United States Patent

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[54] INPUT-OUTPUT APPARATUS

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[52] **U.S. Cl.**.....**340/149 A,** 340/149 R, 340/378 R

[51] **Int. Cl.**.....**G08b 5/00**

[58] **Field of Search**.....340/149 R, 149 A

[56] **References Cited**

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[57] **ABSTRACT**

An input-output apparatus particularly adapted for use in business systems in which the input apparatus is an order board which is portable and capable of operation by the ordering or consuming public. The board has a plurality of slide members therein which are selectively moved in ordering to various locations corresponding to quantities of an item to be ordered. A plurality of rows of holes in the board aligned with the slide members provide information of the quantity of an item to be ordered and these holes are blocked by the slide members when moved in a manner corresponding to the number of items to be ordered. A readout device in the form of a plurality of contact pins having the same array orientation as the holes in the order board will be brought into alignment with and inserted into the holes in the board wherein those holes not blocked will allow passage of the pins and those blocked will cause the pins to slide in the reader to actuate contacts and energize signaling devices corresponding to the number of items ordered. This information is available for transmittal as a display at the point of sale and to a remote location in a business system. It also provides information in terms of signals to a memory storage unit for retaining such information for business purposes.

11 Claims, 8 Drawing Figures

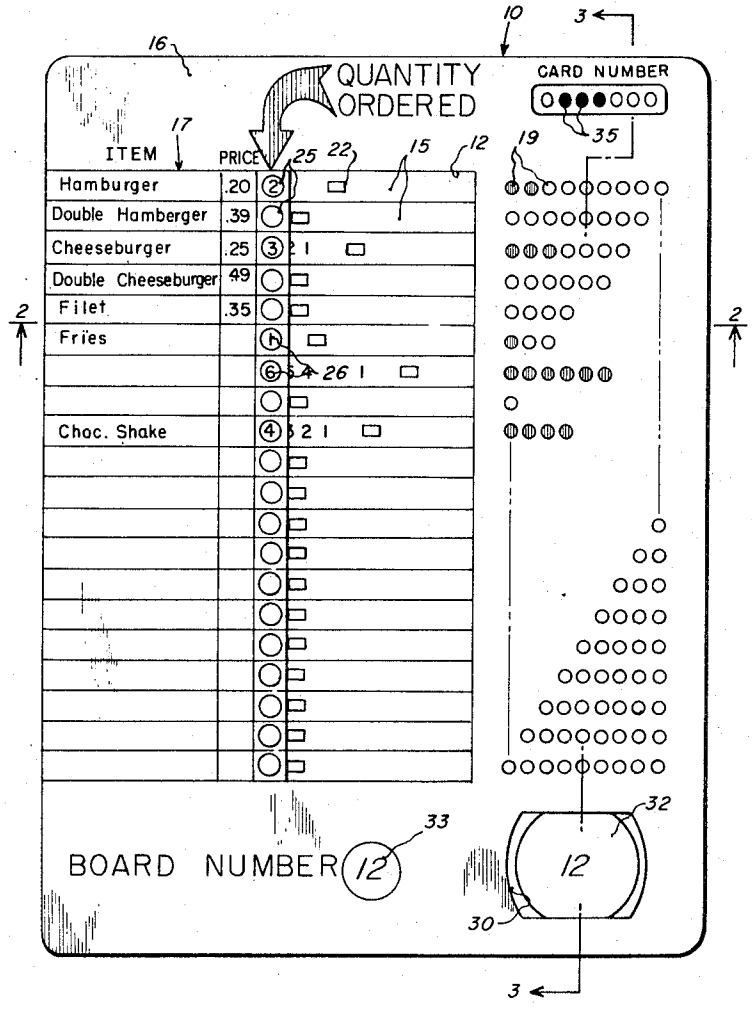
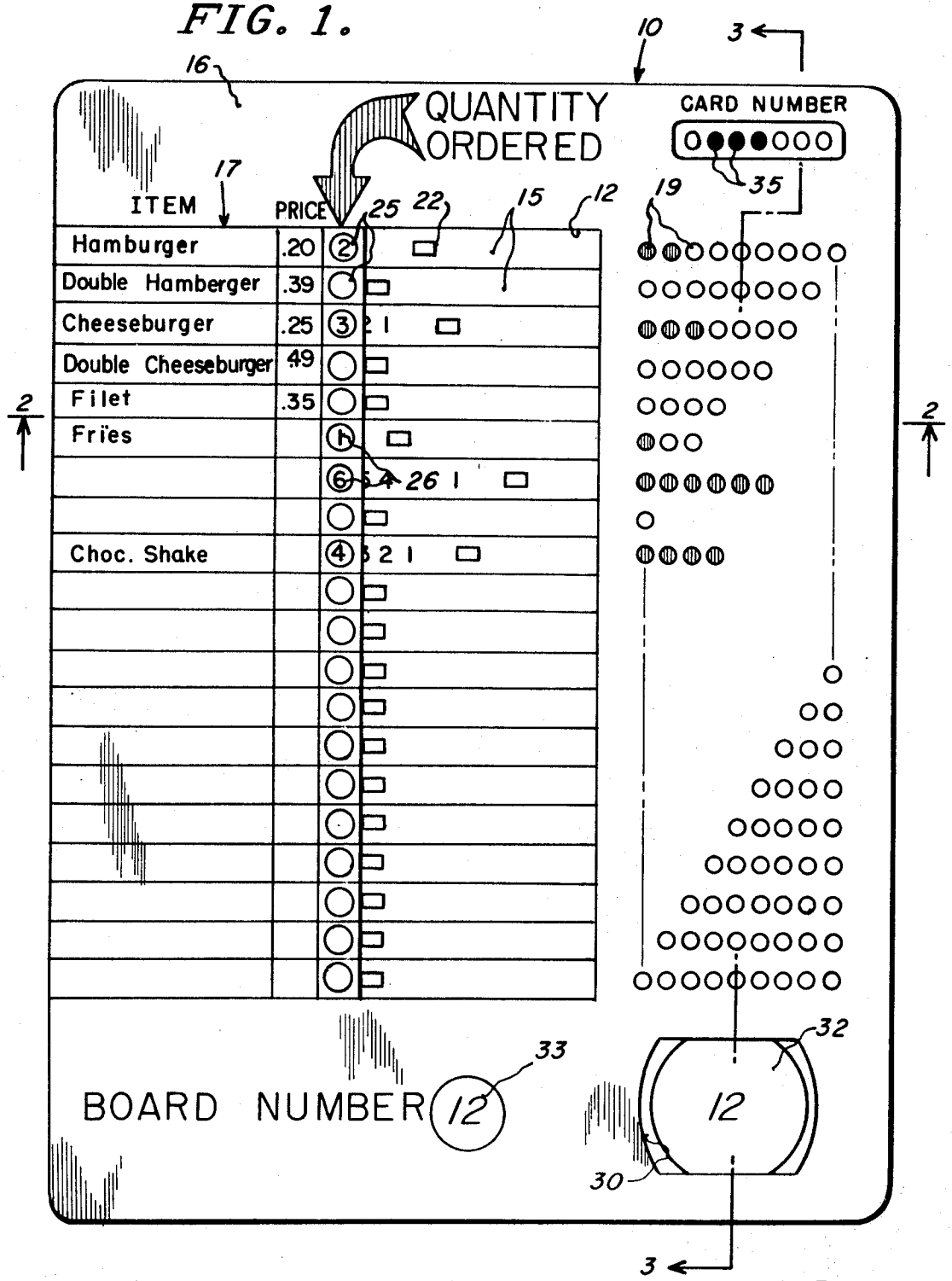


FIG. 1.



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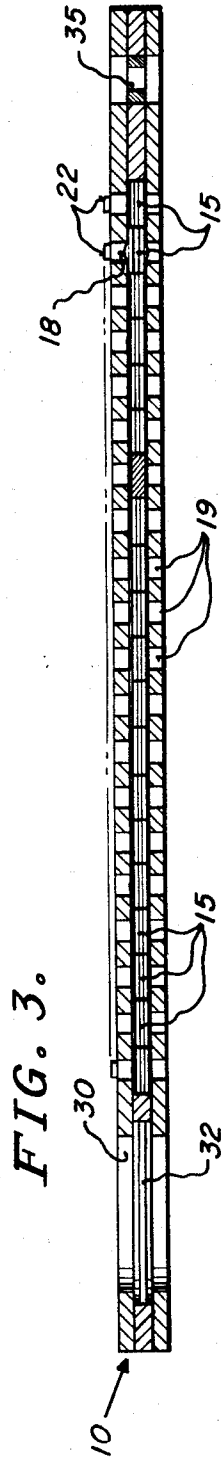


FIG. 3.

