

L. W. NELSEN.  
CULVERT.  
APPLICATION FILED JULY 10, 1916.

1,254,153.

Patented Jan. 22, 1918.

Fig. 1.

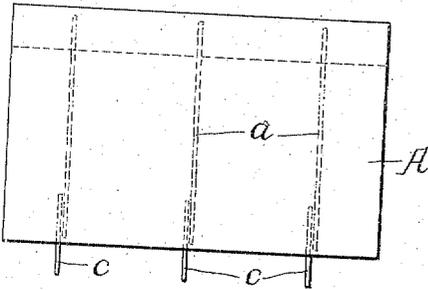


Fig. 2.

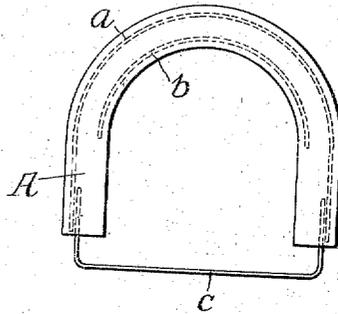


Fig. 3.

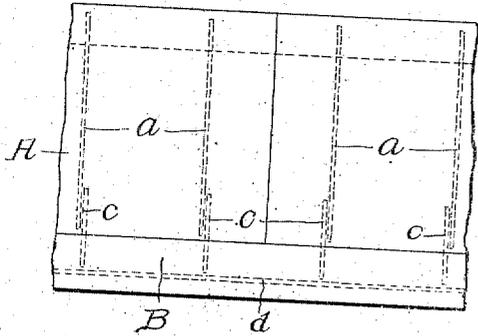
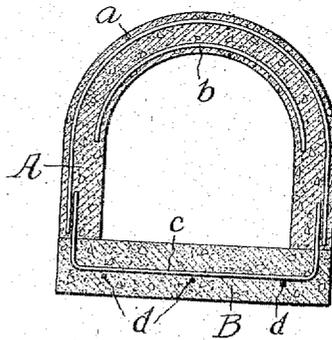


Fig. 4.



Witness:

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# UNITED STATES PATENT OFFICE.

LAURITS W. NELSEN, OF PONTIAC, ILLINOIS.

## CULVERT.

1,254,153.

Specification of Letters Patent.

Patented Jan. 22, 1918.

Application filed July 10, 1916. Serial No. 108,275.

To all whom it may concern:

Be it known that I, LAURITS W. NELSEN, a citizen of the United States, residing at Pontiac, in the county of Livingston and State of Illinois, have invented a certain new and useful Improvement in Culverts, of which the following is a specification.

My invention relates to an improved culvert construction in which culvert sections of arch form may be made in quantity in the factory and shipped to the place where the culvert is to be made, at which place they may be assembled to form the completed culvert. The culvert sections are preferably of U-shape, although they may have other conformations, and these sections are provided with reinforcing rods of iron or steel, some of which are secured in the ends of the culvert sections when they are manufactured, so that the portions of the rods between the ends thus secured extend beyond the ends of the culvert sections to be engaged by the concrete of the bed of the culvert when the latter is constructed. The reinforcing bars thus secured in the culvert sections hold the ends thereof together to strengthen the sections after they are made and during shipment of the same. The sections are preferably made from concrete.

My invention is shown in its preferred embodiment in the accompanying drawings, in which—

Figure 1 shows one of the culvert sections in side elevation,

Fig. 2 shows the culvert section in end elevation,

Fig. 3 shows portions of two of the culvert sections in place in the completed culvert in side elevation, and

Fig. 4 shows in end elevation the culvert construction shown in Fig. 3.

Similar letters refer to similar parts throughout the several views.

As shown in Figs. 1 and 2, each culvert section is preferably provided with a body portion A of concrete through which reinforcing rods *a* of iron or steel extend to strengthen the section. These rods are preferably continuous, although they may be made in any desired manner and form and given any desired arrangement. It is preferable to employ also a second set of reinforcing rods inside of the rods *a*, shown at *b*. In addition to the reinforcing rods referred to, other reinforcing rods *c* are provided which have bent ends secured in the

ends of the culvert section, so that the mid portions of the bars *c* extend beyond and outside of the ends of the culvert section and serve to connect the end portions of the section together to strengthen the same, so that after the sections are manufactured as described, they cannot readily be broken during handling or shipping.

When it is desired to construct a culvert from sections of the kind shown in Figs. 1 and 2, a continuous bed of concrete B, as shown in Figs. 3 and 4, is first made which preferably is provided with longitudinal reinforcing rods *d*, and before the bed of concrete sets the sections A are put in place by forcing the extending portions of the reinforcing rods *c* into the still plastic upper surface of the bed and embedding the ends of the sections in the upper surface of the bed B with the side edges of the sections as close together as they can be brought. The concrete of the bed, of course, closes over the reinforcing rods *c* and when the bed is set, the result is a strong reinforced concrete construction. The joints between the sides of the sections may be filled, if desired, with thin cement so as to completely close them.

As a result of my construction, I am able to make the culvert sections A in the factory in quantity, so that the sections may readily be had and shipped to any location where it is desired to construct a culvert. Furthermore, the construction of the culvert is an extremely simple operation since it requires only the laying of the concrete bed B of the culvert and no forms whatever are required to complete the culvert construction, since the sections are readily put in place in the manner above described. I have thus not only devised an improved form of culvert construction, but have also provided an improved article of manufacture consisting in culvert sections which may be manufactured in advance, ready for use in any quantity and locality.

While I have shown my invention in the particular embodiment above described, I do not, however, limit myself to this exact construction, as I may employ any equivalent thereof known to the art at the time of the filing of this application without departing from the scope of the appended claims.

What I claim is:

1. As an article of manufacture, a culvert section comprising concrete formed into a U-shape having substantially parallel side

walls and open on one side adjacent the ends of said sides, a reinforcing rod or rods having their ends bent at substantially right angles to the middle portion thereof and having a portion of said bent ends embedded in the concrete of the section, whereby said rod or rods extend across said open side at a distance from said ends, and a reinforcing rod or rods extending through the concrete of the section substantially parallel to the edges of the section.

2. As an article of manufacture, a culvert section comprising concrete formed into a U-shape having substantially parallel side walls and open on one side adjacent the ends of said sides, and a reinforcing rod or rods having their ends bent at substantially right angles to the middle portion thereof and having a portion of said bent ends embedded in the concrete of the section, whereby said rod or rods extend across said open side at a distance from said ends.

3. The method of forming a culvert, consisting in forming a concrete bed at the place where the culvert is to be constructed, and placing upon the bed previously completed unit arch sections having projecting retainers, said retainers being embedded in the concrete of the bed while the concrete of the bed is still in plastic condition and before it has set.

4. The method of forming a culvert, consisting in forming a concrete bed at the place where the culvert is to be constructed, and placing upon the bed before the latter has set unit arch sections having projecting tie rods between their lower ends so that the tie rods are embedded in the concrete of the bed when the unit arch sections are placed in position.

In witness whereof, I hereunto subscribe my name this 26th day of June, A. D. 1916.

LAURITS W. NELSEN.