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ROTARY MEASURING AND SELF CLOSING FAUCET:

Patented Feb. 13, 1883.



INVENTOR

ATTORNEYS.

(Model.)

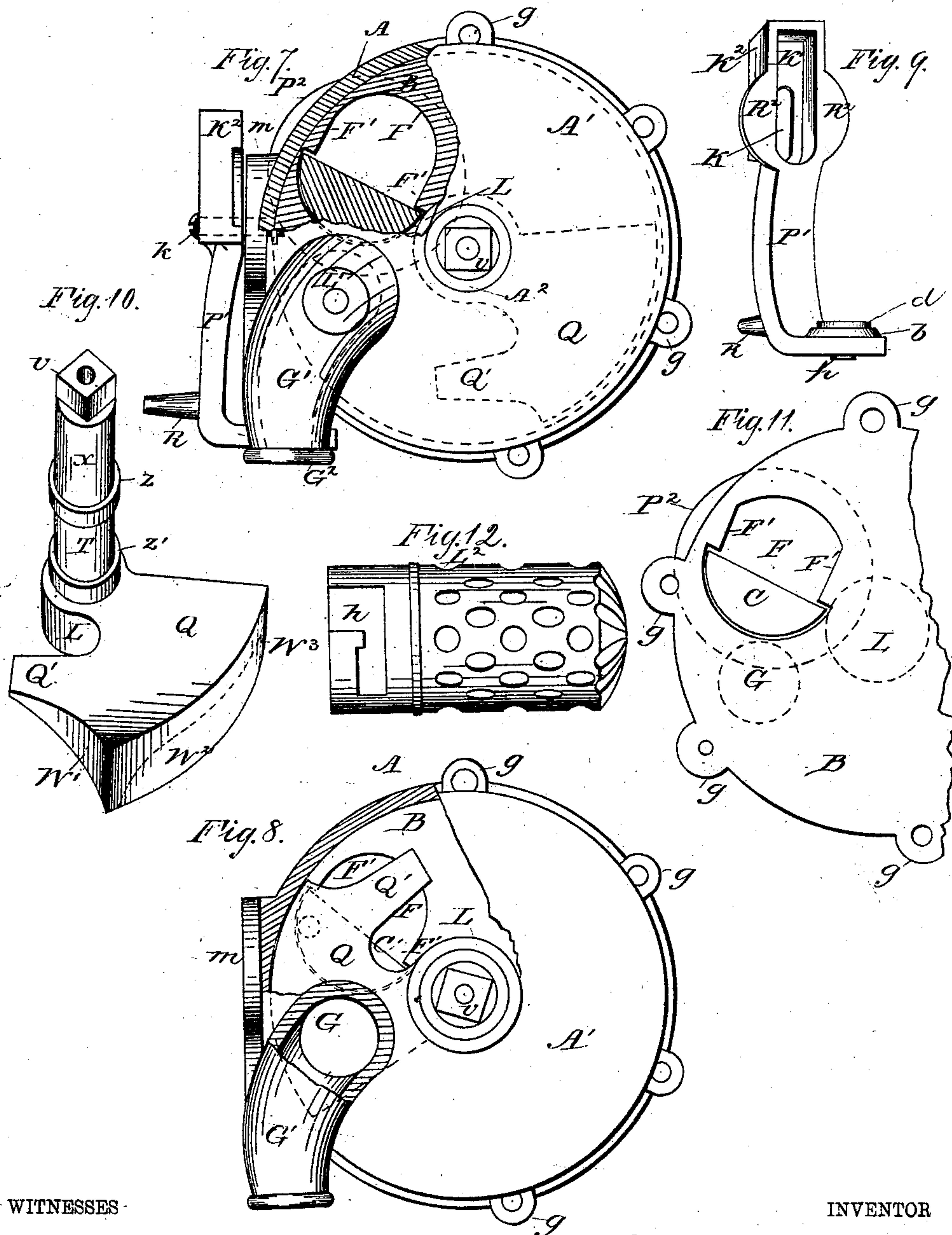
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T. WEAVER.

