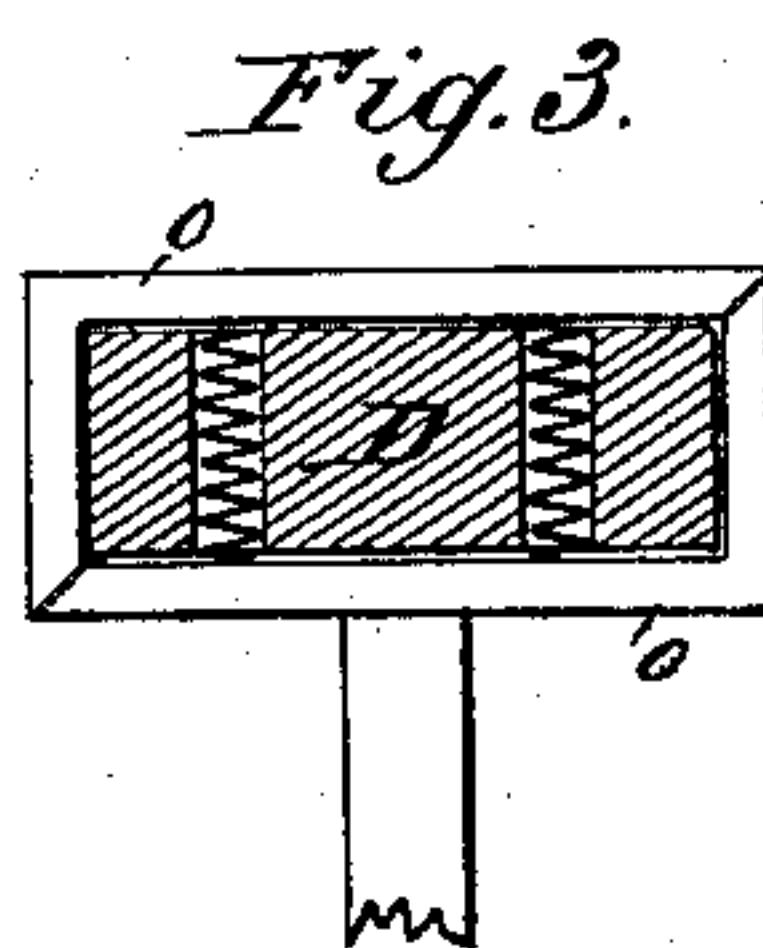
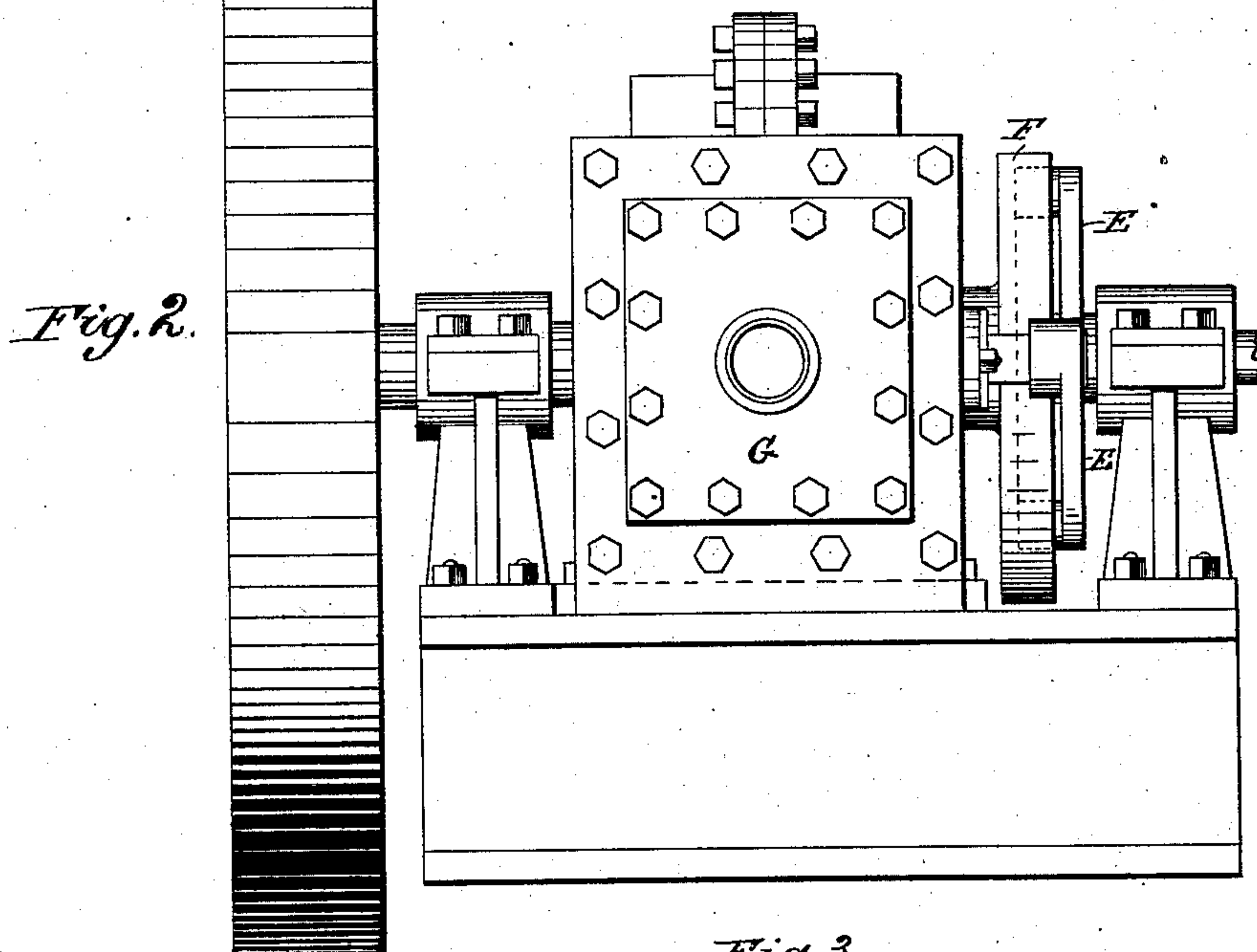
