C. D. VORIS.

CORRUGATED METAL CULVERT.

APPLICATION FILED MAR. 7, 1908.

901,569. Patented Oct. 20, 1908.

Fig. 1.

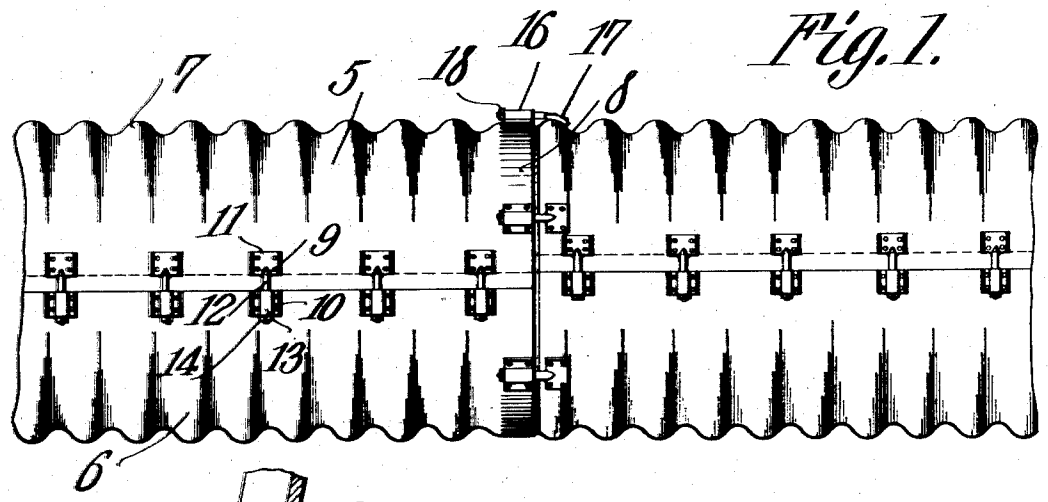


Fig. 3.

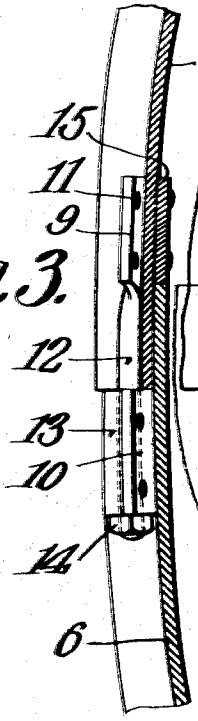


Fig. 2.

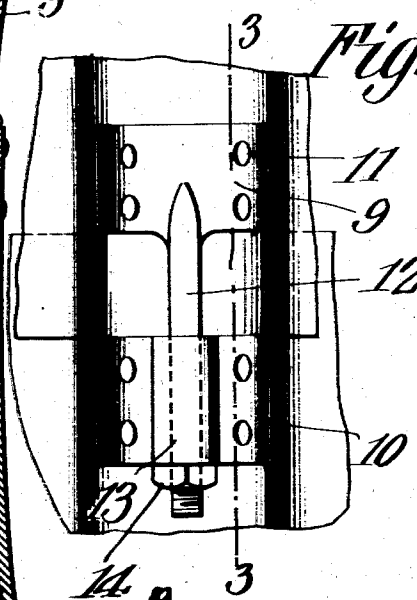


Fig. 4.

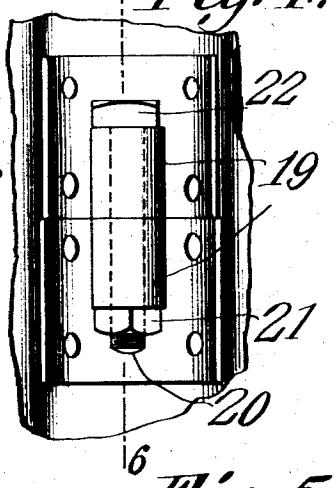


Fig. 5.

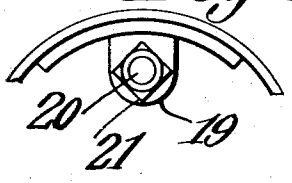
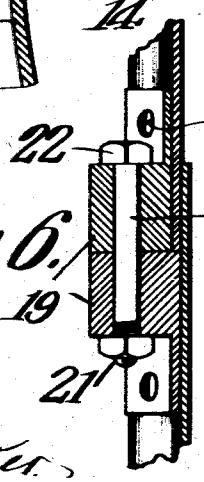


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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CORRUGATED-METAL CULVERT.

