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SELECTIVE CONTROL AND DISPLAY APPARATUS

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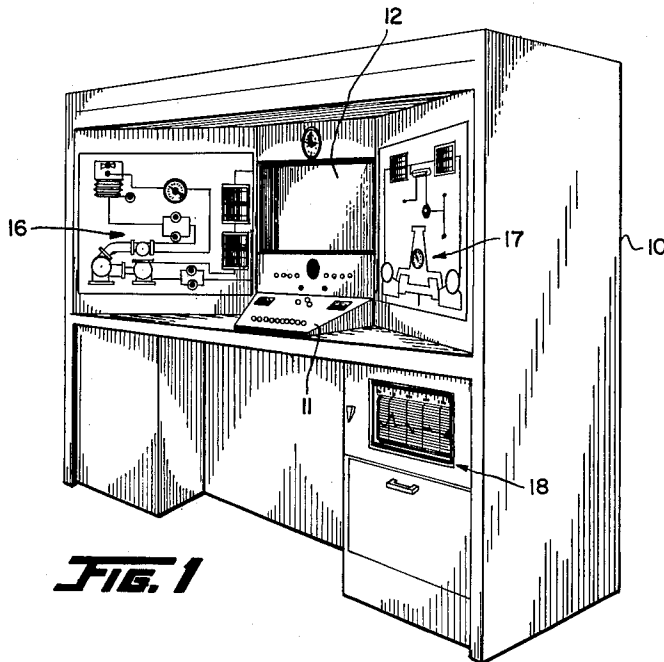


FIG. 1

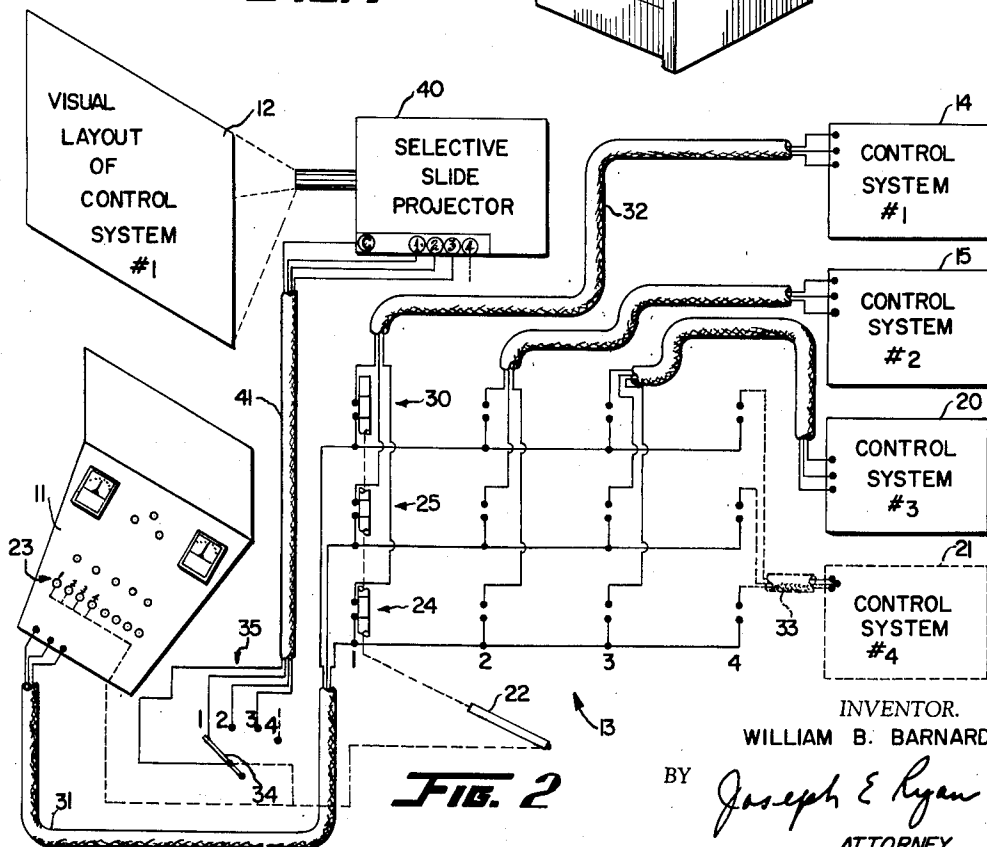


FIG. 2

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SELECTIVE CONTROL AND DISPLAY APPARATUS

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1 Claim. (Cl. 236—1)

The present invention is concerned with an improved control system wherein an entire conditioning system is controlled from a single panel. Simultaneous with the connection of the panel to any one of the various components of the system visual means is provided so that the operator is assisted in his remote control of the system from the panel.

