

No. 770,287.

PATENTED SEPT. 20, 1904.

R. HARVEY & C. J. BRUCE.
SELF TILTING TRAY OR TABLE.

APPLICATION FILED APR. 18, 1903.

NO MODEL.

2 SHEETS—SHEET 1

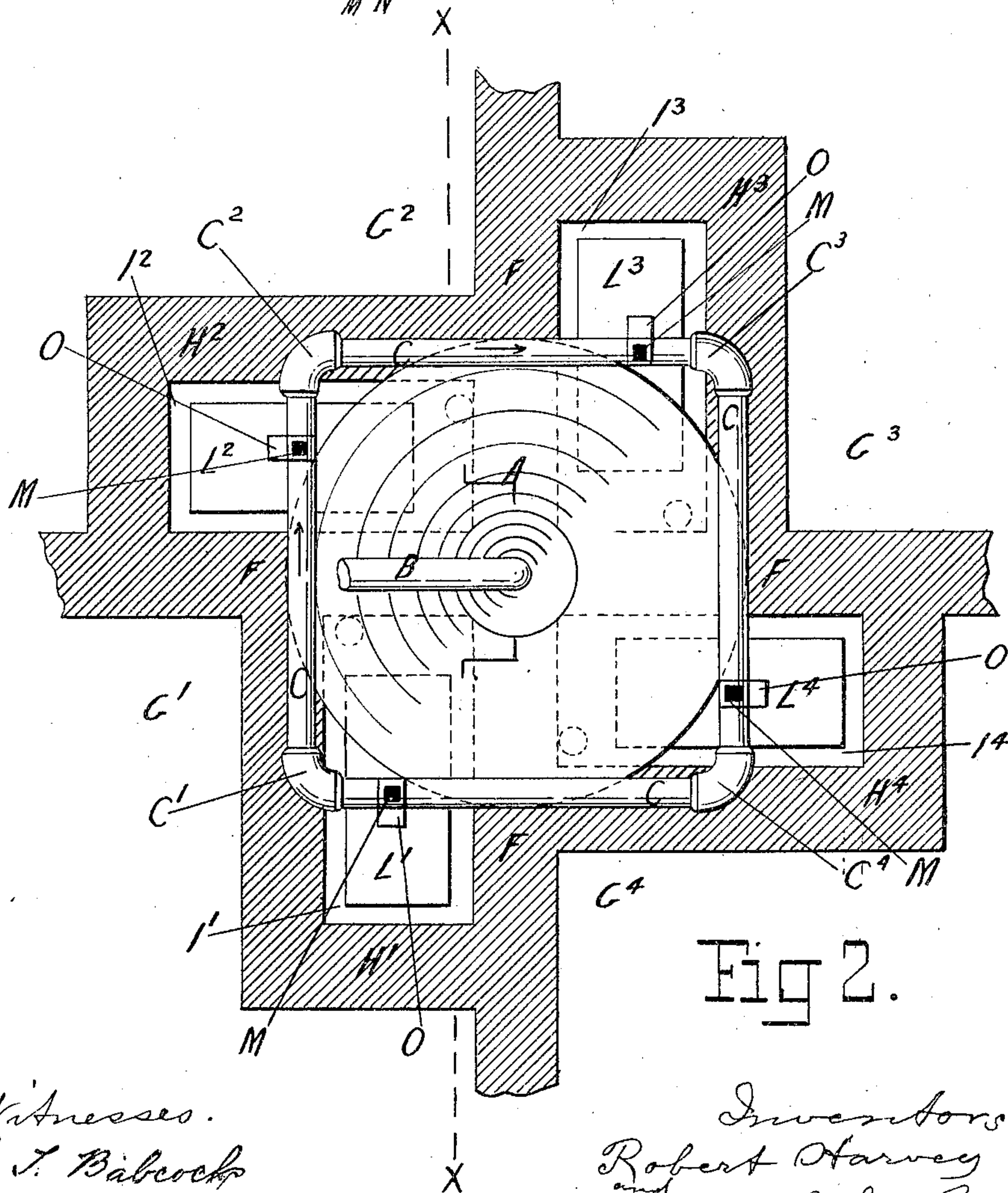
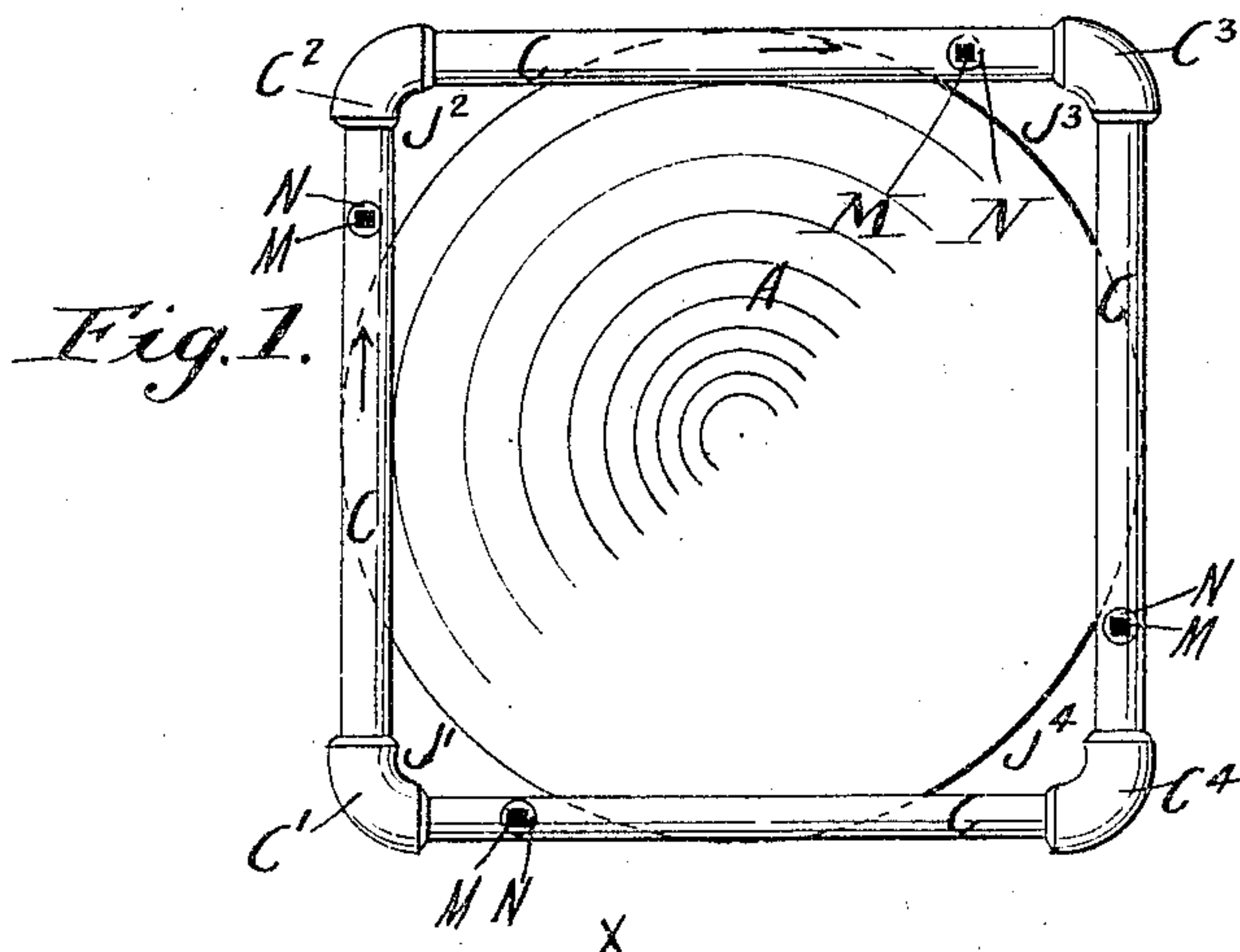


Fig 2.

