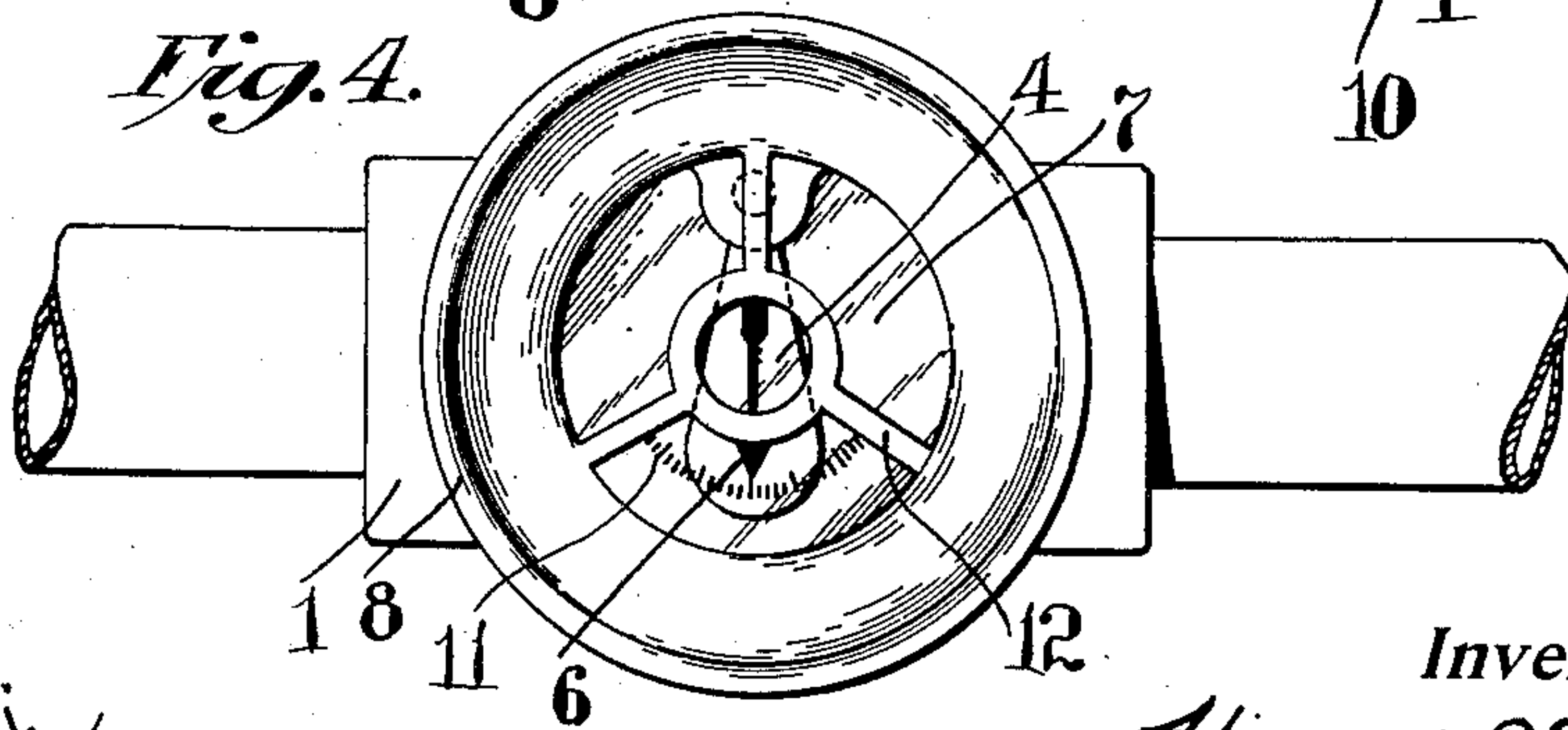
