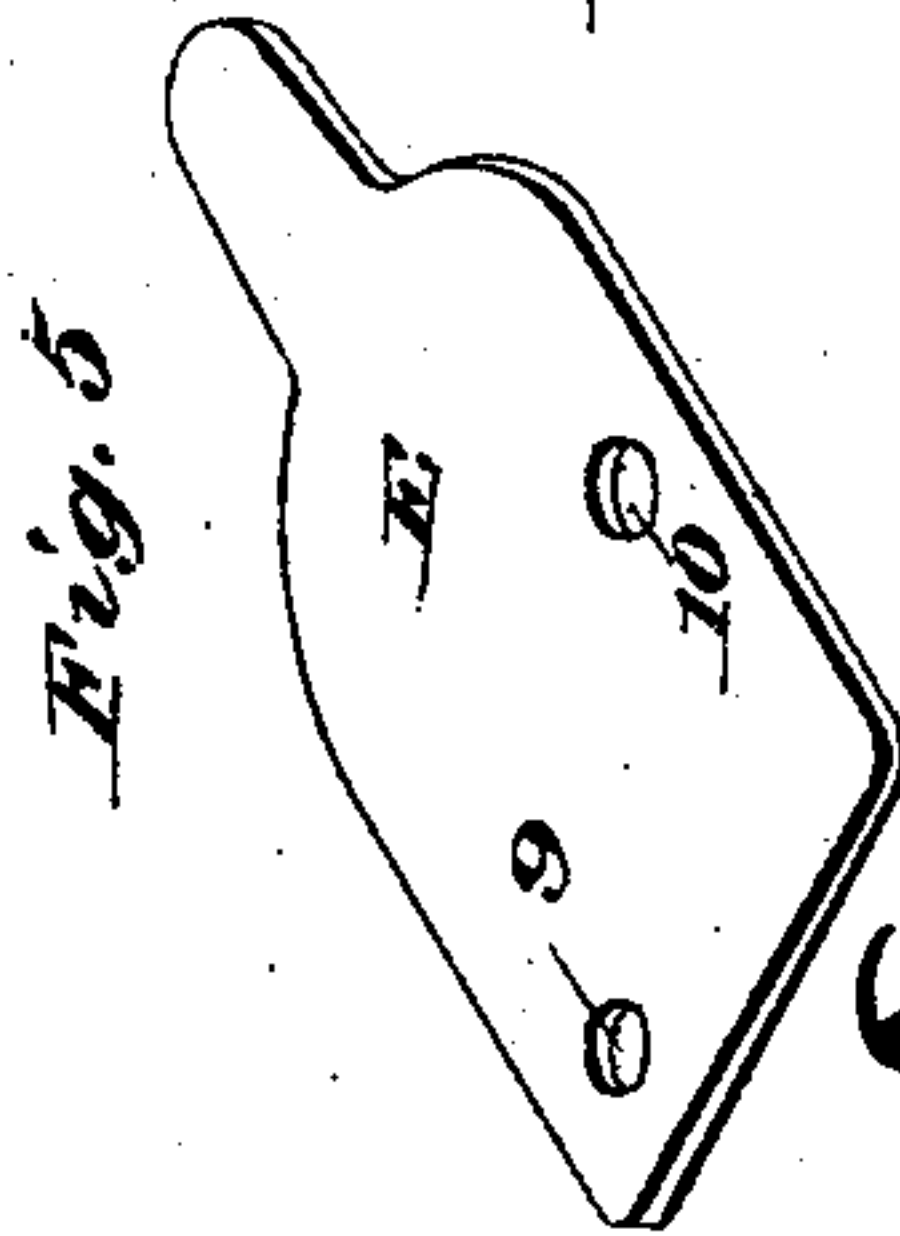
