A. C. HESSEL.

CONDUIT.

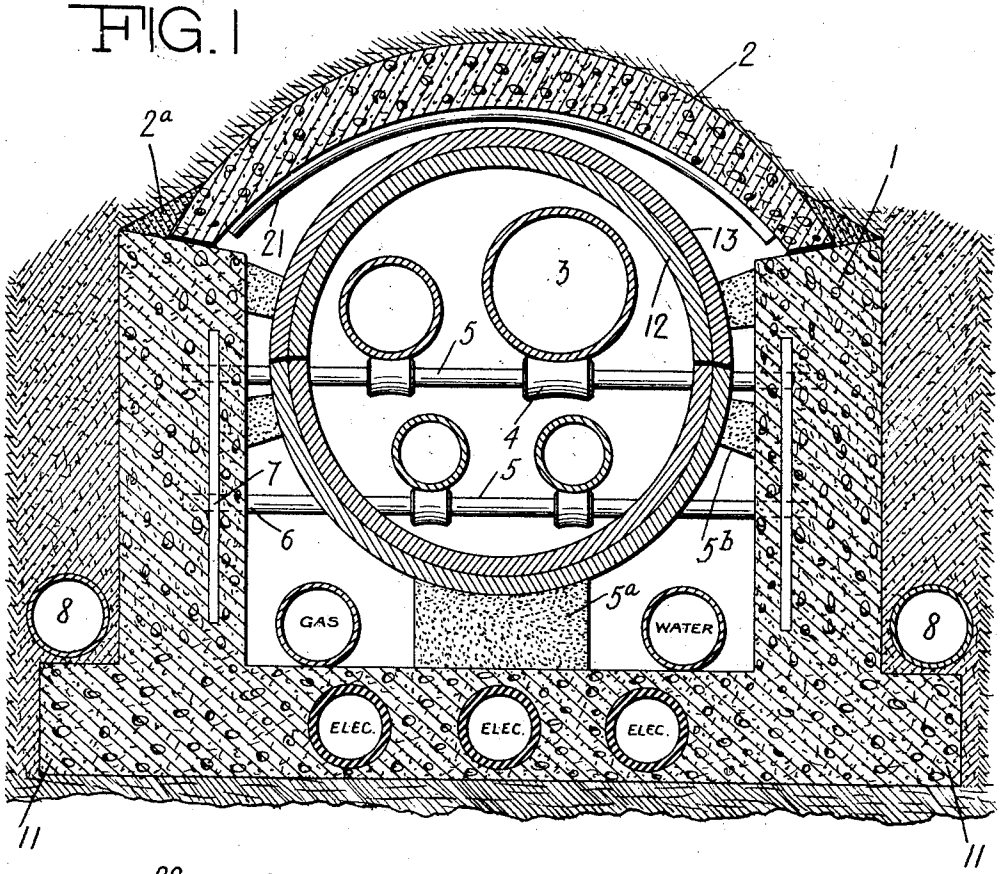
APPLICATION FILED MAY 20, 1916.

1,317,495.

Patented Sept. 30, 1919.

