

[54] **APPARATUS FOR USE WITH A DISPATCHING SYSTEM HAVING VISUAL AND AUDIBLE SIGNALS**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 43,692, June 5, 1970, abandoned.

[52] U.S. Cl. **340/286 R, 340/378 R, 340/326 R**

[51] Int. Cl. **G08b 7/00**

[58] Field of Search **340/248 RX, 326 R, 378 R, 340/286 R, 332 R**

[56] References Cited

UNITED STATES PATENTS

3,182,357	5/1965	Tuttle.....	340/286 R
3,261,011	7/1966	Crosthwait.....	340/286 X
3,281,821	10/1966	Joy.....	340/286 X
3,310,797	3/1967	Auger.....	340/286 R

Primary Examiner—Harold I. Pitts

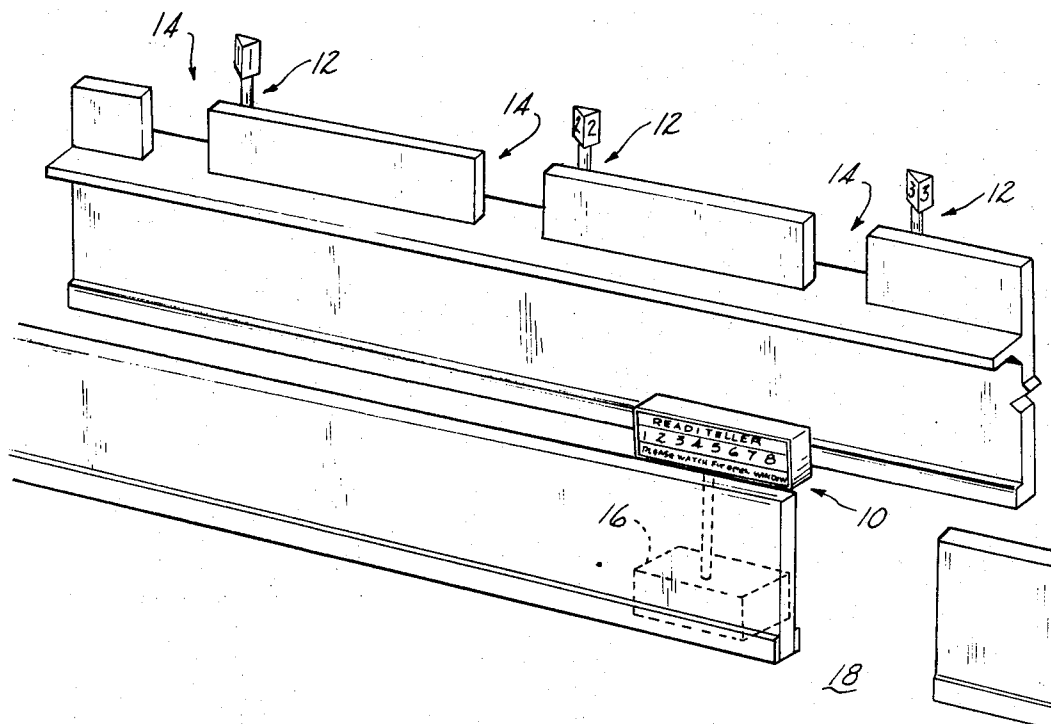
Attorney, Agent, or Firm—Hauke, Gifford, Patalidis & Dumont

[57]

ABSTRACT

Apparatus for use with a system for holding and dispatching customers in a business establishment having a plurality of separate operating stations such as a bank so that customers can be retained in a single line and then dispatched to an operating station when the operator at that station is free to transact business. A number of remote units are connected to a master unit such that energizing actuating means at the remote unit causes a bell to ring momentarily and flashes a light at both the remote unit and the master unit. The bell indicates to those standing in line that an operating station is ready to service the next customer and the flashing lamp at the master unit indicates which particular operating station is ready for use. The flashing lamp at the remote unit helps the customer find the right operating station. The system includes a counter at each remote unit energized by the actuating means so that information regarding the number of customer transactions will be recorded at each operating station.

