

No. 767,328.

PATENTED AUG. 9, 1904.

J. H. CONNELL.
METER.

APPLICATION FILED NOV. 16, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

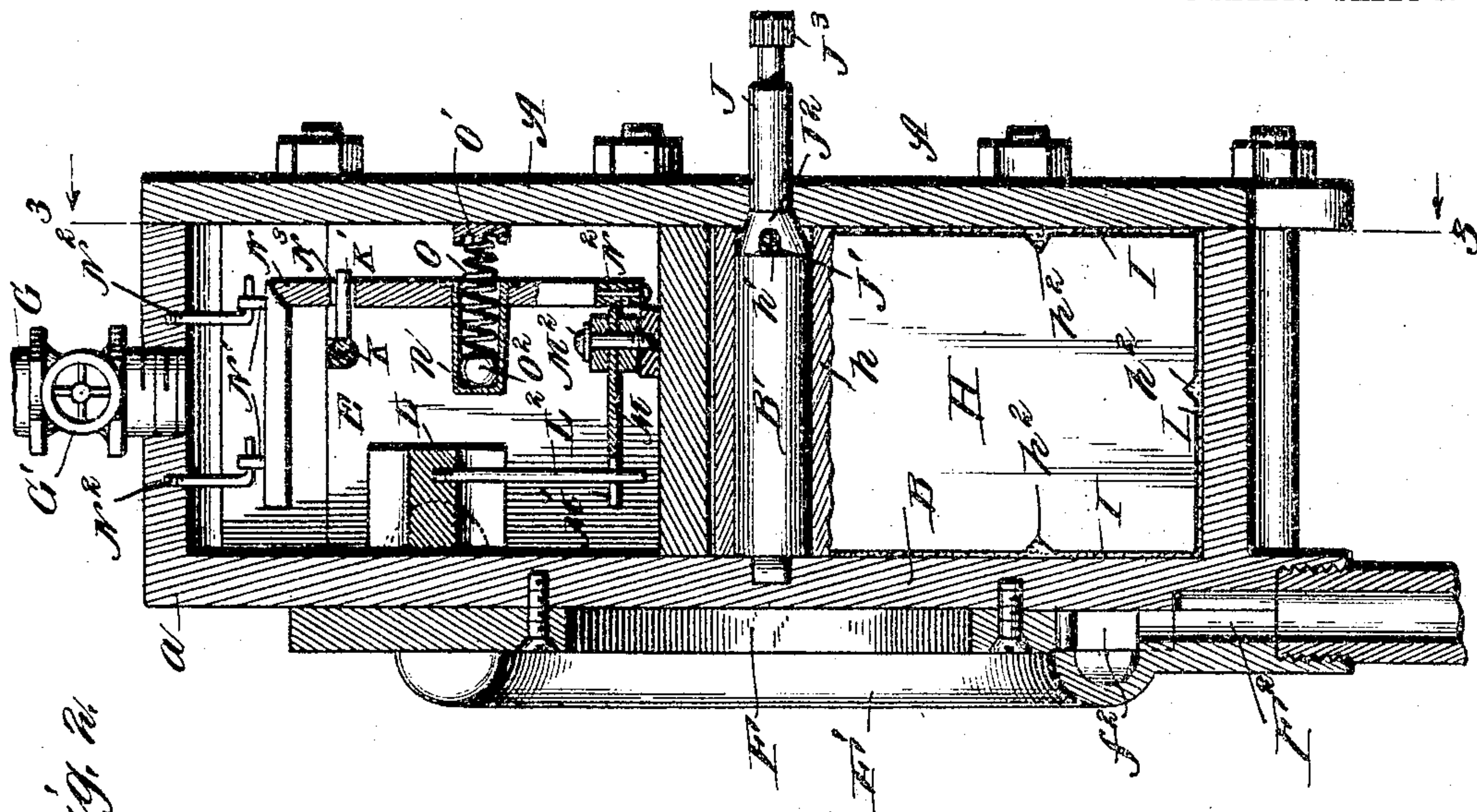


Fig. 2.

