

- [54] **ADDITIONAL CREDIT REQUIRED  
INDICATOR IN VENDING MACHINE**

- [75] Inventor: **Thomas P. Jachimek**, Evergreen  
Park, Ill.

- [73] Assignee: **The Seeburg Corp.,** Chicago, Ill.

- [22] Filed: **Sept. 11, 1970**

- [21] Appl. No.: 71,616

- [52] U.S. Cl. ....340/149 R, 235/92 CN, 307/203

- [51] Int. Cl. ....G07f 9/08, H03k 17/00, H03k 19/00

- [58] **Field of Search** .....340/248, 149; 307/231, 235;  
307/237, 215, 203; 194/10, 15, 16; 221/2;  
346/16, 17; 235/92 CN

- [56]
- References Cited**

## UNITED STATES PATENTS

- 2,703,640      3/1955      Law et al. ....235/92 CN

- |           |         |                 |           |
|-----------|---------|-----------------|-----------|
| 3,302,005 | 1/1967  | Farnsworth..... | 307/203 X |
| 3,511,351 | 5/1970  | Jones.....      | 194/15    |
| 3,532,203 | 10/1970 | Clift .....     | 194/10    |

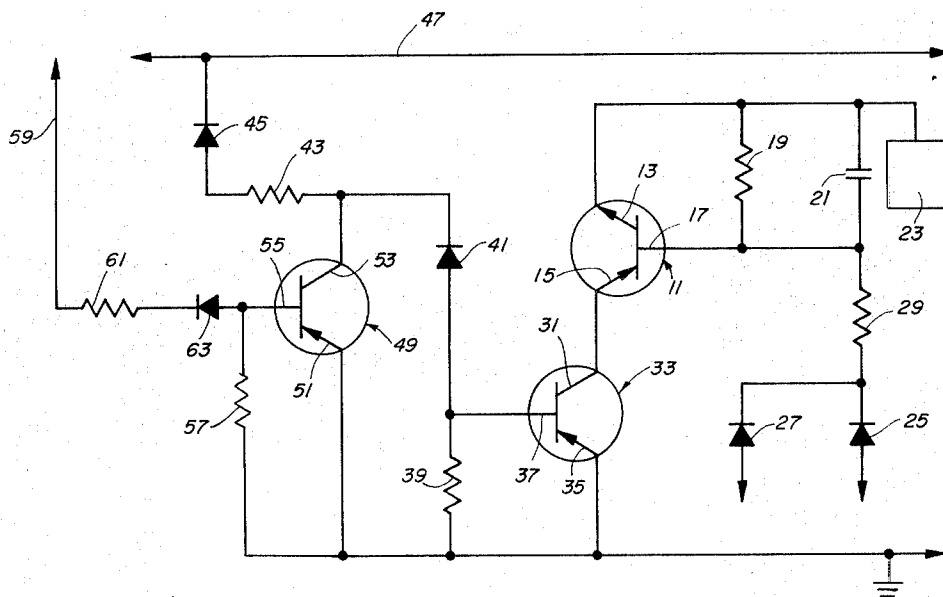
*Primary Examiner*—Donald J. Yusko

**Attorney—**Ronald L. Engel, Daniel W. Vittum, Jr.,  
Gomer W. Walters and John A. Waters

[57] **ABSTRACT**

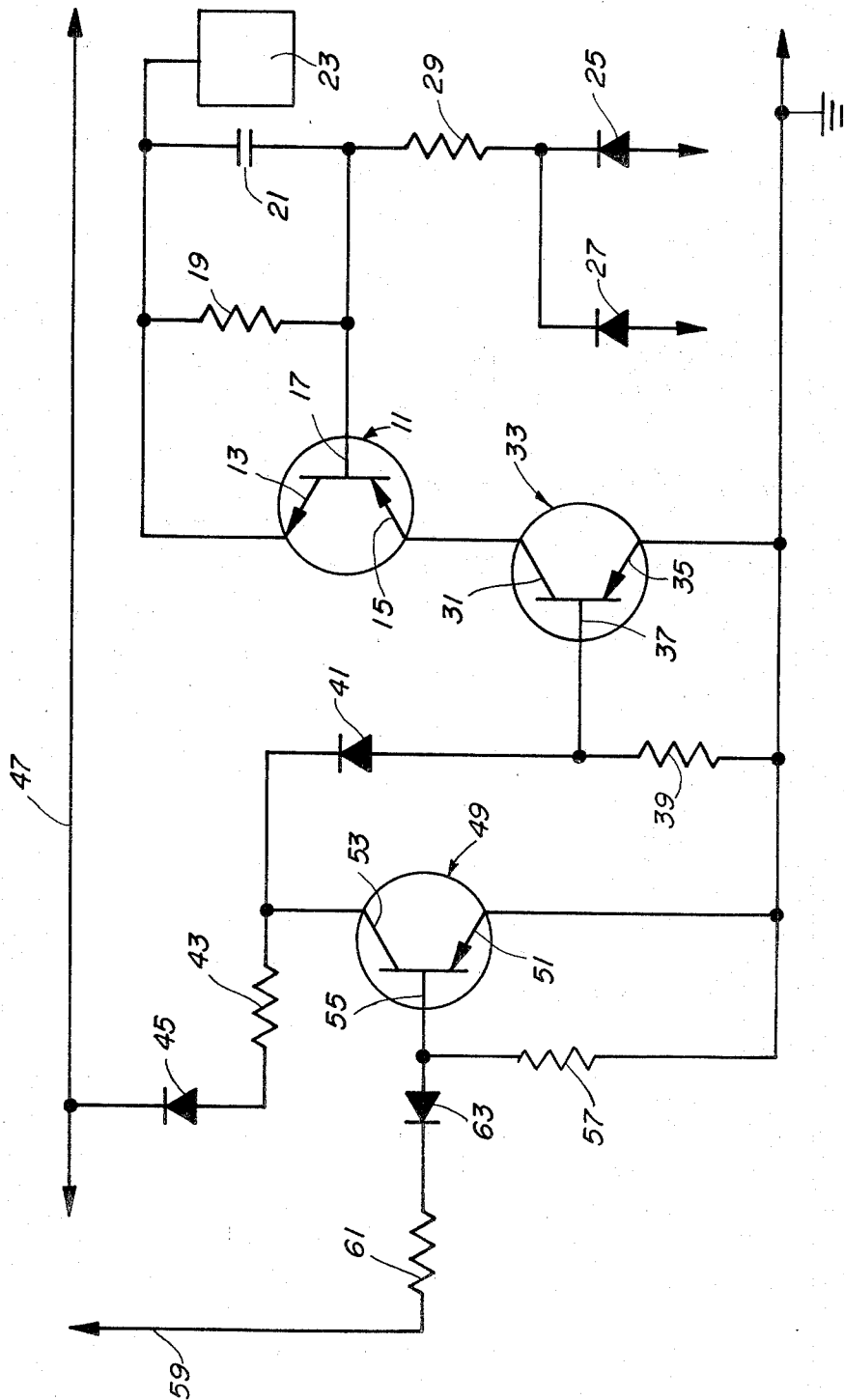
An indication is provided that more credit must be established after a customer establishes some credit below a predetermined minimum credit level. A silicon controlled switch is activated to produce the indication upon establishment of credit less than the minimum credit level. The silicon controlled switch is subsequently turned off when established credit exceeds the minimum credit level.

**5 Claims, 1 Drawing Figure**



PATENTED JAN 9 1973

3,710,320



INVENTOR.  
THOMAS P. JACHIMEK

BY *Gomer W. Walters*  
WEL

