

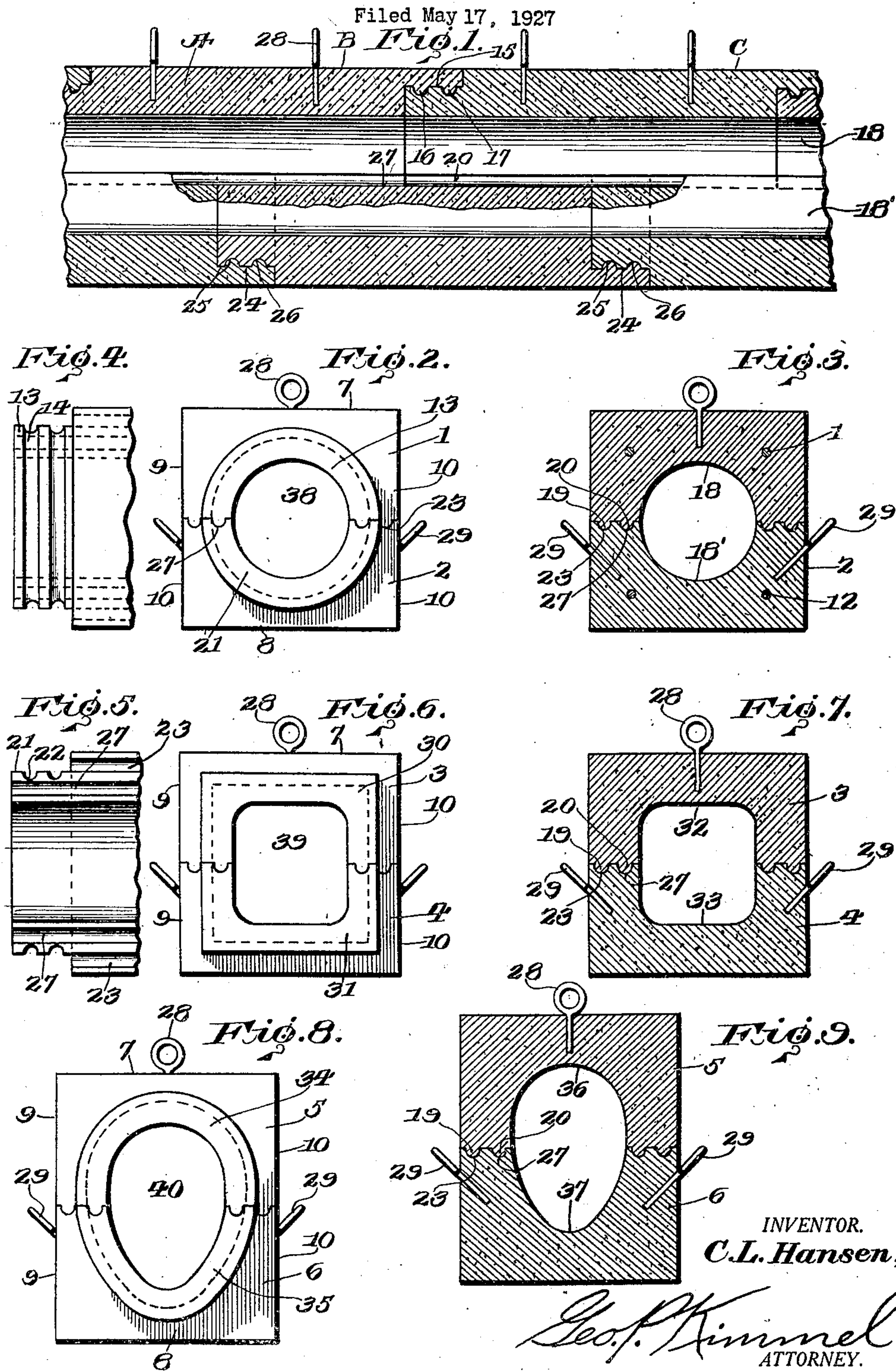
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SECTIONAL PIPE, CONDUIT, OR CULVERT UNIT

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SECTIONAL PIPE, CONDUIT, OR CULVERT UNIT.

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The invention relates to a sectional pipe or conduit unit designed primarily for sewers, but it is to be understood that a pipe or conduit unit, in accordance with this invention is adapted to be used in any connection for which it is found applicable, and the invention has for its object to provide, in a manner as hereinafter set forth, a simple, inexpensive, strong, durable, conveniently handled, reinforced and thoroughly efficient pipe or culvert or conduit unit formed of a pair of interlocking, superposed, copper metal sections, each constructed and arranged for end interlocking engagement with the sections of adjacent units when a course of units is laid to provide a sewer pipe, conduit or culvert of the desired length.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Figure 1 is a fragmentary view in longitudinal section of a pipe, conduit or culvert formed of a plurality of sectional units in accordance with this invention.

Figure 2 is an end view of the unit.

Figure 3 is a cross sectional view thereof.

Figure 4 is a fragmentary view in plan of the unit.

Figure 5 is a fragmentary view in top plan illustrating one end of the lower section of the unit.

