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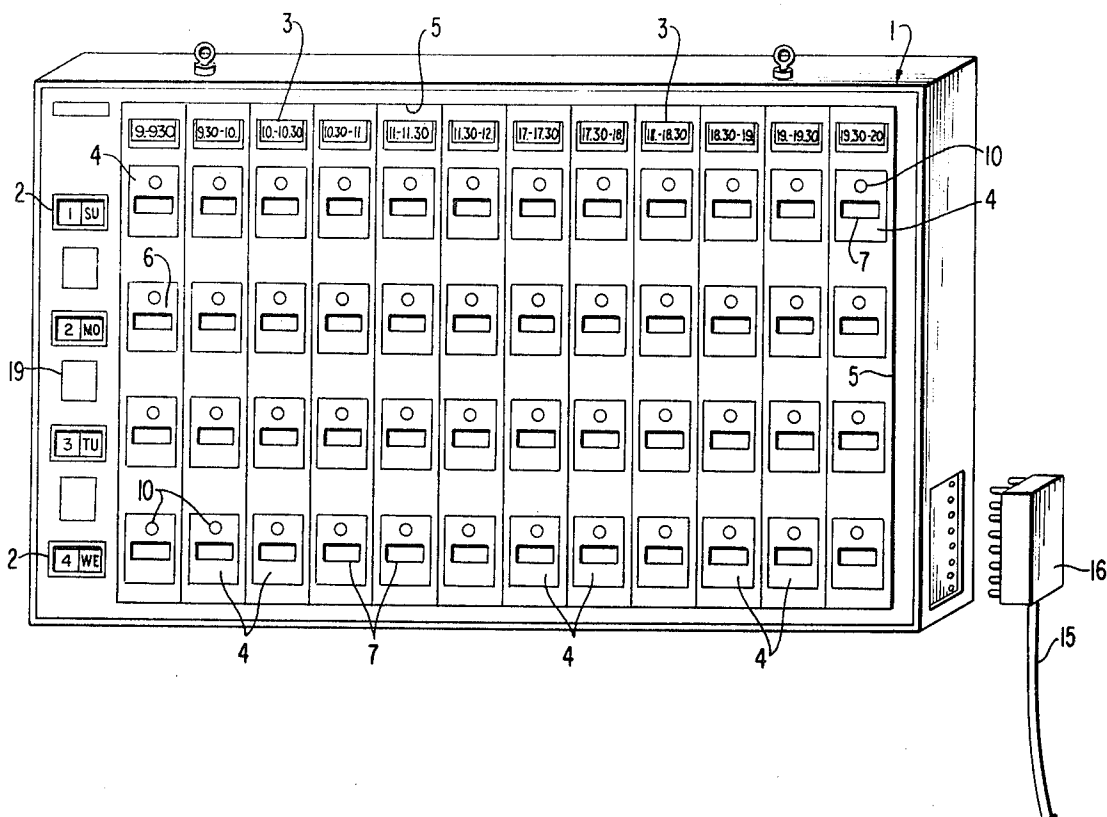
[50] Field of Search..... 340/153,
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[54] **PRE-ENGAGEMENT CARD CONTROLLED
 DEVICE FOR PATIENTS**
10 Claims, 4 Drawing Figs.

[52] U.S. Cl..... **340/153,**
 340/280, 340/286, 340/309.1, 340/309.4
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ABSTRACT: Appointment selection device formed by a plurality of card holding compartments arranged in rows and columns. The rows designate days and the columns designating time periods within a day, the compartments including adjustable means for regulating the size thereof thereby permitting introduction of no more than a prescribed number of cards in a given compartment. Indicating means is provided for indicating when a compartment contains a prescribed number of cards.