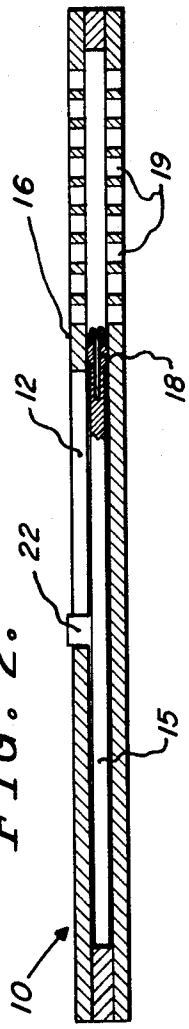


FIG. 2.

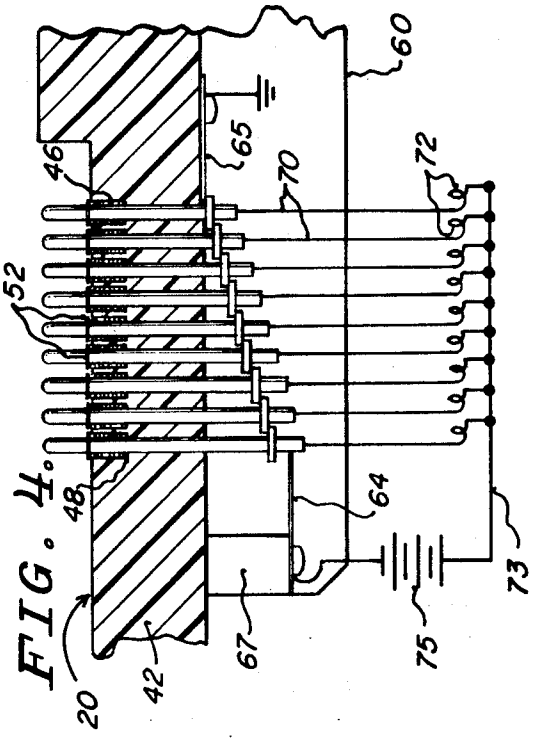


FIG. 4.

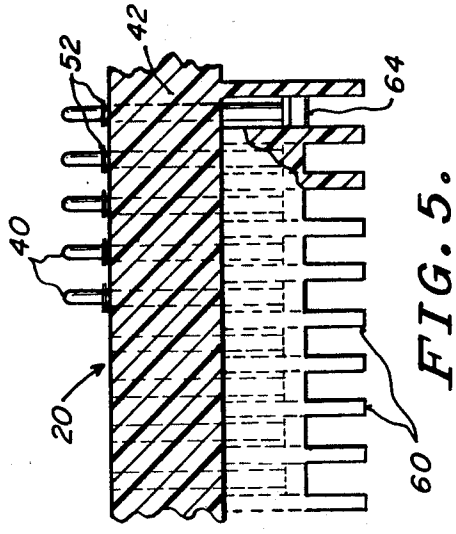


FIG. 5.

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FIG. 8.

