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[54] **TOKEN-DESTROYING VENDING SYSTEM**
9 Claims, 3 Drawing Figs.

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[50] Field of Search 194/4, 3; 222/2

[56] **References Cited**

UNITED STATES PATENTS

2,106,582	1/1938	Wall	194/3X
2,591,029	4/1952	Vander Plas	222/2
3,136,402	6/1964	Smith	194/4(E)
3,153,469	10/1964	McPherson	194/4(H)
3,204,741	9/1965	Maxwell et al.	194/4(B)

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ABSTRACT: A vending machine operable in response to the insertion of predetermined correct coins. The coins inserted in the machine are melted or burnt away after being evaluated. The machine may dispense articles, or control electricity, gas or water, in accordance with the value of the coin.

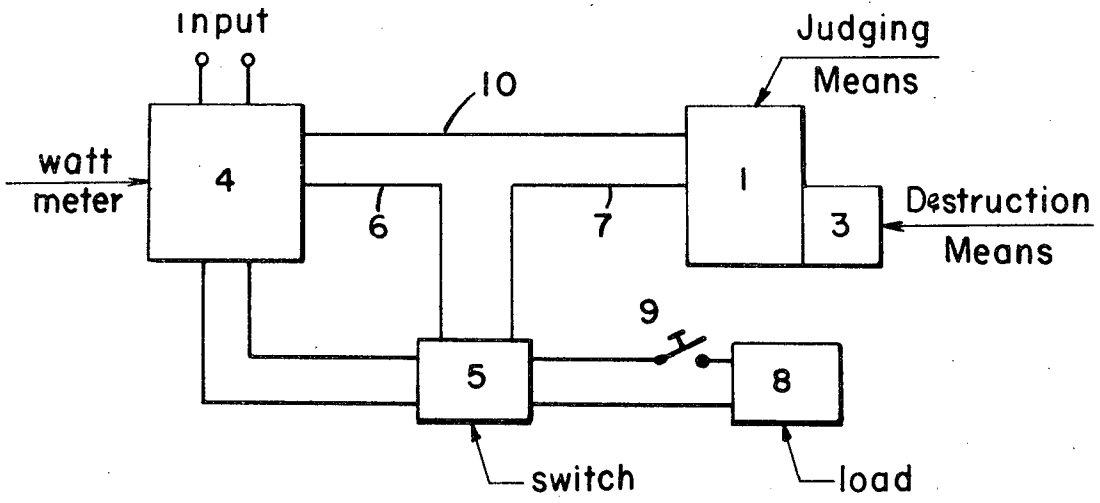


FIG. 1

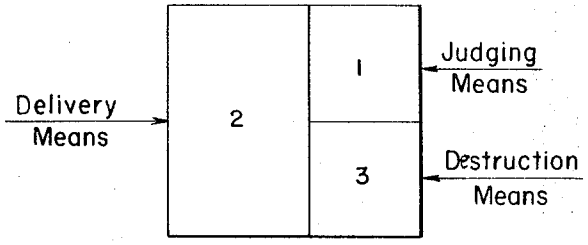


FIG. 2

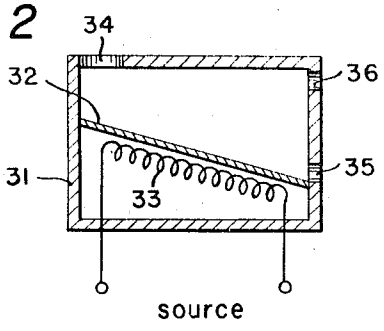
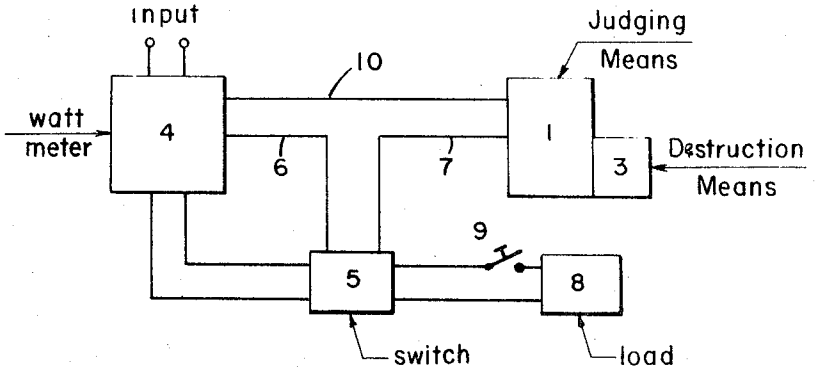


