No. 798,143. PATENTED AUG. 29, 1905.

J. McCARTHY.

ELECTRIC ALARM CLOCK.

APPLICATION FILED MAY 6, 1904.

2 SHEETS—SHEET 1.

Fig. 3.

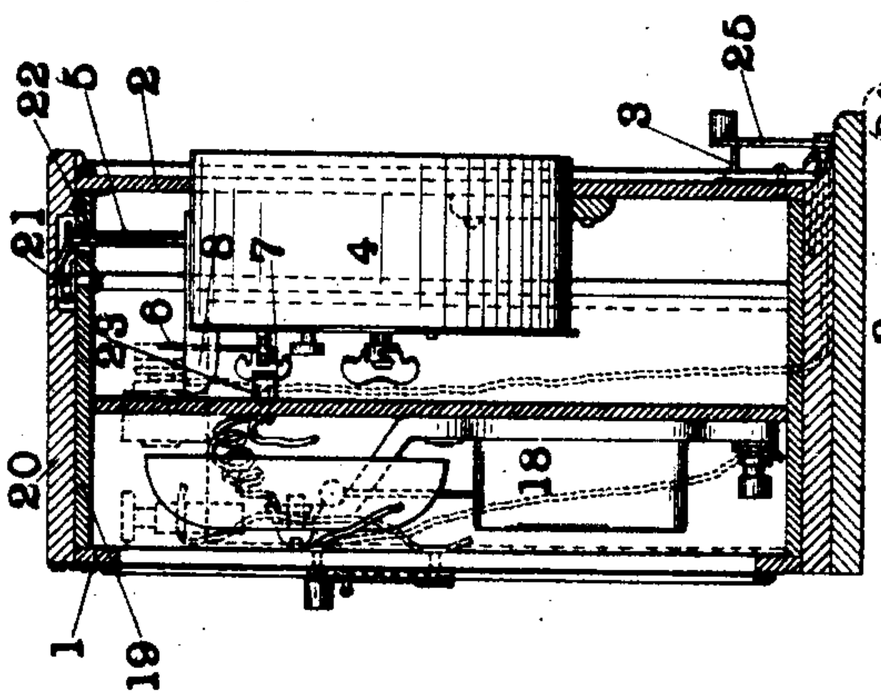

Fig. 2.

