J. H. CONNELL.

WATER-METER.

No. 191,031. Patented May 22, 1877.

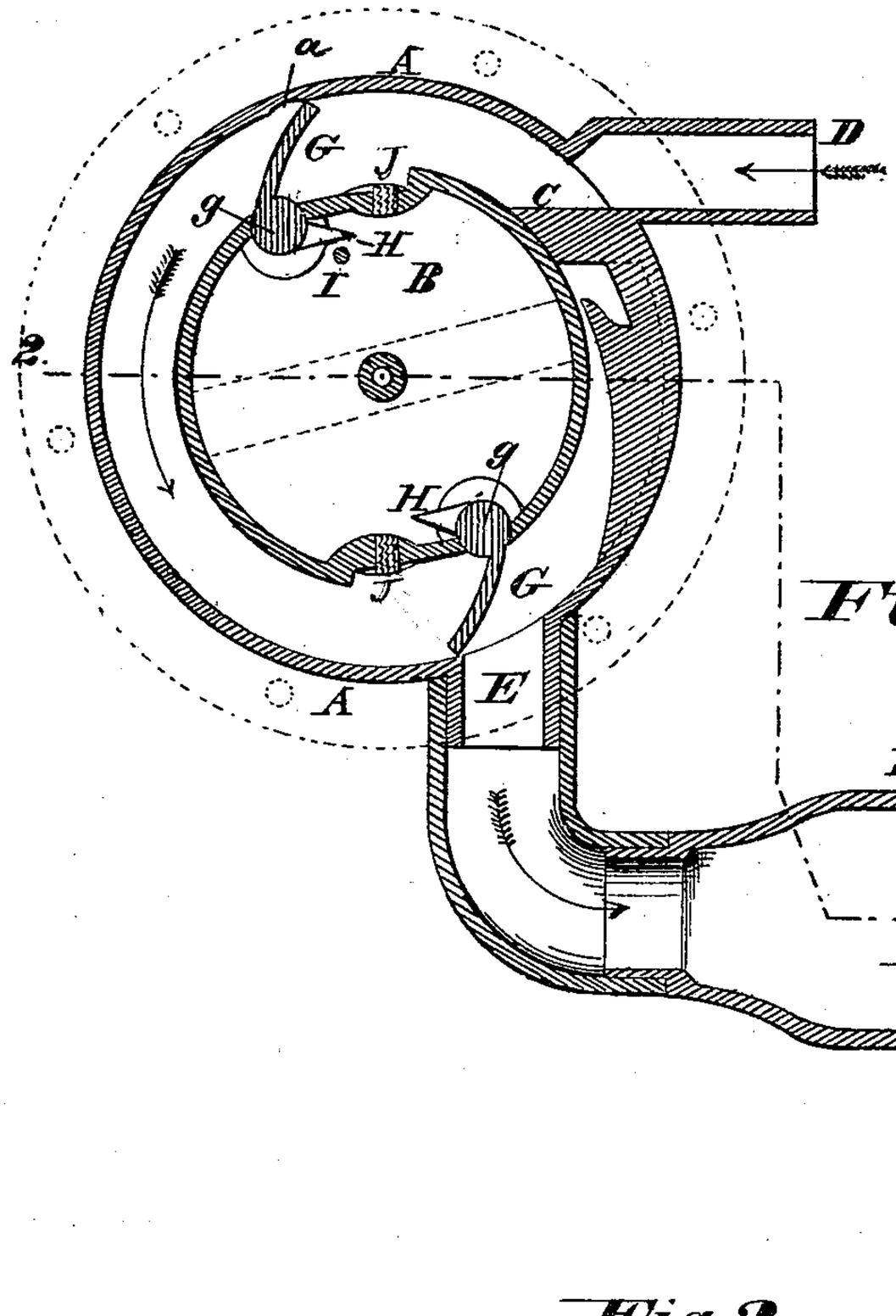

Fig. 1.

Fig. 2.