2 SHEETS—SHEET 1.

FIG. 1



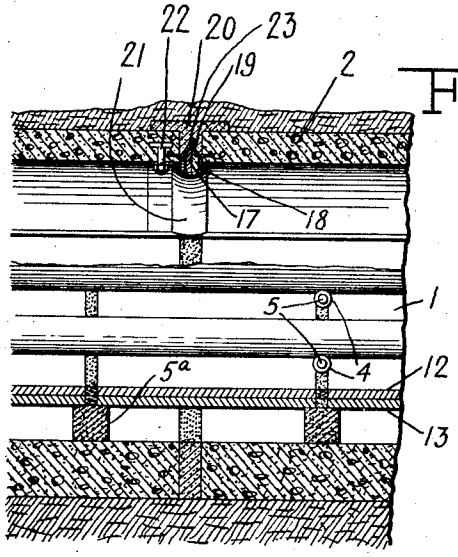


FIG. 5

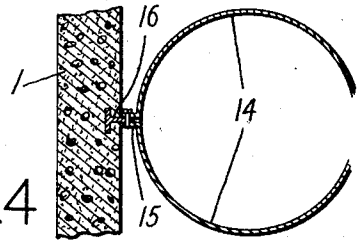


FIG. 4

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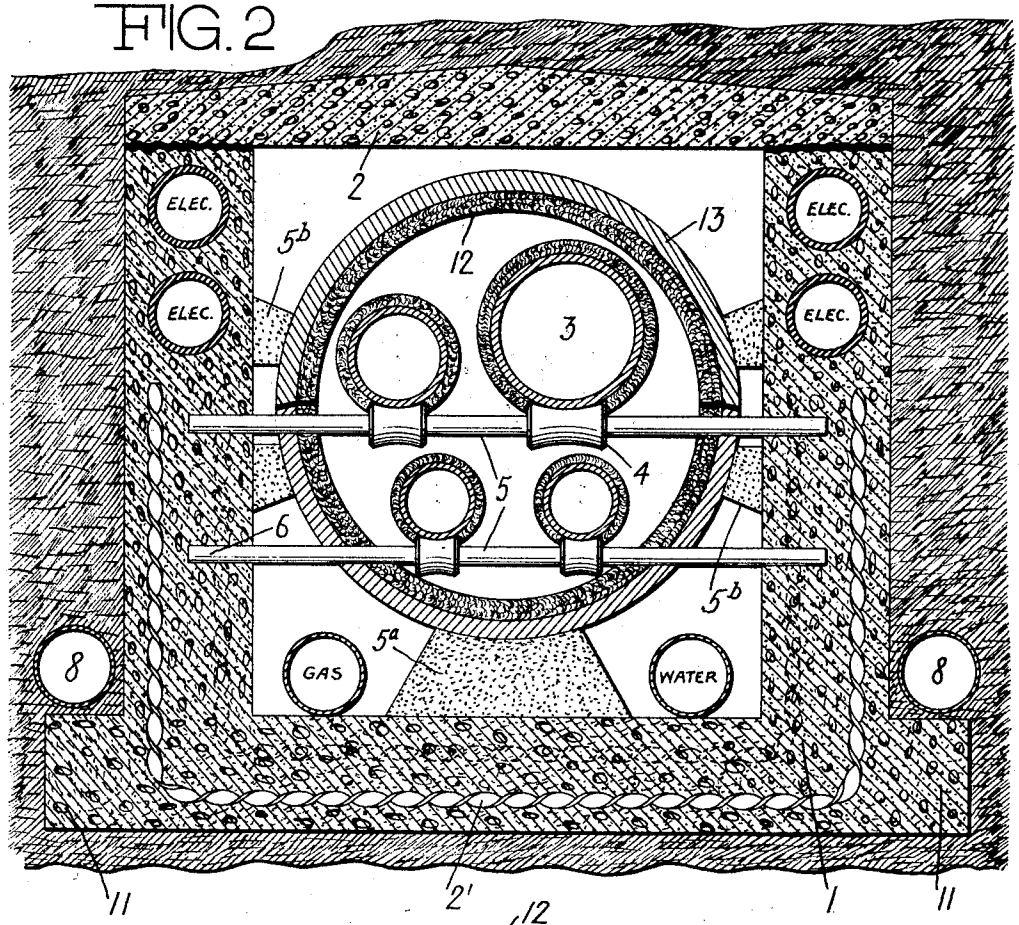
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2 SHEETS—SHEET 2.

FIG. 2



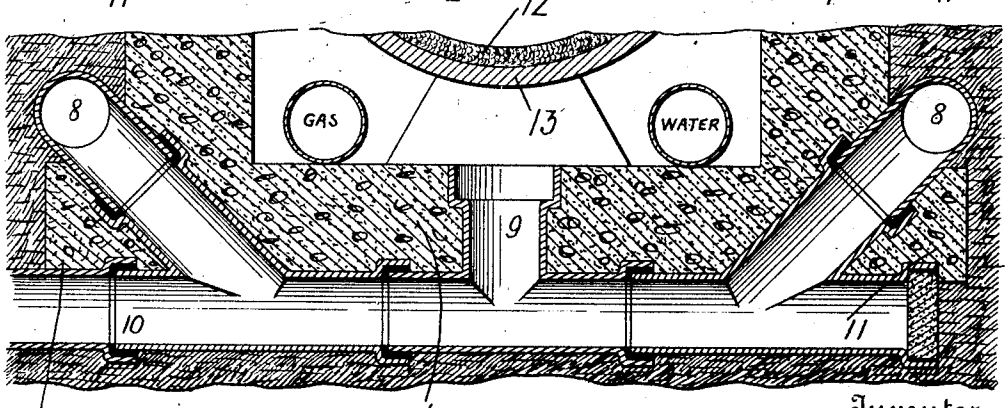


FIG. 3

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UNITED STATES PATENT OFFICE.