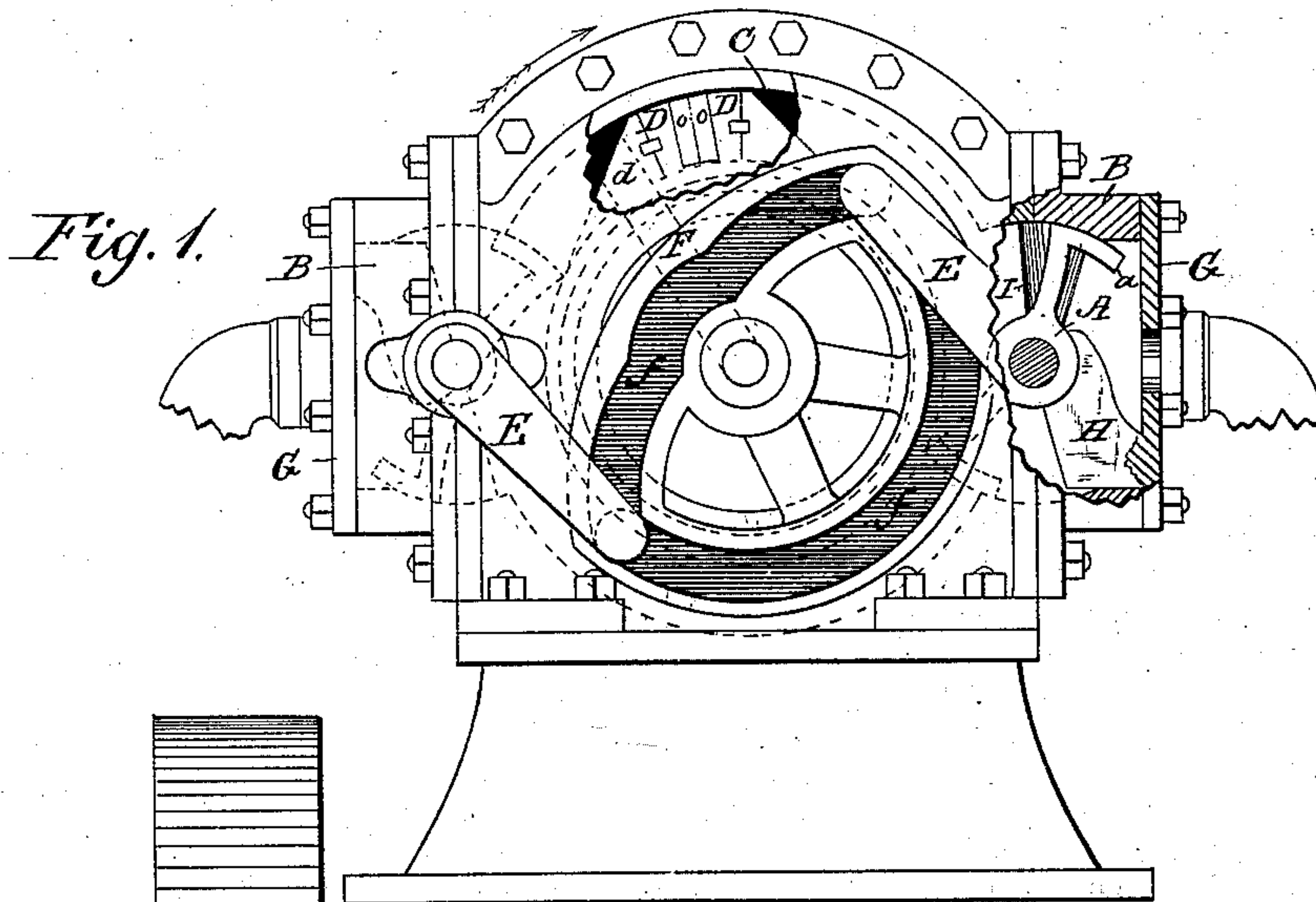