FIG. 3



TOKEN-DESTROYING VENDING SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a vending or dispensing machine and, more particularly, to a vending machine which is used with and operable in response to an insertion of a predetermined token or coin other than coins in circulation and in which the coin inserted is melted or burnt away.

2. Description of the Prior Art

Generally, a vending machine for goods is located on a street or in front of a store. When one wishes to buy an article, he inserts coins corresponding in value to the article to dispense it. The coins deposited into the machine are accumulated in a coin receiving container disposed therein. Thus, there is the risk that the accumulated coins will be stolen. In addition, the prior art vending machines require that the accumulated coins be collected. A useful number of machines of this kind will result in an increase in personnel expenses for coin collection.

It is also known that hospitals and rooms of hotels are sometimes provided with automatic gas or electricity-supplying devices operable in response to an insertion of coins to automatically supply a corresponding amount of gas or electricity. These devices also have the feature that the inserted coins are accumulated therein. Thus, the requirements involved in the collection of the accumulated coins cause an increase in personnel expenses in service businesses of this kind.

Further, it is conventional that the quantity of electricity, gas or water domestically used within a period be recorded relying on the inspection of an indicating meter located in each home and that the record is utilized as a basis for calculating the charge. This system requires a visit to respective homes so as to inspect the meter and collect money and, therefore, an increase in number of homes serviced results in an increase in the work involved in meter inspection and money collection and, hence, in the personnel expenditure.

It is therefore, an object of the present invention to prevent the coins accumulated within a service-affording vending machine from being robbed as well as to eliminate troubles conventionally involved in the collection of accumulated coins, by melting or burning away the inserted coins or tokens after they have been evaluated.

Another object of the invention is to provide an automatic supplying apparatus in which the switch or the valve for feeding or supplying electricity, gas or water operates to supply same in response to the coins inserted and when the quantity of the material for the value of the coins inserted has been dispensed, the switch or the valve operates to stop the supply while the coins inserted are melted or burnt away so as to save the trouble involved in the inspection of meters and in the collection of money.

In brief, these and other objects are achieved by using special coins and having a coin-judgment means and an article-dispensing means or a device for controlling gas or electricity and adding a coin-destruction means such as an electric heater or a container of acid or other solvent.

These and other objects will be more fully understood from the following description taken in conjunction with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram illustrating the structural relationship of the vending machine according to the present invention,

FIG. 2 is a cross-sectional view illustrating an embodiment of a coin treating means utilized in the vending machine, and

FIG. 3 is a diagram illustrating the general arrangement of the apparatus for automatically supplying gas, electricity or water, according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 diagrammatically illustrates the structural relationship in the vending machine of the present invention which

comprises a coin-judgment or sensing means **1**, a delivery means **2** for responding to the signals received from the coin-judgment means **1** to deliver articles one after one, and a destruction means **3**. The coin judgment means **1** is conventional and a so called "coin selector mechanism" which functions to judge the coins inserted as to whether they are the predetermined ones and to feed a signal to the article-delivery means **2** when the inserted coins are proper ones and which rejects the coins and returns them from the vending machine when they are not the proper ones.