5 Claims, 3 Drawing Figures



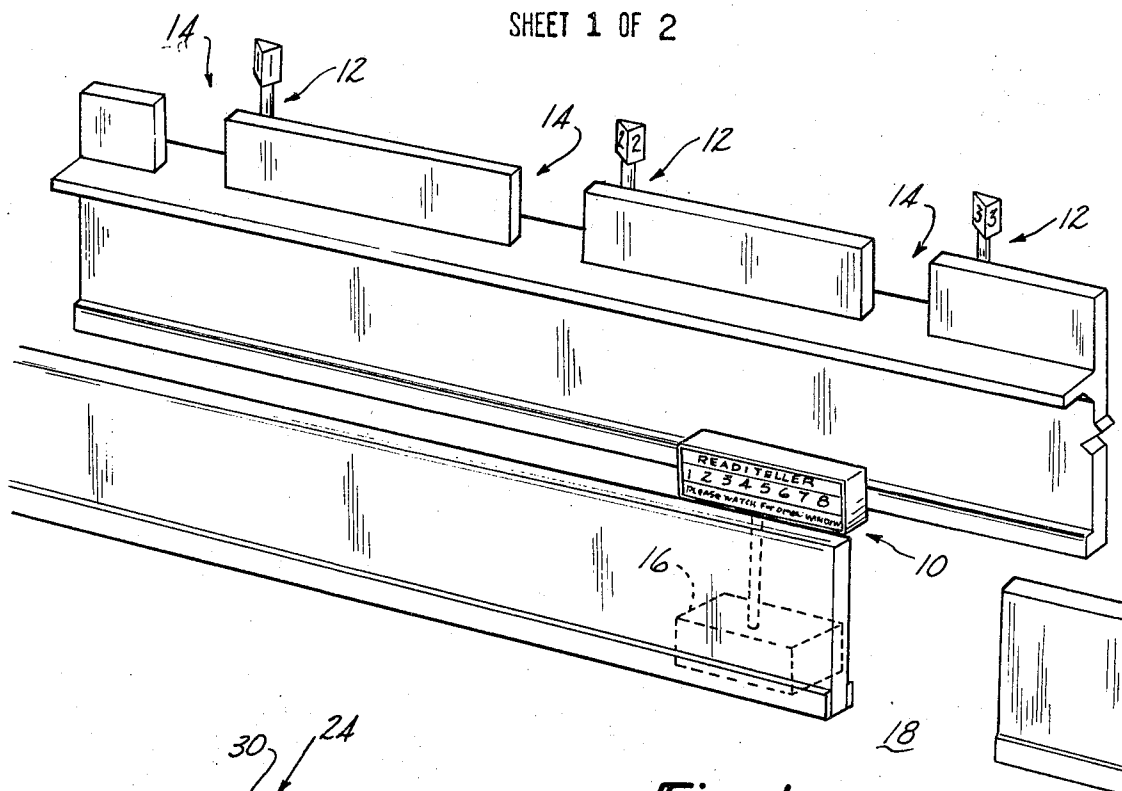


Fig-1

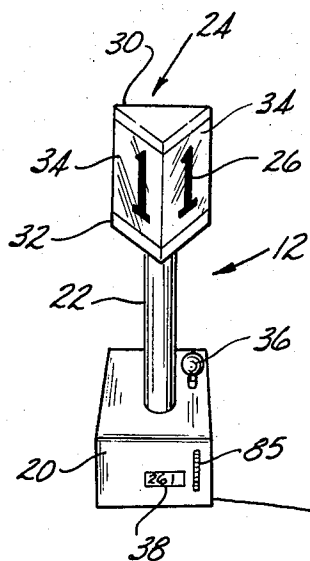
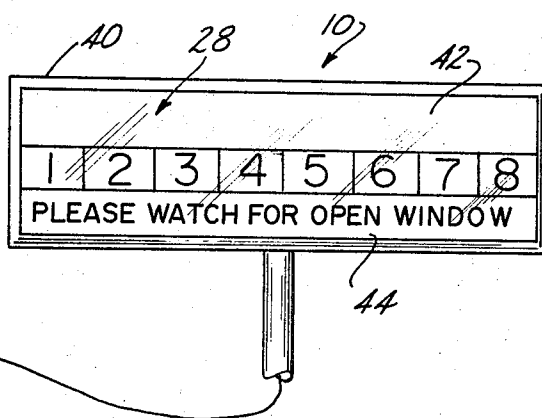