Figures 6 and 7 are respectively an end view and a cross section of a modified form of sectional unit.

Figures 8 and 9 are respectively an end view and a cross section of still another modified form of the unit.

Each of the units, as illustrated, is formed of an upper and lower section, and on Figures 2 and 3, the upper and lower sections are indicated at 1, 2 respectively, on Figures 6 and 7 at 3, 4 respectively and on Figures 8 and 9 at 5, 6 respectively. Each upper section has a flat top 7 and each lower section a flat bottom 8. The outer side faces 9, 10 of each section are squared. The

width, height and length of each upper section corresponds to that of the lower section.

Each of the sections of the unit is constructed from molded concrete and can be provided with metallic reinforcements, of any character, in accordance to sizes or as desired. The metallic reinforcements can be disposed in any suitable manner in each of the sections and by way of example the metallic reinforcements are illustrated in accordance with the form shown in Figures 2 and 3, and said reinforcements are indicated at 11 with respect to the upper section 1 and at 12 with respect to the lower section 2. As illustrated the metallic reinforcements consists of bars or rods extending lengthwise of the sections of the unit, but it is to be understood that the reinforcements can be disposed in the sections of the unit in any suitable manner.

The two sections of the unit are of like construction, are oppositely disposed with respect to each other but with this exception that the upper face of the lower section is grooved to receive ribs depending from the lower face of the upper section. The sections of the unit when in interengaging position form a tubular body portion.

Referring to Figures 2 to 5 of the drawings the section 1, at one end, is formed with an extension 13 of semi-circular contour having its periphery with the exception of its bottom edge, formed with spaced grooves 14. The extension 13 is spaced from the top 7 and sides 9, 10 of the section 1. The other end of the section 1 is formed with a semi-circular pocket 15 having the wall thereof provided with spaced semi-circular lugs 16, 17 of semi-cylindrical cross section. The rib 16 is spaced from the bottom of the pocket 15 and the rib 17 spaced from the mouth of the pocket 15.

The section 1 has its lower face provided with a semicircular groove 18 which extends from the outer end of the section 13 and opens into the pocket 15. The width and depth of the groove 18 is materially less than the width and depth of the pocket 15. The lower face of the section 1, in proximity to each outer side face of said section, is formed with a lengthwise extending rib 19 of semi-circular cross section and the lower face of said section 1 is further formed with a rib 20, spaced from but in parallelism with the rib 19. The rib 20 is arranged in proximity to the groove 18. The ribs 19

extend from one end of the section 1 and terminate at the base of the pocket 15. The ribs 20 extend from the outer end of the extension 13 and terminate at the base of the

5 pocket 15.
The section 2 at one end is formed with a semi-circular extension 21 which is spaced from the bottom 8 and side faces 10 of said section 2, and has its outer periphery, with
10 the exception of the ends or upper edges thereof, formed with spaced grooves 22 of semi-circular cross section. The upper face of the section 2 in proximity to each side face is provided with a semi-circular groove
15 23 to receive a rib 19. The other end of the section 2 is formed with a semi-circular pocket 24 having its wall formed with a pair of semi-circular ribs 25, 26 of semi-cylindrical cross section. The rib 25 is positioned
20 in proximity to the bottom of the pocket 24 and the rib 26 in proximity to the mouth thereof. The section 2 has its upper face formed with a pair of semi-circular grooves 26 which are spaced from
25 the grooves 23, extend lengthwise of the section and project from the outer end of the extension 21 to the base of the pocket 24. The grooves 27 are adapted to receive the ribs 20. The section 2 has its upper face
30 formed with a semi-circular groove 18' which extends from the outer end of the extension 21 and terminates in the pocket 24.

When the sections 1 and 2 are mounted in interengaging relation and flush with re-
35 spect to each other, the extensions 13, 21 form a tubular projection at one end of the unit, and the pockets 15 and 21 form an annular pocket which extends inwardly from the other end of the unit for the reception of
40 the tubular projection of an adjacent section, but the sections of a plurality of units can be set up in staggered relation whereby the upper vertical joints will be alternately disposed with respect to the lower vertical
45 joints as shown in Figure 1.

The top of the upper section of each unit has embedded therein and extended upwardly therefrom a pair of hooks or eyelets 28, and each side of each lower unit is provided with a pair of hooks or eyelets 29
50 which are embedded therein and extend therefrom. The hooks or eyelets are provided to enable the lifting and lowering of the sections of the unit when desired.

55 The form of unit shown in Figures 6 and 7 is the same as that shown and described with respect to the construction of unit shown in Figure 2, with this exception that the extension 30 at one end of the upper section 3 is of inverted U-shape and the extension 31 at one end of the section 4 of U-shaped contour. The pockets at the other
60 ends of the sections are of a contour to receive and fit the extensions 30, 31 of adjacent sections. The pockets are not shown. The

inner face of the extensions 30 and 31 correspond in contour to the shape of the grooves 32, 33 formed respectively in the sections 3, 4.

