(No Model.) 2 Sheets—Sheet 1.

J. A. TILDEN.

FLUID METER.

No. 457,294. Patented Aug. 4, 1891.

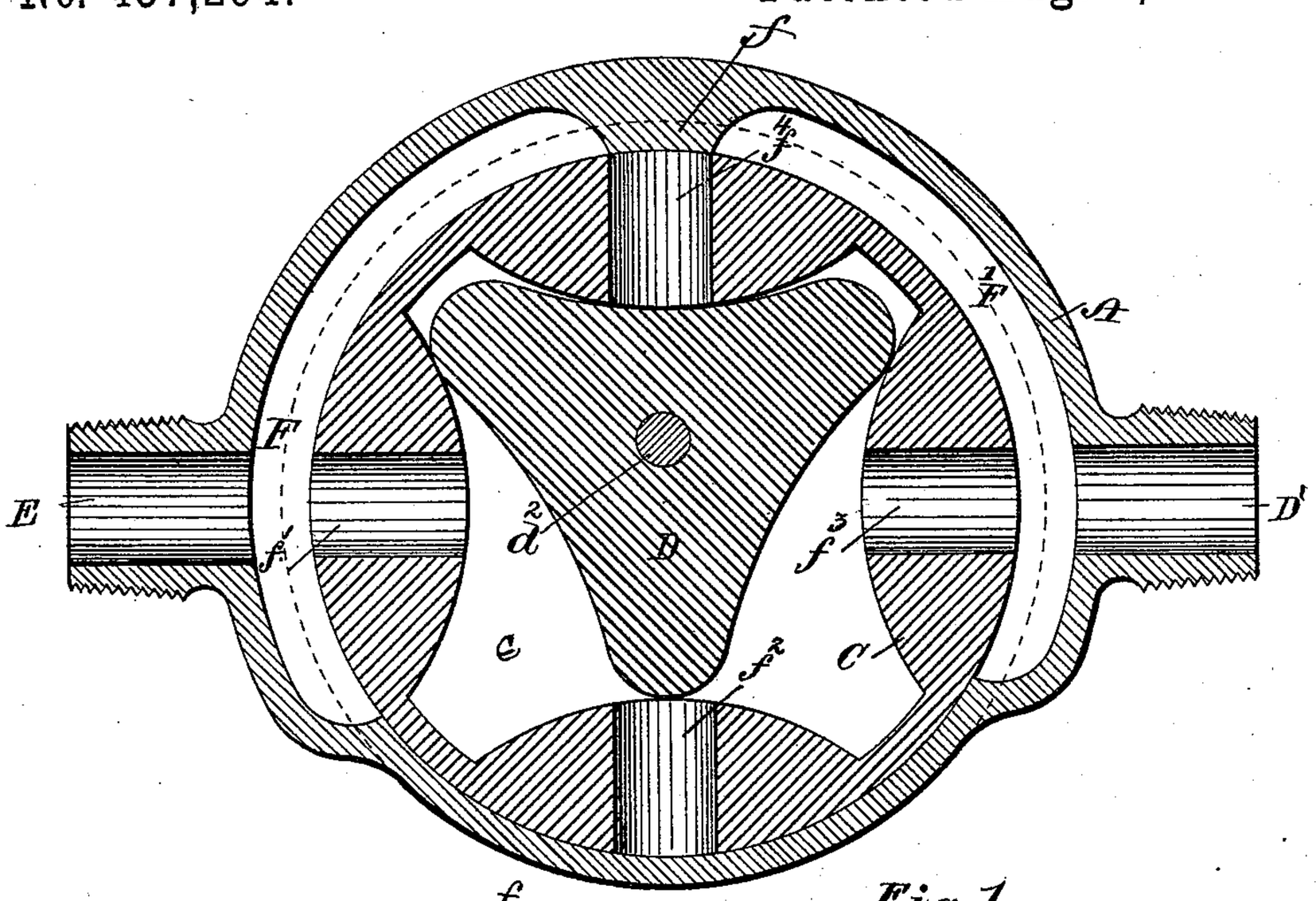

Fig. 1.