Fig -2



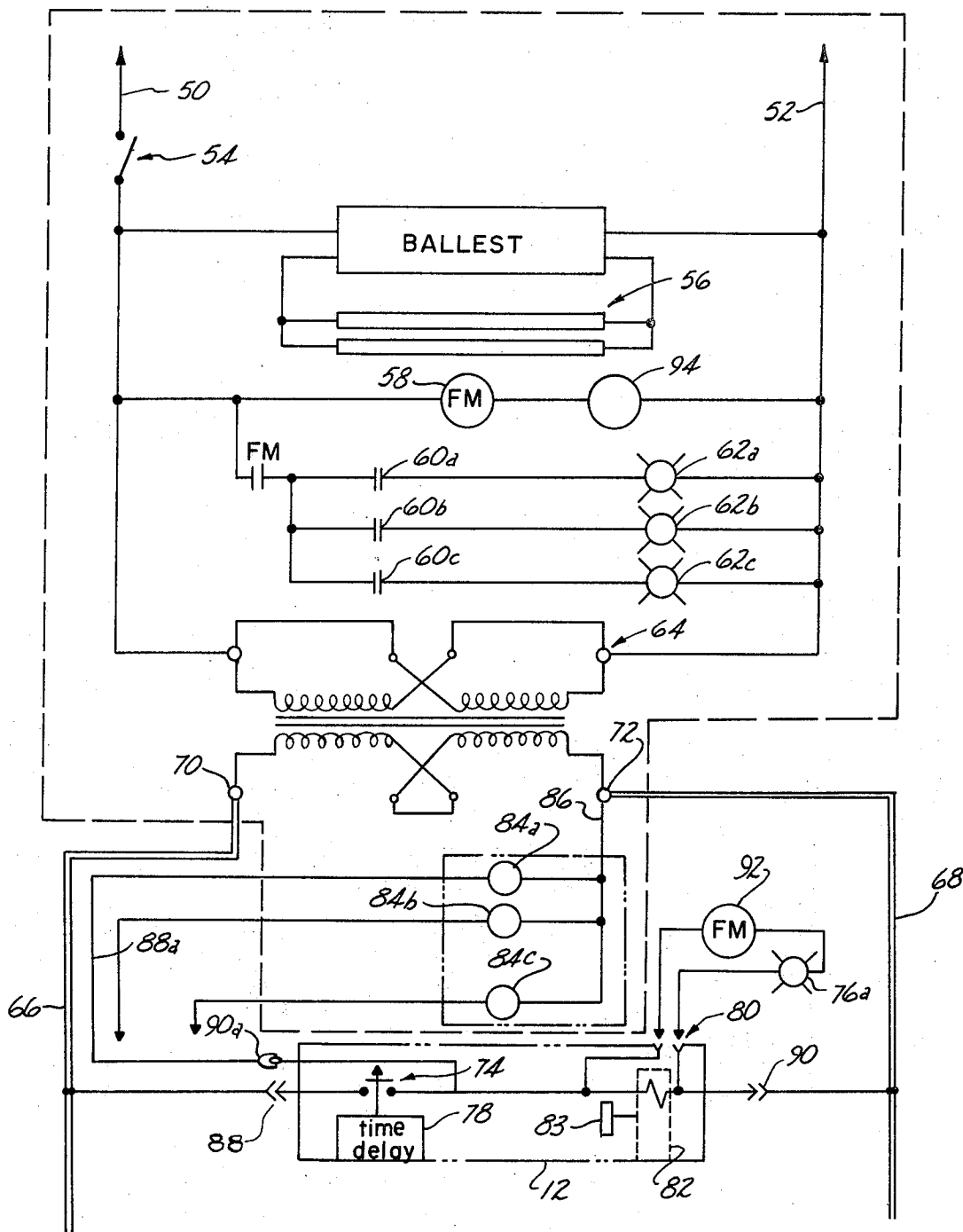


Fig-3

APPARATUS FOR USE WITH A DISPATCHING SYSTEM HAVING VISUAL AND AUDIBLE SIGNALS

RELATIONSHIP TO OTHER APPLICATION

The present application is a continuation-in-part of application Ser. No. 43,692, filed June 5, 1970 and now abandoned.

BACKGROUND OF THE INVENTION

I. Field of the Invention

The present invention relates to apparatus for use in a system for controlling customer traffic in a business establishment and more particularly to apparatus for a system for directing customers from a single waiting area to one of a plurality of customer service stations as those stations becomes free.

II. Description of the Prior Art

In business establishments having a plurality of operating stations, such as a bank with a number of different teller windows, it has been the customary practice for customers to wait in lines in front of the individual stations for their turn to conduct their business. This method of operation is by no means the most efficient in which to accomodate customers in a business operation. Often a person seeking to conduct his transactions in the quickest manner possible will understandably choose to wait in the shortest line. However, since each transaction will take a different amount of time, it is impossible to guess which window will be free first and it is often the case that the shortest line requires a longer waiting time than another longer line. This situation often produces a sense of dissatisfaction and disgruntlement on the part of the customer. Furthermore, it is often the case that in large business establishments with a plurality of operating stations, such as a bank, that only a portion of the operating stations are visible to the customer at any one time or that the customer is unable to observe all operating stations simultaneously. In this situation, the customer will often wait in a near line in order to conduct his business whereas an operating station not entirely visible to the customer may have few or no customers waiting to transact business. This situation leads to an inefficient system of accomodating customers and one that is generally unsatisfactory.