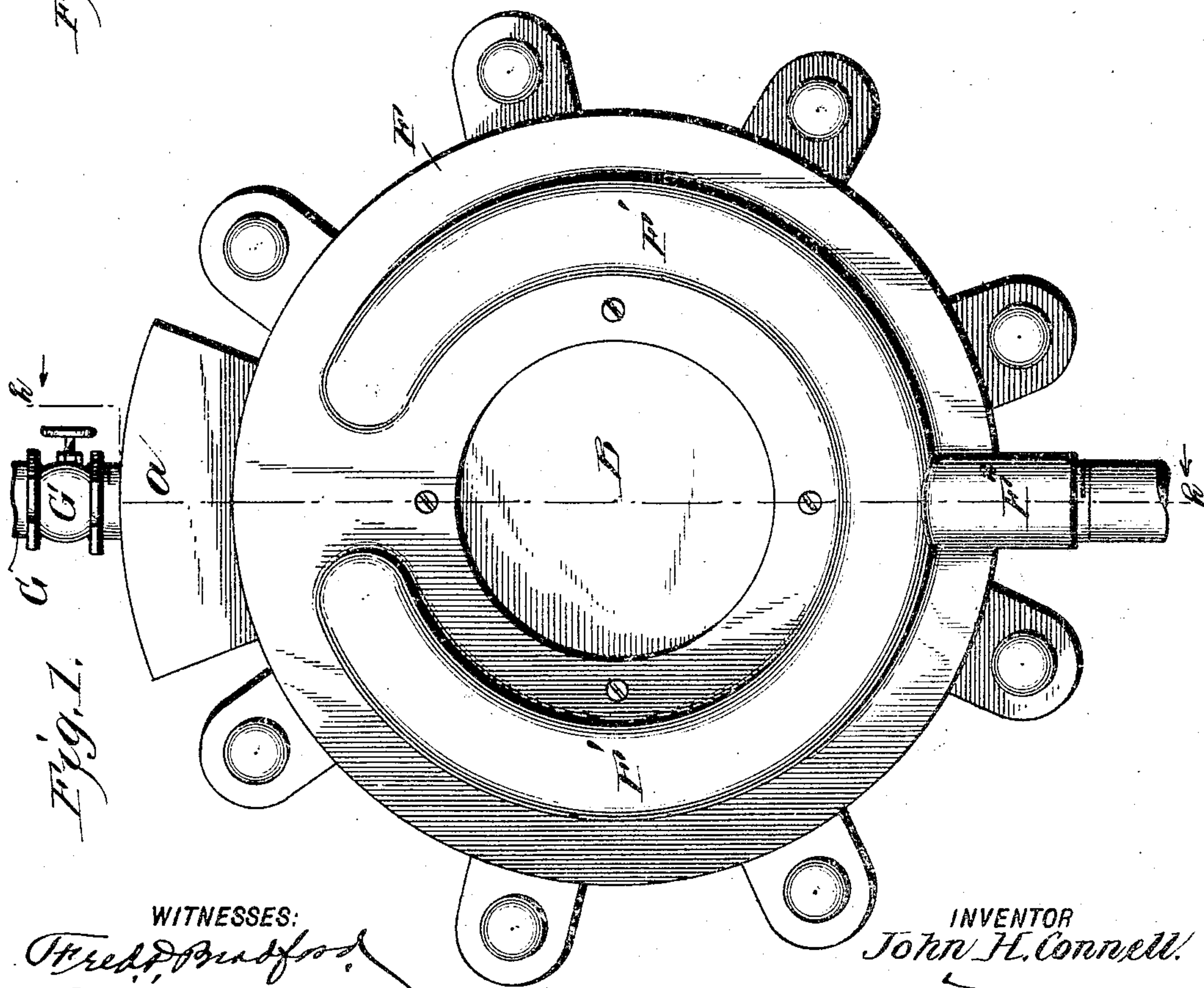


Fig. 1.