ALBERT C. HESSEL, OF NEW YORK, N. Y.

CONDUIT.

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Application filed May 20, 1916. Serial No. 98,757.

To all whom it may concern:

Be it known that I, ALBERT C. HESSEL, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Conduits, of which the following, taken in connection with the accompanying sheets of drawings, is a full, clear, and concise description thereof.

My present invention relates primarily to a conduit construction for the accommodation of steam conveying pipes and other pipes.

Among the objects of my invention is to provide a flexible, composite system for service pipes in general, that is to say, a system in which provision is initially made for the accommodation of steam, gas, oil and water pipes, and where desirable pipes for sewerage, so that by a single installation at a single initial expenditure, an entire service eventually may be taken care of.

A further object of my invention is to provide a new and novel trench construction for accommodating the service pipes.

A further object of my invention is to provide specifically new and novel means for supporting steam conveying pipes within the trench.

Another object of my invention is to provide a new and novel form of expansion joint between abutting ends of the trench sections.

A still further object of my invention is to provide a new and novel form of interior and exterior drainage system for a trench of my improved construction.

Further objects will make themselves manifest upon a reading and understanding of the following specification and accompanying drawings, in which I have set forth certain preferable embodiments of my invention.

Referring to the drawings: Figure 1 is a vertical cross-sectional view of a system involving certain of the features of my invention. Fig. 2 is a similar view of a modification thereof. Fig. 3 is a similar view of a fragmentary portion thereof illustrating more particularly the drainage features thereof. Fig. 4 is a fragmentary cross-sectional view of a modification, illustrating a modified form of a container and means for support therefor. Fig. 5 is a vertical cross-sectional view of a fragmentary part of a trench, illustrating an expansion joint conforming to certain features of my invention.

In conduit construction generally, it is extremely advantageous to provide a substantial supporting foundation for the conduit and contained steam conveying pipes. It is one of the principal objects of my invention to provide such adequate support for the steam conveying pipes while at the same time avoiding the use of the usual well-known cylindrical conduits. This I accomplish by forming what I term herein a monolithic trench 1, having the bottom and sides formed integral with a removable sectional top 2, preferably of concrete slab construction. The concrete trench is built at the point of installation, while the top sections 2 may have previously been formed and transported to the point of use. Where found desirable the trench may be reinforced as at 2′ (Fig. 2). After the top sections 2 are placed, the point of jointure is covered with cement as at 2^a. The steam conveying pipes 3 are supported on suitable rollers 4, which in turn are supported by rods 5, the ends of the latter being positioned in the sides of the concrete trench when being built. In this manner the necessary adequate support is given to the steam pipes. Where necessary, or where found desirable, the rods 5 may be additionally supported by such suitable reinforcing means as shown at 7, (Fig. 1) where a perforated plate is embedded in the concrete wall of the trench, said plate being provided with suitable holes for the accommodation of the ends 6 of the rods 5.

In the system illustrated, I have provided for the accommodation of other service pipes, such as gas and water and pipes for the electric conductors. Certain of these pipes are installed when the trench is built, the same being embedded within the bottom or side walls thereof, while other of the pipes such as the water and gas pipes may be installed at some future or later time and these are positioned preferably within the interior or cavity of the trench. In Fig. 1, I have shown gas and water pipes resting upon the bottom of the trench, and the pipes for the accommodation of the electrical conductors positioned within the body of the bottom of the concrete trench, while in Fig. 2, I show these latter pipes positioned with-

in the side walls thereof. It will be understood that when this practice is resorted to there will be provided at stated intervals, or equi-distant points, when a long run of trench is constructed, suitable entrances to these pipes so as to make the running of the conductors therethrough convenient.