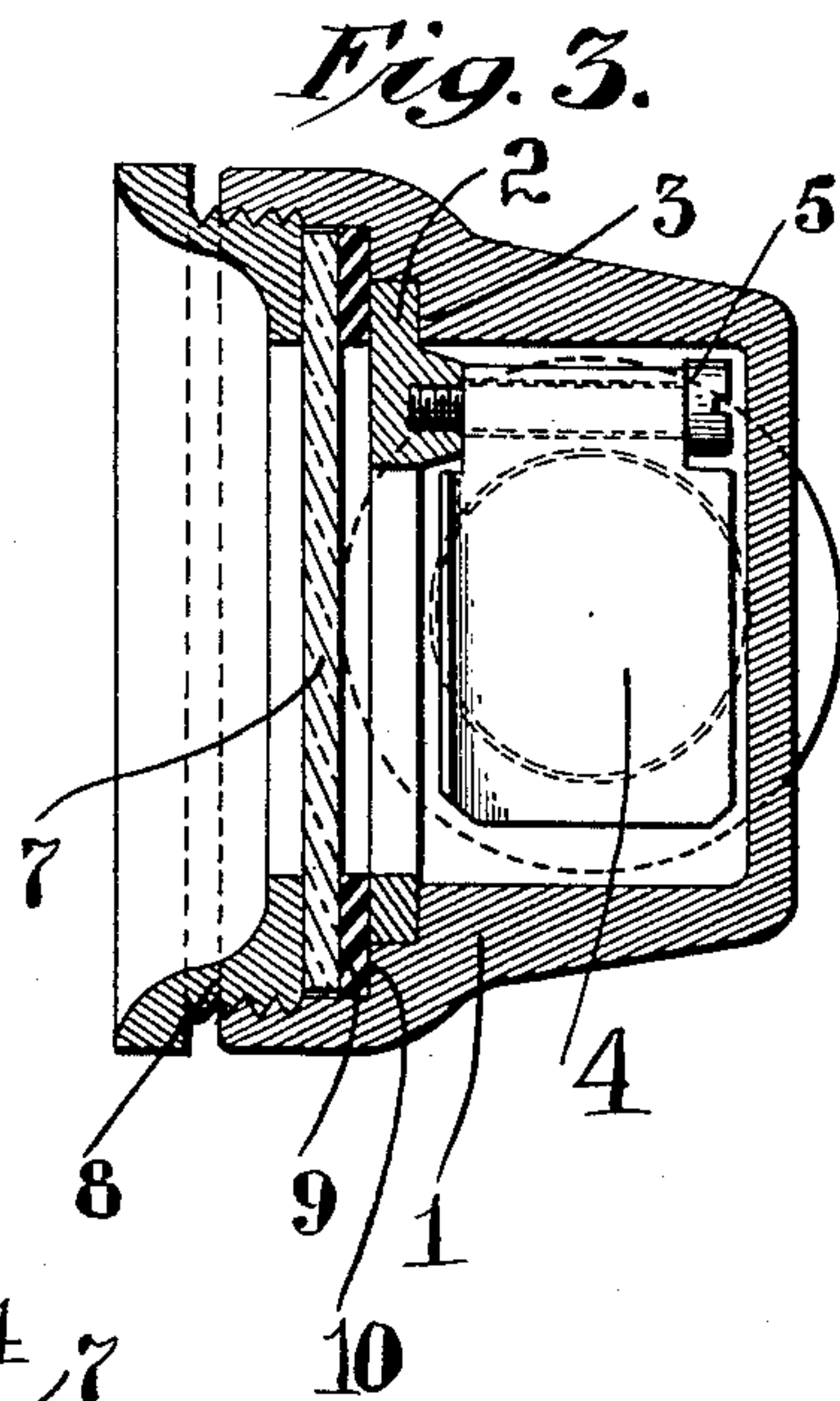
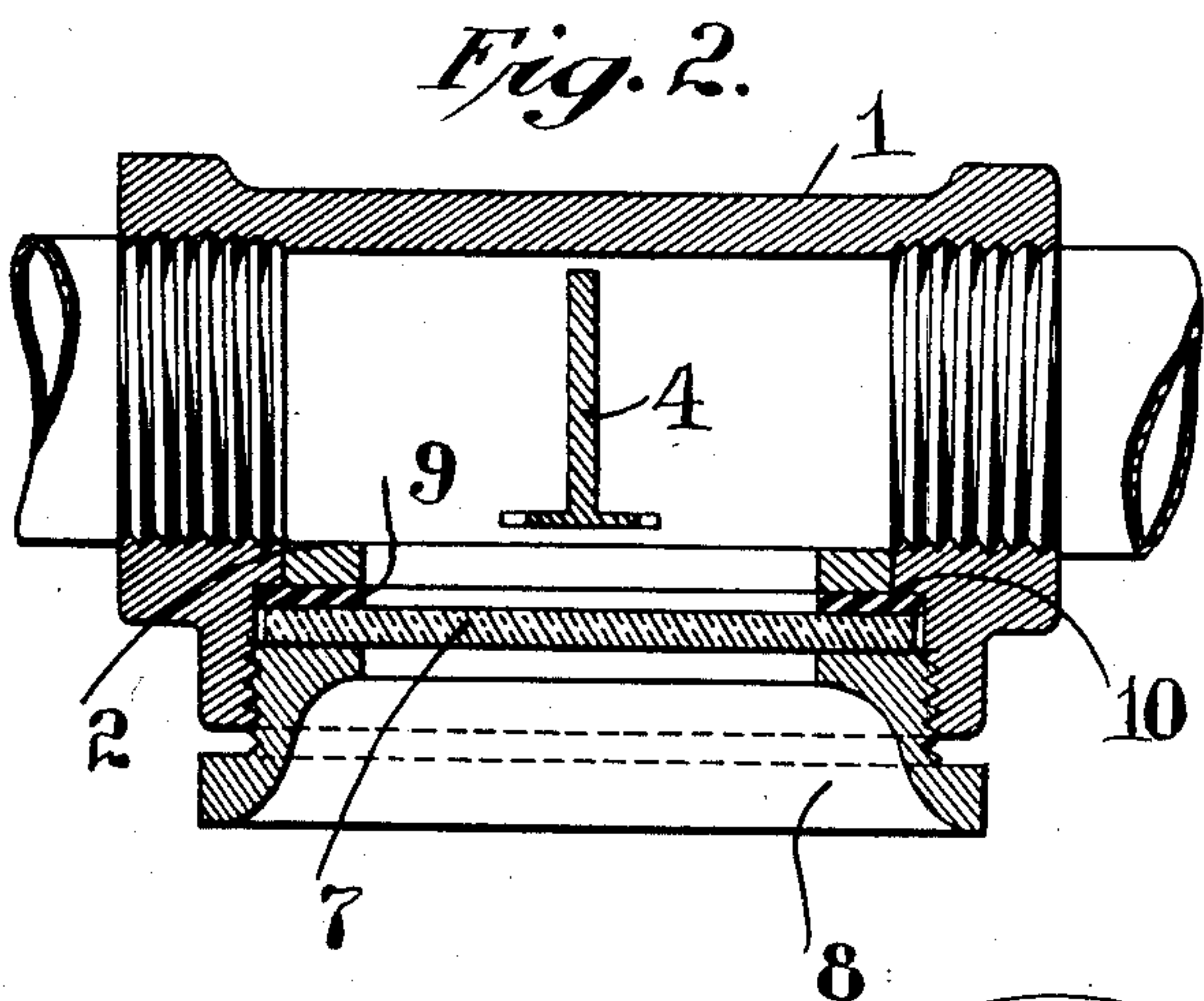
