No. 837,328. PATENTED DEC. 4, 1906.

E. T. MORRIS.

CULVERT MOLD.

APPLICATION FILED MAR. 1, 1906.

3 SHEETS—SHEET 1.

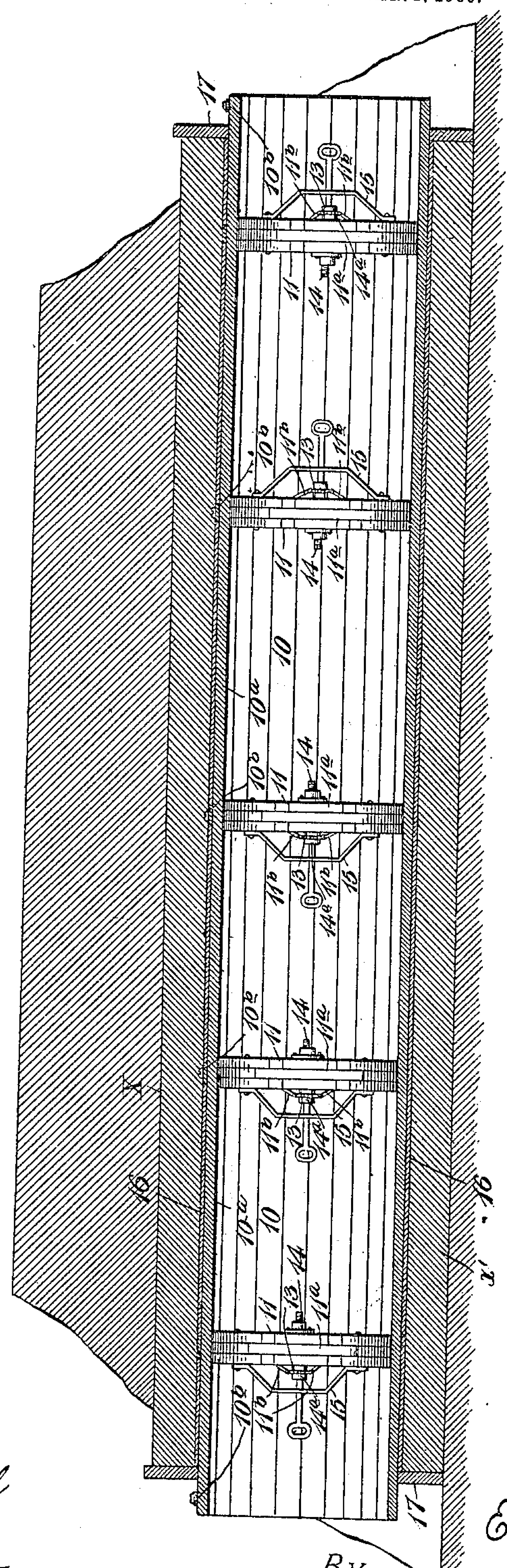

Fig. 1.

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3 SHEETS—SHEET 2

Fig. 2.