To overcome this problem, many banks and similar establishments are now utilizing a system wherein the customers are maintained in a single line away from the tellers so that they can move to the first teller who becomes free. This is a better system than those previously used for the reasons given above. A problem often encountered with the use of such a single line system, however, is that the teller's windows are not all equally visible from the single line. Also, unless the next patron is paying attention, several minutes may go by before he realizes that a window has been free.

The present invention provides apparatus to be used in a single line system and which makes such a system more efficient.

U. S. Pat. No. 3,182,357, issued to R. G. Tuttle on May 11, 1965, discloses a similar system for banks and grocery stores but which utilizes a plurality of waiting stations. Means are provided to release customers from the waiting stations in turn as a service area becomes free. While this alleviates the problems encountered by

customers who select the wrong line in a bank or the like where each teller has his own line, it does not eliminate the problem. The wrong line can be selected at the waiting station and although it is impossible that a poor selection would cause a person to wait an additional time longer than one complete cycle through the waiting stations, it is entirely possible that a person coming to a particular waiting station after another had assumed the same position at another station could be released first.

The present invention provides apparatus which insures that the first person in line will be served first.

SUMMARY OF THE PRESENT INVENTION

The apparatus of the present invention is comprised of a plurality of remote operating units connected to a master unit. The master unit is positioned to be visible to customers waiting in a single line and the remote units are placed at the various operating stations. When an operating station is free to conduct business, the operator will energize actuating means on the remote unit to sound a bell and to illuminate two flashing lights for a predetermined time; one light at the master unit will indicate by station number, letter, or other designation which operating station is free to conduct business, while the light at the remote unit, arranged in a manner visible to the line of customers, will provide a further indication of the station free to conduct business. Furthermore, a counter is installed on each remote unit which records the number of customers serviced at that station, thus allowing the management of the business establishment to determine the productivity of each station operator, customer business volume of the business establishment and the like.

