

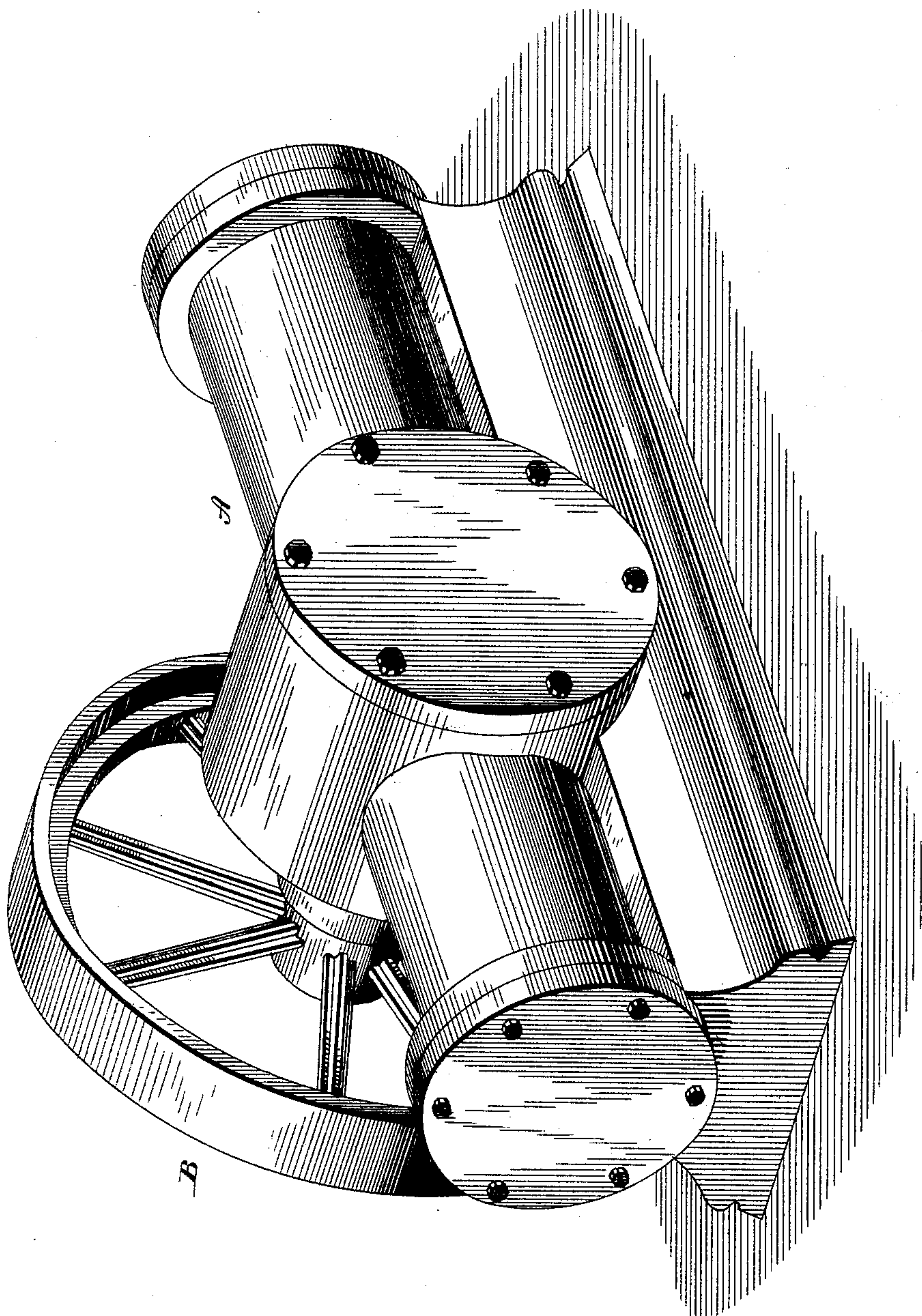
(No Model.)