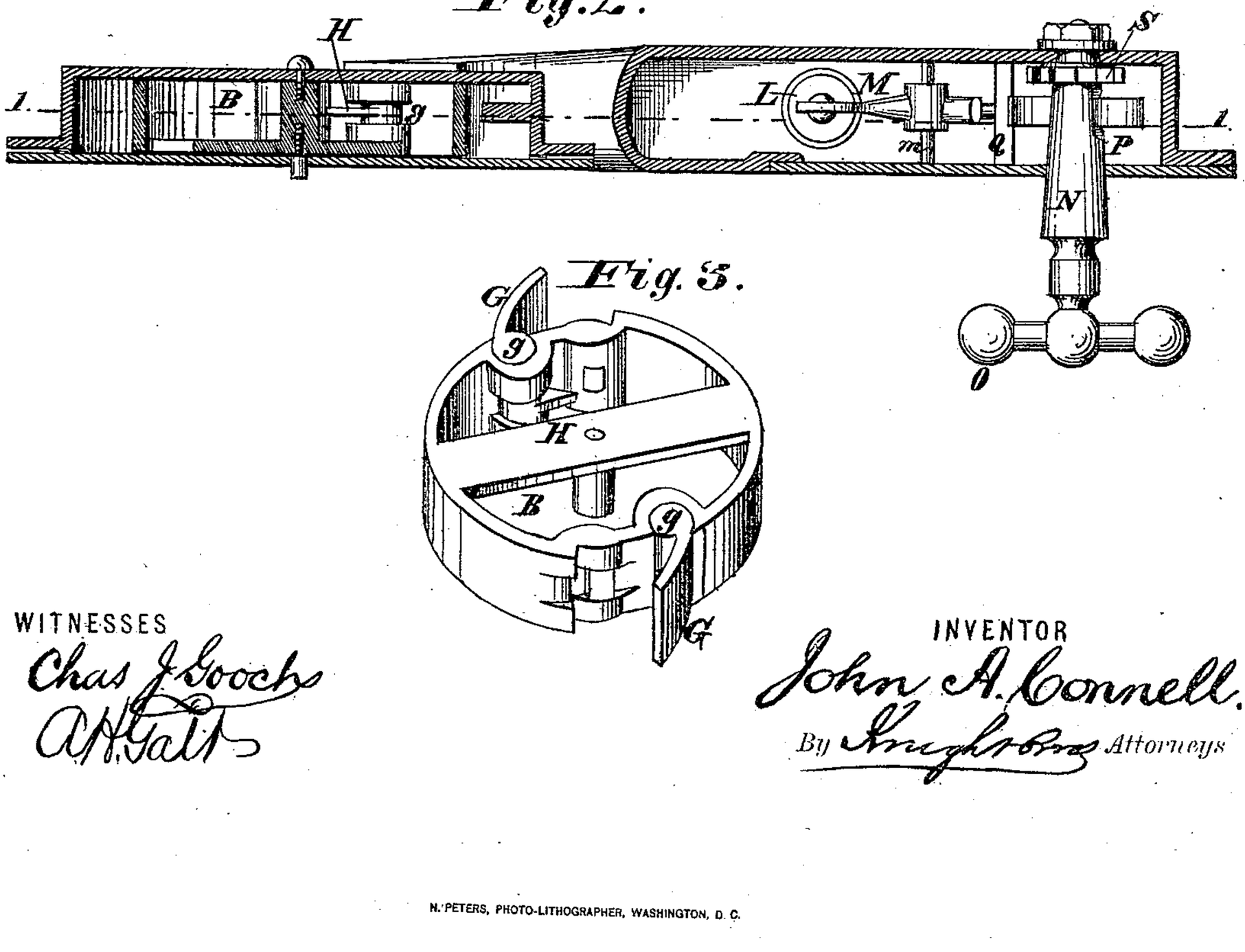

Fig. 3.

WITNESSES

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JOHN H. CONNELL, OF KANAWHA C. H., WEST VIRGINIA.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. **191,031**, dated May 22, 1877; application filed September 9, 1876.

To all whom it may concern:

Be it known that I, JOHN H. CONNELL, of Kanawha C. H., in the county of Kanawha and State of West Virginia, have invented a certain new and useful Improvement in Water-Meters, of which the following is a specification:

My invention relates, first, to a rotary meter, with pivoted valves, provided with projecting tappet-arms, adapted to come in contact with a stop, so as to throw the valves open to their full extent immediately on passing the induction-opening. The valves rest when closed on rubber cushions, which act to force the wings against the stationary abutment just below the inlet, and at the same time yield sufficient to accommodate sand or other inequalities.

