

No. 637,238.

Patented Nov. 21, 1899.

H. R. COTTRELL.
COIN-FREE DELIVERY APPARATUS.

(Application filed Dec. 29, 1897.)

(No Model.)

7 Sheets—Sheet 1.

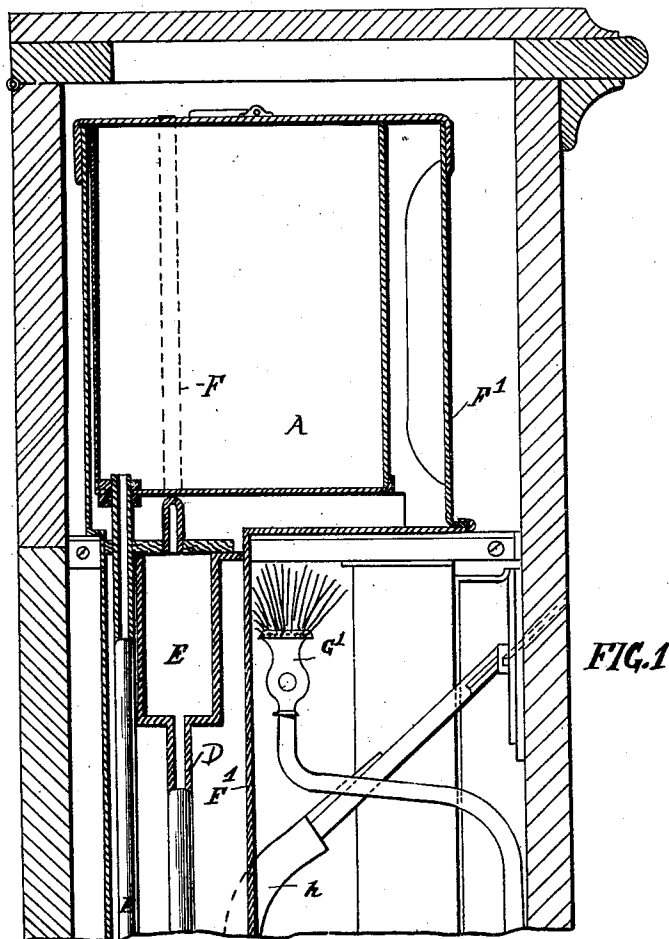


FIG. 1

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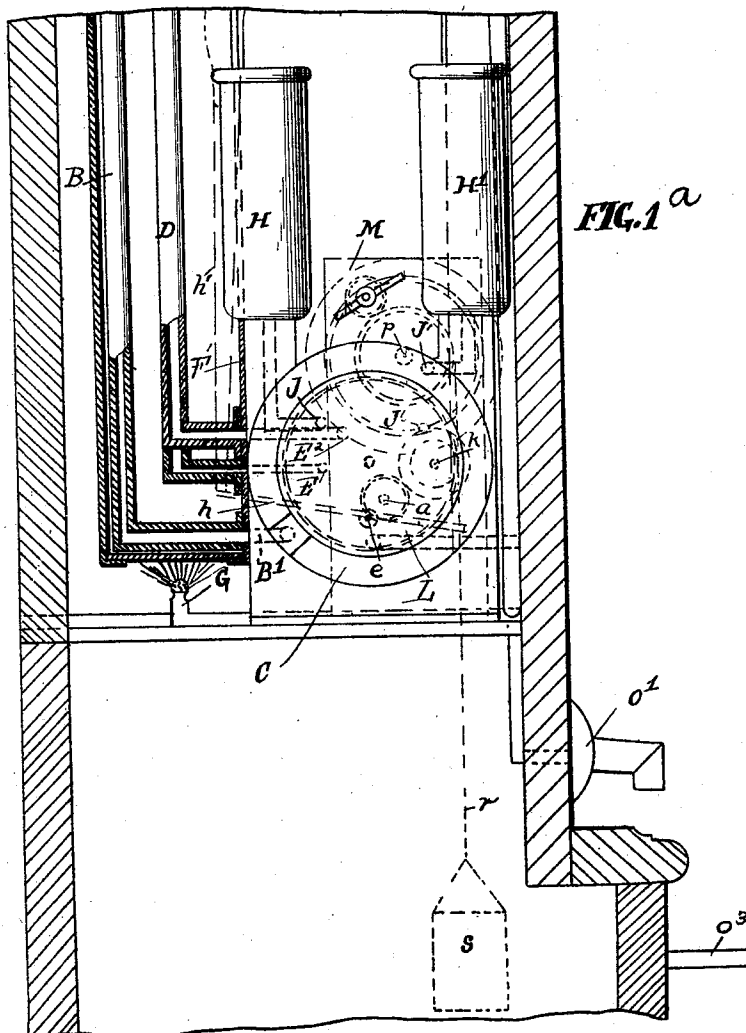