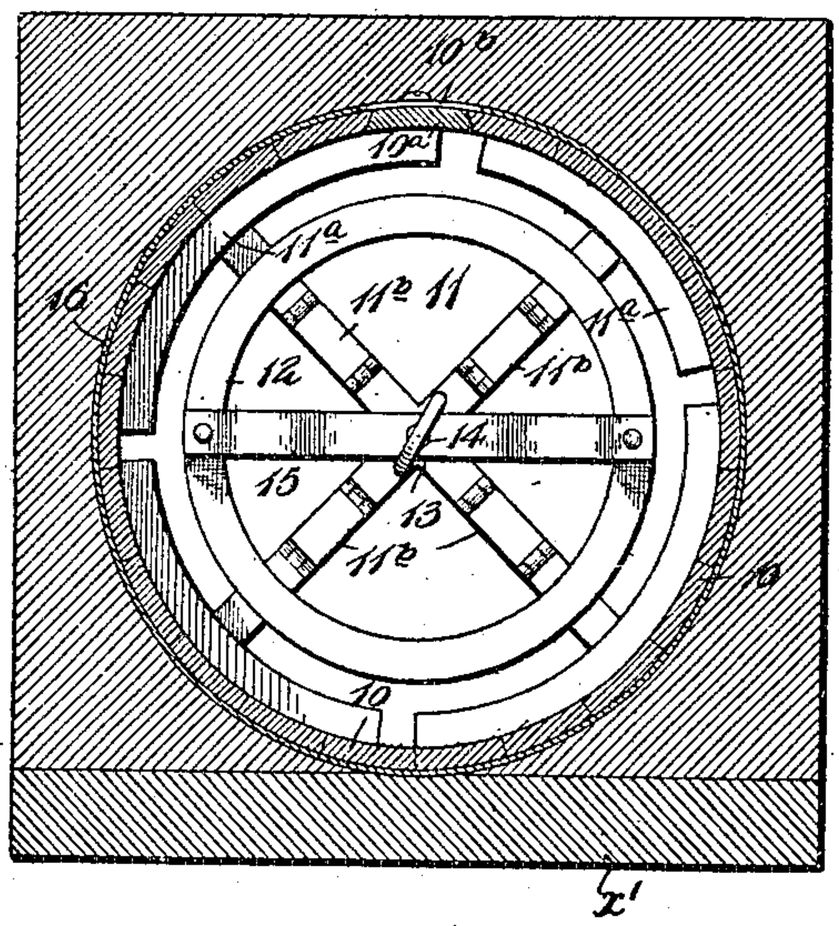
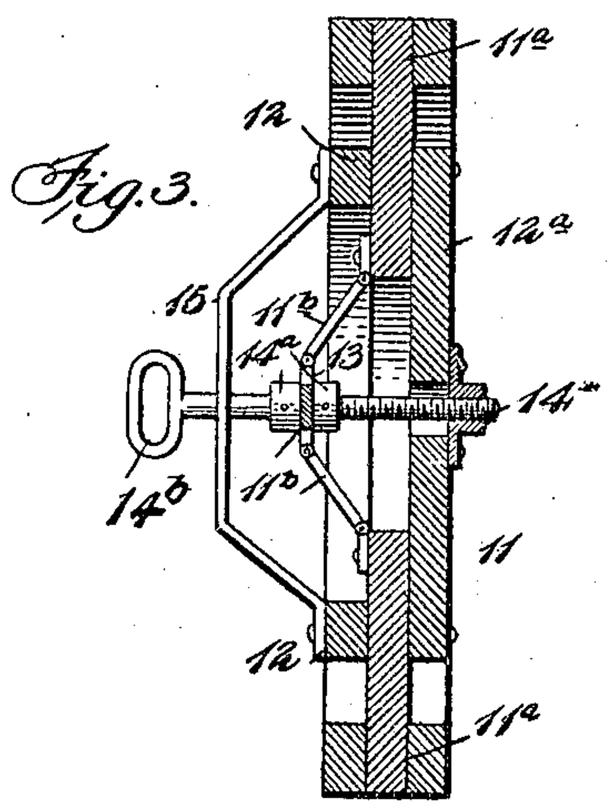


Fig. 3.



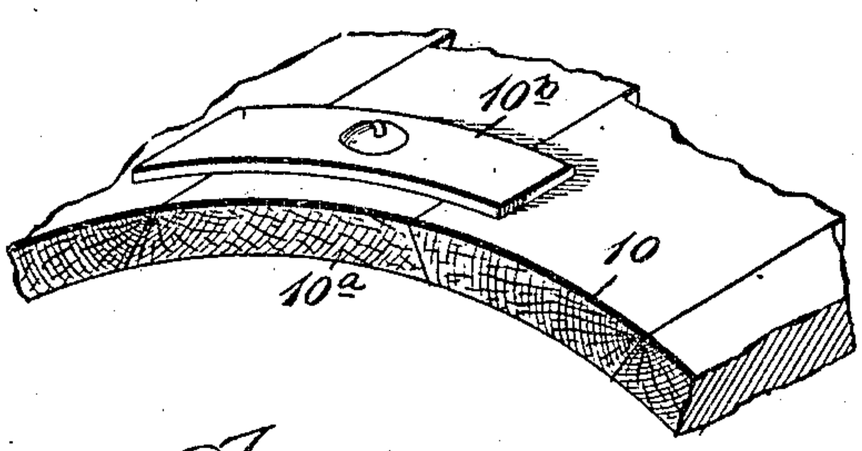


Fig. 4.