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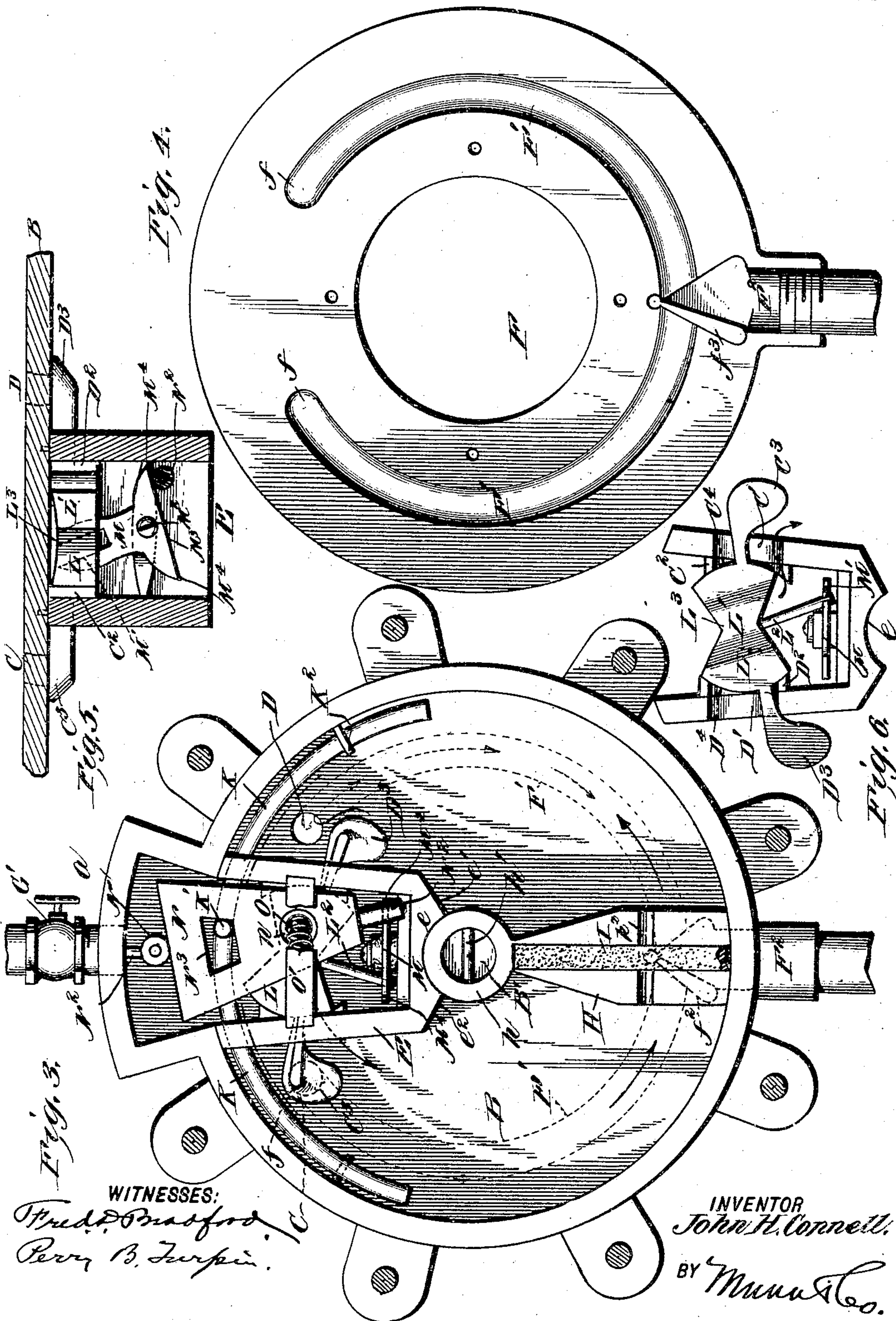
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