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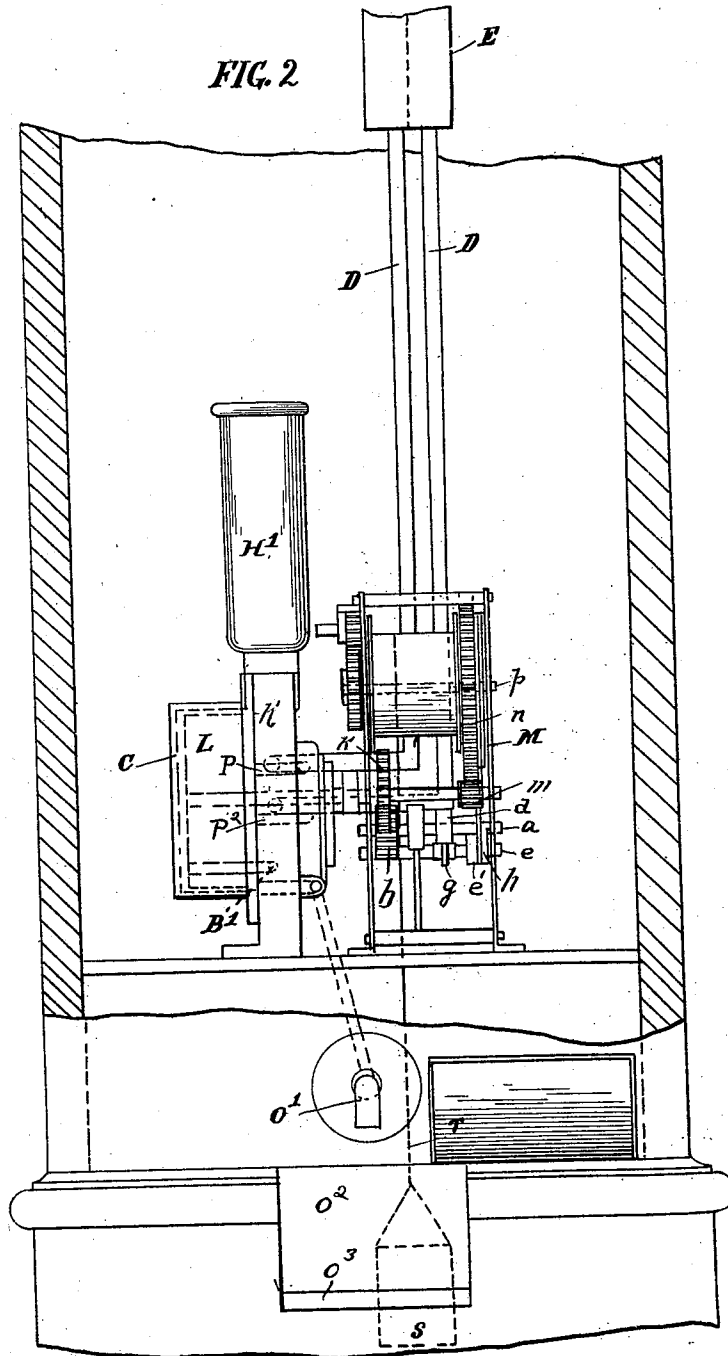
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7 Sheets—Sheet 3.



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Patented Nov. 21, 1899.