ROTARY MEASURING AND SELF CLOSING FAUCET.

No. 272,176.

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WITNESSES

Clarence Howard
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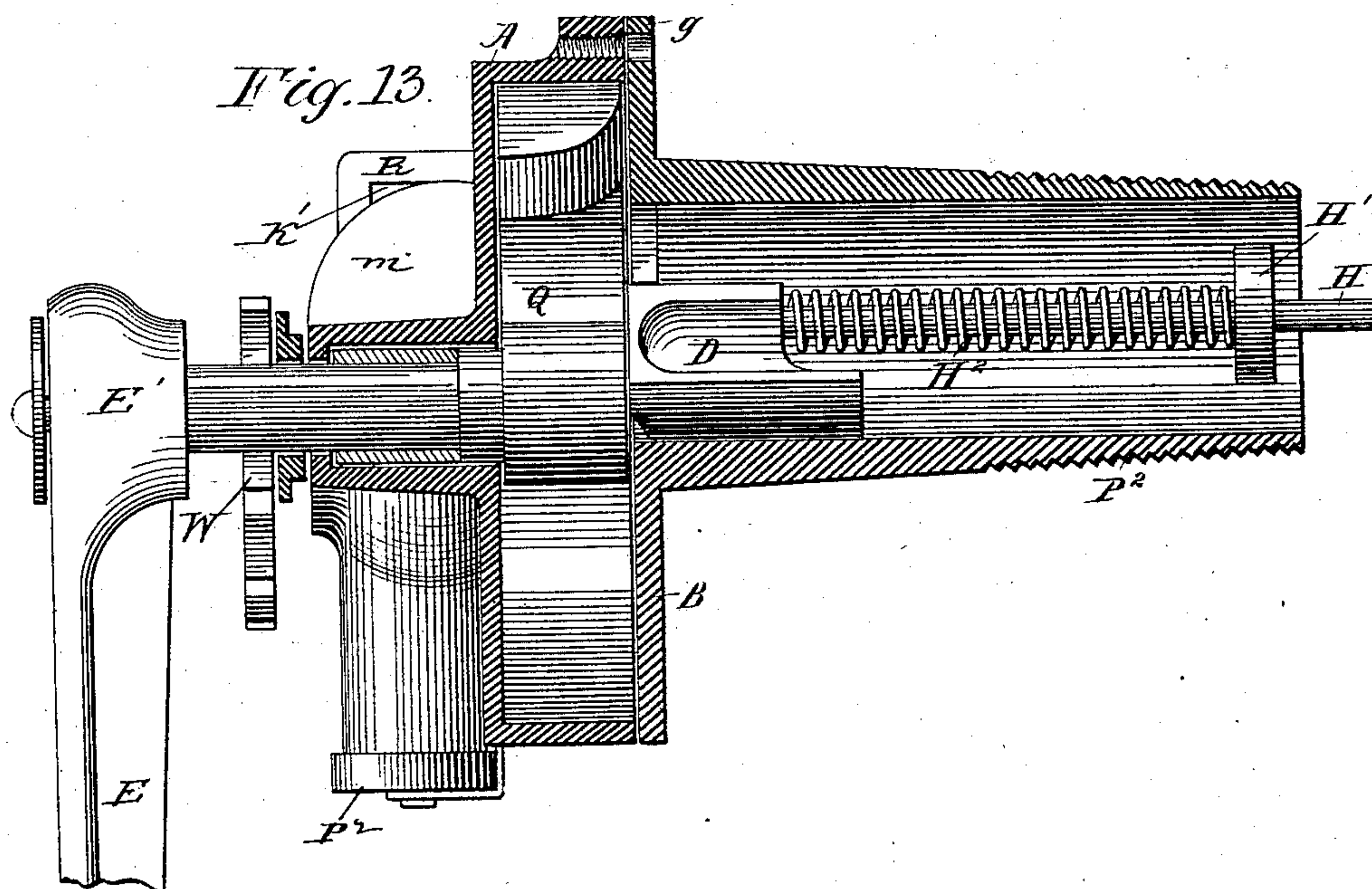
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Witnesses.