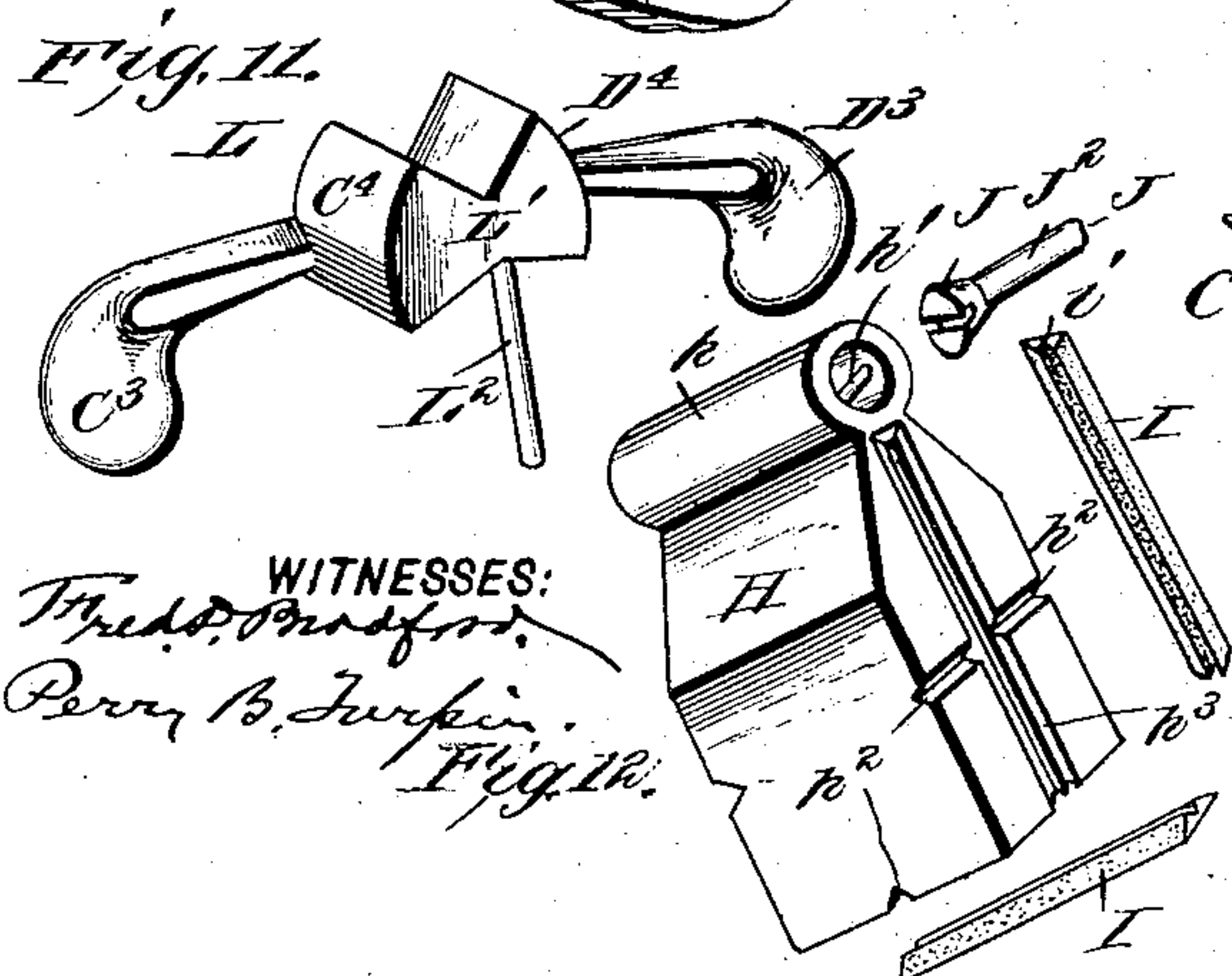
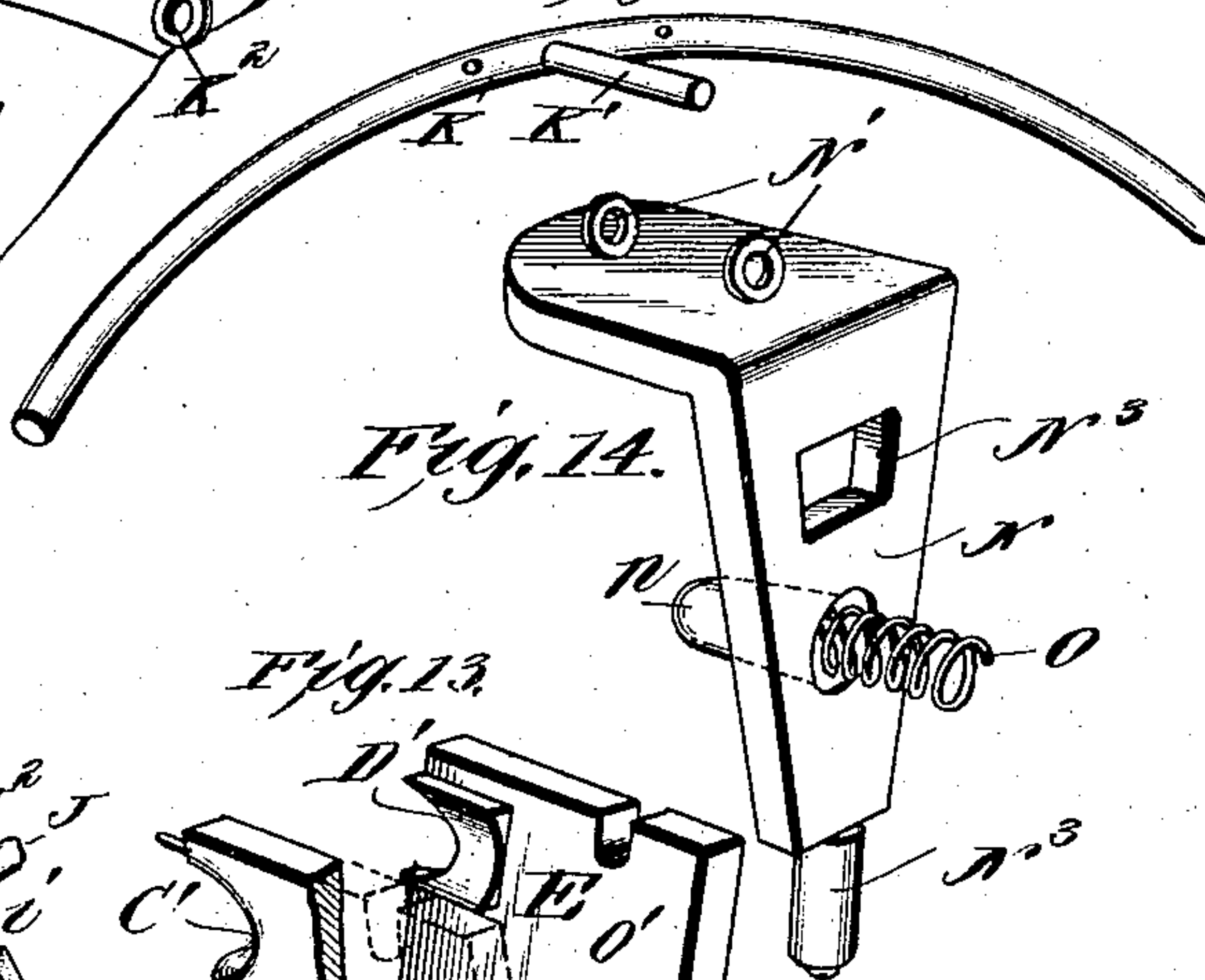
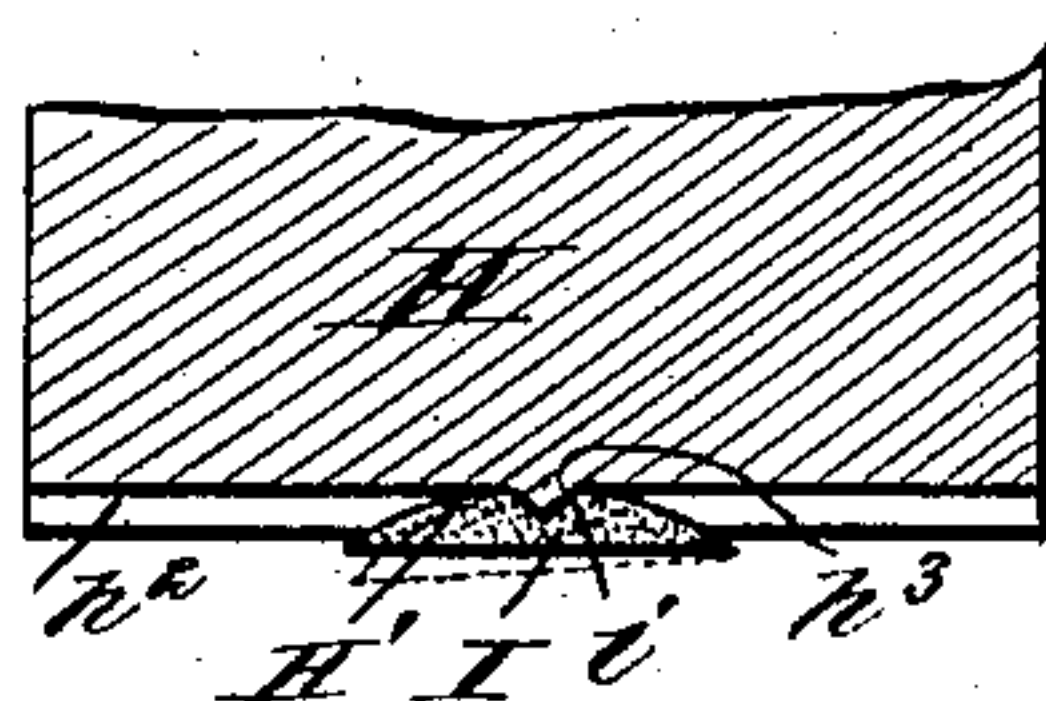
