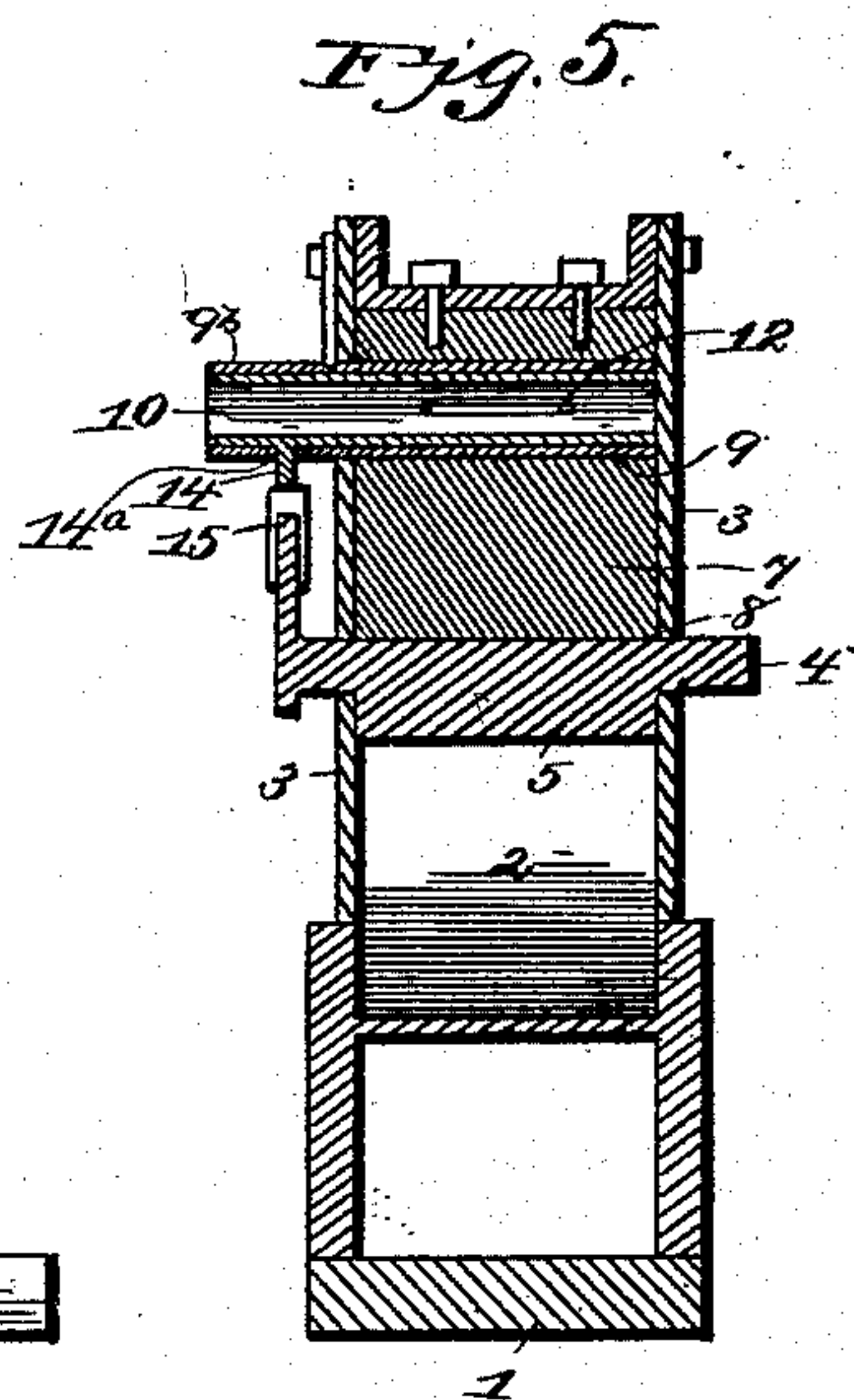
