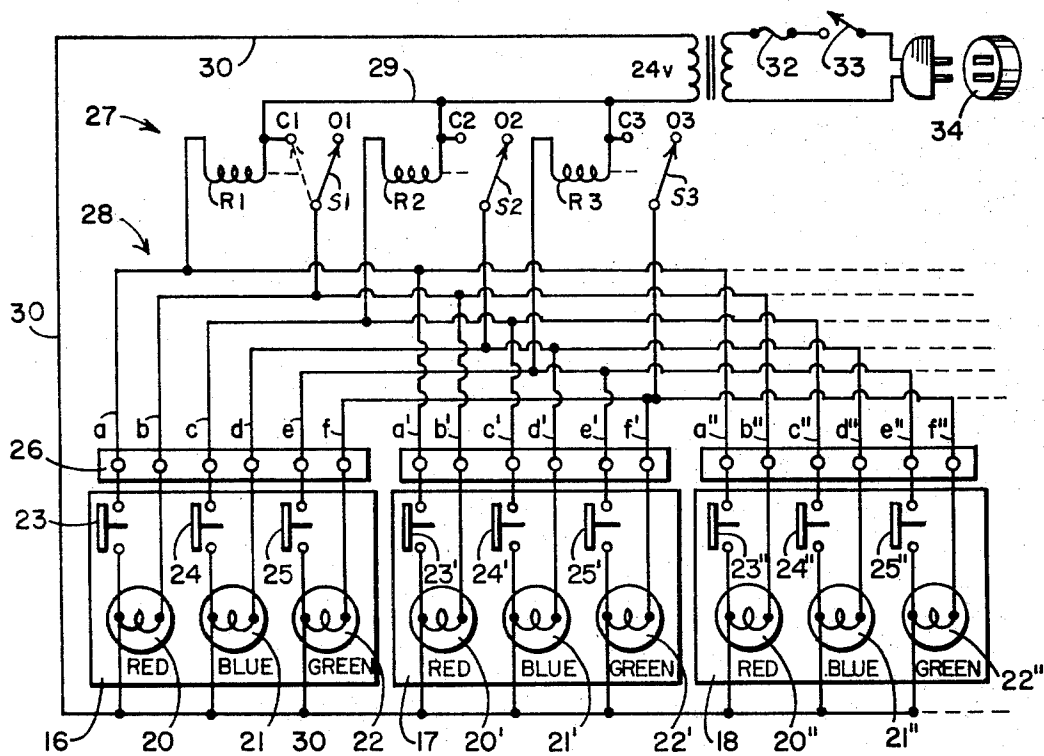
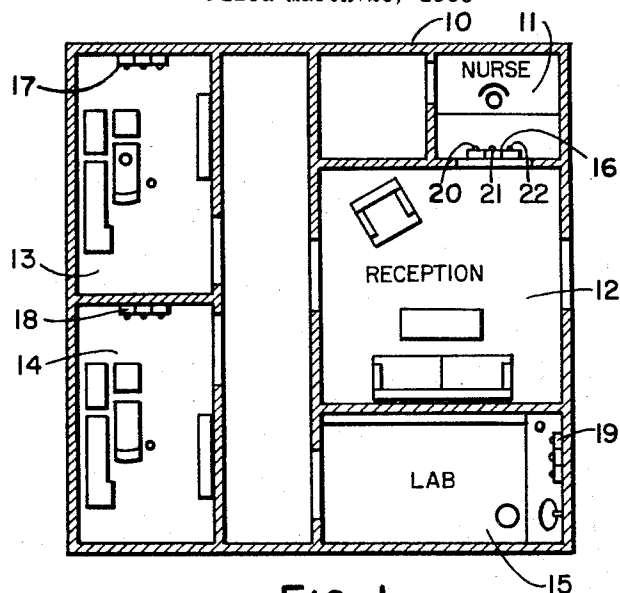


J. D. KRANTZ

REMOTE CONTROL PLURAL LAMP SIGNALING SYSTEM

Filed March 23, 1966



JOHN D. KRANTZ

BY *Elliott & Pastoriza*
ATTORNEYS

1

2

3,430,224

REMOTE CONTROL PLURAL LAMP SIGNALING SYSTEM

John D. Krantz, Inglewood, Calif., assignor to Coastal
Dynamics Corporation, a corporation of California
Filed Mar. 23, 1966, Ser. No. 536,713

U.S. Cl. 340—313

3 Claims

Int. Cl. G08b 5/36, 27/00; H04m 11/02

ABSTRACT OF THE DISCLOSURE

A remote control signaling system for offices is provided in the form of indicating lights and associated actuating means in various locations. A source of energy is arranged to be conducted to the various indicating means by a control circuit in the form of latch type relays. The arrangement is such that a person in one room may energize a given light or signal in another room to alert a person in the other room of a certain situation and the person in the other room may in turn signify his reception of this signal by de-energizing the same light. A silent communication system is thus provided for use by doctors and the like.