The invention further consists in the combination with the said pivoted valves and opening device of a recess within the casing to prevent the obstruction of the valves by sand or other foreign matter, as hereinafter described.

The invention further consists in the combination, with the measuring apparatus, of a faucet, having an intermittent flow of the full capacity of the discharge-opening, so as to prevent the passage of a minute constant stream, which might fail to be accurately measured.

In the accompanying drawing, Figure 1 is a vertical section of the apparatus. Fig. 2 is a horizontal section in the two planes indicated by the lines 2 2 in Fig. 1. Fig. 3 is a perspective view of the rotary piston and its valves.

A represents the meter-cylinder, and B the rotary piston, which revolves concentrically therein. C is the stationary abutment. D is the induction-port. E is the discharge-port from the meter-cylinder; and F the final discharge-port of the apparatus. G G are a pair of valves pivoted at *g* to the rotary piston B. H H are arms projecting rigidly from the heels of the valves G, so as to come in contact with a stop, I, directly the valve passes the inlet D, and thus throw the valve open to its full extent, as shown at the upper part of Fig. 1. *a* is a recess, in which the extremity of the valve is received, so as to prevent its obstruction by sand or other foreign matter, which may be carried by the water. After passing the recess *a* and stop I the valve is kept open to its full extent by the pressure of the liquid. J are rubber cushions or springs, secured in the rotary piston B, on which the valves G G rest when closed. The springs act to force the valves out, and keep them in close contact with the incline stationary abutment C, and allow them to yield sufficient to pass over any inequalities or dirt. K is the casing of the faucet, into which the liquid is received from the conducting-pipe E of the meter. The discharge-pipe F is closed at its inner end by a valve, L, attached to a lever, M, which is fulcrumed to the case by a pintle, *m*. N represents a shaft revolved by a crank or handle, O, and carrying elastic arms or tappets P P, which act in succession on the extremity of the lever M, so as to raise the valve L. Q is a bar, extending across the interior of the case in such a position as to receive the contact of the elastic arms P P in succession before they reach the lever M. The object of this arrangement is to cause the said arms to strike the lever M suddenly with such force and in such position that they will deflect the said lever to fully open the valve before the movement of the arm P can be arrested by the operator. R is a pawl engaging with a ratchet-wheel, S, on the shaft N, and held by an arm, *s*, or by a spring or weight, so as to prevent a retrograde motion being imparted to the shaft N.

Operation: The drawing shows the valve closed and one of the arms P deflected by contact with the stop-bar Q, and ready to escape therefrom. The additional rotation of the shaft N causes the deflected arm P to escape from the stop-bar Q, strike the end of the lever M, and escape therefrom, reaching instantaneously the position shown in dotted lines, which permits the lever to resume its normal position, and the valve to close after delivering a modicum of liquid. A continued rotation of the shaft may cause these discharges to follow each other in as rapid succession as may be desired, or the smallest amount of liquid required may be delivered by a single opening and closure of the valve, but it is impossible for the operator to open

the valve less than to its full extent. The discharge of the faucet must therefore be in a stream of the full capacity of the pipe F, instead of a stream smaller at first and increasing in size under control of the operator. The faucet can be operated with either a spring or weight to raise the valve. Each time the valve L opens the meter-piston B revolves with full force, and the amount of liquid thus caused to pass is recorded in any usual or suitable manner.

The following is what I claim as new, and desire to secure by Letters Patent—

1. The combination of the piston B, hinged valves G, cushions J, and stationary abutment C, as and for the purpose set forth.

2. The combination of the recess *a* with the pivoted valves G, arms H, and stop I, as set forth.

3. The combination, with the meter A B D E G, of a discharge-valve, L, opened by a sudden impulse, as explained, so as to prevent the retention of the valve in a slightly-open position.

JOHN HARRISON CONNELL.

Witnesses:

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WILLIAM ALEXANDER QUANNIER.