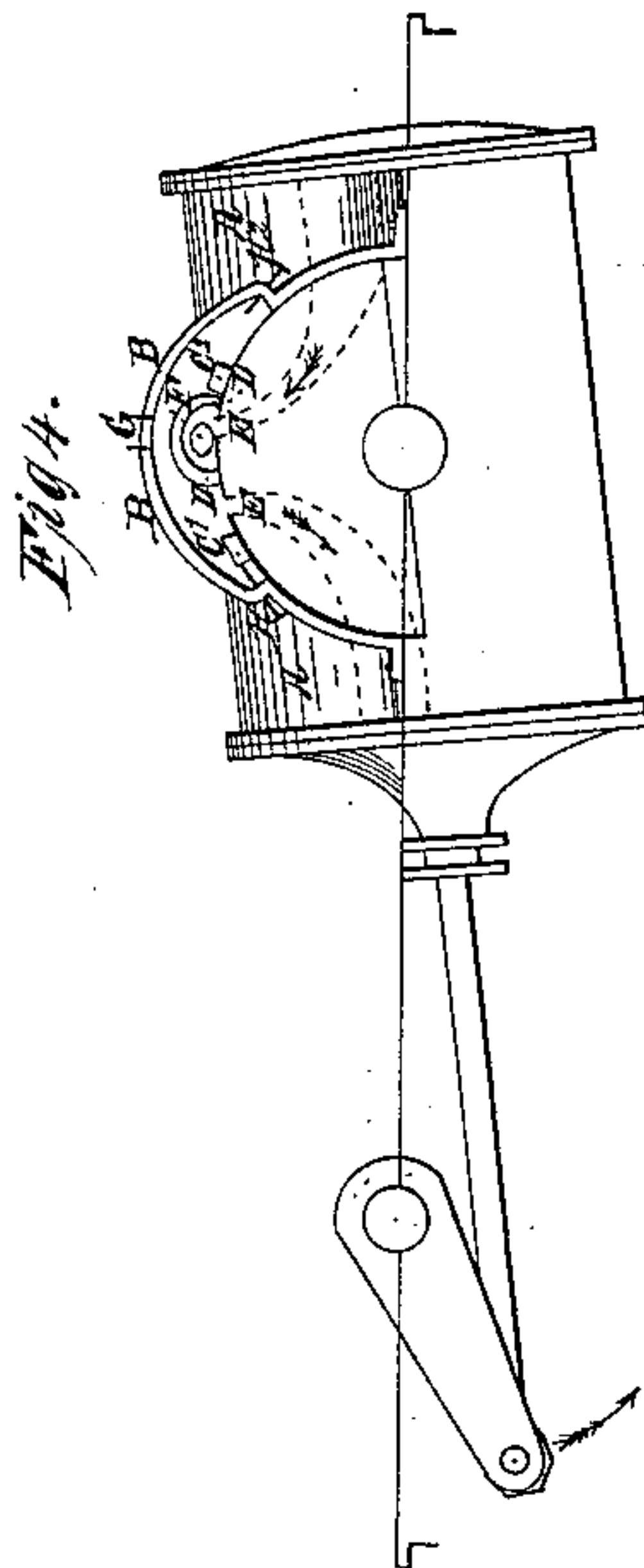