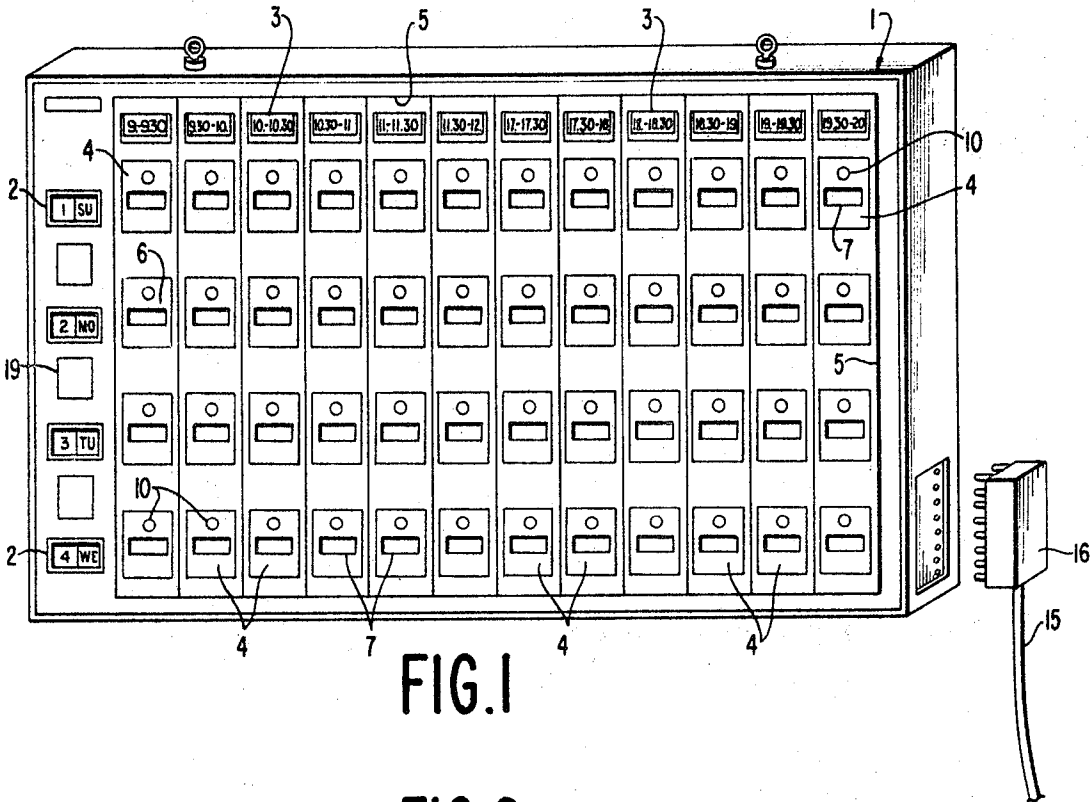
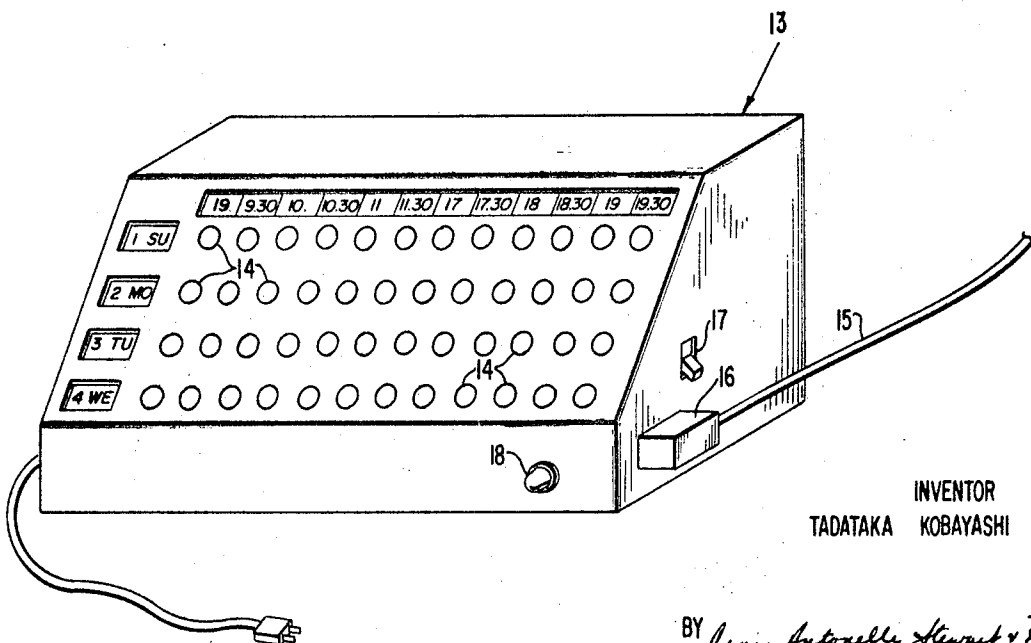