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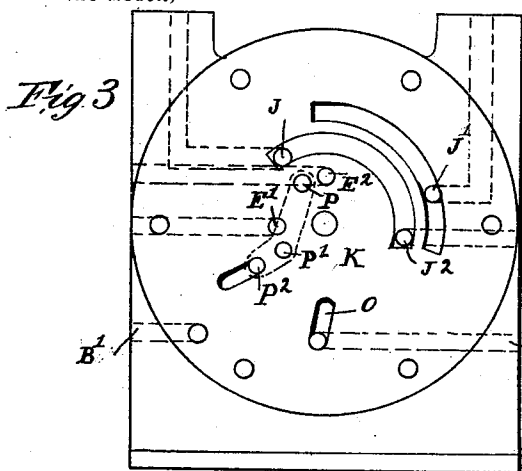
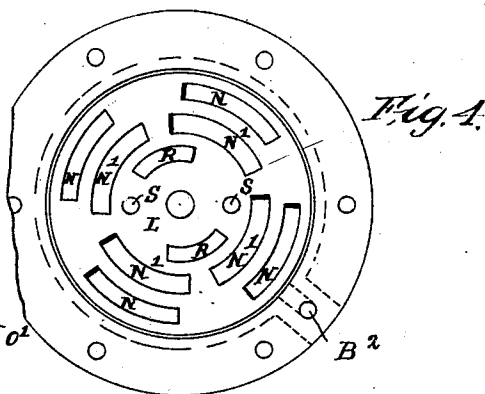


FIG. 5

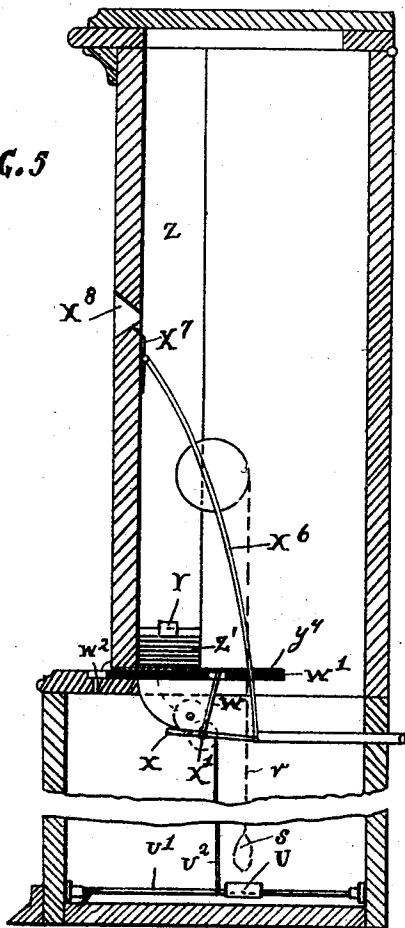
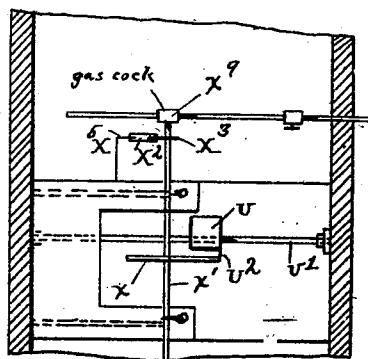


