United States Patent Office 3,533,243
Patented Oct. 13, 1970

3,533,243

METHOD OF LAYING UNDERGROUND PIPES, CONDUITS AND THE LIKE SO AS TO MAKE THEIR PRESENCE EASILY DETECTABLE

Forman K. Suydam, 30 Herbert Drive,
Englishtown, N.J. 07726

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,347
Int. Cl. F16l *1/00;* G01d *13/02*
U.S. Cl. 61—72.1 3 Claims

ABSTRACT OF THE DISCLOSURE

The method of laying underground pipe, conduit or the like so as to make its presence easily detectable. A substantially enduring indicant is coated over the sidewalls of the excavated trench for an upwards distance from the placement at least comparable to the depth of cut taken in subsequent machine excavations, and is then covered over itself to complete the installation.

This invention relates to a method of laying underground pipes, conduits and the like and, more particularly, to a method which makes the presence of such placements easily detectable at a later time when subsequent excavations are desired.

Many forms of machine apparatus are known for reclaiming underground pipes, conduits and the like. Such apparatus basically operate to remove these materials from the ground so that they may be inspected from time to time, and repaired or replaced when necessary. Within this category typically fall sewers, water mains, gas lines and electric cables. In other instances, it is sufficient to know only the location of these pipes, conduits, etc., without having to go to the bother of uncovering them. Such occasions arise, for example, in repairing a roadway, in constructing an out-door in-the-ground swimming pool and in grading a landsite. There, it is required only to know the whereabouts and depths of these installations—and not their general conditions—so that the paving, construction and grading contractor's work can proceed at a pace unhampered by the anxiety of whether or not he will accidentally run into these underground placements and damage them.

Some utility companies have sought to prevent such happenings to their installations by posting markers at various intervals along the lengths of the installation. These markers announce that pipes, conduits, etc. have been laid, and advise all interested parties to telephone the company to determine their precise locations before proceeding further. Other companies, however, provide no such markers. In these latter instances, and also in those where contact with the sponsoring company is or can not be made, the building contractor must proceed with his equipment at a relatively slow pace in order to avoid damaging the installations not visible to him.

Where the underground placement comprises a sewer or water main constructed of vitrified clay, cement concrete or cast-iron pipe for example, a resulting collision is generally "felt" by the machine operator. Where a smaller gas line or electrical cable conduit constructed of glazed tile or fiber is run into, on the other hand, no such collision is felt. Here, it has been known to happen not only that the line or cable may break or otherwise be damaged as a result, but that on some occasions household appliances (mostly gas stoves) have been literally torn from their stations due to the machine pull exerted on the installations to which the appliances were connected.

Pipe, conduit and the like installations laid according to the method of this invention, however, provide a fast and visible alert to the machine operator to inform him of his working at a depth which is only a few or more inches away from an underground placement. In response to the alert, the operator can safely complete the machine step on which he is then working, and either proceed to another locale in which to work, or return with another tool he can better control in close operating conditions. Illustrative of this would be the situation where the operator of a bulldozer would stop grading short of hitting a water main crossing his path, and would thereafter continue grading in the critical area of the water main using a hand shovel and/or rake.

In accordance with the method, an excavated trench is provided at such a depth and of such dimension as to receive the pipe, conduit or similar installation to be laid. A trench for sewer pipe, for example, might be provided at a depth far enough below the surface to serve the lowest basement in a location and of a width sufficient to accept a 24 inch pipe but not so wide that the maximum load imposed on the pipe by the backfill will be exceeded. A backhoe or a ladder type trenching machine can be used for this kind of work.

After the pipe, conduit, etc. is laid in place by any of a number of means, portions of the sidewalls of the excavated trench are coated along the length of the trench with a substantially enduring visible indicant. This coating step, more particularly, is preferably carried out so that the indicant extends upwards from the implanted installation and covers the sidewalls at least a distance comparable to the depth of cut taken in subsequent excavations. (The reason for selection of this distance will hereinafter become apparent.) Such an indicant might be a methyl red or methyl orange color-fast dye, for example, or any of a number of long-lasting paints. Such products readily adhere to the soil surface, and serve to designate the presence of the pipe and conduit installation.

The method of the invention further includes the step of back-filling the overburden from the excavated trench so as to cover the indicant and the placement to the desired elevation. With the back-filling of the overburden portion, the pipe, conduit, etc. installation is complete.

When, at a later date, a building contractor is called upon to work in the location having such installations, the following will be seen to take place. In working his bulldozer, scraper or power shovel, as an example, the machine operator will proceed as normal, i.e. removing the surface ground layers, until he uncovers such amount that the covered dye or paint indicant becomes visible. At this point, he knows the underground placement to be buried no more than a given depth below his last cut. What that depth will be is determined by knowledge of the extent of cut taken by various types of excavating equipments and is decided upon prior to the installation of the pipe, conduit, etc.

For instance, if the maximum cut reasonably taken by a bulldozer is twelve inches, then the sidewalls of the excavated trench are coated with the dye or paint indicant upwards from the placement for a distance comparable to that depth. If the indicant is not visible to the bulldozer operator on one of his passes, it means the pipe, conduit, etc. is still at least twelve or more inches below the surface. If it just becomes visible on his next pass, it means that the placement is twelve inches belows. If the indicant appears in the material he scrapes away, it means the underground installation is within twelve inches of the surface. At these last two points, the machine operator can either proceed with his bulldozing step at a more careful pace, proceed to another location in which to work, or continue to remove the soil but with a hand shovel or rake so as to be almost certain of not damaging the installed placement.

Needless to say, if the maximum reasonable depth of cut taken by the bulldozer or other equipment is more or less than the assumed twelve inches, the coating of the sidewalls from the placement will accordingly be of more or less distance also, and by substantially the same amount. Where the depth of cut is six inches, the extent of the upwards coating of the sidewalls will also approximate six inches. Where the depth of cut is eighteen inches, so too will be the approximate extent of the coating. Using this method of laying underground pipes, conduits and the like, therefore, it will readily be seen that the presence of these installations can be easily detected.

It will additionally be readily seen that within the scope of the present invention are methods in which only one sidewall of the excavated trench is coated with a visible indicant, and methods in which the indicant is coated over substantially the entire depth of the sidewall or sidewalls. With either of these modified arrangements, the underground placements can also be easily detected and, more specifically, before any damage to the installation has been done.

I claim:

1. The method of laying underground pipe, conduit or the like so as to make its presence easily detectable comprising the steps of:

(a) placing the pipe, conduit or the like in an excavated trench adapted for its receipt;

(b) coating a sidewall of the excavated trench with a substantially enduring indicant designating the presence of the pipe, conduit, etc. for an upwards distance from the top of the placement at least comparable to the cut taken in subsequent excavations at a later date; and

(c) back-filling the overburden from the excavated trench so as to cover the indicant and the placement, leaving an unused, excess portion of overburden substantially corresponding to the volume of the excavated trench occupied by said placement.

2. The method as define din claim 1 wherein step (b) comprises coating the sidewall of the excavated trench with a substantially color-fast dye.

3. The method as defined in claim 1 wherein step (b) comprises coating the sidewall of the trench with a substantially long-lasting paint.

References Cited

UNITED STATES PATENTS

2,007,465	7/1935	Burt	175—42
3,115,861	12/1963	Allen	61—72.1

JACOB SHAPIRO, Primary Examiner

U.S. Cl. X.R.

116—114; 175—42