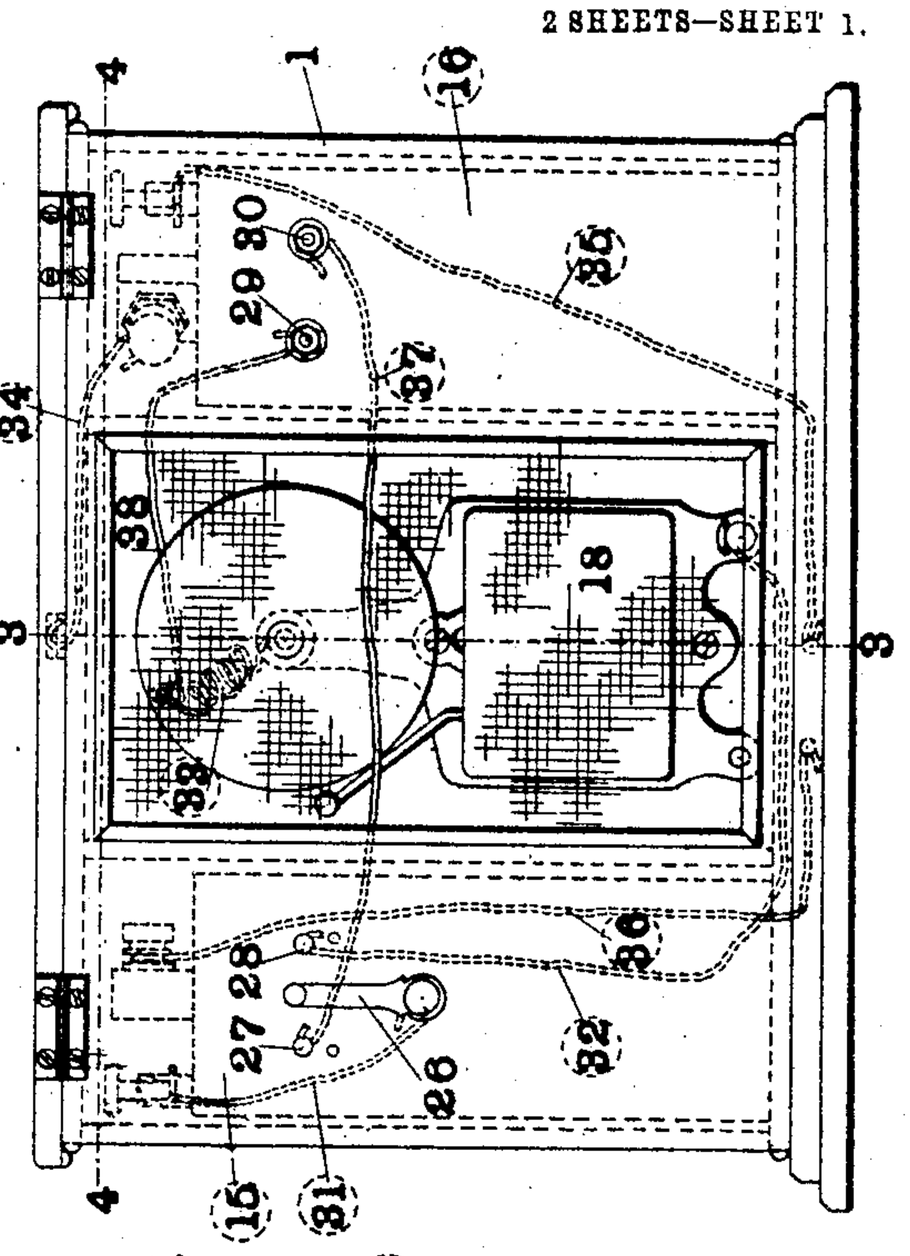

Fig. 1.

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2 SHEETS—SHEET 2.

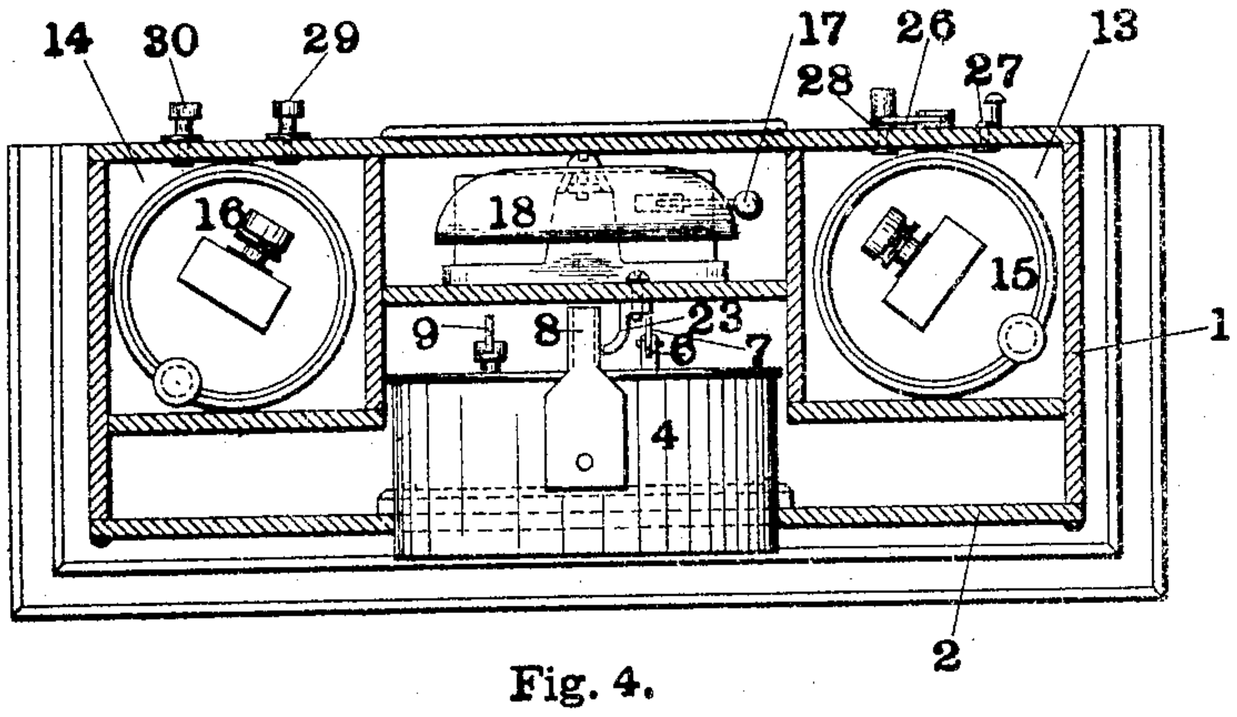

Fig. 4.