The form of unit shown in Figures 8 and 9 is the same as that shown and described with respect to the unit Figure 2, and also Figure 6, with this exception that the extension 34 at one end of the section 5 is of semi-oval contour and the extension 35 at one end
70 of the section 6 is of semi-elliptical contour but oppositely disposed with respect to the extension 34. The pockets at the other ends of the sections are of a contour to receive and fit the extensions 34, 35 of adjacent sections.
75 The pockets are not shown. The grooves 36, 37, formed respectively in the sections 5 and 6 correspond respectively to the contour of the inner face extensions 34, 35.

Otherwise than that as stated the forms shown in Figures 6 and 8 are the same as that shown in Figure 2.

When the sections 1 and 2 are mounted in interengaging position a passage 38 of circular shape in cross section is provided.
80 When the sections 3 and 4 are mounted in interengaging position, the unit provides a channel or passage 39 of polygonal shape in cross section having rounded corners, and when the sections 5 and 6 are mounted in interengaging position the unit forms a channel or passage 40 of inverted egg-shape in cross section.

With reference to Figure 1 which illustrated in longitudinal section a fragmentary
100 portion of a sewer pipe, conduit or culvert, formed by three interlocking units, indicated at A, B and C, it will be noted that the extensions extend into the semi-circular pockets and are interlocked with the walls thereof,
105 as the ribs on the walls of the pockets engage in the grooves formed in the extensions, and further whereby the ribs formed on the inner face of an upper section engage in the grooves formed on the inner face of a lower
110 section. The ribs and grooves formed lengthwise of the sections coact to prevent lateral displacement thereof when the sections are arranged in superposed relation, and the ribs formed on the walls of the
115 pockets coact with the grooves formed in the projections to prevent lengthwise shifting of the units relative to each other. The construction and arrangement as shown and described prevents lateral displacement
120 of the sections of the unit relative to each other, or lateral displacement of the units relatively to each other, and further couples the units in lengthwise relation in a manner whereby the sections of unit will abut against
125 a pair of sections adjacent units and prevent lengthwise shifting of the units.

The joints between the sections of the units and the joints between the units is sealed in any suitable manner, preferably
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by pliable asphaltic material. The double groove and rib construction gives an absolute water tight joint, which is very important in sanitary sewers, especially if the sewage is pumped. The pliable asphalt joint material in connection with the ribs will always assure a water tight joint.

The flat bottom and sides of the sections of the unit furnishes better bearing and foundation for the pipe line as a whole, especially in unstable soil.

The inverted egg-shaped passage or channel possessing this advantage, that with small volumes of flow it is better adapted for self-cleaning. The rounded corners of the polygonal passage prevent any retardation of flow.

It is thought the many advantages of a pipe, conduit or culvert unit, in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. In a pipe, conduit or culvert, a unit of polygonal cross sectional contour and comprising a pair of superposed sections each having its inner face formed with a lengthwise extending groove of less width than the width of said face, said grooves registering to provide a channel, each of said sections further having its inner face at one end formed with a pocket conforming in contour to the shape of the grooves, the wall of said pocket formed with spaced ribs, each of said sections further having its other end provided with an extension spaced from the outer periphery of the section, conforming in contour to the shape of the grooves and having spaced grooves in its outer periphery to receive the ribs on the wall of a pocket, and said sections having the inner faces thereof formed with inherent interengaging coacting means adjacent the grooves in said faces to prevent lateral shift of the sections relatively to each other and to provide a joint therebetween, the pocket of one unit adapted to receive the extensions of an adjacent unit to provide joints therebetween.

2. In a pipe, conduit or culvert, a unit of polygonal cross sectional contour and comprising a pair of superposed sections each having its inner face formed with a lengthwise extending groove of less width than the width of said face, said grooves registering to provide a channel, each of said sections further having its inner face at one end formed with a pocket conforming in contour to the shape of the grooves, the wall of said pocket formed with spaced ribs, each of said sections further having its other end provided with an extension spaced from the outer periphery of the section, conforming in contour to the shape of the grooves and having spaced grooves in its outer periphery to receive the ribs on the wall of a pocket, and said sections and extensions provided with lengthwise extensions inherent interengaging coacting means to prevent lateral shift of the sections relatively to each other and to provide a joint therebetween, the pockets of one unit adapted to receive the extensions of an adjacent unit to provide joints therebetween.

3. In a pipe, conduit or culvert, a unit comprising a pair of superposed sections, each having its inner face formed with a lengthwise extending groove of less width than the width of said face, said grooves registering to provide a channel, said sections having their inner faces formed with inherent interengaging coacting means to prevent lateral shift of the sections relatively to each other and to provide a joint therebetween, each of said sections further formed at one end with a pocket offset relative to the groove in the section and at its other end with an extension registering with the groove in the section and inset relative to the outer periphery of the latter, said pockets and extensions conforming in cross section to the contour of the grooves, the wall of said pocket formed with spaced ribs and the outer periphery of the extensions provided with spaced grooves, and the pockets of one unit adapted to receive the extensions of an adjacent unit to provide a joint between the units.

In testimony whereof, I affix my signature hereto.

CHRISTIAN LUDVIG HANSEN.