March 17, 1964 L. W. GLENN 3,124,893

METHOD OF DISPERSING FLUID BENEATH SLAB FLOORS

Filed March 1, 1961 2 Sheets-Sheet 1

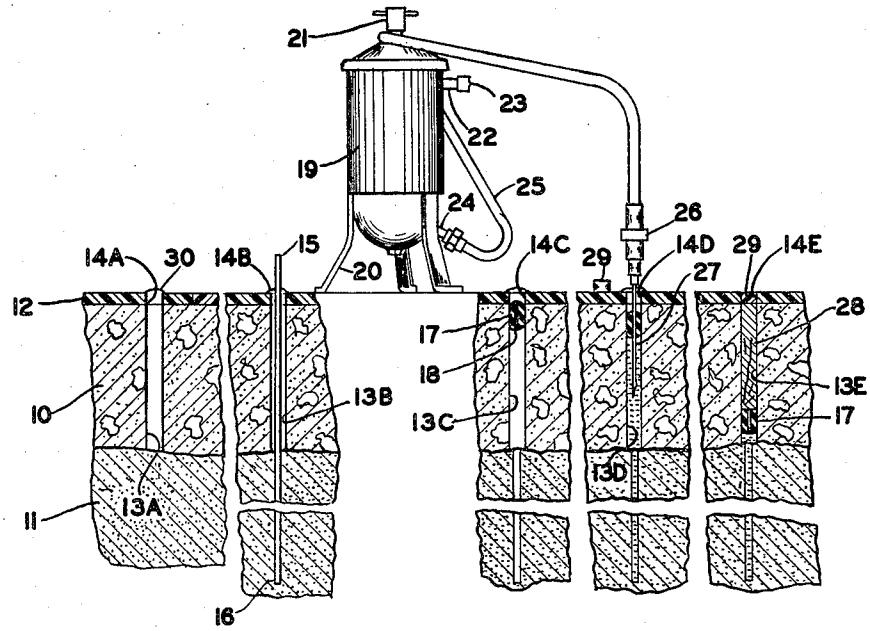


FIG. 1

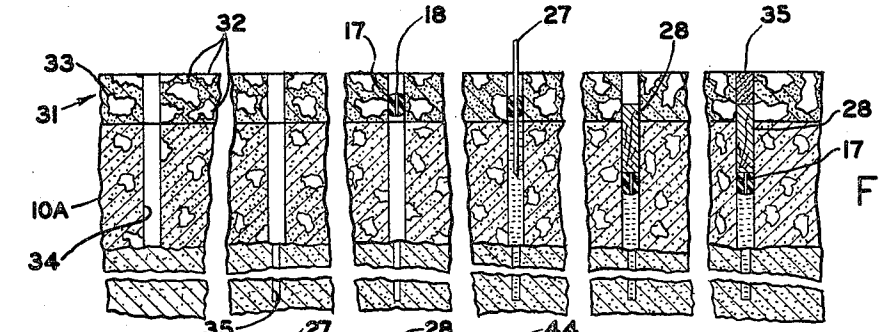


FIG. 2

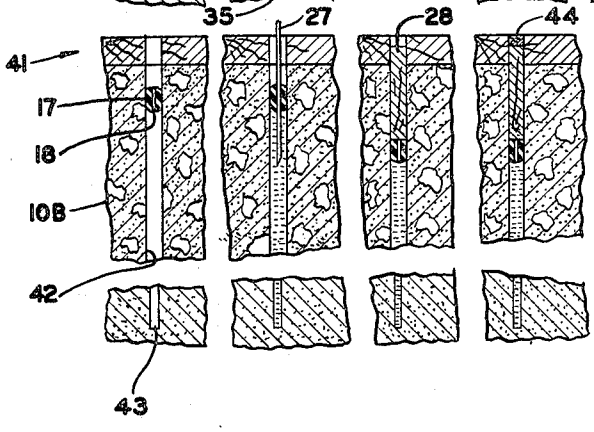


FIG. 3

INVENTOR.
LESTER W. GLENN
BY Harold B. Hood
ATTORNEY

March 17, 1964 L. W. GLENN 3,124,893

METHOD OF DISPERSING FLUID BENEATH SLAB FLOORS

Filed March 1, 1961 2 Sheets-Sheet 2

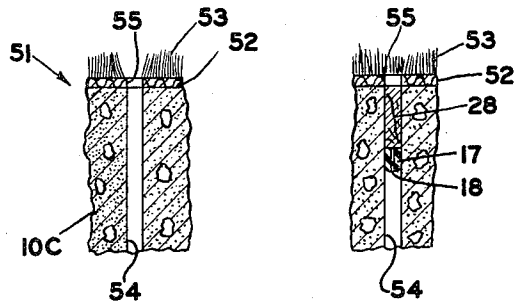


FIG. 4

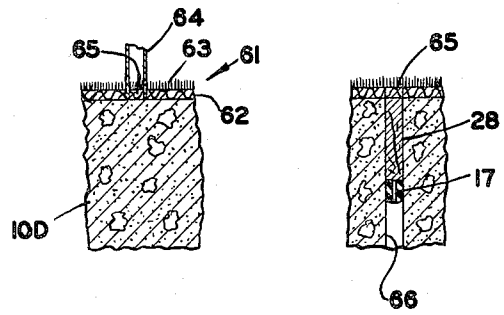


FIG. 5

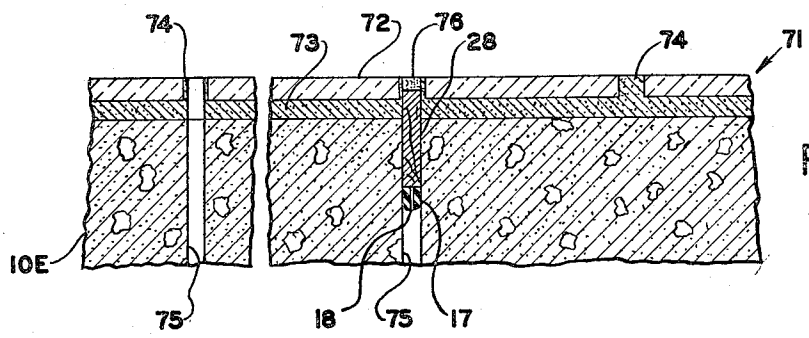


FIG. 6

INVENTOR.
LESTER W. GLENN
BY Harold B. Hood
ATTORNEY

United States Patent Office 3,124,893 Patented Mar. 17, 1964

3,124,893

METHOD OF DISPERSING FLUID BENEATH SLAB FLOORS

Lester W. Glenn, 1825 14th St. NW., Bradenton, Fla.

Filed Mar. 1, 1961, Ser. No. 92,638
14 Claims. (Cl. 43—124)

The present invention relates to a method of dispersing fumigant or other fluid into the earth supporting a slab floor, and the primary object of the invention is to provide a procedure whereby a fluid may be caused to permeate the ground beneath such a slab, with minimum hazard to conduit means embedded in the slab or located beneath the slab, and in such a fashion as to facilitate substantially complete obscuration of the scars resulting from the operation.

In recent years, the practice of erecting homes and other buildings upon slabs, usually of concrete, directly supported upon the earth has become very popular primarily, but not entirely, in the warmer regions of the country. Such construction, of course, renders the permeation of the ground beneath the slab with a fumigant or other fluid, for destroying and/or inhibiting the ingress of termites and other pests, or for any other purpose, quite difficult. It is not feasible effectively to permeate the ground beneath such a slab of substantial dimensions by rodding or even drilling from points outside the perimetral boundaries of the slab, and even with relatively small slabs, such rodding and/or drilling involves a substantial hazard of damage to pipes, cables, electrical conduits and the like which may have been laid beneath the slab.

