Feb. 6, 1934. L. A. SHARP 1,945,707

ELECTRIC CONDUIT SYSTEM AND FITTING THEREFOR

Filed Feb. 25, 1929 2 Sheets-Sheet 1

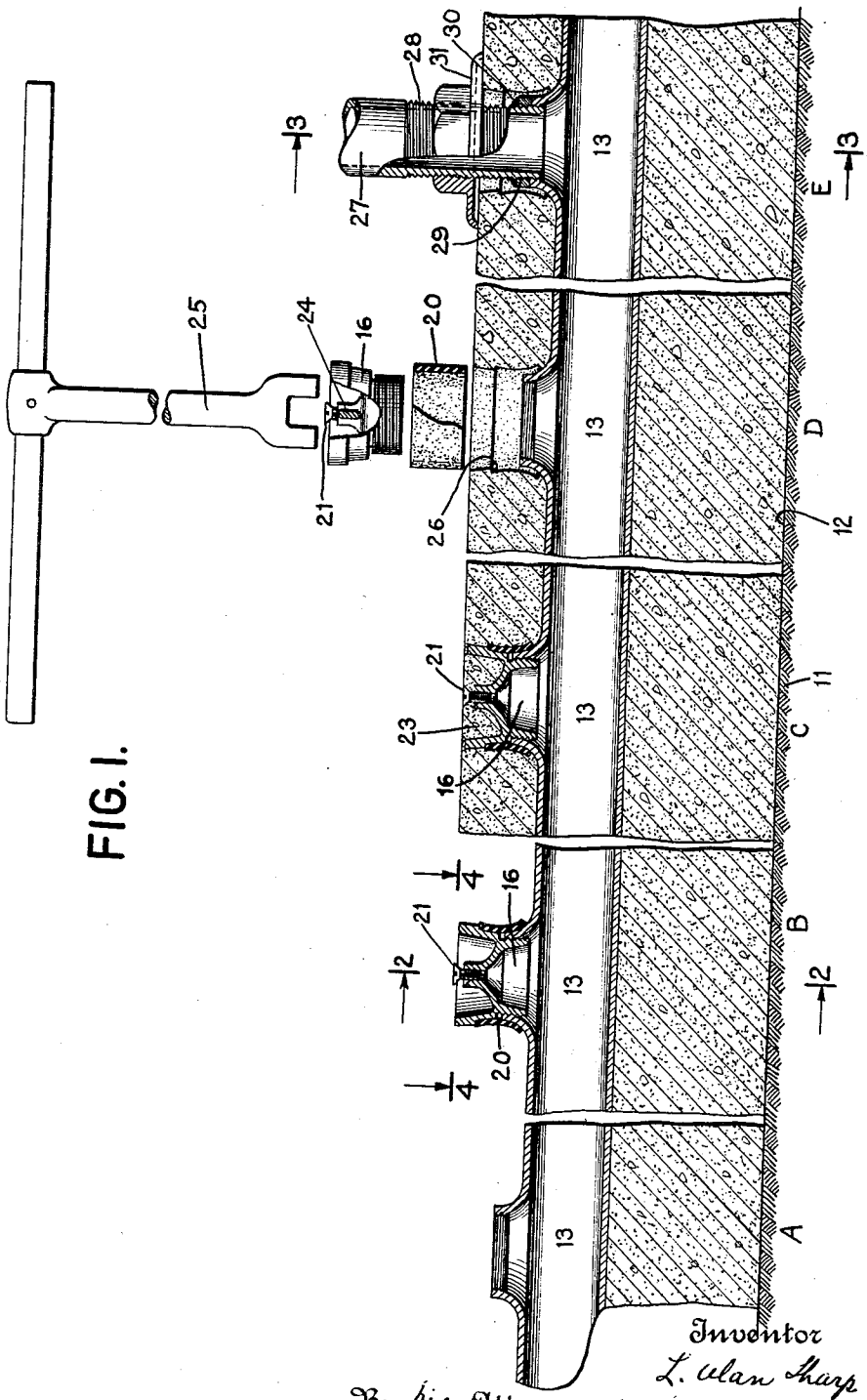


FIG. 1.