FIG. 6



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FIG. 7

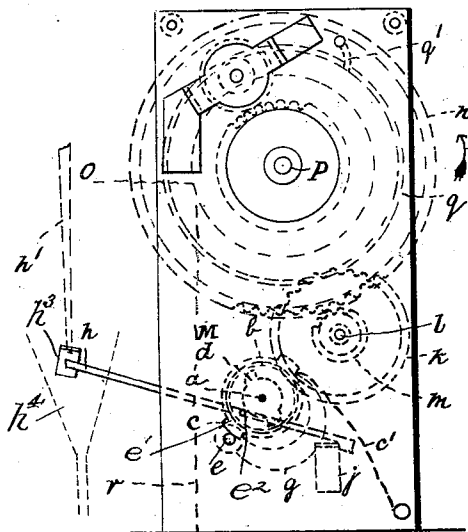


FIG. 8

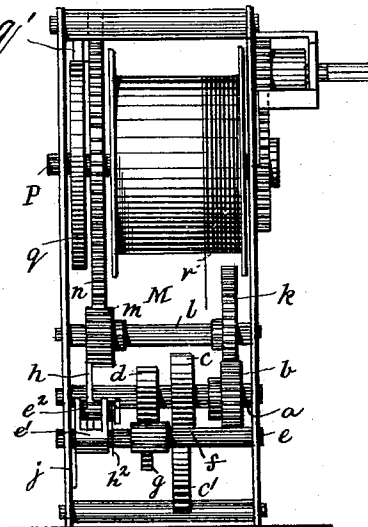


FIG. 9

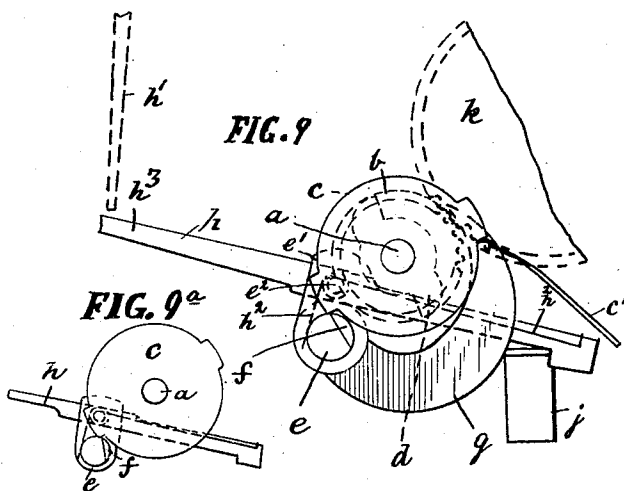
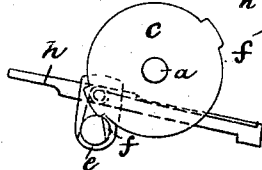


FIG. 9^a



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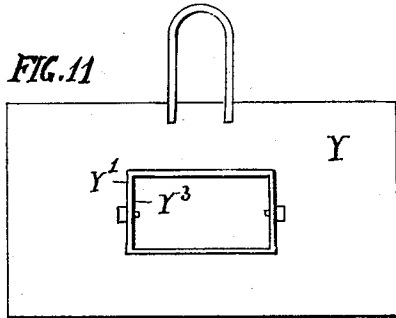
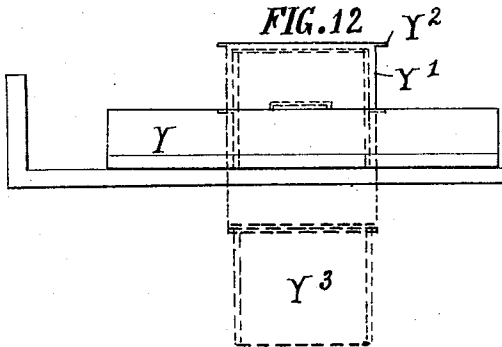
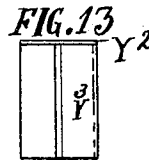
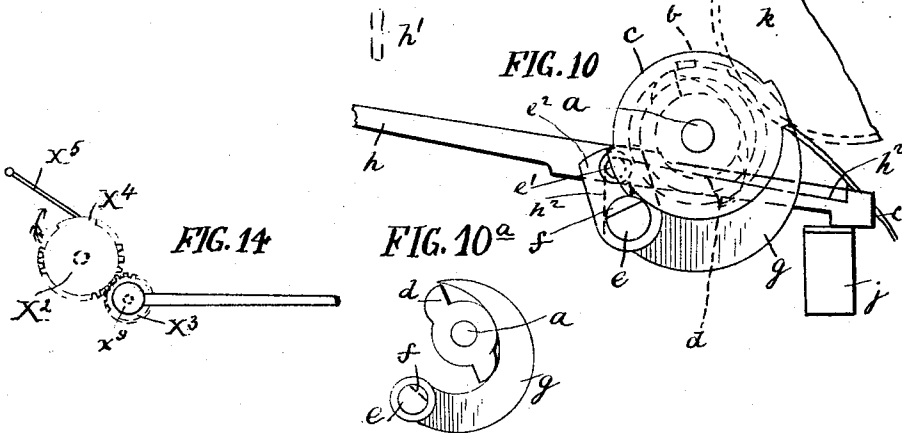
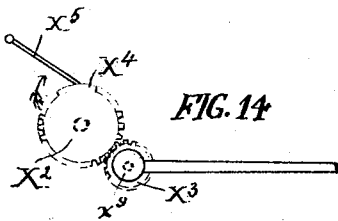
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Fig. 15.

