

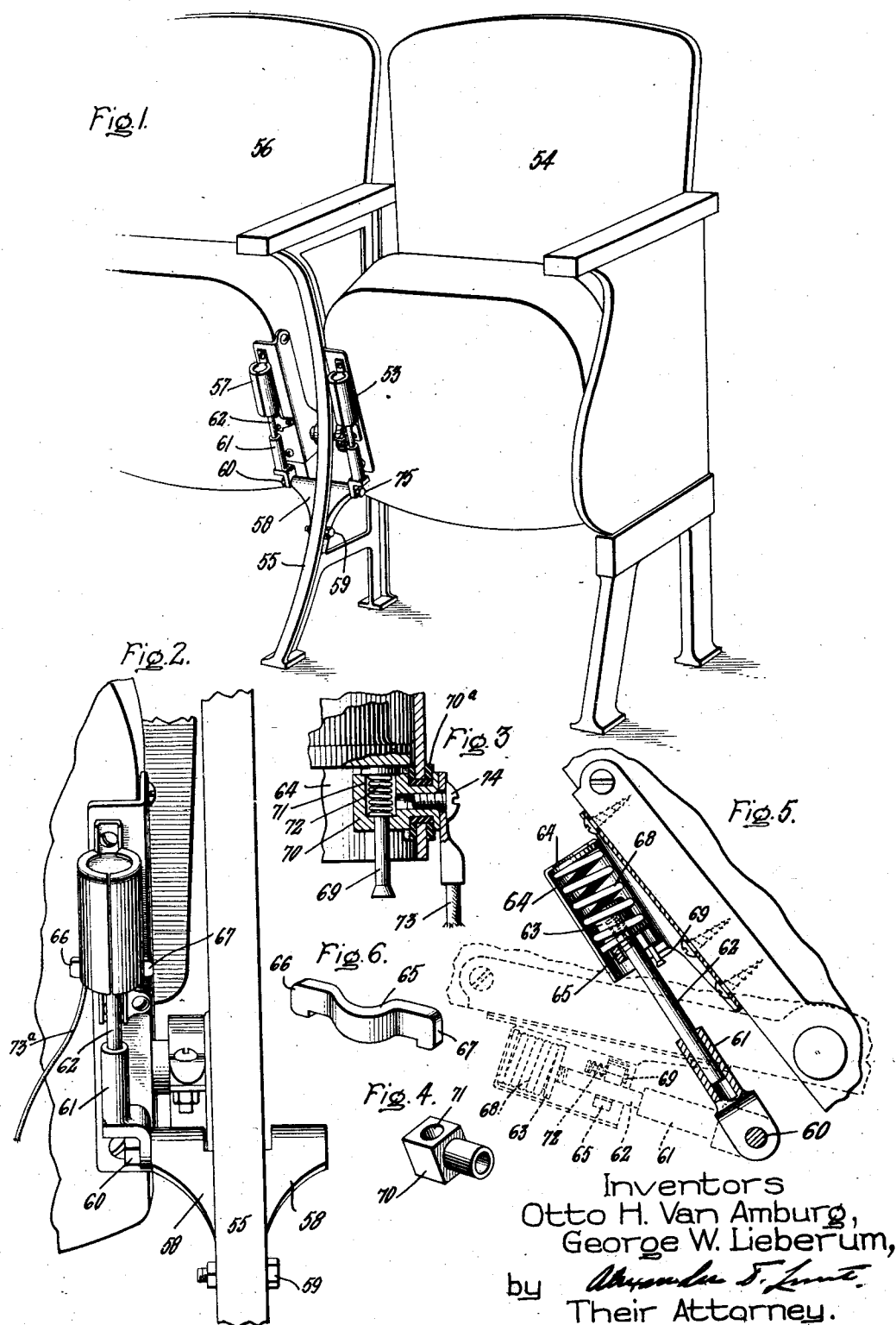
June 9, 1931.