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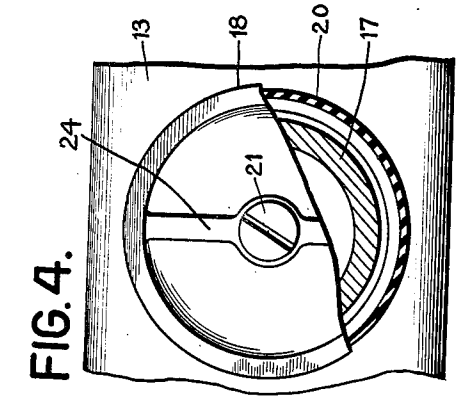


FIG. 4.

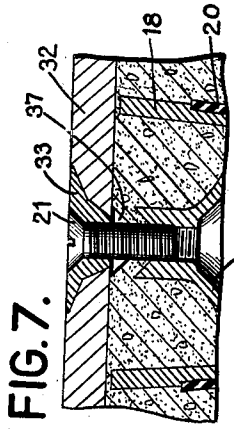


FIG. 7.

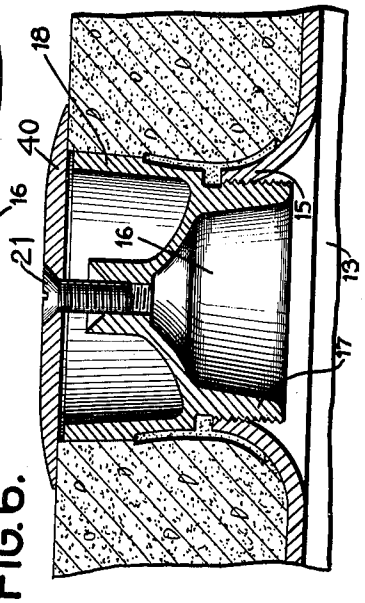


FIG. 6.

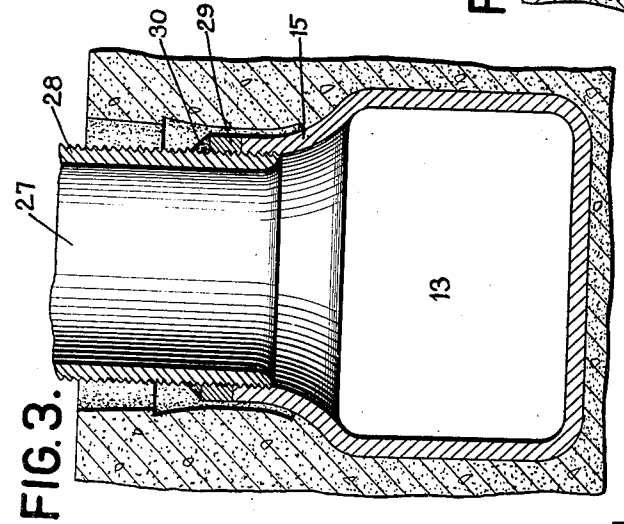


FIG. 3.

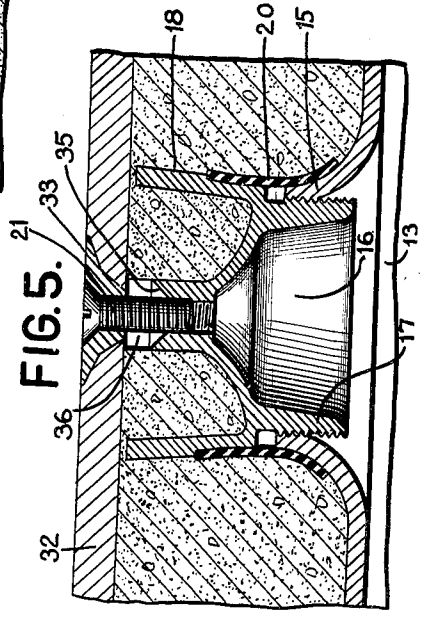


FIG. 5.

