May 6, 1947. R. W. SMITH 2,420,103

WIRING SYSTEM FOR OUT-DOOR AUTO THEATRES

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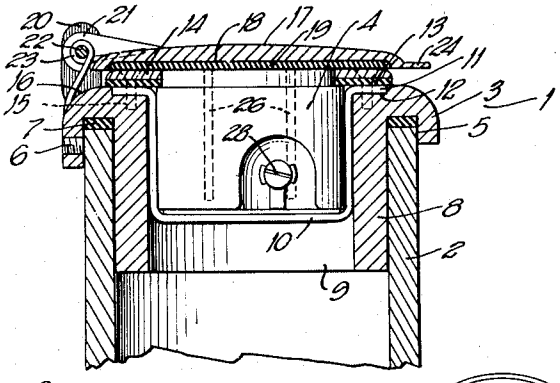


FIG. 1

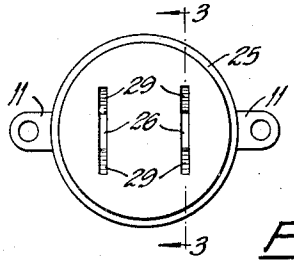


FIG. 2

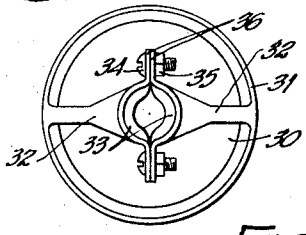


FIG. 4

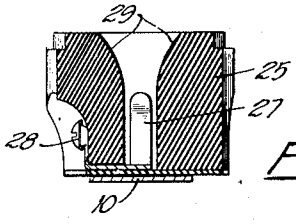


FIG. 3

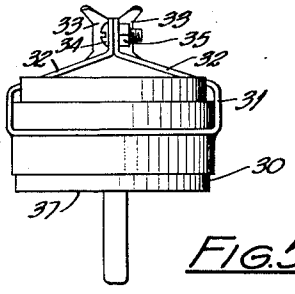


FIG. 5

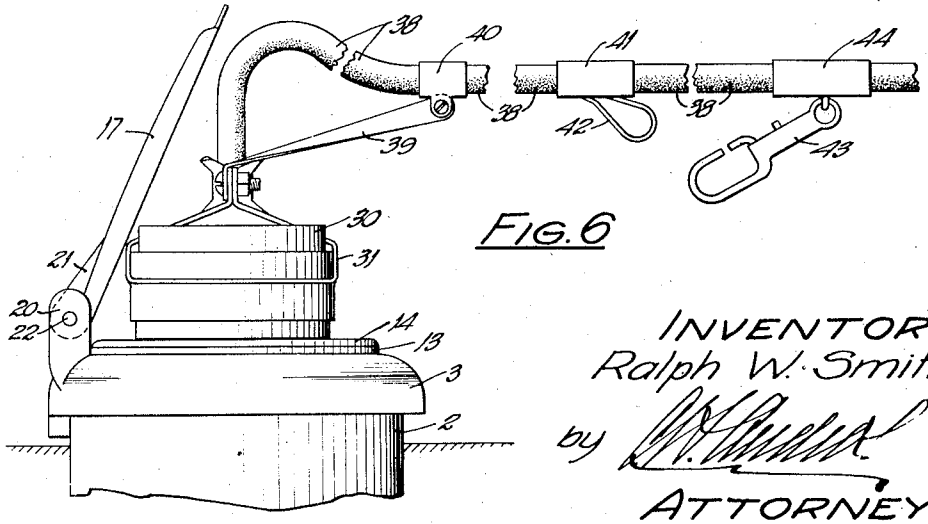


FIG. 6

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WIRING SYSTEM FOR OUT-DOOR AUTO THEATRES