O. H. VAN AMBURG ET AL

1,809,651

COMBINED SWITCH AND SEAT OPERATING MEANS

Filed June 27, 1927



UNITED STATES PATENT OFFICE

OTTO H. VAN AMBURG AND GEORGE W. LIEBERUM, OF BRIDGEPORT, CONNECTICUT,
ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

COMBINED SWITCH AND SEAT OPERATING MEANS

Application filed June 27, 1927. Serial No. 201,678.

Our invention relates to combined switch and seat operating means and especially to such means for use with signal systems for indicating in an auditorium, such as a theater or the like, vacant or occupied seats, or both, although the invention is not limited thereto necessarily.

In combined switch and seat operating means, it is desirable to locate the device close up to the bottom of the seat where it is inconspicuous and out of the way. At the same time, however, it is required that the device be simple in structure and reliable in operation.

The object of our invention is to provide an improved construction and arrangement in a combined switch and seat operating means which meets in a satisfactory manner the foregoing requirements, and for a consideration of what we believe to be novel and our invention, attention is directed to the following specification and the claims appended thereto.

In the drawings, Fig. 1 is a perspective view of adjacent seats equipped with combined switch and seat operating means embodying our invention; Fig. 2 is a face view on an enlarged scale of one of the combined switch and seat operating means, the seat being shown in raised position; Fig. 3 is an enlarged detail view of the circuit making and breaking elements of the switch; Fig. 4 is a detail perspective view of a part of the contact making element of the switch; Fig. 5 is a sectional view of the combined switch and seat operating means, the seat being shown raised in full lines and lowered in dotted lines, and Fig. 6 is an enlarged detail view of a bar which forms a part of a plunger mechanism.

Referring to the drawings, 54 and 56 indicate adjacent seats having a common side frame 55 and provided with combined switch and seat operating means 53 and 57 embodying our invention. Attached to side frame 55 by a bolt 59 is a yoke 58 to which the lower ends of the combined switch and seat operating means are pivoted by means of bolts 75 and 60.

The combined switch and seat operating

means comprises a socket 61 which forms the lower end of the combined switch and seat operating means and which is pivoted to the side frame of the seat as before referred to, the socket having an offset ear provided with an opening through which the bolt, such as the bolt 60, extends. Slidably mounted in socket 61 is a plunger arm 62 which at its upper end is connected to a plunger 63, it being shown in the present instance as having threaded engagement therewith. Plunger 63 is located in a plunger casing 64 which in turn is carried by an angular bracket secured to the bottom of the seat as shown particularly in Figs. 1, 2 and 5.

Transverse the plunger casing 64 near the lower end thereof, we provide a bar 65 which serves as a stop for the plunger when the seat is raised as indicated in Fig. 5. The ends 66 and 67 of the bar 65 project beyond the walls of the plunger casing. Bar 65 is shown in cross-section in Fig. 5. Between the plunger 63 and the end of the cylinder 64 we provide a compression spring 68 which serves to force the piston 63 down against the stop 65 and against the circuit closing contact element 69 (see Fig. 3). This circuit contact element is mounted in a metal element 70 shown in detail in Fig. 4 and is adapted to slide axially therein. Within the cavity 71 in the element 70 we provide a compression spring 72. When the seat is raised the spring 72 operates to raise the contact 69 (see dotted lines in Fig. 5), and allows the contact 69 to follow for a limited distance in engagement with the piston 63 as the latter rises. When the piston returns to the position shown in Fig. 5 it engages the contact 69 before it reaches its seat against the stop 65. This arrangement insures a good contact surface and connection between the piston 63 and the contact 69. Also the point at which the circuit should be closed or opened as the seat is raised or lowered may be adjusted by using contacts 69 of different lengths. Or the same result may be accomplished by threading the contact and providing it with a nut near its lower end. The length of the stroke of the contact 69 may be thus adjusted. As shown in Fig. 1

3, a conductor 73 is connected electrically with the element 70 by means of a screw 74. A bushing 70a maintains the element 70 and its connection insulated from the casing 64.

Connected to casing 64 and through it and spring 68 to plunger 63 is a second conductor 73a, Fig. 3.