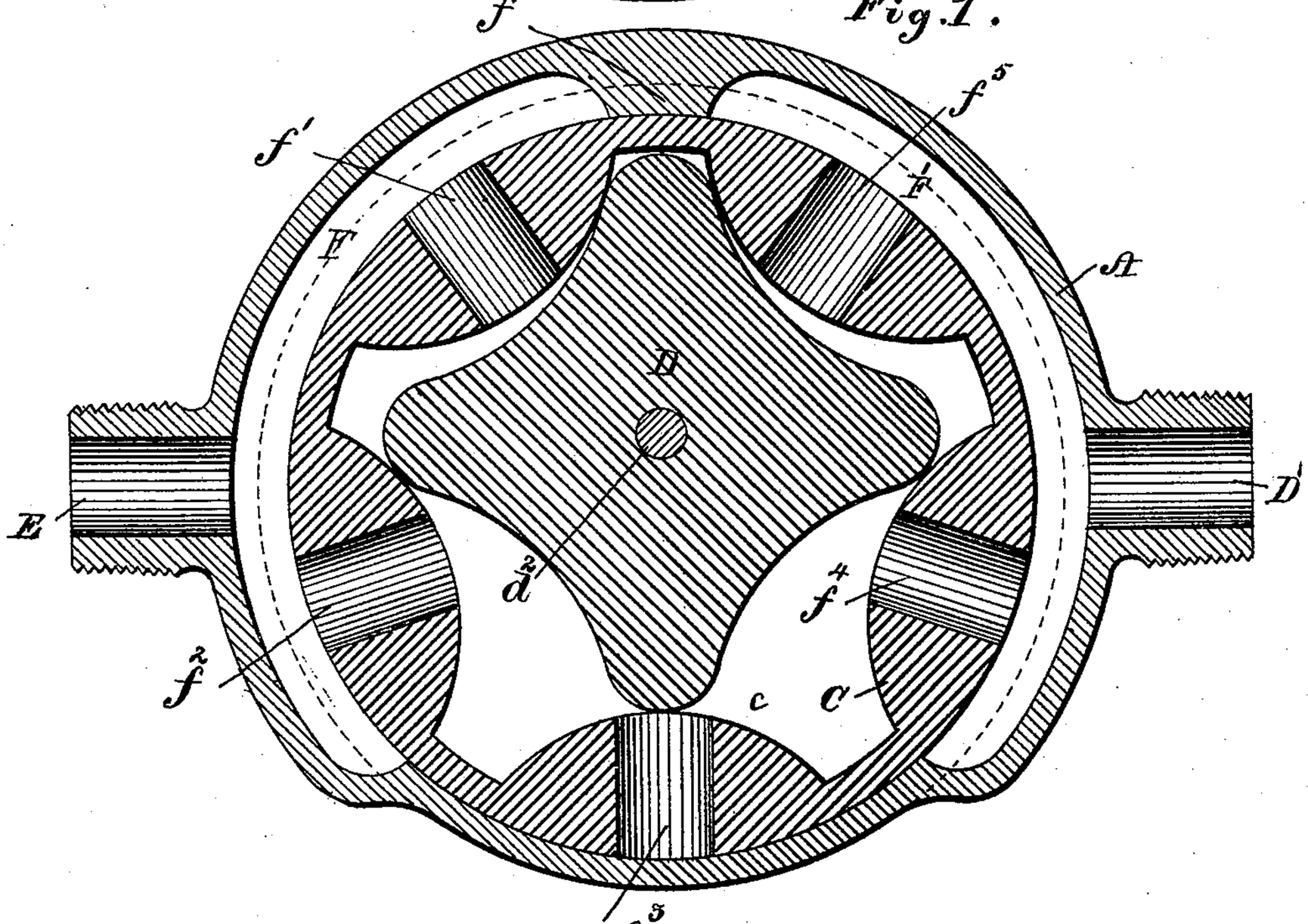

Fig. 2.

Witnesses:
L. M. Dolan
E. F. Small.