Witnesses.
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Felix D. Morris.

Inventors.
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2 SHEETS—SHEET 2.

Fig 3.

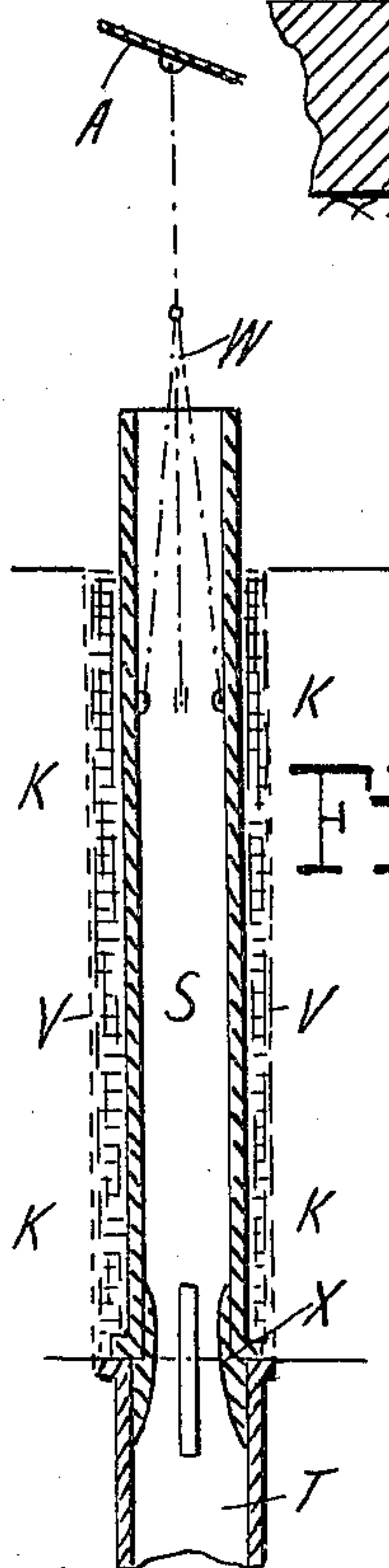
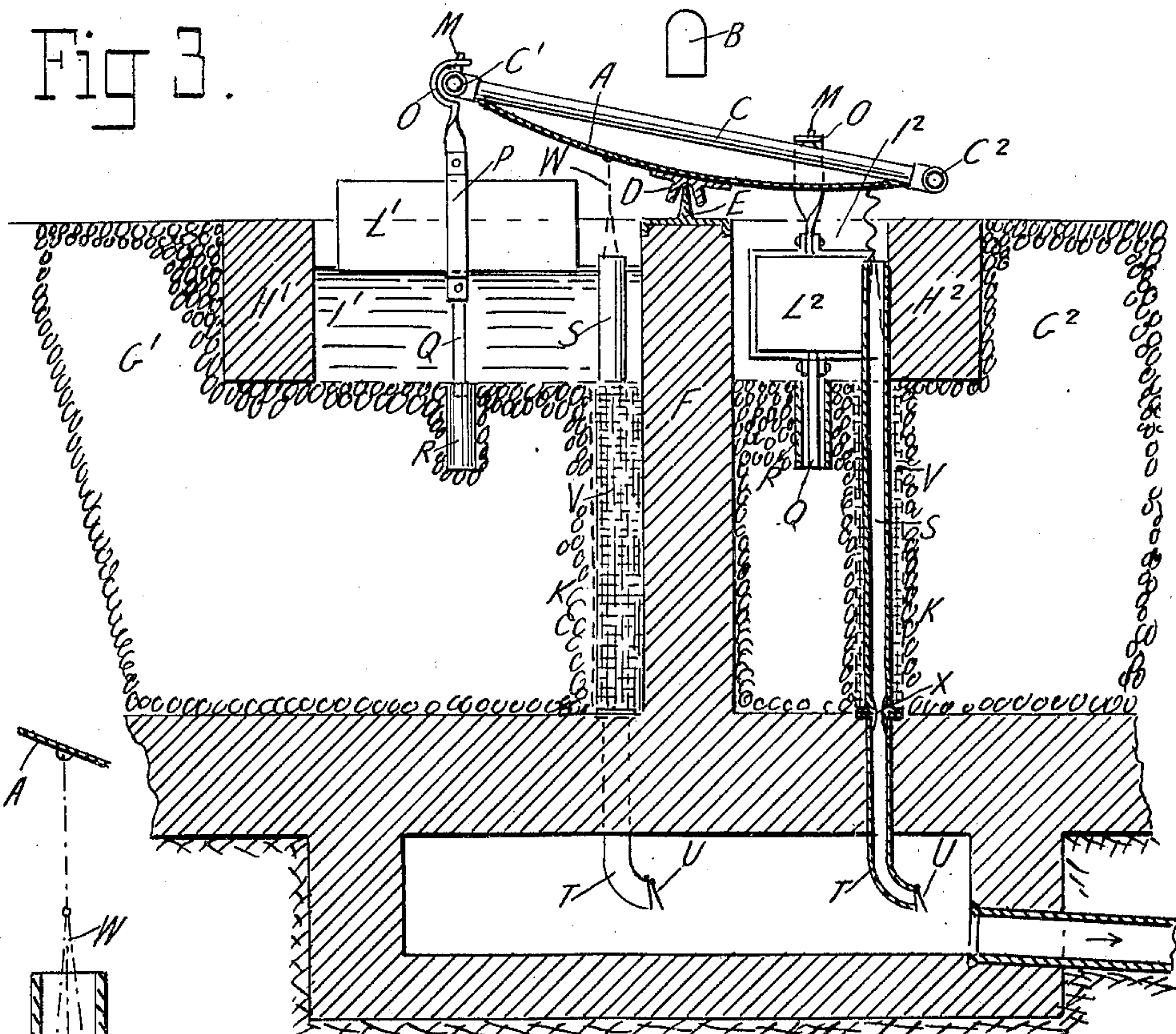