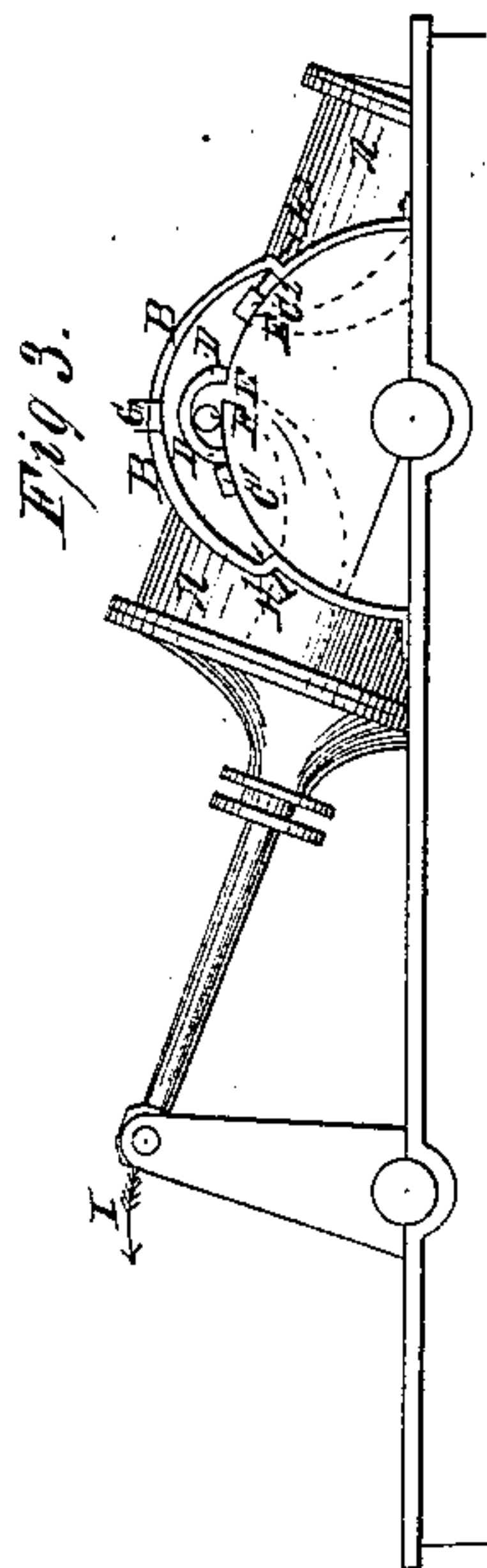
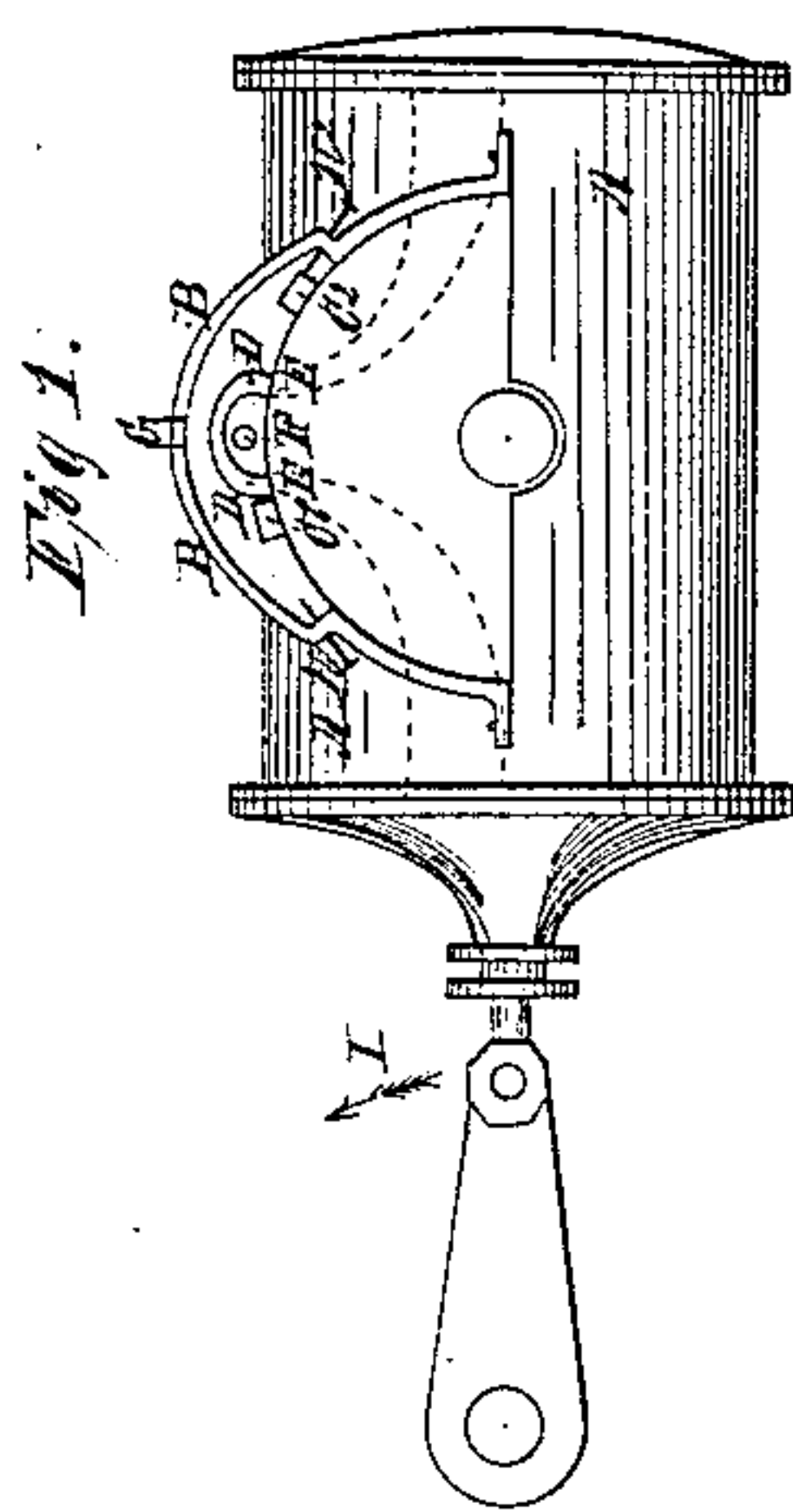