Where the slab itself constitutes the building floor, with its uppermost surface exposed, attempts have heretofore been made to disperse a fumigant into the ground by drilling vertically through the slab and forcing the fumigant through the passages so formed. So far as I am advised, however, it has always heretofore been necessary, in such a procedure, to drill passages having diameters of at least ½" in order to accommodate nozzles which must necessarily include sealing means expansible into contact with the passage walls. Where the floor includes any kind of attached covering for the slab however, such as asphalt, rubber or vinyl tile, linoleum or carpet cemented to the slab, a terrazzo finish, or ceramic tile, slate, flagstones or other brittle, separate elements set in a mortar bed, such drilling has been impossible without leaving scars incapable of substantial obliteration or obscuration. Prior to my invention, it has been necessary, in the case of tile or similar coverings, to remove spaced tiles from the floor covering before drilling through the slab; and, since it is impossible thus to remove such tiles consistently without damage thereto and it is equally impossible to match tiles which have been in use, it has always heretofore been necessary to replace such removed elements with contrasting elements, resulting in a substantial modification in the appearance of the repaired floor. In the case of terrazzo finishes, any available filling for a relatively large hole drilled through the finish will inevitably be flagrantly prominent; and where such a slab is covered with cemented carpeting, it has been impossible to make unobvious repairs

Through the use of the procedures and the apparatus hereinafter to be disclosed, however, I have found it possible effectively to permeate the ground beneath such a slab, no matter which of the above listed coverings may constitute a part of the floor, and yet to obliterate substantially completely all traces of scars after the chemical has been dispersed.

To the accomplishment of the above and related objects, my invention may be embodied in the steps described in

the following specification and in the forms of apparatus illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only and that the specific procedures described are by way of illustration only and that change may be made in the specific constructions illustrated and described or in the specific steps stated, so long as the scope of the appended claims is not violated.

FIG. 1 is a more or less diagrammatic illustration of the apparatus and the operational steps embodying my invention as applied to a slab floor including a covering of composition tile;

FIG. 2 is a similar illustration in connection with a floor having a terrazzo finish;

FIG. 3 similarly illustrates four steps in the procedure when the floor covering is made of hardwood;

FIG. 4 illustrates two of the steps involved in the application of my procedure to a floor having a cemented, long-nap carpet cover;

FIG. 5 illustrates two of the steps involved where the floor covering is short-nap carpeting; and

FIG. 6 illustrates portions of the procedure which is used where the floor covering comprises separate, brittle elements set in a mortar bed.

Referring more particularly to the drawings, it will be seen that I have illustrated in FIG. 1 a concrete slab 10 supported upon the earth 11 and having a covering 12 of asphalt, rubber, vinyl or similar tile. Accordingly to the present invention, passages are substantially vertically drilled, at suitably spaced intervals over the floor, through the covering and through the slab, a plurality of such passages, in successive stages of the process, being illustrated at 13A, 13B, 13C, 13D and 13E. Each such passage has a diameter not substantially exceeding one-fourth inch, and care should be taken to exert a light pressure against the drill as it progresses through the tile, in order not to crack or shatter the tile, and to prevent bowing or canting of the drill as it progresses through the slab 10. If the drilling is done skillfully, the entire passage through the slab and floor covering will be uniform in diameter, the regions of the tile surrounding each passage mouth will not be damaged and only a very small annular bulge or collar 30 will be raised in the material of the tile immediately adjacent the portion 14 of each passage.

Preferably, the next step in the process will be to insert a rod 15 through each passage, and to push the rod into the earth to a depth of approximately 18" beneath the bottom surface of the slab, thereby forming, in the earth, an extension 16 of each passage 13. While this rodding step is desirable, in order to accelerate the rate at which fluid can be caused to permeate the earth adjacent each passage, it is not essential to the accomplishment of the primary objects of the invention.