This invention relates generally to signaling systems and more particularly to a remote control signaling system for enabling simple communications to be carried out between a plurality of separate locations, such as offices, separate rooms in a building or household, or between any other number of locations.

Conventional inter-communication or signaling means between offices generally comprise intercom systems or inter-telephone communication systems. Also, buzzers and the like have been employed to provide simple signals between offices. There are many situations, however, where it would be desirable to provide a communication means between two or more offices or rooms in a building wherein simple requests for information may be conveyed between the rooms without the necessity of any conversation or use of any audio-type inter-communication system. For example, a busy doctor may require a nurse's presence from a front office while he is working on a patient. It would be convenient for him if he could signal the nurse by an inaudible indicating means so as not to distract the patient and, further, be apprised in a silent manner that the nurse is on her way. As a second example, the nurse in an outer office may wish to advise the doctor that he has a long distance telephone call or that another patient is waiting to see him. In such instance, an inaudible communication system which could so apprise the doctor would be useful; and, again, such a system should include means whereby the doctor may indicate to the nurse that the signal has been received, all again without the necessity of having to carry on conversations or sound buzzers or other audible devices.

Any such signaling system as proposed above should be so designed as to enable simple installation and be operable between a plurality of rooms; in fact, the number of rooms should not impose any limitation, and any room in which the doctor might be located should be equipped with such a system.

With the foregoing considerations in mind, it is accordingly a primary object of the present invention to provide a simple remote control signaling system which meets the various desirable features outlined above.

More particularly, it is an object to provide a signaling system capable of handling a plurality of different signals to convey pre-determined messages, all in an inaudible manner, and between a plurality of different locations.

Another important object of this invention is to provide a signaling system meeting the foregoing object in which there are included means enabling any person receiving a

signal to immediately acknowledge receipt of such signal.

Another object is to provide a signaling system which requires minimum effort on the part of a doctor or other person using the system to convey or receive signals.

More general objects of the invention are to provide a novel electrical signaling system which is completely silent in operation, requires only electrical energy when it is actually in operation, extremely economical to manufacture, and is simple to install and maintain.

Briefly, these and other objects and advantages of this invention are attained by providing a plurality of signaling means disposed in a plurality of separate locations such as separate rooms in a building or separate offices in a single building suite. Each of these signaling means includes one or more indicators preferably in the form of colored lights. An actuating means, such as a push button, is associated with each indicator. The corresponding indicators in each of the separate signaling means are identical so that if three indicators are provided, such as a red light, a blue light, and a green light in a signaling means in one location, the signaling means in another location will also include a red, blue, and green light.

The actuating and indicating means are all interconnected with each other and a suitable source of electrical energy by a control means such that operation of one of the actuating means in one of the signaling means by a person in one location energizes the indicator associated with the one actuating means and also the corresponding indicator in each of the other locations. Thereafter, operation of the actuating means associated with the corresponding indicator in any one of the other locations, de-energizes the energized indicators. The result is that a person in one location may signal a person in another location and the person in the other location can signify receipt of the signal by terminating the signal.

By providing a plurality of indicators at each location, several different coded signals may be communicated between parties in the respective locations. For example, in the case of indicators employing colored lights, the energization of a red light could indicate that a person desires the presence of another person, such as a doctor desiring the presence of the nurse in his office. Energization of a blue light, on the other hand, might mean that a person is wanted on the telephone, and so forth.

By employing simple colored lights, no audible signals are present with the result that a patient, for example, will not be distracted by communications between a doctor and his nurse or other doctor in one of the other locations.

A better understanding of the invention will be had by now referring to one embodiment thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is a schematic plan view of a medical office in which the remote control signaling system of the present invention is employed; and,

FIGURE 2 is a schematic circuit diagram illustrating certain of the signaling means in FIGURE 1.

Referring first to FIGURE 1, there is shown an office 10 which, for purposes of illustrating the invention, is assumed to be a dentist's office wherein there is a single dentist and nurse. The nurse is ordinarily stationed in a nurse's office 11 where she can function as a receptionist for patients received in the reception room 12. The dentist will ordinarily have at least two rooms such as indicated at 13 and 14 with dental chairs and equipment so that he can work with two patients at a time. There will also normally be included an office for the dentist or a laboratory such as indicated at 15.

The remote control signaling system of the present invention includes a plurality of signaling means disposed in a plurality of different locations. For example, in the office layout of FIGURE 1, there is provided a signaling means

in the nurse's office 11 as at 16, a signaling means in room 13 as indicated at 17, a signaling means in room 14 as indicated at 18, and a signaling means in room 15 as indicated at 19. The latter two locations are provided with signaling means since the dentist may be in any one of the three rooms.