Fig 4.

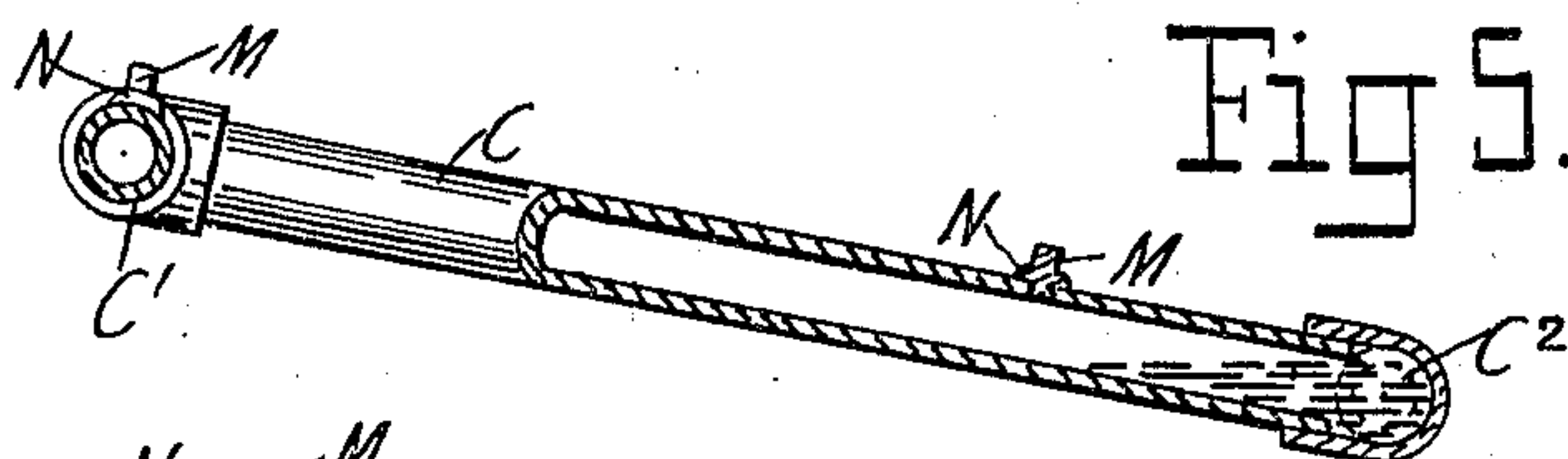


Fig 5.