In large systems such as an air conditioning system for a large building, it has been found to be more economical to control the entire system from a single control panel generally located in the engineer's room. As each floor of a building may contain a ventilation and conditioning system similar to the other floors the panel need only contain one set of control equipment and it is selectively connected to the apparatus of one particular floor by conventional switches. This obviously reduces the size of the main control panel as one panel will serve the need of a plurality of control systems. When the remote control panel is connected to one particular system or the equipment on one floor of the building, it is to the engineer's advantage to have a pictorial view of the equipment so that upon the remote setting of a temperature controller or a damper he is able to visualize what effect the particular change will have on the air conditioning of that floor.

The present invention provides a novel means to visually portray the system to which the remote control panel is connected. On the control panel there is a associated projector which has a plurality of slides for projecting a picture of the control system on the screen. The slides are so arranged on the projector that simultaneous selection of a picture of a control system for one floor of the building is made when the control panel is connected to that system. This greatly facilitates in the correct adjustment and remote control of the equipment on the particular floor selected. As the engineer connects the remote control panel to the various systems in the building the slide projector is operated to place on the screen a picture of the control system to which the remote control panel is connected at that particular time.

It is therefore an object of the present invention to provide an improved control system.

Another object of the present invention is to provide in a remote control system a visual picture of the apparatus being controlled simultaneous with the connection of the remote control panel to any one of a plurality of apparatuses.

And still a further object of the present invention is to provide in air conditioning system wherein a plurality of systems are selectively connected to a common control panel a means is provided for pictorially representing the control system to which the control panel is then connected.

These and other objects of the present invention will become apparent upon a study of the specification and drawing of which:

FIGURE 1 is a representative view of one type of control panel for accomplishing the present invention, and

FIGURE 2 is a schematic showing of the present invention wherein a remote control and indicating panel is selectively connected to one of a plurality of control systems and simultaneously there is projected on a screen a picture of the control system selected.

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Referring to FIGURE 1 a typical remote control panel 10 is shown. This control panel might be located in an engineer's room and by associated wiring selectively connected to a plurality of control systems of a building. Generally in air conditioning systems for buildings the control apparatus of each floor is quite similar and rather than have a remote control panel for each floor a panel such as 10 is selectively connected to the control apparatus of the particular floor desired. After the apparatus of that floor is functioning properly the panel can be selectively connected to another floor's control apparatus. An operator's remote control and indicating panel 11 provides for the manual selectivity in the connection of the apparatus of panel 10 to the particular control apparatus of any one of the floors. Associated with the control panel 10 is a screen 12 on which a picture of the apparatus to which the panel 10 is selectively connected is placed by an associated projector or other similar device. Panels 16 and 17 contain various equipment condition indicating devices associated with a pictorial showing of the equipment. A recording type indicating device 18 is a part of panel 10.

Referring to FIGURE 2 the operator's remote temperature control and temperature indicating console or panel 11 is shown selectively connected through a plurality of switches shown at 13 to a number of control systems 14, 15, 20 and 21. Switch mechanism 13 is of the gang switch type having a plurality of positions 1, 2, 3, and 4. When an operator 22 is moved to any one position a plurality of individual circuits are closed associated with that position. In each of the positions of operator 22 remote console 11 is connected to one control system to enable an attendant to remotely control and receive indication of individual function in that particular control system. Operator 22 is manually controlled by a series of buttons 23 shown on the operator's panel 11. For example, when button No. 1 is manually pushed operator 22 moves to the No. 1 position to close switches 24, 25 and 30 connecting three circuits from console 11 through conduit 21 containing a number of wires and conduit 32 to control system No. 1 shown at 14. Upon depressing button No. 4 on console 11 operator 22 is moved to position No. 4 and console 11 is connected through conduit 31 and another group of switches of position No. 4, conduit 33 to control system No. 4 shown at 21.