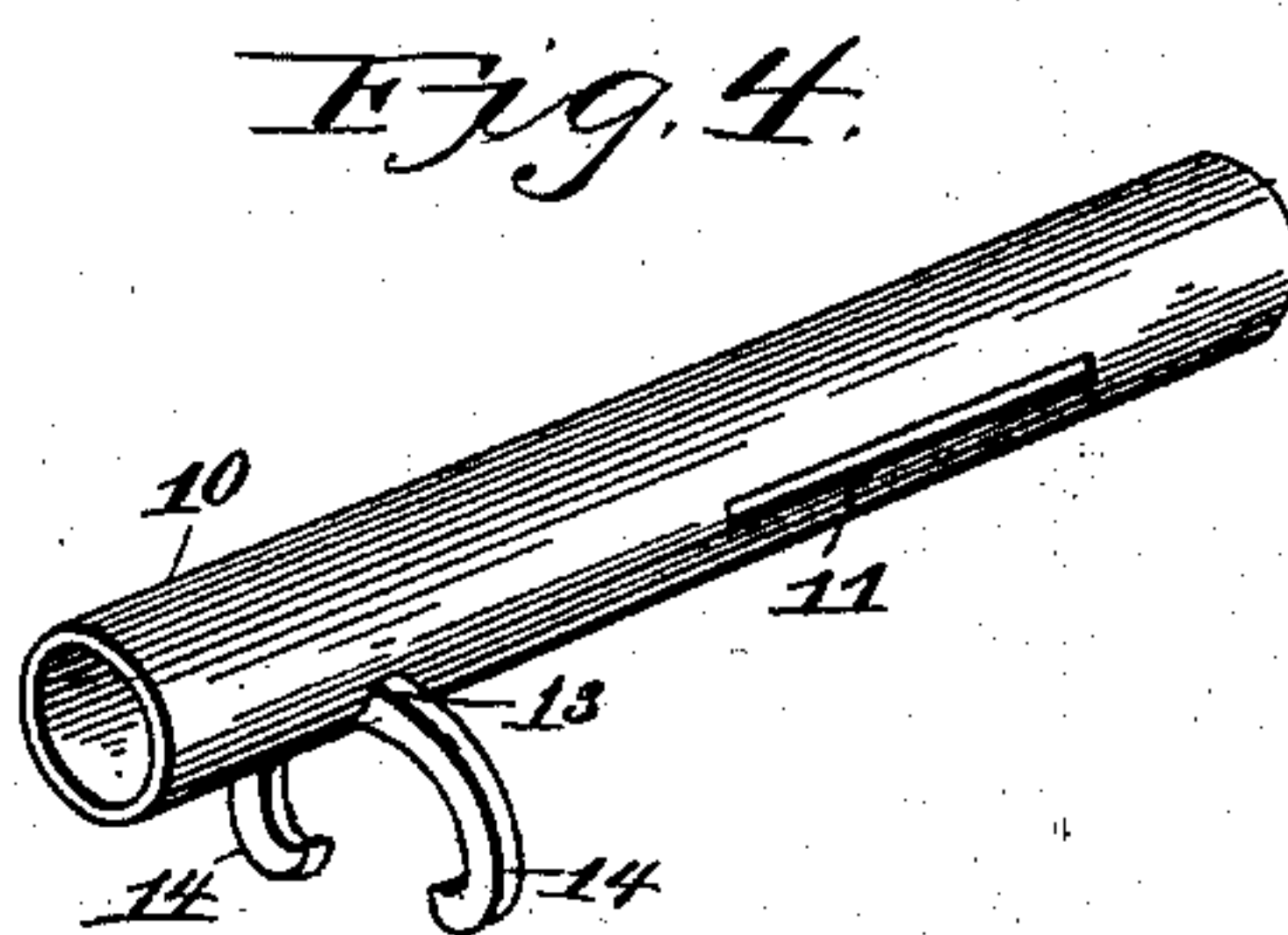
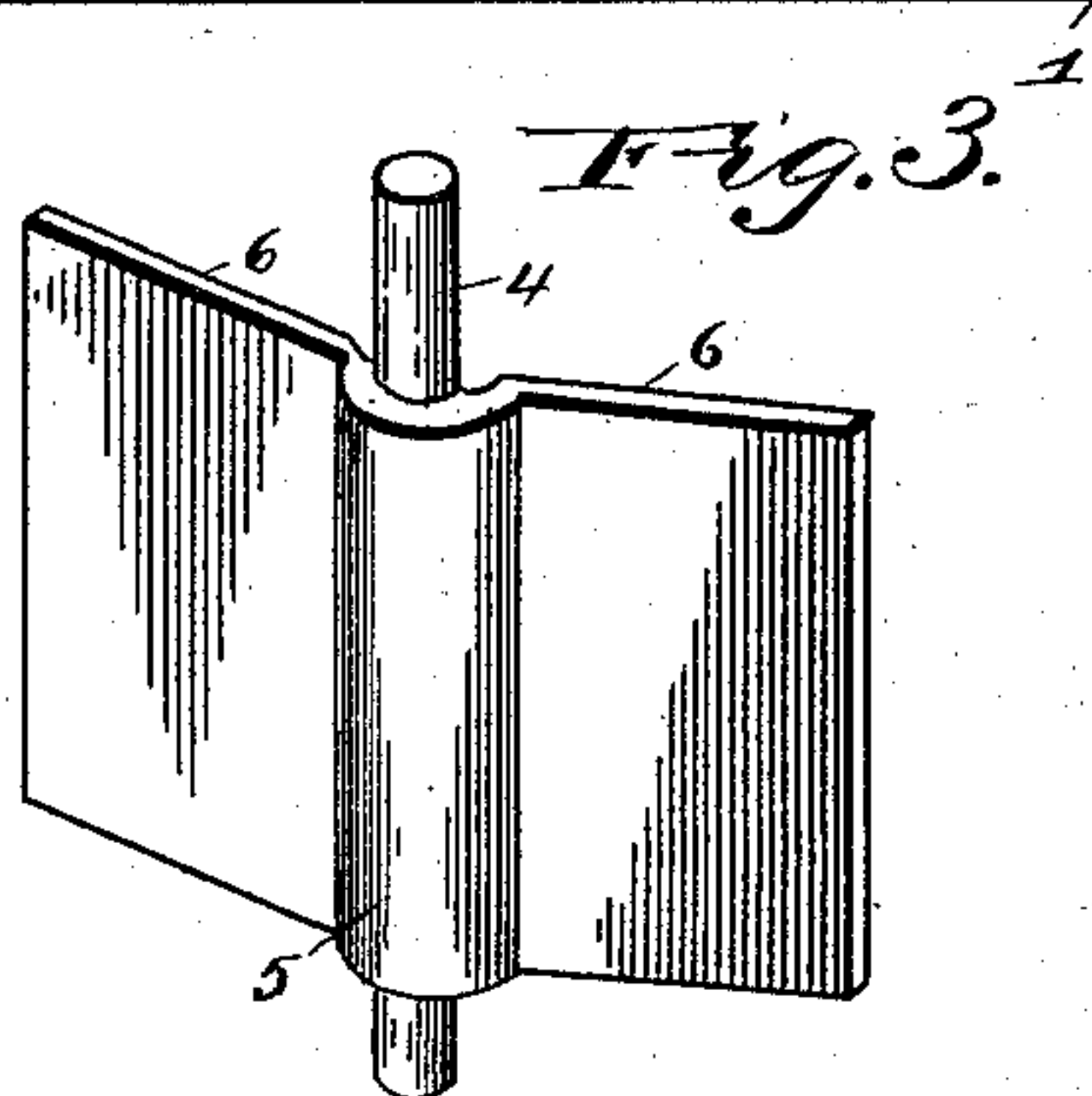