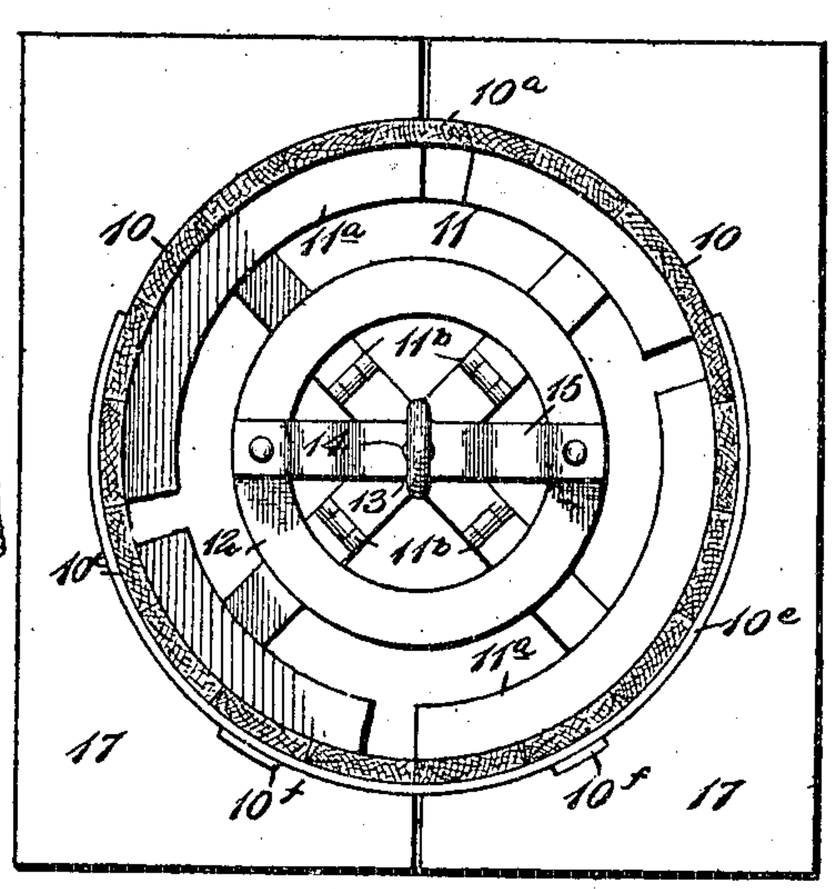


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 6.