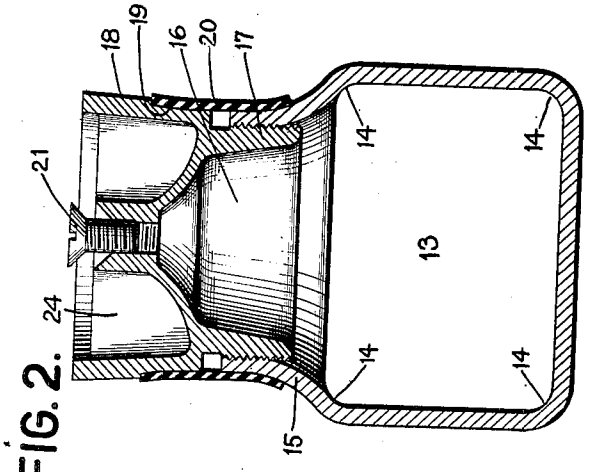


FIG. 2.

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Patented Feb. 6, 1934 1,945,707

UNITED STATES PATENT OFFICE

1,945,707

ELECTRIC CONDUIT SYSTEM AND FITTING THEREFOR

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Application February 25, 1929. Serial No. 342,532

13 Claims. (Cl. 247—3)

This invention relates to improvements in underfloor duct systems and the like.

In systems of electrical distribution, it is the practice to embed the conduits in floors, partitions or the like and to provide outlets along the conduits.

In the patent of W. C. Robinson Pat. No. 1,776,195, issued Sept. 16, 1930, a system is disclosed wherein the conduits are provided with integral necks which are adapted to receive plugs. During installation the conduit with its numerous necks each with a plug fitted therein, is embedded in the overlying concrete material with the plugs extending up to or substantially up to the floor surface. When a service connection or connections are to be established one or more of the plugs are removed, thereby affording a pre-formed opening directly in the concrete itself through which the desired service connection or connections may be made.

The present invention relates to improvements in the foregoing construction. With such systems when such plugs are employed, practical considerations require that provision be made for varying the over all height of the top of the plug from the conduit to provide for variations in the thickness and kind of the overlying cover material.

It is furthermore desirable to provide a simple means for locking the plugs in position and to also provide suitable means to prevent ingress of concrete into the threads of the necks. If such ingress of concrete were permitted, the concrete when it hardened would render the removal of the plugs difficult. Furthermore, the means for preventing the ingress of concrete into the threads preferably must be of such character that its use does not hinder or obstruct the removal of the plug from the concrete after it has been set and it should not, upon removal of the plug leave too large an opening in the concrete.

Accordingly one object of the present invention is to provide a plug construction which is adjustable for over all height.

Another object resides in the provision of a novel means for preventing the ingress of concrete into the threads of the necks and a further object resides in the improved means for impositively locking the plug in position and at the same time providing for the easy removal of the plug after the concrete has become set.

Furthermore, in the use of plugs in underfloor duct systems, the provision of supplemental marking means is desirable in order that the location of the plug may be more readily spotted. Such plugs may be disposed slightly below the surface of the finished floor and according to the present invention an improved marking screw construction is afforded. Such marking screw construction has for one of its objects the provision of improved means which is adjustable as to height for spotting the location of the plugs.

In the practical use of underfloor conduit systems it is sometimes the practice to employ over the concrete material another supplemental cover material such as linoleum or other like finished floor covering. When such supplemental covering material is used, provision should be made for spotting the location of the plugs which are disposed below and covered by said supplemental covering material.

Accordingly, a further object of the present invention is to provide a construction in which marking screws may be employed to project through the linoleum and preferably such marking screws cooperate with an escutcheon plate which serves as a linoleum holder and also as a marker for the outlets below.

With underfloor duct systems it frequently happens that an outlet which has been used for a time is abandoned. Such abandoned outlet leaves an opening through the concrete or other material, which opening is unsightly so that it either has to be filled up with concrete or covered in some other way.

Accordingly, another object of the present invention is to provide a simple means for securing in position over an abandoned outlet opening a covering plate. Preferably such plate is secured in position by employing one of the usual plugs in the conduit and utilizing the marking screw element of such plug to secure such cover plate in position.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and claims and shown in the drawings, which by way of illustration show what I now consider to be preferred embodiments of the invention.