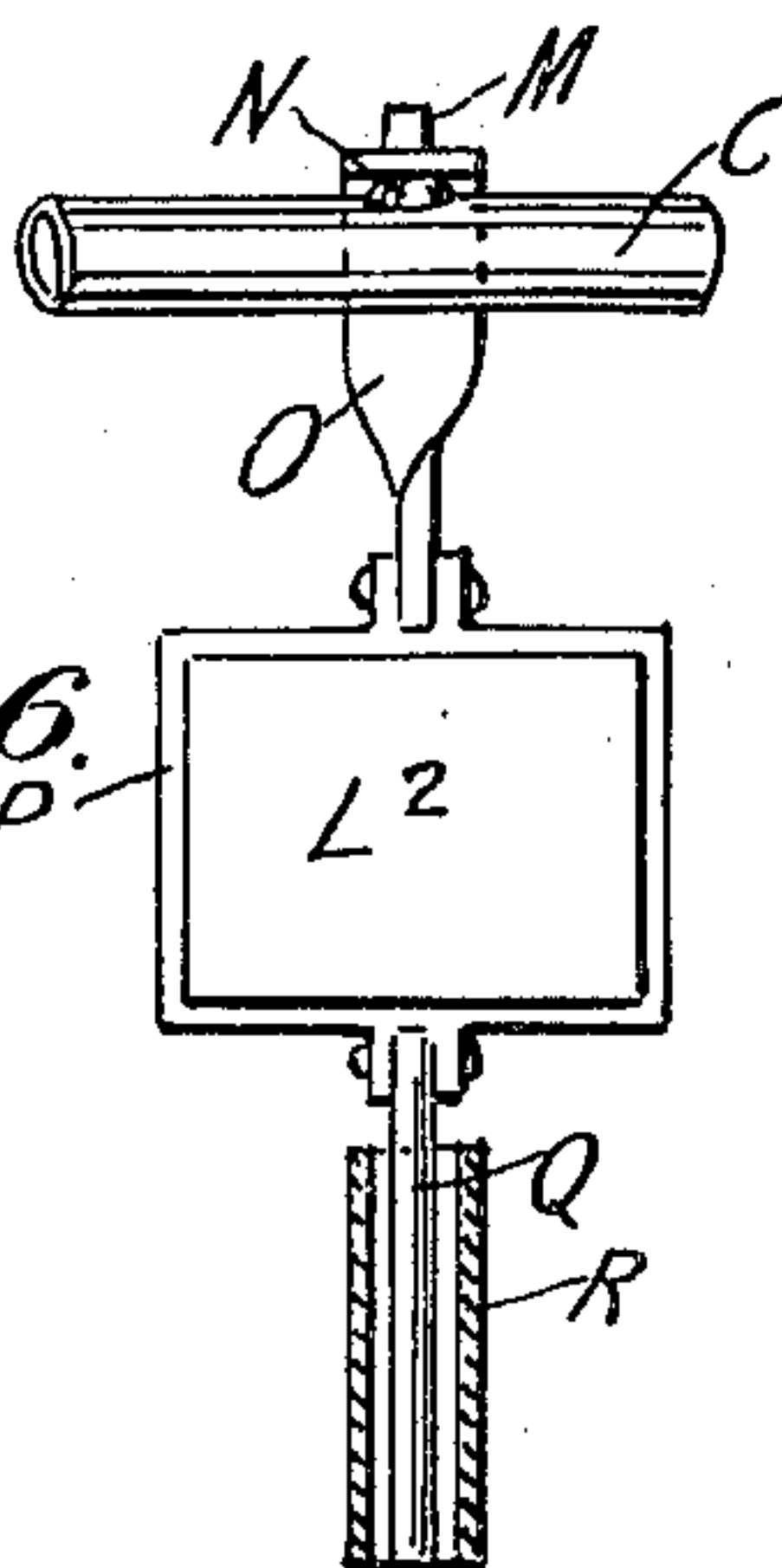


Fig 6.