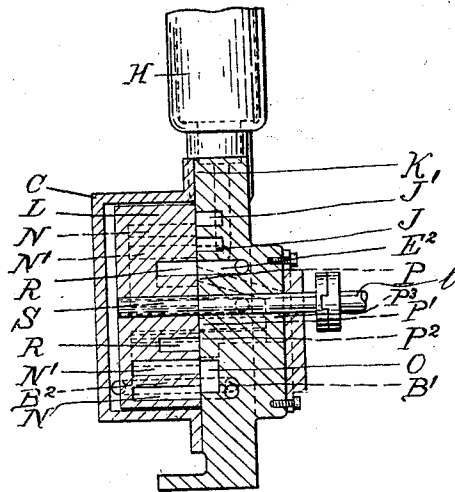
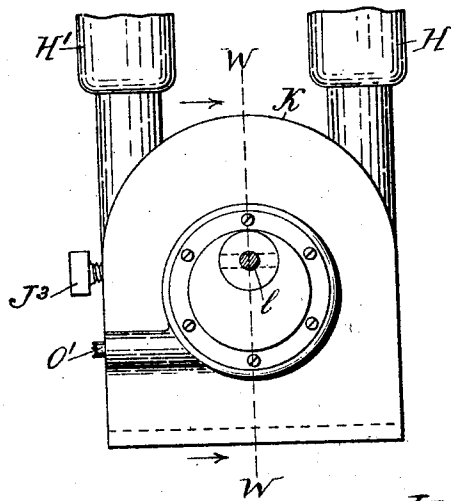


Fig. 16.



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UNITED STATES PATENT OFFICE.

HARRY ROSCOE COTTRELL, OF WEST BROMWICH, ENGLAND.

COIN-FREED DELIVERY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 637,238, dated November 21, 1899.

Application filed December 29, 1897. Serial No. 664,283. (No model.)

To all whom it may concern:

Be it known that I, HARRY ROSCOE COTTRELL, residing at West Bromwich, in the county of Stafford, England, have invented
5 Improvements in Coin-Freed Machines for the Automatic Delivery of Liquids, Goods, and Articles, (which has been patented in Great Britain under No. 13,530, dated June 19, 1896; in France under No. 268,885, dated November 8, 1897, and in Belgium under No. 129,562, dated July 31, 1897,) of which the following is a specification.

This invention relates to an automatic coin-freed machine or machines or combined machines for the delivery of both eatables and
15 drinkables and articles—such, for example, as for delivering hot coffee, bovril, and a biscuit, cake, or a like article of food.

A combined machine or apparatus constructed according to my invention for delivering hot coffee or like liquid, a biscuit, or like eatable in exchange for coins deposited consists, primarily, of two parts—viz., a liquid-delivery part and a food-delivery part—
25 and mechanism for controlling and cutting off gas or other heating agent and for closing the coin-slots when either all the supply of coffee or biscuits, or both, is exhausted. The coffee-delivery part and the biscuit-delivery
30 part have each a separate coin-slot and are capable of being operated entirely independent of one another, while the whole of the parts of the combined apparatus are inclosed within a suitable casing.

In order that my invention may be the better understood, I will now proceed to describe the same in relation to the accompanying drawings, reference being had to the letters
35 marked thereon.

Like letters refer to like parts in the various figures.