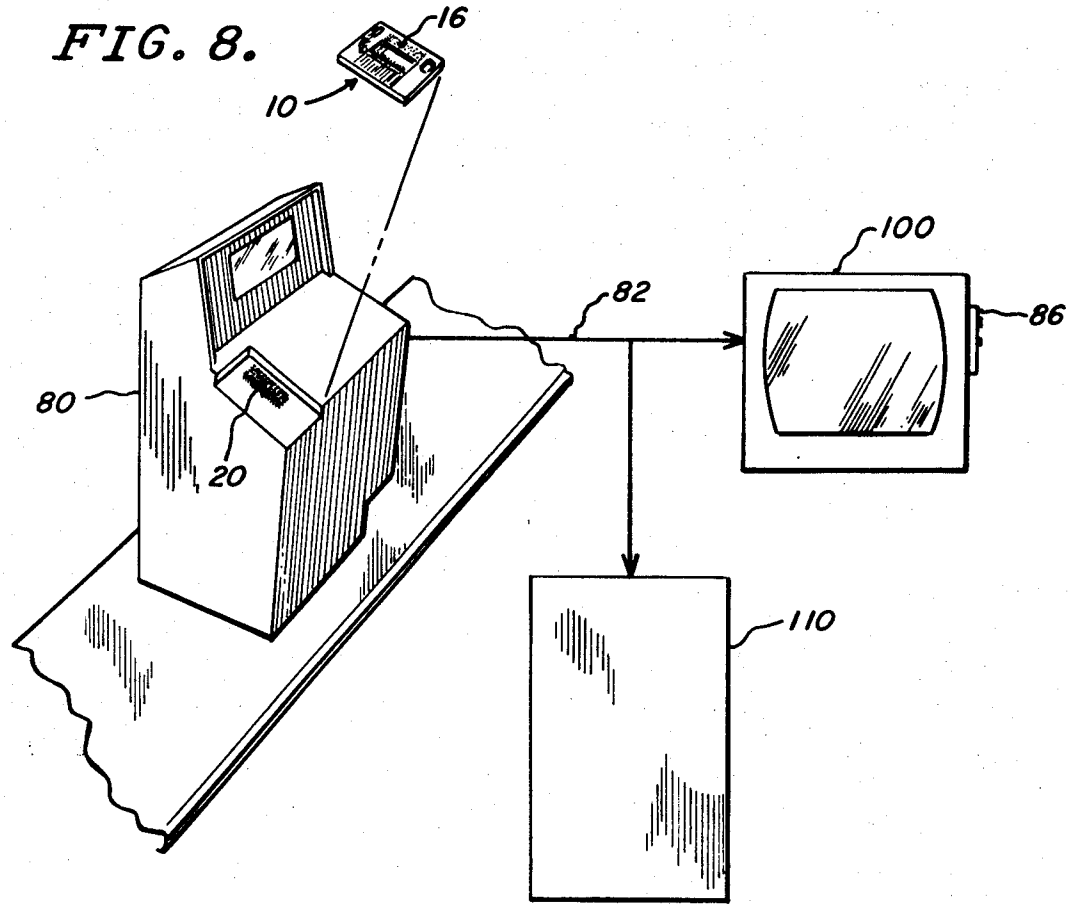


FIG. 6.

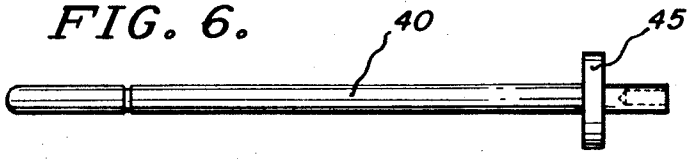
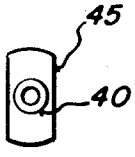


FIG. 7.



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INPUT-OUTPUT APPARATUS

My invention relates to input-output apparatus and more particularly to apparatus of this type particularly adapted for use as an ordering device and a reader to be used in a business system where a limited number of items are to be sold.

Input and output type devices for computers, business systems and the like take a variety of forms and include a varying degree of complexity. Generally, the shape and configuration of such apparatus is dictated by the quantity and variation in the type of input information to be supplied thereto and the sophistication of the system with which it is to be utilized.

In the present invention, a simplified input-output apparatus is provided which is particularly adapted for business systems wherein a limited amount of variety of input information exists. In particular, the input-output apparatus of the present invention is particularly directed to ordering devices and readout devices which are utilized in businesses where a limited number of items are available for ordering. This is particularly true in businesses such as restaurants or short order type food dispensing, such as in the sale of hamburgers and associated sandwiches together with beverages to go with the same. The particular input apparatus is made portable such that it may be given to the purchaser for the purpose of manipulating the same to identify his order after which the input apparatus or board is read and information thereon including the total of purchase and the order are appropriately handled to expedite the preparation of the food and beverage and payment for the same. Thus, the input-output apparatus is particularly adapted for use by companies who sell a few selected items to many customers and it is intended to improve the customer service and satisfaction while improving companies' operating function.

