

(No Model.)

2 Sheets—Sheet 1.

F. ROBINSON.

PISTON THROW INDICATOR FOR AIR BRAKES.

No. 437,800.

Patented Oct. 7, 1890.

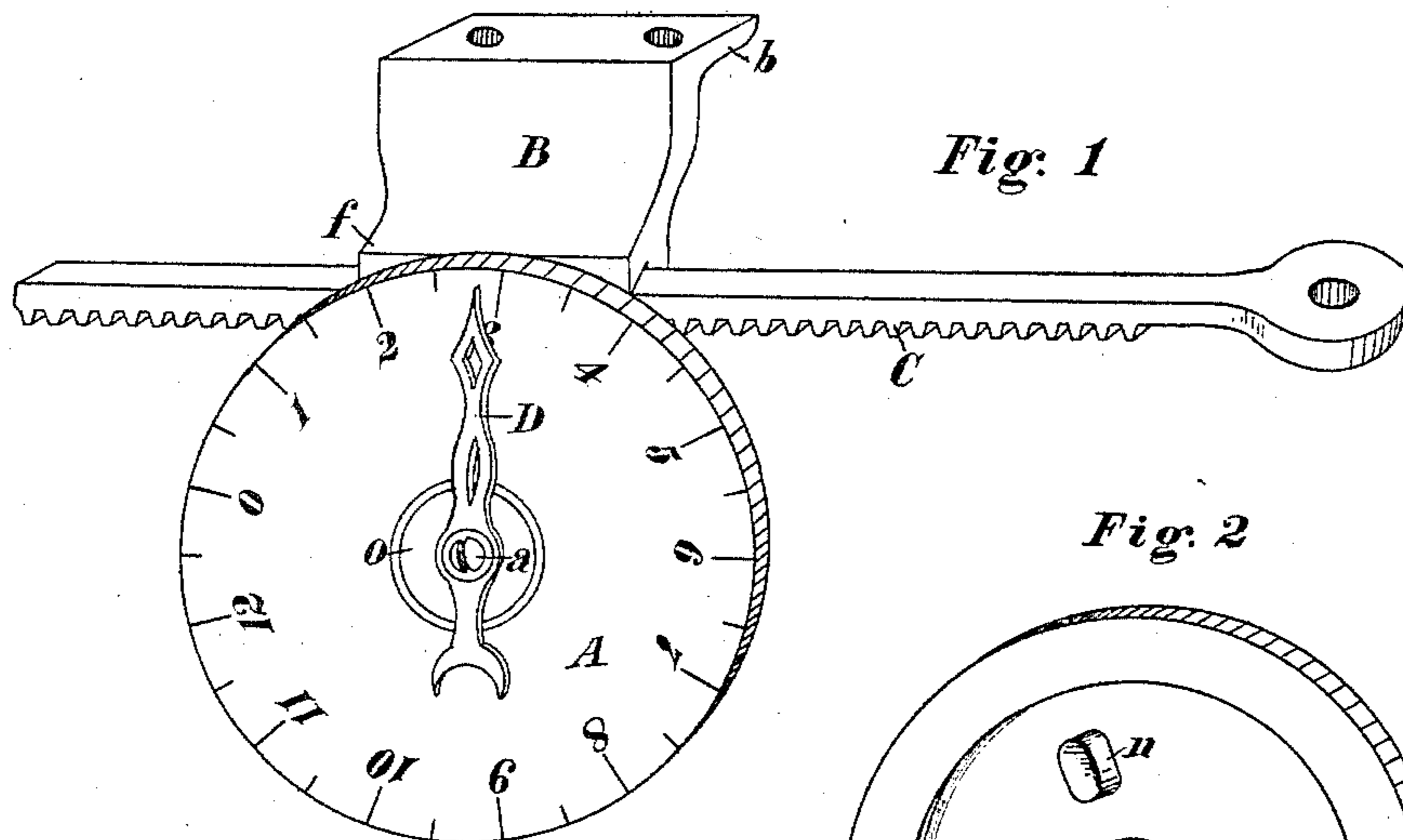


Fig. 1

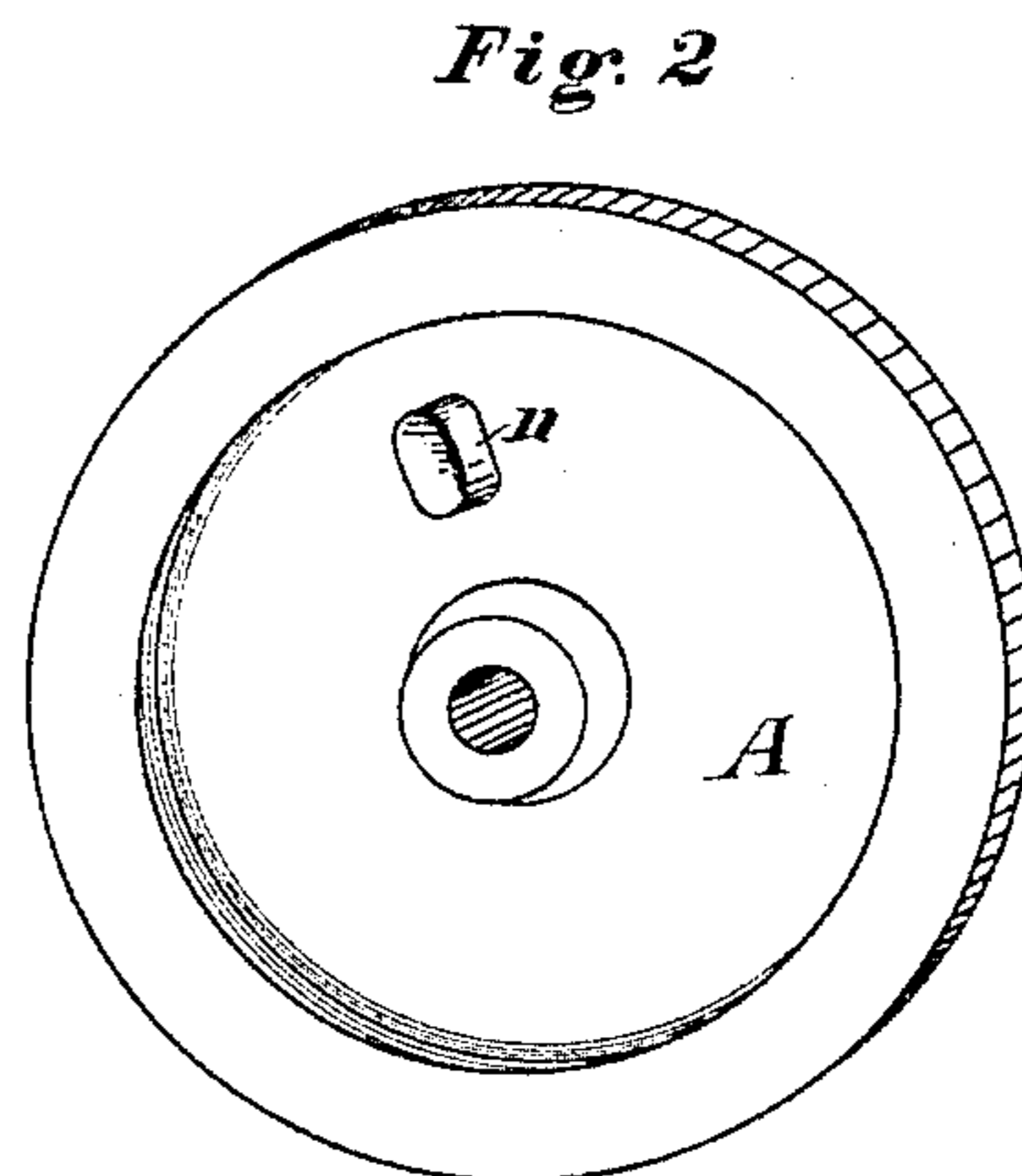


Fig. 2

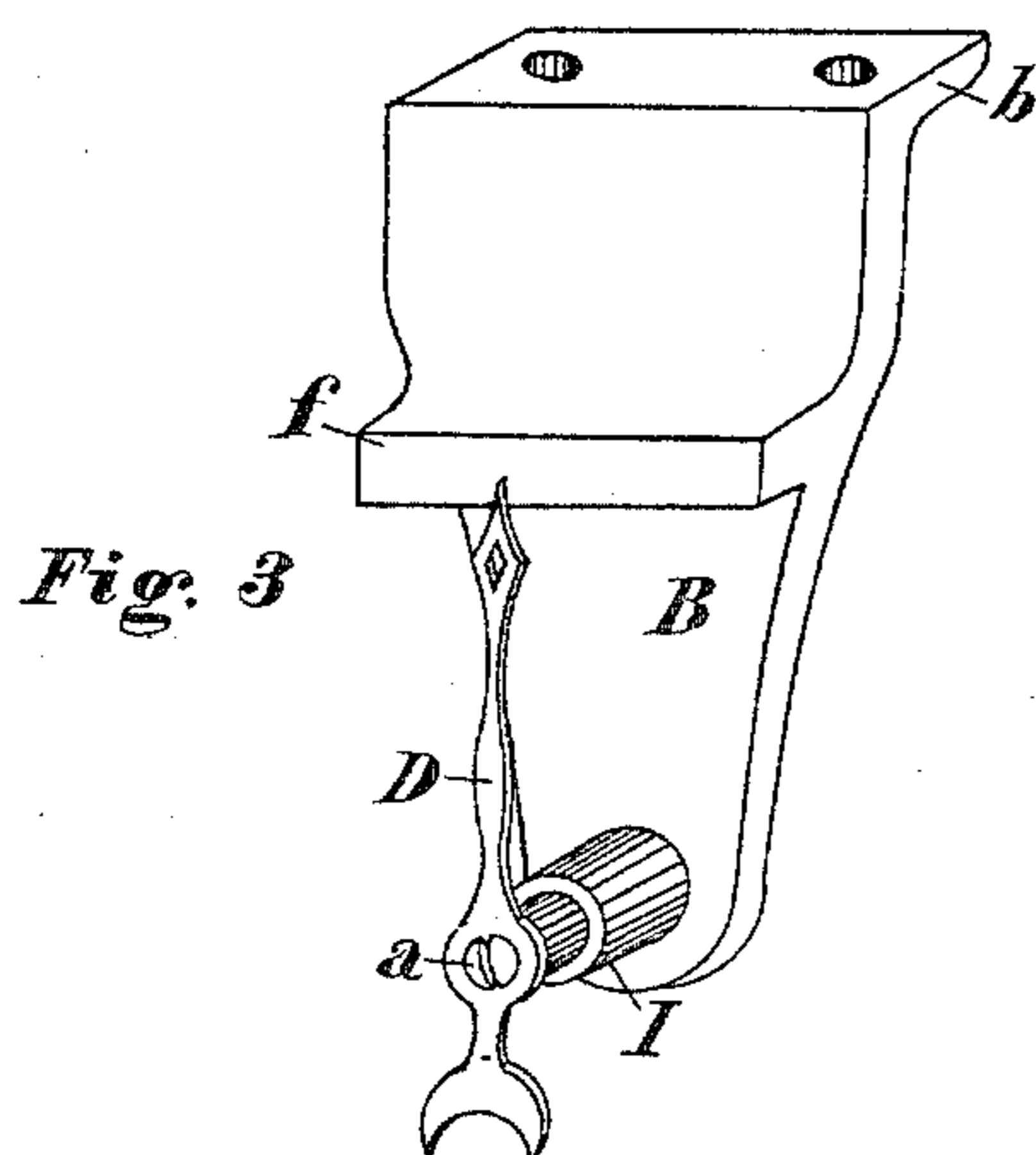


Fig. 3

Fig. 4

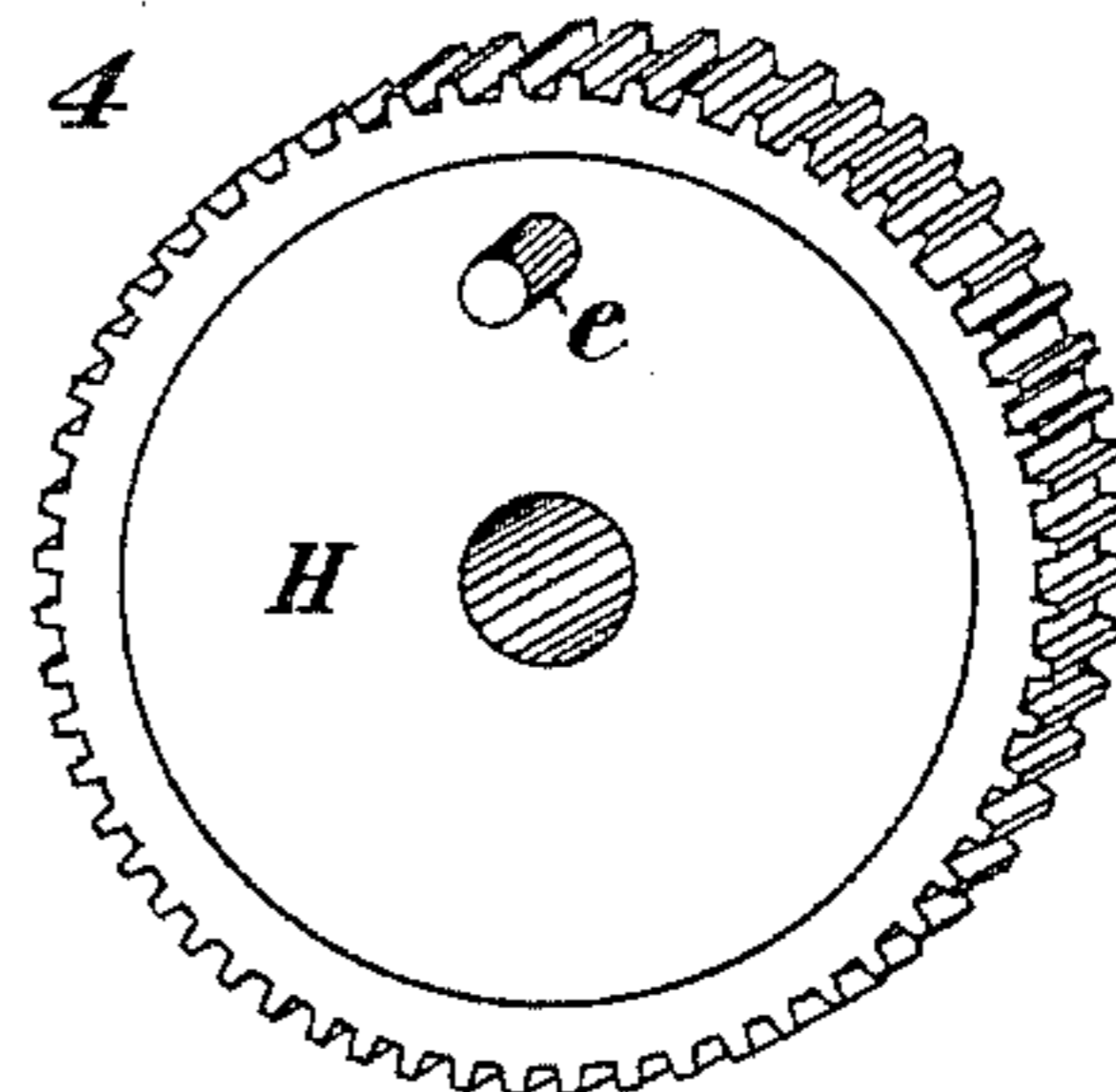
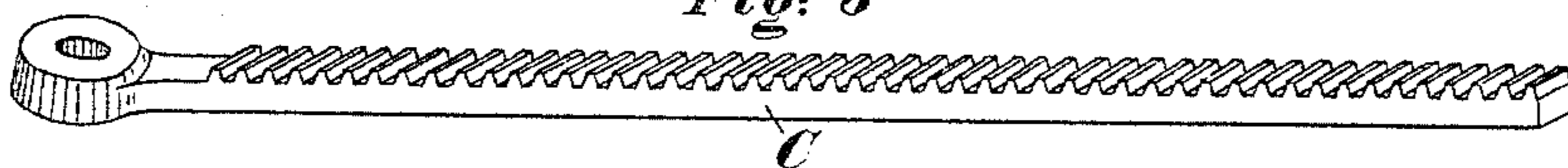


Fig. 5



Witnesses:
James H. Kennedy
T. C. Green.