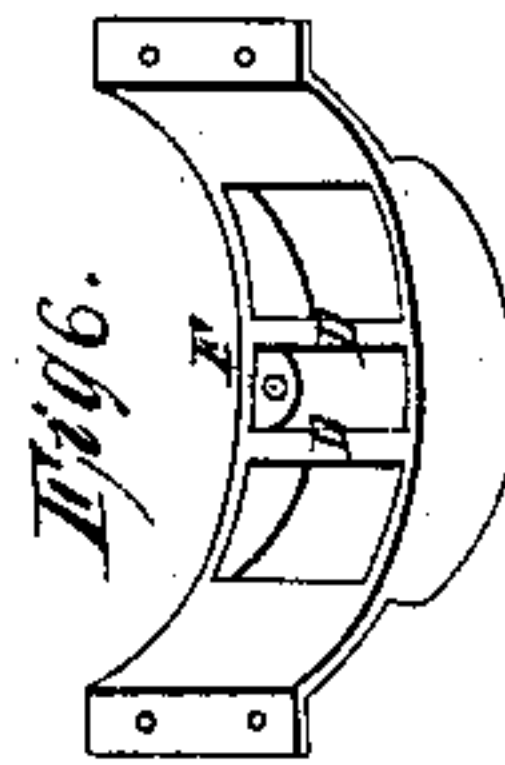