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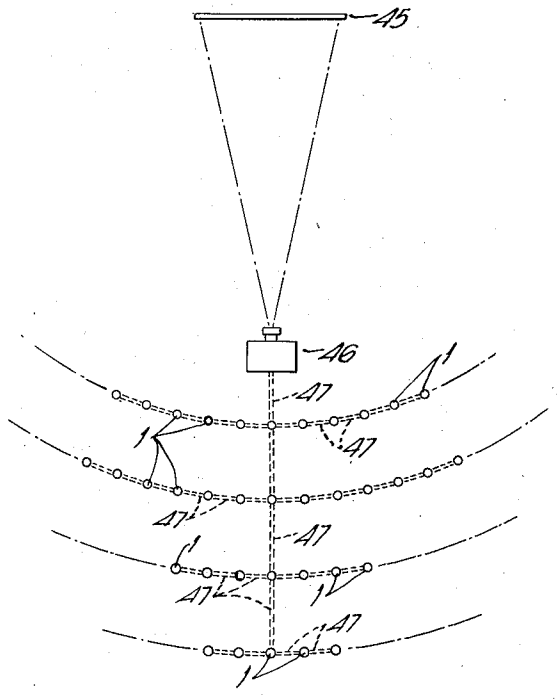


FIG. 7

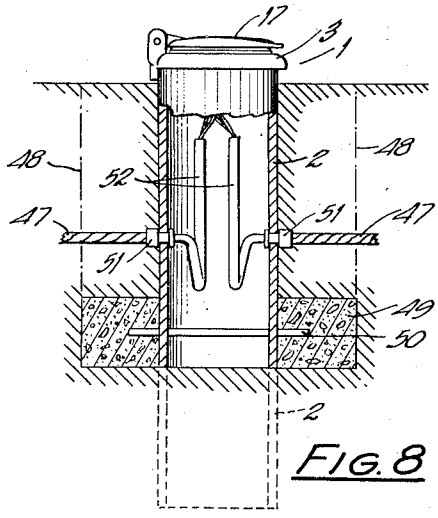


FIG. 8

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WIRING SYSTEM FOR OUTDOOR AUTO THEATRES

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2 Claims. (Cl. 174—70)

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In out-door auto theatres, parking spaces for automobiles are arranged in front of the screen, the cars being parked side by side and facing the screen. These parking spaces are arranged generally in arcs similar to the seats in a threatre and drive-ways are provided therebetween so that each car is free to come and go.

Although but one projection screen is employed, which is visible to the occupants of all of the cars, it is desirable to provide individual loud speakers for sound reproduction, one for each car, rather than one or a plurality of speakers near the screen or grouped about the parking spaces.

My invention relates to a novel wiring system for theatres of the above character which is employed in the electrical transmission of sound to individual loud speakers.

A first object of my invention resides in the provision of a wiring system for an out-door auto theatre, comprising conductors arranged underground and plug sockets, electrically connected to said conductors and disposed with the housings therefor substantially flush or elevated to only a very slight extent above the surface of the ground whereby the automobiles may be driven in any direction and substantially over all parts of the theatre. Another object resides in providing a system of this character which comprises comparatively inexpensive parts and may be quickly and cheaply installed.

Another object resides in providing in a system of this character a plug socket in which the lead of a loud speaker is adapted to be plugged and a housing comprising a hinged cover for said socket which is of such construction that the component parts thereof may be easily but securely assembled preferably with the socket and cover in a particular position relative to the screen of the theatre, when one part thereof is embedded in the ground.

Another object resides in providing in a system of this character a fitting or housing for a plug socket of the above character which is simple in construction and so arranged that it may be readily positioned and anchored in the ground and operatively incorporated in the wiring system.

Still another object resides in providing in a system of the foregoing character an outlet or fitting having a plug socket therein and a hinged cover adapted to prevent the ingress of rain and other elements, said socket being so positioned and arranged as to enable a plug of a loud speaker after it is inserted therein to be easily rocked

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and disengaged when the car either backs up or moves forwardly, the cars being parked facing the screen, and the hinge of the cover being correspondingly arranged to enable the plug to be freely disengaged in the above manner, or, having its axis extending in a direction generally toward the screen.