The improved input-output apparatus includes a control panel which is portable and has a face surface which is divided such that the menu or list of items to be sold or ordered are positioned with corresponding slide members positioned within the panel and having projecting handles or knobs located in a recessed surface in the panel adjacent to the order list and with a plurality of rows of holes aligned with each of the slide members indicative of the number of units of each item to be ordered. The individual slide members are moved to a desired quantity designation and as they are moved a ball detent in the same, slide over corresponding adjacent holes until the desired quantity is reached thereby blocking out a corresponding number of the holes in the side of the board opposite the order list. A control panel or board is available to each customer to indicate his order thereon and this is given to a cashier who places the same in a reader which will tabulate the number of each item ordered and produce a total for the purchase as well as directing order information to an area of food preparation or order filling. The reader may be mechanical, electro-mechanical, optical, magnetic, pneumatic or photoelectric and it senses holes in the rows which are blocked by the slide members to indicate a total of each item ordered. Associated equipment will provide cost information which could be displayed at the point of sale, for example, a cash register, and the order panel includes a removable tab, identifying the panel, which the customer takes and returns to identify his order when the order is completed. Once an order is filled, the board is moved or the slides thereon repositioned to a no order condition and the board is reused by subsequent customers. This improved input-output apparatus in a business system eliminates problems of wait time by customers where orders are taken orally and written down and gives the customer something productive to do reducing the negative feeling of waiting in line for placing orders. It gives a customer an opportunity to check a menu list or order list enhancing the possibilities of impulse buying. It further enables the customer to keep track of items being ordered and improves the accuracy in ordering since an order clerk does not have to take the order, restate and write the same. By translating the output into a computer type cash register, the mathematic errors are eliminated and errors in illegibility in writing are similarly eliminated. The improved input-output apparatus provides a business system which requires fewer employees to take orders during peak load periods and simplifies the order taking operation to enable any employee with the ability to make change to man the station. It further provides information which may be utilized in inventory control systems to permit improved automation of business systems. The input-output apparatus may be used over and over again since it is made of permanent material eliminating problems of mutilation, soiling, loss, etc. It further enhances the probability of more accurate cash handling by employees and control by management over sales.

It is therefore an object of this invention to provide an improved input-output apparatus particularly adapted for businesses which have a few selected items to be sold or delivered to many customers.

Another object of this invention is to provide a simplified input-output apparatus in which the input apparatus or order board is portable and may be operated by a customer.

Another object of this invention is to provide in an apparatus of this type a simplified order board in the form of a panel having a plurality of slide members therein which slide members when operated block selectively a number of holes in the panel which correspond with the quantity of a particular item selected for ordering.

A further object of this invention is to provide an improved ordering device which may be utilized with a readout apparatus taking various forms.

Another object of this invention is to provide a simplified electro-mechanical readout apparatus which senses blocked holes in an order device to provide electrical signals therefrom in accord with the number of holes blocked in an order device.

A still further object of this invention is to provide a simplified input-output apparatus which may be utilized in connection with an ordering and inventory control system.

These and other objects of this invention will become apparent from the reading of the attached description together with the drawings wherein:

FIG. 1 is a plan view of the input portion of the improved input-output apparatus,

FIG. 2 is a sectional view of the same taken along the lines 2—2 in FIG. 1,

FIG. 3 is a sectional view of the input portion of the input-output apparatus of FIG. 1 taken along the lines 3—3 therein,

FIG. 4 is a side elevation view of the output portion of the input-output apparatus with parts broken away,

FIG. 5 is an end elevation view of the output apparatus of FIG. 4,

FIG. 6 is a side elevation view of a contact pin of the output apparatus,

FIG. 7 is an end elevation view of the pin of FIG. 6, and

FIG. 8 is a perspective view of a typical order system utilizing the improved input-output apparatus.