Finally, for convenience, the system operates on ordinary line voltage. However, as a safety factor, a step-down transformer is utilized to reduce the line voltage, thereby eliminating the danger of harmful electric shock to the station operators. Therefore, a primary object of this invention is to provide an apparatus to make more efficient use of a system for dispatching customers in a business establishment from a single waiting line to available customer service stations.

Another object is to record the number of transactions carried on at each station in a business establishment with a plurality of operating stations by providing means automatically registering a count each time the remote unit is actuated to indicate that the operator at that station is free to service the next customer.

Another object is to provide a system of controlling the flow of persons in a business establishment with a plurality of operating stations which utilizes convenient line voltage and yet eliminates the danger of harmful electric shock by providing a step-down transformer in the system intermediate the master unit and each of the remote units.

DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become evident as the invention is further described in conjunction with the accompanying drawings in which like parts refer to like parts throughout the several views and in which:

FIG. 1 is a perspective view illustrating the system of the present invention ready for use;

FIG. 2 is a perspective view of a portion of a preferred master unit and one preferred remote unit of the system of the present invention; and

FIG. 3 is a schematic representation of a preferred electrical circuit for the system of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Now referring to the drawings for a detailed description of the present invention, a preferred embodiment thereof is illustrated in FIGS. 1 and 2 as comprising a master unit 10 and a plurality of remote units 12. The remote units 12 are individually placed at an operating station, indicated generally by reference characters 14, while the master unit 10 is supported by a stand 16 and is placed adjacent a waiting area 18.

The remote units 12 each preferably comprises a base portion 20, a post 22 supported by the base portion 20 and an indicating portion 24 supported by the post 22. A numeral, indicated by reference character 26 formed on the indicating portion 24, designates an operating station and corresponds with the same numeral in a row of indicia 28 formed on the master unit 10. In the preferred embodiment illustrated, the master unit 10 can be connected with eight remote units 12, but it is apparent that a greater or lesser number of remote units 12 can be provided depending upon the needs of the particular bank or other business establishment.

Each remote unit 12 further comprises upper and lower triangular cap members 30 and 32, respectively, which retain translucent panes 34 in place. The numerals 26 are formed in the panes 34 with the triangular cap members 30 and 32 displaying the panes 34 in a position so that they are visible from the greatest possible number of directions. The base portion 20 includes an actuating portion 36 of a switch, preferably of the plunger type, and a counter indicator 38 which indicates the number of times the actuating portion 36 has been depressed in a manner which will be subsequently described.

The master unit 10 preferably comprises a housing 40 having a front translucent panel 42 on which the numerals 28 and a set of instructions 44 can be displayed.

Referring now to FIG. 3, a preferred electrical diagram of the present invention is illustrated. Lines 50 and 52 are adapted to be connected in the conventional manner to ordinary line voltage, usually 115 volts AC, to provide electrical power for the system. A conventional switch 54 in line 50 operates to turn the system on or off and main sign lights 56, mounted within the housing 40 of the main unit 10, are energized by the switch 54 so that the panel 42 is illuminated whenever the system is in operation.

A flashing motor 58 is connected across lines 50 and 52 in series with a plurality of single pole, single throw relays 60 and master indicator lights 62. The lights 62 are positioned in the housing 40 with one light disposed behind each numeral in the row of numerals 28. Thus, while in the schematic only three lights 62a, 62b and 62c and their corresponding relays 60a, 60b and 60c are illustrated, it is to be understood that in the particular embodiment being described there would be eight such sets and in other embodiments more or less could

be provided depending upon the needs of the particular business establishment.

It is clear then that when a relay 60 is closed the flashing motor 58 will cause the light 62 in series with the particular relay 60 to flash to draw customer attention to the particular numeral in the row of numerals 28 which is being illuminated.