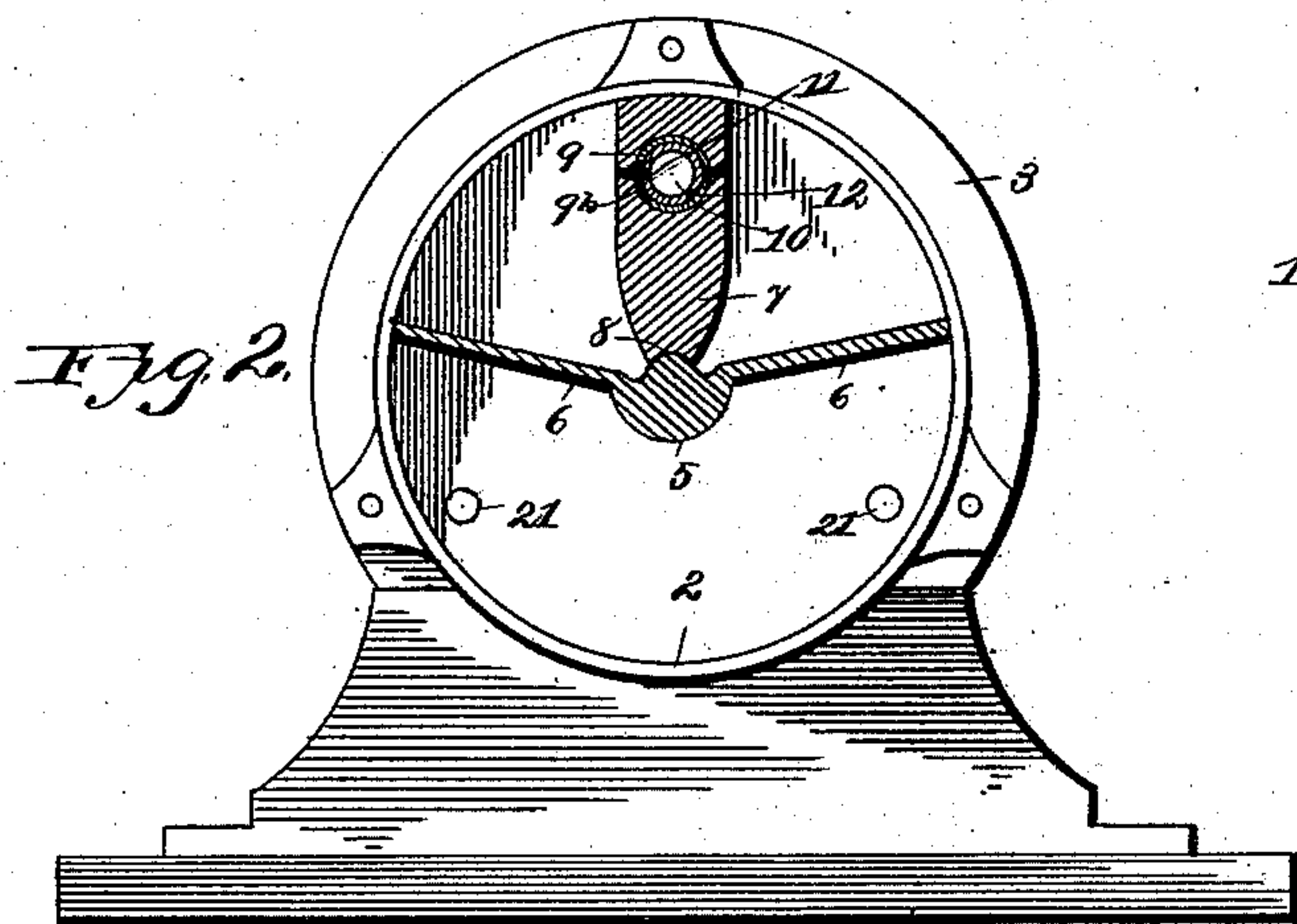