FIG. 2



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FIG. 3

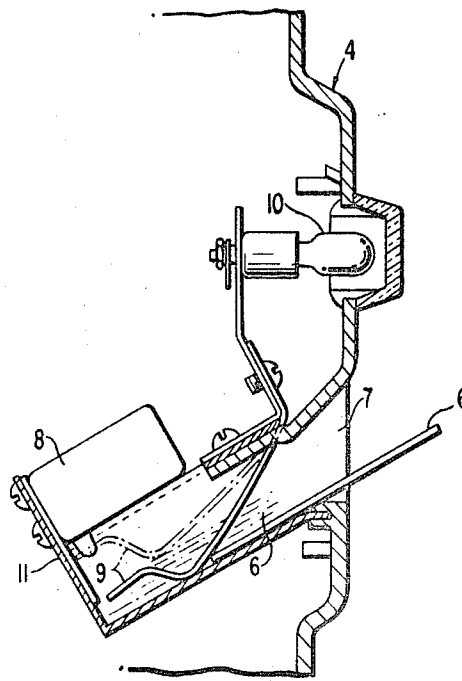
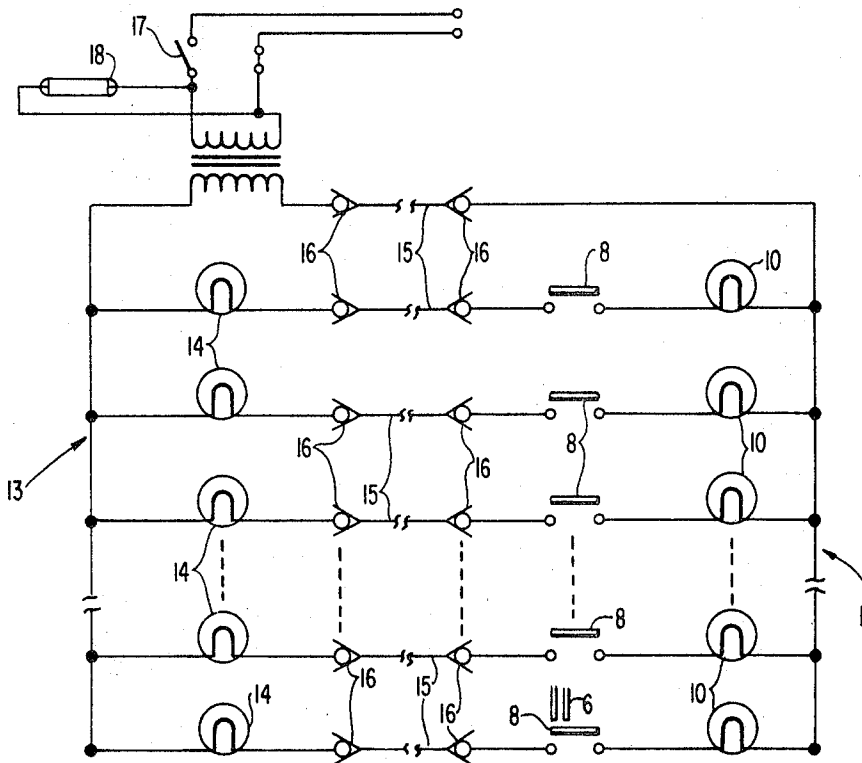


FIG. 4



PRE-ENGAGEMENT CARD CONTROLLED DEVICE FOR PATIENTS

The present invention relates in general to a reservation indicator and more particularly to a method and device for making appointments for medical examination at medical facilities, such as dispensaries, health clinics and hospitals.

