

Nov. 8, 1927.

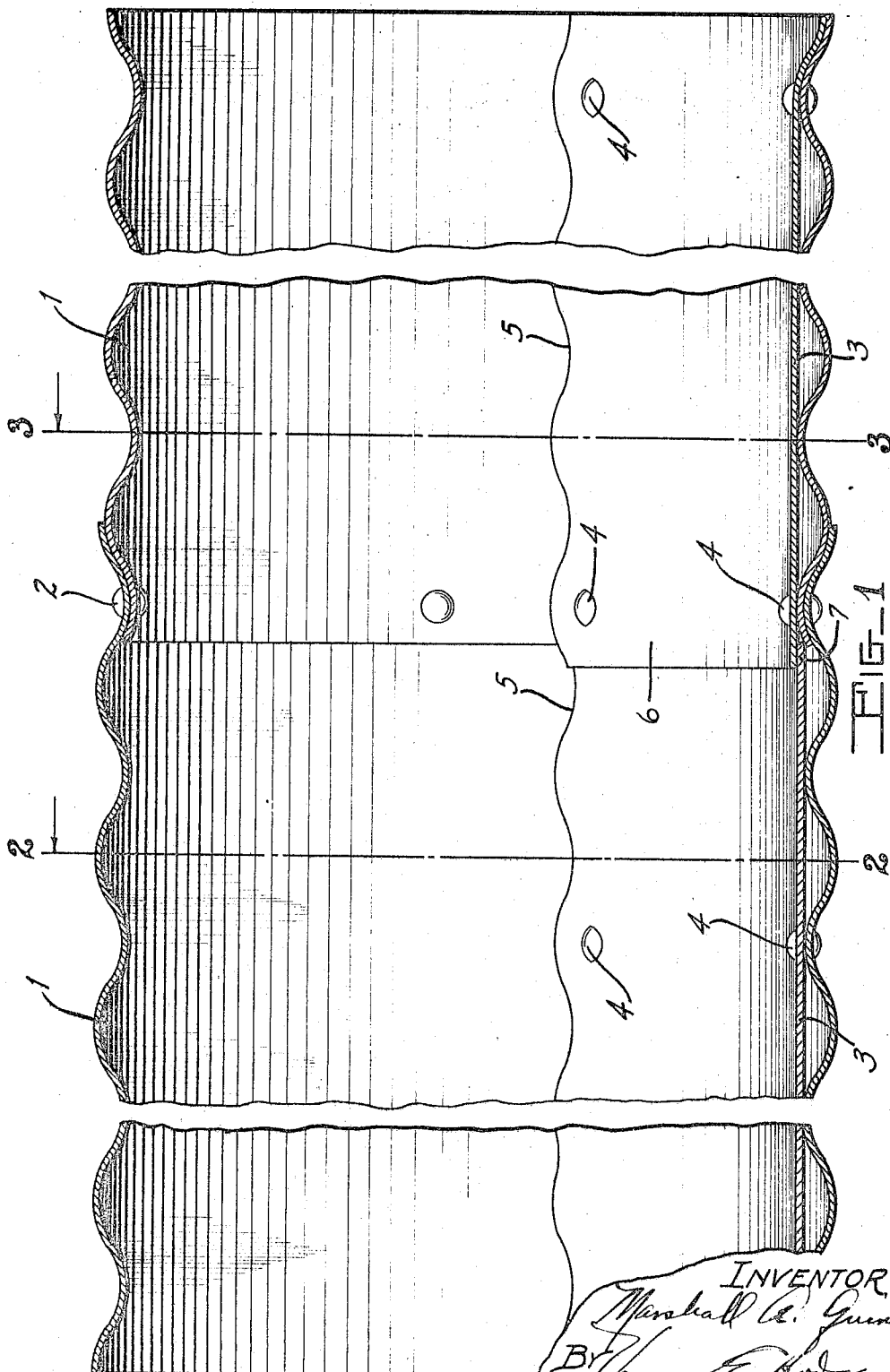
M. A. QUINN

1,648,148

CULVERT

Filed Dec. 27, 1926

2 Sheets-Sheet 1



INVENTOR
Marshall A. Quinn
By *Jensen E. Rodgers*
ATTY.

Nov. 8, 1927.