A step-down transformer 64 is also connected across lines 50 and 52. The step-down transformer 64 reduces the 115 volt line voltage to 24 volts in the present embodiment of the invention in a manner well known in the art prior to connection to the remote units 12, thus eliminating any dangerous electrical shock hazard to operators of the remote units 12.

Each remote unit 12 is identical to the other remote units 12 so that a description of one will suffice as a description for all of them. Power is supplied to the remote units 12 through leads 66 and 68 which are connected directly to the electrical output terminals 70 and 72, respectively, of step-down transformer 64. Connected in series across leads 66 and 68 are a single-pole, single throw switch 74 and remote unit light 76. It has been found to be convenient to use a common push button type switch for switch 74 and this is the actuating portion 36 of FIG. 2. Switch 74 is operated in conjunction with a time delay 78, thus holding the switch 74 in a closed state for a predetermined period of time. The time delay 78 is of the conventional relay type and a time delay of about 15 seconds has been found convenient for the present invention. However, the time delay 78 may be easily adjusted for time delays up to several minutes in standard time delay devices. Remote station light 76 is preferably a 24 volt incandescent light bulb and is connected in series with the switch 74 and the step-down transformer 64, such that closure of switch 74 will illuminate the remote unit light 76. It has been found convenient to connect the remote unit light 76 to the switch 74 through a two wire standard female-male electrical connector 80.

A solenoid 82 is connected in parallel with the light 76 so that it too is energized each time the switch 74 is actuated. The solenoid 82 energizes a standard rotary type counter 83, the indicator 38 (FIG. 2) of which is in view on the base portion 20 of the remote unit 12. The solenoid 82 remains in the energized state until switch 74 is again opened. When the switch 74 opens, the solenoid 82 deenergizes, thus being ready to increment counter 83 upon the next closure of switch 74. In this manner, each closure of switch 74 is automatically recorded by counter 83. A dial 85 (FIG. 2) is preferably provided on the exterior of the base portion 20 to permit the counter to be manually reset. Female and male connectors 88 and 90 are preferably provided to permit connection and disconnection of the remote units 12 and from the leads 66 and 68.

The master unit 10 also includes latching mechanism 84 for the relays 60 and these are connected to the switch 74 and step-down transformer 64 by lines 86 and 88 and connectors 90a. Thus, when switch 74 is closed, latching mechanism 84a for the particular remote unit 12 is energized to close the corresponding relay 60a and thus energize the light 62a at the master unit 10. When the switch 74 is returned to the open state by the time delay 78, latching mechanism 84a deenergizes, thus returning relay 60a to the open position so that both lights 62a and 76a are deenergized.

A flashing motor 92 is illustrated as being connected in the circuit for the lamp 76. It is clear, however, that a single flashing motor could, if desired, be used for all of the lamps 76 in the remote unit 12. A bell 94 is provided in the master unit 10 to be actuated by the switch 74. The bell 94 preferably is of the type which strikes but once each time the switch 74 is actuated.

The operation of the present invention may now be described for use in a bank, although the use of the present invention in grocery stores, shopping markets and the like are well within the scope of the invention. The banking customers form one line near or in front of the master unit 10, preferably in the area 18 as indicated in FIG. 1. Each teller window 14 is equipped with a remote control unit 12. As the teller is finished with a customer and ready to accommodate another customer, the teller closes switch 74 by the actuating portion 36 on his remote unit. The closure of switch 74 will activate time delay 78 and will energize latching mechanism 84, thus closing relay 60. The closure of relay 60 will cause the bell 94 to sound and will complete the circuit to the master indicator lamp 62 which, when utilized in conjunction with the flashing motor 58, will continue flashing until the relay 60 resumes an open state. The closure of switch 74 will also illuminate the remote station light 76 so that it will begin flashing and energize solenoid 82, thus incrementing counter 83. The bank customer in the front of the line will thus hear the bell so that his attention will be called to the master unit 10. The flashing light on the panel 42 of the master unit 10 indicates the designation of the teller station that is free to accommodate the customer. The customer then may identify the free teller station by observing that the remote station light 76 disposed within the indicator portion 24 is also flashing.