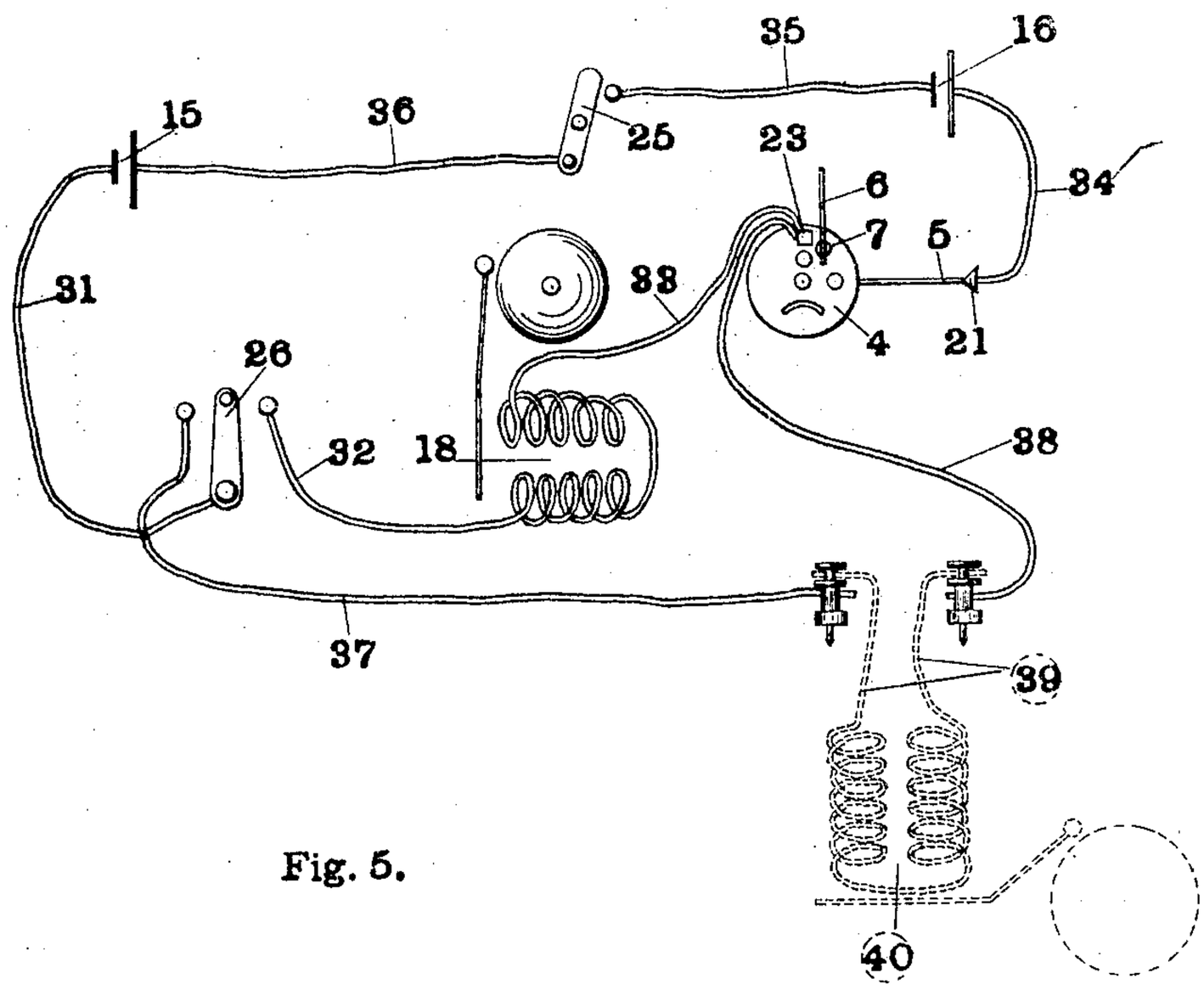

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOSEPH McCARTHY, OF ST. LOUIS, MISSOURI.

