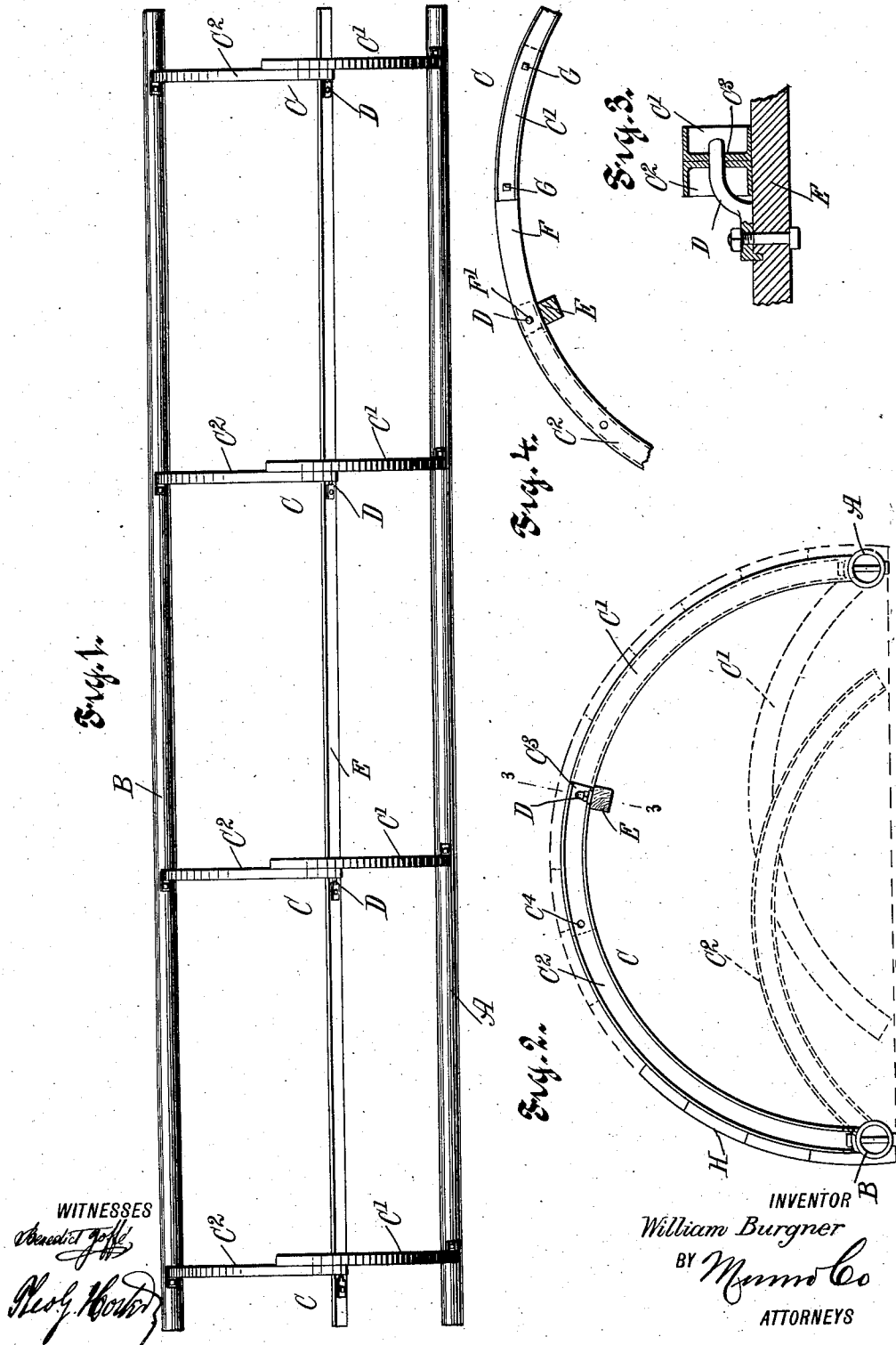


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 COLLAPSIBLE FORM FOR CONCRETE CULVERTS.
 APPLICATION FILED SEPT. 28, 1911.

1,027,176.

Patented May 21, 1912.



UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

Patented May 21, 1912.

Application filed September 28, 1911. Serial No. 651,739.