Each of the signaling means 16, 17, 18, and 19 are identical. Thus, with respect to the signaling means 16 in the nurse's office 11, there are included a plurality of indicators 20, 21, and 22 which may take the form of colored lights such as red, blue, and green. Associated with each of these indicators is an actuating means for energizing or de-energizing the lights as will be described in detail subsequently. The signaling means 17, 18, and 19 similarly include corresponding indicators in the form of red, blue, and green lights, each of these indicators having an associated actuating means.

Suitable control means interconnect the various signaling means with each other and with a source of electrical energy such that the doctor may signal the nurse from any one of the rooms and the nurse may signal the doctor from any one of the rooms.

The manner in which the control means enables the foregoing signaling operations to be carried out will be evident by now referring to the circuit diagram of FIGURE 2.

In the lower portion of FIGURE 2, the various signaling means 16, 17, and 18 are shown in boxes, the signaling means 19 also being connected to the interconnections, but not shown in FIGURE 2. Since the circuit connections between the various signaling means and the control means therefor are identical, detailed description of one will suffice for all. Thus, for the signaling means 16 in the nurse's office, it will be noted that the various light bulbs 20, 21, and 22 are connected, respectively, in series with actuating means in the form of push button switches 23, 24, and 25. The switches, in turn, connect to a terminal board 26.

Energization and de-energization of the various lights in response to operation of the push buttons is effected by a control means including a plurality of ratchet relay switches designated generally by the numeral 27, interconnected with the various signaling means 16, 17, and 18 by interconnections 28. The ratchet relay switches and signaling means also connect to a source of electrical energy provided on a power lead 29 and return lead 30. Preferably, the electrical source constitutes a 24-volt supply from a transformer 31, the primary of which connects through a conventional fuse 32 and main on-off switch 33 to a 110-volt outlet 34.

The latching relay switches 27 comprise relay coils R1, R2, and R3 for operating associated switch arms S1, S2, and S3. The number of latching relay switches correspond to the number of indicators in any one signaling means. Since, in the example taken for illustrative purposes, there are provided three distinct indicators, such as 20, 21, and 22, for each of the signaling means in the various locations, there are provided a corresponding number of relays.

It will be clear from FIGURE 2 that if the various leads from the terminal board 26 are designated *a*, *b*, *c*, *d*, *e*, and *f*, respectively, the relay coil R1 will be energized when the push button 23 is closed through the lead *a* and return lead 30 to move the switch arm S1 from its solid to dotted line position. In the dotted line position, energy on the lead 29 is passed through the lead *b* and light 20 to the return lead 30 to energize the light. A characteristic of the latching type relay R1 is that whenever it is energized, it will throw the switch arm S1 to one or the other of its positions. Thus, if the switch arm S1 is in its open solid line position, that is, on the contact designated O1, energization of the relay R1 will cause it to move to the contact C1 or closed position. Subsequent operation of the relay R1 will then cause the switch arm S1 to swing back to the contact O1 or open position.

The interconnections between the indicator 21 and indicator 22 with the relays R2 and R3 and their associated switch arms S2 and S3 are identical to those described. Further, it will be evident that because of the paralleling of the signaling means 17 and 18 with the leads *a*, *b*, *c*, *d*, *e*, and *f*, when one of the indicators, such as the indicator 20 is energized, as by operation of the push button 23, all of the other corresponding red lights in the other signaling units will be energized since they are all connected to the lead *b*. The same situation obtains for energization of the blue and green indicator lights as by actuating the associated actuating means in the form of push buttons 24 and 25. The interconnections to the signaling means 17 and 18 and the push buttons and lights are all designated by the same letters and numerals followed by primes for the signaling means 17 and double primes for the signaling means 18.

With the foregoing description in mind, the operation in detail of the electrical circuit of FIGURE 2 will be described in conjunction with the example heretofore already set forth. More particularly, assume that a doctor is in room 13 and wishes to call the nurse into his office. Assume also that the pre-determined code is such that when the nurse's red light is energized, this indicates to her that the doctor wants her in his office. When the doctor operates the push button 23' in the signaling means 17 in room 13, the relay R1 is energized from lead 29 through lead *a'*, push button 23' and return circuit 30 to cause the switch S1 to move from the open contact O1 to the closed contact C1. Energy is thus passed through the lead *b*, light 20, and return lead 30. The red lights 20' and 20'' in each of the signaling means 17 and 18 will also be energized through leads *b'* and *b''*, and the doctor will see that his own red light 20' is on, indicating that the nurse is being signaled by the indicating red light 20 in her office.