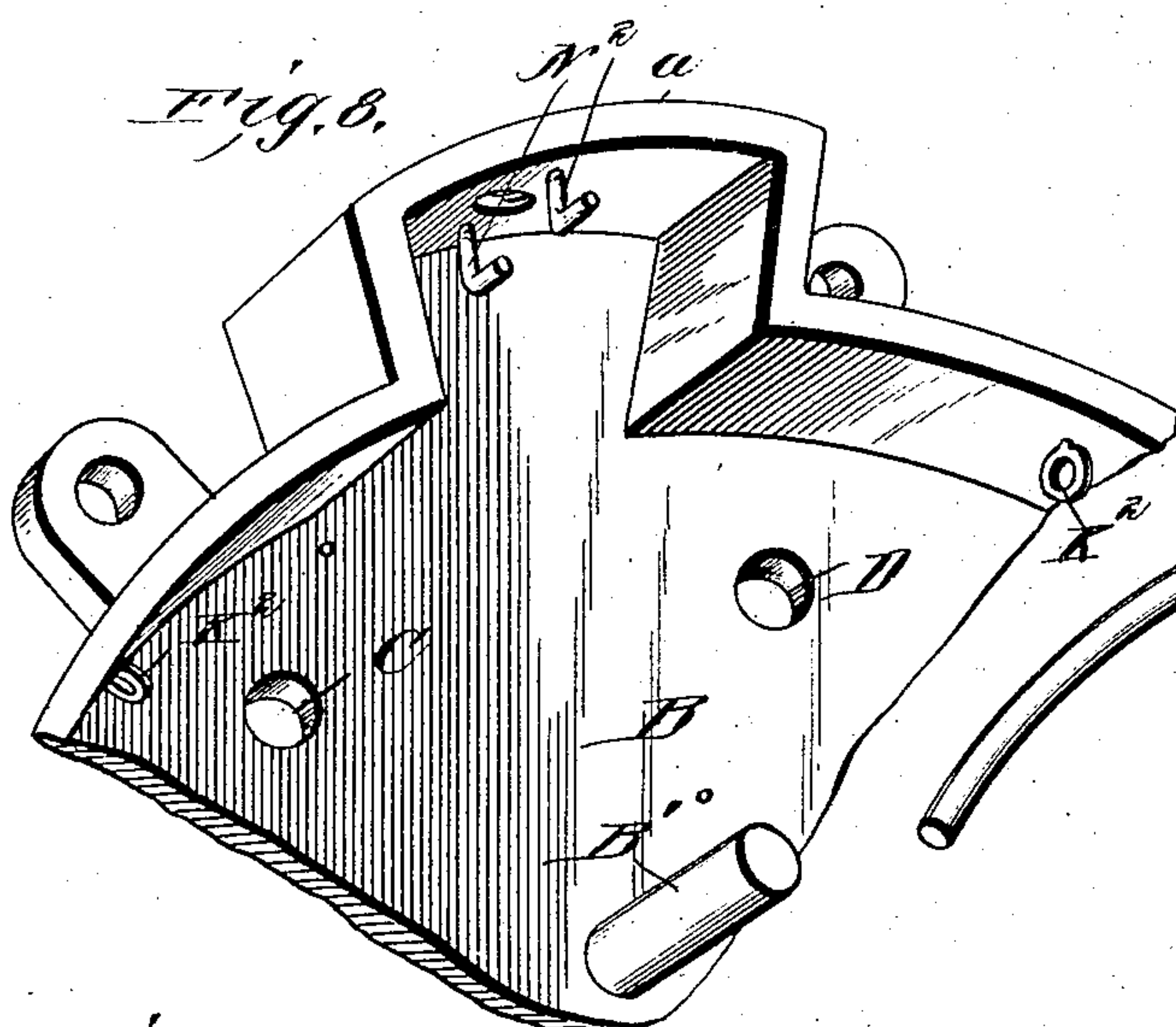
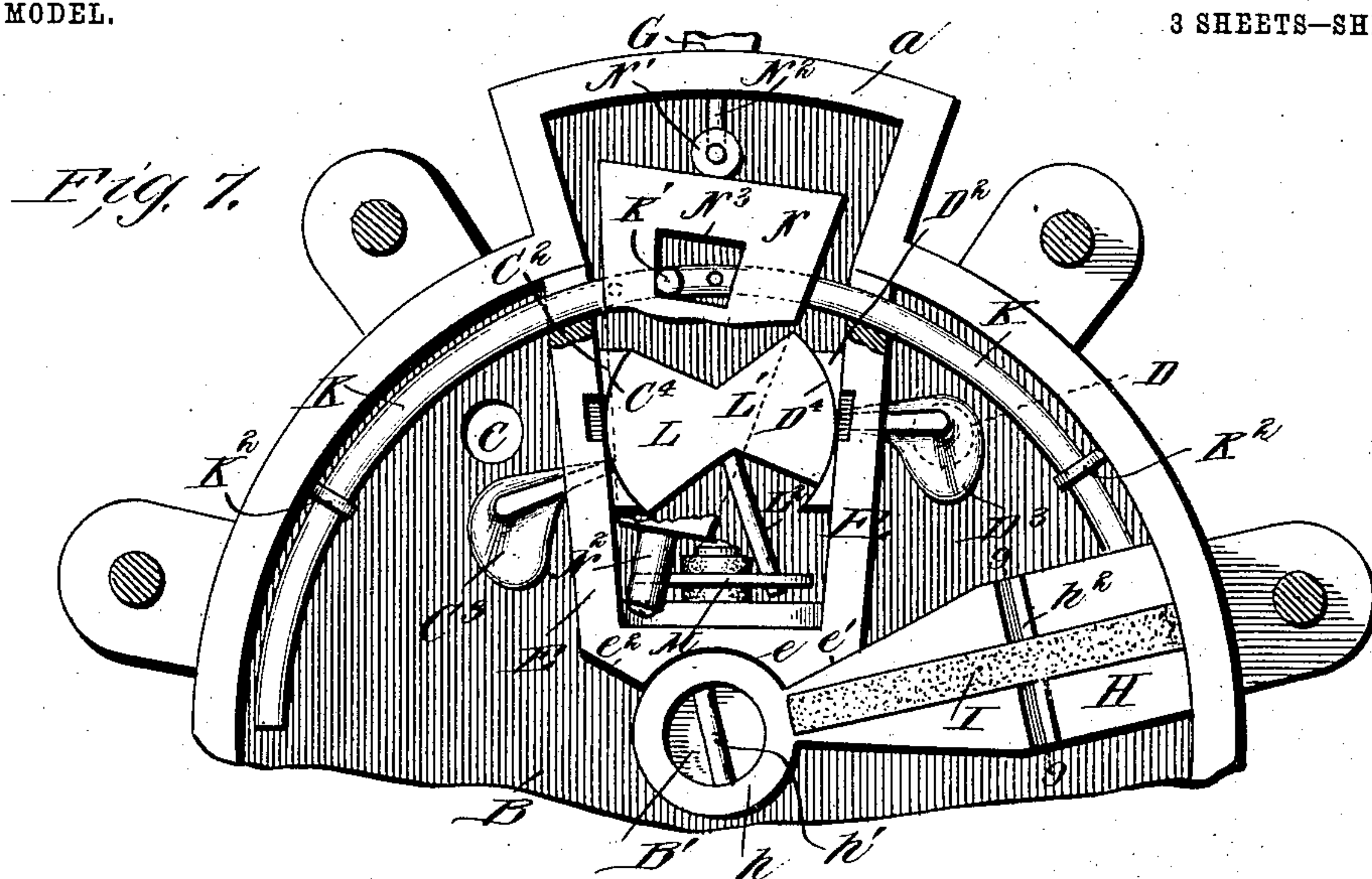
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3 SHEETS—SHEET 3.