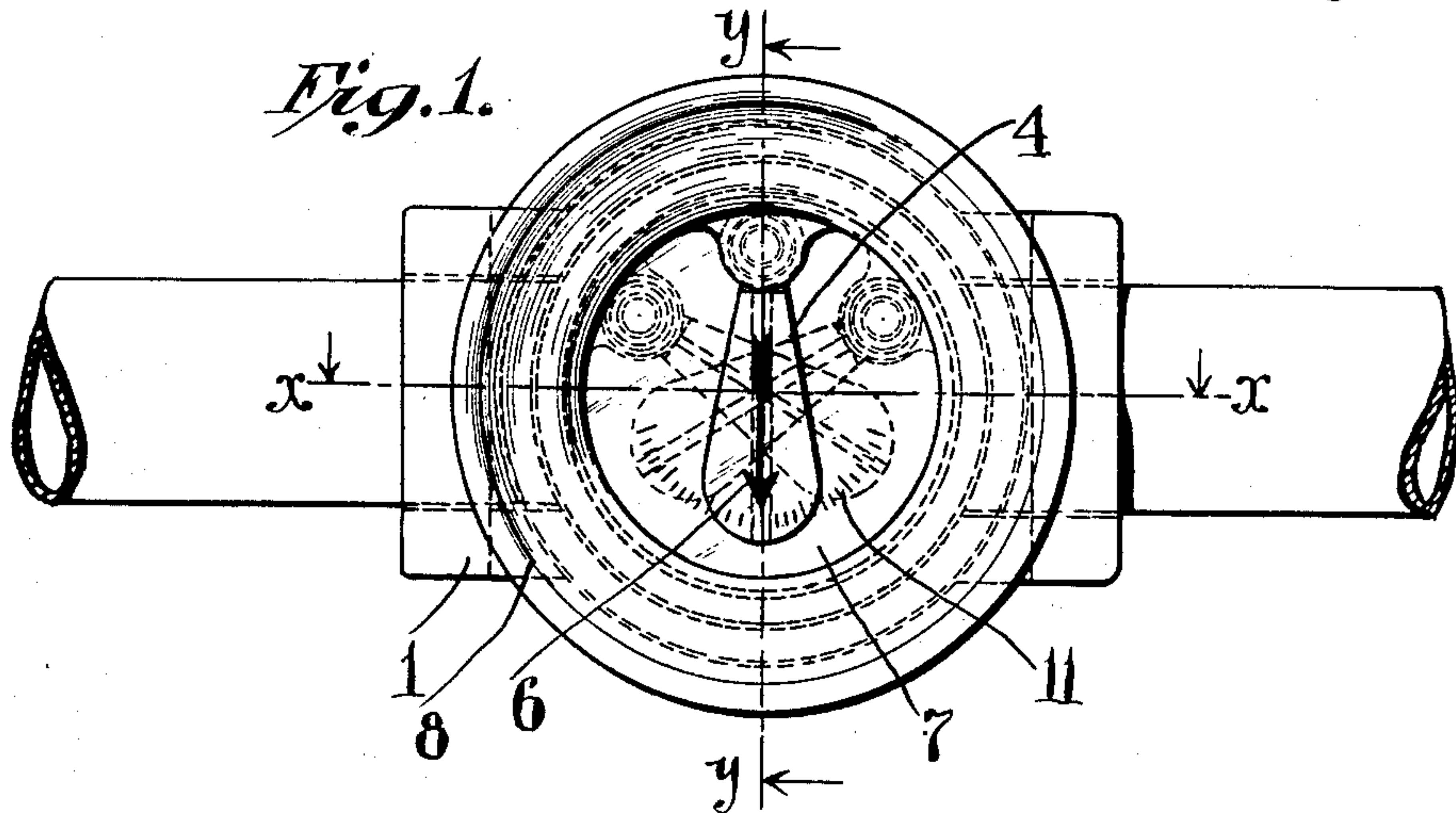