No. 901,569. Specification of Letters Patent. Patented Oct. 20, 1908.

Application filed March 7, 1908. Serial No. 419,774.

To all whom it may concern:

Be it known that I, CLIFFORD D. VORIS, a citizen of the United States, residing at Crawfordsville, in the county of Montgomery and State of Indiana, have invented a new and useful Corrugated-Metal Culvert, of which the following is a specification.

This invention relates to sheet metal culverts of that general class especially designed for use beneath rail-way tracks, road ways and the like or in the construction of sewers, well curbing and similar structures.

The object of the invention is to provide a corrugated sheet metal culvert formed of a plurality of sections capable of being readily united to permit the formation of culverts of different lengths and which may be quickly knocked down and the sections compactly nested for transportation or shipment.

A further object of the invention is to provide improved means for securing the culvert sections in assembled position, the fastening devices on the longitudinal edge of one section forming a stop for the longitudinal edge of the mating section, thereby to limit the contractile movement of said sections.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation of a knocked down culvert constructed in accordance with my invention. Fig. 2 is an enlarged front elevation of one of the fastening devices. Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2. Fig. 4 is a front elevation illustrating a modified form of the invention. Fig. 5 is a top plan view of Fig. 4. Fig. 6 is a longitudinal sectional view taken on the line 6—6 of Fig. 4.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved culvert forming the subject matter of the present invention comprises a plurality of tubular telescopic members of any desired length and each formed of mating sections 5 and 6 adapted to be assembled with their adjacent longitudinal edges overlapped and detachably united so as to permit said sections to be compactly nested for transportation or shipment. The sections 5 and 6 are stamped or otherwise formed with circumferential corrugations 7, the corrugations terminating short of the opposite ends of said sections to form terminal bearing collars 8.

Secured to the exterior walls of each culvert section at the over-lapped longitudinal edges thereof are fastening devices each preferably formed of interengaging members 9 and 10. The member 9 of the locking device comprises a substantially rectangular plate curved transversely to conform to the curvature of the exterior walls of the adjacent culvert section and to which it is secured by bolts, rivets or similar fastening devices 11, said plate being provided with a depending shank 12 adapted to enter a socket or keeper 13 formed on the member 10 and provided with terminal threads for engagement with a clamping nut 14. The member 10 is also preferably concaved to conform to the exterior walls of the adjacent culvert section and is spaced inwardly from the longitudinal edge of said culvert section 6 so as to form a stop for the longitudinal edge of the mating section 5, thereby to limit the contractile movement of said sections. The upper section 5 is reinforced and strengthened at the member 9 by the provision of a plate or washer 15 which bears against the longitudinal edge of the section 6, the longitudinal edge of the section 5 being disposed in contact with the upper longitudinal edge of the member 10 when the sections are assembled to form a culvert, as before stated. It will thus be seen that the clamping nuts 14 by engagement with the lower edges of the sockets 13 serve to lock the sections 5 and 6 in assembled position and prevent expansible movement of said sections, while the longitudinal edges of the sections 5 and 6 by engagement with the plates 15 and upper edge of the member 10 serve to prevent contractile movement of said sections. Attention is here called to the fact that by having the members 9 and 10 of the locking devices seated in the depressions or grooves formed between the corrugations 7, said fastening devices are effectually housed and protected.

Secured to the exterior surface of the col-

lar 8 of one of the tubular members is a socket member 16 similar in construction to the member 10, there being a shank carrying member 17 similar to the member 9 and fastened to one of the corrugations of the adjacent tubular member with its shank extending through the socket member 16 for securing the over-lapped ends of said tubular members in engagement with each other when the clamping nuts 18 are adjusted.

In building a culvert the sections comprising the tubular members are assembled with the adjacent edges of the tubular members 5 and 6 disposed in contact with the members 10 and 15 and with the shanks of the members 17 extending through the socket 16, after which, the nuts 14 and 18 are adjusted thereby clamping the several sections in adjusted position. In order to knock down the culvert for transportation or shipment the nuts 14 and 18 are removed and said sections nested by placing one section within the other, in the usual manner.