Similarly, the article-delivery means **2** is conventional, responding to the signal from the coin-judgment means **1**, to deliver articles equivalent in value to the inserted coins from the delivery or outlet opening of the vending machine, using for example, a clutch mechanism.

The relationship of the coin-treatment means **3** which forms a major part of the invention, relative to the coin-judgment and goods-delivery means **1** and **2** corresponds to the relationship of the coin container relative to the corresponding means in the conventional vending machine. In other words, the inserted coins are allowed to fall down into the coin-treatment means **3** in the case where the coins are the correct ones. The coins used with the machine of the present invention are made from a meltable, soluble or combustible material and the pieces which have fallen into the coin-treatment means **3** are melted, dissolved or burnt away.

An embodiment of the coin treatment means **3** is shown in vertical section in FIG. **2**, which shows a housing **31** within which is disposed an inclined heating plate **32**. A heating means, for example, a coil of nichrome wire **33**, is provided beneath the heating plate **32** to heat the latter. The coil of nichrome wire **33** may be continuously fed with electrical power, or alternatively, the electrical power to the coil **33** may be controlled, for example, by a switch mechanism each time a coin falls. Further, the coil of nichrome wire **33** may be supplied with electrical power at predetermined intervals irrespective of the presence or absence of coins.

The coins that fall from the coin-judgment means **1** enter the housing **31** through an inlet **34** shown in FIG. **2** dropping onto the heating plate **32**. The latter is heated by the coil of nichrome wire **33** and melts or burns away the coins falling thereon. The molten material or gases produced at this time are respectively delivered or exhausted out from the housing **31** through the apertures **35** and **36** provided therein. In FIG. **2**, in order to destroy the fallen coins, coins other than the usual coins in circulation are used to operate the various kinds of vending machines. Thus, the coins used with the machines of the present invention are formed from meltable or combustible resinous material or metallic material and the user of the machine is required to buy such coins beforehand for a fixed price.

The embodiment shown in FIG. **2** is designed for melting or burning the pieces by application of heat. This embodiment may be so modified that sulfuric acid, nitric acid or aqua regia formed from them is contained within the housing **31** to chemically treat the pieces falling thereinto.

FIG. **3** diagrammatically illustrates an embodiment of the system for automatic electricity-supplying apparatus according to the present invention. The apparatus comprises coin-judging means **1**, coin-destruction means **3**, a wattmeter **4** and switch means **5**. The coin-judging means and coin-destruction means are the same as previously described with reference to FIGS. **1** and **2**. The power input lines are connected to a load **8** through the wattmeter **4** and the switch means **5**. The wattmeter **4** functions to supply a signal through a line **6** to open the switch **5** when a quantity of electricity corresponding in value to the inserted coins has been supplied to the load **8**. In other words, the wattmeter **4** is a kind of preset counter. The coin-judgment means **1** functions to feed a signal through a line **7** to the switch means **5** to close the switch when proper coins have been inserted thereby actuating the switch means. Also, the coins inserted, if they are proper ones, are delivered into the coin-treatment means **3** in a manner similar to that described in conjunction with FIG. **1**.

Now, a description is made hereunder with respect to the operation of the apparatus shown in FIG. 3. When proper coins are inserted into the coin-judgment means **1**, the signal fed through the line **7** actuates the switch means **5** to close the switch conduct. A user of the apparatus then closes a switch **9** so as to provide the load **8** with electrical power with the result that the wattmeter of the preset counter **4** operates. When the wattmeter integrates the supply of electrical power corresponding to the value of the inserted coins, the meter supplies a signal through the line **6** to the switch means **5** to open the switch and thereby stop the electrical supply to the load **8**.