With the foregoing and other objects in view, my invention includes the novel elements and the constructions thereof and arrangements described below and illustrated in the accompanying drawings, in which—

Fig. 1 is a fragmentary, sectional elevation view of my preferred form of plug-socket outlet;

Fig. 2 is a plan view of the removable plug socket;

Fig. 3 is a sectional view of the plug socket taken in about the plane 3—3 of Fig. 2;

Fig. 4 is a plan view of a preferred type of plug for use on the end of the loud speaker leads;

Fig. 5 is an elevation view of the plug;

Fig. 6 is a fragmentary view of a speaker lead having its plug inserted in the outlet;

Fig. 7 diagrammatically illustrates a typical underground layout for an auto theatre embodying my invention; and

Fig. 8 is a fragmentary sectional view showing a preferred manner of embedding and anchoring an outlet conduit in the ground and its connection with the underground feeders of the system.

It will first be observed that the system of my invention is primarily characterized by the fact that due to the novel parts embodied therein it may be easily installed; the parts assembled and readily adjusted in desired relationship to the parking spaces or the theatre screen; and it is of a permanent nature requiring no additional means above the ground for supporting it which would interfere with unlimited driving in all directions which my system permits.

Bearing in mind that in accordance with my invention, the electrical conductors which are connected with the sound system are embedded in the ground and that outlets are provided preferably substantially flush with the surface of the ground in which the loud speakers are plugged, I will first describe the outlets or plug sockets and housings therefor.

Referring first to Fig. 1, 1 designates generally an outlet which comprises a conduit or pipe 2, a closure or cap 3 for the end of said conduit within which is supported a plug socket 4 which, generally speaking, may be of conventional design but modified as will hereinafter be pointed out. The conduit 2 may be about a two foot length

of a 2" pipe which is preferably embedded generally vertically in the ground with the top thereof about 1" above the finished ground level of the theatre.

A cap or closure element 3 is mounted over the top of conduit 2 and is provided with an annular groove 5 therein adapted to receive the walls of the conduit. It will be observed, as illustrated, that the walls of groove 5 fit rather closely against the outer and inner walls of conduit 2, the conduit being slidably inserted therebetween. By providing the cap with a groove, the cap engaging both the outer and inner walls of the conduit on all sides, the cap cannot be displaced or inadvertently removed from the end of the conduit by a force exerted thereon and laterally of the conduit. In order to secure the cap in position, a set screw 6 is provided which may be threaded in a lug extending axially of the conduit and downwardly from the outer rim of the cap. A gasket 7 is preferably interposed between the end of the conduit and the cap, in the groove 5, to provide a fluid-tight joint therebetween.

I prefer so to form the cap 3 that the body 8 thereof defining the inner wall of groove 5 extends for an appreciable distance within the conduit 2 while the downwardly extending lip defining the outer wall of groove 5 may terminate at a relatively small distance from the end of the conduit when the cap is mounted thereon. This arrangement provides a secure connection between the cap and conduit whereby lateral forces cannot displace the cap while the cap may be removably secured to the conduit in substantially flush relation to the ground surface.

Cap 3 is provided centrally thereof with an opening or passage 9 in which is adapted to be mounted the plug socket 4. Socket 4 is provided with a supporting strap 10 having laterally extending ears 11. The cap, adjacent and on opposite sides of the central opening therein, is recessed at 12 to receive the ears 11. The tops of the ears, when disposed in the recesses 12 therefor, lie preferably substantially flush with the top of the cap. An annular gasket 13 which is adapted closely to engage the sides of the socket, preferably overlying and engaging a shoulder thereon, is interposed between the top of the cap and an annular element or ring 14 which also preferably fits closely about the upper end of the socket. Both the gasket and ring preferably extend outwardly beyond the ears and recesses in the cap, as illustrated, whereby to provide a substantially fluid-tight joint, and the ring, gasket and socket are secured to the cap by set screws 15, threaded into tapped openings in the recesses in the cap. Furthermore, the upper surface of the cap preferably slopes outwardly and downwardly from adjacent the gasket and ring as indicated at 16 to prevent accumulation of moisture.

The cap has hingedly fastened thereto a cover 17 which, preferably, is recessed as at 18 and has secured in said recess a gasket 19 which is adapted to engage ring 14 and effect, when closed, substantially complete protection of the socket against the elements. The upper surface of the cover is preferably slightly curved from its center to the edges thereof to shed water. To effect the hinged connection between the cap and cover, spaced upstanding lugs 20 may be formed on the cap, only one thereof being shown in Fig. 1, between which spaced lugs 21, formed on the cover and only one of which is shown, are mounted on a pin 22 passing between the lugs of the cap.