In Figs. 4 to 6 of the drawings there is illustrated a modified form of fastening device in which each member of the fastening device is formed with a socket 19 for the reception of a bolt or similar fastening device 20 so that by adjusting the nut 21 in engagement with the adjacent end of the socket on one of the members the head 22 of the bolt will be forced in contact with the adjacent end of the socket on the other member thereby to clamp the culvert sections in assembled position. This form of fastening device is principally designed for fastening the over-lapped longitudinal edges of the culvert sections in assembled position and in order to conform to the exterior walls of the culvert, the members comprising the fastening device are preferably concaved, as shown. If desired, however, this form of fastening device may also be used for connecting the over-lapped collars 8 without departing from the spirit of the invention. It will also be understood that the tubular members forming the culvert may be each formed of a single piece of metal having its adjacent longitudinal edges overlapped and fastened by the locking device shown in Fig. 2 of the drawings instead of being formed in mating sections, without departing from the spirit of the invention.

Having thus described the invention what is claimed is:

1. A culvert comprising a hollow section having its adjacent longitudinal edges over-lapped, and co-acting fastening devices independent of and secured to the over-lapped portions of said section and bearing against the adjacent longitudinal edges thereof for limiting the expansible and contractile movement of said sections.

2. A culvert comprising a hollow section corrugated circumferentially and having its adjacent longitudinal edges over-lapped, and a fastening device independent of and secured to the over-lapped portions of said section and comprising interengaging members, the member on one longitudinal edge of said section being disposed in contact with and forming a stop for the opposite longitudinal edge of said section.

3. A culvert comprising a hollow section corrugated circumferentially and having its adjacent longitudinal edges over-lapped, and fastening devices independent of and secured to the exterior walls of said section at the over-lapped edges thereof, said fastening devices being formed of interengaging members one of which is provided with a shank and the other with a socket for the reception of said shank.

4. A culvert comprising a hollow section corrugated circumferentially and having its adjacent longitudinal edges over-lapped, and spaced interengaging fastening devices independent of and secured to the exterior walls of the culvert section between the corrugations and serving to limit the expansible and contractile movement of said culvert sections.

5. A culvert comprising a hollow section corrugated circumferentially and having its adjacent longitudinal edges over-lapped, plates secured to the over-lapped edges of said section, one of said plates being provided with a shank having a threaded portion and the other plate provided with a socket for the reception of the shank, and a nut engaging the threads on the shank and bearing against the adjacent end of the socket.

6. A culvert comprising a plurality of telescopic members each including a hollow section corrugated circumferentially and having its adjacent longitudinal edges over-lapped, a locking member secured to one of the over-lapped edges of each section and provided with a threaded shank, a co-acting locking member secured to the other over-lapped longitudinal edge and provided with a socket for the reception of said shank, a plate secured to the interior walls of the culvert and bearing against and forming a stop for one of said longitudinal edges, the other longitudinal edge being disposed in contact with the socket, and nuts engaging the threads on the shanks for locking the over-lapped edges of the sections in assembled position.

7. A culvert comprising a plurality of telescopic members each including mating sections corrugated circumferentially and having their adjacent longitudinal edges over-lapped, fastening devices secured to the longitudinal edges of one section of each tubular member and provided with threaded shanks, co-acting fastening devices secured to the longitudinal edges of the mating sections and provided with sockets for the re-

ception of the shanks, and nuts engaging the threads on the shanks for locking said sections in assembled position.

8. A culvert comprising a plurality of telescopic members corrugated circumferentially and each provided with a terminal bearing collar adapted to over-lap the bearing collar of an adjacent tubular member, a fastening device secured to the exterior walls of one of the members and provided with a threaded shank, a fastening device secured to the bearing collar of the mating tubular member and having a socket formed therein for the reception of the shank, and clamping nuts engaging the threads on the shanks for clamping said bearing collars in engagement with each other.

9. A culvert including a hollow section having its adjacent longitudinal edges overlapped, a reinforcing plate secured to the inner wall of the culvert section at one longitudinal edge thereof and forming a stop for the other longitudinal edge of said section, and co-acting fastening devices secured to the exterior wall of the culvert section at said overlapped edges for forcing one of said longitudinal edges in contact with the reinforcing plate and the other against the adjacent fastening device.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLIFFORD D. VORIS.

Witnesses:

BRUCE HAINES,

ROBERT H. CISSEL.