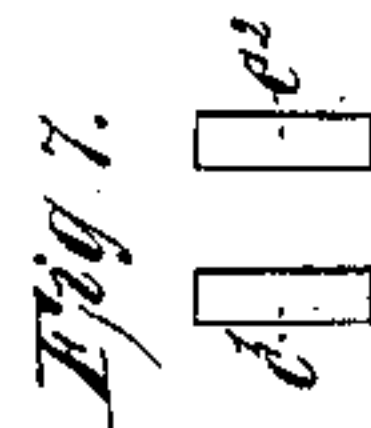
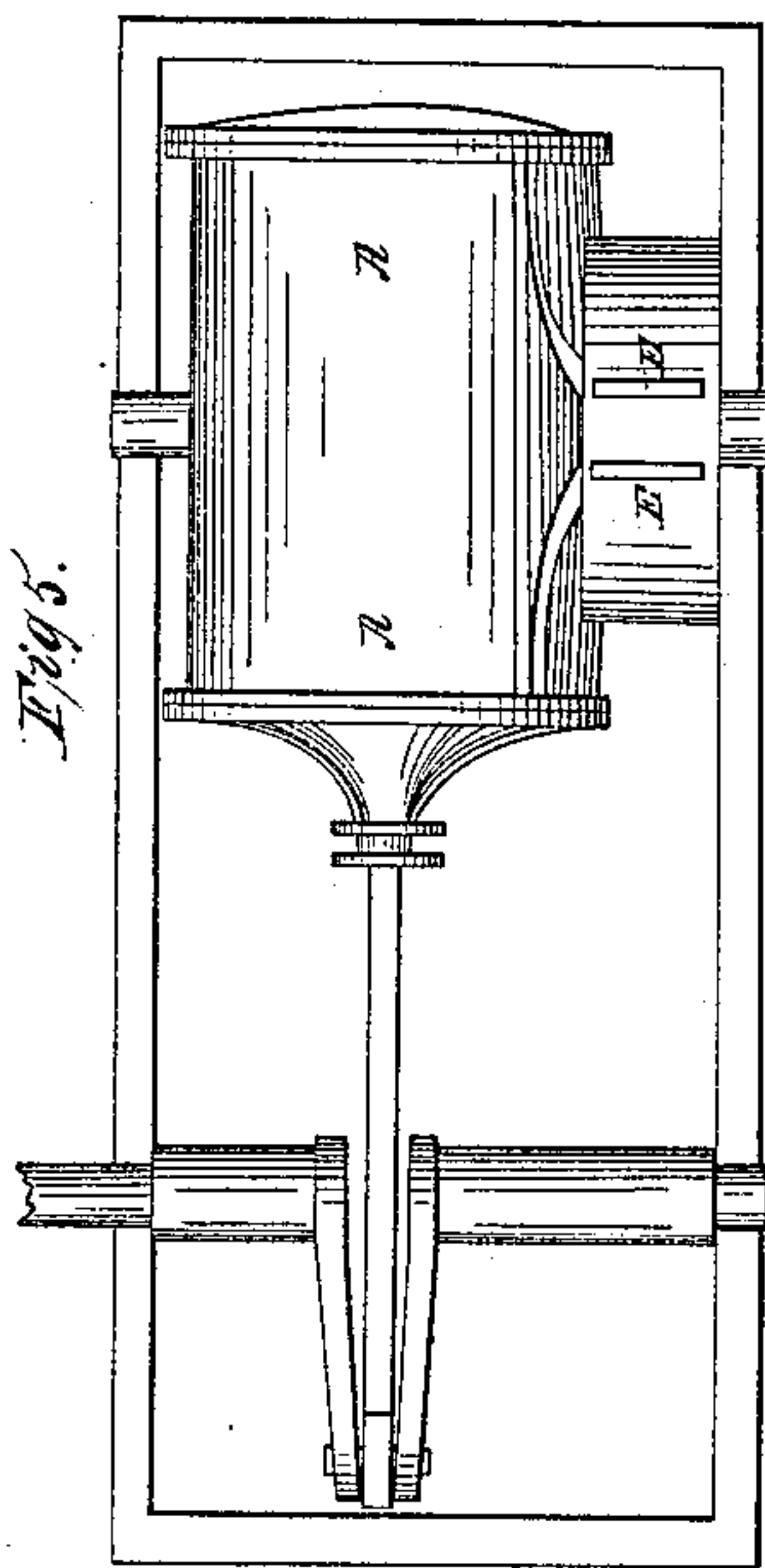