Inventor
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Clarke & Sprague

(No Model.) 2 Sheets—Sheet 2.

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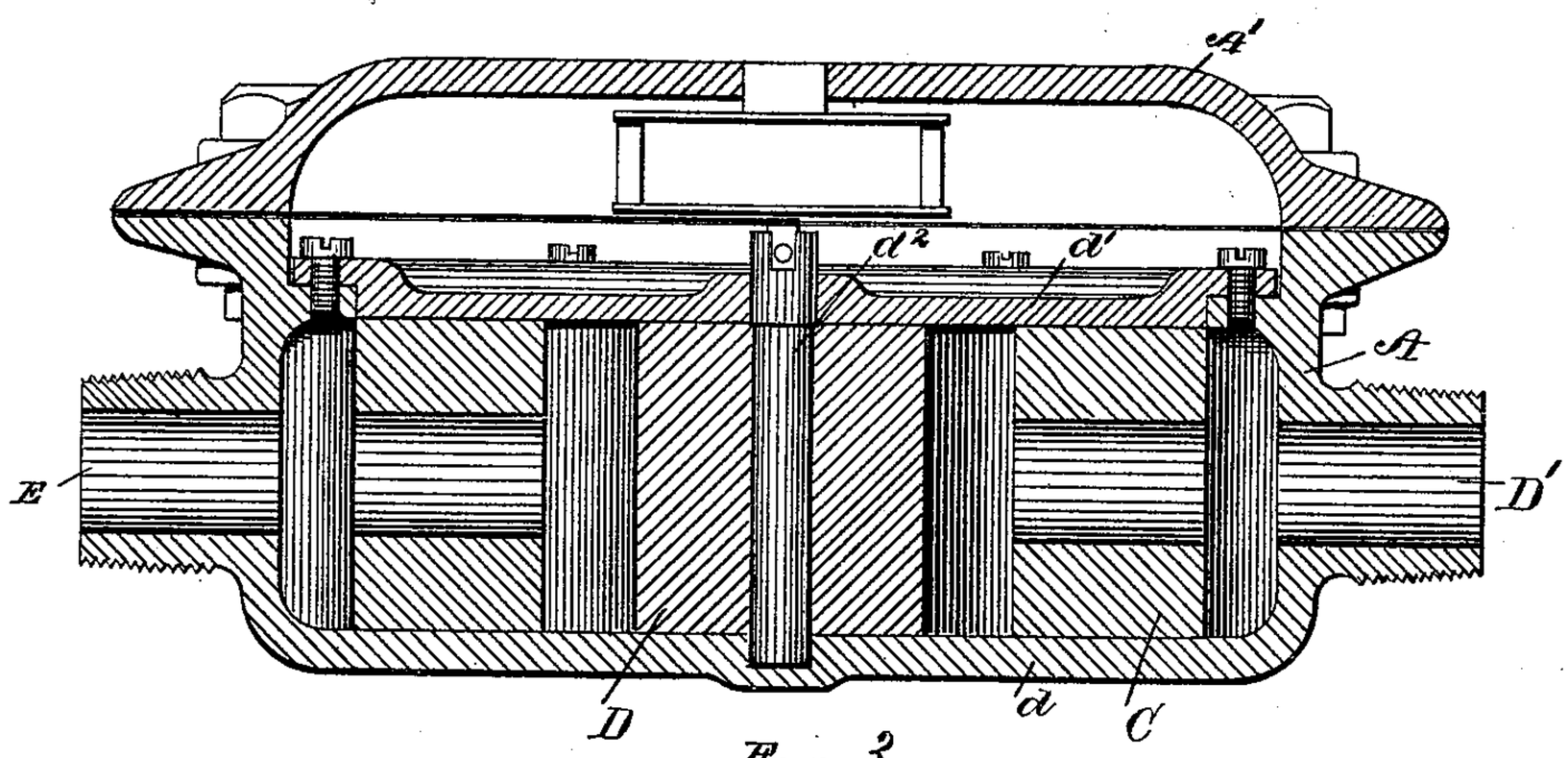

Fig. 3.