ELECTRIC ALARM-CLOCK.

No. 798,143. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed May 5, 1904. Serial No. 206,426.

To all whom it may concern:

Be it known that I, JOSEPH McCARTHY, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Electric Alarm-Clocks, of which the following is a specification.

My invention relates to alarm-clocks, and especially to alarm-clocks having an electrically-operated alarm.

The principal objects of my invention are to provide an electrically-operated alarm mechanism to which an ordinary alarm-clock may be connected, to provide an alarm-clock that may be caused to operate alarm-bells in a plurality of circuits, to provide means for operating either an alarm-bell on the clock itself or a distant alarm, and other objects hereinafter more fully appearing.

My invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a front view of my improved alarm-clock with the front door raised. Fig. 2 is a rear view of the clock. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 2. Fig. 4 is a horizontal sectional view on the line 4 4 of Fig. 2, and Fig. 5 is a diagrammatic view of the circuits.

The clock comprises a case 1 of any suitable form, but preferably ornamental, provided with a front hinged door 2. The latter is hinged at its upper edge and is fastened shut by a pivoted latch 3, which engages in a slot in the forwardly-projecting margin of the lower side of the case. The door is provided near its central portion with an opening of the proper shape to receive an ordinary alarm-clock. In the clock shown the opening is circular. In this opening an alarm-clock 4 is mounted. The door is of wood or other insulating material, so that the clock is insulated except at the points where electrical conducting contact is desired. This is an ordinary alarm-clock with mechanical alarm mechanism, of which the "Ansonia" clock may be taken as an example. The bell usually found on such clocks is removed and in its place a contact member 5 is arranged. The alarm-spring is wound up and a stop-arm 6 is soldered on the alarm-winding finger-piece 7. A stop 8 is mounted on the clock-case in position to be struck by the stop-arm 6 and prevent more than a partial revolution of the latter. Thus the alarm-spring can never be wholly unwound. The remaining parts of the clock—the interior mechanism, the time-winding finger-piece 9, the hour and minute hand setting button 10, the alarm-setting button 11, and regulating-lever 12—are unchanged.

In the rear corners of the case chambers 13 and 14 are partitioned off and primary cells 15 and 16 are placed therein. Cells of any type may be used, but dry cells are shown and preferred. By inclosing them in practically air-tight chambers evaporation of the moisture of the cells and their consequent deterioration is to a large degree prevented. A chamber 17 is partitioned off between the chambers 13 and 14 and an electric bell 18 of any suitable type is mounted therein.

The top of the casing is formed by a fixed top 19 and a hinged top 20. The front door 2 is hinged to the fixed top 19. The hinged top 20 is provided to permit the raising of the front. A spring-contact 21 is secured to the fixed top 19 and projects over a hole 22 in the latter. When the door is closed, the contact member 5 on the clock projects through the hole 22 and makes contact with the spring-contact 21.

A contact-piece 23 is secured upon the partition just back of the clock in such position that it may be engaged by the alarm-winding finger-piece 7 when it rotates to the position at which it is stopped by the stop-arm 6 and stop 8.

At the front of the casing and upon the lower side thereof a contact 24 and switch 25 are mounted. A switch 26, having two contact-points 27 and 28, is mounted on the rear side of the case. Two contact-posts 29 30 are also mounted upon the rear side of the casing.

The several contact members, switches, battery, clock, &c., are connected by the electrical conductors as follows: A conductor 31 connects one terminal of the cell 15 with the switch 26. The contact-point 28 of the switch is connected with one terminal of the bell by a conductor 32, the opposite terminal of the bell being connected by a conductor 33 with the contact-piece 23 back of the clock. A conductor 34 connects the spring-contact 21 with one terminal of the cell 16. The opposite terminal of the cell 16 is connected by a conductor 35 with the switch 25, the contact 24 of which is connected by a conductor 36 with the remaining terminal of the cell 15.