In FIG. 3, when the load **8** does not require the entire quantity of the electricity which corresponds to the value of the inserted coins, the switch **9** may be opened to stop the electrical supply to the load **8**. In this case, however, the value integrated in the wattmeter **4** has not yet reached the preset value, i.e. the electrical quantity corresponding to the value of inserted coins, and thus, no signal is fed to the line **6**. Thus, switch means **5** remains closed. Therefore, when the remaining part of the electrical power is required, a mere closing of the switch **9** is sufficient for this purpose. When the remaining part of the electrical power has entirely been supplied, the switch means **5** is opened by the signal from the line **6**.

Furthermore, the coin-judgment means **1** delivers the coins inserted to the coin-treatment means for melting, dissolving or burning away the coins only when the coins are correct ones.

In the foregoing description, it has been assumed that the wattmeter **4** is preset for delivery of a predetermined amount of electric power when coins of the proper value are inserted in the coin judgment means **1**. If it is desired to provide for delivery of different amount of power as desired by the customer, the coin-judgment means includes coin-evaluating means and is connected to the wattmeter **4** by a line **10** so as to supply a signal to preset the wattmeter for delivery of an amount of power corresponding to the value of the coins inserted. When the wattmeter has supplied the selected amount of power to the load **8**, it sends a signal through the line **6** to open the switch means **5**.

FIG. **3** shows an embodiment wherein the present invention is utilized for an electrical-power-supplying apparatus. It is, however, readily appreciated that the principle of this embodiment may be similarly applied to a gas or water-supplying apparatus. It will be apparent that this modification requires a replacement of the wattmeter **4** by a suitable gas or water meter and replacement of the switch means **5** of the described embodiment with suitable valve means.

I claim:

1. A vending system comprising a coin-operable vending machine and coins for operating said machine, said coins being formed wholly of material which is consumed, gasified or melted by heat, said machine comprising judgment means for judging a coin inserted into the machine as to whether it is a proper one for operation of the machine, delivery means operable in response to said judging means to deliver a commodity when said coin is a proper one, and coin-destruction means for receiving said coin from said judgment means, said destruction means comprising a chamber into which said coins drop, electrical heat-generating means in said chamber for heating coins received in said chamber to wholly consume, gasify or melt them and means for discharging the resulting destruction products from said chamber.

2. A vending system according to claim **1**, in which said heat-generating means comprises an inclined plate forming a floor of said chamber and electrical means for heating said plate.

3. A vending machine according to claim **2**, in which said discharging means comprises a discharge opening from said chamber at the lower end of said inclined plate.

4. A vending system as defined in claim **1**, wherein said electrical heat-generating means is designed so as to generate heat every time that said coin is supplied thereonto.

5. A vending system as defined in claim **1**, wherein said electrical heat-generating means is designed so as to periodically generate heat at predetermined time intervals.

6. A vending system comprising coin operable dispensing apparatus and coins for operating said apparatus, said coins being formed wholly of material which is consumed, gasified or melted by heat, said apparatus comprising judgment means for judging said coin inserted as to whether it is a proper predetermined one, coin destruction means for receiving said coins from said judgment means, a preset counter settable by said judgment means connected to said source, and supply control means adapted to be controlled by both of said judgment means and said present counter, said supply control means being maintained in a set position when said coins inserted are correct ones, said preset counter resetting said supply-control means when the amount supplied has reached a preset value in said preset counter in accordance with the value of said coin, said coin-destruction means comprising a chamber into which said coins drop, electrical heat-generating means in said chamber for heating coins received in said chamber to wholly consume, gasify or melt them and means for discharging the resulting destruction products from said chamber.

7. A vending system as defined in claim **6**, wherein said preset counter is a watthour meter, said supply control means is an electrical switch and said apparatus is adapted for use as an automatic electricity supply apparatus.

8. A vending system as defined in claim **6**, in which preset counter is a gas flow meter, said supply control means are in the form of a valve and said apparatus is adapted for use as an automatic gas supply apparatus.

9. A vending system as defined in claim **6**, in which said preset counter is a water flow meter, said supply control means are in the form of a valve and said apparatus in adapted for use as an automatic water supply apparatus.