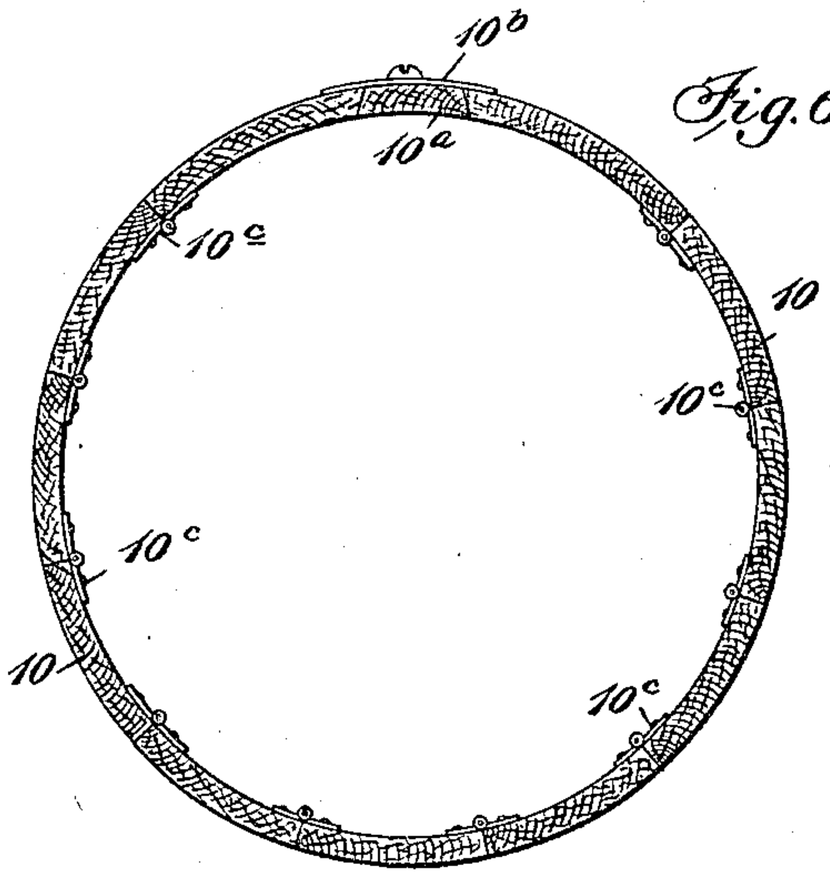


Fig. 7.

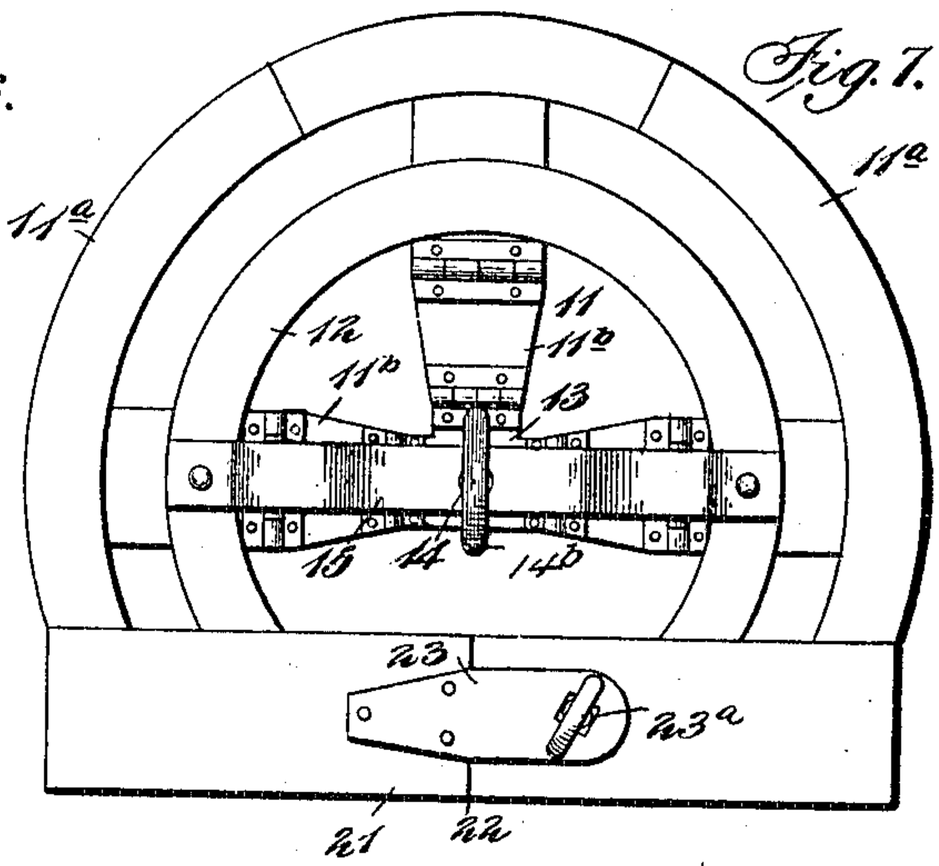


Fig. 8.