## ADDITIONAL CREDIT REQUIRED INDICATOR IN VENDING MACHINE

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates generally to an arrangement for indicating to a customer that additional credit must be established to obtain a vend from a vending machine, and, more specifically, this invention relates to an arrangement for producing an indication that more coins must be deposited in a coin-operated phonograph in order to obtain the playing of a selection.

#### 2. Description of the Prior Art

In the vending machine field frequently there are situations in which a customer has accumulated credit less than that required to permit vending of the desired vend item. In some circumstances, a customer may become distracted and not be sure as to whether he has established enough credit to make a selection. In other cases, such as when a pricing change has been made, the customer may not be aware that additional credit is necessary to initiate a vending cycle. Accordingly, it is desirable to inform the customer when he must insert additional coins or other monetary units in order to reach a minimum credit level.

Earlier prior art vending machines did not involve this problem, as no coin less than that which established a minimum credit level could be deposited. However, with respect to those vending machines in which partial credit less than a vend price can be established, there has been no information conveyed to the customer that he must establish more credit before being able to obtain a desired vend item. Therefore, the customers are frequently annoyed and irritated by the necessity of keeping track of deposited coins and the total credit that has been established.

The problem is particularly acute in the coin-operated phonograph area where the standard single play for pricing has been in effect for a long period of years.