In places where health facilities are available to the general public, such as public health centers and hospitals, it is a general practice to take patients on a first come-first serve basis with the result that a patient will often spend a great deal of time waiting for medical treatment, especially during the first few hours after the clinic or dispensary is opened, while during other periods of the day there may be fewer patients than can be handled by the doctors available. On the other hand, while this problem can be solved by giving patients specific appointments of time and date, this is a highly and inefficient and costly procedure for public health facilities, which have limited funds upon which to operate and therefore must make maximum use of the time available. Where specific appointments are provided for patients, personnel for recording and keeping appointments up to date are necessary and the scheduling usually results either in an inefficient use of the doctors time or overcrowding condition which is no better than that created when no appointments are provided.

The present invention proposes an appointment method and apparatus for recording of appointments to eliminate the above-mentioned defect and to particularly shorten the time during which a patient must wait for medical treatment.

Generally, in clinics and other public health facilities, the medical examiners determine the order in which patients are taken in accordance with prescribed problems which may be given priority during certain times on certain days and the order in which the patients have arrived for treatment. However, in accordance with the present invention, the required time for medical examination and treatment is divided into several optional periods of time in accordance with the facilities available and special treatment plans so that the limits of the number of patients which can be cared for in a prescribed period of time can be decided in advance. Patients are then allowed to choose their own general period of time for examination and treatment in accordance with their personal schedules. However, contrary to prior methods, the patient is not given opportunity to select a specific time and date for an appointment, but merely selects a general time period within which to appear for examination and treatment. For example, a day may be divided up into periods of one hour with a predetermined limit of six patients during each time period. A patient may then select one of the time periods for examination and treatment provided six people have not already previously reserved the same time period. With this system, the extent of the time periods and number of patients permitted during a time period can be varied so as to provide for maximum efficiency in use of the doctors time while reducing to a minimum the time period which a patient must wait for examination and treatment.

In order to eliminate the need for special personnel in controlling the selection of time periods for individual patients and controlling the number of patients to be permitted during a given time period over a successive number of days, the present invention provides a device which enables patients to select one of a plurality time periods available over a plurality of days. The device provides means for automatically monitoring the number of patients which have reserved a given time period and for preventing more than the prescribed number of patients from reserving any one time period, while permitting adjustment of the length of the time periods and the number of patients which may be permitted to receive examination and treatment during a particular time period. Visual means is also provided for indicating in connection with any given time period when the maximum number of reservations have been made.

In brief the present invention includes a device including a plurality of compartments capable of receiving cards identifying a particular patient by name, the compartments being

oriented in rows and columns with the rows representing days of the week and the columns representing time periods into which each day is subdivided. The time periods are indicated above each column and the date is indicated to one side of each of the rows so that the particular date and time assigned to a given compartment can be easily determined.

The patient cards which are placed within the compartments may include the name of the patient, the prescribed matters for which the patient seeks examination and treatment and other selected information. The cards are of a prescribed size and thickness so that means can be provided within each compartment to limit the number of cards which may be placed therein. The means for limiting the number of cards to be placed in a given compartment is preferably made adjustable so that the number of patients that can be received during a given time period on a given date can be varied at will. In addition, a visual indicating means is provided at the outside of each compartment and is actuated in response to detection of the maximum number of cards within the compartment, thereby providing a visual indication that no more patients will be received on the prescribed date at the prescribed time relating to this compartment.

The device in accordance with the present invention provides for great flexibility in controlling the flow of patients to the health facility since the number of patients which may be received at a prescribed time on a given date can be easily varied by varying the number of cards which can be received within the given compartments, and the length of the time periods to which the compartments relate can be easily adjusted by merely changing the indicators above the columns which identify the time periods involved. This provides for maximum efficiency in the operation of the medical facility while decreasing the amount of time required by a patient to receive examination and treatment.