After the switch 74 has remained closed for a predetermined time, the time delay 78 will again open the switch 74, thus extinguishing the remote unit light 76 and deenergizing the latching mechanism 84 which in turn opens the relay 60, thus extinguishing the flashing master indicator light 62.

In addition, as the switch 74 resumes an open position, solenoid 82 deenergizes and is thus ready to increment counter 83 upon the next closure of switch 74. The counter 83 may be used by the management of the bank to check the productivity of the individual tellers, the amount of customer business, and the like. When the teller is finished with the customer, the teller again closes the switch 74 and the process described above is repeated.

It is apparent that an apparatus has been described which will facilitate the utilization of a system for dispensing of service at a number of stations in business establishments where this is the manner in which services are provided. The system includes an audio indication that a service area is free and a visual indication of which service area is ready to service the customer. Safety features are provided so that there is little danger of accident, and a counting means is incorporated into the apparatus so that the system can also be used for purposes of evaluation.

It is also apparent that the particular system de-

scribed can be readily installed in existing establishments. In a sense it is completely portable as it can be plugged into the wall and be put into operation. The remote units and the master unit can be moved from one place to another and do not become permanent fixtures, so that it is not necessary to substantially modify the existing structures to accommodate the present apparatus and to use such apparatus in a system for insuring efficient customer handling. A standard assembly can be provided to accommodate a predetermined number of remote units, but the apparatus will still function with less than this number of remote units. Those that will be used in a given situation will be simply plugged into the master unit.

It is also apparent that although I have described but a single embodiment of my invention many changes can be made therein without departing from the spirit of the present invention or the scope of the appended claims.

I claim:

1. Apparatus for use in a system for retaining customers in a single line and then dispatching them to one of a number of service areas as the service areas become free, said apparatus comprising a master unit disposed to be viewed by the customers in the line and a remote unit disposed at each of the service areas in a position to be viewed by the customers in the single line, said master unit being adapted for connection to a source of ordinary line voltage, an electrical connection between said master unit and said remote units, said electrical connection including a step-down transformer for reducing the line voltage connecting said master unit and said remote units, said remote units being portable and being connected with said master unit, audio indicating means associated with said master unit and visual indicating means on said remote units and on said master unit, means at said remote units for actuating simultaneously both the audio indicating means and the visual indicating means whereby the availability of a service area will be indicated by the audio indicating means, the particular service area which is available will be indicated by the visual indicating means on the master unit and the location of the available service area will be indicated by the visual indicating means on the remote unit.

2. The apparatus as defined in claim 1 and including means for recording and indicating each time the actuating means on said remote unit has been actuated.

3. The apparatus defined in claim 1 and in which said visual indicating means comprises electric lamps and including means for flashing at least one of said electric lamps.

4. The apparatus defined in claim 3 and including means holding said actuating means in an actuated position for a predetermined period of time.

5. The apparatus as defined in claim 1 and in which said master unit and said remote unit indicating means includes lamps at said master unit and at said remote units and said electrical connections including electrical relays energizing said master unit lamps upon actuation of one of said remote units.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,803,578 Dated April 9, 1974

Inventor(s) Edward K. LaVanway

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 3, line 23, after "station" insert --14--;
line 24, delete "indicia" and insert
--numerals--;
line 55, delete "main" and insert --master--;
line 58, delete "56" and insert --58--;
Col. 4, line 53, after "counter" insert --83--;
line 60, delete "88" and insert --88a--;
Col. 5, line 2, delete "76" and insert --76a--
line 14, delete "teller window" and
insert --operating station--;
line 14, after "14", insert --or teller
window in the case of a bank--;
line 18, after "unit" insert --12--;
line 22, change "lamp" to --light--
line 38, delete "unit" and insert
--station--.

Signed and sealed this 22nd day of October 1974.

(SEAL)

Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents