No. 669,272. Patented Mar. 5, 1901.

J. WALRATH.

GAS ENGINE.

(Application filed May 21, 1900.

(No Model.) 2 Sheets—Sheet 1.

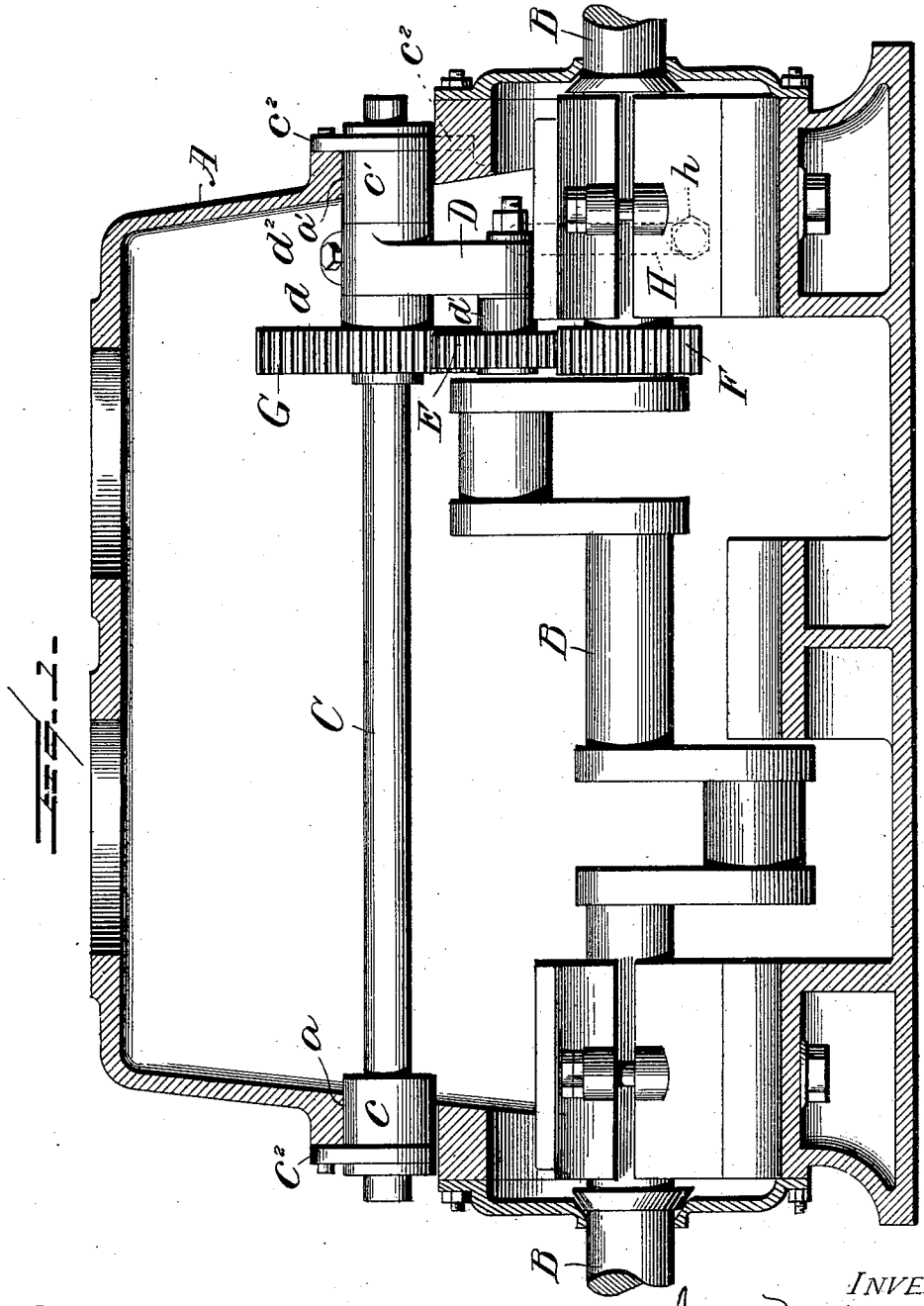


FIG. 1.

