Feb. 24, 1931. J. C. DAVIS 1,793,592

ORGAN

Filed April 22, 1927 2 Sheets-Sheet 1

Fig 1

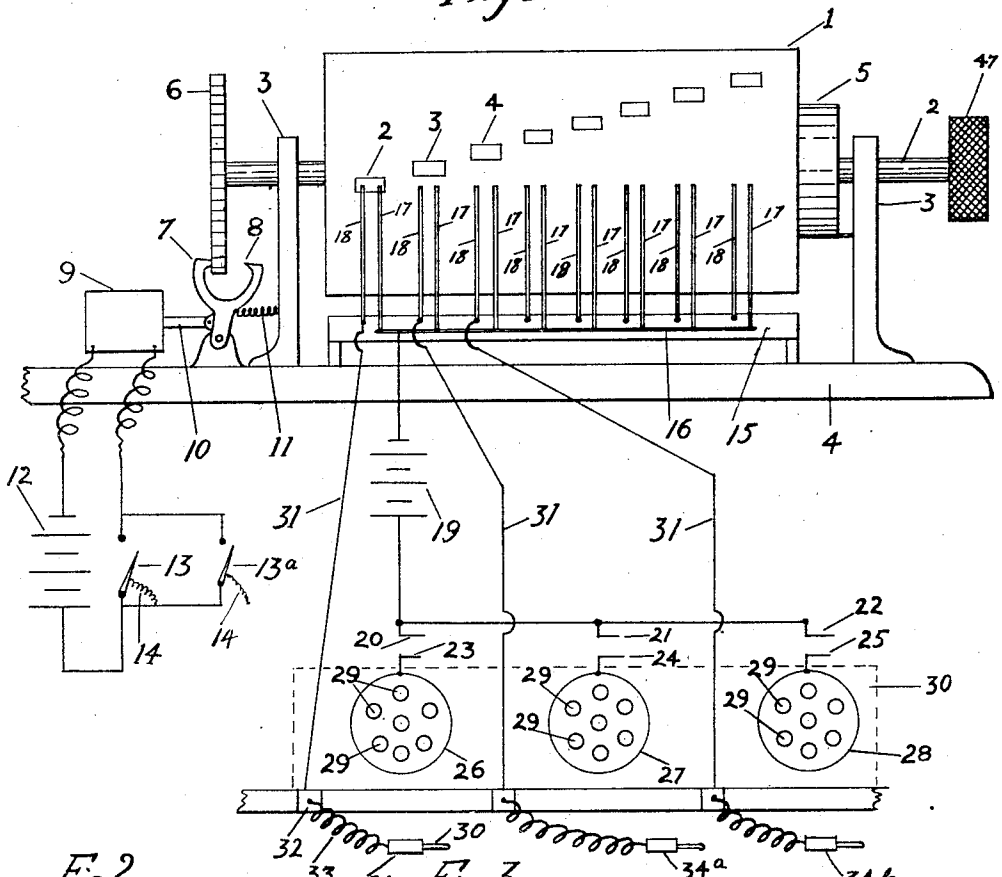


Fig 2

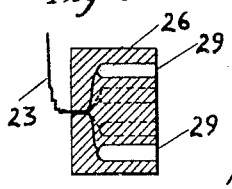


Fig 3

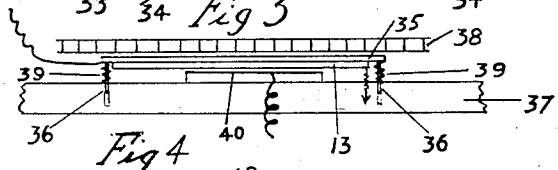


Fig 4

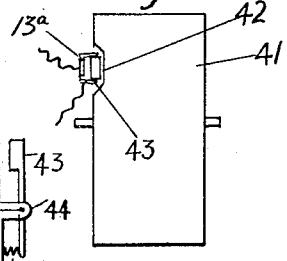
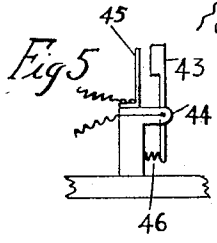