However, in view of the inflationary trend of our society, coin-operated phonograph operators have had to increase the price of phonograph plays. Thus, for example, a popular pricing change is to make two singles available for 25 cents. It is apparent that it would be desirable to be able to inform the customer when he deposits a dime that that is no longer sufficient for him to obtain a play and that he must deposit additional coins in order to reach a minimum credit level corresponding to 25 cents.

### SUMMARY OF THE INVENTION

The present invention was developed in order to be able to give a customer an indication that he must establish additional credit in order to be able to obtain a vend item. Briefly, this invention relates to an arrangement for actuating a visual indicating device to inform a customer that more credit must be established in order to obtain a vend. The indicating device is preferably an electrically energized light, though any other type of indicating device would serve equally well.

A first switching device, such as a silicon controlled switch, is responsive to the establishment of credit below the minimum credit level to energize an indicat-

ing device. However, control of the first switching device is exercised by a second switching device, the second switching device being, for example, a first transistor. The conducting state of the first transistor is controlled by a third switching device, such as a second transistor, which is responsive to a signal indicating that credit has been established equal to or in excess of the minimum credit level.

The first transistor is connected in series with the silicon controlled switch and obtains a base signal from a reset circuit which does not provide an output signal until a specified time after power has been applied to the circuit. A reset circuit is disclosed in an application of James A. Wrabel entitled RESET CIRCUIT FOR LOGIC SYSTEM, U.S. patent application Ser. No. 71,621, filed Sept. 11, 1970 and assigned to the same assignee as this invention. After the time delay established by the reset circuit, the first transistor in series with the silicon controlled switch is turned on to permit operation of the silicon controlled switch. Upon deposit by a customer of coins or other monetary units establishing a credit less than the minimum credit level, the silicon controlled switch will be activated to energize the indicating device. When additional coins or other monetary units are deposited to establish a credit in excess of the minimum credit level, the second transistor will be turned on to return the first transistor in series with the silicon controlled switch to a nonconducting state, thereby turning off the silicon controlled switch and the indicating device.

Therefore, it is a primary object of this invention to provide an arrangement for a vending machine to indicate to a customer that additional credit must be established before any item in the machine can be vended.

Another object of this invention is to provide an arrangement that will be actuated upon establishment of credit by a customer less than a minimum credit level to indicate that additional credit must be established to obtain a vend and which will be disabled when a customer has established credit equal to or greater than the minimum credit level.

A further object of this invention is to provide an arrangement that will indicate to a customer of a coin-operated phonograph that the credit established is not sufficient to obtain the play of a single recording and that more credit must be established to obtain such a play.

These and other objects, advantages, and features of this invention will hereinafter appear, and for purposes of illustration, but not of limitation, an exemplary embodiment of the subject invention is shown in the appended drawing.

### BRIEF DESCRIPTION OF THE DRAWING

The sole FIGURE of this application is a schematic circuit diagram of a preferred embodiment of the present invention.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The indicator control circuit illustrated in the only FIGURE of this application is based upon a switching device, such as a silicon controlled switch 11. Silicon controlled switch 11 has power terminals 13 and 15

and a gate terminal 17. Gate terminal 17 is connected to power terminal 13 by a resistor 18 in parallel with a capacitor 21. Power terminal 13 of silicon controlled switch 11 is also connected to an indicating device, shown automatically at 23. This indicating device may be any type of arrangement that may be utilized to give a customer an indication that it is necessary to establish additional credits before obtaining a vend. In this preferred embodiment, however, an electrical light bulb having a translucent cover with appropriate lettering thereon is utilized.

Input signals are applied to gate 17 of silicon controlled switch 11 through diodes 25 and 27 and a resistor 29. Any number of desired input may be utilized by increasing the number of diodes such as 25 and 27. In this particular example, however, it is assumed that a coin-operated phonograph has its pricing arranged so that two singles may be played for 25¢. With such an arrangement, deposit of a nickel or a dime will not bring the system to a minimum credit level and thus inputs on diodes 25 and 27 are obtained from the nickel coin switch and the dime coin switch, respectively.

Power terminal 15 of signal control switch 11 is connected to the collector 31 of a transistor 33. Transistor 33 also has an emitter 35 connected to ground and a base 37. Base 37 is biased at a level determined by resistor 39, diode 41, resistor 43 and diode 45 connected in series between a line 47 and ground. The bias voltage for base 37 of transistor 33 is obtained from between resistor 39 and diode 41. Line 47 has a signal thereon from the reset circuit shown and claimed in the above-identified application of James A. Wrabel. A signal will appear on this line a predetermined period of time after power is applied to the vending machine.