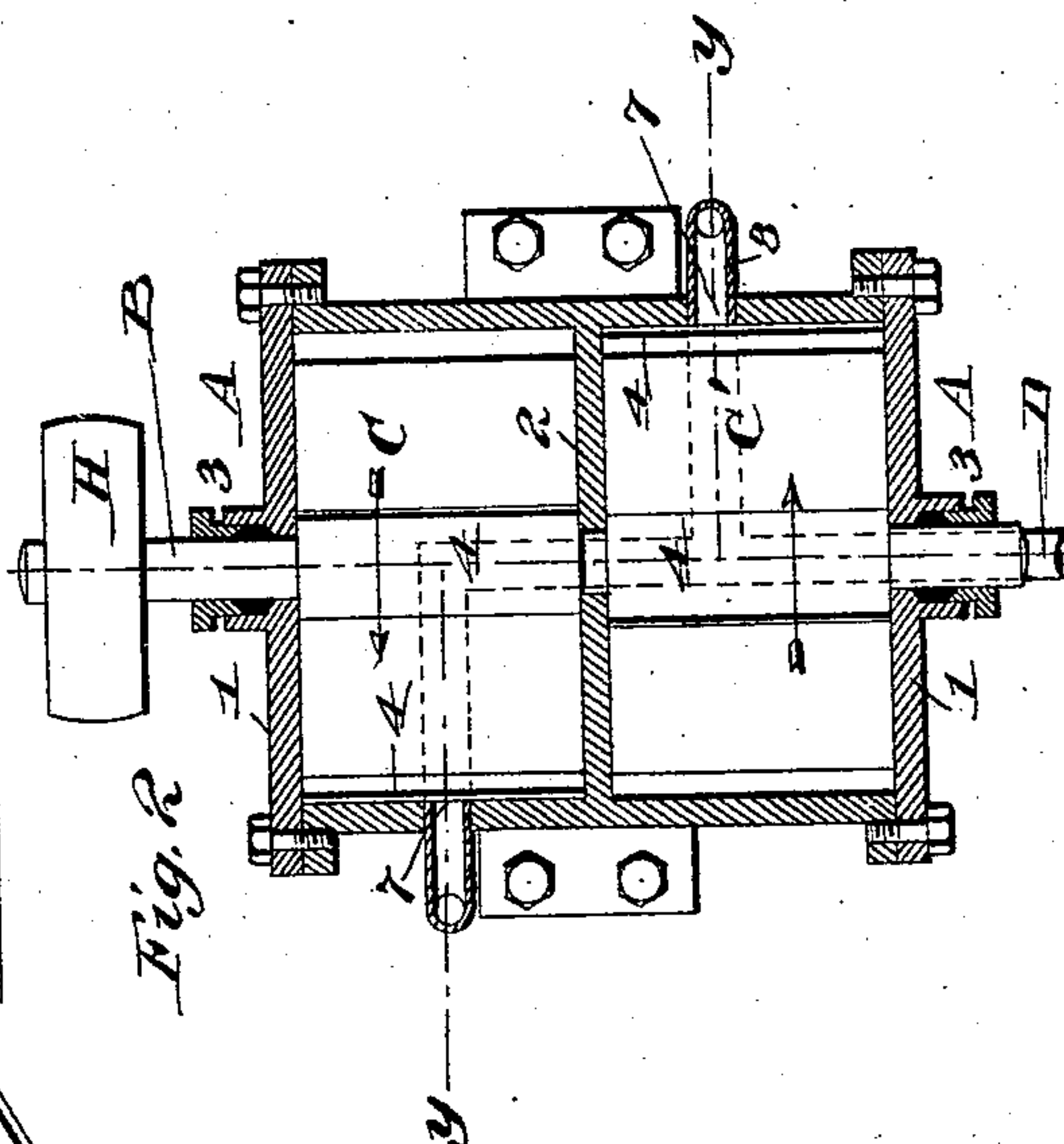