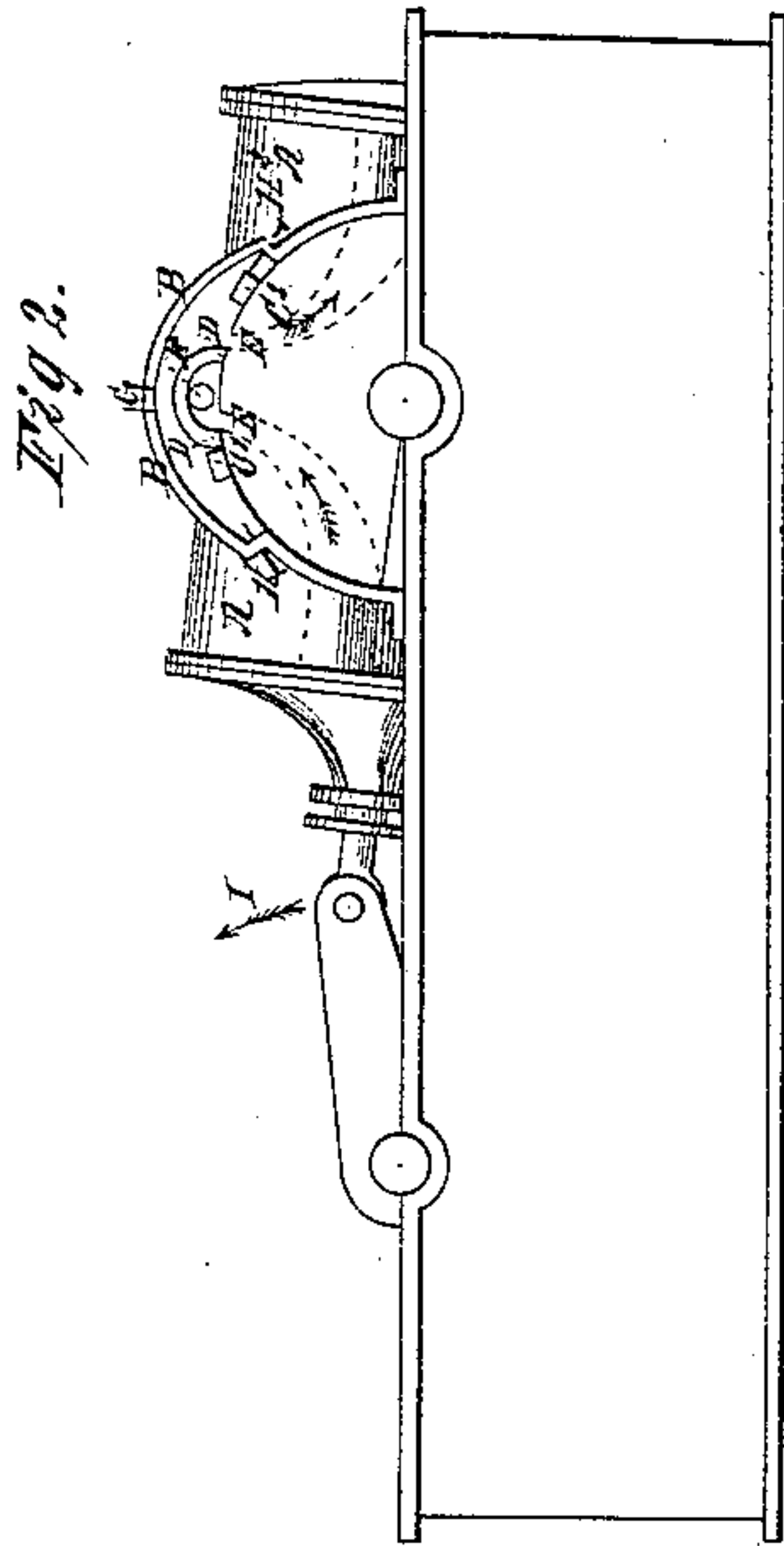