H. P. QUICK.
INDICATOR.

APPLICATION FILED AUG. 22, 1908.

931,484.

Patented Aug. 17, 1909.



Attest:
Frank E. Rappman

by

Inventor:
Howard P. Quick
Maubly & Matty
Attys

UNITED STATES PATENT OFFICE.

HOWARD P. QUICK, OF BROOKLYN, NEW YORK, ASSIGNOR TO VIRGINIUS D. MOODY AND CHARLES S. HAMNER, OF NEW YORK, N. Y.

INDICATOR.

No. 931,484.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed August 22, 1908. Serial No. 449,786.

To all whom it may concern:

Be it known that I, HOWARD P. QUICK, a citizen of the United States of America, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Indicators, of which the following is a specification.

My invention relates to indicators for showing visually the flow of liquids through pipes, and comprises a casing adapted to be connected in a pipe line and having a window of transparent material, and, behind said window, and in the path of liquid flowing through the casing, a swinging member adapted to be deflected by the said liquid.

My invention consists in the novel structure of the device.

The object of my invention is to provide a simple, reliable and automatic flow indicator, the operation of which will be understood at a glance, and the meaning of the indications of which will be obvious even to untrained observers.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of such flow indicator is illustrated, and will then point out the novel features in claims.

In said drawings Figure 1 shows a front elevation of my improved flow indicator connected in a horizontal pipe line; Fig. 2 shows a horizontal axial section on the line $x-x$ of Fig. 1; Fig. 3 shows a vertical axial section of the device on the line $y-y$ of Fig. 1. Fig. 4 is a view similar to Fig. 1, illustrating means for reinforcing the window when relatively great pressures are to be resisted.

My device comprises a main casing member, a supporting member, rotatively movable for purposes of adjustment, a flap or indicator, pivotedly connected to said ring or supporting member, a window, means for holding said window in place, and packing means forming a tight joint to prevent the escape of liquid around the window.

