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1,929,817

CULVERT

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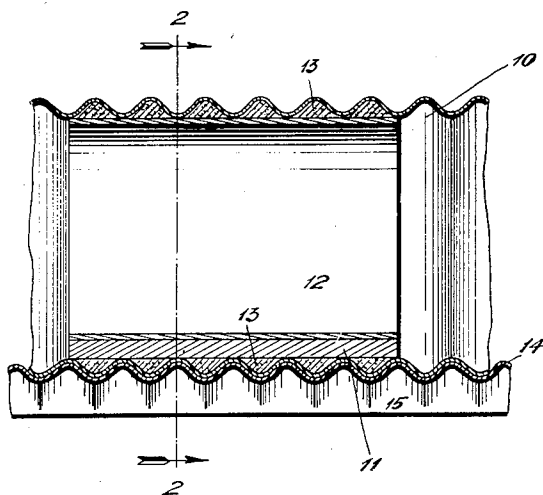


Fig. 1

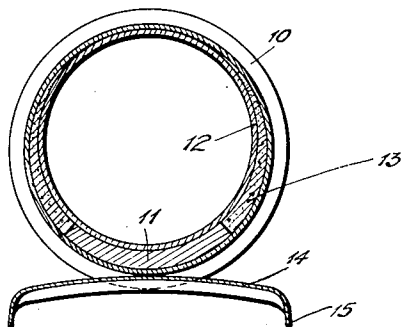


Fig. 2

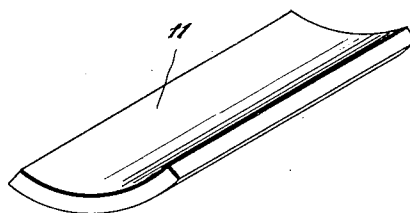


Fig. 3



Fig. 4

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UNITED STATES PATENT OFFICE

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CULVERT

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2 Claims. (Cl. 137—75)

Corrugated sheet metal culverts are now in general use and it is well known that after a period of years of such use the bottom portions of the culverts deteriorate first, due to corrosion and also due to the abrasion of sand and gravel flowing through the culvert and striking upon the corrugations. Numerous efforts have been made to provide additional resistance to wear and corrosion at the bottoms of these corrugated culverts, principally by applying thereto coatings of protecting materials applied to the corrugated culverts when new, but such coatings are of no value for the repair of culverts in which the bottoms have deteriorated.

It is also well known that when concrete or masonry or other culverts are used, there is considerable cracking or breaking of the culvert due to earth pressure, etc.

The objects of my invention are to provide a culvert of simple, durable and inexpensive construction of greatly increased strength and wear and corrosion resisting qualities.

A further object is to provide means of simple, durable and inexpensive construction for repairing culverts, in which the bottom portions have been wholly or partially destroyed.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 shows a vertical, central, longitudinal, sectional view through a culvert embodying my invention.

Figure 2 shows a transverse sectional view on the line 2—2 of Figure 1.

Figure 3 shows an isometric view of one of the tile blocks used in my improved culvert; and

Figure 4 shows a side elevation of the corrugated sheet metal base member.

Referring to the accompanying drawing, it will be seen that my improved culvert comprises first an ordinary corrugated culvert indicated generally by the numeral 10. On the interior of the culvert I place upon the bottom thereof a series of segmental blocks 11, smooth on both surfaces and preferably made of tile, concrete or the like. These blocks are laid on the interior of the culvert to cover the bottom portion of the culvert, and they rest upon the raised ribs of the corrugations, as clearly shown in Figure 1.

When these blocks have been laid within the culvert, I then insert on the interior of the cul-

vert and above the blocks a sheet metal tubular liner 12, which may be made without corrugations and of inexpensive material. Then between the culvert body and the liner I inject a mass of material in plastic form, indicated by the numeral 13, which is preferably forced into position under pressure.

For this filler I have successfully employed an asphaltum base mixed with crushed stone, and this material then fills all the spaces between the culvert and liner, and the spaces between the corrugations under the blocks 11.

Before placing the culvert in position for use I first place, along the line on which the culvert is inserted, a base member. This base member is preferably formed of corrugated sheet metal and comprises an arched body portion 14 with the side edges extended downwardly and outwardly at 15. The total width of the base is substantially that of the total width of the culvert.

In practice I have found that with my improved culvert the base tends to hold it in line, and in addition to this, the liner 12 with the spaces between it and the corrugated culvert filled with the asphalt aggregate also stiffens and reinforces the entire culvert.

Furthermore, in the event that wear and corrosion should take place on the lower portion of the liner, this would not affect the life of the culvert as a whole, because it would then expose the upper surface of the tile blocks and they would resist wear indefinitely.

Furthermore, the corrugated culvert itself at the bottom would at no time be subjected to wear or corrosion from within, because it is thoroughly protected, both by the tile blocks 11 and the asphalt aggregate.

Another very advantageous feature of my invention is that it may be employed in connection with the repair of corrugated culverts already worn out at their lower portions by abrasion or corrosion. When a culvert of this character is to be repaired, the tile blocks 11 are first laid along the bottom. Then the sections of the liner are placed in position to firmly hold the blocks, and then the asphalt aggregate is forced into the space between the liner and the culvert and surrounding the blocks. When this has been done, the life of the culvert as a whole is greatly increased.

I claim as my invention:

1. The combination of a corrugated metal culvert, a series of rigid segmental blocks placed on the bottom of the interior of the culvert, and a sheet metal pipe fitted into the interior of the cul-

vert and engaging both the culvert and said blocks for holding the latter in position.

2. The combination of a corrugated metal culvert, a series of rigid segmental blocks placed on the bottom of the interior of the culvert, and a sheet metal pipe fitted into the interior of the

culvert and engaging both the culvert and said blocks for holding the latter in position, and a plastic material inserted between said pipe and said culvert and filling the spaces above the sides of the blocks and between the pipe and culvert.

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