A. J. FISHER.

PORTABLE MOLD FOR CONCRETE CULVERTS.

APPLICATION FILED OCT. 25, 1912.

1,079,000.

Patented Nov. 18, 1913.

2 SHEETS—SHEET 1.

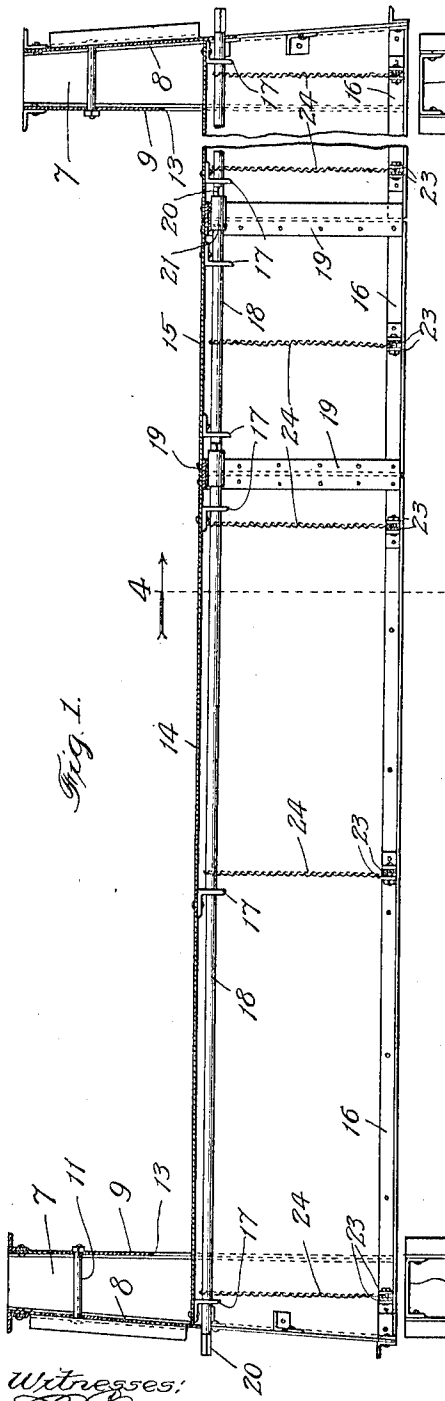


Fig. 1.