In the drawings:

Figure 1 shows successive steps of the installation of the present improvements in connection with an underfloor duct system;

Fig. 2 is a detail sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged detail view taken on line 3—3 of Fig. 1;

Fig. 4 is a top plan view taken on line 4—4 of Fig. 1;

Fig. 5 is a view showing the plug and marker screw construction when used in connection with an escutcheon plate in a supplemental floor covering such as linoleum;

Fig. 6 shows the plug construction when used in connection with a covering plate for an abandoned outlet; and

Fig. 7 is a modification of the embodiment shown in Fig. 5.

In more detail in the drawings, it will be understood that in the installation of an underfloor duct system, the rough floor of concrete or like material will be first laid as indicated at 11. Such material terminates at line 12. The conduit 13 will then be suitably supported in position at the proper height above the underfloor 11. Such conduit preferably has the configuration shown in Fig. 2 with sweeping filleted corners 14 and with integral necks formed from the conduit material as shown at 15. The conduit is laid down with necks 15 extending upwardly therefrom as shown at A in Fig. 1. The next step in the installation is to place the outlet plugs in position. Such plugs 16, each preferably have the configuration shown in Fig. 2. Each plug comprises an annular portion 17 which is exteriorly threaded to a substantial distance to engage the interior threads on the necks 15. The upper part of the plug is slightly tapered as shown at 18 and this portion of the plug is preferably recessed as shown at 19, to receive a soft rubber ring element 20. The rubber ring 20 tightly fits the recess 19 in the plug, and when such plug is screwed into position into the outlet neck 15 the ring engages over the exterior of the neck and serves several purposes. First the ring 20 forms an impositive lock to hold the plug against displacement. By the employment of such a ring the plug can be rotated so as to engage within the conduit to any desired extent of depth and when the proper extent of depth of engagement is secured, depending upon the thickness of the floor material which is to be ultimately filled over the conduit and in and around and over the plug, the ring will hold the plug in this position and prevent its accidental displacement from such position.

With systems of this sort the various plugs in the outlet necks are all initially set to a particular height before the filling layer of concrete is applied and the foregoing construction affords a means for adjusting the over all height of the plugs. Obviously, if the conduits are to be buried at relatively greater depth, longer plugs can be applied when required, but ordinarily the desired range of adjustment of plug height can be had by advancing the plugs in or out of the threads to the desired extent.

Further objects of this ring construction will be hereinafter referred to in connection with the step marked C in Fig. 1.

As a supplemental means for marking the position of the plug, a marker screw 21 is provided which is threaded to receive suitable threads in a threaded opening of the plug. Such marker screw, it will be understood, can be advanced in or out to any desired extent and the usual practice will be to advance it slightly above the top line of the plug as shown in Fig. 2 and at B in Fig. 1. After the plugs are installed and the marking screws are adjusted to the proper and desired height as shown at B in Fig. 1, the next step is to fill in the concrete material up to a line substantially flush with the top of the plugs or slightly over the top of the plugs as shown with step C in Fig. 1. In practice the marker screws can even be slightly below the top of the finished surface of the concrete covering material. In practice, certain markers at intervals may be visible and intervening markers or plugs may be invisible and such intervening plugs can be located by measurement. While the concrete is being poured the rubber rings 20 will act as seals or packings to prevent ingress of the fluid concrete into the threads of the necks 15. The rings also act as seals or packing to prevent ingress of moisture into the duct or system. Such ring, it may be mentioned tightly grips both the plug itself and the neck and by this engagement sealing is effected.