Inventor.
Frederic Robinson

(No Model.)

2 Sheets—Sheet 2.

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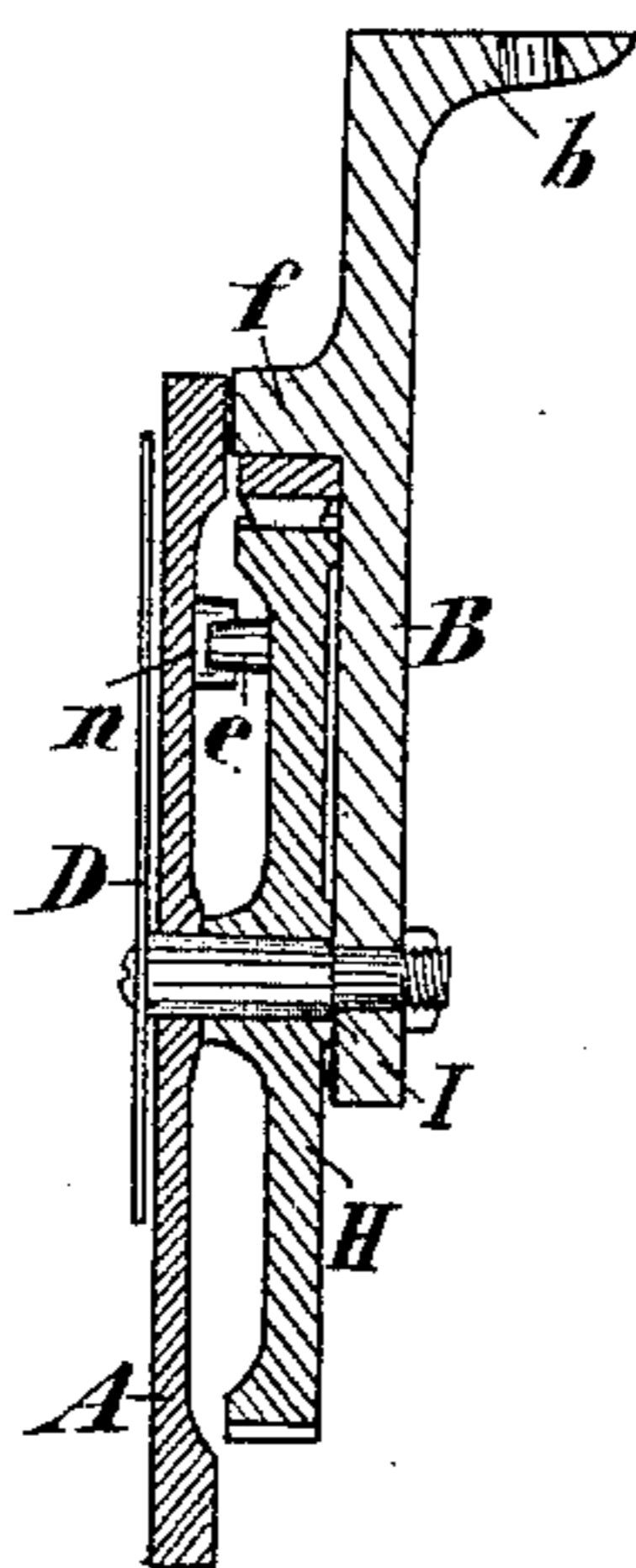


Fig. 6.