Figure 1 is a part-sectional elevation of the upper portion of my machine. Fig. 1^a is a similar view of the lower portion. Fig. 2 is
45 a front view, the casing being shown partly in section. Fig. 3 is a detail view of the valve-face. Fig. 4 is a similar view of the valve and casing. Figs. 5 and 6 are sectional views of the casing, showing the gas-extinguishing
50 and coin-slot-closing gear. Figs. 7 and 8 are detail views of the valve-rotating mechanism. Fig. 9 shows the cam and wiper in normal po-

sition of rest. Fig. 9^a is a detail view of escapement-wheel and verge-shaft. Fig. 10 shows their position when a coin has depressed
55 the coin-lever. Fig. 10^a is a detail view of the cam and wiper. Fig. 11 is a plan of the weight for the biscuit-delivery mechanism. Fig. 12 is an elevation of the same, showing the two positions in full and dotted lines, respectively. Fig. 13 is an end elevation of
60 bottom weight, showing the groove. Fig. 14 shows the locking-gear for the gas-extinguishing mechanism. Fig. 15 is a part-sectional end elevation of the valve, valve-casing, and
65 valve-seat on the line W W of Fig. 16, seen in the direction of the arrows; and Fig. 16 is a back elevation of the valve-seat.

The apparatus for automatically delivering a quantity of hot coffee in exchange for a coin
70 consists principally of a hot-water-supply tank, chambers for measuring out the water, one or more reservoirs for coffee, essence, milk, or other ingredient, a specially-constructed valve for regulating the flow of hot
75 water and essence into and out of chambers contained within the said valve, and coin-operated mechanism for controlling the intermittent rotation of the said valve.

Situated at the top of the casing is a water-
80 tank A, having a main water-supply pipe B, leading downward into the valve-casing C, through which water passes, while leading from the said valve-casing are two pipes D D, running, respectively, to a water-chamber E,
85 divided into two to form two water-measuring chambers, which determine the quantity of liquid that shall be delivered in exchange for each coin deposited. Both the measuring-chambers, (which are provided with air-
90 vent pipes F,) the water-tank A, and their pipes B and D D are inclosed within a hot-water jacket F', kept hot by suitably-arranged gas-jets G G' or other suitable source of heat.

Located above the top of the valve-casing
95 C are arranged two liquid or essence reservoirs H and H'. The first may be used for milk and the latter for coffee essence, by way of example, which when the machine is in operation are in uninterrupted communication
100 with ports J J', respectively, formed within a part of the valve-seating K, upon which a circular valve L is adapted to rotate. The face of the valve L, which is intermit-

tently rotated by mechanism M, hereinafter described, is formed in this instance with two series of essence or liquid measuring chambers N N', two of which of each series are always open to a greater or less extent to the respective essence-ports J' J in the valve-seating, while the third or fourth of each series is always open by passages, hereinafter described, to one or other of the ports E' E² in connection with the measuring-chambers E and to the port O of the liquid-delivery outlet O' of the machine. The valve-seating is also provided with ports P P' P², the first two being connected by a common passage P³ at the back of the casing with the third port P², and the body of the valve is provided with diverting ports or recesses R R, arranged to bridge ports E² and P or E' and P' and through passages S S arranged to effect the connection between the measuring-chamber E and the port O, referred to above, and also to insure that when water is flowing from the valve-chamber through one of the passages S in the valve-body L and through the port E' in the seating K into one of the measuring-chambers E in one direction water shall also and at the same time be flowing in the reverse direction from the other measuring-chamber E through the port E² in the valve-seating K into one of the two diverting chambers or ports R formed in the valve-face and from thence by the passages P P² into one of the pairs of the essence-chambers N and N', which are swilled or flushed out by the hot water, and the coffee and milk or other mixture thus made passes away by the delivery-pipe O' to the consumer and is thoroughly mixed in such passage. Each of the chambers N N' is large enough to bridge the distance between the ports P² and O, and these ports are each long enough to bridge said chambers. Thus one of the measuring-chambers E fills with water when the main water-supply tank A of the machine is filled, the casing C of the valve also being filled with water at the same time. The water passing from the tank A down the pipe B, through the passage B' in the valve-seating and the passage B² in the valve-casing C to the back of the valve L, and then through one of the passages S into the port E' and pipe D to one of the measuring-chambers E.