Now, a plug 17 is pushed into each passage, in the manner illustrated in connection with the passage 13C of FIG. 1, preferably to a depth below the level of the tile covering 12. The insertion of the plug 17 may, if desired, be facilitated by applying to its peripheral surfaces a light coating of cylinder oil or cup grease. The plug should have a substantially fluid tight engagement with the walls of the passage, and I presently prefer to use a rubber or other transaxially-compressible, elastic grommet having an axial bore 18 therethrough. Preferably, the equilibrium diameter of the plug 17 will slightly exceed the internal diameter of the passage in which it is to be seated so that, as the plug is pushed home, it will be transaxially compressed, thereby attaining a pressurized engagement with the peripheral surface of the bore and slightly constricting the bore 18.

A reservoir 19 may preferably be mounted upon a plurality of legs 20 and is provided with a removable closure

cap 21. Said reservoir is provided with an inlet 22 adjacent its upper end, to which is connected conduit means 23 such as a hose leading from a suitable source (not shown) of compressed air. Near its bottom, the reservoir is provided with an outlet 24 to which is connected conduit means 25, which is preferably a flexible hose; and a suitable nozzle 26, preferably including a strainer (not shown), is carried at the free end of the hose 25 and in turn carries a hypodermic needle 27. I have found that a conventional 16-gauge stainless steel hypodermic needle, which may be silver-soldered to the tip of the nozzle 26, serves admirably for the purposes of my invention.

The needle 27 is forced axially through the plug 17 to position its distal end within the passage 13 at a point beneath the plug 17. Where the plug is a grommet, as illustrated, the needle will, of course, be pushed through the bore 18 thereof; but it will be obvious that a solid plug could be used and that the hypodermic needle could force its own way through such a plug. In any event, the parts should be so proportioned and designed that, when the needle is positioned in the manner illustrated in the passage 13D of FIG. 1, the material of the plug will elastically grip the needle to define a substantially fluid tight seal thereabout.

A measured quantity of fluid to be injected into the earth is filled into the reservoir 19 and the cover 21 is tightly seated on the reservoir. Now, compressed air is fed to the reservoir 19 through the inlet 22 to force the fumigant through the hose 25 and needle 27 into the passage 13D. The fumigant will fill the passage 13D and the associated extension 16 and will be dispersed into the ground in the vicinity of said passage and its extension. The rate of flow, of course, will depend upon the characteristics of the soil and upon the pressure value of the air supplied to the reservoir. Eventually, and usually within one to two minutes, the measured quantity of fumigant, which is usually one to two pints, will have been discharged from the reservoir and through the needle 27 into the passage 13 and the surrounding region of the earth. Quivering of the hose 25 will usually signal the fact that all of the liquid has been discharged and that air is passing through the hose. Now, the supply of air to the reservoir is cut off and the apparatus is allowed to stand for a brief period during which most of the pressure within the reservoir will bleed off into the passage 13. Either by removing the cap 21 or by disconnecting the hose 23, the interior of the reservoir, the hose 25 and the needle 27 will now be returned to atmospheric pressure, whereafter the needle will be withdrawn from the plug. The waiting period is for the purpose of ensuring against the possibility of drip from the needle, after it is withdrawn, since the fumigant (which is preferably ethylene dibromide) may damage floor coverings.

Sometimes it may be desirable to inject a fluid which is gaseous at atmospheric temperatures and pressures and which is available in the liquid phase in pressure cylinders. In such case, such a cylinder may be directly connected to the reservoir 19 through a suitable fitting at 21, and the whole assembly may be mounted on a weighing scale. The reservoir 19 will thus act as a receiver, the evaporation pressure of the fluid will enforce flow into the soil and the amount of fluid injected can be determined by the weight reduction of the assembly.