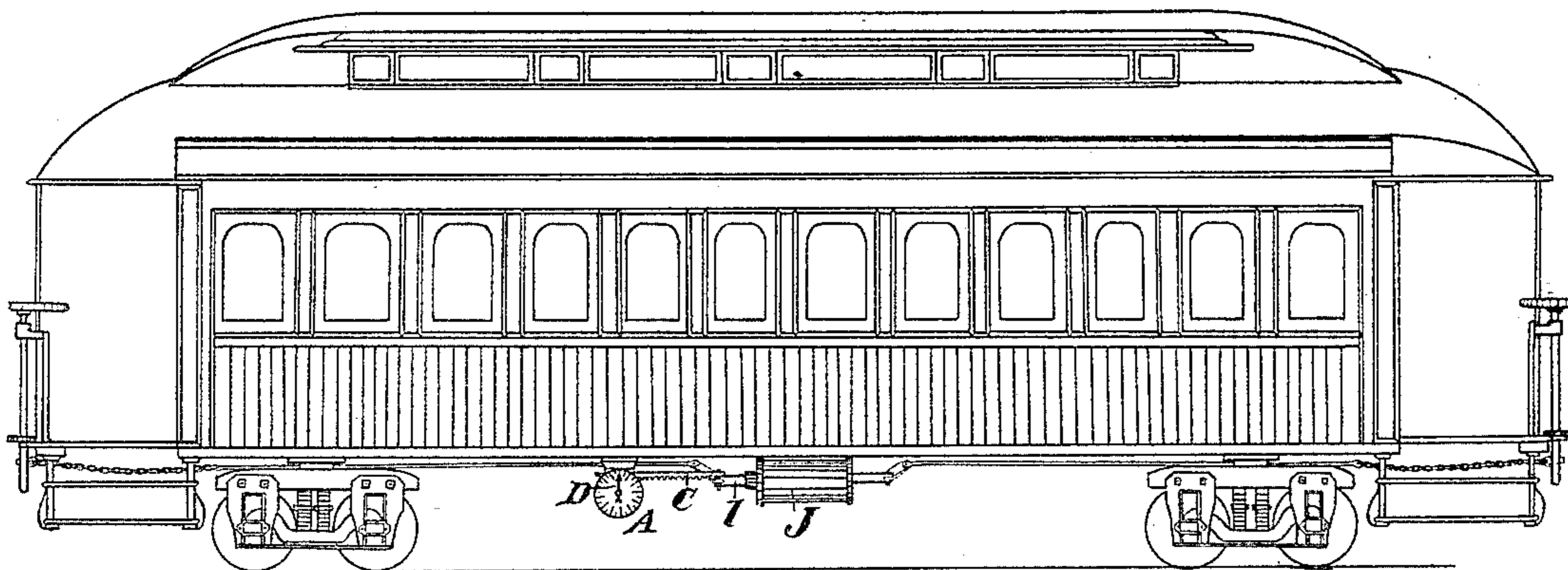


Fig. 7.

WITNESSES:

James H. Kennedy
T. L. Green

INVENTOR

Frank. Robinson

UNITED STATES PATENT OFFICE.

FRANK ROBINSON, OF BANGOR, MAINE.

PISTON-THROW INDICATOR FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 437,800, dated October 7, 1890.

Application filed October 5, 1889. Serial No. 326,135. (No model.)

To all whom it may concern:

Be it known that I, FRANK ROBINSON, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Piston-Throw Indicator for Air-Brakes; 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.

Throughout the description reference is made to the accompanying drawings in two sheets, in which—

Figure 1 is an isometric view of my improved "piston-throw indicator" complete. Fig. 2 is a rear view, in perspective, of the indicator-disk used in my device. Fig. 3 is an isometric view of the hanger or bracket of my invention, showing shelf, axle, and stationary indicator-hand. Fig. 4 is a similar view of the pinion-wheel of my device. Fig. 5 is a like view of the rack. Fig. 6 is a similar cross-section of Fig. 1. Fig. 7 is a vertical elevation of a railway-coach provided with air-brake and my improved indicator attached.

Similar letters of reference refer to correspondingly-like parts throughout the different figures.

My invention relates to an improved piston-throw indicator for railway air-brakes and other similar appliances; and the object of my invention is to produce an air-brake indicator to designate the working capacity or extent of throw of the piston within the air-brake cylinder when the brakes are applied, as will be hereinafter fully set forth and described.

Referring to the drawings, my improved indicator consists of a circular disk A, having numbered graduations upon its face, an axial hole drilled through its center, and a small stud *n* projecting from its rear surface. This disk A is mounted upon a horizontally-extending shaft I, projecting from a vertically-depending hanger or bracket B, which latter is constructed with a flange *b* at its upper end and provided with holes or other means, whereby it can be rigidly fastened to the timbers of a car-bottom.