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FIG. 3.

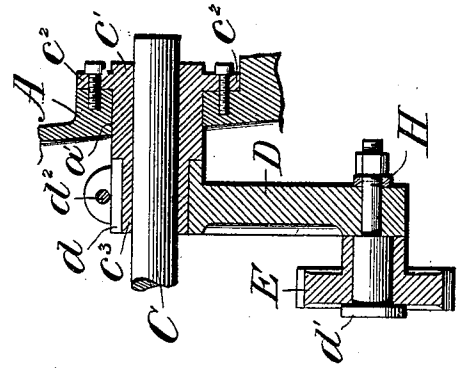
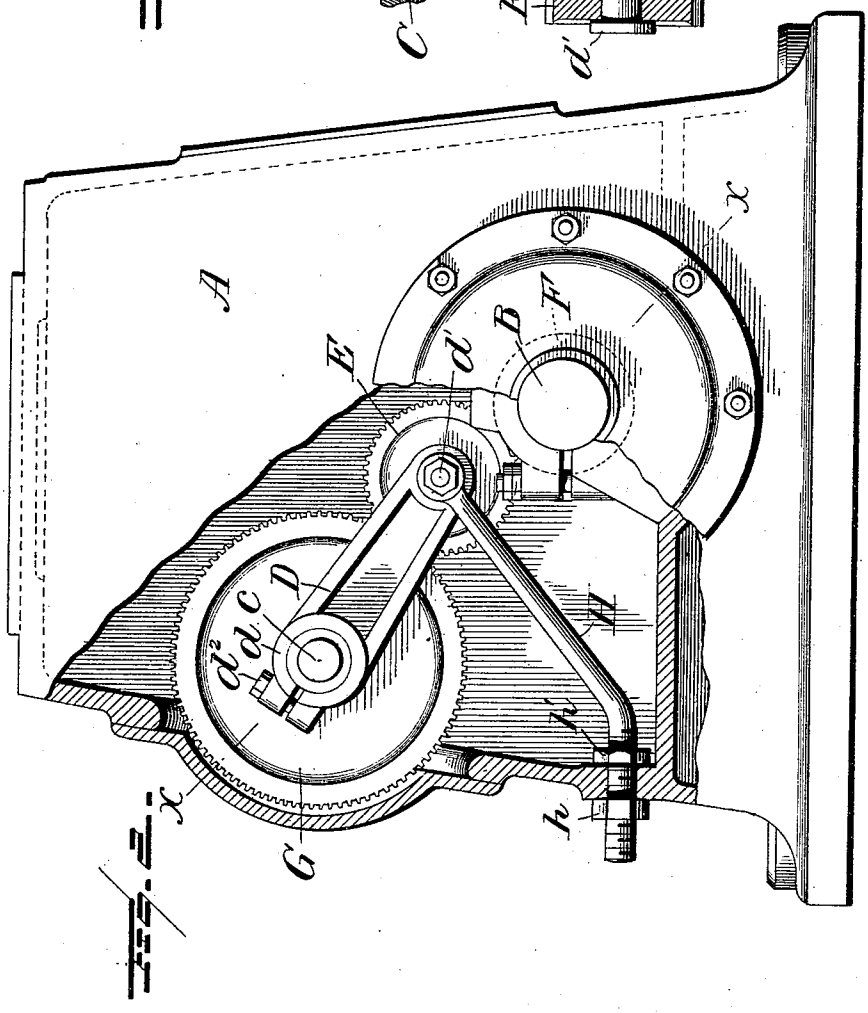


FIG. 2.



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UNITED STATES PATENT OFFICE.

JESSE WALRATH, OF RACINE, WISCONSIN.

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 669,272, dated March 5, 1901.

Original application filed December 29, 1899, Serial No. 738,660. Divided and this application filed May 21, 1900 Serial No. 17,417. (No model.)

To all whom it may concern:

Be it known that I, JESSE WALRATH, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Gas-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This application is a division of my former application, Serial No. 738,660, filed December 29, 1899, said division having been required by the United States Patent Office.