The pipes for the electrical conductors may be formed of fiber, tile or other suitable material or I may, where desirable, provide cylindrical openings through the concrete for the accommodation of the insulated conductors.

In order to provide for the interior drainage of seepage water or water of condensation, and also the drainage of the immediate exterior of the trench, I provide a suitable system of drainage such as that shown in Fig. 3 in which pipes 8 are arranged exterior of the trench and a pipe 9 leading from the interior thereof, preferably at its lower inclined end, all of which pipes communicate with a common outlet 10 discharging at any desirable point.

In order to afford an adequate foundation and support for the drain pipes 8, I preferably form laterally extending flanges 11 to the base of the trench, these being of integral construction therewith.

To increase the insulating properties of the system, I provide, where desirable, a containing tube 12, made of cast asbestos, cork or other suitable insulating material, reinforced by another surrounding containing tube 13 (see Fig. 2). The containing tube 12 is sectional in form and the rods 5 are positioned between the ends of adjacent sections, as shown in Fig. 5, in which are illustrated the lower halves of two adjacent sections of the containing tube. Between the sections a filler of plastic cement is provided to form a seal. The containing tube at the point of juncture between the sections is supported by a block of concrete 5^a while similar blocks 5^b may be provided to space the containing tube from the sides of the trench (see Fig. 2). Where these containers are used it will be observed that a high degree of insulation is provided as they serve to maintain a dead air space between the same and the steam conveying pipes. If desirable, these spaces may be filled with any fibrous insulating filler. As an alternative construction, I may make the containing tube of two-part metal construction as shown at 14 (see Fig. 4), these parts being provided with laterally extending flanges or ears 15, which may be bolted to projecting coincident flanges or ears 16, embedded in the side walls of the trench 1.

According to another phase of my invention, I provide a new and improved form of sectional top for the concrete trench (see Fig. 1). This top is reënforced and made thicker at the longitudinal central zone thereof, the outer curvature being concentric with the central longitudinal axis of the trench. This form possesses a maximum ability for resisting stresses imposed thereon by the covering earth.

In order to take care of expansion and contraction, I provide a novel form of joint between adjacent ends of the trench so formed for this purpose. This I have shown in detail in Fig. 5 in which the top sections are provided with angular sheet metal members 17 and 18 having one extremity embedded within and supported by the concrete top slabs. These members are preferably made of springing material, the member 17 being provided with an angular extension 19 which extends downwardly below the upper edge of the member 18, so as to make a desirable form of joint to prevent water from seeping past. This joint is further protected by a filler 20 of cementitious material. In the event, however, of seepage water passing the joint thus formed, I provide the trough 21, which is supported by suitable lugs 22 cast integral with the top section. This trough 21 is arranged so that its ends will discharge within the trench along the walls thereof, so that any seepage water entering may pass out through the drain 9. I may, when desirable, make the members 17 and 18 of integral construction, as at 23, the flexibility of the material being sufficient to allow for expansion or contraction as the case might be.

It will thus be observed that in a system constructed in accordance with the above-described principles, the possibility of seepage water coming in contact with insulating material, is removed. This is very important as, in ordinary systems, as now employed, where seepage does occur, it has disastrous results and requires usually an expenditure of a great deal of money, labor and material to locate and correct the same.

In my system many cubic inches of water per lineal foot of conduit can flow continuously within the concrete trench, and yet do no harm, the same discharging from the trench at a desirable point, preferably the lower end of the trench.

In addition to this, in my system I make provision for taking care of the seepage water that may enter at the sides and exterior of the trench, where the ditch is filled with cinders, this water preferably being discharged also at the lower end of the system. The exterior drain pipes are, in my system, provided with a very substantial foundation which entails very slight additional expense because it is, in its preferable form, constructed as an integral part of the concrete trench itself.

Of equal importance to the above advantages is the flexibility of the system described, that is to say, the facility with which

the various services as outlined, in addition to steam conveying, may be taken care of at practically no additional cost except for the necessary and required material.

It will be understood that in a long run of steam work where no man holes occur, it will become necessary to establish electric man holes to facilitate the installation of the electric cables. Where steam man holes do occur, a combination man hole can be constructed, and the walls and floor of the steam man hole can be chased to allow the electric cables to be entirely concealed.