My improved input-output apparatus as shown in the drawings has included an order board or input device indicated generally at **10** and a reader or output device indicated generally at **20**. The order board is preferably made of a dielectric material, such as plastic and the order board is formed with an internal recess which extends substantially over the width and length of the same and is preferably formed by rectangular plates of plastic material spaced apart by connecting border strips. On one surface, an opening **12** leads to the recess which has positioned therein a plurality of elongated slide members **15** which are made of plastic material and have a thickness dimension equal to the thickness of the recess within the board and a length dimension approximately equal to two-thirds of the width of the board. The slide members are positioned in the recess in side-by-side relationship and extend throughout the length of the same and are adapted to slide within the recess toward opposite edges of the same. The face of the board, as indicated at **16**, is divided into an indicia or menu section **17** which occupies approximately one-third of the width of the board with a recess or opening **12** being centrally located and occupying approximately one-third of the width of the board. On the remaining one-third of the board are positioned a plurality of apertures or holes **19** which extend through both sides of the board and communicate with the recess. These apertures are formed in rows with each row having the same number of apertures which, as will be indicated hereinafter identify quantity or units of the items to be ordered. The slide members **15** are adapted to slide between the sides of the board in the recess such that they will selectively block the apertures or holes in the row progressively as the slide is moved toward the edge or side of the board. Each of the individual slides have a knob or handle **22** attached thereto and the slides are preferably made of a dielectric material. At the ends of the slide members **15** is a split section with knob portions forming a ball detent portion **18** thereon. These will frictionally engage the holes after slide movement to hold the slide member in a hole after movement but will permit sliding movement of the slide members for order indication. Adjacent the order section **17** on the board or menu section is a row of additional holes indicated at **25** which holes permit viewing of the slide member. An indicia or number legend, as indicated at **26**, are positioned on each of the slides and as the slides are moved from left to right as indicated in the drawing in FIG. 1 numbers appear in progressive order to indicate a quantity of items ordered. As the slide is so moved, it will block progressively the number of holes corresponding to the number designation indicated in the opening **25** adjacent each item.

In addition to the rows of holes identifying quantity of the units listed on the indicia or order menu, the panel board **10** includes an aperture **30** extending therethrough in which is positioned a tab **32** having a number designation thereon corresponding to number legend **33** listed on the face of the board. As will be hereinafter noted, after an order is read the tab is given to a customer to identify his purchase and returned by the customer to the server upon receipt of the order at which time the tab is replaced in the aperture **30** for reuse. Each board in addition may include a plurality of holes **35** having blocked spaces and open spaces to provide a binary identification of the board and which could be read by the reader. The reader would signal the kitchen in a separate circuit of the board identification along with the order read by the reader, as will be hereinafter identified.

The reader or output apparatus **20** is shown in one version in FIGS. **4**, **5** and **8**. It is an electro-mechanical version having a plurality of sensors in the form of pins **40** which are mounted on a base **42** and slidably positioned therein. The base is a dielectric block of material and the pins have a pattern corresponding to the holes in the input device or order board. The pins are made of an electrically conductive material and the top of each pin has an electrical connection or contact **45** thereon. As will be seen in FIG. **4**, the pins are of varying length and the contact heads **45** extend into contact with adjacent pins. Each pin has a spring member **46** positioned around the same which spring members are held in position by horse shoe clips **52** and extend into recesses **48** around the pins in the base. Each of the pins projects beyond the base a same distance and the rows of pins for each row are separated by fins **60** of dielectric material which project up beyond the height of the highest pin to mechanically shield the rows of pins from one another. Positioned on top of the base is an electrical contact plate **65** and a second connector **64** which is elevated by a dielectric block **67** to contact the uppermost pin when it is raised. Under normal spring bias actions, it is out of contact with the pins. Each of the pins in addition have a lead connection **70** extending therefrom, the lead connection leading to a signal coil **72** with the opposite side of the coil being connected to a common conductor **73** leading to power source, such as battery source **75**. Thus, all of the pins are connected in parallel circuit with the battery source and each of the respective signal coils **72** are similarly connected. As will be hereinafter noted, these provide signals to the display unit **100** in a kitchen and also to a computer memory circuit **110** to indicate and record the quantity of each item placed in an order. Thus, the rows of pins will have a plurality of signal coils and electrical connections, one for each pin with a circuit established through the electrical contacts and the contacts carried by the heads of the respective pins. The array of a plurality of rows or pins, each divided by the fins and each having separate electrical connections will provide a readout device which will be actuated whenever the board is brought into contact with the reader.