M. A. QUINN

1,648,148

CULVERT

Filed Dec. 27, 1926

2 Sheets-Sheet 2

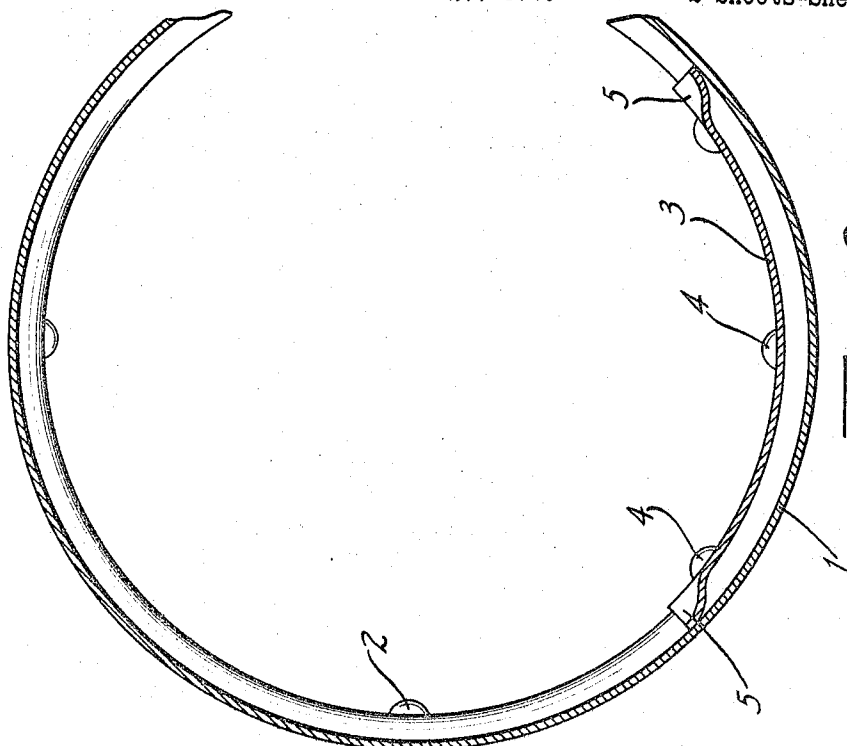


FIG. 2

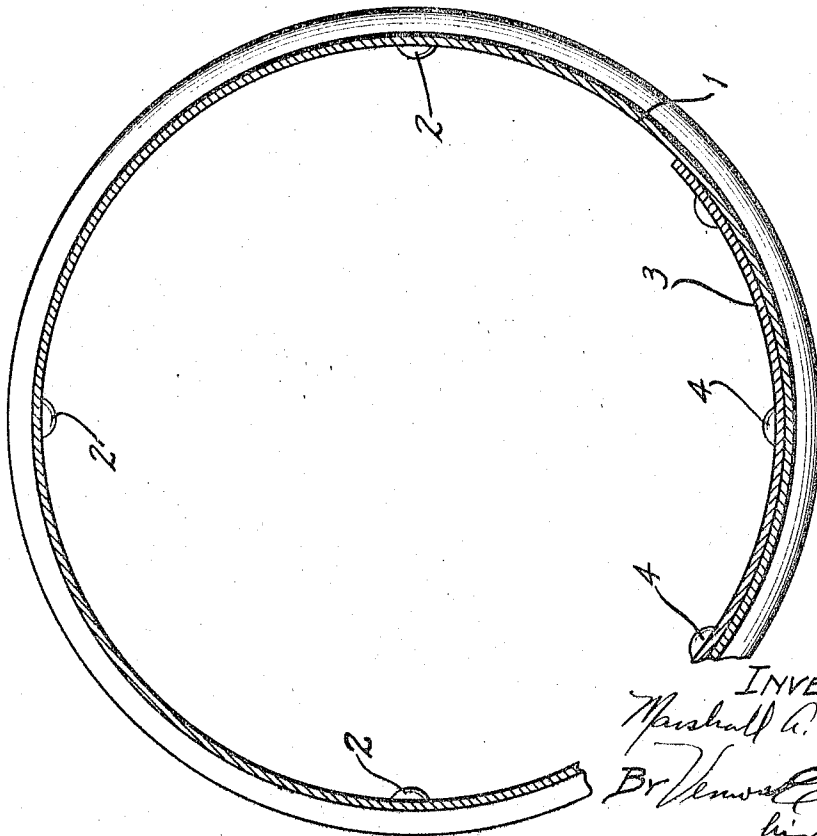


FIG. 3

INVENTOR
Marshall A. Quinn
By *James C. Boddy*
his ATTORNEY

UNITED STATES PATENT OFFICE.

MARSHALL A. QUINN, OF ROANOKE, VIRGINIA.

CULVERT.

Application filed December 27, 1926. Serial No. 157,375.

This invention relates to an improvement in culverts.

The object of the invention is to prevent the erosion or eating away of the corrugations of the culvert pipe by sand or gravel carried through the pipe by the drain water.

It is well known that the corrugated culvert is far superior to any other form in almost every way, for it has the most of its material so disposed as to exert the maximum resistance to external force.