The underfloor system is now completely installed. When an outlet is desired at any point in the system, the workmen spot the outlet opening location by observing either the marker screw or the plug itself or both by vision or measurement and the workmen then chip out from the concrete that portion of the concrete material which is disposed within the upper cavity of the plug as indicated at 23 in Fig. 1, view C. When such concrete has been removed from the plug cavity there will be left exposed accessible through the floor, a cross web portion 24 (see Fig. 4). Such cross web portion 24 serves as an engaging protection for a spanner-like removing wrench 25, see Fig. 1, view D. By employing the wrench, the plug 16 is then removed and the ring 20 is likewise removed, as indicated at D in Fig. 1. The ring 20 being of rubber is slightly compressible or yieldable and thus can free itself from the shoulder 26 in the concrete, which is made upon the setting of the concrete about the top of the ring. The neck 15 is now accessible for the reception of a service extension connection. Such service extension connection comprises a pipe member 27 which is provided with exterior threads 28 and which has a band 29 disposed thereon, preferably threaded to receive the threads of the extension and also held in position by solder as indicated at 30 in Fig. 3. In applying the extension, band 29 abuts the top of the neck 15, and thus limits the extent to which the outlet extension can be threaded into the neck. Finally, to finish off the floor and cover up the comparatively narrow opening which is left around pipe 27, a floor plate 31 which had previously been applied to the extension is threaded down into position (see view E Fig. 1). This floor plate will cover the opening around the vertical extension 27 and thus give a finished appearance to the extension.

In Fig. 5, a construction is shown in which a supplemental floor covering such as a sheet of linoleum 32 is employed. In this case the marker screw 21 is backed out and an escutcheon plate 33 is inserted in an opening in the linoleum covering. The marker screw is then re-applied and tightened down to firmly clamp the linoleum covering in position. The escutcheon plate 33 also serves to protect an otherwise rough opening, in the linoleum, from ravelling, by compressing the edges bordering such opening into waterproof engagement with the escutcheon. As shown in Fig. 5, the screw 21 can be initially threaded down into the countersunk part 35 of the plug, and subsequently after the concrete has become set the overlying concrete can be chipped out to provide an opening 36 to permit the backing out of the screw. Alternatively the screw 21 can be initially disposed to itself preform a countersunk recess in the concrete, as indicated at 37 (Fig. 7) and it may afterwards be backed out and re-ap-

plied after it has been passed through the escutcheon plate.

As shown in Fig. 5, it will be observed that the linoleum only projects to a slight extent over the opening and such projection is insufficient to cause any substantial inward bending of the linoleum adjacent the marker screw because of the tapering configuration of the escutcheon member.

It will be understood that the marker screw and escutcheon serve also as a marker for the outlets in the linoleum or other floor covering. When an outlet is to be made these parts spot the location of the plug which is concealed under the linoleum and to provide an outlet at any point it is only necessary to remove the screw and escutcheon and cut a ringlike opening in the linoleum. The procedure is then the same as before, viz to remove the plug and apply the desired service extension.

Fig. 6 shows the manner of covering an abandoned outlet opening. When one of the openings is to be covered up, one of the usual plugs 16 is employed. The plug is threaded into the neck to the desired depth and thereafter a covering plate 40 is applied over the opening and over the top of the plug and such cover plate is held in position by the marker screw 21.

While I have shown the improved duct and fittings in connection with the floor, it will be understood that the same may be used in connection with any partition such as a wall partition or even with a ceiling. The outlets and plugs would then be disposed in such partition in the same manner as is herein shown in a floor construction.

What I claim is:

1. A conduit system of electrical distribution comprising a conduit with necks thereon at intervals, plugs fitted in said necks and serving to pre-form openings in concrete when the concrete is filled around the conduit and plugs, said plugs being adapted for removal to provide openings through the concrete for the insertion of service extensions, said conduit and plug assembly including flexible ring-like elements adapted to engage both the plugs and the necks of the conduit for the purpose described.

2. A conduit system of electrical distribution comprising a conduit with necks thereon at intervals, plugs fitted in said necks and serving to pre-form openings in concrete when the concrete is filled around the conduit and plugs, said plugs being adapted for removal to provide openings through the concrete for the insertion of service extensions, said plugs each being provided with a screw member adapted to be extended from the plug, and an escutcheon member engaged by said screw and cooperating therewith to anchor linoleum to the conduit with the upper surface of the escutcheon substantially flush with the upper surface of the screw, said screw and escutcheon also serving to locate the position of an outlet below the linoleum.