Another transistor 49 is connected across the series combination of resistor 39 and diode 41. Transistor 49 has an emitter connected to ground and a collector 53 connected between diode 41 and resistor 43. The base 55 of transistor 49 is biased through a resistor 57. Base 55 of transistor 49 receives an input signal on line 59 indicating that credit equal to or greater than the minimum credit level of the vending machine has been established. This signal is applied to base 55 of transistor 49 through a resistor 61 and a diode 63.

In the quiescent state, silicon controlled switch 11 is prevented from conducting by transistor 33 which is normally in a non-conducting state. When power is applied to the vending machine, a signal will appear on line 47 a predetermined period of time after application of the power. A signal on line 47 will turn on transistor 33 (while transistor 49 is in a nonconducting state) so that silicon controlled switch 11 may be actuated. If a dime or nickel (in the particular embodiment being discussed as an example) is deposited, a signal will be applied to the gate terminal 17 of silicon controlled switch 11 to trigger silicon controlled switch 11 into conduction. Conduction of silicon controlled switch 11 actuates the indicator device 23 to inform the customer that more credit must be established before a phonograph play can be vend.

It is, of course, recognized that the establishment of credit need not be solely in response to the deposit of coins but also may be in response to insertions of bills or credit cards.

After the customer has deposited additional coins or other monetary indicia to meet or exceed the minimum credit level, a signal will appear on line 59 to initiate conduction of transistor 49 to short out the bias voltage to transistor 33. As a result of this action, transistor 33 is turned off, which turns off silicon controlled switch 11. Transistor 33, and thus silicon controlled switch 11, will be held in the off stage so long as the minimum credit signal appears on line 59.

Therefore, an arrangement is provided which is responsive to the establishment of credit less than a minimum credit level to provide an indication that the customer must establish additional credits in order to obtain a vend item, and this indication is then removed when the customer has established credit equal to or greater than the minimum credit level.

It should be understood that the various modifications, changes, and variations may be made in the arrangements, operations, and details of construction of the elements disclosed herein without departing from the spirit and scope of this invention.

I claim:

1. An indicating arrangement for a vending machine comprising:

an indicating device for informing an operator of the vending machine that additional credit must be established;

a first switching device responsive to the establishment of credit less than a predetermined minimum credit level to activate said indicating device;

a second switching device connected in series with said first switching device and adapted to render said first switching device inoperative for a predetermined period of time after application of power to the vending machine; and

a third switching device responsive to a signal representing that credit equal to or greater than the minimum credit level has been established to change the state of said second switching device.

2. An indicating arrangement as claimed in claim 1 wherein said first switching device comprises a silicon controlled switch.

3. An indicating arrangement as claimed in claim 2 wherein said second and third switching devices comprise first and second transistors, respectively.

4. An indicating arrangement as claimed in claim 3 and further comprising a first resistor, a first diode, a second resistor and a second diode connected in series between ground and a power source that provides a power signal a predetermined time after application of power to the vending machine, the base of said first transistor being connected to the common point of said first resistor and said first diode, the emitter-collector junction of said second transistor, being connected in parallel with the series combination of said first resistor and said first diode.

5. An indicating arrangement for a vending machine comprising:

a silicon controlled switch;

an output line, one power terminal of said silicon controlled switch connected to said output line;

an indicating device for informing an operator of the vending machine that additional credit must be established;

5

means for applying to the gate terminal of said silicon controlled switch a signal indicative of the establishment of credit less than the minimum credit level;

- a first transistor, the collector of said first transistor 5  
being connected to the other power terminal of said silicon controlled switch and the emitter of said first transistor being connected to ground;
- a power line having a power signal applied thereto at a predetermined time interval after application of 10  
power to the vending machine;
- a series combination of a first resistor, a first diode, a second resistor and a second diode connected between ground and said power line, the base of said first transistor being connected to the com- 15

6

mon point of said first resistor and said first diode; and

a second transistor having its emitter connected to ground and its collector connected to the common point of said first diode and said second resistor, a signal being applied to the base of said second transistor when credit equal to or greater than the minimum credit level has been established,

whereby said indicating device is activated upon establishment of credit less than the minimum credit level and de-activated when credit equal to or greater than the minimum credit level is established.

\* \* \* \* \*

20

25

30

35

40

45

50

55

60

65