When the nurse observes the red light, she will press the push button 23 associated with the red light in her signaling means which will again energize the relay R1 and return the switch S1 from the closed contact C1 to the open contact O1, thereby opening the circuit from the power lead 29 to the red light 20. Since this action also opens the circuit to all of the other corresponding red lights 20' and 20'' in the other signaling means, the doctor will be immediately apprised when he observes the red light 20' on his signaling means to be extinguished that the nurse has received his signal and is on her way.

In the event that the nurse wishes to signal the doctor that there is a telephone call for him, she may operate the push button 24 in her signaling means 16. Operation of the push button 24 will energize the relay R2 from the power lead 29 and lead *c* from the terminal board 26 through the push button 24 to the return lead 30. When the relay R2 is energized, the switch S2 will be thrown from its open contact O2 to its closed contact C2, thereby providing power from the lead 29 on the lead *d* to thereby energize the blue light 21 in the nurse's office as well as the blue lights 21' and 21'' through leads *d'* and *d''* in the various other offices. The doctor, on observing the blue light 21', will then simply actuate the associated push button 24' on his signaling means 17 which will again provide energization to the relay R2 thereby returning the switch arm S2 to its open position. When the switch arm S2 returns to the open position, all of the blue lights will be extinguished and thus the nurse will be apprised that the doctor has received a message to the effect that there is a telephone call for him to answer.

Other information, such as the fact that a patient has arrived, may be communicated by means of the green indicators in a like manner.

It will be evident from the foregoing that the signaling system provides a very economical and simple means of conveying messages back and forth between a nurse and a doctor regardless of the particular room or location of the doctor, provided that all possible locations are pro-

vided with one of the signaling means as described. Further, it will be evident that the arrangement is such that receipt of the signal may be very easily acknowledged by simply extinguishing the corresponding indicators. Should the doctor or nurse not receive a signal, the indicators will remain illuminated or energized until such time as action can be taken by the signaled party.

But the use of colored lights, there are no distracting noises that might bother a patient, and further, since there is a pre-determined code between the doctor and his staff, there is no means by which a patient or visitor can determine the significance of the particular signals employed.

Finally, since each of the signaling means in and of itself is identical to each of the other signaling means, the manufacture and installation of the entire signaling system can be carried out extremely economically.

The present invention has thus provided a greatly improved remote control signaling system which fully satisfies the various objects heretofore set forth. While a specific example has been described wherein only three indicators are provided in each signaling means, it will, of course, be understood that further indicators may be provided in each signaling means and in addition any number of additional signaling means may be paralleled to the output leads from the various latching type control relays described so that the system can be easily extended to any number of locations. The invention is therefore not to be thought of as limited to the specific example set forth.

What is claimed is:

1. A remote control signaling system for operation from a source of electrical energy, comprising, in combination: first indicating means and associated actuating means in a first location; second indicating means and associated actuating means in a second location; and control means interconnecting said first and second indicating and actuating means with said source of electrical energy, said control means including switch means for closing a circuit from said source to said indicating means when any one of said actuating means is operated and said circuit is open, and for opening said circuit when any one of said actuating means is operated and said circuit is closed, such that operation of said first actuating means energizes said first and second indicating means and operation of said second actuating means de-energizes said first and second indicating means, whereby a person in said first

location may energize said second indicating means in said second location to signal a person in said second location and said person in said second location may de-energize said first indicating means in said first location to signify receipt of said signal.

2. A remote control signaling system comprising in combination: a plurality of signaling means disposed in a plurality of separate locations respectively, each signaling means including a plurality of corresponding indicators and an actuating means associated with each indicator; and a plurality of latching relay switches connected between said source of electrical energy and said plurality of signaling means, said latching relay switches each functioning to close a circuit from said source to corresponding indicators in each of said signaling means when the actuating means associated with said indicators is operated and said circuit is open, and to open the circuit to said corresponding indicators when the actuating means is operated and said circuit is closed, such that operation of one of said actuating means in one signaling means by a person in one location incorporating said one signaling means energizes that indicator associated with said one of said actuating means and also the corresponding indicator in each of the others of said signaling means, operation of the actuating means associated with said corresponding indicator in any one of the others of said signaling means de-energizing the energized indicators, whereby a person in one location may signal a person in another location and the person in said other location can signify receipt of such signal by terminating the signal.

3. A system according to claim 2, in which said indicators in each signaling means comprise light bulbs for emitting different colored light, corresponding indicators in said signaling means emitting the same color light.

References Cited

UNITED STATES PATENTS

2,091,108	8/1937	Sengebusch	340—313 X
2,758,378	8/1956	Walczak	340—313 X
3,261,011	7/1966	Crosthwait	340—311

JOHN W. CALDWELL, *Primary Examiner*.

HAROLD I. PITTS, *Assistant Examiner*.

U.S. Cl. X.R.

340—311, 312, 226