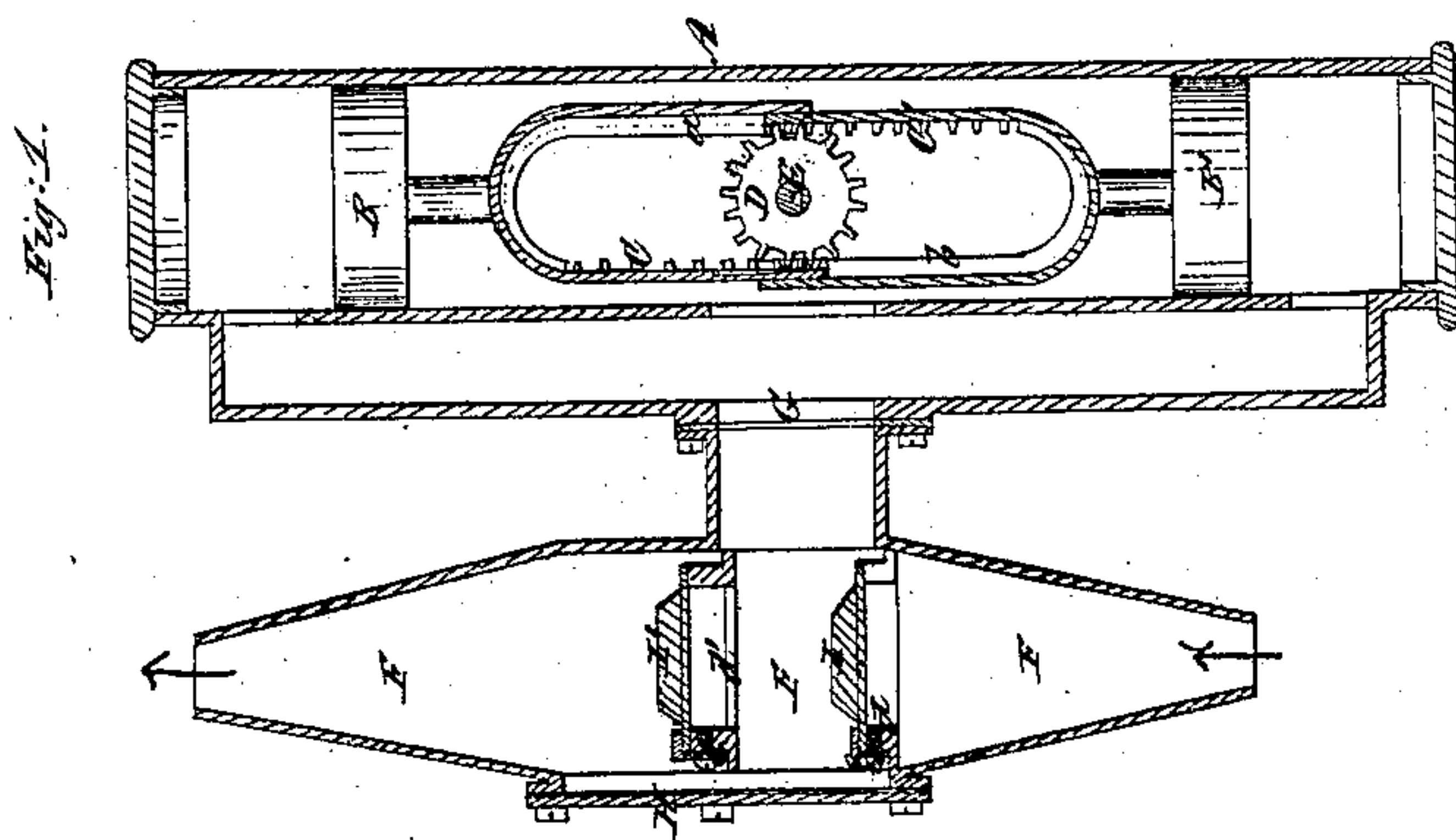