It will be seen, therefore, that with the device described whenever the seat is occupied, i. e., is in the down position as shown in dotted lines in Fig. 5, plunger 63 separates from the contact 69, Figs. 3 and 5, breaking the circuit between conductors 73 and 73a. On the other hand, when the seat is in raised position the plunger returns into engagement with the element 69 thereby closing the circuit between conductors 73 and 73a.

When the seat becomes unoccupied the compression spring 68 expands forcing the seat upward into the position indicated by the solid line in Fig. 5, and at the same time bringing plunger 63 and contact 69 into engagement, thereby closing the circuit between conductors 73 and 73a. Conductors 73 and 73a may lead to any suitable signal indicating means such as an electric lamp.

With the arrangement shown, it will be seen that when the seat is unoccupied and in raised position the circuit through the signal lamp is closed so that the lamp burns, while when the seat is lowered the circuit is open so that the signal lamp is extinguished.

From a consideration of Figs. 1 and 5 it will be seen that our combined switch and seat operating means is mounted close to the bottom of the seat, the pivot 60 for the socket 61 being directly adjacent to the seat pivot, and the casing 64, plunger arm 62 and socket 61 being in alignment and making but a small angle with the bottom of the seat. In other words, the structure is brought up close to the bottom of the seat where it is quite out of the way. The socket arrangement illustrated serves to give a loose connection between the rod 62 and the socket 61 which is rigidly pivoted and permits of a certain downward movement of the seat before the spring 60 comes into play. This means that the first movement of the seat is easily effected and it is not until the seat is part way down and pressure can be readily applied to it that the spring 68 comes into play. Spring 68 is sufficiently strong so that when the seat is released it is automatically raised to effect opening of the circuit.

Our combined switch and seat operating means comprises few parts all of a simple character and capable of being manufactured at low cost. Also the structure is easily installed and, as stated, occupies a position close to the bottom of the seat. At the same time, the construction is reliable in operation and not likely to get out of order.

While we have shown and described our invention in connection with the specific form of apparatus shown in the drawings, we do not wish to be limited to such form of apparatus inasmuch as in view of the disclosure other forms may be readily produced without departing from the spirit of the invention or from the scope of the claims contained herein.

What we claim as new and desired to secure by Letters Patent of the United States, is:—

1. The combination with a chair having a frame and a pivoted seat, of a combined switch and seat operating means comprising a socket pivoted to the frame adjacent to the seat pivot, a casing fixed to the under side of the seat, a plunger in the casing, a plunger arm connected to the plunger at one end and having its other end located in said socket and adapted to slide therein, said casing, plunger arm and socket being in alignment and making a small angle with the bottom of the seat, a circuit closer in said casing controlled by movement of the plunger, and a spring between the end of the casing and the plunger and acting in a direction to raise the seat.

2. The combination with a chair having a frame and a pivoted seat, of a combined switch and seat operating means comprising a socket pivoted to the frame adjacent to the seat pivot, a casing fixed to the under side of the seat, a plunger in the casing, a plunger arm connected to the plunger at one end and having its other end located in said socket and adapted to slide therein, said casing, plunger arm and socket being in alignment and making a small angle with the bottom of the seat, a spring between the end of the casing and the plunger and acting in a direction to raise the seat, and a circuit closer in said casing comprising a spring pressed contact adapted to be moved by the plunger.

3. The combination with a chair having a frame and a pivoted seat, of a combined switch and seat operating means comprising a socket pivoted to the frame adjacent to the seat pivot, a casing fixed to the under side of the seat, a plunger in the casing, a plunger arm connected to the plunger at one end and having its other end located in said socket and adapted to slide therein, said casing, plunger arm and socket being in alignment and making a small angle with the bottom of the seat, a spring between the end of the casing and the plunger and acting in a direction to raise the seat, and a circuit closer in said casing comprising a spring pressed contact carried by and insulated from the casing and adapted to be moved by the plunger.

In witness whereof, we have hereunto set our hands this 22nd day of June, 1927.

OTTO H. VAN AMBURG.
GEORGE W. LIEBERUM.