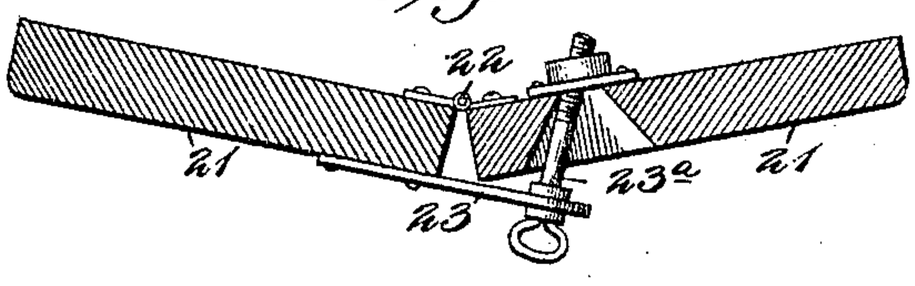


Fig. 9.

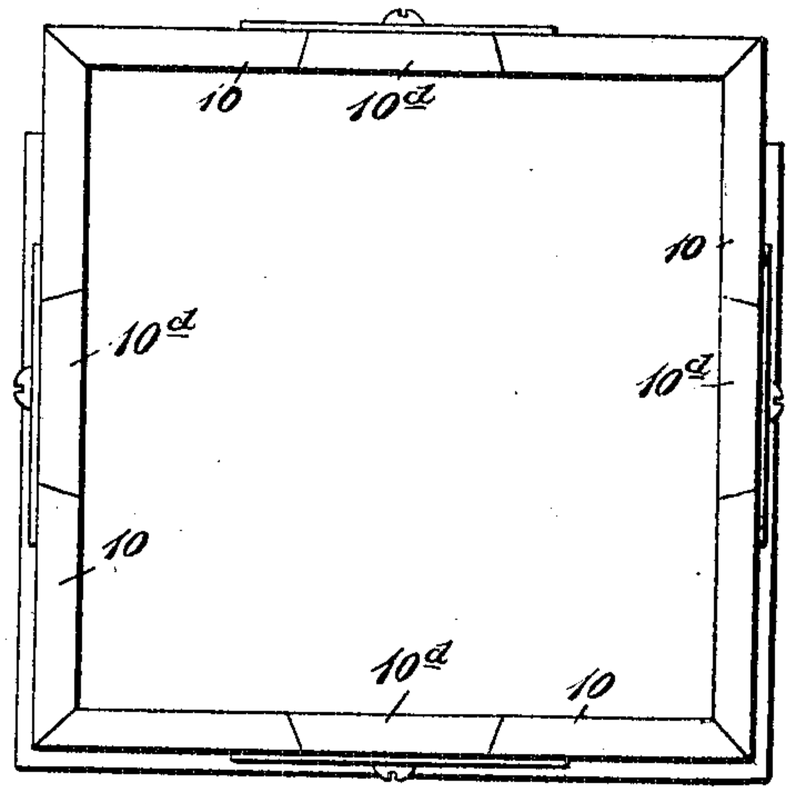
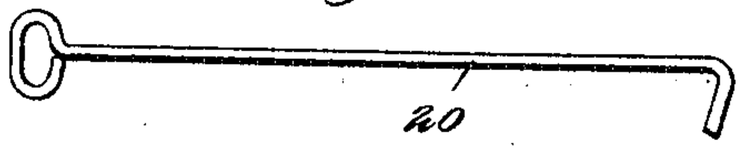


Fig. 10.



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UNITED STATES PATENT OFFICE.

EDGAR T. MORRIS, OF ELBURN, ILLINOIS.

CULVERT-MOLD.

No. 837,328. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed March 1, 1906. Serial No. 303,670.

To all whom it may concern:

Be it known that I, EDGAR T. MORRIS, a citizen of the United States, residing at Elburn, in the county of Kane and State of Illinois, have invented new and useful Improvements in Culvert-Molds, of which the following is a specification.

This invention is an interior mold or form particularly adapted for making culverts in roadways or highways on the ground or in their permanent position, the object being to provide a set of forms which may be readily erected for use and quickly removed from a culvert when completed without impairing the forms or molds.

In the accompanying drawings, Figure 1 is a longitudinal section of a culvert in a roadway with the forms in position and ready to be removed from the culvert. Fig. 2 is a cross-section showing an elevation of one of the cross-forms having extensible pieces which support the longitudinal strips or staves of the mold in position, the said pieces being readily retractable, so as to allow the staves to be collapsed or removed. Fig. 3 is a cross-section of the expansible form or support. Fig. 4 is a perspective detail of a key-piece in said staves. Fig. 5 is an end view of the mold with end boards in position. Fig. 6 is an end view of a modification, in which the staves are hinged together. Fig. 7 is an end view of a former for semicircular or partly-circular culverts. Fig. 8 is a section of removable lower boards used with the construction shown in Fig. 7. Fig. 9 is an end view of a mold for square or rectangular structures. Fig. 10 is a view of a hook for pulling out the cross-forms which cannot be reached by hand.

In the drawings, X refers to a culvert or conduit, which is constructed of concrete, cement, artificial stone, or the like. In carrying out the invention I do not limit the same to any particular form of culvert; but an especial shape of the forms or molds relates to circular culverts, as shown in Figs. 1 to 6, inclusive.

The staves or longitudinal strips of the mold are indicated at 10. These are provided with a central key-piece 10^a at the crown, the edges of which are beveled on the outer side, so as to allow it to fall or be removed inwardly when the inner supports or forms are removed. A cross-button 10^b, Fig. 4, is employed to hold the key-piece in place before removal is necessary.

In the square form of the mold, as shown in Fig. 9, several key-pieces 10^d, one in each side, are employed. The staves may also be connected together by hinges 10^c, as shown in Fig. 6, and also in erecting the staves end holders 10^e may be employed, as shown in Fig. 5, clips 10^f on one or more of the staves being used to hold the end holders in position. These holders are made to reach above the middle of the form, but are not necessary when the staves are hinged together.

11 refers to one of the extensible inner supports or forms. This is provided with segmental extensible side sections 11^a, which are advanced or retracted by the following means: 12 is a ring connected to a back plate 12^a, and between this ring and the plate are the sliding segmental sections 11^a. These are provided with toggle-arms 11^b, connected to a central plate 13, operated by a screw rod or bolt 14, which extends through a hole in said plate. This screw has two collars or shoulders 14^a, between which is mounted the plate 13. The screw has an eye 14^b and works in a screw-threaded socket on the back plate 12^a.

By moving the screw in or out the extensible sections of the forms or cross-supports of the mold are advanced or retracted. Several of these cross-supports are employed, as shown in Fig. 1, according to the length of the culvert being erected. When the sections 11^a are advanced, they support the staves. By retracting the sections the forms or inner supports may be removed, allowing the mold to collapse and be removed.

In building a culvert a bottom layer x' of cement or concrete is first laid (see Fig. 2) in a suitable excavation. The cross parts and sides of the mold are then erected. I also usually employ a sheathing 16 of heavy paper, which is placed around the mold to prevent the cement running into the cracks in the mold, and also place end boards 17 at the ends of the culvert, after which the cement is packed around the mold and allowed to set. A hook 20 is used for operating the screws and also removing the cross-supports when necessary.

In square or flat bottom culverts the inner forms are shaped accordingly and the staves set up to suit the same. In a flat-bottomed arched culvert lower pieces 21 are used, forming part of the forms. These pieces are hinged together, as at 22, and are expanded or collapsed by a screw 23^a, working through

an arm 23, projecting from one of the pieces. These pieces support the arch form, which is placed thereon.

I claim—

1. An inner supporting-form for the wall of a mold, comprising a plate, segmental pieces movable radially thereon, an axially-extending screw mounted at the center of the plate, and toggle-arms operatively connected between the screw and the said pieces.

2. The combination with the staves, of supporting-forms within the same having radially-movable sections, and an axially-extending screw at the center operatively connected to said sections.

3. An inner supporting-form for the wall of a mold, comprising a plate, segmental pieces movable radially thereon, a screw mounted in the plate and operatively connected to the mold, and a rod which may be advanced into the mold and having means to operate the screw and withdraw the form from the mold.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDGAR T. MORRIS.

Witnesses:

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H. G. BATCHELOR.