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UNITED STATES PATENT OFFICE.

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ROTARY MEASURING AND SELF-CLOSING FAUCET.

SPECIFICATION forming part of Letters Patent No. 272,176, dated February 13, 1883.

Application filed September 29, 1879.

To all whom it may concern:

Be it known that I, THEOPHILUS WEAVER, of the city of Harrisburg, county of Dauphin, and State of Pennsylvania, have invented a new and useful Improvement in Rotary Measuring and Self-Closing Faucets, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of my said faucet, showing one part of the casing in sectional view and parts of the stop-clutch and of the induction-pipe broken away. Fig. 2 is a perspective front view of my faucet with part of the winch and part of the gate broken away. Fig. 3 is a sectional view of the index and stop wheel and its friction devices. Fig. 4 is a perspective view of the measuring-valve. Fig. 5 is a front view of the stop-clutch. Fig. 6 is a perspective view of the exit-pipe stopple, shown detached from the gate. Fig. 7 is a perspective view of my faucet with the winch, index-wheel, and clutch removed and part of the casing broken away. Fig. 8 is a perspective view of the same with the gate also removed and the casing partly broken away to show the piston in front of the valve and over the eduction-port. Fig. 9 is a perspective view of the gate. Fig. 10 is a perspective view of the piston. Fig. 11 is a front view of part of the rear section of the casing, showing the valve inserted therein and the position of the ports partly by indicated lines. Fig. 12 is a perspective view of my strainer.

The object of my invention is to furnish a faucet that will readily deliver from a cask or other reservoir various grades of molasses, oils, and effervescent liquids—in the two first-named articles measuring them and in the last-named checking the issue of the liquid, and for all the kinds of liquids named answering as a self-closing and safety faucet and as a telling-faucet—and one that can be cheaply manufactured, its parts being almost entirely capable of being finished by common lathe-work.

The principal novel and useful features of my improved faucet are: First, a measuring or cut-off valve arranged longitudinally in the induction-pipe and projecting at its front end into the faucet-chamber, and by its body or head barring the passage therein between the

round hub of the piston, located centrally in the faucet-chamber, and the circular wall of said chamber during the operations of measuring—that is, while drawing and discharging—and at the intervals between said operations being automatically tripped or adjusted by the strike on the sweep of the piston to allow it to pass by the valve-head at the end of each revolution of the piston; second, a radial full-sweep piston mounted on its actuating-shaft directly, and revolving by pivot motion in the axis of a circular faucet-chamber; third, the arrangement of the induction and the eduction ports nearly opposite—one in the front end and the other in the rear end of the casing—that the valve may bear against the rear side of the piston-sweep while the exit-port is closed thereby; fourth, a special adaptation of the stop-clutch, that its use may be omitted at will, while the index-wheel is allowed to continue its operations without being stopped at each revolution, when the quantity drawn is a multiple of that denoted by one revolution of said wheel and it is preferred to draw without stopping at intervals; fifth, an improved spring gate and stopple for closing the eduction-spout, after it is closed internally, to stop the dripping of clinging sirup in said spout after the drawing is stopped; sixth, an improved attaching-joint for the strainer.

In all the views of both plates of the drawings similar letters denote similar parts.

A represents the wall of the major section of the casing. A' is the front end of the same, and has centrally on it the journal-box A², in which the packing T' is held about the neck T, between the journal-shoulders Z Z' on the piston-shaft T X.

B represents the minor section of the casing, it being also the rear end of it, and has on it the wrench-socket B² in the staple B', which is made angular that it may be caught by a wrench to screw the induction-pipe P² into a cask-head. Said pipe is located aside from the center of said end, and on the upper part of it, to secure a down-grade flow of the liquid from the cask into the faucet-chamber, and proper filling of the latter when the former is nearly empty. In the taper end of said pipe P² is a projection, H', in which is guided the stem H of the cut-off valve C' D.

H² represents a spiral spring, which sets about said stem against said projection at its foot, and at its other end against the body D of the valve, which it actuates, holding it pressed against the front end of the casing, and when tripped holding it pressed against the rear side of the sweep Q of the piston, as shown in Figs. 1 and 8. The body D of said valve is semi-cylindrical, and fills the transverse space between the circular wall of the casing and the hub L of the piston, mounted centrally in it, as shown in Figs. 7 and 11. The flat side of said body is placed parallel to the radius of the faucet-chamber; but it may be arranged as a secant to its circle, it being only essential that it close the space between the wall A and the hub L. Said body D is made longer than the depth of the faucet-chamber, that, by resting with its flat side against the abutments F', about the inlet-orifice F, it may rest with its convex side against the inside of the induction-pipe to resist canting or bending of the stem H when it is being tripped by the strike Q' on the sweep Q of the piston.

The sweep-piston is in form substantially as shown in Fig. 10, and is located in the casing, as shown in Figs. 1 and 7. Its shaft T X has the actuating-winch E applied thereto by screws and plate f. Said shaft has the journal-bosses Z Z' thereon, which hold the packing between them. The boss Z may be omitted, and a corresponding ring may be formed in the tube A² as one of the bearings. Said shaft has on it the hub L, which is of length equal to the depth of the faucet-chamber, and it is part way cylindrical, and the balance of its body is extended at right angles to its shaft to form the cam-form sweep Q Q', which is also of the same depth as said hub, and is in form as shown in Fig. 10, it being mainly a sector of the circle that inscribes the circular wall A of the faucet-chamber, as shown in Figs. 1 and 7. The front side of said sweep Q Q' is a plane, and is of more area than its rear side, as the strike Q' and its hind end, W³, are cut away obliquely, as shown. Said strike is so made that it may readily travel over the valve-head C', which is also beveled at U to favor its approach. The part W' is squarely edged, that it may serve as a scraper for the wall A. The hind end, W³, of the sweep Q is beveled, as shown in Fig. 10, to let the valve down gently after it is passed by said sweep. The retreat in the sweep between the strike Q' and the hub L is so made to clear the way for the ascent of the valve-head C' while being tripped, and to prevent gorging by a little remnant of the undischarged liquid, which thus escapes from its cornered place to the induction side of the valve, and prevents forcing the joints of the casing and straining its works. For the same reason the eduction-port G is arranged nearly opposite and near to the induction-port F, as well as that the valve may bear against the sweep when it is over the eduction-port.

The faucet-chamber is the space inclosed by

the circular wall A and the ends A' and B of the casing, and it has the induction-port F and the eduction-port G in the rear and front ends, respectively, as described and as shown in Figs. 8 and 11, the port F communicating with the induction-pipe P² and the port G communicating with the eduction-pipe G' on the front end, A'. The capacity of said chamber is equal to one gill plus the solid contents of hub L and sweep Q, plus a remnant for cornering, as the piston can only discharge at each revolution what is in the chamber in front of it immediately after the valve has come to position off the sweep Q, and is set as a cut-off or bar, thus causing the liquid to pass out at the eduction-port the balance of its revolution, which at its completion passes a small cornered remnant back again in endless circulation. At the same time the piston is compelling the measured and cut-off portion to go out of the faucet-chamber at the eduction-port an equal portion is again replaced in it by drawing on the liquid from the reservoir to fill the vacuum produced by the piston's advance. At the completion of each revolution of the piston and of each full measuring, the cut-off valve is again automatically tripped and set as a bar by the advance of the sweep Q, and the discharging is repeated, as before, by a positive operation. If the rotation of the piston be stopped immediately after the valve is fully tripped, before it has come off the sweep Q, the latter body will stand over the eduction-port G and close it, as shown in Figs. 1 and 8, the induction-port F being then only partially covered. The actuating-winch E is so applied to the shaft of the piston that its handle M may be down when the said port G is closed, as shown in Fig. 2. When said parts are in said positions there will be no escape of liquid from the reservoir drawn on by way of the faucet; but if the liquid is viscid there may be a little dripping at the mouth of the eduction-pipe G', on account of a portion adhering therein immediately after drawing. The spring-gate P' R, made as shown in Fig. 9 and applied and operated as shown in Figs. 2 and 7, is added to the faucet to arrest said dripping. Said gate is made with a box, K', for the insertion of a spiral spring, l, which sets in it above the attaching screw or bolt k, by which the body K² is held applied with its face R² against the standard m. Said screw or bolt is inserted into said standard through the slot K, which allows the gate to move vertically when operated, and the face R² is so made to allow it to revolve about said screw that when the conical or oval stopple b d on its foot p is removed from the mouth of the pipe G' it may be set back out of its way, as shown in Fig. 7. Said stopple may be made detachable and in form as shown in Fig. 6. The object in making said stopple conical or oval is that it may readily find its central place in the mouth of pipe G', which is reamed out correspondingly, thus making a liquid-tight

stopple without the use of the usual packing, leather, or fibrous matter, which has heretofore been employed, with some disadvantage, for this purpose. On said induction-pipe G' there is cast a seat, L' , (shown in Fig. 7,) on which is attached by screw or stud the index-wheel r t in position as shown in Figs. 1 and 2. Said wheel has in its recessed hub the spiral spring N^2 , held crowded therein by the plate a , under the head of the attaching-screw N' , to hold the wheel by friction between the intervals of its engagement. Said wheel is notched roundly between the unpitched teeth r and index t thereon, and its hub is provided with the lug N , as shown in Fig. 3.

On the winch-wrist E' is the knuckle e , which is adapted and arranged to communicate with one of said notches, and pass said wheel one-eighth of a revolution at each turn of the winch E —that is, for a faucet of one gill capacity one revolution of the eight-notched wheel shown occurs when the drawing has amounted to one quart. The indicator t then points upward and the winch E stands down, as shown in Fig. 2. The sweep Q of the piston, when the indicator and the winch are in the positions stated, is over the exit-port G , as shown in Fig. 8. When said parts are in said positions the stop-clutch W V' automatically catches the lug N on the index-wheel and locks it both ways by said lug N acting as a detent in the clutch-notch R' and the knuckle e acting as a detent in a notch of the index-wheel. Said stop-clutch is provided with the eye R^3 , through which it is swiveled on the piston-shaft, and it is kept thereon by the wheel W V' , which is in front of its flange L^2 . The winch E may therefore be removed for shipment without disconnecting or dropping off other parts. If desired, the faucet can be run without stopping at intervals by throwing the stop-clutch over center and out of gear, as indicated in Fig. 2. Said clutch is not only a telling device by stopping the machine at a certain point, thus announcing the drawing and the closing of the port internally, but it also acts as a check device to resist pressure from the reservoir, which would otherwise move the piston and open the exit-port, and in case the liquid was fermenting or effervescent the valve P' R might also be forced open, and thus leakage would occur.

Several details of the construction of my faucet may be modified in practice, which need not be shown to be understood—as, for examples, first, the circular wall A of the faucet-chamber may be cast as part of the rear section of the casing, the present lid of the chamber, and then the front section will be the lid of the same; second, the said lid may have formed on it a skirting or standard around its edge to re-enforce it and cap the other section, that the parts, when joined by screws g , may better resist stress; third, the sweep of the piston may be relieved of part of its bulk by recessing its body, as indicated

at W^2 , Fig. 10; fourth, the knuckle e on the wrist E' of the winch may be cast as part of the face-plate f , which may also have cast on it a square lug to seat it partly in the eye of the winch; fifth, the register and stop device may be made to arrest the movement when a pint has been drawn, instead of when a quart has issued, in two ways—either by adding another lug on index-wheel r , similar and opposite to lug N , or the knuckle e may be duplicated to pass two teeth, r r , of index-wheel at each revolution of the winch.

My improved strainer for insertion into the end of the induction-pipe P^2 has the usual meshed head, L^2 , which is provided with a novel and useful attaching-shank having in it the hook or return-slot h , which, in connection with the lug H' , forms a sort of bayonet-joint, the object of which is that when the pipe P^2 is being inserted into a cask-head the strainer may not accidentally drop off into the vessel; or when the faucet is being removed from a cask it may not be left buried in the footing of sirup in it, and thus be lost, as now frequently occurs.

I am aware that the foregoing bayonet-joint may be modified, as a raised teat or lug on the inner side of the inlet-pipe may be employed to catch in a suitable depression or groove on the strainer-tube to hold it.

I am also aware that the principle or plan of construction of my faucet may be used in meters generally, in pumps, and other machinery as well. I therefore do not limit my invention to faucets exclusively.

I also know that a faucet is extant having its inlet and outlet ports both located adjacently in the rear end wall of the meter-chamber, that the piston may cover both ports at a certain interval during each revolution, and that such arrangement, however, is impracticable, as gorging occurs a moment before both ports are covered, thus forcing liquid out at the joints of said chamber; and another difficulty is that the liquid acts to press the piston from its seat, and it must therefore cause leakage at the discharge-spout, especially when the parts are worn somewhat, unless the lid is sprung on the chamber, and pressure is thus obtained in the spring of the lid to hold the piston to its seat on the ports, which of course causes the faucet to work hard. All these difficulties I entirely avoid by my new and different construction and arrangement.

Having thus fully described my invention, I here add what I desire to secure by Letters Patent of the United States, expressed in claims as follows:

1. The valve arranged longitudinally in the induction-pipe and projecting at its front end into the measuring-chamber, and therein by its body barring the passage between its circular wall and the circular hub of the piston located centrally in said chamber, and by contact with the piston producing the intermitted cut-off, substantially as set forth.

2. The segmental piston having its hub and

actuating-shaft centrally arranged in the circular meter-chamber, and having the edges of its sweep beveled or inclined to the plane of its revolution for tripping the valve arranged at right angles to said plane, substantially as set forth.

3. In a liquid-meter, the arrangement of the inlet and the outlet ports in the opposite end walls of the meter-chamber, and with a partial overlap transversely relative to each other, that the outlet-port may be closed by the front side of the piston, and held seated over said port-opening by the pressure of the valve and the liquid acting against the opposite side of the piston, substantially as set forth.

4. The interlocked arrangement of the index-wheel and the actuating-winch by the gravitating stop-clutch swiveled to the piston-shaft, so that the rotary movement is stopped both ways, substantially as and for the purpose set forth.

5. The index-wheel r t , provided with the lug N on its hub, and with the friction attachment consisting of the spring N^2 and screw N' , in combination with the cog e on wrist E' of winch E , and with the gravitating-clutch W V' , all arranged that the clutch may be used or omitted during the measuring, in the manner set forth.

6. The device of a spring stopple-gate for closing the eduction-spout, whose stopple se-

cures its own correct central position on the mouth of the spout when it is stopped thereby, substantially as set forth.

7. The gate-frame $P' R$, provided with cavity K' and slot K , in combination with spring l and attaching-screw k and standard m , all arranged for operation substantially as set forth.

8. The spring-gate $P' R$, provided with foot p , in combination with conical or oval stopple b d , substantially as and for the purpose set forth.

9. The strainer with meshed head L^2 , constructed with the attaching-shank provided with the hook h , in combination with pipe P^2 , provided with a lug, H' , therein, substantially as and for the purpose set forth.

10. The combination of the valve $C' D H$, the spring H^2 , the piston $Q X$, and the casing $A A' B P^2$, all operating for propelling the flow and stoppage of liquids, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto set my hand and seal, in presence of witnesses, this 6th day of September, 1879.

THEOPHILUS WEAVER. [L. S.]

Attest:

S. S. RECKORD,
D. A. KEPNER.