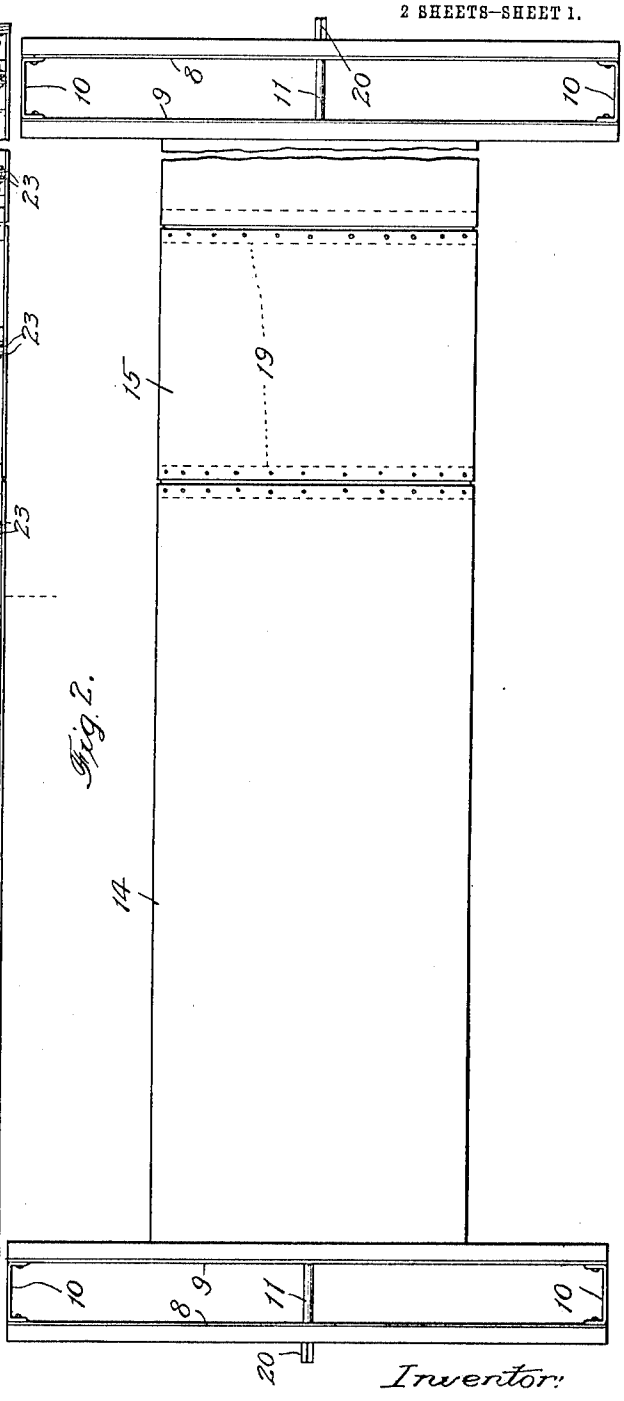


Fig. 2.

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Fig. 3.

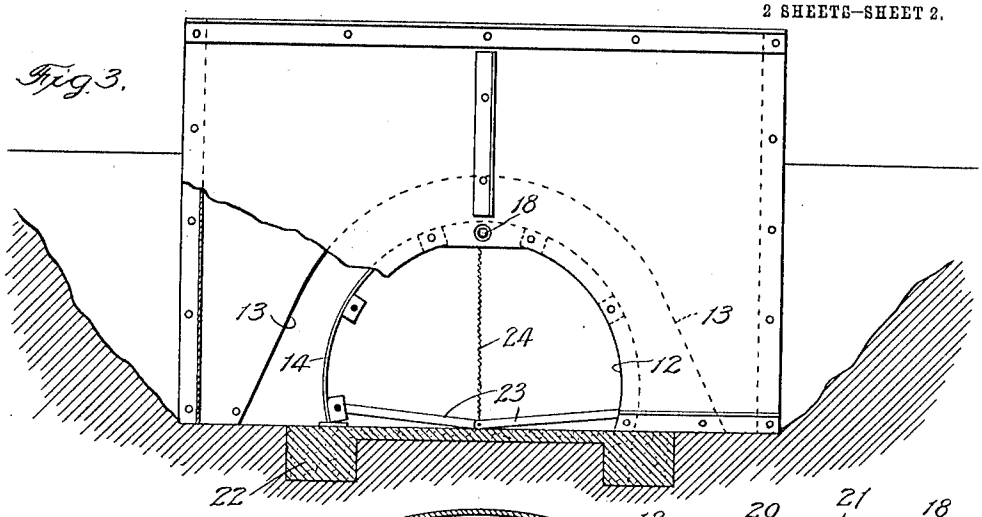


Fig. 4.