Now when a penny is deposited the valve is given a certain rotation—for example, in the case of a four-port valve, as shown, a quarter-turn—and water runs through the other passage S in the valve and port E² in the seating that have been brought coincident by such part rotation and thence into the empty measuring-chamber E and fills the same. While this is going on water runs from the first-named measuring-chamber E, through port E' in the valve-seating K and into one of the diverting chambers or ports R in the valve-face, through the port P to the port P², and thence to one pair of the essence-measuring chambers N N' in the valve, where

it becomes incorporated with the coffee, milk, or other essence contained therein and flows away through the delivery-pipe O'. An indentation or recess *o*² and shelf *o*³ are provided to hold the glass or tumbler beneath the pipe or nozzle *o*'. On a further penny being placed in the machine the valve makes a further quarter-turn, when another series of holes in the valve seating and body are brought coincident and water runs there-through to the measuring-chamber which was emptied on the first penny being deposited, the water in the other measuring-chamber meanwhile running away through coincident ports, intercepting-chamber, and passages to the essence-chambers in the valve and the delivery-outlet.

If it is desired to have means for washing out the essence reservoir or reservoirs, such as when milk or other readily-deterioratable substance is used, I arrange an outlet J² in the port J', which is closed with a plug tap or valve J³, so that the essence may be removed and the chamber and passages washed out without disturbing the mechanism in any way.

The coin-operated mechanism M for intermittently controlling the rotation of the valve of the liquid-delivery part of the apparatus is shown in Figs. 7, 8, 9, 9^a, 10, and 10^a, and consists of an axis *a*, mounted in a frame and having made fast upon it a toothed wheel *b*, an escapement-wheel *c*, and a double-armed cam *d*. A verge-shaft *e* comes below the said axis and carries a wiper-arm *g* and a slightly-counterpoised coin-lever *h*, spring-pressed by a spring *h*² and hooked at one end to engage a suitable stop *j*, while the other end carries an inclined platform *h*³, upon which the coin placed within the coin-slot falls after passing down coin-races *h*', directing the same to the coin-lever *h*. A wire-spring *h*² is wound about the axis *e*², one end of which bears against the shaft *e* and the other end is hooked to engage over the hooked end of the coin-lever *h*. The spring is so stressed as to always tend to reduce the amount of angle between the coin-lever and the arm *e*'. The verge-shaft *e* is half-gapped at a part opposite the escape-wheel *c*, thereby forming a semicircular pallet *f*, while the toothed wheel *b* on the shaft *a* engages with another toothed wheel *k*, made fast upon a counter-axis *l*, carrying a pinion *m*, engaging with the teeth of a large toothed wheel *n*, carried at one end of a drum loosely mounted on a drum-shaft *p*, and winder-axis, carrying a ratchet-wheel *q*, with which a pawl on the face of the combined wheel and drum engages, while a cord or chain *r*, having a heavy weight *s* suspended from it, is wound around the said drum *o*. The counter-axis *l*, on which the toothed wheel and pinion are mounted, directly drives the valve L of the liquid-delivery mechanism. A spring *c*' is mounted on the frame and engages the escapement-wheel *c* to prevent its backward rotation. The end of the coin-le-

ver h upon which the coin falls works within a hopper-shaped top h^4 of a further coin-chute leading to a cash-receptacle.

The mechanism for controlling and shutting off the supply of gas to the jets heating the water-jacket F' and the supply-tank A and for simultaneously closing the entrances to the coin-slots or displaying announcements that the machine is empty on the last packet being delivered or the last portion of coffee or other essence or liquid being consumed is shown in Figs. 5, 6, 11, 12, 13, and 14 and is arranged as follows:

The weight Y , which rests upon the pile or packets z' in the chute Z , has a hole through its middle fitted with a like-shaped open-ended box or socket Y' , capable of sliding within the said hole and provided with stops Y^2 for preventing the same falling through or out of the hole. Within this socket or box Y' is a supplementary sliding weight Y^3 , which is also prevented from falling completely out of its place by suitable stops. When the weight Y is in its normal position—say on the top of the last packet of the pile—as shown in full lines, Fig. 12, the socket Y' and supplementary weight Y^3 are closed up or telescope the central hole in the larger weight Y . The drawer Y^4 , upon which the packets fall from the pile to be delivered, has an opening in its bottom, and when the same is pushed back into place after drawing out the last packet of the pile the principal weight Y comes thereon, and the socket and secondary weight Y^3 being unsupported fall through the opening in the drawer-bottom, and the said supplementary weight Y^3 comes upon one end of a rocking lever X , fixed to a turning axis X' , mounted in brackets carried by the machine-framing and having secured to it a toothed wheel X^2 , engaging with a pinion X^3 , made fast to the plug of a gas-cock x^9 and adapted to shut off the supply of gas from the jets, as aforesaid, on the said lever X being rocked. To near the joint of the lever is fitted an arm, peg, or equivalent W , engaging with a horizontally-sliding frame W' , working in suitable guides and having a forward extension, upon the top face of which is printed the word "Empty." When the lever is rocked by the weight, this slide is traversed forwardly and the extension covers the coin-slot W^2 of the biscuit-delivery part of the apparatus, exhibits the word "Empty" to the public, and prevents further coin being put in the machine.