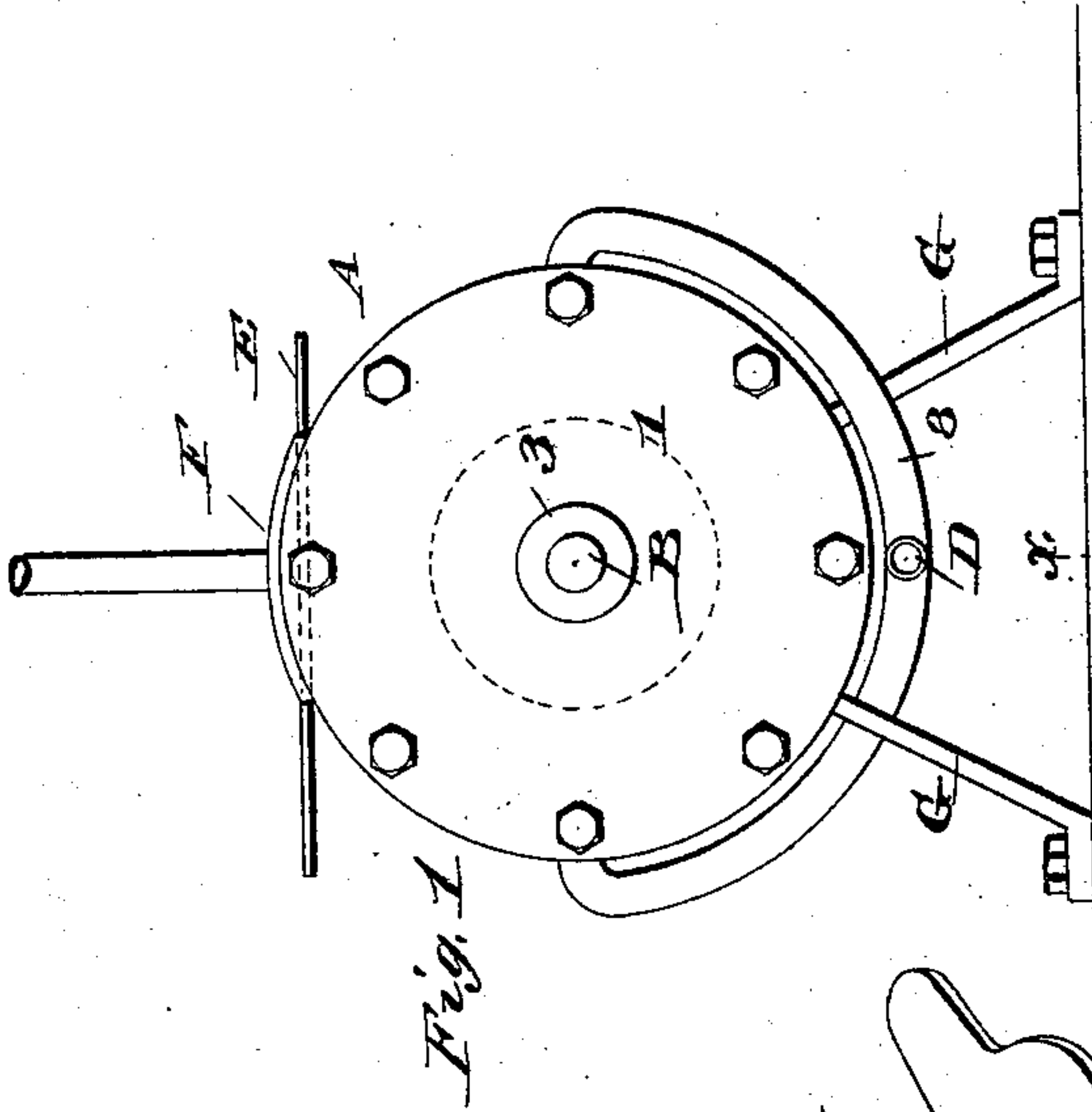