As a general object of the present invention to provide a device for recording appointments for medical treatment which clearly eliminates the difficulties which have been encountered heretofore with known methods of scheduling and accepting patients for treatment at medical facilities.

It is another object of the present invention to provide a device of the type described which greatly increases the efficiency of medical facilities.

It is another object of the present invention to provide a device of the type described which permits patients to select times for appointment on their own in accordance with their personal choice.

It is a further object of the present invention to provide a device of the type described which eliminates the need for personnel to supervise the selection and maintenance of an appointment schedule for medical treatment.

It is still another object of the present invention to provide a device of the type described which offers flexibility in the setting up of appointment schedules over a period of time so as to maintain optimum efficiency in the operation of the medical facility while requiring a minimum of the patients time.

These and other objects, features and advantages of the present invention will become more apparent from the following detailed description thereof, when taken in conjunction with the accompanying drawings, which illustrate by way of example one operative embodiment of the present invention, and wherein:

FIG. 1 illustrates in perspective one exemplary embodiment of the device in accordance with the present invention;

FIG. 2 illustrates in perspective and observing unit electrically connected to the device of FIG. 1 and indicating the operation condition thereof;

FIG. 3 is a detailed sectional view through one of the elemental compartments of the device of FIG. 1 indicating the construction thereof and the components associated therewith; and

FIG. 4 is a schematic circuit diagram of the electrical system of the device of FIG. 1.

Looking now more particularly to the drawings wherein corresponding elements in the respective views are designated by light reference numerals wherever possible, and particularly to FIG. 1, a housing 1 encloses a plurality of compartmental elements 4 arranged in rows and columns. Indicators 2, which may be provided in the form of holders for cards designating respective dates, are provided to one side of each of the rows of elements 4 thereby assigning each row to a respective day of given date. In addition, an indicator or holder 3 is provided above each of the columns formed by the elements 4, these indicators 3 designating or providing means for designating given time periods throughout the day represented by each of the rows of elements. Thus, as seen in FIG. 1, the left most column may designate the period 9—9:30 the next column may designate 9:30—10 and so forth. Thus, the respective elements 4 providing compartments 7 are identified by their respective coordinates as to date and time period.

In using the device of FIG. 1, the patient merely fills out a patient card indicating his name, the prescribed matters relating to his examination and treatment, and other data. The patient card is then placed in a holder having a prescribed size and thickness and inserted into the compartment 7 of the element 4 representing the time and date of the desired appointment. The compartments 7 are of such a size to take a plurality of cards; thus, more than one patient may make an appointment for a given time period on a given date, the number of appointments possible being determined by adjustable elements within the compartment which will be described in greater detail in connection with FIG. 3.

As also indicated in FIG. 1, each of the elements 4 is provided with an indicator 10 providing a visual indication when the compartment contains the limit of cards requesting appointments. The indicating means 10 and control arrangement therefor including the configuration of the compartments 7 of the respective elements 4 is illustrated in greater detail in FIG. 3. This FIG. shows a card 6 partially inserted into the compartment 7 and bearing against a spring 9 which is fixed by suitable fastening means such as screws, to a bracket secured to the wall of the compartment, the spring 9 being in electrical contact with the bracket. The bracket has an upward extension which carries the indicator 10, in the form of a lamp or other visual indicating device, and forms the ground circuit for this indicator. The free end of the spring 9 is positioned opposite to and is spaced from a contact 11 which is electrically connected to one terminal of a detecting unit 8, which may be formed by a small switch. Thus, deflection of the spring 9 as indicated in dotted line at 9' by insertion of a plurality of cards will eventually produce contact between the free end of the spring 9 and the contact 11 thereby completing a circuit to illuminate the indicator 10 and actuate the detecting unit 8. The particular position of the detecting unit 8 and contact 11 with respect to the free end of the spring 9 determines the number of cards 6 which must be inserted into the compartment 7 to effect deflection of the spring into contact with the contact member 11. Thus, the number of cards acceptable by the compartment 7 and the condition for illumination of the indicator 10 are determined by this distance.