My present invention relates to engines, and more particularly to the class known as "explosive" or "gas" engines; and it consists in improved means for mounting the eccentric cam or second-motion shaft and the devices connecting it with the main or crank shaft to provide for the adjustment of said connecting devices to compensate for wear or for changes in the relation of the two shafts from other causes.

The drawings which form a part of this specification show the best mode in which I have contemplated embodying my said invention, and my said invention is disclosed in the following description and claims.

In the drawings, Figure 1 is a transverse sectional view of the main frame of an engine on the line $x\,x$, Fig. 2. Fig. 2 is a view showing a part of the frame and the ends of the main and second-motion shaft, a part of the frame being broken away. Fig. 3 is a detail of parts of the construction hereinafter referred to.

In the drawings, A designates the part of the main frame of the machine in which the crank-shaft is mounted.

B is the main or crank shaft, mounted in the frame A.

C designates the eccentric cam or second-motion shaft, which derives its motion from the crank-shaft. The shaft C is mounted in two cylindrical bearings $c\,c'$, inserted in bored apertures $a\,a'$ in the main frame, which apertures may be bored while the base is on the boring-machine for boring the seats for the bearings of the crank-shaft, and thus the proper alinement of the shaft C parallel with the crank-shaft is secured.

The bearings $c\,c'$ are each provided with a flange c^2, by which they are secured to the main frame. One of said bearings—the one designated by the reference-letter c'—is provided with an extension or sleeve c^3, (see Fig. 3,) upon which is mounted a radius-arm D, which has at one end a split collar d to engage said sleeve c^3. This radius-bar has at its opposite end an aperture in which is mounted a stud d'. The split collar d is provided with perforated ears, through which is passed a screw d^2, by means of which said collar can be rigidly clamped on said sleeve c^3 to hold it in the desired position. Upon the stud d' is mounted a pinion E, which meshes with a pinion G on the cam-shaft C and which may be made to mesh with the driving-gear F on the crank-shaft by adjusting the arm D to the proper position, as shown in the drawings.

In order to brace the arm D and also provide for its adjustment in case of the wear of parts or other changes affecting the relation of the two shafts B C, I provide a brace-rod H, secured at one end to the arm D. In this instance I provide the brace with an eye which fits over the threaded end of a stud d' and is clamped against the arm D by the securing-nut of the stud. The opposite end of the brace H is bent at an angle and threaded. This bent portion is passed through an aperture in the side wall of the main frame and is secured on each side of the wall by nuts $h\,h'$. By means of these nuts the radius-arm can be accurately adjusted when the engine is assembled to bring the pinion E into proper relation with the gear F on the crank-shaft, and the radius-arm can be adjusted at any time that it is desired to compensate for wear or whenever from any reason there is a change in the relation of the two shafts.

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

1. In an engine, the combination with the crank-shaft and driving gear-wheel mounted thereon, of the cam-shaft and gear mounted thereon, the radius-arm carrying an intermediate pinion in mesh with the gear on the cam-shaft, the brace-rod and securing means therefor permitting adjustment, substantially as described.

2. In an engine, the combination with the

crank-shaft provided with a driving gear-wheel, of the cam-shaft, bearings therefor, one of said bearings provided with an extension, a gear-wheel on said cam-shaft, a radius-arm adjustably mounted on said bearing extension, and an intermediate gear-wheel mounted on said radius-arm meshing with the gear-wheel on the cam-shaft, substantially as described.

3. In an engine, the combination with the crank-shaft provided with the driving gear-wheel, of cam-shaft bearings therefor, one of said bearings provided with an extension, a radius-arm adjustably mounted on said bearing extension, a pinion carried by said radius-arm and meshing with the gear-wheel on the cam-shaft and an adjustable brace for said arm and pinion connecting said radius-arm and the main frame of the machine, substantially as described.

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

JESSE WALRATH.

Witnesses:

MARTIN J. GILLEN,

EFFA M. CHADWICK.