(No Model.)

G. W. DUDLEY.
ROTARY ENGINE.

No. 259,112.

Patented June 6, 1882.



WITNESSES:

W. W. Hollingsworth
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UNITED STATES PATENT OFFICE.

GEORGE W. DUDLEY, OF WAYNESBOROUGH, VIRGINIA, ASSIGNOR TO THE
ELASTIC WHEEL AND MANUFACTURING COMPANY, OF SAME PLACE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 259,112, dated June 6, 1882.

Application filed February 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. DUDLEY, of Waynesborough, in the county of Augusta and State of Virginia, have invented a new and useful Improvement in Rotary Engines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, forming part of this specification.

This invention relates to an improvement in the class of rotary engines shown in Letters Patent No. 236,007, granted to me under date of December 28, 1880, in which I have shown an annular steam-chamber in which rotates a segmental piston connected to a shaft by arms provided with a steam-port to conduct the steam at all times immediately behind the piston, and an exhaust-valve hinged within an exhaust-chamber in such manner that one end of the valve will project across the steam-chamber to form an abutment for the back-pressure of the steam, while the other end of the valve will be operated upon by the exhaust to open the valve and allow its escape when the valve has been closed by the piston.

The object of the present invention is to provide means of insuring the proper action of the exhaust-valves under all circumstances, particularly when the engine is running rapidly under low pressure.

In the accompanying drawings, Figure 1 is a side elevation of the steam-chamber, partly in section. Fig. 2 is an end view of the same, and Fig. 3 is a detail showing the piston-packing.

The segmental exhaust-valves A are journaled in the sides of the exhaust-chambers B, and are provided at their ends with lips *a*, which are made segmental in form, so as to coincide with the arcs described by the ends of the valves when moved about their journals. These lips are formed on the rear or outer sides of the valves, so that when the valves are moved to the position shown in the drawings one of the lips of each valve shall lie across the annular steam-chamber C to form an abutment for the steam, which enters the chamber C through the radial port *d* in the disk carrying the piston D. The journals of the valves A are made to project through the walls of the

exhaust-chambers B and are provided with suitable glands or stuffing-boxes. In the drawings the journals are shown projecting through upon one side only, and to these are attached levers E, to the free ends of which rollers are secured and adapted to move in a grooved cam, F, secured to the shaft carrying the piston. The groove *f* of the cam is concentric through a little more than one-half of its extent, while the remaining portion consists of three short curves, breaking the same at nearly regular intervals. As the cam is connected to the disk to which the piston is attached, the cam will revolve with the movement of the piston, and, owing to the construction of the cam, the levers will be operated so as to insure the proper action of the valves. It is to be understood that the valves are still operated by the force of the exhaust, as in my former invention referred to, while the cam and levers merely insure the proper action thereof when the engine is running rapidly under low pressure. No appreciable force, therefore, is expended in the operation of the levers.

The heads G of the exhaust-chambers are cast with pieces H, which shall project within the exhaust-chambers in such manner as to form a support for the abutting end of the valve when the latter is closed, and also to prevent the passage of steam at that end of the valve. The steam exhausts at the opposite end of the valve at one or both sides of the valve through a port or opening formed by a recess, I, in the wall or walls of the exhaust-chambers.

The piston D is loosely secured between tangential projections formed on the periphery of the disk, and these projections are solid with the radial port or ports passing through them to the steam-chamber.

In my invention referred to the ends of the piston-block are provided with packing composed of rectangular pieces of sheet-rubber.

In the present invention I have substituted for the rubber a packing consisting of two angular metal plates, *o*, which are adapted to be fitted together in rectangular form in a suitable recess formed around the block or the ends of the block, and held in contact with the walls of the steam-chamber by spiral or other springs

arranged between the said plates in perforations formed through the recessed portion of the said block.

The drawings represent the piston as just having passed the exhaust-valve on the left-hand side, moving in the direction of the arrow, while the position of the cam at the same time insures the opening of the valve, so as to form an abutment behind the piston with one of its ends and to allow the exhaust to escape at the other. The concentric portion of the groove will insure the said valve remaining stationary during the next half-revolution of the cam and piston—that is, until the piston shall have passed the valve on the right-hand side—and that in its turn forms the abutment for the steam. In the meantime the valve on the right-hand side, as shown by the position of its lever and the cam in the drawings, will have been closed to allow the piston to pass, and when the piston has passed it it will form an abutment in the manner already described.

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

1. In a rotary engine, the exhaust-valves A, having lips formed on the rear or outer sides of their ends, with openings at the sides for the exhaust, and adapted to form abutments across the steam-chamber, substantially as shown and described.

2. In a rotary engine, the combination, with the segmental exhaust-valves having segmental lips formed on their rear or outer sides, at the ends thereof, and located in chambers having suitable passages for the exhaust at one or both ends of the valves, of a suitable cam, substantially as described, which is made to rotate with the piston, and which is connected with the said valves in such manner as to insure a given movement thereof under all circumstances, substantially as shown and described.

GEORGE W. DUDLEY.

Witnesses:

A. G. SYNE,

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