Associated with operator 22 and connected manually thereto is a switch operator 34. Operator 34 is simultaneously positioned in one of the four positions when the manual buttons 23 are pushed to connect the operator's console 11 to a particular control system. A selective slide projector 40 of a conventional type, having an electrical control apparatus so that one of a plurality of slides stored therein is projected on a screen, is connected to switch 35 through conduit 41. Thus whenever operator 34 is moved to one of its positions an appropriate slide is selected from those in the projector 40 and shown on the screen 12. For example, in the position shown, operator 34 engages contact 1; so that, a circuit exists from operator 34, through flexible lead 36, to a common connection C on the projector, from projector terminal 1, and back to terminal 1 of switch 35. Slide No. 1 is then projected on the screen.

Operation

The apparatus disclosed in FIGURE 2 for describing the present invention is quite simple and it is obvious that a remote control console such as 11 might have many circuits which are selectively connected to a number of control systems such as 14, 15, 20 and 21. However for explanation purposes only four systems are selected with three circuits to be connected from panel 11 to any one of the control systems. Furthermore in the use of the

selective slide projector only one position in switch 34 is shown for each control system. It is obvious that a number of slides to give different pictorial representations of any one of the control systems might be used.

Let us assume that the control panel 10 was installed in a large office building and the air conditioning system of the office building was controlled remotely from this panel. Further let us assume that control system 1 was for the first floor of the building, system 2 for the second floor and so on. Using the common remote control panel 11 a number of functions associated with the control systems for each floor could be remotely controlled by this common panel. Further, let us assume that someone called from the first floor of the building complaining of the temperature in their particular locality on that floor. The engineer at the control panel 10 could by his manual selections buttons at 23 connect the remote control and indicating console 11 to the control system on floor 1. This would be done by pushing button No. 1 on console 11.

Operators 34 and 22 of switches 35 and 13, respectively, would then move to the No. 1 position to connect control console 11 to system 14 and at the same time energize projector 40 to place the slide associated with the No. 1 position and thus the No. 1 control system in the projector so that a visual representation of control system No. 1 was projected on screen 12. From console 11 the engineer might then through the associated circuits shown in conduit 31 read the temperature in the particular locality on floor 1 and readjust the control point of a thermostat to satisfy the complaint of the occupant of floor 1. The visual representation on the screen would assist him in selecting the proper thermostat and to know how the particular change might affect the whole system on that particular floor. While there are only three wires shown connected from console 11 through conduit 31 it is obvious that this would generally be a very large conduit to carry numerous wires so that a multitude of separate circuits are provided between control console 11 and the selected particular control system.

While the present invention has been described in one particular manner it is obvious that the invention is concerned with the connection of apparatus to a remote station and simultaneously providing a visual indication of the remote apparatus associated with this station, therefore, it is intended that the scope of the present invention only be limited by the appended claims in which

I claim:

A system for remote temperature supervision and temperature control of a large and complex multispace air conditioning installation, a remote air conditioning apparatus in each space designed to have the temperature in said space remotely supervised and controlled with a minimum amount of personal contact by a person within the area, a single console type panel having temperature control and temperature supervision equipment for adjusting and observing the value of the temperature maintained in any one of said spaces by the air conditioning apparatus therein, a screen mounted on said console, a magnifying projector associated with said screen and having located therein a plurality of compact pictorial showings of the layout of each of said air conditioning apparatuses, said projector having means for selecting and moving to projecting position any one of said pictorial showings to project a magnified showing of the selected pictorial showing on said screen, means for selectively connecting at one time any one of said apparatuses to said temperature control and temperature supervision equipment of said panel whereby said system of the panel is connected to control and supervise the temperature maintained by said one apparatus and for simultaneously operating said projector to select, move to projecting position, and project the corresponding showing of the layout of said one apparatus on said screen whereby a magnified showing of said schematic layout of said one apparatus is provided.

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