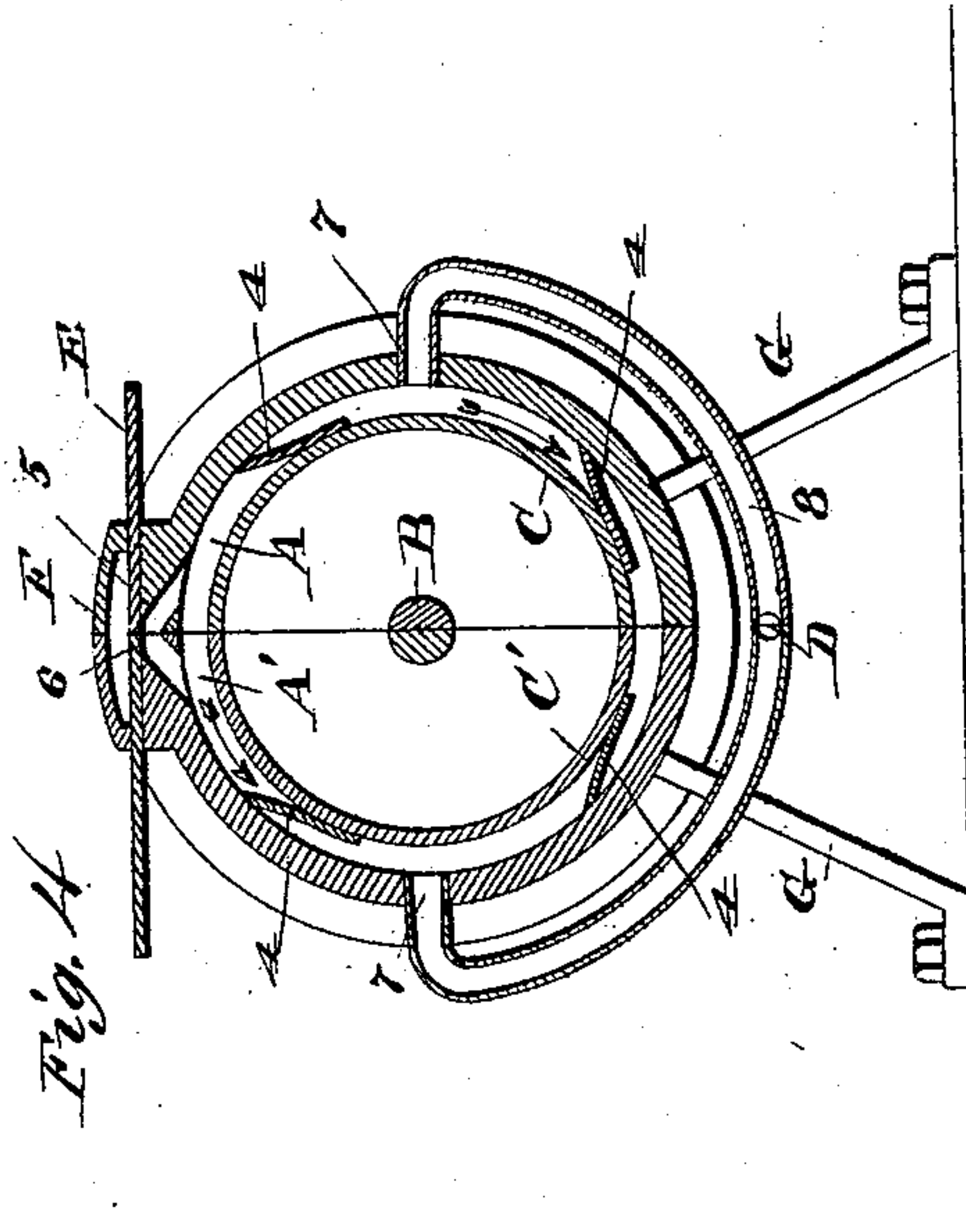