WITNESSES:

23

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Fig. 12.

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JOHN H. CONNELL, OF CHARLESTON, WEST VIRGINIA.

METER.

SPECIFICATION forming part of Letters Patent No. 767,328, dated August 9, 1904.

Application filed November 16, 1903. Serial No. 181,351. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. CONNELL, a citizen of the United States, residing at Charleston, in the county of Kanawha and State of West Virginia, have made certain new and useful Improvements in Meters, of which the following is a specification.

My invention is an improvement in meters for measuring water and other liquids, and has for an object to provide a novel construction of meter which can be easily assembled and taken apart for repairs or for any other purpose and which will operate efficiently without any appreciable diminution in the pressure of the water; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a bottom plan view, and Fig. 2 is a vertical cross-section on about line 2 2 of Fig. 1, of a meter embodying my invention. Fig. 3 is an elevation of the meter on about line 3 3 of Fig. 2, the top of the casing being removed. Fig. 4 is an elevation of the inner side of the channeled bottom plate of the meter. Fig. 5 is a detail cross-section on about line 5 5 of Fig. 3. Fig. 6 is a detail elevation of the lower side of the valve-chamber with the valve in place. Fig. 7 is a detail elevation of the valve-chamber, a portion of the casing, and the operating parts somewhat similar to but showing the parts in a different position from that shown in Fig. 3. Fig. 8 is a detail perspective view of a portion of the casing. Fig. 9 is a detail cross-section on about line 9 9 of Fig. 7. Fig. 10 is a detail perspective view of the slide-rod. Fig. 11 is a detail perspective view of the rocker, having the inlet and discharge valves. Fig. 12 is a detail perspective view showing the body of the oscillating blade and the indicator-stem and packing-strips detached. Fig. 13 is a detail perspective view, partly broken away, in section of the valve-chamber; and Fig. 14 is a detail perspective view of the shifter.

In carrying out my invention I provide the casing having the top plate A, the bottom plate B, having the outlet-openings C and D on opposite sides of the valve-chamber E, and

the channeled bottom plate F, having the curved channel F', registering at its ends f with the outlet-openings C and D and communicating midway said ends f with the discharge-opening F², which is controlled by the check-valve f^2 , which operates to prevent back pressure. In operation the water delivered to the casing is discharged alternately from the openings C and D and passes through the channel F' to the discharge-opening F², means being provided to secure the alternate discharge of the water through the openings C and D, as will be described.

