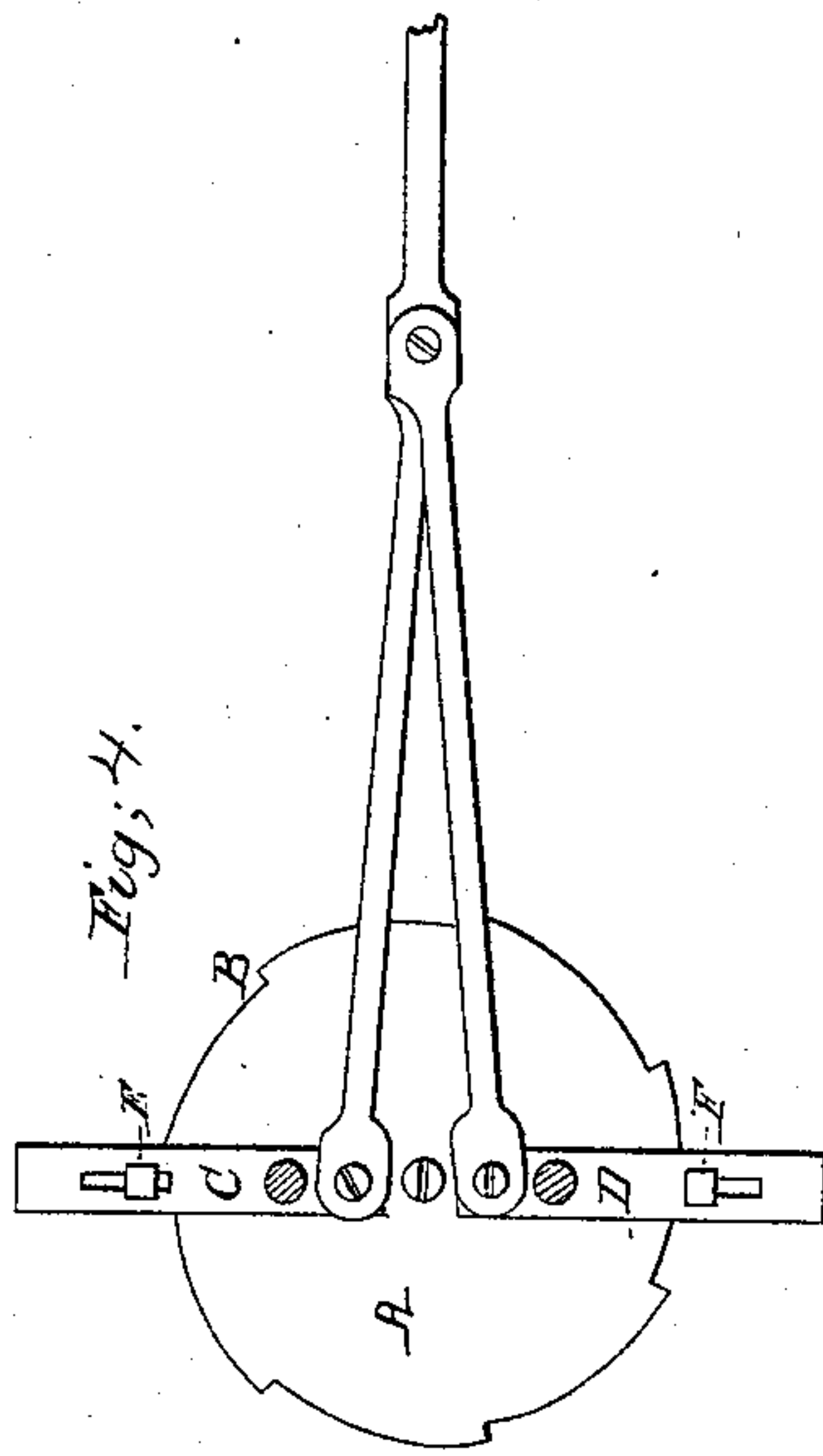
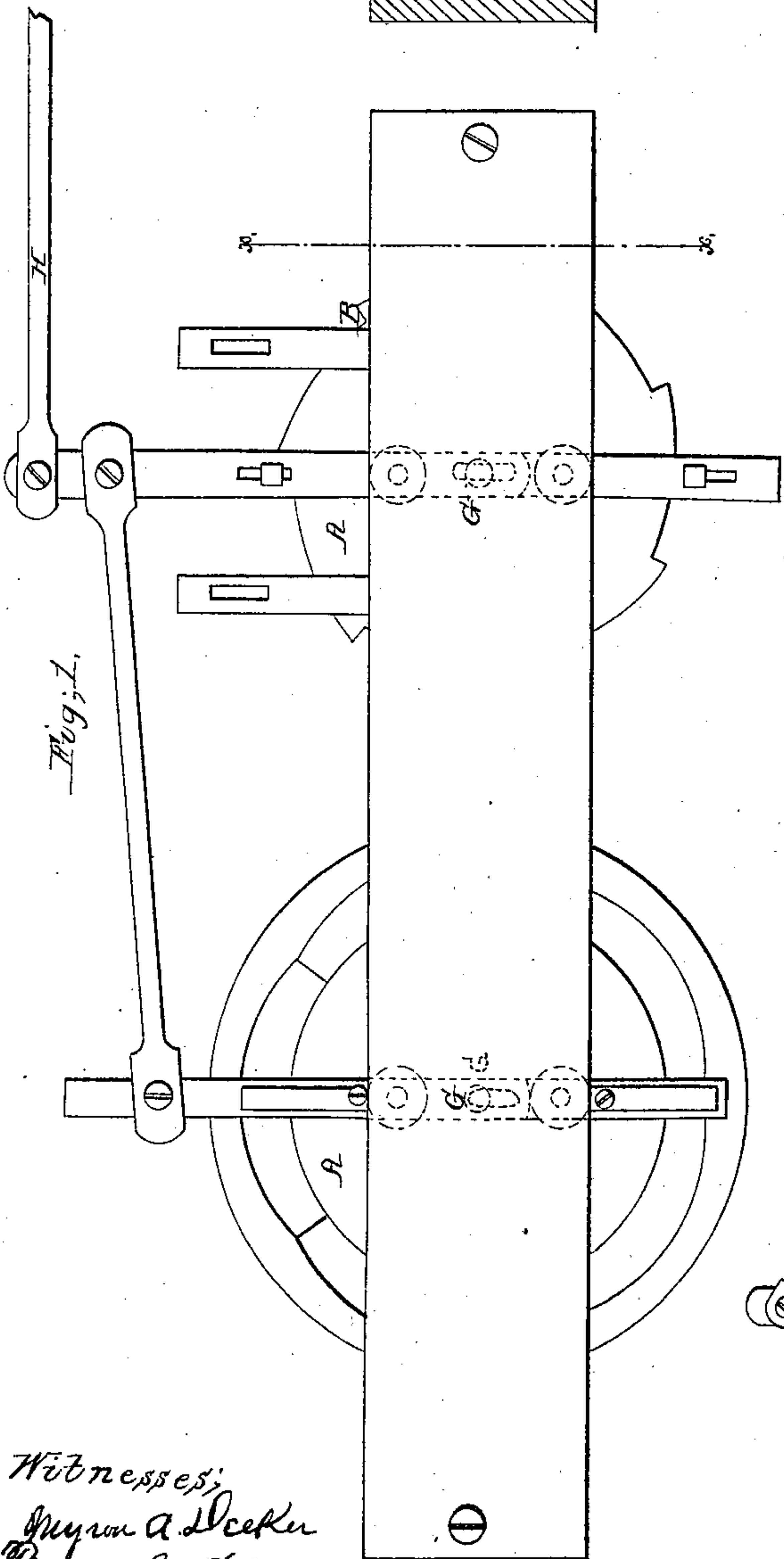