2 Sheets—Sheet 1.

E. T. MCKAIG.
STEAM ENGINE.

No. 410,432.

Patented Sept. 3, 1889.



WITNESSES
H. L. Oursand
George A. Wooster

7/27/89

INVENTOR
Eddy T. McKaig
by James Duggan & Co.
Attorneys.

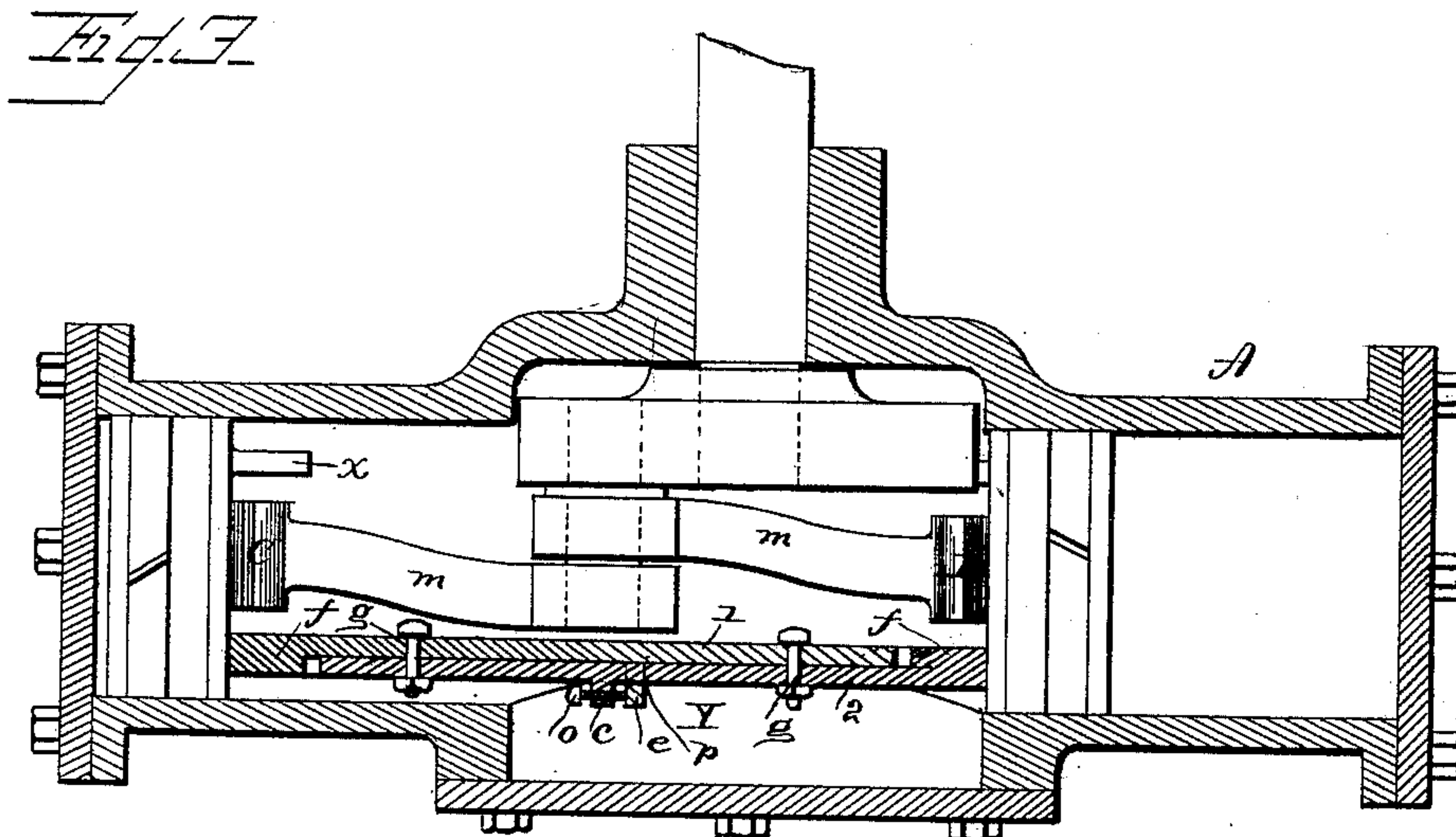
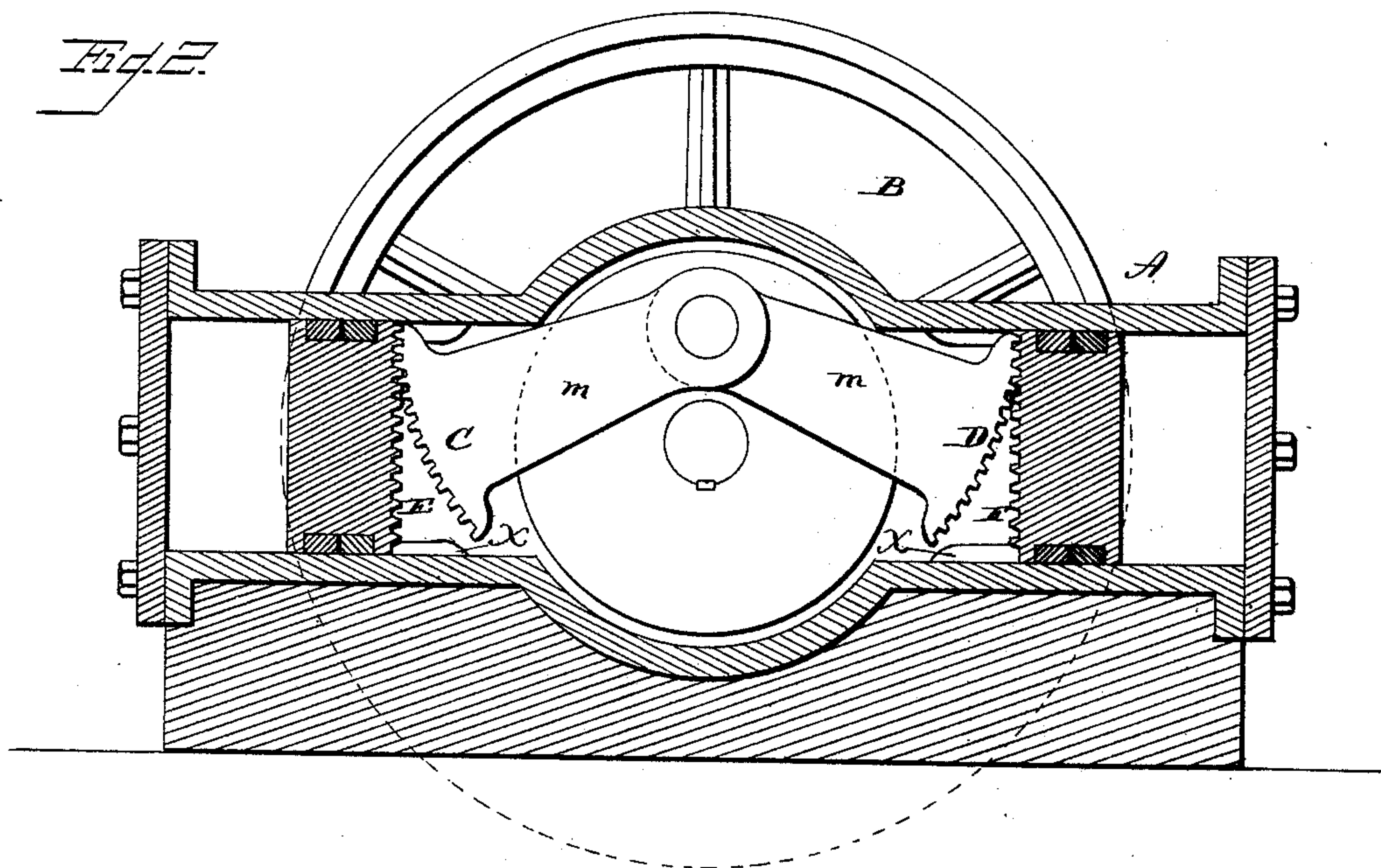
(No Model.)