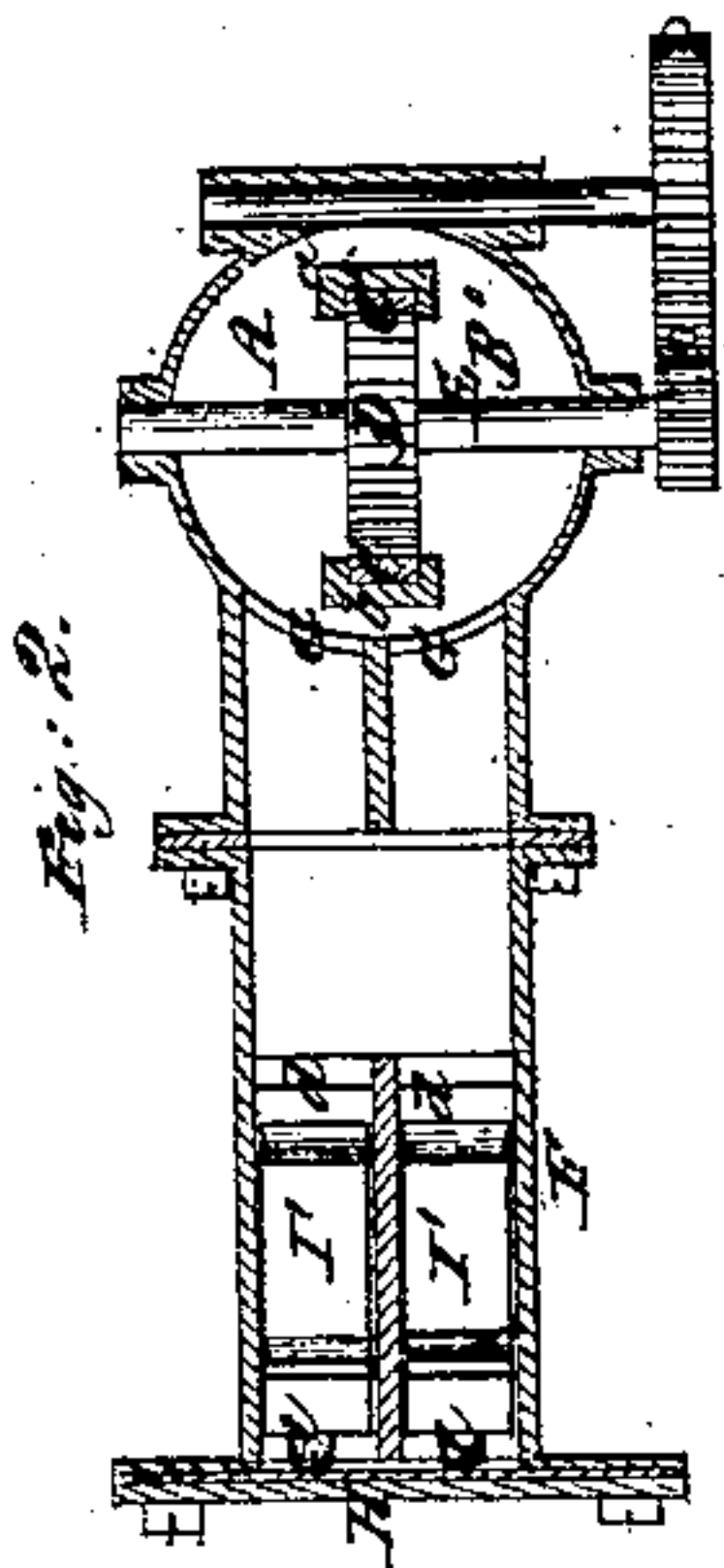
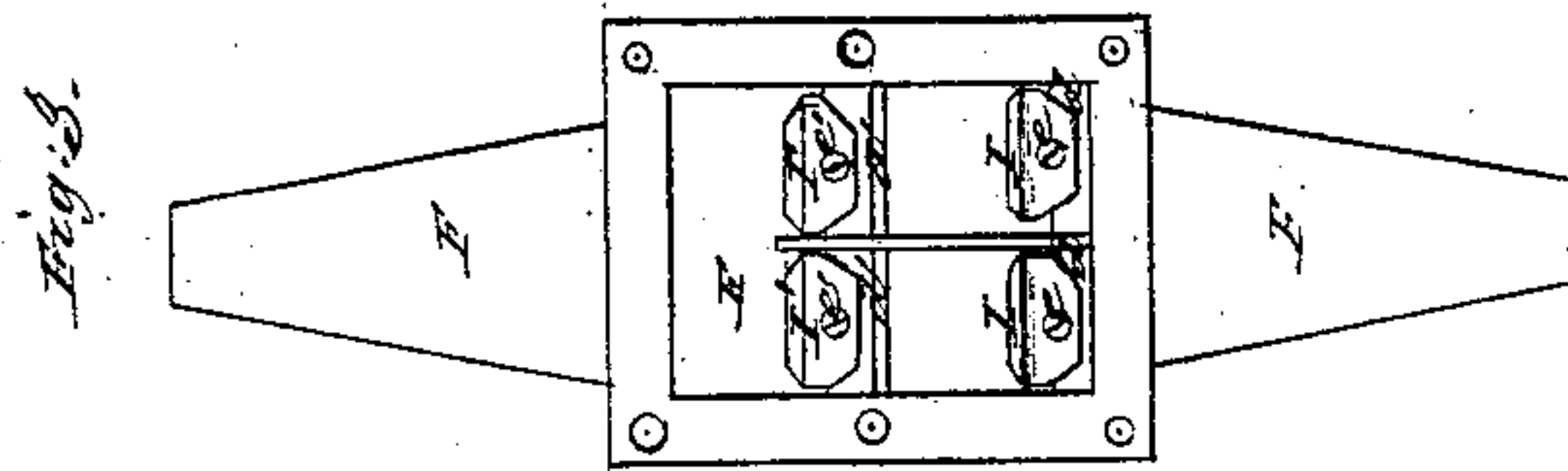