Now, a preferably wooden dowel having a diameter substantially equal to the diameter of the passage 13 and a length four to five times its diameter, is driven into the passage 13, thereby forcing the plug 17 more deeply into the passage and, at the same time, establishing a substantially fluid tight engagement between the lower end of the dowel and the upper end of the plug, thus sealing the plug bore 18. Preferably, the dowel is water-soaked before insertion. As is illustrated in connection with the passage 13E in FIG. 1, the dowel will preferably be driven to a depth such that its upper end is flush with the juncture between the slab 10 and the floor covering 12.

From a new piece of material corresponding to the material of the floor covering 12 and closely approximately the color of such floor covering, there is punched a plug 29. Such a plug may readily be produced with a conventional metal punch, bringing the die thereof against the top side of the tile and the punch against the bottom side. If pressure is applied to the punch slowly and carefully, cracking or shattering of the tile or of the plug may be avoided. The slug 29 so punched out of a new tile will be a truncated cone ¼" in diameter at its bottom and 9/32" at its top. This tapered shape, and the slight raised collar 30 above-mentioned around the hole 14 in the floor covering, will facilitate insertion of the plug and will contribute to sealing the hole perfectly so that it is difficult to detect the patch even when its location is known. The plug 29 is inserted in the hole 14E and is tapped home with a smooth faced hammer until the plug is perfectly flush and the collar 30 has been substantially eliminated. Preferably, but not necessarily, a drop of cement will be applied to the bottom surface of the plug before it is inserted in the hole 14E, so that the plug will be adhesively secured to the upper end of the dowel 28.

The above procedure may be followed exactly in the case of a floor in which the covering is linoleum or its equivalent.

Where the floor consists solely of the concrete slab 10, without any covering thereon, the above procedure is followed precisely, except of course for the provision and insertion of the plug 29 and except that the dowel 28 will be driven to a level significantly below the exposed surface of the slab and the portion of the passage above the upper end of the dowel will be filled with concrete conforming to the characteristics of the concrete from which the slab is formed.

In FIG. 2, I have illustrated the procedure where the floor consists of a slab 10A and a terrazzo covering 31. Such a covering, of course, consists of a mass of aggregate largely comprising relatively large particles 32, embedded in a mass of non-shrinking cement 33, the exposed surface of the covering having been ground or polished after setting to produce a variegated appearance. In the exposed surface of such a covering, it is always possible to find many areas more than ¼" in diameter, scattered over the surface, at which only the cement is exposed. Selecting such an area for each passage, a suitable number of suitably spaced passages 34 will be drilled through the slab 10A and its covering 31. Now, an extension 35 is rodded beneath each such passage and thereafter a plug 17 is seated in each passage 34. In this case, it is not necessary, though it may be advisable, to insert the plug to a depth below the bottom of the floor covering 31. As before, the needle 27 is inserted through the plug 17 and the fumigant is similarly forced into the space below the plug. After the needle is withdrawn, a dowel 28 is driven into the passage to force the plug 17 more deeply thereinto and to seal the outer end of the plug; and thereafter the portion of the passage above the upper end of the dowel is filled with a suitable, non-shrinking cement corresponding in character and color to the cement component of the original terrazzo cover.

In FIG. 3, I have illustrated a concrete slab 10B having a covering 41 which may be parquet or any other suitable hardwood arrangement. In this case, the passages 42 are carefully drilled through the covering and the slab, and the rodding step above described is performed to produce extensions 43. A plug 17 is now seated in each passage, and is pressed to a level significantly below the bottom surface of the floor covering. The needle 27 is inserted and the fumigant is forced into each passage to permeate the soil beneath the slab. After withdrawal of the needle, a dowel 28 is driven into each passage to force the plug 17 more deeply thereinto and to seal the outer end of the plug.