Thus, in the operation of the input-output apparatus, the order board will be operated by a customer to select the particular items desired to be ordered and the quantity of such items. This will be done by engaging the knob on each of the respective slides and mov-

ing the desired slide identifying a particular item to a position where the proper quantity of such item to be ordered is disclosed in the aperture **25**. This will affect blocking progressively of a selected number of holes in the row of holes **19** in the board aligned with the slide member and the particular item on the menu. When the proper selections have been made according to the customers' desires the board is placed in the output device or reader by the customer or the cashier order taker, the output device being in a fixed position such that the order board may be brought into contact or proximity with the same. The board will be aligned with the reader's holes so that corresponding rows align and the pins in the particular rows will project through holes not blocked while those holes which are blocked by the slide members will cause the pins to slide in the base moving the pins upwardly into contact with the contact **64** on the base member. Thus, for example, if a single item is to be ordered, only the first pin will be moved and the signal coil **72** connected thereto will be operated when the circuit is completed by contact between the head **45** on the pin and the contact **64**. Where a plurality of items of a particular type are to be ordered, several holes corresponding to the desired number will be blocked and the number of pins corresponding to this number will be moved upwardly. In each instance the contact portion **45** of the respective pins so moved will be in contact with one another and the contact **64** to establish a plurality of parallel circuits energizing the respective coil members **72** associated with the moved pins. The remaining pins in the row representing the quantity not ordered will slide through the holes in the order board and no circuit will be effected for the same. Similarly for the remaining items on the menu or for all items not ordered, the respective pins corresponding thereto will slide in the board and no circuit will be effected for the same. The contact **65** on the board connected to a ground circuit to effect a spark arrest as the pins align to the normal or rest position.

The designation of the number of a particular item being ordered will be fed to a computer type cash register indicated schematically at **80** which will total the amounts of the items ordered and present a grand total on display in front of the customer. At the same time, the cashier will operate a circuit to transmit the information of the order via a cabling indicator generally at **82** to a display board **100** positioned in a kitchen area wherein the order will be made up. This display board when energized will remain lighted or indicating until the order is completed and an appropriate switch such as is indicated at **86** is operated indicating completion of the order. Along with the quantity and designation of items being ordered, additional information such as identification of the board or order number and any special instructions may be transmitted by additional signaling equipment connected between the cashier's location and the display board. Information obtained from the order may be also stored in the memory unit **110** for cost control inventory and general business management by the owners of the apparatus.

The improved input-output system provides a simplified arrangement in which order boards are made portable and available to customers to select their orders while waiting to be waited on. This will eliminate delay and reduce the number of personnel required in the operation of the business. It further might enhance impulse buying and will eliminate errors in order taking. Once the customer has selected his order and presented his board to the cashier, the total cost of the order may be computed in the computer type cash register and displayed prominently so that accuracy and efficiency is effected in the transaction. From a business standpoint, this arrangement will also eliminate possibilities of mishandling of funds by employees and will significantly reduce the number of persons or employees required to operate the cash registers or payment systems. The information provided is also available for display purposes at the point where the order is made up, for example, a kitchen, expediting the makeup of the order and the time involved in transmitting the same to such area. This information is also available for computer type business systems for inventory control and the like.

While I have shown one type of readout device it will be recognized that optical type sensors may be employed similar to the electro-mechanical structure described above within the scope of the present invention since the optical or photoelectric type sensors would be capable of sensing the presence or absence of the slide blocking one of the holes in the board.

In considering this invention it should be remembered that the present disclosure is illustrative only and the scope of the invention should be determined by the appended claims.