2 Sheets—Sheet 2.

E. T. McKAIG.
STEAM ENGINE.

No. 410,432.

Patented Sept. 3, 1889.



WITNESSES
F. L. Ouraud
George A. Wooster.

INVENTOR
Eddy T. McKaig,
by *James Duggan*
Attorneys.

UNITED STATES PATENT OFFICE.

EDDY THOMAS MCKAIG, OF RACINE, WISCONSIN.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 410,432, dated September 3, 1889.

Application filed May 8, 1889. Serial No. 309,999. (No model.)

To all whom it may concern:

Be it known that I, EDDY THOMAS MCKAIG, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Steam-Engines; 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 has relation to steam-engines; and it consists in the construction and novel combination of parts, as will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a view in perspective of a steam-engine embodying the improvements of my invention. Fig. 2 is a vertical longitudinal sectional view showing the pistons fitted with rings and springs, or designed to fit closely and to have water-grooves, as commonly made; and Fig. 3 is a sectional view seen from the top of the cylinder, and showing the crank, pistons, rods, and the bars connecting the pistons.

Referring by letter to the accompanying drawings, A designates the cylinder, and B is the fly-wheel which is on the same shaft with the disk.

C and D are eccentrically-pivoted toothed segmental gears having arms *m m*, which are connected to the eccentric disk and engage toothed racks E and F, which are in turn engaged by a connecting-bar, which simply holds them in relative arrangement to each other, so that the eccentric motion of the disk may be imparted to the pistons from the driving-shaft. The heads or pistons connected by the cross-bar Y are toothed in similar sides and engage the teeth of the eccentrics. They are also provided with wings X, which act as guides and serve to insure accurate movement of the pistons. The pistons are double, and are provided with exhaust-vents V in their outer layers.

The connecting-bars 1 2 are cast with or securely bolted one to each piston, and overlap nearly the whole length, and are provided with flanges *f f*, to prevent the pistons from cramping or binding in the bore of the cylinder, and are bolted together through the slots *g g*. The lug *c* on the outside bar is provided with a set-screw *o*, which sets against a lug *e e*, which is attached to the inside bar and extends through a slot *p* in the outside bar.

This set-screw *o* prevents the pistons from throwing apart when running at a high speed, and the pressure of the steam keeps the pistons compressed together, so as to take up all lost motion. The bars 1 and 2 are near one side of the cylinder, so as to clear the crank-pin, and are as wide as the diameter of the bore of the cylinder will admit, and are set in a plane parallel to the line of motion of the crank-wheel.

An engine of this construction may be used with gas, air, or other pressure, equally as well as with steam, and they may be made horizontal, vertical, or inclined and with one or more cylinders. The cylinders may be on either side of the crank, or on one side only, by making a long piston or by giving it a guide, so that it may not cramp in the cylinder; but I prefer the style hereinbefore illustrated and described.

The object of my invention is to obtain a straight line of action to keep the strain in a straight line with the bore of the cylinder and prevent the wearing down of one side of the cylinder in a single-acting engine and apply to the work the friction that is lost by the angle of a common cross-head engine.

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

1. In a steam-engine, the combination, with the driving eccentric and arms having segmental racks, of the pistons engaged by said racks having wings or guides, the overlapping piston rods or bars, one of which is provided with a lug and the other a slot to receive said lug, the adjusting-screw carried by one of the rods and engaging the lug of the other, and the bolts connecting said bars or rods, substantially as described.

2. In a steam-engine, the combination of the pistons, the overlapping bars or rods, one having a lug and the other a slot to receive said lug, the set-screw carried by one of the bars and engaging the lug on the other, and the bolts connecting said rods or bars, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

EDDY THOMAS MCKAIG.

Witnesses:

J. W. ADRIANCE,

J. F. BICKEL.