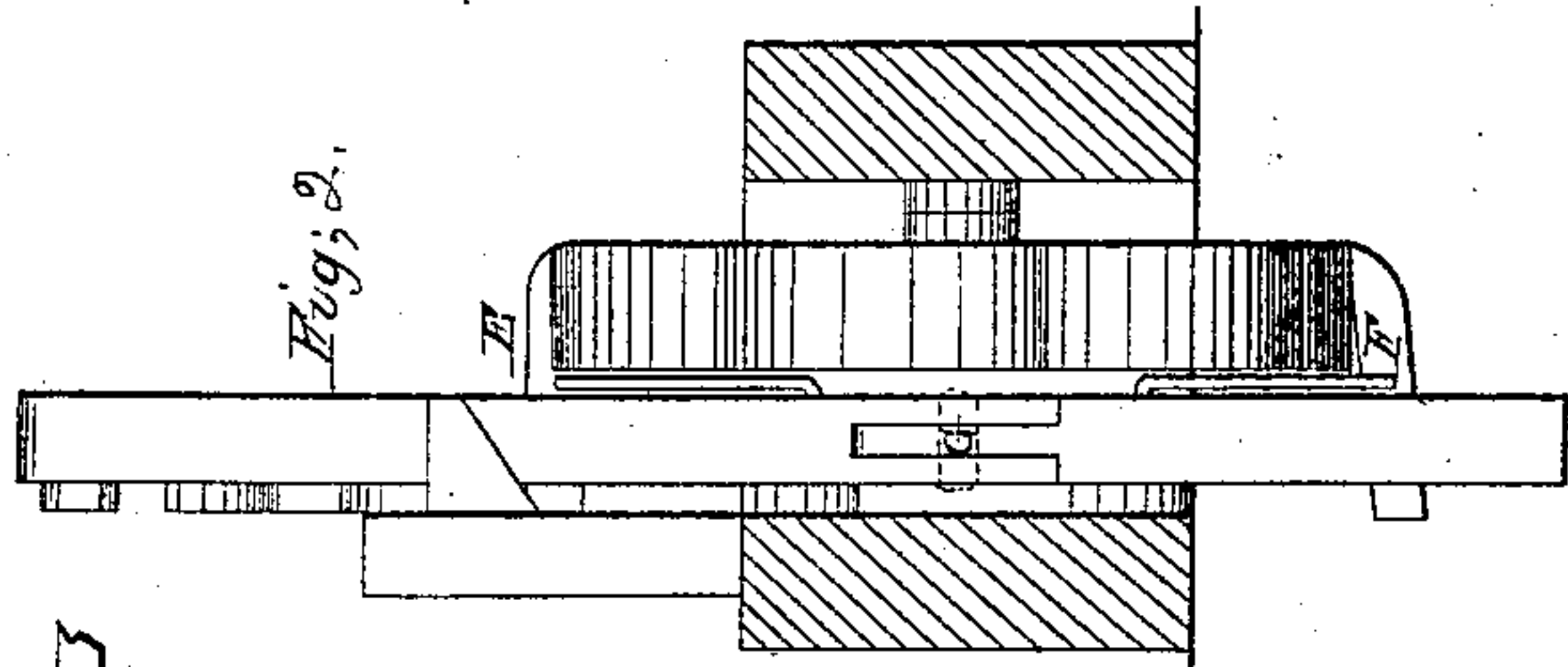