The contact 11 is structurally associated with the detecting unit 8 so as to be moveable as a unit therewith. In addition, the detecting unit 8 is adjustably supported on the housing of the compartment so as to make the distance between the contact 11 and the unbiased position of the free end of spring 9 adjustable. Regulation of the maximum number of cards which may be carried in the compartment before a full condition is indicated is therefore possible.

The patient tickets upon which the prescribed matters are written are preferably placed within card holders made of transparent synthetic material with the thickness of the holders being uniform so that an accurate determination of the number of cards in the compartment 7 can be detected by the combined spring 9 and detecting unit 8. With this arrangement, a device which provides for a visual indication of the

available time periods for each of a plurality of days may be made accessible to the patients desiring appointments and the mechanism associated with each of the elements 4 adjustably provides a limit to the number of appointments which can be made during each time period and indicates visually when all appointments for the time period have been taken. By providing the indicators 2 and 3 in the form of holders or other adjustable indicating means, the dates for the individual rows of elements 4 can be changed periodically and the time periods for the respective columns can be adjusted at will for time periods of increased or decreased length. The device also eliminates the need for special personnel to monitor the schedule of appointments since the cards 6 are inserted by the patients themselves in the compartments 7 designating the respective dates and times available. The time required for a patient to obtain examination and treatment is therefore reduced to a minimum by allowing the patient to choose the day and hour freely at his own desire. On the other hand, such a system does not force the doctor into a successively heavy schedule, because the time periods and number of patients accepted during the time periods can be adjusted in advance in accordance with the facilities available and schedules of special treatment which may be planned.

While the device of FIG. 1 provides for the scheduling of appointments for a period of 4 days with the respective days being subdivided into 12 time periods, the size of the device is obviously adjustable, a variation in the number of time periods or in the number of days accommodated by the device being easily obtained by addition or subtraction of rows or columns of compartments. The device may be constructed by providing the columns representing time periods as units, as indicated in FIG. 1, so that additional columns may be easily added to the unit. In addition, multiple devices as indicated in FIG. 3 may be combined into larger units to accommodate larger time periods and a greater number of days.

FIG. 2 illustrates an observing unit which is electrically connected to the device of FIG. 1 and provides a condensed visual indication of the condition of each of the elements 4 as to the full or available capacity thereof. The observing unit 13 is provided with a plurality of indicating lamps 14 arranged in rows and columns corresponding to the rows and columns of elements 4 in the device of FIG. 1. Thus, when a compartment is indicated as containing the limit of cards by illumination of the indicating device 10 associated therewith, a corresponding indicator 14 on the observing unit 13 will be lighted. The observing unit 13 may be located at a remote position in the medical office or the consultation room so as to provide for the doctor or other medical personnel an indication of the condition of appointments for the coming time period.

FIG. 4 provides a schematic circuit diagram of the electrical interconnection of elements in the device 1 and the device 13 and the manner in which the devices themselves are electrically interconnected. The appointment selection device and the observing unit are joined electrically by a cable 15 and connectors 16. Though a very simple electrical system is provided by way of example, it is of course understood that indication of the available times can be accomplished by more complicated logical circuits, if desired, especially in connection with large scale devices of greater complexity. The operating electric source is connected via a switch 17 through a suitable transformer to reduce the voltage to that prescribed for the indicating lamps 10 and 14. If indicators operating on normal voltage are utilized, it is understood that the transformer arrangement can be eliminated. A pilot lamp 18, such as a neon tube, is also provided to indicate the operating condition of the device. The series circuits including the respective indicating lamps 10 and 14 and the switches 8 are connected in parallel to the operating voltage it is also obvious that a suitable rearrangement of this circuit can be made without difficulty so that the respective units may be operated from individual power sources so that the appointment selection device may be utilized without connection to the observing unit 13.