Thus, the corrugated culvert is able to withstand more overhead pressure than is possible with a smooth sheet metal pipe of the same material. However, since the drain water usually only covers a small arc in the bottom of the pipe, the sand and gravel, as well as the water itself, tend to wear away the internal top sides of the corrugations of the pipe.

To prevent this erosion, the present form of culvert is provided with overlapping plates placed in the bottom of the pipe upon the corrugations, which plates are smooth throughout their lengths except at the outer edges where they are corrugated to substantially fit the corrugations of the culvert. Between these corrugated edges the plates are smooth and rest upon the corrugations of the pipe and are substantially concentric with the pipe.

At one end of the pipe, the bridge plate is projected outwardly so as to overlap the next adjacent bridge plate in the length of the pipe to be connected therewith. These bridge plates are secured in the culvert pipes by rivets or other suitable means and provide a smooth passage of water through the culvert, thus preventing the erosion and they also tend to strengthen the pipe at this point.

In the accompanying drawings:

Fig. 1 is a vertical sectional view of a portion of a culvert, illustrating the invention;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1; and

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

The culvert is formed of the ordinary corrugated pipe 1 having the ends thereof overlapped and secured together by means of the rivets 2 or other suitable means. It is well known that these corrugated pipes are far superior to the smooth pipe for the culvert because they may be made inexpensively of sheet metal and by reason of the corruga-

tions they will withstand a tremendous overhead pressure, which could not be sustained by a plane or smooth pipe of the same material.

However, the flow of water through the culvert carrying sand and gravel with it tends to wear away the internal top edges of the corrugations, thus greatly decreasing the life of the culvert. In order to obviate that particular objection, bridge plates 3 are placed in the bottom of the culvert and are secured therein by means of the rivets 4 or other suitable means. Since the drain water usually only covers a segmental portion of the bottom of the culvert, it is not necessary to have these bridge plates extend entirely around the inside of the culvert. On the contrary, they serve their purpose just as well and tend to decrease the cost of the pipe when they extend only in a small arc in the bottom of the culvert.

As shown in Figs. 1 and 2, the outer edges 5 of the bridge plates 3 are crimped or corrugated to correspond to the corrugations of the pipe 1 in order that the bridge plate may fit more closely in the pipe and thereby will tend to hold itself in position. The bridge plate 3 is smooth substantially throughout its ends and between corrugated edges 5, being curved substantially concentrically with the pipe in order to fit closely over the internal edges of the corrugations and provide a smooth draining surface of the water. This will tend to eliminate any erosion by the sand or gravel as well as the water, thus greatly lengthening the life of the culvert at a very low expense.

The outer end 6 of the bridge plate 3 projects beyond the corresponding end of the pipe 1, in order to overlap the adjacent end 7 of the next succeeding bridge plate 3 in its corresponding pipe 1. This insures a tight joint between the ends of the bridge plates and tends to prevent any water or sand from flowing into the corrugations of the pipe, also preventing leaking through the riveted edges of the pipes.

It will thus be evident that by reason of the covering over of the corrugations and the spaces between the corrugations of the culvert pipe, a wearing away thereof is prevented in the passing of sand and gravel with the drain water through the culvert, thus greatly lengthening the life of the pipe.

Claims:

1. A culvert in the form of a corrugated

pipe having an arcuately formed bridge plate substantially concentric with the culvert secured in the bottom thereof upon the inner edges of the corrugations, said bridge plate having the side edges thereof crimped or corrugated to interfit with the corrugations of the pipe, said bridge plate having a smooth internal surface substantially throughout its length between the corrugated edges, and means for securing the bridge plate in position in the pipe.

2. A culvert formed of corrugated pipes having the adjoining ends thereof overlapped, means for securing said adjoining ends together, bridge plates secured in the bottoms of the pipes and extending throughout a portion of the internal circumference thereof, said bridge plates being curved and substantially concentric with the pipes, the outer edges of the bridge plates being crimped or corrugated to interfit with the corrugations of the pipes, said bridge plates being smooth between the corrugated edges and substantially throughout their lengths,

and means for securing the bridge plates in position in the pipes, an outer end of each bridge plate being extended beyond the outer end of its corresponding pipe to overlap the end of the bridge plate in the next succeeding pipe.

3. A culvert in the form of a corrugated pipe having a smooth-walled lining plate secured in the bottom thereof over the corrugations, the edges of said lining being crimped to interfit with the corrugations in the pipe, and means for fastening the lining therein.

4. A culvert in the form of a corrugated pipe having a smooth-walled sheet metal lining plate secured in the bottom, only, thereof over the corrugations, said lining plate being substantially concentric with the corrugated pipe and having the edges, only, thereof crimped to interfit with the corrugations of the pipe, and fastening means for securing the lining in a fixed position in the pipe.

In testimony whereof I affix my signature.
MARSHALL A. QUINN.