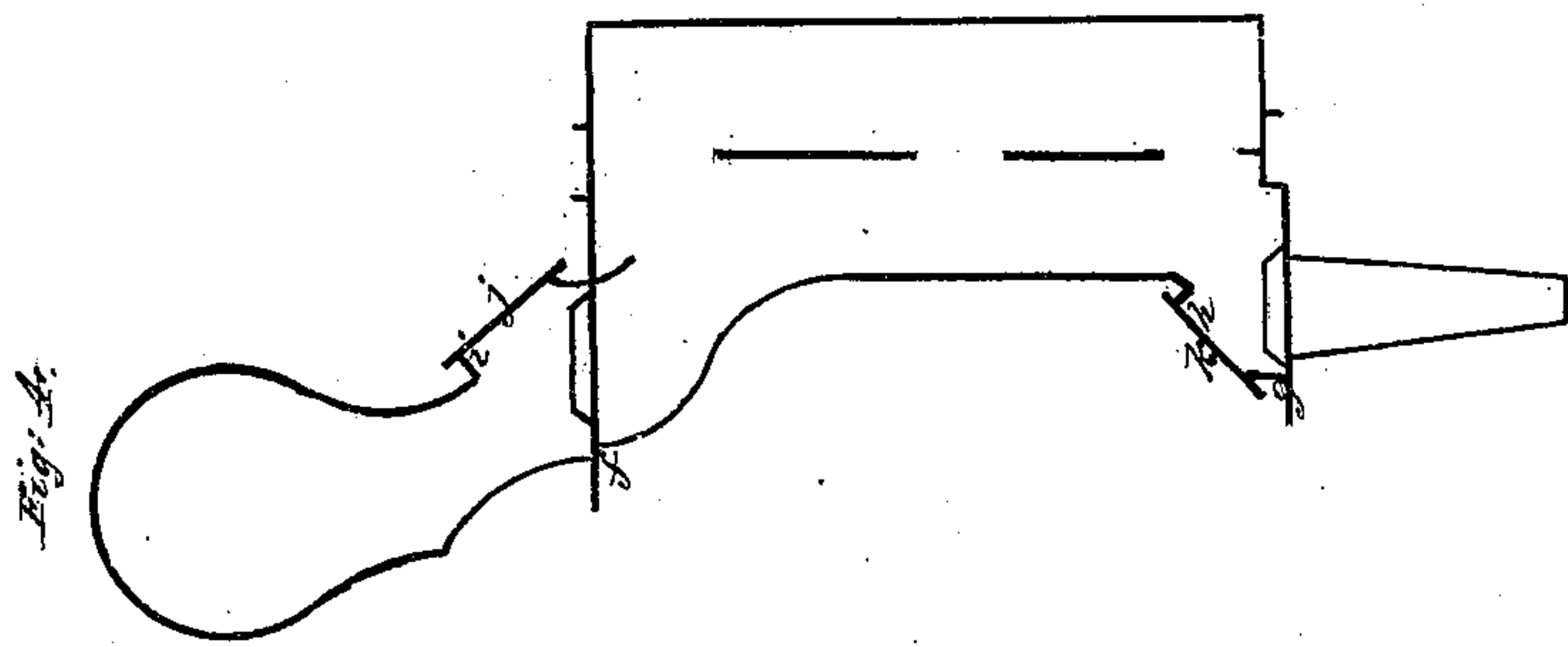