*W. Galladay,  
Mechanical Movement.*

*N<sup>o</sup> 64,858.*

*Patented May 21, 1867.*



*Witnesses;  
Myron A. Decker  
Philip C. Dietrich*

*Inventor;  
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By his atty R. D. C. Smith*

# United States Patent Office.

WILLIAM GALLADAY, OF SHEBOYGAN FALLS, WISCONSIN.

*Letters Patent No. 64,858, dated May 21, 1867.*

## IMPROVEMENT IN MECHANICAL MOVEMENT.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM GALLADAY, of Sheboygan Falls, in the county of Sheboygan, and State of Wisconsin, have invented a new and useful Improvement in Mechanical Movements; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my apparatus.

Figure 2 is a vertical cross-section of the same.

Figure 3 represents a different mode of connecting my apparatus with the driving power.

Figure 4 represents a modification of fig. 3.

My invention relates to that class of mechanical movements whereby reciprocating motion is converted into rotary motion without the occurrence of "dead-centres;" and it consists in the employment of two vibrating levers, each carrying a pawl, and engaging alternately with ratchets on the face of the wheel, so that the wheel receives its motion constantly in one direction, and from the levers alternately, said levers being moved simultaneously by the same power.

That others may understand its construction and operation, I will particularly describe it.

A is a wheel, which may form a pulley or a gear-wheel, as desired, for the purpose of transmitting motion to other parts of a machine. Upon its side or edge are formed the ratchets B. In number they should be odd, so that as the wheel is being moved by one pawl the other should be returning for a fresh hold. Upon a portion of the frame of the machine, directly at the side of the wheel A, are pivoted the two arms C and D, so that they may vibrate in close proximity to the wheel A without touching it. The arms C and D carry the pawls E and F, which, as the said arms are moved back and forth alternately, engage with the ratchets B and move the wheel A. The movement of each pawl is in distance one half the length of the ratchet B, with just sufficient margin to insure the engagement of the pawls. As the arms C and D are located on opposite sides of the centre upon which the wheel A turns, the one acts by pulling at the upper side of the said wheel, while the other acts by pushing at the lower side, and as they are moved in opposite directions as relates to the motion of the wheel, it follows that one will be acting while the other is preparing to act. The two arms C and D may be coupled together by a pin in one working in a slot in the other, as shown in figs. 1 and 2 at G, in which case they both receive motion from the connecting-rod H, or they may be coupled to the piston or other motive power by separate connecting-rods, as shown in figs. 3 and 4, and these rods may be attached to different portions of the levers C and D, as may be required to adapt the machine to a special purpose, or to adapt it to the piston-stroke of a particular engine; as, for instance, the arrangement shown in fig. 3 will give much less motion of the wheel A than will the arrangement shown in fig. 4; but the arrangement shown in fig. 3 will impart much greater power than the other.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the arms C D and pawls E F with the ratchet-wheel A, as and for the purpose set forth.

Connecting the arms C and D at their inner ends so as to be operated by one connecting-rod, substantially as shown and described.

Witnesses:

GEO. S. GRAVES,

R. G. DEMITT.

W. GALLADAY.