Witnesses.
E. T. Babcock
Finis D. Morris.

Inventors
Robert Harvey
and
Charles John Bruce
by W. H. Babcock
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UNITED STATES PATENT OFFICE.

ROBERT HARVEY, OF NEWTOWN, AND CHARLES JOHN BRUCE, OF
BLAKEHURST, NEW SOUTH WALES, AUSTRALIA.

SELF-TILTING TRAY OR TABLE.

SPECIFICATION forming part of Letters Patent No. 770,287, dated September 20, 1904.

Application filed April 18, 1903. Serial No. 153,162. (No model.)

To all whom it may concern:

Be it known that we, ROBERT HARVEY, master plumber, residing at 17 London street, Newtown, near Sydney, and CHARLES JOHN BRUCE, plumber, residing at "Blink Bonnie," Torrensstreet, Blakehurst, in the State of New South Wales, Australia, subjects of the King of Great Britain and Ireland, have invented certain new and useful improvements in self-tilting trays and tables adapted to receive moving liquid or matter, so as to automatically direct the flow, divert, and discharge the same; and we 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.

This invention embraces the use of an intermittently-operated tilting receiving tray or table whose tubular parts are charged with fluid metal or its equivalent, which acts as a moving counterpoise to assist in overbalancing the tray in a desired direction and also to retain it in the altered position until again operated. The tray is so pivoted and poised as to be readily actuated by the moving liquid or matter discharged over its surface into adjacent receptacles and in which it is temporarily retained to be utilized as a buoyant medium to operate it again in a desired direction. Floats are used in conjunction with the tray, and each adjacent receptacle is provided with an outlet-valve to be operated as may be desired so as to produce alternately filling and discharging operations, also periods of resting when full and resting when empty.

The invention is applicable to a variety of purposes, such as the alternate mixing of chemicals which it is desired to place in different or contiguous chambers and also for the distribution of grain, sand, or such like or any matter which will readily flow over its surface, and it is equally serviceable when adapted to septic-tanks and their associated filter-beds to divert the flow of the effluent in any desired direction and into as many receptacles as may be arranged for and also to discharge the effluent at stated intervals.

In the accompanying drawings the inven-

tion is shown adapted to a septic-tank and filter-beds.

Figure 1 is a top view of the tilting tray with its tubular parts adapted to produce four tilting motions. Fig. 2 is a plan showing the tilting tray with its associated floats applied to a four-chambered filter-bed. Fig. 3 is a vertical sectional elevation on line *xx* of Fig. 2, showing also floats and outlet-valves. Fig. 4 is a vertical sectional elevation showing in detail an outlet-valve with its perforated casing. Fig. 5 is a sectional detail of a tilted tubular part with fluid metal inclosed. Fig. 6 is an elevation in detail of a float and connections for suspending same from tilting table.

The tray or table A, suitably dished, is the receiver for the fluid or matter discharged from the pipe B of a septic-tank. In the tubular parts C, attached to said tray, a sufficient quantity of mercury or other shifting metal is placed to serve as a counterpoise when located in either of the bends C', C², C³, and C⁴, which are the resting-places into which it flows as the tilting movement continues. There may be any desired number of these bends as may be required when designing the shape of the table. The one shown to be rectangular is suitable for producing four tilting movements; but the apparatus may be adapted to two movements only or any additional number, as may be required, such as triangular, hexagonal, or polygonal.