S. H. Gray,
Double-Acting Pump,
No 13,459,
Patented Aug. 21, 1855.



UNITED STATES PATENT OFFICE.

S. H. GRAY, OF BRIDGEPORT, CONNECTICUT.

PUMP.

Specification of Letters Patent No. 13,459, dated August 21, 1855.

To all whom it may concern:

Be it known that I, S. H. GRAY, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain
5 new and useful Improvements in Single-Cylinder Double-Acting Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference
10 being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a vertical section of a single cylinder double acting pump with my improvements applied to it. Fig. 2, is a horizontal section through the line x, x . Fig. 3,
15 is a front view of the suction and delivery valve chamber, the capping plate being removed.

Similar letters of reference in each of the several figures indicate corresponding parts.
20 My invention relates to an improvement in that description of single cylinder double acting pump which employs two pistons and has three discharge passages, the rod of one
25 of said pistons, moving through the rod of the other and said pistons being arranged to move from and toward each other and discharge the water at the top and bottom of
30 the cylinder as the handle of the pump is moved in one direction and to move toward each other and discharge water at the center as the handle is moved in an opposite direction.

The nature of my said improvement consists in the employment and arrangement of
35 the racks and pinion, between the pistons for the purpose of moving the pistons from and toward each other, in such a manner that the necessity of having the rod of one piston pass through the other and through
40 several stuffing boxes is avoided and consequently the expense of the pump greatly reduced, friction and liability of derangement lessened and the pump made more compact and easy to be operated.

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

A, represents the pump cylinder, B, B', are the pistons, C, C', the racks attached to the pistons and D, the pinion for operating
50 them. The rack C, is attached to the bottom of the piston B, and the rack C', to the top of the piston B', as shown and the rack C, is connected to C', and guided in its movement and kept from having any except up
55 and down play by a guide a , which is attached to the piston B and stands opposite the rack C, and the rack C', is connected to C, and kept from having any except up and
60 down play, by a guide b , which is attached to the piston B', and stands opposite the rack C'. The pinion D, is arranged between the racks on a shaft E, and is turned by the
65 pump handle, directly or through intermediate gearing. This pinion, as may be evident, by having a circular vibratory movement imparted to it, operates the racks and causes them to move the pistons from and
70 toward one another. It is by thus arranging racks between the pistons and making one piston or its attachment serve as the guide for the other, and vice versa, that I am enabled to avoid the necessity of having the
75 rod of one piston work through the rod of the other.

I do not claim operating the two pistons of a single cylinder double acting pump, by means of two racks and a pinion, when said racks and pinion are arranged above the
80 top or below the bottom piston, and the rod of one piston passed through the rod of the other, but,

What I do claim as new and desire to secure by Letters Patent, is,

The employment and arrangement of the
85 racks C, C', and pinion D, combined, between the pistons, substantially as and for the purposes set forth.

SYLVESTER H. GRAY.

Witnesses:

DAVID B. LOCKWOOD,
JOHN SMITH.