In said drawing 1 indicates the said casing, comprising an approximately circular object with connections at opposite sides for the ends of the pipe, and having an opening on one side in which is a supporting ring 2, seated against a shoulder 3, formed in said casing as indicated particularly in Fig. 3.

To this ring a flap 4 is pivoted by means of a pivot screw 5. For lightness and simplicity

of construction this flap is formed as an object of T-section, as indicated particularly in Fig. 2, the broad face so formed on the front side of the flap being, therefore, readily distinguishable even in dim lights and being well adapted to have upon it an arrow mark 6, or other convenient means for attracting attention. In front of the ring 2 and flap 4, there is a window 7 of glass, or other suitable transparent material, and in front of this window there is a screw-ring 8 adapted to screw into the open mouth of the casing 1 and so to hold the window in place. To insure a tight joint between the window and casing 1, I provide packing material 9 between the said window and a shoulder 10 of the casing and the face of the ring 2. This packing material which, ordinarily, is more or less elastic, also serves to distribute strain on the window and to prevent cracking of the window due to pressure irregularly applied.

It will be obvious that with the flap in the normal position indicated in full lines in Fig. 1 the flap will tend to hang down vertically and fluid flowing in either direction through the apparatus will cause said flap to deflect to the one side or to the other, according to the direction of the flow, thus indicating positively that fluid is flowing through the device. Where flow is to be indicated only, or mainly, in one direction the pivotal point of the flap need not be on the vertical axis of the apparatus, but the ring 2 may be moved to one side or the other, as indicated in dotted lines in Fig. 1, according to the direction of normal flow of liquid through the apparatus; the flap will then, nevertheless, tend to hang down vertically when there is no liquid flowing, but when liquid is flowing in the normal direction the flap will be deflected to or beyond the position indicated in dotted lines in Fig. 1.

The apparatus is equally suitable for inclusion in vertical or nearly vertical pipe lines, the ring 2 being shifted, if so desired, against the direction of flow to or toward one of the positions indicated in dotted lines in Fig. 1, so that the flap will tend to hang transversely of the normal path of flow, and will be deflected from such position by liquid flowing in the normal direction. The apparatus so arranged is then suitable for use in pipes in which the flow is upward. When the flow is downward in a vertical pipe, in

applying the indicator the piping is rearranged so as to provide a length in which the flow is upward, or horizontal or nearly so, in which length the indicator is included.

- 5 If so desired, the window 7 may be provided with a graduated arc 11, in which case the device will serve as an approximate indicator of the rate of flow.

What I claim is:—

- 10 1. A flow indicator comprising in combination a casing having an open side, a window of transparent material, normally closing such open side, means for holding such window in place, and a deflectable flap behind said window and in the path of liquid
15 flowing through the casing.

2. A flow indicator comprising in combination a casing having an open side, and having entrance and outlet openings for the
20 flow of liquid through said casing and past said open side, a window of transparent material, normally closing such open side, a supporting body behind said window and a deflectable flap pivoted to said body and
25 adapted to hang by gravity in the path of liquid flowing through the casing.

3. A flow indicator comprising in combination a casing having an open side, and having entrance and outlet openings for the flow
30 of liquid through said casing and past said open side, a window of transparent material, normally closing such open side, a rotatively adjustable supporting body behind said win-

dow and a deflectable flap pivoted to said body and adapted to hang by gravity in the
35 path of liquid flowing through the casing.

4. A flow indicator comprising in combination a casing having an open side, and having entrance and outlet openings for the passage of liquid through said casing and past
40 said open side, a window of transparent material, normally closing such open side, a screw ring screwing into the mouth of said casing and holding said window in place, a ring behind said window and seated in a
45 shoulder in the casing and a deflectable flap pivoted to said ring.

5. A flow indicator comprising in combination a casing having an open side, and having entrance and outlet openings for the pas-
50 sage of liquid through said casing and past said open side, a window of transparent material, normally closing such open side, a screw ring screwing into the mouth of said casing and holding said window in place, a
55 ring behind said window and seated in a shoulder in the casing, a deflectable flap pivoted to said ring, and packing material between said window and the casing.

In testimony whereof I have signed this
60 specification in the presence of two subscribing witnesses.

HOWARD P. QUICK.

Witnesses: