Oct. 13, 1942. A. FERRIS 2,298,689

ELECTRICAL DETECTOR BASE

Filed June 19, 1940 2 Sheets-Sheet 1

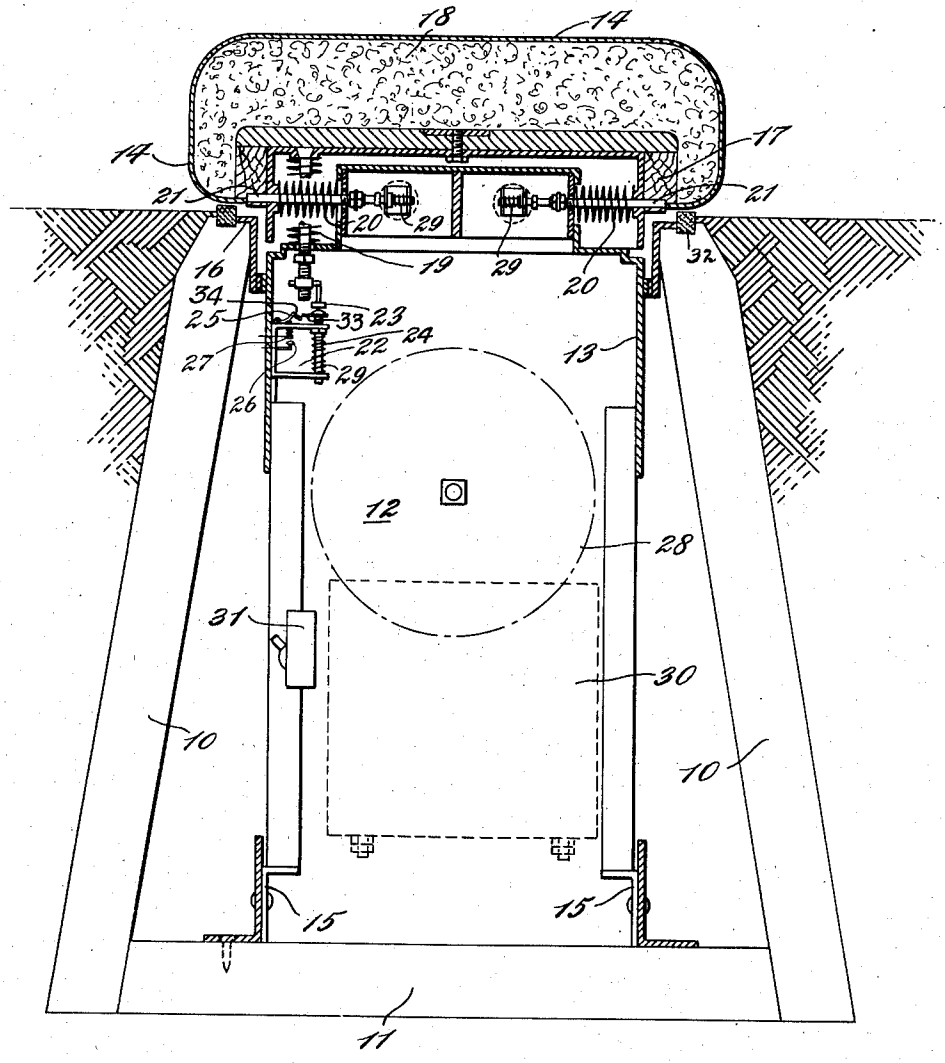


Fig. 1.

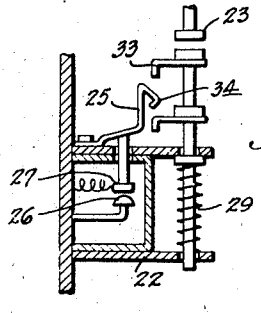


Fig. 4.

INVENTOR.
Anthony Ferris
BY
Gifford, Scull & Burgess
ATTORNEYS

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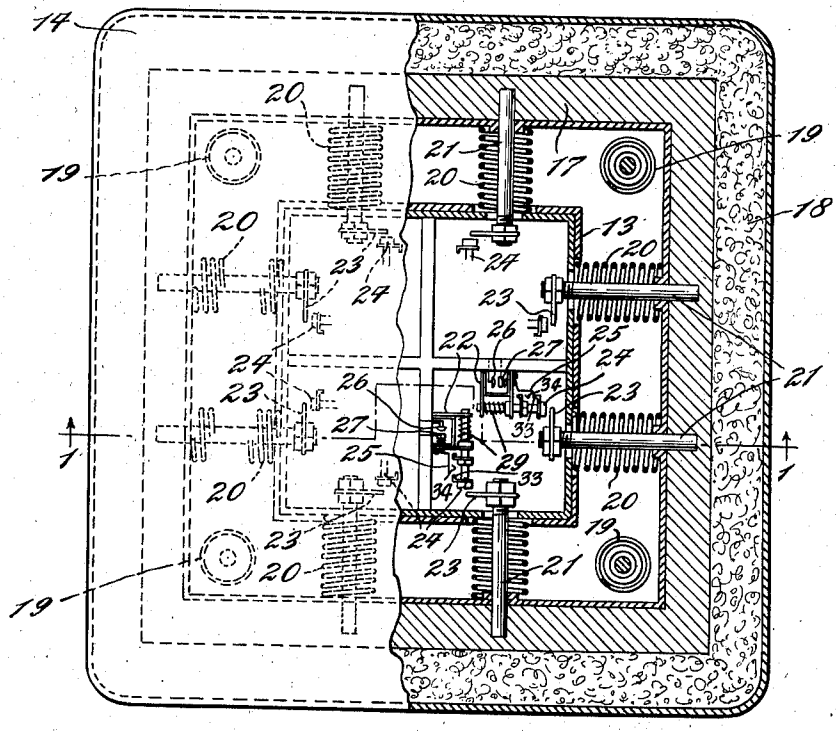


Fig. 2.

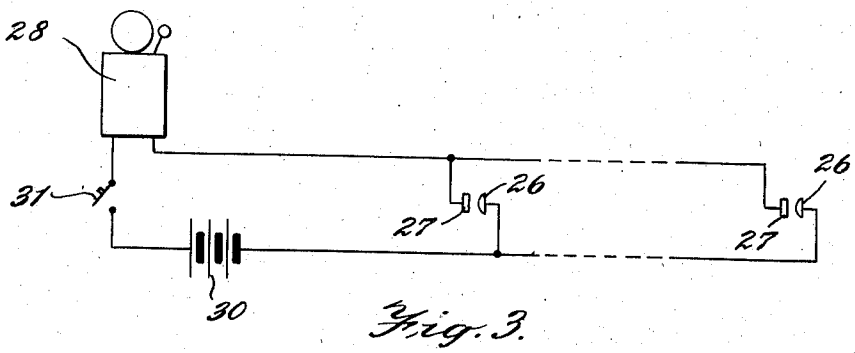


Fig. 3.

INVENTOR.
Anthony Ferris

Gifford, Scull & Burgess
ATTORNEYS

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UNITED STATES PATENT OFFICE

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ELECTRICAL DETECTOR BASE

Anthony Ferris, New York, N. Y.

Application June 19, 1940, Serial No. 341,310

8 Claims. (Cl. 273—25)

This invention relates to an improved electrical detector base. The invention will be best understood from the accompanying description and drawings in which:

Fig. 1 is a side elevation in section along lines 1—1 of Fig. 2 of a base embodying the invention.

Fig. 2 is a plan view in partial section of a base as shown in Fig. 1.

Fig. 3 is a diagrammatic wiring circuit for the base.

Fig. 4 is an enlarged view in partial section of the circuit closing device as shown in Fig. 2.

Referring to the drawings in detail, there is an enclosure sunk into the ground. This enclosure has sides 10, a floor 11, and is open at its top to receive a combined base and detector unit 12.

The base and detector unit 12 consists of a supporting frame 13 and a base portion 14. The supporting frame 13 extends into the enclosure and rests on brackets 15 which are secured to the floor 11 of the enclosure. The frame 13 also has ears 16 secured to it which overhang and rest on the upper edges of the sides 10 of the enclosure. Thus the combined base and detector unit 12 is removably but firmly supported in the enclosure.

In the base 14 there is a frame 17 over which padding 18 is placed. The base extends over the enclosure and is above the level of the ground.

The base 14 is resiliently carried on the supporting frame 13 so that downward or lateral movement of the base in relation to the frame is permitted. This floating relation between the base 14 and the frame 13 is obtained by interposing a series of vertical coil springs 19 and a series of horizontal springs 20 between the base 14 and the supporting frame 13.

The coil springs 19 and 20 are placed around the base 14 and one end of each spring being secured to the base frame 17 and the other end to the supporting frame 13. In the arrangement illustrated, there are two horizontal springs 20 on each side of the base and a vertical spring 19 at each corner of the base. This arrangement may be varied to suit particular requirements.

Passing centrally through each of the coil springs 19 and 20 there is a plunger 21 secured to the base frame 17 and movable therewith. These plungers also project through appropriate openings in the supporting frame 13 and these openings are of sufficient size to permit the movement of certain of the plungers laterally of the frame 13 when other plungers are moved inwardly of the frame 13 depending upon the direction in which the base is moved.

When a plunger 21 is moved inwardly of the supporting frame 13 by movement of the base 14 it operates a circuit closing mechanism. The circuit closing mechanisms are mounted on the supporting frame 13 so that each of the mechanisms is in a position to be operated by an appropriate plunger 21.

The operation of one of the circuit closing mechanisms is described as follows: When a plunger 21 moves inwardly of the frame 13, a lug 23 carried on the plunger engages with a resiliently held rod 24 and depresses it. This rod 24 carries a lug 33 which in turn engages with and depresses a contact carrying spring 25. The spring 25 mounted on a supporting bracket 22 carries a rod-like member intermediate its ends. A contact 27 is carried at the end of this rod-like member and a second contact 26 is mounted on the frame below the first-mentioned contact 27. When the spring 25 is depressed, the rod-like member and contact 27 move downwardly so that contacts 26 and 27 are closed, completing an electrical circuit which causes the operation of an electrical signalling device. The electrical signalling device illustrated is a single acting gong 28.