To prevent the slide being forced back from outside the machine, the periphery or face of the toothed wheel X^2 on the axis end is fitted with a projection or plain part X^4 , and pivoted adjacently thereto is a catch X^5 , whose nose end normally lies on the plain part of said projection; but on the said toothed wheel making a slight turning movement on the lever rocking the said nose falls over the end of the projection, which constitutes a shoulder, and renders it impossible for the wheel

X^2 and cognate parts to be turned back to their original positions until the catch X^5 has been thrown out of gear with the shoulder by hand. To another part of the lever X , controlling the gas-supply and slides, is pivoted the lower end of a long arm X^6 , extending up the inside of the machine and jointly connected at its top end to a vertically-sliding plate X^7 , adapted on said lever being rocked to cover up the coin-slot X^8 , controlling the liquid-delivery part of the apparatus, and to present the word "Empty" before an opening in the casing simultaneous with the closing of the coin-slot of the biscuit-delivery mechanism and the turning off of the gas.

Should the supply of essence in the reservoirs become exhausted while there still remain packets in the pile, then gas is cut off and the coin-slots closed by the weights S at the end of the cord or chain wound around the drum o of the liquid-valve-controlling mechanism M falling on to a treadle or plate-like arm U of a lever, turning on an axis U' , disposed across the bottom of the casing and to whose other end a coupling-rod U^2 , extending upward to the weight-operated lever X , aforesaid, is connected.

Having now particularly described and ascertained the nature of this said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a coin-freed automatic mixing and liquid-delivery machine a rotating valve having a series of essence-measuring chambers within its body and ports and passages upon its face in combination with a valve-seating provided with ports and passages, a supply-tank for water or other dilutant, a plurality of measuring vessels, one or more essence-chambers and a coin-freed mechanism for intermittently operating the distributing and measuring valve, substantially as and for the purposes described.

2. In a coin-freed automatic liquid mixing and delivery machine, a rotating-valve having a series of essence-measuring chambers within its body and ports and passages upon its face in combination with a valve-seating provided with ports and passages adapted and arranged so that the water or other dilutant on its way to the delivery-orifice mixes with the essence in one or more of the measuring-chambers of the valve and thoroughly cleanses said chamber or chambers ready to receive the next charge and coin-freed mechanism for controlling the operation of said valve, substantially as described.

3. In a coin-freed automatic liquid-delivery machine a motor mechanism consisting of a source of power, a nest of gearing controlling such power to give an intermittent movement consisting of an escapement-wheel, a cam having as many arms as the escapement-wheel has teeth in combination with a verge having pallets thereon adapted to engage with the teeth of the escapement-wheel, a wiper-arm mounted on the verge and adapted to engage

with the said cam, and a coin-arm pivotally
carried on an arm fixedly mounted on the
verge, the said arm being adapted to normally
engage with a stop on the framework and to
5 be disengaged by the weight of the coin placed
in the machine substantially as described.

4. In a combined coin-freed machine for
the automatic delivery of hot liquids and a
biscuit or the like, the combination therewith,
10 of means for the cutting off of the source of
heat and the closure of the coin-slots simul-

taneously with the delivery of the final incre-
ment of either comestible sold, substantially
as and for the purposes described.

In testimony whereof I have signed my 15
name to this specification in the presence of
two subscribing witnesses.

HARRY ROSCOE COTTRELL.

Witnesses:

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