No. 614,291. Patented Nov. 15, 1898.

J. N. COONS.

GAS OR LIQUID VENDING MACHINE.

(Application filed Jan. 21, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

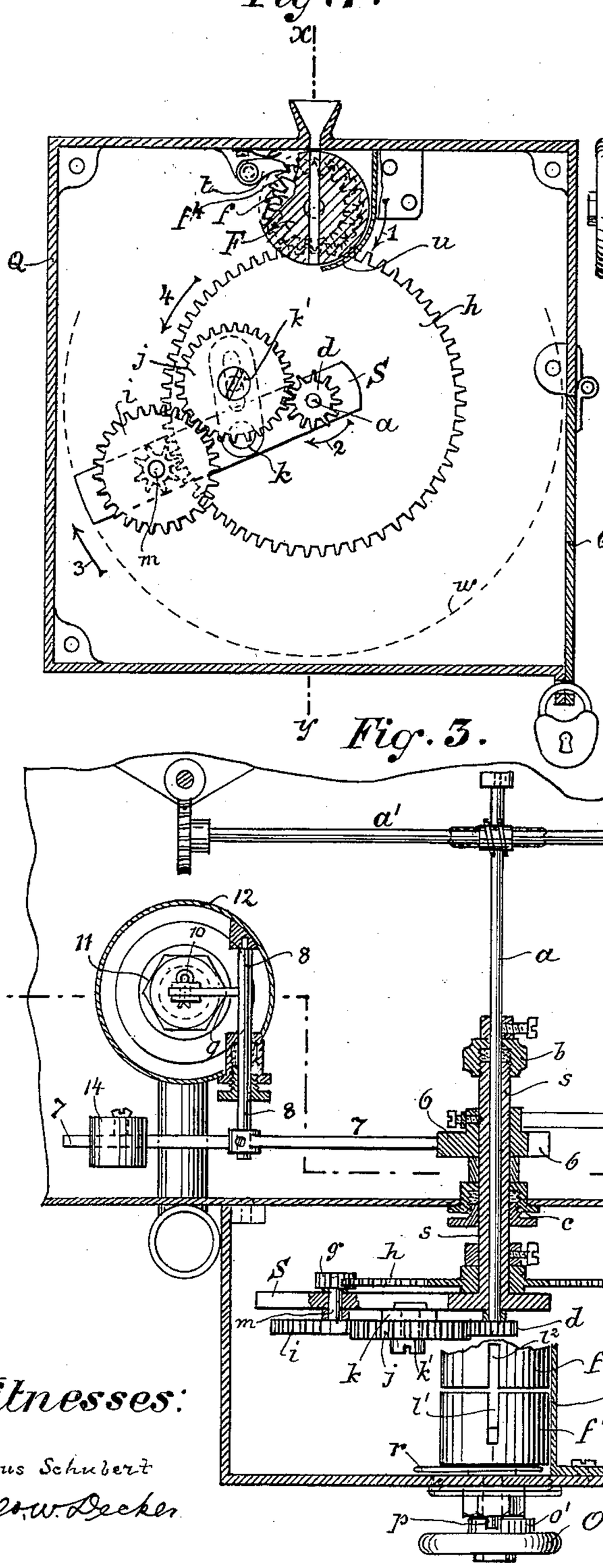

Fig. 2.