The lugs 21 preferably lie adjacent the respective lugs 20 of the cap, and a spiral spring 23 is disposed about pin 22 and between lugs 21, one end thereof engaging the top of the cover and the other end engaging the side of the cap whereby to urge the cover to closed position. A lip 24 may be formed on the cover to enable it to be readily raised.

An important feature of my invention lies in the fact that the axis of the hinge, connecting the cap and cover, bears a particular relationship to the disposition of the plug-receiving slots in the socket when supported in the cap as above described.

The plug socket of my invention, as illustrated in Figs. 2 and 3, is generally of conventional form comprising a body of electrical insulating material 25 having slots 26 therein in which are mounted contacts 27 of conducting material connected with terminal screws 28 in recesses in the sides of the socket body. However, in accordance with my invention, two opposite walls of the slots diverge upwardly, preferably being curved from adjacent the top of the contacts 27 to the top of the socket body, as indicated at 29. With this arrangement, the prongs of the plug, when inserted in the socket, may be rocked out of engagement with contacts 27 and withdrawn from the socket when a lateral pull is exerted on the plug in the direction in which the slot walls diverge.

When the socket is supported in the cap, the recesses 12 for the ears of the socket-supporting strap so position the socket with respect to the cap that the axis of the hinge pin 21 will extend in the same direction as that in which the walls of the slots diverge. Hence, when the cap is mounted with the hinge pin extending generally in the direction of the screen in the theatre, a car may be parked in front thereof, facing the screen, with a loud speaker mounted on the car and plugged into the socket in said cap, and, when the car is thereafter driven either forwardly or backwardly, the plug will be readily pulled from the socket.

In Figs. 4 and 5, I have shown a preferred type of plug, indicated generally at 30 and comprising a cable or lead-gripping device. This device comprises an annular portion 31 secured to the body of the plug 30 and having overbent arms 32 which terminate in generally semi-cylindrical, cable-embracing portions 33. Bolts 34, passing through ears 36 on each portion 33, and nuts 35 serve to compress them into tightly gripping relation to a cable or lead passed therebetween. The upper ends of portions 33 may be outwardly splayed to facilitate insertion of the lead end for connection purposes to the plug. The base 37 of the plug is preferably of sufficient diameter to rest on the ring 14 and thereby protect the socket and electrical connections when operatively plugged therein as illustrated in Fig. 6.

As shown in Fig. 6, the loud speaker lead 38, which is connected with plug 30, the other end being connected to the loud speaker (not illustrated), is preferably provided with a take-up element comprising a resilient element 39, which may be formed of rubber, fastened to the lead-gripping device of the plug and to a clamp 40 fastened to the lead at some distance therealong from the plug. The take-up serves to shorten the distance from the plug to the part of the car to which the lead is fastened and to prevent the plug from trailing at some distance therefrom on the ground when the car pulls away. Further along the lead, I prefer to secure thereto a second clamp

41, preferably fixed against sliding therealong, said clamp being provided with a loop 42 adapted to be engaged by a clasp 43 which is supported on a ring 44 which, preferably, is slidable along the lead.

When the loud speaker to which lead 38 is connected is suspended, for example, within and on the door of a car, it is not securely fastened thereto. Hence, the lead is run down to the bumper and looped thereabout, the clasp 43 being snapped over the loop 42 to connect the ends of the loop in the lead together and thereby prevent a pull exerted on the plug end of the lead from dislodging the speaker, the bumper being used to pull the plug from the socket.

In Fig. 7, I have diagrammatically illustrated a typical lay-out for an auto theatre wherein 45 represents the screen and 46 the projection booth. The plug outlets 1 are arranged as hereinbefore described substantially flush with the ground level and in preferably arcuate rows with sufficient distance between rows to enable cars to be driven in and parked side by side in front of the outlets and facing the screen. From the projection booth, electrical conductors 47 for electrical sound transmission, are laid underground and connected with the respective outlets. I prefer to employ lead sheathed, BXL cable for this purpose, the cables being preferably provided with appreciable slackness therein between the outlets to which they are connected so that strains may not be transferred very readily from one outlet to another.