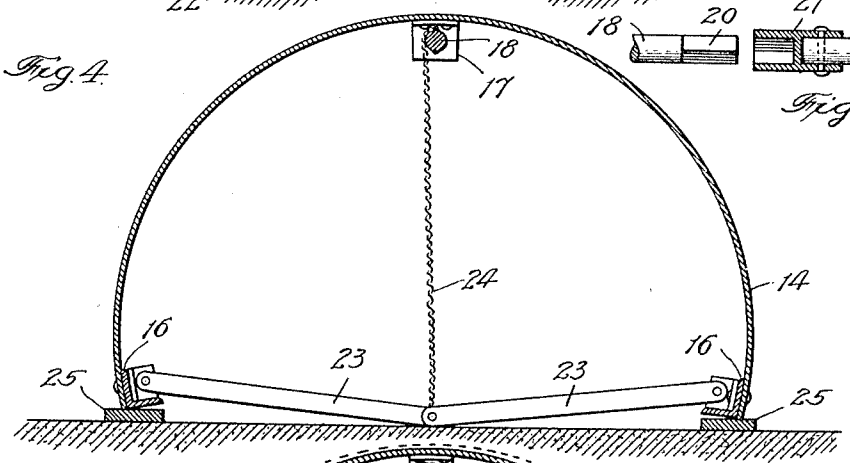
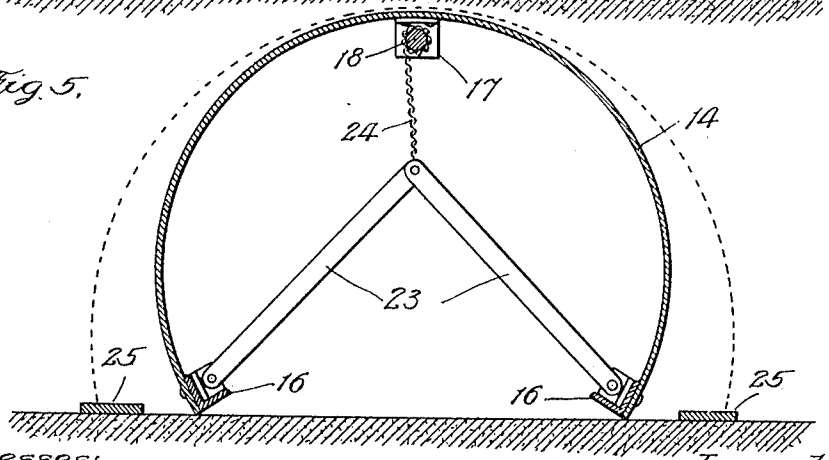


Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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PORTABLE MOLD FOR CONCRETE CULVERTS.

1,079,000. Specification of Letters Patent. Patented Nov. 18, 1913.

Application filed October 25, 1912. Serial No. 727,727.

To all whom it may concern:

Be it known that I, ANDREW J. FISHER, a citizen of the United States, residing at Buda, in the county of Bureau and State of Illinois, have invented a new and useful Improvement in Portable Molds for Concrete Culverts, of which the following is a specification.

My invention relates to improvement in the construction of knock-down molds for concrete culverts and is of the same general nature as that shown and described in Letters Patent No. 920,448, granted to me May 4, 1909, though intended for use, more especially, in the construction of drains or culverts of smaller size than those for which my former invention has been generally employed.

My object is to provide a collapsible metal mold of novel and improved construction, adapting it to be readily set up and to be readily removed from the molded structure without injury to any of its parts, so that it may be used over and over again.

The novelty of the present mold resides more especially in the collapsible arch-form portion constructed as hereinafter described and claimed.

In the accompanying drawings—Figure 1 is a view in side elevation of a complete mold, a portion between ends being broken away to shorten the view; Fig. 2, a top plan view of the mold projected from Fig. 1; Fig. 3, a partly broken end view of the mold; Fig. 4, an enlarged section of the arch-form portion of the mold, taken on line 4 in Fig. 1; Fig. 5, a view corresponding with Fig. 4, but showing the arch-form contracted to permit its withdrawal from the drain; and Fig. 6, a view illustrating the construction of a sectional winding shaft for contracting the arch-form.

The end-molds 7 may be of the same general construction as those shown and described in my aforesaid Letters Patent, and consist of outer and inner walls 8 and 9 tapering toward each other as illustrated, and held together by end-walls 10 and suitably disposed tie-bolts 11. In the outer wall 8 of each end-mold is an approximately semi-circular opening 12 of the size of the drain-passage; and the inner wall 9 of each end-mold has a somewhat larger opening 13 of the size and shape approximately of the arch-portion or shell of the drain. The arch-form comprises end-sections or members 14 and intermediate sections or members 15 each formed of a flexible and resilient metal plate or sheet arched to present a segment of a cylinder, somewhat in excess of a semi-circle, reinforced along opposite edges with angle-bars 16. In the top of each arch-form member is a plurality of alined, perforated angle-pieces 17 forming bearings for a sectional winding-shaft 18. The outer or end-members 14 of the arch-form, as I prefer to provide them in practice, are approximately eight feet in length and the intermediate members 15 approximately two feet in length, so that by employing only the members 14 a drain or culvert 16 feet in length may be molded, while when a drain or culvert of greater length is to be formed, intermediate members 15, as many as desired, may be employed to lengthen the arch-form.