Fig 5



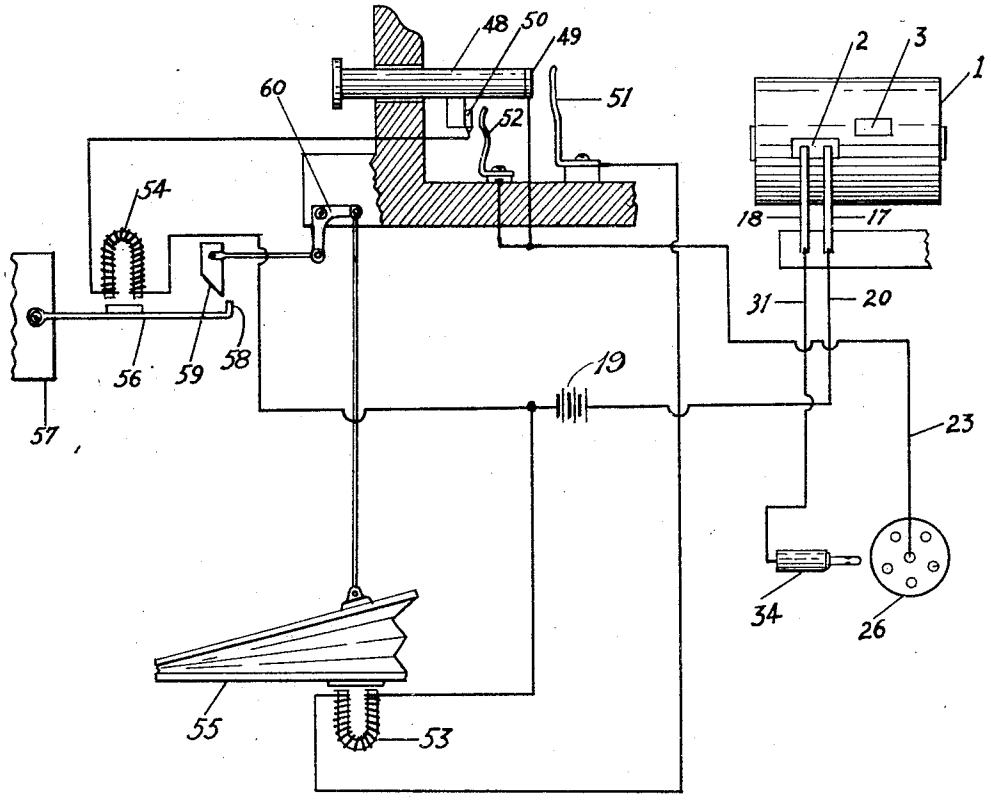
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Feb. 24, 1931. J. C. DAVIS 1,793,592

ORGAN

Filed April 22, 1927 2 Sheets-Sheet 2

Fig. 6.



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1,793,592

UNITED STATES PATENT OFFICE

JOHN CARLYLE DAVIS, OF WYOMING, OHIO

ORGAN

Application filed April 22, 1927. Serial No. 185,897.

My invention relates to organs and has particular reference to improved stop actuating mechanism therefor.

In pipe organs as at present constructed, there is provided, in connection with the stops for obtaining different tonal and volume effects, a series of pistons, to each of which an arrangement of desired stops may be connected prior to the rendition of a composition, so that by the actuation of such pistons at the proper time during the rendition, the desired series of stops may be automatically actuated into playing position.

In the performance of the composition or program, it is thus necessary that the artist at the proper time select the piston provided with the desired stop combination and manually operate such piston. This operation detracts his attention from the key manuals and is to such extent undesirable as it does not leave the artist in a position where he may direct his entire attention to the manuals for the proper rendition of the notes called for by the composition.

The principal object of this invention is to provide means whereby the pistons may be automatically selected without requiring conscious thought of the artist for such selection, each change in the stop arrangement being effected by the mere operation of a switch which is arranged to effect all changes, the active selection being entirely performed by the artist prior to the rendition of the composition or program.

Further objects of the invention will appear from the following detailed description thereof.

In the drawings:

Figure 1 is a diagrammatic view of an organ constructed in accordance with this invention.

Figure 2 is a sectional view of one of the piston sockets.

Figure 3 is an elevation of a detail of the hand operated switch.

Figures 4 and 5 are details of the foot operated switch.

Figure 6 is a diagrammatic view of the piston mechanism.