Here, the problem of obscuring the repair is some-

what complicated by the fact that the grain of the flooring runs horizontally while the grain of ordinary wood dowels runs axially thereof. Now available on the market, however, is a product known as a "furniture dowel" which is a wood plug with the grain running perpendicular to the axis of the piece. Selecting such a furniture dowel which closely matches the grain of the drilled piece of the flooring 41, and which has a diameter conforming to the diameter of the bore through the flooring, the dowel 28 is driven to a depth such that its upper end is positioned below the exposed surface of the floor covering 41 to a degree precisely equal to the axial dimension of the selected furniture dowel. With a drop of glue on the bottom end thereof, the furniture dowel is now inserted in the upper end of the passage 42 and is tapped home until its upper surface is precisely flush with the exposed surface of the flooring.

In FIG. 4, I have illustrated the first and last steps of the procedure to be followed where the floor comprises a slab 10C and a covering 51 of long-nap carpeting. In such a situation, the woven or otherwise-formed backing 52 of the carpeting is conventionally cemented to the upper surface of the slab 10C.

In such a situation, the long nap 53 of the carpet is carefully separated at suitably spaced points and the passages 54 are drilled straight through the carpet backing 52 and the slab 10C, substantially without affecting the nap 53. After the fumigant has been dispersed into the soil in the manner above-described, a dowel 28 is driven into each passage to force the plug 17 more deeply into the passage and to seal the upper end of said plug. The dowel will be driven to a depth such that its upper end is below the upper surface of the carpet backing 52; and now the long nap 53 of the carpet is brushed back into place to obscure completely the tiny perforations 55 which have been driven through the backing 52.

In FIG. 5 I have illustrated the first and last steps which are used when the covering 61 for the slab 10D is short-nap carpeting cemented to the slab. In this case, the carpet backing 62 may be similar to the backing 52, but the nap 63 of the carpet is too short effectively to cover even a quarter inch hole through the backing 62.

A ¼" or slightly larger slug 65 of carpeting is released from the main body of the carpeting by a circumscribing cut which may be made by means of a thin tube 64 ground sharp at one end. When the sharpened end of the tube is held against the carpeting and carefully tapped with a hammer, its sharpened edge will be driven through the carpet backing and into engagement with the upper surface of the slab 10D. Now, if a drop of solvent for the cement which secures the carpeting to the slab is applied to the slug 65, it can be carefully loosened and removed. After such removal, the passage 66 may be drilled through the slab 10D without damaging the carpet; and the fumigant may be dispersed into the earth beneath the slab in the manner above-described. After removal of the needle, a dowel 28 will be driven into the passage 66 to drive the plug 17 more deeply into said passage and to seal the upper end of the passage. In this case, the dowel is driven to such a depth that its upper end is flush with the upper surface of the slab 10D. Now, a drop of suitable cement is applied to the bottom surface of the (carefully dried) slug 65 and the slug is reinserted into the carpet body and pressed into engagement with the upper end of the dowel 28 where it will be adhesively secured to obscure any indication of damage to the carpet.

FIG. 6 illustrates the first and last steps to be followed in working with a floor consisting of a slab 10E and a covering 71 comprising separate brittle elements 72 such as ceramic tile, flagstones or the like set in a bed 73 of mortar and separated by tongues 74 constituting portions of the mortar bed.

Customarily, such tile or similar elements 72 are separated by distances exceeding one-fourth inch so that the transverse dimension of each tongue 74 is more than one-fourth inch. Passages 75 according to the present invention may, therefore, be drilled through the mortar bed and the slab at suitably spaced points, each of which is located in one of the tongues 74. After completion of the fumigant-dispersing step and withdrawal of the needle, a dowel 28 may be driven into each passage 75 to force the plug 17 more deeply into such passage and to seal the upper end of such plug. In this case, the dowel will be driven to a depth such that its upper end is significantly below the exposed surface of the corresponding tongue 74, and the portion of the passage above the dowel may be filled with mortar as at 76 corresponding in character to the mortar which constitutes the appropriate tongue.

As is clearly illustrated in the drawings, the axial dimension of the plug 17 will preferably be at least equal to its transaxial dimension, in order that the plug may constitute an effective and substantially fluid tight seal against escape of fumigant, during the dispersing operation, toward the upper end of the passage.