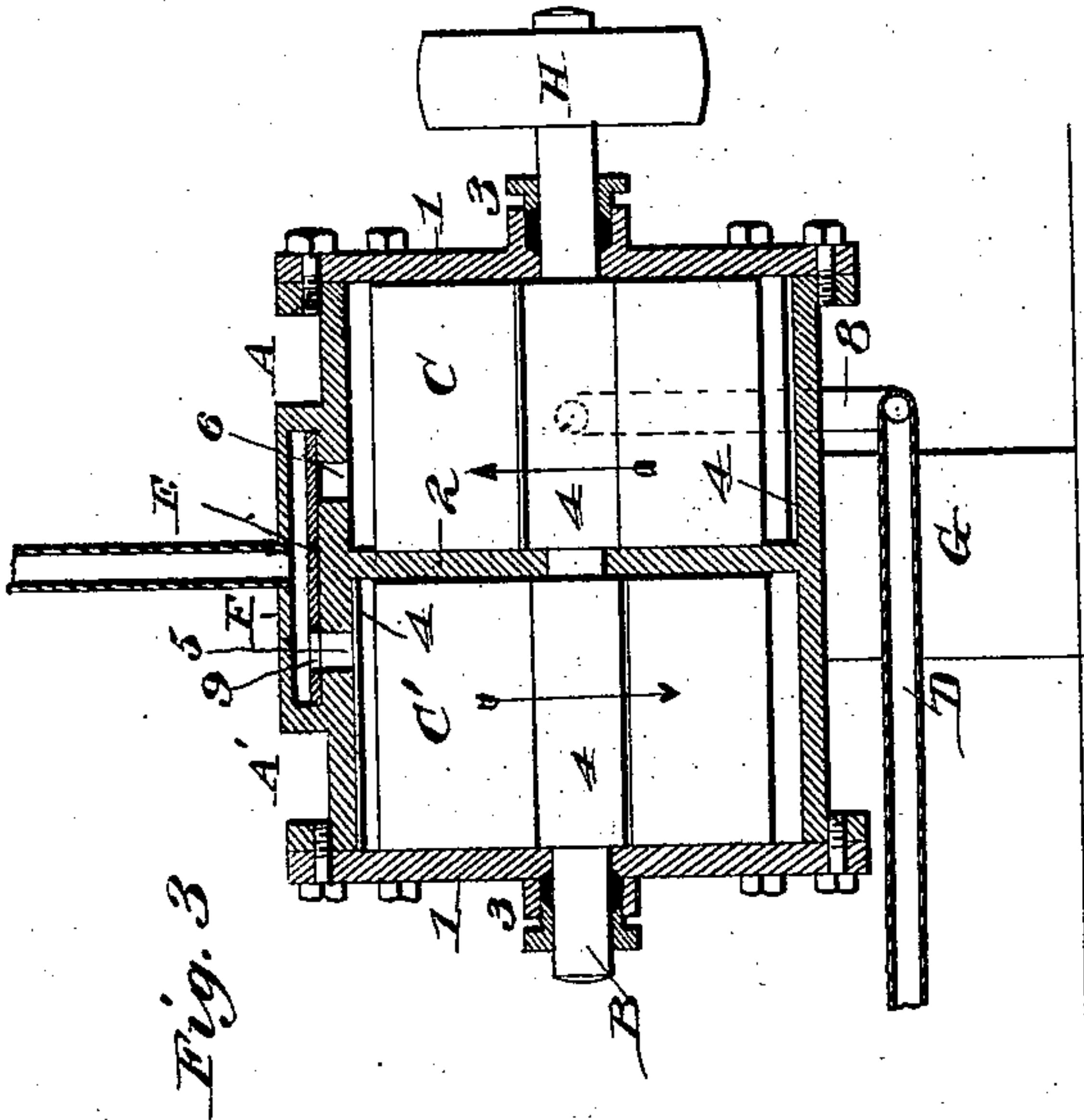