The numeral 1 indicates a cylinder constructed of some electrically non-conductive material as, for instance, wood or hard rubber. The cylinder 1 is mounted on a shaft 2 which has bearings in brackets 3 mounted on a suitable portion of the frame 4 of the organ. The surface of the cylinder 1 is provided with a series of electrically conductive segments 2, 3, 4 etc. which are disposed in the surface of the cylinder in the manner clearly shown in the drawings. A clock spring 5 places the cylinder 1 under tension and is arranged to rotate the cylinder when released by an escapement mechanism comprising a toothed wheel 6 and double pawl 7—8, the latter being pivotally mounted on the frame 4 as shown. The pawl 8 is arranged to be actuated by a solenoid 9, the armature 10 of which is pivotally secured to said escapement pawl. A spring 11 returns the pawl when the solenoid 9 is de-energized. The solenoid 9 is energized by battery 12 or other source of current when the switch 13 or 13*a* is closed, said switch 13 being normally held in open position by means of a spring 14. Mounted on a non-conductive bracket 15 supported on the organ frame 4 is a conductive bar 16 on which bar a series of electrically conductive spring brushes 17 are mounted. Mounted on the non-conductive bracket 15 is a corresponding series of electrically conductive spring brushes 18. The respective pairs of brushes are so arranged that each of the pairs is in sequence arranged to come into contact with one of the conductive segments 2, 3, 4 etc. of the cylinder, as said segments are advanced by the rotation of such cylinder. The conductive bar 16 is connected to a battery or other suitable source of power 19, the opposite pole of which is connected by means of wires 20, 21, 22 etc., to one terminal of the respective piston operative devices at present employed in pipe organ construction and not shown in the drawings herein. The opposite pole of such piston operating mechanisms are connected by wires 23, 24, 25 etc. with the piston selector socket members 26, 27, 28 etc., there being one of such members for each of the pistons comprised in the particular organ construction to which the present invention is applied.

Each of said plugs is provided with a series of sockets 29.

In Figure 2 I have illustrated the selector socket in section, and it will be noted that each of the sockets 29 constitutes a terminal for a common lead 23, 24 or 25, as the case may be. The selector socket members 26, 27, 28 etc. are mounted in a panel 30. Each of the brushes 18 is connected by means of a wire 31 to a terminal 32 in the panel 30, to which terminal is connected a flexible cord 33 carrying a plug 34, 34—A, 34—B etc. adapted to be inserted in either of the sockets 29 of either of the socket members 26, 27 or 28 etc.

The switches diagrammatically illustrated at 13 and 13—A in Figure 1, are respectively adapted to be operated by the foot or hand of the performer. The switch 13 comprises a bar 35 mounted on pins 36 which telescope in openings in the frame 37 of the organ adjacent the keyboard 38. The bars normally are elevated by means of springs 39 but when depressed is arranged to close a contact with a conductor plate 40 mounted in the frame. The switch illustrated diagrammatically at 13—A is arranged to be operated by the foot and is set preferably adjacent the shoe 41, as shown in Figure 4, the shoe being notched at 42 to receive the movable member 43 of the switch which is pivoted in a bracket 44. The movable member makes contact with the fixed terminal 45. A spring 46 normally keeps the contacts open. The end of the shaft 2 of the cylinder 1 is provided with a knurled handwheel 47 for the manual return of the cylinder at the conclusion of the performance, or at any other time.

In Figure 6 I have illustrated the piston mechanism in diagrammatic form, it being understood that the ordinary organ mechanism comprises a plurality of such pistons. The device consists generally of a piston 48 slidably mounted at a convenient point adjacent the organ manuals. The piston 48 carries contacts 49 and 50 arranged respectively to make contact with springs 51 and 52 to complete circuits through magnets 53 and 54 for the operation respectively of the bellows mechanism 55 and the pivoted rod 56 mounted on the adjustable combination piston slide 57. When the rod is raised by the magnet 54 the hook 58 thereon is in the path of a pawl 59, which pawl is connected with a bell crank 60 operated by the bellows 55.

The mechanism just described is that comprised in the usual organ construction as for instance in the well known organ construction known as the Austin organ, and the magnets 54 and 53 are as illustrated in the diagram arranged to be operated through the connectors 20 and 23 or 21 and 24, etc.