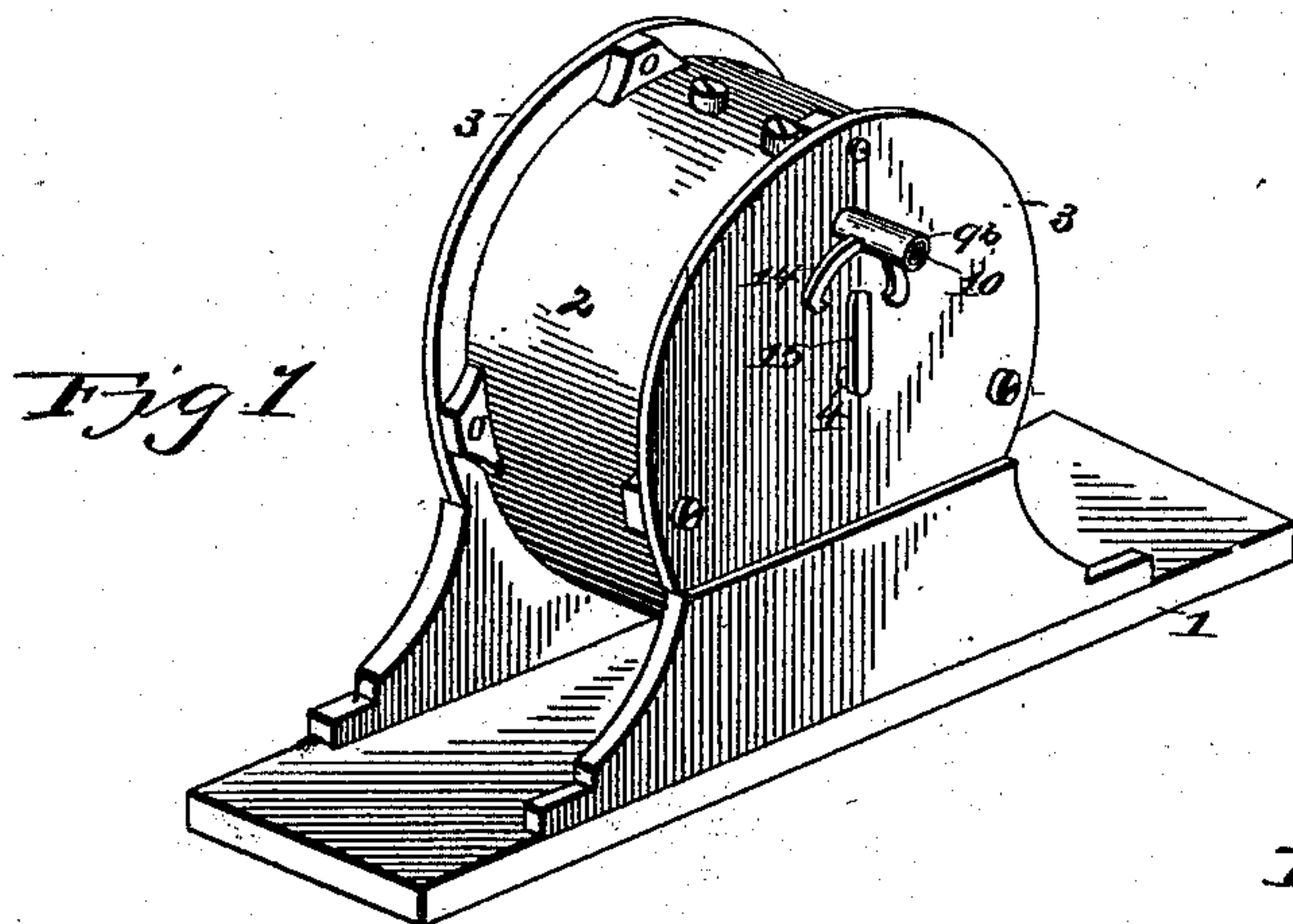