An outlet and a preferred manner in which it may be partially embedded and anchored in the ground are illustrated in Fig. 8. The ground is dug out to provide a hole defined by the dot-dash lines 48. The conduit or pipe 2 is then driven substantially vertically into the earth at the bottom of this hole for a short distance. Concrete is then placed about the pipe to form a slab 49 which is preferably positively anchored to the pipe by means of rods 50, such as large spikes, which pass through the walls of the pipe. Thereafter, when the concrete has hardened, the conduits or BXL cables 47 are secured in openings in the pipe 2, as shown at 51, using conventional connectors. The lead covered wires 52 pass through these openings and are preferably of such length as to allow for connection of the wires to the plug sockets before the sockets and caps are mounted on the pipes, thereby forming loops as illustrated when the outlet is completely assembled. The caps are, of course, as above pointed out, so positioned on the pipes that the axes of the hinges of their covers extend generally in the direction of the screen. The holes so dug as indicated by the dot-dash lines are, in completing the installation, filled in so that the outlet is substantially flush with or perhaps slightly above the ground level.

It will be observed that in the system of my invention, the outlets may be easily embedded and anchored in the ground and the conductors connected thereto to provide an underground system which in no way interferes with the unrestricted movement of automobiles over the ground in the theatre. Furthermore, the parts are relatively inexpensive but capable of easy installation.

Also, it will be noted that the wheels of the automobiles may pass directly over the outlets without harm either to the cars or the outlets, and the caps cannot be dislodged thereby because, although simple in design, they are so constructed as to positively engage the pipes on which they are mounted. Additionally, when leaving, it is not necessary manually to disconnect the plug from the socket but this will be automatically accomplished when the car is driven away.

While I have described my invention in its preferred embodiments, it is to be understood that the words which I have used are words of description rather than of limitation. Hence, changes within the purview of the appended claims may be made without departing from the true scope and spirit of my invention in its broader aspects.

What I claim is:

1. An outlet for use in an underground wiring system for out-door auto theatres, said outlet comprising a pipe of a length adapting it firmly to be secured in position when embedded vertically in the ground and through which wires may extend, a socket-supporting element mounted to overlie the upper end walls of said pipe and extending a substantial distance within said pipe and in closely but slidably fitting relation to the inner walls thereof whereby to prevent a laterally applied force from disengaging it from said pipe, said element being provided with a central opening therein, a plug socket secured to said element and disposed within the opening in said element, said socket comprising a body having slots therein adapted to receive the prongs of a connecting plug and opposite walls of said slots diverging toward the surface of said body whereby to enable said plug to be rocked from said socket, a cover and a hinge pivotally connecting said cover to said element in a position adapting it when closed wholly to overlie the socket therein, the axis of said hinge extending generally in the same direction as that in which the walls of said slots diverge, and means for securing said element to said pipe.

2. An outlet for use in an underground wiring system for out-door auto theatres, said outlet comprising a pipe of a length adapting it firmly to be secured in position when embedded vertically in the ground and through which wires may extend, a socket-supporting element mounted to overlie the upper end of said pipe and having an annular groove adapted to receive therein the end of said pipe, the outer wall of said groove surrounding the outer wall of said conduit pipe, said supporting element having a passage extending centrally therethrough through which said wires may extend and the walls thereof about said passage being adapted closely but slidably to fit within the walls of said pipe and to extend within said pipe a substantial distance sufficient to prevent a force applied to said element from disengaging it from said conduit, a plug socket secured to said element and disposed within the passage in said element, said socket comprising a body having slots therein adapted to receive the prongs of a connecting plug and opposite walls of said slots diverging toward the surface of said body whereby to enable said plug to be rocked from said socket, a cover and a hinge pivotally connecting said cover to said element in a position adapting it when closed wholly to overlie the socket therein, the axis of said hinge extending generally in the same direction as that in which the walls of said slots diverge, and means for securing said element to said pipe.

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