The valve-chamber E is provided within the casing and communicates at its outer end with a projecting portion a of the casing, to which the supply-pipe G, having a throttle-valve G', discharges, the discharge from the pipe G passing to the interior of the valve-chamber E, as will be understood from Fig. 3 of the drawings. The valve-chamber extends nearly to the middle of the casing and is provided in its inner end with a curved recess e , which fits the shaft portion h of the oscillating blade H, which oscillates in the chamber between the position shown in Fig. 7, in which it abuts one edge e' of the chamber E, to an opposite position, in which it abuts the edge e'' at the inner end of the chamber E, as will be understood from Figs. 3 and 7, Fig. 3 showing the blade in its intermediate position. As the blade moves from the position shown in Fig. 7 to its opposite position it will force water in front of it out through the opening C and then on the return movement it will force the water which has entered in rear of the said wing out through the opening D, the operation continuing from time to time as long as the water is discharged from the pipe G to the valve-chamber.

The blade H is provided in its sides and outer ends with grooves H', preferably V shape in cross-section and having the central longitudinal rib h^3 , on which pivots the packing-strip I, the latter having the central groove i , fitting on the rib h^3 , and slots or passages h^2 being provided leading from the opposite edges of the blade, so the pressure of water on one side or the other will prop-

erly tilt the packing to cause it to tightly pack the blade when the same moves in one or the other direction, as will be understood from Figs. 7, 9, and 12 of the drawings.

5 The cylindrical sleeve h of the blade H journals on a stud B' on the plate B and is provided at its outer end with a pin h' , which receives the slot J' in the inner end of the tapered head J^2 of the indicator-stem J ,
 10 whose outer end at J^3 may be suitably connected with any desired form of register.

The valve-chamber is provided in its opposite sides with openings l for the passage of the slide-rod K , which latter is provided with
 15 a stem K' within the valve-chamber and in position to operate the valve-shifter presently described. This slide-rod K is guided at K^2 within the casing and is arranged at its ends to be operated by the blade H to the position
 20 shown in Fig. 7 when the said blade reaches the end of its stroke in one direction and to be shifted to the opposite position by the engagement of the blade when the said blade reaches the position opposite that shown in
 25 Fig. 7, as will be understood from Fig. 3 of the drawings. In this connection it will be noticed Fig. 7 shows one position of the slide-rod and Fig. 3 the other position of the said rod, as well as of the parts associated there-
 30 with, as will be described.

The valve-chamber is also provided in its opposite sides with the outlet-ports C' and D' , the water which passes through the port C' being ultimately discharged from the casing
 35 through the outlet C , while the water passing through the port D' is discharged ultimately from the casing through the outlet D , the valve-chamber being provided with curved seats C^2 and D^2 at the inner ends of the ports
 40 C' and D' , said seats C^2 and D^2 conforming to the ends of the feed or inlet valve, as presently described.

In Fig. 11 I show the rocker L , having the valves C^3 and D^3 , controlling the outlets C and
 45 D , and the intermediate or head portion L' , having the valve portions C^4 and D^4 , which control the ports C' and D' , as will be understood from Figs. 3, 6, 7, and 11 of the drawings. When the rocker L is in the position
 50 shown in Figs. 6 and 7, the port D' will be closed and the port C' will be open, so the water passing into the chamber may pass thence into the casing, so it will operate upon the blade H to force the same from the posi-
 55 tion shown in Fig. 7 toward the opposite position of said blade, as before described. As the blade moves from the position in Fig. 7 to its opposite position it will force the water within the casing out through the outlet C .

60 For operating the rocker L from the blade I provide said rocker with an arm L^2 , which operates in the fork M' of a lever M , which is pivoted at M^2 and has its end M^3 provided with the arms M^4 for engagement by the
 65 swinging end of the valve-shifter N , so the

movement of said valve-shifter N from the position shown in Fig. 3 to that shown in Fig. 7 will shift the rocker L in such manner as to uncover the outlet C , close the outlet D , close the port C' , and open the port D' , while when
 70 the shifter is moved to the position shown in Fig. 3 the outlet C will be closed, the port D' opened, the port D' closed, and the outlet C opened. The shifter N is pivoted at one end, preferably by means of the eyes N' , fitting on
 75 the hooks N^2 in the offset a of the casing, and is provided at its swinging end with a roller N^2 to engage the arms M^4 of the intermediate lever and also has between its ends a laterally-
 80 elongated opening N^3 , in which operates the stem K' of the slide-rod K . This shifter is operated by the slide-rod and is actuated by a spring O , preferably a coil-spring, connected at one end, O' , with the casing and at its other
 85 end with the shifter and preferably operating at its said other end in a thimble n in the shifter, a glass ball-bearing O^2 being provided for such end of the spring to prevent the shifter from stopping on the center. The pur-
 90 pose of this spring O is to quickly throw the shifter to the end of its stroke after it has been operated past the center by the action of the slide-rod, and the slot N^3 in the shifter, within which the stem K' operates, is to per-
 95 mit this quick movement of the shifter toward the end of its stroke in the operation of the invention.

From the foregoing the operation will be readily understood. It will be noticed that
 100 when the parts are in the position shown in Fig. 3 water will flow from the valve-chamber through the port C' , as indicated by the arrows, and the blade will be moved in the direction of the arrows, forcing the water
 105 which may be in front of it out through the outlet D . As the blade reaches the end of its stroke it will strike the end of the slide-rod K and will quickly shift said rod toward the position shown in Fig. 7. This will move the
 110 valve-shifter and the rocker carrying the valves to the position shown in Fig. 7, closing the outlet D and the port C' and opening the outlet C and the port D' , admitting water through the outlet D' to operate upon the blade
 115 H and force the same to its opposite position. When the blade reaches such opposite position, it will readjust the parts through the slide-rod in the manner before described, and the operation will be repeated from time to
 120 time. The body of the rocker L is grooved on its under side at L^3 to permit sand to pass out.