(No Model.)

J. CHEEK.
STEAM ENGINE.

No. 416,900.

Patented Dec. 10, 1889.



Witnesses

Wm. Bagger

By *his* Attorneys,

Joseph Cheek

CA Snow & Co.

Inventor

UNITED STATES PATENT OFFICE.

JOSEPH CHEEK, OF BEARDSTOWN, ILLINOIS.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 416,900, dated December 10, 1889.

Application filed August 8, 1889. Serial No. 320,140. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH CHEEK, a citizen of the United States, residing at Beardstown, in the county of Cass and State of Illinois, have invented a new and useful Steam-Engine, of which the following is a specification.

This invention relates to steam-engines of that class in which an oscillating piston is mounted in a cylindrical casing, said oscillating piston being provided with wings extending in opposite directions from a central shaft and on opposite sides of a central abutment, in which latter is mounted an oscillating valve for the purpose of regulating the steam-supply; and my invention has for its object to construct an engine which shall be simple, durable, and economical in operation, and in which the valve shall be so arranged and balanced as to cause little or no frictional resistance to the operation of the device.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of my improved steam-engine. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a perspective view of the main shaft carrying the piston detached from the casing. Fig. 4 is a perspective detail view showing the valve detached. Fig. 5 is a vertical sectional view taken on the line *xx* in Fig. 2. Like numerals of reference indicate like parts in all the figures.