(No Model.)

W. M. BARNES.
ROTARY STEAM ENGINE.

No. 517,513.

Patented Apr. 3, 1894.



Witnesses;

J. F. Coleman
John D. Wood

Fig. 5

Inventor:
William M Barnes
by S. C. Fitzgerald
Atty

UNITED STATES PATENT OFFICE.

WILLIAM MUNROW BARNES, OF AUBURN, KENTUCKY.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 517,513, dated April 3, 1894.

Application filed June 22, 1893. Serial No. 478,455. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MUNROW BARNES, a citizen of the United States, residing at Auburn, in the county of Logan and State of Kentucky, have invented certain new and useful Improvements in Rotary Steam-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.

My invention relates to improvements in rotary steam-engines.

The invention will first be described in connection with the accompanying drawings, and then particularly pointed out in the claims.

In the drawings—Figure 1 is a side elevation of a rotary engine embodying my invention. Fig. 2 is a horizontal section, partly in elevation, taken through the center of Fig. 1. Fig. 3 is a vertical section taken on the line $x-x$ Fig. 2. Fig. 4 is a vertical section on line $y-y$, Fig. 2. Fig. 5 is a detail view of the reversing valve.

Referring to the drawings, A, A' are cylinders, provided with cylinder-heads, 1, and separated by a partition or diaphragm 2. Through the central diaphragm and through each cylinder-head passes a revoluble piston-shaft B, which works in packed glands 3. On the piston-rod and within the cylinders are located rotary pistons, C, C', which are smaller in diameter than the interior of the cylinder and are provided with spring-wings 4, which bear against the interior surface of the cylinder and serve to pack the piston so that steam cannot escape around them; at the same time these wings or vanes are acted on by the steam and produce the desired rotation. I preferably place the vanes of one piston in a direction opposite to those of the other, thus permitting the engine to be run in either direction by letting the steam into the opposite cylinder. In the top of each cylinder is a steam inlet, 5 and 6, each inlet being sloped or inclined, as shown, one in one direction and the other in the opposite direction, so that the steam as it enters the cylinder will strike the vanes and revolve the piston. In the side of each cylinder is an exhaust outlet 7,

these outlets being preferably connected with each other by branch pipe 8 which unites at the main exhaust D.

For the purpose of letting the steam into either cylinder as desired, a sliding plate E is provided, being mounted on top of the steam-cylinders, which are flattened at this place, as shown, in order that the plate E may fit steam-tight, while on top of the plate is placed a cap or chest F, secured to the cylinder at each end. The top of the chest or cap F has a steam supply pipe through which steam is admitted to the interior of the chest. The sliding plate has two ports 9 and 10, so arranged that when the port 9 is in register with the inlet 5, the port 10 will be out of register with inlet 6 and vice versa. When either port is in register with its respective steam inlet all communication between the chest and the opposite cylinder will be cut off.

The cylinders are mounted on suitable legs G by means of which the engine is supported on the floor, while a pulley H, fixed on the piston shaft, serves to transmit motion to any desired apparatus.

The operation is so apparent as to need no description.

As the steam enters each cylinder at an angle it strikes the vanes in such a manner as to rotate the piston; moreover, the pressure of the steam against each inward-inclined side will tend to hold the spring-metal vanes or wings in close contact with the interior surface of the cylinder thus packing the piston in an efficient manner.

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

In a rotary engine, the combination with a casing consisting of two aligned cylinders divided by a central partition, of a piston shaft rotatively mounted in said casing and extending through the axes of the respective cylinders, pistons mounted on said shaft in the respective cylinders, said pistons being provided with tangential vanes arranged about their peripheries and contacting at their free ends with the inner walls of the cylinders, the vanes on the respective pistons being oppositely directed, said cylinders being pro-

vided with oppositely directed steam inlet
ports adapted to admit steam against the in-
ner side of the said vanes, outlet tubes lead-
ing from opposite sides of the respective cyl-
5 inders, a steam chest F arranged over the
steam inlet ports and provided with lateral
openings and with a flat valve seat extending
between and coinciding with the lower wall
of each of said openings, and a flattened slide
10 valve E arranged in said steam chest with its
extremities passing through the lateral open-
ings thereof, said slide valve having a handle

at one end and having ports formed through
it at different points along its length, said
ports being adapted to coincide respectively 15
with the steam inlet ports of the respective
cylinders, substantially as described.

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

WILLIAM MUNROW BARNES.

Witnesses:

W. R. BURR,

THAD. A. GILLUM.