While I have illustrated and described certain preferred embodiments of my invention, I do so by way of example only, as changes may be made in the structural details thereof without departing from the spirit and scope of my invention, as defined by the following claims.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent, is:

1. In a system of the character described, the combination of an inclosure for pipe lines, a housing for said pipe lines suspended within said inclosure, and out of contact therewith, and means for supporting said pipe lines within said housing, said means passing through the wall of said housing and being embedded in a part of said inclosure.

2. In a system of the character described, the combination of a trench-like inclosure, a housing adapted to receive a plurality of pipe lines, said housing being supported within said inclosure and out of contact therewith, and means for supporting said pipe lines out of contact with said housing, said means passing through the wall of said housing and being embedded in a portion of the inclosure, whereby the weight of said pipe lines will be wholly supported by said inclosure.

3. In a system of the character described, the combination of a trench like inclosure formed of reinforced concrete, a housing located within said inclosure and out of contact therewith, said housing being adapted to receive a plurality of pipe lines and means for supporting said pipe lines, said means comprising rods extending transversely through said housing and having their ends embedded in the inclosure, whereby the weight of said pipe lines will be wholly supported thereby.

4. In a system of the character described, the combination of a trench like inclosure for pipe lines, a housing adapted to receive a plurality of pipe lines, said housing being suspended within said inclosure and out of contact therewith, and means for supporting said pipe lines independently of said housing, the supporting means being anchored in the walls of said inclosure and extending through said housing, the portion of the supporting means within said housing being adapted to engage a part of the periphery of the supported pipe lines.

5. In a system of the character described, the combination of a permanent inclosure, a housing supported within said inclosure, and out of contact therewith and adapted to receive a plurality of pipe lines, said pipe lines being insulated from said housing, and means for supporting said pipe lines, whereby the weight thereof will be borne by the permanent inclosure, said supporting means passing through the wall of said housing.

6. In a system of the character described, the combination of a permanent inclosure, a housing positioned within said inclosure, and out of contact therewith, said housing being adapted to receive a plurality of pipe lines, means for insulating the pipe lines from the wall of said housing, and means for supporting the load of said pipe lines from said permanent inclosure, said supporting means passing through the wall of said housing.

7. In a system of the character described, the combination of a trench-like inclosure for pipe lines, a housing for said pipe lines insulated from said inclosure, said housing being formed of a plurality of sections, a roof for said inclosure formed of a plurality of sections, the joints in the sections of said roof and said inclosure being in staggered relation to each other, means for supporting the pipe lines within said housing and out of contact therewith, said means being anchored in the inclosure and passing therethrough at the joints of the sections, and means for insulating said pipe lines from said housing.

8. In a system of the character described, the combination of a trench formed of reinforced concrete, a plurality of service pipes embedded in the walls thereof, a housing of a relatively destructible material positioned within said inclosure and out of contact with the walls thereof, said housing being adapted to receive a plurality of pipe lines, and means for supporting said pipe lines out of contact with said housing, whereby the load will be borne by the walls of said inclosure, said means comprising rods having their ends embedded in the concrete of the walls of the inclosure and passing through said housing.

9. In a system of the character described, the combination of a trench-like inclosure built up of reinforced concrete and having service pipes embedded in the walls thereof, a drainage system communicating with the interior of said inclosure, a housing of a relatively light material suspended within said inclosure and out of contact with the interior thereof and adapted to house a plu-

rality of pipe lines, said pipe lines being insulated from the wall of said housing, means for supporting said pipe lines directly from the walls of said inclosure, said supporting means embodying a rod passing through said housing and having its ends embedded in the opposite walls of said inclosure, and means mounted on said rod adapted to contact with the under-surface of the periphery of each of the supported pipe lines.

10. In a conduit system, the combination of a permenanet inclosure, a relatively destructible housing adapted to receive a plurality of pipe lines suspended therein and out of contact therewith, means for supporting said pipe lines, whereby the load thereof will be carried by said inclosure, said means comprising rods passing through apertures in the walls of said housing and having their extremities embedded in the walls of said inclosure, and rotatable means mounted on the portions of said rods within said housing to provide seats for said pipe lines.

ALBERT C. HESSEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."