To the under side of the tray A is secured a pivot-cup D, poised upon the pivot E, which rests on the mid-wall F of a filter-bed such as is shown in Fig. 3 divided into four compartments G', G², G³, and G⁴ and chambered with the inner divisions H', H², H³, and H⁴ for forming the pockets or chambers I. These are serviceable for holding the liquid, which, having flowed over the tray A and out of either of the corner-apertures J', J², J³, and J⁴, descends through the filtering medium K and ultimately successively rising into the pockets I', I², I³, and I⁴ causes the floats L', L², L³, and L⁴ also to rise and operate the table, say, in the direction indicated by the arrows. Each of the floats L', L², L³, and L⁴ are attached to the tubular parts C by means of a device

such as is shown in Fig. 6, which consists of the pin M, made, preferably, square at the top and screwed into the tubular part. It is provided with a rounded collar N to receive the crank suspension-rod O and allow of its oscillating as may be necessary when the tilting movements occur. The said suspension-rod is likewise attached, by means of the bracing-clip P, to the floats, the under portion of the said clip carrying the guide-rod Q, which rises and falls freely in the tube R. Communicating with each of the chambers is a tubular valve S, having its seating above the outlet-pipe T, the discharge end of which is provided with the flap-valve U. The said valve being tubular will when seated admit of its being used as an overflow-pipe in the event of the chambers being surcharged with liquid. In Fig. 4 a detail of this valve is given, showing the perforated outer casing V, which prevents the filtering medium K from coming in contact with the valve, so that its rising and falling movements are not impeded. In the said detail a triple suspending attachment W is shown secured to the tubular part S and to the under side of the tray A. The outlet-valve X is of the ordinary fork construction to admit of the free flow of the outgoing fluid.

In working the said tilting tray it is obvious that if the floats are in the position shown in Fig. 3 the tray will be inclined toward the adjacent chamber—say G^2 —and will therefore direct the flowing liquid or matter into that compartment. The tray is retained in its position by the mercury which has passed along the tubular part and into the bend C^2 , where it remains until the float L^2 is made buoyant by the rising fluid—say in chamber I^2 —when on reaching a sufficient height to poise the table the mercury will be induced to flow in the direction, say, of chamber I^3 and will then rest in the bend C^3 . The fluid will then pass over the tray and out of the aperture J^3 , such action continuing automatically as long as the liquid is flowing over the surface of the tray. In operating the outlet-valves simultaneously with the tilting movement of the tray the lifting and closing movements are so regulated as to produce in one compartment the filling operation, in another the discharging operation, in another the period of resting when full, and in another the period of resting when empty. This is accomplished by the adjustment of the suspending attachments W to a desired length which will insure such results.

Having now described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. A receiver, in combination with a pivoted support adapted to permit its tilting in more than two directions, and tubular parts containing shifting material as a counterpoise and corresponding to the sides of said receiver, in order that such material may shift from corner of receiver during the tilting operations thereof substantially as set forth.

2. A receiver universally pivoted and provided with discharge-openings corresponding to its various tilting positions, in combination with receptacles arranged to receive the discharge through the several openings, means for supplying fluid to the said receiver and a series of tubular parts mounted on the said receiver, adapted to contain shifting counterpoise material and provided at intervals with resting-places for the same corresponding in location to the said openings substantially as set forth.

3. A receiver mounted for tilting in more than two directions in combination with floats connected to it at intervals, receptacles for its discharge and tubular parts carried by said receiver and arranged to form resting-places, corresponding to said floats, for inclosed shifting counterpoise material substantially as set forth.

4. A tilting tray poised upon a central pivot and adapted to discharge in more than two directions, tubular parts attached to said tray, arranged for the intermittent flow of liquid metal, the combination therewith of the floats, as and for the purposes set forth.

5. A poised tilting tray adapted to discharge in more than two directions operated by rising and falling floats, and counterpoised in the manner set forth, the combination therewith of outlet-valves, as and for the purposes set forth.

6. A tilting tray in combination with a universal pivot supporting the same, tubular parts inclosing liquid metal or the like, attached to said tray, the floats suspended therefrom, the valves and attachments therefor operated by the said table, as described and shown, and for the purposes set forth.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ROBERT HARVEY.
CHARLES JOHN BRUCE.

Witnesses:

ARTHUR JOSEPH,
JOHN JASPER STONE.