H. E. Canfield,

Oscillating Steam Engine.

N^o 13,637

Patented Oct. 9, 1855.



Witnesses.
William Price
Samuel G. Booth

Inventor.
Henry C. Canfield

UNITED STATES PATENT OFFICE.

HENRY E. CANFIELD, OF NEW YORK, N. Y.

CUT-OFF VALVE FOR OSCILLATING ENGINES.

Specification of Letters Patent No. 13,637, dated October 9, 1855.

To all whom it may concern:

Be it known that I, HENRY E. CANFIELD, of the city of New York, county of New York, and State of New York, have invented
5 a new and Improved Mode of Cutting Off Steam in Oscillating Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and
10 the letters of reference marked thereon.

The nature of my invention consists in the arrangement of loose valves (regulated by set screws or their equivalents,) within the valve box of oscillating engines in such a
15 manner that the oscillation of the cylinder will produce all the motion necessary in said valves to cut off the steam at such part of the stroke as the set screws may be set for.

To enable others skilled in the art to make
20 and use my invention I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 is a side view of an engine with the bed plate and face of the valve box removed. Fig. 2
25 is also a side view with the bed plate, but the face of the valve box is removed to show the different position of the steam ports (E E) from that shown in Fig. 1. Fig. 3 and Fig. 4 are also side views to illustrate the different
30 positions of the valve and steam ports hereinafter explained. Fig. 5 is a top view of the engine with the valve box removed showing the steam ports (E E) leading to either end of the cylinder. Fig. 6 is a per-
35 spective view of the under side of the valve box, showing the partition (D D) between the steam chamber and the exhaust chamber (F). Fig. 7 is a top view of the loose valves (C¹ C²).

40 In Fig. 1 B B is the valve box connected with the boiler by the steam pipe G. The said valve box also contains an exhaust chamber, the partition of which is shown by D D. The said exhaust chamber is relieved
45 of its steam by the exhaust pipe F. The partition of the exhaust chamber is made of such width as will cover both of the steam ports (E E) when the piston is at the end of its stroke, which is the position shown in
50 Fig. 1.

In Fig. 2 the crank is supposed to have moved in the direction of the arrow (I). This movement opens one of the steam ports to the steam in the valve box while the other
55 steam port is opened into the exhaust cham-

ber. The dotted lines from the steam ports (E E) show the steam passages to either end of the cylinder and the arrows within these dotted lines show the direction in which the steam is moving.

60 Fig. 3 shows the position of the steam ports when the piston is at half stroke. It will be seen that the steam port opening into the exhaust chamber is fully open while the one in the steam chamber is closed by the
65 loose valve (C²). As the piston moves in the direction shown by the arrow I it moves the steam ports back to the position shown in Fig. 4. The pressure of the steam on the loose valve (C² Fig. 3) causes it to adhere
70 to the steam port which it covers and is carried with it against the partition of the exhaust chamber (D D) and so prevents the admission of steam during the last half of the stroke. The same movement that carries
75 the loose valve (C²) against the partition also carries the loose valve (C¹) from the position shown in Fig. 3 to that shown in Fig. 4, when it comes in contact with the set screw H¹ and its movements and objects
80 are the same as those of C² as previously described. It will be seen that by increasing or diminishing the distances traveled by the loose valves, by means of the set screws (H¹ H²) that the steam can be let in to the full
85 extent of the stroke or by shortening the distance traveled by said loose valves, by means of the aforesaid set screws, the steam will be cut off at an earlier part of the stroke.

In the foregoing description and drawings
90 like letters and figures refer to like parts.

As the other parts of the engine which are not lettered or described are not my invention and may be varied to suit different
95 kinds of work, a more particular description than that furnished by the drawings will hardly be found necessary.

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

The arrangement in oscillating engines of
100 separate loose valves moving independently of each other, when the motion is given them by the oscillation of the cylinder for the purpose of cutting off the steam at such part of the stroke as may be desired, sub-
105 stantially as shown and described.

HENRY E. CANFIELD.

Witnesses:

WILLIAM DIXEY,
SOLOMON G. BOOTH.