Of course, the process as above described is only one part of a complete extermination job, and perimeter trenching and ground-treating should be done, in addition to the above operations, as in any other type of treatment. Yearly perimeter ground treatment with dieldrin or chlordane to establish a chemical barrier from the surface to the ground water level is also desirable.

Experience has indicated that ethylene dibromide does not seep upwardly from beneath such a slab after dispersion according to the procedures above described. There is a possibility that plantings closely adjacent a foundation may be injured by the treatment if the footings are shallow. Care must be taken to avoid spilling ethylene dibromide inside the building, as it is a very powerful solvent and will ruin asphalt tile, for instance, before it can be wiped up. For this reason, extreme care must be taken against drippage from the needle and the reservoir 19 should be refilled only outside the building. Additionally, standard precautions against breathing the vapors in confined areas and against contact of the liquid with skin or clothing should be observed.

I have found that normally acceptable plugs 17 may be produced by cutting quarter inch diameter automotive ignition cable at approximately one inch intervals, slipping the insulation off the wire strands and cutting one inch pieces into quarter inch lengths. Care must be exercised to extract all strands of wire from the rubberoid pieces in order to ensure a substantially fluid tight seal between the grommet and the needle.

I claim as my invention:

1. The method of dispersing a fluid into the earth supporting a slab floor, which compirses the steps of forming through such a slab and any covering thereon a passage having a major transverse dimension not substantially exceeding one-fourth inch, seating within said passage a transversely-elastic plug conformable to said passage in cross section, having equilibrium transverse dimensions at least equal to the transverse dimensions of said passage and having an axial length at least equal to its transverse dimensions, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a fumigant through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug in place in said passage, and promptly thereafter driving a snugly-fitting dowel into the upper end of said passage and into intimate, sealing engagement with the upper end of said plug.

2. The method of dispersing a volatile fluid into the earth supporting a slab floor, which comprises the steps of forming through such a slab and any covering thereon

a passage having a major transverse dimension not substantially exceeding one-fourth inch, seating within said passage a transversely-elastic plug conformable to said passage in cross section, having equilibrium transverse dimensions at least equal to the transverse dimensions of said passage and having an axial length at least equal to its transverse dimensions, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, and promptly thereafter driving a snugly-fitting dowel into the upper end of said passage to drive said plug more deeply into said passage.

3. The method of dispersing a fluid into the earth supporting a slab floor, which comprises the steps of forming through such a slab and any covering thereon a passage having a major transverse dimension not substantially exceeding one-fourth inch, seating within said passage a transversely-elastic plug conformable to said passage in cross section, having equilibrium transverse dimensions at least equal to the transverse dimensions of said passage and having an axial length at least equal to its transverse dimensions, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is sunk below the exposed surface of said floor including any covering thereon, and filling the portion of said passage above said dowel with a plug of material conforming in character to the exposed surface of said floor.

4. The method of claim 1 in which said plug is a rubberoid grommet.

5. The method of claim 1 in which said tubular element is a hypodermic needle.

6. The method of claim 5 in which said plug is a rubberoid grommet.

7. The method of claim 1 which includes the step of rodding the earth beneath the lower end of said passage to a depth of at least twelve inches before seating said plug.

8. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slap with a covering of cemented, shearable composition material, which comprises the steps of drilling a passage through said covering and said slab, said passage having a diameter not substantially exceeding one-fourth inch, seating within said passage, below the level of said covering, a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is sunk below the level of said covering, cutting from a piece of material conforming to said covering a plug dimensioned sungly to fit within that portion of said passage which penetrates said covering, and inserting said plug in place to fill said last-named passage portion.

9. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slab with a terrazzo covering, which comprises the steps of selecting a spot in the exposed surface of the terrazzo where no aggregate particle is exposed, drilling, at that spot, a passage through said covering and said slab, said passage having a diameter not substantially exceeding one-fourth inch, seating within said passage a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is sunk below the exposed surface of the terrazzo, and filling the portion of said passage above said dowel with non-shrinking cement conforming in color to the immediately contiguous area of the original terrazzo.

10. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slab with a hardwood covering, which comprises the steps of drilling a passage through said covering and said slab, said passage having a diameter not substantially exceeding one-fourth inch, seating within said passage a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is sunk below the exposed surface of said covering, and inserting in place a furniture dowel to close the opening through said covering flush with the exposed surface of said covering.

11. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slab with a cemented, long-nap carpet covering, which comprises the steps of separating the nap of said covering at a selected spot to expose a minute area of the carpet body, drilling, at that spot, a passage through the carpet body and said slab, said passage having a diameter not substantially exceeding one-fourth inch, seating within said passage, below the level of said covering, a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper

end of said plug and the upper end of said dowel is sunk below the level of said carpet body, and thereafter brushing the nap of the carpet back to conceal the hole through the carpet body.

12. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slab with a cemented, short-nap carpet covering, which comprises the steps of isolating a slug of carpet with a circumscribing cut, applying a cement-solvent to said slug to loosen the same from said slab and removing said slug intact, then drilling, at the point of said slab exposed by removal of said slug, a passage through said slab, said passage having a diameter not substantially exceeding one-fourth inch, seating within said passage, below the level of said covering, a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is flush with the exposed surface of said slab, and thereafter cementing said slug to the upper end of said dowel to fill the hole in said carpet.

13. The method of dispersing a fluid into the earth supporting a floor comprising a continuous slab having a covering of brittle, separate elements set in, and separated by, a bed of mortar, which comprises the steps of drilling, through the mortar joint between two of such elements and through said slab, a passage having a diameter not substantially exceeding one-fourth inch, seating within said passage, at a level below the upper surface of said slab, a cylindrical plug of elastic material having an equilibrium diameter at least equal to the diameter of said passage and having an axial length at least equal to its equilibrium diameter, forcing a tubular element axially through said plug and into the portion of said passage below said plug with the elastic material of said plug gripping the walls of said tubular element in substantially fluid-tight relation, forcing a volatile fluid through said tubular element to permeate the earth beneath said slab, withdrawing said tubular element from said plug while leaving said plug seated in said passage, promptly thereafter driving a snugly-fitting dowel into said passage to a depth such that the lower end of said dowel intimately and sealingly engages the upper end of said plug and the upper end of said dowel is sunk below the exposed surface of said covering, and filling the portion of said passage above the upper end of said dowel with mortar conforming to said mortar bed.

14. The method of dispersing a liquid into the earth supporting a slab floor, which comprises the steps of forming through such a slab and any covering thereon a passage having a major transverse dimension not substantially exceeding one-fourth inch, seating within said passage a transversely-elastic plug conformable to said passage in cross section, having equilibrium transverse dimensions at least equal to the transverse dimensions of said passage and having an axial length at least equal to its transverse dimensions, forcing a tubular element axially through said plug to dispose the lower end of said element within the portion of said passage below said plug with the elastic material of said plug gripping the walls of said element, intermediate the ends of said element, in substantially fluid-tight relation, confining a measured quantity of volatile liquid in a chamber with which the upper end of said element is in communication, forcing a gas into said chamber to displace such liquid through said element, continuing the supply of gas to said chamber until gas only escapes through said element into said passage, withdrawing said tubular element from said plug while leaving said plug seated in said passage, and promptly thereafter driving a snugly-fitting dowel into the upper end of said passage and into intimate, sealing engagement with the upper end of said plug.

References Cited in the file of this patent

UNITED STATES PATENTS

2,059,095	Fellman	Oct. 27, 1936
2,116,591	Barber	May 10, 1938
2,755,968	Fiant	July 24, 1956

OTHER REFERENCES

Termites and Termite Control, Kofaid et al., authors, 2nd edition, revised, University of California Press, page 468.