Riveted to the inner ends of the members 14 and to one end of each of the members 15 is an inner reinforcing-strip 19 which fits into the adjacent member so that the members engage at their ends in telescoping relation. Each section of the shaft 18 has a squared end 20 and at its opposite end carries a sleeve-piece 21 presenting a squared socket. The arch-form members are each provided with toggle-links 23 in pairs pivotally connected at their outer ends to the angle-bars 16 and pivoted together at their inner ends where they are connected to a chain 24 fastened to the winding shaft 18.

In constructing a culvert, a concrete foundation 22 as illustrated in Fig. 3, may first be laid the full length of the drain and the end-molds placed in position. When the end-molds are set up the arch-form members are placed in position and caused to telescope together at their ends, as illustrated. I find it desirable to place wooden strips 25 upon the foundation 22 between the end-molds 7 for the arch-form sections to rest upon at their opposite edges, as illustrated, and when in position the opposite ends of the arch-form fit the openings 12 of the outer walls 8 of the end-molds. Concrete to form the culvert is poured or shoveled into the top of each end-mold and tamped, and concrete is also plastered over the arch-form

to a thickness corresponding approximately with the outline of the opening 13 of the inner walls 9 of the end-molds.

When the molded structure has hardened the end-molds are removed by separating the inner and outer walls 8, 9 from each other, and the arch-form members are removed by applying a wrench or the like to the squared outer end of the shaft 18 and turning it to wind up the chains 24, flex the links 23, as shown in Fig. 5, and draw the lower ends of the members toward each other. This contracts the arch-form members away from the molded drain so that they may be readily withdrawn from opposite ends of the latter. Where intermediate members 15 are employed they may be fastened at bolt-openings, registering with the bolt-openings in the strips 19, to the sections 14, as or when they are placed in position so that they may be withdrawn with the end members, and in placing the members in position the squared ends of the shaft-sections enter socket-pieces 21 on the adjacent shaft-sections, so that the shaft may be turned from one end to wind up all the chains 24, as described. The wooden strips 25 permit the edges of the arch-form members to be slid toward each other with little strain upon the chains, and also serve to raise the edges of the form members above the level of the floor of the drain, so that the links 23 when pressed down at their inner ends against the floor of the drain, as shown in Fig. 4, serve to hold the edges of the form rigid. I prefer to provide the form members slightly more than semi-circular in cross-section, whereby the lower edges curve inward and are more readily drawn toward each other by the links and winding-chains.

The foregoing description is intended to convey a clear understanding of my improvements in what I now believe to be the best form of their embodiment, and no undue limitation should be understood therefrom.

It is my intention to claim all that is novel in my invention, and that the claims shall be construed as broadly as the prior state of the art may warrant.

What I claim as new and desire to secure by Letters Patent is:

1. An integral resilient sheet metal mold form for concrete culverts, and the like, substantially semi-circular in cross-section, reinforcing angle bars attached to the edges of said form and having a side flush with the edges thereof, links pivoted to the bars above said sides, brackets attached to the interior of the form at its upper portion, a winding shaft journaled in the brackets, and a flexible connection between said shaft and the inner ends of the links.

2. In a mold for concrete culverts, and the like, a collapsible arch-form, constructed of a plurality of mutually-engaging sheet metal members, arch-shaped in cross-section and having opposite edges on which they rest, bearings carried by said members, mutually-interlocking shaft sections journaled in said bearings, and flexible connections between said shaft sections and said edges, for the purpose set forth.

ANDREW J. FISHER.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."