What is claimed is:

1. An input-output apparatus comprising, a first part including a panel board having a plurality of slide members positioned within the panel board and slidably mounted in a slot therein, a portion of the slot in said panel board being exposed to a surface of the panel board, a plurality of rows of holes extending through the panel board and aligned respectively with each of said slide members and with one another, said slide members including handle means extending through the exposed slot in the panel board and adapted to be moved to slide the slide members within the panel to cover progressively the holes in the rows aligned with the slide members, and a second part of the apparatus including means having rows of aligned sensors corresponding to the holes in the rows in the panel member and adapted to align with the rows of holes in the panel member to sense the positions of the respective slide members therein by the presence of blocked holes therethrough, said sensors including means to provide signal outputs responsive to the number of holes blocked in each row by the slide members in said panel board.

2. The input-output apparatus of claim **1** and including detent means located on each of the slide members and adapted to fit selectively into one of the plurality of holes aligned in the panel board with the slide members to hold the slide members in a predetermined position relative to the row of holes therein.

3. The input-output apparatus of claim **2** and including indicia means positioned on one side of the panel board and aligned with each of the slide members to identify the same.

4. The input-output apparatus of claim **3** and including an additional row of holes aligned with the indicia

means and positioned respectively over each of the plurality of slide members, said row of holes aligning with and disclosing indicia means positioned on the slide members and distributed along the extent of the same such that as each slide member is moved and different indicia appears within the holes.

5. The input-output apparatus of claim 4 and including an aperture extending through the panel board and a selectively removable and insertable tab means positioned in said aperture with corresponding identifying indicia positioned on the panel board and on the tab means.

6. The input-output apparatus of claim 4 in which the slot in the panel board is a recess within the same, the recess being open to one surface of the board and in which the plurality of slide members are elongated members positioned within the recess and exposed to said one side of said board intermediate their extent with handle means attached to the slide members, said slide members being positioned in contacting relationship with adjacent members to be guided for sliding movement within the recess and in which the rows of holes are aligned with the extent of the slide member and to one side of said opening in the side of the panel member and extending through the panel member such that the individual slide members may be independently and selectively slidable within the recess to be guided by adjacent slide members and with the detent means aligning with the row of holes such that the detent means may fall into any one of the holes in the row to position the slide member with respect to the row of holes and such that the slide members block certain of the holes in the row as they are moved relative thereto.

7. The input-output apparatus of claim 1 in which the means having rows of aligned sensors forming the second part of the apparatus includes a base member having a plurality of slidably mounted prong members therein with the prongs being arranged in a plurality of rows corresponding to the plurality of holes in the panel member and including switch contact means included in part in each of the plurality of prongs to be operated when the prongs slide in the base and relative thereto.

8. An order taking apparatus comprising, a portable board having a plurality of rows of apertures therein, each row representing an item to be ordered and in each aperture in the row representative progressively from the start of a row of the quantity of an item to be ordered, indicia means positioned on the surface of the board and identifying items available for ordering, individual slide means positioned within the portable board and aligned with the indicia means and respectively with each of the rows of holes and having projecting gripping means positioned beyond the surface of the board enabling the slide means to be moved toward and away from the rows of holes to block selected holes in each row in accord with the desired quantity of an item to be ordered, and a fixed sensor having a frame with rows of aligned sensing elements corresponding to the apertures in each row in the portable board, said sensing elements each including means for providing a signal output therefrom, said portable board when positioned adjacent said fixed sensor so that the rows of sensing elements aligned with the rows of apertures in the board causing signal outputs from the sensing elements at the holes which are blocked by the slide means.

9. The order taking apparatus of claim 8 in which the fixed sensor is a frame having a plurality of rows of slidably mounted contact pins therein which cooperate with a fixed contact in the frame and with each other when moved to connect individual signal producing elements in circuits with an energizing source.

10. The order taking apparatus of claim 9 in which the frame of the sensor is an insulated material and the pins in the rows are electrically conductive material and in which the portable board and the slide means therein are made of a nonconductive plastic material.

11. An order taking apparatus comprising, a portable board having a plurality of rows of apertures therein, each row representing an item to be ordered and in each aperture in the row representative progressively from the start of a row of the quantity of an item to be ordered, indicia means positioned on the surface of the board and identifying items available for ordering, individual slide means positioned within the portable board and aligned with the indicia means and respectively with each of the rows of holes and having projecting gripping means positioned beyond the surface of the board enabling the slide means to be moved toward and away from the rows of holes to block selected holes in each row in accord with the desired quantity of an item to be ordered.

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