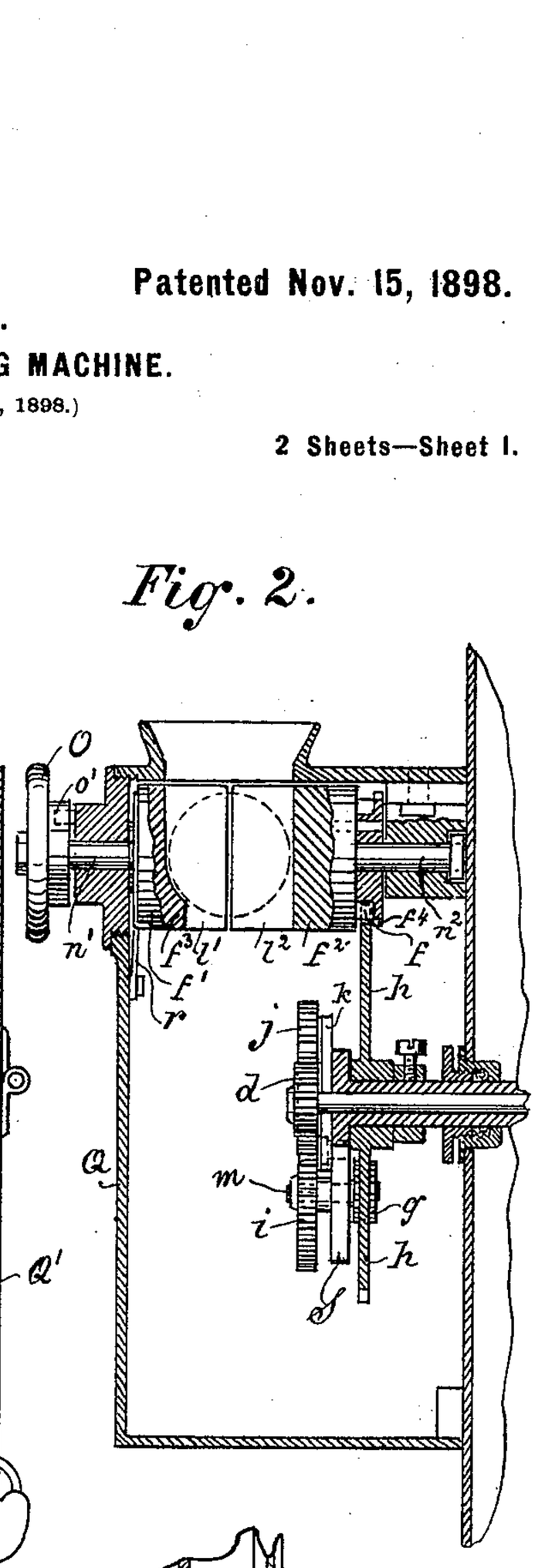

Fig. 3.

Fig. 4.

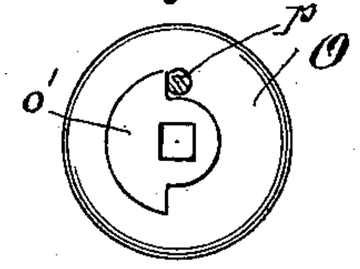

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Fig. 5.

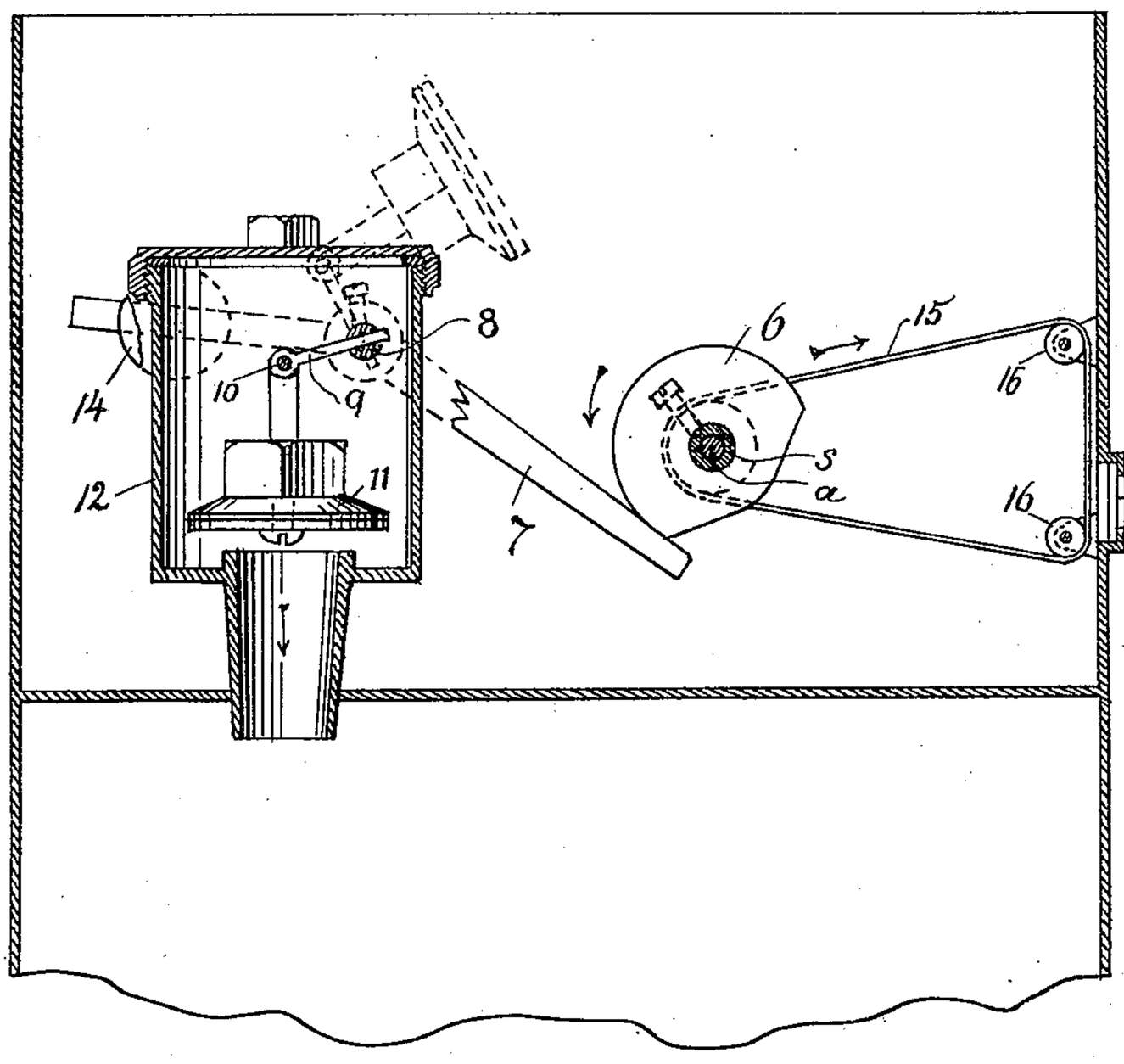
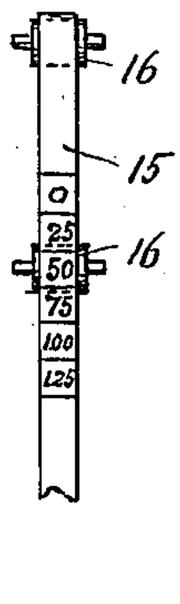


Fig. 6.



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UNITED STATES PATENT OFFICE.

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GAS OR LIQUID VENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,291, dated November 15, 1898.

Application filed January 21, 1898. Serial No. 667,473. (No model.)

To all whom it may concern:

Be it known that I, JAMES N. COONS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Gas or Liquid Vending Machines, of which the following is a specification.

My invention relates to gas or liquid vending machines actuated and controlled by coins; and the object of my invention is to provide a vending-machine which is capable of delivering accurately-measured quantities for varying prices of gas or fluid for a coin unit and which is built of a limited number of parts and easily worked, cleaned, and repaired.

In the accompanying drawings, Figure 1 represents a front view of the principal working parts of the machine, with the face-plate removed. Fig. 2 is a vertical section on the line x y, Fig. 1. Fig. 3 is a plan view and section showing connections and parts in the top chamber of the meter. Fig. 4 is a view of the inner face of a hand-wheel employed for turning the money-barrel, showing the stopping-shoulders and a section through the stop-pin. Fig. 5 is a vertical section through the meter on the line z z, Fig. 3, showing the parts actuating the gas-valve and registering both the amount of money paid and the consumption of gas equivalent to such payment. Fig. 6 is a face view of a belt employed for registering the payment and the consumption.

Around the front part of a shaft a, revolved from the meter-shaft a', turned by the flow of gas or liquid, is mounted a sleeve s, carrying at its front end a lever S and at its rear end a stuffing-box b, preventing the escape of gas between the shaft a and the inner face of sleeve s. This sleeve s passes through a stuffing-box c in a wall of a meter and serves as a front bearing for the shaft a. A pinion d is secured to the projecting front end of shaft a and a larger cog-wheel h is rotatably mounted upon the projecting end of sleeve s behind the lever S. Through the outer end of lever S a short shaft m is mounted, parallel to shaft a and provided at its inner end with a pinion g, gearing into the wheel h, while preferably a larger wheel i is secured to the front end of m. This wheel i and the pinion d on shaft a are connected by an exchangeable intermediate gear j, rotatably mounted upon a pin k', adjustably mounted in a slot of arm k, secured upon the front face of lever S, as shown in Figs. 1, 2, and 3 of the drawings.

Into the gear h, preferably at its top, gears a cog-wheel f, secured to the rear portion of a split barrel F. This barrel F is split transversely near its central portion in two independent parts, f' having a slot l' and shaft n', and f^2 having a slot l^2 and shaft n^2. The axes of these half-barrels and their shafts coincide, each being rotatably mounted in proper bearings in the casing Q, inclosing the parts, and a hand-wheel O being secured to the projecting end of shaft n' and being provided with a recessed hub o', the projections of which engage a stationary stop-pin p, mounted upon the casing and limiting the motion of the hand-wheel and the connected front portion f' of the money-barrel to exactly one half-revolution, a coil-spring r preferably returning f' to its primary position as soon as the hand-wheel O is released. The slots l' and l^2 are placed exactly opposite each other, and l^2 preferably extends through the entire thickness of the barrel, while l' has a slight obstruction f^3 near its bottom edge of sufficient size to stop a regulation coin, yet leaving a sufficient space at the bottom of the slot to pass all smaller coins directly through the slot.

Secured to the rear end of barrel f^2, behind the gear f, is a ratchet-wheel f^4, engaging a pawl t, secured to the casing Q, which allows the half-barrel f^2 to be turned in one direction only, preferably in the direction indicated by arrow 1 in Fig. 1 of the drawings. A shield u, secured to the casing and closely fitting the lower portion of the barrel, prevents a premature dropping of a coin before a full half-turn is completed.

A door Q' in the casing, securely locked, allows the withdrawal of the coins, and suitable flanges are provided for securing the casing to a meter. The barrels are mounted with their slots standing exactly perpendicular at the start and closely under the top wall of the casing to make improper extraction of coin impossible. A small funnel on the top wall facilitates the expedient entry of a coin.

Upon the sleeve s is secured a cam 6, which

engages a lever 7, secured to a shaft 8, mounted in a gas-valve casing 12, and connected with the plunger 11 by means of lever 9 and pin 10 in such a manner as to allow the plunger 11 to be swung up and out of the casing 12 (after the top cover 13 is removed) for cleaning and repacking purposes, as fully shown and illustrated in Fig. 5 of the drawing, the removal position of the valve being shown in dotted lines. The lever 7 carries a weight 14, which serves to close the valve.

An endless marked belt 15, secured to the hub of cam 6 and passing over two pulleys 16, mounted upon the front wall of a meter, which at this point is provided with a small opening 17, closed by a glass plate, serves to register both the amount of money paid and the quantity of gas consumed.

The operation of the machine is then as follows: A coin (twenty-five cents, for instance) is dropped into the slots l' l^2 and the hand-wheel O is turned in the direction of arrow 1. The barrel f' will respond first and by means of the coin as a connection turn the barrel f^2 until both have completed one half-revolution together, when the coin will drop and the spring r will return the front half-barrel f' to its starting position, while the rear half-barrel f^2 will remain in its end position, the pawl t and ratchet-wheel f^4 preventing it from turning back and following the other half-barrel. The slot l^2 passing entirely through the barrel f^2 this new position of f^2 will entirely correspond to the starting position and with the returned barrel f' present the same appearance as if no movement of either had occurred. A second coin will repeat this operation and bring f^2 back to its starting position by continuing the movement in the direction of arrow 1, barrel f^2 then having completed one full turn, while f' returns after each half-turn. Additional coins will continue to turn f^2 and cause it to perform additional movements, always in the same direction. The effect of these operations on the sleeve s and the gear-train and cam secured thereon is then as follows: The flowing gas is slowly turning the shaft a and with it the pinions d and g in the direction of the arrow 2, and thus causing the lever S slowly to climb back to its starting position in the direction of the arrow 3, the loose cog-wheel h then being held in a stationary position by the cog-wheel f on barrel f^2, sufficient friction being provided on the end face of f^2 or on the ratchet-teeth of wheel f^4 to carry the weights of lever S and its gear-train. A coin being dropped into the slot and the barrel being given half a turn will rotate the cog-wheel f in the direction of the arrow 1, and thereby the wheel h in the direction of arrow 4, the latter wheel taking the lever S and its gear-train along for such a distance as is given by one-half of the number of teeth on wheel f. An additional number of coins will continue to push the lever around in the direction of arrow 4, its end then describing a semicircle w, which is sufficient for the insertion of five unit coins, while the continuously-flowing gas gradually turns the lever S (with the sleeve s and cam 6) in the direction of the arrow 3 back to its starting position without in the least interfering with the insertion of an additional coin and a corresponding reversion of the lever S during this trip. In the drawings the position is assumed to be after the first coin has been inserted and the first half-turn of the barrel has been completed and the gas-valve has been opened by means of cam 6. During the additional turns the lever 7 only is riding on the circular face of the cam, as the opening of the valve is sufficient for all practical purposes.

The gear-train described above gives an excellent chance to adapt this apparatus to any change in the price of gas which may happen during its use, as by removing the wheel i and replacing it by another wheel with more or less teeth an accuracy can be reached by which the unavoidable error in the quantity of the supply can be reduced to less than one-hundredth of one cubic foot of gas.

It is evident that the semicircular return motion of barrel f' and the semicircular progressive motion of barrel f^2 prevent the same coin from being used twice, as, if for some reason a coin should bind in the slots l' l^2 and both barrels be prevented from moving forward or backward by the stop-pin p on one end and the pawl t and ratchet-wheel f^4 on the other end, the lug f^3 standing up and preventing the coin from being extracted the only chance to get additional gas will be by pushing the coin into the machine, thus insuring equitable payment for the gas consumed. Without a coin, barrel f' alone will turn and leave the rest of the machine unaffected.

Having thus described my invention, I claim—

1. In a gas or liquid vending machine, the combination of two cylindrical slotted coin-receptacles adjusted side by side, one being operated from the exterior of the apparatus and arranged to make one half oscillating turn, and the other operated by the first by means of a coin, and arranged to make an intermittent rotary motion of equal length, as and for the purposes herein shown and described.

2. The combination of the shaft a operated by the gas-meter, and having the pinion d, the sleeve s fitted around a, and carrying firmly secured thereon the cam 6 and the lever S, and rotatably mounted the cog-wheel h, the gear-train j, i and g mounted upon lever S and gearing into the teeth of pinions d and cog-wheel h respectively, the coin-receptacle F, having the hand-wheel O, the gear f, ratchet-wheel f^4 and spring r, the pawl t, the casing Q, the gas-inlet valve having the shaft 8 and lever 7 carrying the balance-weight 14, and the endless ribbon 15, secured to the hub of the cam and guided by the rollers 16, as and for the purposes herein shown and set forth.

3. In a gas or liquid vending machine, the combination of the shaft *a* operated by the meter and carrying a pinion *d*, a coin-receiving barrel carrying the gear-wheel *f*, a sleeve *s*, carrying a lever S, and thereon shaft *m* carrying pinion *g*, and an interchangeable gear-wheel *i*, a slotted link *k* adjustably secured to said lever S and carrying an intermediate gear-wheel *j*, rotatably mounted upon a sliding pin *k'* secured upon said link *k;* a loose gear-wheel *h* mounted upon said sleeve *s*, engaging both the said gear-wheel *f* and the said pinion *g* and connecting said sleeve *s* with said shaft *a*, as and for the purposes herein shown and set forth.

Signed at New York, in the county of New York and State of New York, this 20th day of January, A. D. 1898.

JAMES N. COONS.

Witnesses:

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