The operation of the parts described is as follows: When it is desired to set the alarm, the switch 26 is closed on the contact 28, the switch 25 is closed, and the alarm-winding finger-piece 7, with its stop-arm 6, is turned back, as in the ordinary winding of the alarm, a part of a revolution, so as to break the circuit between the finger-piece 7 and the contact-piece 23. The hour for the release of the alarm mechanism is set as usual. When the hour determined upon has arrived, the alarm mechanism is released, as usual, and the alarm-winding finger-piece 7 rotates and makes contact with the contact-piece 23. The circuit is thus closed. Further rotation is prevented by the stop 8. The circuit is as follows: cell 15, conductor 31, switch 26, conductor 32, bell 18, conductor 33, contact-piece 23, finger-piece 7, clock 4, contact member 5, spring-contact 21, conductor 34, cell 16, conductor 35, switch 25, conductor 36 to cell 15 again. The bell will ring until the circuit is manually interrupted. The person to be awakened must get up in order to stop the ringing of the bell.

Other connections for operating alarms at a distance—as, for example, distant rooms of a hotel—are provided. A conductor 37 connects the contact 27 of the switch 26 with the contact-post 30. A conductor 38 connects the companion contact-post with the contact-piece 23. The contact-posts 29 and 30 may be connected to any exterior circuit 39 containing an electric bell 40 or a switchboard, by means of which connection could be made with a plurality of bells.

For use in connection with the exterior circuit 39 the switch 26 is set on the contact 27. The circuit is then as follows: cell 15, conductor 31, switch 26, conductor 37, exterior circuit 39, conductor 38, contact-piece 23, finger-piece 7, clock 4, contact member 5, spring-contact 21, conductor 34, cell 16, conductor 35, switch 25, conductor 36 to cell 15 again.

The battery is shown divided in order to secure a symmetrical arrangement in the case; but obviously both cells might be inserted at the same point in the circuit. The case shown is made of wood, and hence no other insulator for the contact-piece is necessary; but obviously the case could be made of metal or any conducting material and the contact-pieces insulated therefrom in the well-known manner.

Obviously my device is capable of considerable modification within the scope of my invention, and therefore I do not wish to limit myself to the specific construction shown and described. For example, the contact 23 may be located so as to make contact with the stop-arm 6 instead of the finger-piece 7.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An electric alarm-clock comprising a case arranged to receive alarm-clock mechanism, an electric circuit comprising a source of current, a circuit-breaking switch and contacts arranged to be connected by the alarm-clock mechanism, an alarm-clock mechanism arranged in said case to connect said contacts, a second circuit in said case comprising an electric alarm, a third circuit external to said case comprising an electric alarm, and means for throwing said second-mentioned and third-mentioned circuits separately in series with said first-mentioned circuit.

2. An electric alarm-clock comprising a case, an electric circuit therein comprising a source of current, an electrically-operated alarm and separated contacts, and alarm-clock mechanism mounted in said case and having a fixed contact for engagement with one of said separated contacts and a winding finger-piece for engagement with the other of said separated contacts, a stop-arm on said finger-piece and a stop to prevent more than a partial revolution of said finger-piece.

3. An electric alarm-clock comprising a case, a front door hinged at its upper side, a hinged top projecting over said door, said door being provided with an opening to receive a mechanical alarm-clock, a primary battery, an electrically-operated alarm in said case and two separated contacts arranged in said case, said contacts being arranged for engagement with parts of said alarm-clock and electric conductors connecting said battery, alarm and contacts.

4. An electric alarm-clock comprising a case provided with a hinged door, an alarm-clock mechanism mounted on said door and provided with a fixed contact and a rotatable contact member, a circuit in said case comprising a source of current, an electrically-operated alarm, a switch, and separate contacts, one of said separated contacts being arranged for engagement with said fixed contact when said door is closed and the other of said separated contacts being arranged for engagement with said rotatable contact member.

5. An electric alarm-clock comprising a case arranged to receive alarm-clock mechanism, an electric circuit in said case comprising a source of current, an electrically-operated alarm, and contacts arranged to be connected by the alarm-clock mechanism, an electric circuit in parallel with said electrically-operated alarm and comprising contact-posts for connection with an external circuit, and a switch for closing the circuit either through said electrically-operated alarm or through said circuit in parallel therewith.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH McCARTHY.

In presence of—

MARY ELLEN KEEFE,

FRED F. REISNER.