It will be noticed that the several parts are so constructed and connected that they may be readily assembled or removed in a few min-
 125 utes and that the operation of the meter is positive, each stroke forcing out a driven quantity of water.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The improvement in meters herein described, comprising the casing, the valve-chamber within the casing having outlet-openings, outlets being provided from the casing on opposite sides of the valve-chamber, and the latter being provided with ports corresponding to said outlets, an oscillating blade in the casing, a rocker supported in the valve-chamber and having valve portions controlling the ports of the chamber and valves controlling the outlets from the casing, an intermediate lever arranged at one end to operate the rocker, a shifter pivoted at one end within the chamber and arranged at its other end to operate the intermediate lever, said shifter having a laterally-elongated slot, and the slide-rod having at its middle a stem operating in the slot of the shifter and arranged at its ends for engagement and operation by the oscillating blade.

2. The combination with the rocker having valve portions and the casing, of the oscillating blade and intermediate devices within the casing and separate from the rocker whereby the oscillating blade may operate the rocker.

3. The combination with the casing having outlet-openings and the valve-chamber having outlet-ports, of the rocker having valve portions controlling the outlet-ports of the chamber, and valves controlling the outlets of the casing, the oscillating blade, and means intermediate the oscillating blade and the rocker, whereby the blade may shift the rocker from one position to the other.

4. The combination in a meter, with the casing having outlet-openings and the valve-chamber having outlet-ports, of the rocker having valves controlling the outlet-openings of the casing and valve portions controlling the outlet-ports of the chamber, and means for operating the rocker.

5. The combination of the casing having outlet-openings, the valve-chamber arranged within the casing adjacent to and between its outlet-openings and having outlet-ports corresponding to said openings, and valve devices controlling the outlet-ports of the casing and chamber.

6. The combination of the casing having outlet-openings, the chamber having outlet-ports, the rocker having valve portions controlling the outlet-ports of the chamber, and valves controlling the outlets of the openings, the shifter, means whereby the shifter may operate the rocker, the slide-rod provided with means for moving the shifter from one position to the other, and the oscillating blade for operating the slide-rod.

7. The combination with the casing, and the valve-chamber, of the rocker, the shifter, means whereby the shifter may operate the rocker, the slide-rod arranged to operate the shifter and the oscillating blade for operating the slide-rod.

8. The combination with the casing having

outlet-openings and the valve-chamber having outlet-ports, of the valve devices, the shifter for operating the valve devices, the slide-rod for operating the shifter, and the oscillating blade for operating the slide-rod.

9. The combination in a meter with the valve devices and the shifter for moving the same, of the slide-rod for operating the shifter, the blade arranged to operate the slide-rod, and the spring for actuating the shifter.

10. The combination with the casing, the valve-chamber within the casing adjacent to and between the outlet-openings thereof and having outlet-ports corresponding to said openings and the valve devices controlling said outlet-openings and ports, of the shifter in the valve-chamber, means whereby the shifter may operate the valve devices, means for operating the shifter, and a spring for actuating the shifter to the end of its stroke after the shifter has been operated by its operating devices.

11. The combination with the valve devices, of the shifter for moving the same, said shifter having an elongated opening, a slide-rod for operating the said shifter, having a stem entering the elongated opening therein, the spring for actuating the shifter after the same has been moved by its slide-rod, and means for operating the slide-rod.

12. The combination with the casing and the blade having the grooves provided with the longitudinal ribs, and the slots leading to said grooves from the opposite sides of the blade, of the packing operating in the grooves and provided with longitudinal grooves receiving the ribs in the base of the grooves of the blade.

13. The combination with the casing having outlet-openings, and the valve-chamber having outlet-ports and curved seats adjacent to the inner sides thereof, of the rocker having valves controlling the outlet-openings of the casing, and valve portions controlling the outlet-ports and curved to conform to the seats at the inner sides thereof, and means for operating the rocker.

14. The combination of the casing having outlet-openings, the valve-chamber having outlet-ports, the rocker having valve portions controlling said outlet openings and ports, the shifter, means whereby the shifter may operate the rocker, the slide-rod having means for moving the shifter, and the oscillating blade arranged to engage and operate the slide-rod.

15. The combination of the casing having outlet-openings, the valve devices, means for operating the valve devices, and the plate having a discharge-channel communicating with the outlet-openings of the casing.

16. The combination of the casing having outlet-openings, the valve-chamber having outlet-ports, the rocker having valves controlling the outlet-openings and valve por-

tions controlling the outlet-ports, and provided with a crank-arm, the intermediate lever forked at one end to receive the crank-arm and provided at its other end with arms for
5 engagement by the swinging end of the shifter, the shifter swinging at one end in engagement with the arms of the intermediate lever, the slide-rod for operating said shifter, and the blade arranged to operate the slide-rod.
10 17. The combination of the casing having outlet-openings and the valve-chamber having outlet-ports, the rocker having valve portions controlling said openings, the swinging shifter, intermediate devices between the

shifter and the rocker, the spring for actuating the shifter to the ends of its strokes, and means for operating the shifter. 15

18. In a meter substantially as described, the combination with the casing and the valve-chamber, of the rocker having valve portions 20 and having its body portion provided on its under side with a groove for the passage of sand.

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Witnesses:

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W. C. HORTON.