3. A conduit system of electrical distribution comprising a conduit with necks thereon at intervals, plugs fitted and mechanically secured in said necks and serving to pre-form openings in concrete when the concrete is filled around the conduit and said plugs, said plugs being removable to provide openings through the concrete for the insertion of service extensions, said plugs being each provided with a screw, and a cover plate for an abandoned outlet through which said screw extends, said screw constituting an anchorage for the cover plate over an abandoned outlet upon reinsertion of a plug and re-engagement of the same with the neck of the conduit.

4. A conduit system of electrical distribution comprising a conduit with necks thereon at intervals, plugs fitted in said necks and serving to pre-form openings in concrete when the concrete is filled around the conduit and plugs, said plugs being adapted for removal to provide openings through the concrete for the insertion of service extensions, said plugs having threads thereon and an annular recess portion adapted to receive a rubber ring, a rubber ring in said recess portion adapted to engage the neck portion of an outlet and to hold the plug impositively in position with respect to the conduit and also serving as a seal to prevent ingress of the concrete into the threads of the neck or of the plugs.

5. A conduit system including a member secured to the conduit at outlet openings therein, and means comprising screw elements and a cooperating escutcheon plate for holding a floor covering to such members which are secured to the conduit and thereby holding the floor covering in place, the upper surface of said escutcheon plate being flush with the upper surface of the floor covering when the escutcheon plate is in floor-covering securing position.

6. A conduit system including a conduit with necks thereon, plugs threaded for insertion and removal in said necks to afford upon the removal of a plug from the necks a pre-formed opening in concrete which is disposed in and around the conduit and plug, cover plates for abandoned outlets and means connecting each plug with its cover plate whereby said plugs upon re-insertion into the conduit necks constitute an anchorage for the covering plates of abandoned outlets.

7. A conduit system including neck portions and threaded plugs fitted therein by threaded connections, yielding rings around the junction of the plugs and necks to seal and protect the threads against the entrance of concrete when it is placed around the plugs, said ring element being further adapted to yield to facilitate the removal of a plug from concrete which is set thereabout.

8. A plug for use with a conduit to form preformed openings in concrete which is disposed in and around the conduit and plug, said plug having an annular lower threaded portion and an upwardly extending tapered portion, said tapering portion being provided with a flanged portion for receiving a sealing and packing element, and a yielding ring engaged over said flange and forming a sealing and packing element with a cooperating conduit when the plug is threaded thereinto.

9. An underfloor conduit system comprising in combination, a plurality of parts, one part for forming an access opening substantially through a floor to the interior of a hollow part below said first mentioned part, means securing and adjustably connecting said two first mentioned parts whereby they may be adjusted for overall height and the upper surface of the first mentioned part brought substantially to the intended level of a finished floor surface, a third part carried by said first mentioned part and movable with respect thereto from a position in which its upper end lies substantially flush with the upper surface of said first mentioned part to a position above said first mentioned part, floor covering clamping means cooperating with said third part, and means for securing said third part to

said first mentioned part to clamp a floor covering in place by the floor covering means with the exposed upper surface of the floor covering flush with the upper end of said third part.

10. In a conduit system having one or more necks to receive plugs, plugs disposed in said necks and adjustable as to height with respect thereto, and means exteriorly yieldably gripping each plug and its cooperating neck for impositively retaining a plug at a desired depth of engagement with respect to the conduit for the purpose described.

11. In a conduit system having electrical outlets thereon, means for securing a floor covering to said conduit system, said means comprising escutcheon plates which are secured to the conduit system and which having portions extending through the floor covering and which have other portions embedded in the floor covering to prevent ravelling of the edges of the floor covering material where the latter is perforated to receive the securing means to the conduit.

12. In a conduit system having electrical outlets and including means for securing a floor covering to the conduit system, said means including an escutcheon plate with provisions for waterproofing the edges of the floor covering where the latter is perforated for the said securing means, said escutcheon plate having an upper surface which is substantially flush with the upper surface of the floor covering and having other portions embedded in said floor covering.

13. In a conduit system including a duct provided with threaded outlets and plugs provided with threads disposed therein, and means comprising a yieldable sealing ring yieldably gripping an outlet and cooperating plug for preventing the ingress of moisture into the interior of said duct past the aforesaid threads.

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