The use and operation of the device is as follows: When the artist is to render a composition or program, in advance of such rendition as is the custom at the present time he arranges the stops on the several pistons to suit his convenience in employing such combinations of stops during the performance. In order to provide for the automatic operation of the stops so arranged on the piston, the plugs 34, 34—A, 34—B etc. are connected in the socket members 26, 27, 28 etc. so as to connect up the desired piston operating mechanism in the desired sequence during the program. Thus, for instance, at the start of the rendition he desires to use a certain combination of stops. He may connect these in the manner at present employed with the first piston which is connected with the socket member 26. He then inserts the plug 34 in one of the sockets 29 of socket member 26. Later in the composition he desires to use other stops which he connects in the usual manner with piston 2 of the organ which is arranged to be actuated through socket member 27. He then inserts plug 34—A in one of the sockets 29 of socket member 27. Still later in the composition he desires, for example, to return to the stop combination already connected with piston 1 of the instrument. This he accomplishes by inserting plug 34—B in another of the sockets 29 of socket member 26. For later changes in stop combinations the stops and pistons are similarly arranged and subsequent plugs inserted into the related socket members and as often as it is desired to return to a stop combination connected to an earlier piston, the plug member connected with the next pair of brushes to be brought into operation by its related cylinder segment is inserted in the socket member, actuating the desired piston, it being understood that there is one socket member provided for each piston in the organ construction, and as many segments in the cylinder 1 and related pairs of brushes as may be provided in the design of the instrument, reference being had to its probable requirements as to length of program and probable piston actuated stop changes during rendition, the limit of the instrument as to changes both to new combinations or returns to earlier piston combinations being determined by the number of segments and related brushes.

The instrument having been thus arranged in advance of the program it is only necessary for the performer during the rendition thereof, whenever he desires to bring into operation any piston connected stop combination to close either of the switches 13 or 13—A which is a necessary mechanical movement. The closure of either of those switches energizes the solenoid 9 and operates the escapement mechanism which permits the spring 5 to advance the cylinder so as momentarily to bring into contact the segment next in sequence with its related fingers, thus

operating the next piston combination as pre-arranged in the manner above set forth. By reason of the double pawl escapement, the cylinder when at rest is so positioned that none of the segments are in contact with the related brushes, thus eliminating the loss of current when the stop change mechanism is not in actual operation.

It will be understood that many modifications may be made in the details of construction and the agencies employed for the operation in carrying out the present invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an organ, in combination with the piston mechanisms, means for selecting said piston mechanisms during a performance in pre-arranged sequence, and a common means for the operation of said selector means.

2. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, and means for the rotation of said cylinder.

3. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, and means for the rotation of said cylinder whereby said piston mechanisms may be operated in pre-arranged sequence.

4. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, and means for the intermittent rotation of said cylinder.

5. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, and means for the intermittent rotation of said cylinder.

6. In an organ, in combination with, the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, means for the rotation of said cylinder, and an escapement whereby the rotation of said cylinder may be intermittently controlled.

7. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, means for the rotation of said cylinder, and an escapement whereby the rotation of said cylinder may be intermittently controlled.

8. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, means for the rotation of said cylinder, an escapement comprising a toothed wheel and a

pawl whereby the rotation of said cylinder may be intermittently controlled, and means for electrically operating said pawl.

9. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, means for the rotation of said cylinder, an escapement comprising a toothed wheel and a pawl whereby the rotation of said cylinder may be intermittently controlled, and means for electrically operating said pawl.

10. In an organ, in combination with the piston mechanisms, a piston selector, electrical means for the control of the operation of said selector a plurality of switches variously disposed in said organ, said electrical means being operated by either of said switches.

11. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, means for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ.

12. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, means for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ.

13. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, a spring for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ.

14. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to establish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, a spring for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ.

15. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively to establish contact with said terminals so as each to establish the circuit for the operation of a piston mechanism, means whereby the piston mechanism to be actuated by each of said cylinder contacts may be selectively determined, a spring for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ, and means for the return of said cylinder.

16. In an organ, in combination with the piston mechanisms, a non-conductive cylinder rotatably mounted, pairs of electrical contacts mounted adjacent said cylinder, conductors mounted in the surface of said cylinder and arranged successively each to es-

tablish contact between one pair of said terminals to establish the circuit for the operation of a piston mechanism, a socket member in the lead between each of said members and the piston operating circuit, each of said members being provided with a plurality of inter-connected sockets, the other of each of said pairs of contacts being connected to a terminal plug arranged to be inserted in either of the sockets of either of said socket members, a spring for rotating said cylinder, electrical means for the intermittent control of the operation of said cylinder, said electrical means being operated by either of a plurality of switches variously disposed in said organ, and means for the return of said cylinder.

JOHN CARLYLE DAVIS.