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J. M. Dean
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UNITED STATES PATENT OFFICE.

JAMES A. TILDEN, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO THE HERSEY METER COMPANY, OF PORTLAND, MAINE.

FLUID-METER.

SPECIFICATION forming part of Letters Patent No. 457,294, dated August 4, 1891.

Application filed March 19, 1888. Serial No. 267,703. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. TILDEN, a citizen of the United States, and a resident of Hyde Park, in the county of Norfolk and Commonwealth of Massachusetts, have invented a new and useful Improvement in Fluid-Meters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to that class of fluid-meters in which there is a movement of the piston in relation to the ring or piece which forms the wall of the piston-chamber; and it relates to various features of organization and construction, all of which will hereinafter be fully described.

In the drawings, Figure 1 is a horizontal section taken through the piston and piston-chamber of one embodiment of the invention; and Fig. 2 is also a horizontal section representing a meter such as that shown in Fig. 1, but when provided with additional ports. Fig. 3 is a vertical section of a meter having the organization shown in Fig. 1.

Referring to the drawings, A represents the lower section of the case of the meter, and A′ the upper section of said case. The upper side of the latter may serve, if desired, as a support for the case holding the register. The section A is cylindrical in shape and holds the rotative ring or piece C, which is cylindrical upon its exterior and has the piston-chamber *c*. D is the rotary piston within the said chamber *c*.

The rotative effect of the piston is of course produced by the difference in pressure upon the areas submitted to the action of the direct pressure of the fluid as compared with the pressure upon the discharge areas, and the rotative effect of the ring or piece C is also obtained largely from the same cause and partly from the friction of the piston moving upon it; but the piece C, having a larger area subjected to frictional influence than the piston, is retarded in its movement.

E is the inlet-passage. D′ is the exhaust-passage.

In Fig. 1 I have shown the piston as triangular in form in horizontal section, having rounded ends and inwardly-curved sides between the ends, and I have represented the wall forming the piston-chamber as cylindrical upon its exterior and as having a piston-chamber of a shape to permit the rotation of the piston therein for the purpose of dividing it into receiving and discharging sections by the contact of its surface at two or more divergent points with the wall of the chamber. These contact-points, while constantly varying, are always maintained, so that a complete division of the chamber into two or more sections is always accomplished. This construction also depends for its operation upon the movement of the wall or ring which forms the piston-chamber; but instead of forming the inlet and exhaust port in the bottom plate or diaphragm of the meter I use a system of side porting, and this is obtained by enlarging the lower section of the case sufficiently to form the chambers F F′ between the outer surface of the wall and the inner surface of the case. The chambers F F′ are separated from each other by the inwardly-extending section or projection *f* of the case. The chamber F is connected with the inlet-passage and the chamber F′ with the outlet or exhaust passage. The piston wall or ring has framed in it four passages or ports f' f^2 f^3 f^4, which extend in a straight horizontal line from its outer edge to the piston-chamber and which are arranged to enter the chamber midway the center of the measuring-sections. In operation the piston is caused to rotate in the piston-chamber and the ring to be turned also. This divides the piston-chamber into receiving and discharging spaces, which are alternately brought into communication with the fluid-supply chamber F and the exhaust-chamber F′, the ring or wall moving to bring each of the ports f' f^2 f^3 f^4 consecutively into connection with the supply and with the exhaust passages.

In Fig. 2 the construction represented is largely like that of Fig. 1, with the exception that the piston has four points instead of three, and the piston-chamber is correspondingly changed, and the piston thereby caused to act to divide the piston-chamber into more than two measuring spaces or recesses, each of which has its independent port for establishing connection at the proper interval

with the supply-passage and with the exhaust.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination, in a fluid-meter, of the case having the chambers F F′ and the inwardly-extending section or projection *f*, the ring contained in said case and having the piston-chamber and the ports, the rotary piston adapted to divide the piston-chamber into progressive measuring spaces or recesses, the supply-chamber, and the distributing-chamber, substantially as described.

JAMES A. TILDEN.

Witnesses:
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E. P. SMALL.