The bracket B is cast with a narrow shelf *f* projecting outward from the same side as shaft I, and the projection of this shelf is

equal to the thickness of a pinion-wheel which is located upon shaft I, between the dial-plate A and the face of the bracket. The shaft I is rigidly confined to the bracket B and projects from the latter near its lower extremity. A pinion-wheel H is located upon and adapted to turn on said shaft I, between the dial-plate A and the bracket, and this pinion consists of an ordinary cog-wheel, somewhat smaller than the diameter of dial A, and provided with a short pin *e* extending from the side thereof facing said dial at such a location as to engage or come in contact with stud *n* of the dial when the said pinion is turned, as will hereinafter be fully described.

Above the pinion-wheel H and meshing therein is a rack C, filling the space left between said pinion and the projecting shelf *f* of bracket B. The length of this rack C is a little longer than the throw of the piston-rod of an air-brake, to which it is attached by means of a pin passing through a hole drilled through one end of said rack.

At the outer extremity of shaft I is an indicator-hand D, rigidly fastened thereto, and which extends over the face of the dial-plate A to denote the number of spaces the latter has turned in operation. This hand is held upon said shaft I by a broad-headed screw *a*, turned into the end of the shaft, and this screw presses the hand D against a washer *o*, which latter bears against the outer surface of dial-plate A and holds the latter by friction.

Now it can be readily understood that with the construction just described when the rack C is forced through the indicator its cogs meshing into the pinion-wheel H turn the latter, which in revolving brings the pin *e* against the stud *n* upon the back of the dial-plate, causing the latter to also revolve. As the dial A is turned, the hand D, projecting over the same, indicates the number of divisions the said dial has moved. The construction of the parts of this device should be such that when the rack C has moved an inch the hand D will indicate one division upon the dial A.

My invention is attached to a car-body and air-brake as follows: The bracket B is bolted to the timbers under a car by bolts passing through the flanged portion of said bracket, the rest of the device depending in a vertical

position with the dial facing the side of said car. The location of said bracket should be a sufficient distance in front of the air-brake cylinder and in direct line with action of the piston-rod, so that when the latter is receded the rack C will be extended its full length to couple with the projecting end of said piston-rod. Connection is made with the end of the latter by a pin passing through the hole drilled in one end of rack C entering a similar hole in the piston-rod, where it connects with a brake-lever, as shown in Fig. 9 of the drawing. It can now be readily seen that as piston-rod *l* is forced outward by the injection of air into the air-brake cylinder *J* the rack C, connected thereto will travel an equal distance through the indicator and by means of the mechanism hereinbefore described record such distance upon the dial A by moving the latter a like number of graduations by the stationary hand D. Upon a return of the piston-rod *l* and rack C the pinion-wheel H is returned to its former position, leaving the dial A at the recorded distance the piston-rod was extended. The dial can again be set, if desired, by turning it back to the zero-mark by hand, when by a second application of the brake the throw will again be recorded. By this arrangement the capacity of each brake can be tested at the making up of a train by turning on the air from the engine and noting the division indicated by the dial of my improved indicator.

Having thus described my invention, what I

claim, and desire to secure by Letters Patent of the United States, is—

1. A piston-throw indicator consisting of a bracket rigidly confined in front of the piston and containing a projecting shaft thereon, a pinion-wheel mounted upon this shaft and provided with a projecting pin for the purpose described, a rack meshing with said pinion-wheel and provided with means for attachment to the piston-rod, a graduated dial-plate also mounted upon said shaft and adapted to be revolved in one direction by the projecting pin of the pinion-wheel, all in the manner described and substantially as shown.

2. An air-brake indicator consisting of the bracket B, having shelf *f* and shaft I projecting therefrom and means for attachment to the bottom of a car-body, a pinion-wheel H, with projecting pin *e* turning upon shaft I, rack C, with means for connection with an air-brake meshing in said pinion-wheel, dial-plate A, also located upon shaft I and having a stud *n* protruding from its back, adapted to come in contact with pin *e* upon pinion H, and an indicator-hand extending over the graduated face of the dial-plate, all to operate in the manner set forth and substantially as shown and described.

FRANK ROBINSON.

Witnesses:

JAMES H. KENNEDY,
P. W. J. LANDER.