The closing of the contacts 26 and 27 is instantaneous in response to movement of the base 14. The spring 25 has a downwardly sloping cammed surface at 34 which is engaged by the lug 33 on the rod 24. When the spring 25 is being depressed the lug 33 rides over the downwardly sloping cammed surface at 34 to a point where the spring 25 escapes from engagement with the lug 33 and it springs back to its initial position. Thus after the contacts 26 and 27 have been momentarily closed, the spring 25 is released from engagement with the lug 33 on the rod 24 and the connection between the contacts 26 and 27 is broken opening the circuit to the signalling device. Thus the signalling device is maintained in condition for immediate operation by subsequent movement of the base 14.

The rod 25 is returned to its original position by a return spring 29 when the base 14 is returned to its normal position. The contacts 26 and 27 of the various circuit closing mechanisms are connected in parallel so that by closing any pair of contacts an electrical circuit causing the operation of the signalling device will be completed.

The gong 28 and a source of electrical energy in the form of a battery 30 are carried on the supporting frame 13. However, either or both of these may be located elsewhere if desired. Also carried by the supporting frame 13 there is a

master switch 31 for disconnecting the battery 30 from the circuit.

To prevent dirt from entering the enclosure, there is an insert 32 of soft, resilient material such as sponge rubber in the upper edges of the sides 10. This insert 32 goes around the enclosure and projects above the ground level to a point adjacent the under surface of the base 14. The insert 32, because of its soft, resilient characteristics, does not interfere with downward movement of the base.

In operation, an electrical detector base embodying the invention disclosed herein will give an audible indication whenever physical contact is made with it. This audible indication will be instantaneous and will be a great assistance in the judging of close plays as it will enable the person judging such plays to follow other phases of the play visually when that is necessary or desirable.

I claim:

1. An electrical detector base comprising a supporting frame, a base carried by the frame, a series of vertical coil springs and a series of horizontal coil springs spaced about said base and interposed between the base and the frame permitting downward and lateral movement of the base relative to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, and means for completing the circuit in response to movement of the base.

2. An electrical detector base comprising a supporting frame, a base carried by the frame, a series of vertical coil springs and a series of horizontal coil springs spaced about said base and interposed between the base and the frame permitting downward and lateral movement of the base relative to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, and means for momentarily completing the circuit in response to movement of the base.

3. An electrical detector base comprising a supporting frame, a base carried on the frame, resilient means interposed between the base and the frame permitting downward and lateral movement of the base in relation to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, and means for completing the circuit in response to movement of the base comprising a plurality of vertically extending plungers and a plurality of horizontally extending plungers spaced around and carried by the base, circuit closing devices operable by the plungers when the base is moved.

4. An electrical detector base comprising a supporting frame, a base carried by the frame, a series of vertical coil springs and a series of horizontal coil springs spaced about said base and interposed between the base and the frame permitting downward and lateral movement of the base relative to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, and means for completing the circuit comprising a plurality of vertically extending plungers and a plurality of horizontally extending plungers spaced about and carried by the base, circuit closing devices arranged so that at least one of the circuit closing devices will be engaged and operated by one of the plungers when the base is moved.

5. An electrical detector base comprising a supporting frame, a base carried by the frame, a series of vertical coil springs and a series of horizontal coil springs spaced about said base and interposed between the base and the frame permitting downward and lateral movement of the base relative to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, and means for momentarily completing the circuit comprising a plurality of vertically extending plungers and a plurality of horizontally extending plungers spaced about and carried by the base, circuit closing devices arranged so that at least one of the circuit closing devices will be engaged and operated by one of the plungers when the base is moved, and means to operate the circuit closing devices to open the circuit after a predetermined interval.

6. An electrical detector base comprising a fixed supporting frame, a base carried by the frame, resilient means interposed between the base and the frame to permit downward and lateral movement of the base relative to the frame, a single acting electrically operated audible signalling device, a circuit connecting the signalling device to a source of electrical energy, means to close the circuit momentarily in response to movement in any direction of the base relative to the frame.

7. An electrical detector base comprising a supporting frame, a base carried by the frame, resilient means interposed between the base and the frame to permit downward and lateral movement of the base relative to the frame, a single acting electrically operated audible signalling device, a circuit connecting the signalling device to a source of electrical energy, means to momentarily close the circuit in response to movement in any direction of the base relative to the frame comprising a plurality of vertically extending plungers and a plurality of horizontally extending plungers spaced about and carried by the base, circuit closing devices operable by the plungers when the base is moved, and means to open the circuit after it has been closed for a predetermined interval.

8. An electrical detector base comprising a supporting frame fixed in an enclosure, a base carried on the frame and extending over the enclosure, resilient means interposed between the base and the frame permitting downward and lateral movement of the base in relation to the frame, an electrical signalling device, a circuit connecting the signalling device to a source of electrical energy, circuit closing devices located in the enclosure adapted to close the circuit in response to movement of the base and an insert of soft resilient material surrounding the enclosure and contacting the base to prevent dirt from entering the enclosure.

ANTHONY FERRIS.