In use of the device in accordance with the present invention, it is desirable that the days and hours scheduled on the device by variously arranged in advance according to the number of patients so as to prepare the most efficient examining conditions. The particular example provided herein shows a schedule of time periods over a 6-hour schedule with 30 minutes allotted for each time period, but this time period can be easily adjusted in accordance with the requirements of the day and the schedule of events therein by simply replacing the indicators 3 with other indicators designating different time periods. Also, the number of patient cards which may be inserted into the respective compartments can be individually adjusted for each compartment in accordance with desired conditions. When the movement of patients during the first period of time indicate an adjustment for later periods because the patients are irregular in meeting their appointments, the number of patients can be statistically adjusted to provide for sufficient examination and treatment by inserting blank cards or supplementary cards in the compartments for later time periods to make more time available during these periods. Since the main purpose of the system is to provide appointments during time periods in advance, it will be an exception to receive patients which have not made appointments except on an emergency basis. Consequently, for example, examinations from Monday through Friday may be reserved by patients up to the end of the preceeding week. At the time of starting examinations for the week, the dates designating the rows of elements 4 will be changed and the available appointments which remain in the compartments designated by an inactive indicator 10 can be noted to accommodate emergency situations.

By the device in accordance with the invention, it is possible to collect the cards for the following day and to arrange various preparations for operation after the end of the day, as mentioned above. The date can be changed easily by putting the following days card in after taking the present days card out and no trouble will be encountered in carrying out the routine. It is natural to adopt an expedient to an emergency case, which can be done without difficulty by creating artificial spare time by including blank cards in various spaces.

By utilizing this invention as described above, patients make promises by choosing their desired days to be examined by insertion of the cards in the proper compartments and thereby do not unduly waste time in waiting for treatment. If the card inserting method, for instance, to put one on the others is indicated by the card handling indication board 19 on the front panel of the device, the patients can be examined after waiting only a few minutes.

The present invention can be adapted not only to a medical practitioners office, a hospital and other medical facilities, but also to other businesses such as a beauty salon, a recreation hall, etc. In fact, the present invention has application to all facilities wherein services are rendered individually during respective time periods.

In addition, while the device formed of the plurality of elements 4 is disclosed as having a rectilinear configuration providing a planar outer surface, it is also possible to arrange the elements 4 in a cylindrical configuration providing a cylindrical outer surface and to pivotally mount the cylindrical unit

so as to provide easy access to the elements.

While the invention has been specifically shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that changes and modifications may be made therein without departing from the spirit and scope thereof.

I claim:

1. An appointment selection device comprising:
 - a plurality of card holders having an internal cavity for receiving and holding cards having a predetermined thickness, said card holders being combined to form respective rows and columns,
 - designating means for designating a respective time period for each said card holders,
 - control means mounted within each card holder for restricting the size of the cavity thereof to accommodate a prescribed number of cards, and
 - visual indicating means responsive to said control means for indicating when each card holder contains said prescribed number of cards.
2. An appointment selection device as defined in claim 1, wherein said control means includes detector means for detecting said prescribed number of cards in the cavity of the respective card holder.
3. An appointment selection device as defined in claim 2, wherein said detector means includes a switch actuated in response to insertion of said prescribed number of cards into the cavity of the card holder, said visual indicating means being actuated in response to actuation of said switch.
4. An appointment selection device as defined in claim 1, wherein said control means is adjustably mounted within each card holder to permit adjustment of the size of the respective cavity and thereby vary said prescribed number.
5. An appointment selection device as defined in claim 1, wherein said visual indicating means is comprised of a plurality of lamps, each lamp being associated with a respective card holder.
6. An appointment selection device as defined in claim 1, wherein said designating means includes first indicators designating each row of card holders with a different day of the week and second indicators designating each column of card holders with a different time period in a day.
7. An appointment selection device as defined in claim 1, wherein said columns of card holders are formed as a unit with said rows being formed by positioning a plurality of said units side by side.
8. An appointment selection device as defined in claim 1, further including an observing unit having a plurality of additional visual indicating means in the form of lamps each additional visual indicating means being electrically connected to one of the indicating means associated with said card holders for conjoint activation therewith.
9. An appointment selection device as defined in claim 1, wherein said plurality of card holders are arranged in a rectilinear array.
10. An appointment selection device as defined in claim 1, wherein said plurality of card holders are arranged in a rotatable cylindrical array.