1 designates the base, upon which is mounted the cylindrical casing 2, the heads of which 3 3 are attached to the cylindrical casing in the usual manner by means of stud-bolts. The heads 3 3 have bearings for the central main shaft 4, the under side of which has an enlargement 5, from which the wings 6 6, constituting the piston, project in opposite directions. The said piston-wings extend to the circumference of the casing, with which as well as the heads or ends of which the said piston-wings are closely in contact. The edges of said piston-wings may, when desired, be provided with packing-strips of ordinary construction to prevent the leakage of steam.

7 designates the central abutment, which is located radially in the cylindrical casing centrally between the piston-wings 6 6. The said abutment may be formed or cast integrally with the cylindrical casing, or it may be secured thereto in any suitable manner. The lower or inner end of the abutment has a concave recess 8, in which the shaft 4 is closely fitted. The abutment is provided near its outer end with a transverse perforation 9, in which is fitted a tube 9^b, extending at one end through one of the cylinder-heads and forming a steam-entrance. In said tube 9^b is fitted the oscillating valve 10, which consists of a tube or cylinder 10, provided with slots or steam-ports 11 11, adapted to register with corresponding steam-ports 12 12, which connect the steam-entrance 9^b with the steam-space on opposite sides of the abutment. It will be seen that the steam-ports 11 in the valve are so formed or located with relation to each other and to the steam-ports 12 in the abutment that when the steam-port 11 on one side registers with the steam-port 12 the steam-port 11 of the opposite side shall be out of alignment with the corresponding steam-port 12 in the abutment. Thus by a simple oscillating movement of the valve the steam will be quickly and effectually cut off from the steam-space on one side of the abutment and admitted into the steam-space on the opposite side of the abutment. The outer end of the valve is provided with a plate 13, having downwardly-extending curved arms 14 14, extending through a slot 14^a in the tube 9^b, and adapted to be alternately engaged by an arm or cam 15, which extends radially from the main shaft outside the casing. The valve, it will be seen, is retained in position by the arms 14, extending through the slot 14^a in the tube 9^b, and the steam-supply is suitably connected to the outer end of the latter. Exhaust-ports 21 are formed in one of the heads of the casing.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. When steam is admitted through the space 9^b, it will pass through the ports 11 and 12 on one side of the abutment into the steam-space, where it expands, thus forcing the piston in a downward

direction, causing the shaft to oscillate. When the end of the stroke has been reached, the arm 15 of the shaft will engage one of the curved arms 14 attached to the valve, thus oscillating the latter in its bearings and causing the steam to be reversed or supplied to the steam-space on the opposite side of the abutment. The movement is thus reversed and the dead steam is caused to escape through the exhaust-port 21.

Motion may be transmitted from the main shaft 4, by means of a crank or pitman, to a shaft carrying a fly-wheel of ordinary construction.

It will be seen that by the improved construction of the valve herein described sufficient steam will find its way into the bearings of the valve to keep it perfectly balanced and to relieve it from any undue friction caused by the steam-pressure.

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

1. The combination of the cylindrical casing, the radial abutment having a transverse pipe forming a steam-entrance, and ports connecting the same with the steam-space on opposite sides of the abutment, and the tubular oscillating valve seated in said pipe or

steam-entrance and having arms extending through a slot in the latter, substantially as and for the purpose set forth.

2. The combination of the cylindrical casing, the radial abutment having transverse pipe or steam-entrance extending through one of the cylinder-heads, and ports connecting said pipe with the steam-space on opposite sides of the abutment, the oscillating valve seated in the steam-entrance and having ports adapted to register with the ports therein, and provided at its outer end with a plate having downwardly-extending curved arms extending through a slot in the pipe or steam-entrance, the main shaft journaled in the heads of the casing and having radially-extending wings and provided with an arm adapted to engage the curved arms of the valve, and the steam-supply pipe connected to the outer end of the transverse pipe forming the steam-entrance, substantially as set forth.

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

JOSEPH CHEEK.

Witnesses:

C. H. CUMMINGS,
JOHN H. HAGENER.