To all whom it may concern:

Be it known that I, WILLIAM BURGNER, a citizen of the United States, and a resident of Carthage, in the county of Hancock and State of Illinois, have invented a new and Improved Collapsible Form for Concrete Culverts, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved collapsible form for concrete culverts, which is simple and durable in construction, cheap to manufacture, readily set up without requiring skilled labor, and conveniently collapsed to allow removal of the parts from the ends of the culvert after the concrete has set.

For the purpose mentioned use is made of a skeleton frame formed of side bars, transverse arch ribs, each made in sections, secured to the said side bars, and having their free ends overlapping, and a top bar extending underneath the arch ribs and provided with longitudinal pins adapted to engage registering apertures in the said rib sections.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the skeleton frame of the collapsible form for concrete culverts; Fig. 2 is an enlarged end elevation of the same; Fig. 3 is an enlarged longitudinal section of the same on the line 3—3 of Fig. 2; and Fig. 4 is an end elevation of part of the skeleton frame showing the use of a splice plate for arch ribs.

The skeleton frame for the collapsible form for concrete culverts consists essentially of spaced side bars A and B, preferably made of gas pipe or the like, and connected with each other by spaced arch ribs C, each formed of two segmental sections C', C² secured at their lower ends to the tops of the side bars A and B and having their upper free ends overlapping and provided with sets of apertures C³, C⁴ adapted to register with each other for engagement by a longitudinal pin D secured to the top of a top bar E extending underneath the ribs C and parallel to the side bars A and B.

By reference to the drawings, it will be noticed that the pins D extend in one direction so as to readily engage the corresponding sets of registering apertures C³ or C⁴,

each section having an end aperture C³ and an intermediate aperture C⁴, it being understood that for narrow arches the pins D engage the sets of apertures C⁴, while for wider arches the pins D engage the registering apertures C³. For very wide arches use is made of a splice bar F secured by bolts G to one of the sections C² or C', and overlapping the other section C² or C', and the said splice bar F is provided at its free end with an aperture F' adapted to register with a corresponding aperture in the overlapped section for engagement by a pin D of the top bar E.

In using the collapsible form, the side bars A and B are placed on the bottom of the section, and then the sections C', C² are engaged by the pins D of the top bar E, after which the covering H is placed lengthwise on the arches C, as plainly indicated in Fig. 2, the covering H being of any approved construction, preferably narrow matched boards or sheet metal plates or the like. The concrete for forming the arch section is now placed in position on the covering H, and after the concrete has set the operator pulls the top bar E lengthwise from one end of the section so as to disengage the pins D from the corresponding registering apertures of the rib sections C', C² or the rib sections and splice plate F. The side bars A and B will now readily turn so as to swing the rib sections C' and C² downward, as indicated in Fig. 2, to collapse the form and with it the covering H to allow convenient removal of the collapsible parts from the section.

The skeleton frame shown and described is very simple and durable in construction, and composed of comparatively few parts which can be readily connected with each other without requiring skilled labor, and which parts can be quickly collapsed after the section is finished and the concrete has sufficiently set and hardened to allow removal of the form. For very long concrete sections two or more skeleton frames may be used, placed end to end.

By the use of the top bar E and the locking pins D it will be noticed that no further means are required for holding the parts of the skeleton frame in place, but, if desired, stay pieces of wood may be placed between the side bars A and B, but such stay pieces need not be attached and will be of no use after the first filling of concrete is tamped

along each side, and they will probably loosen as the concrete is filled in over the crown, and in case of a storm will readily float out thus offering no obstruction either to flood water or the collapsing and removal of the form.

It is understood that by the use of the collapsible form described, the same can be completely collapsed and removed from the outside, thus not requiring a person to crawl into the section over and under various cross and diagonal stays, which have to be unbolted or unhooked before the form can be collapsed, as heretofore practised.

15 The collapsible form described does not require side supports and is therefore well adapted for use in places where a shallow stream crosses a roadway, while at the same time it may be used to arch over a deeper culvert where sides can be formed up in the usual way to any depth desired. If the section thus built with extended sides is too shallow for a person to enter, then the side forms put up in the usual way may be taken down before the top or arch form is put in place, and in this case short posts of suitable size can be placed so as to support the side bars A and B at the proper height. When the section is done, the whole can be collapsed and removed from the ends of the culvert.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

35 1. A skeleton frame constituting a collapsible frame for concrete culverts and comprising side bars, a plurality of arched ribs,

each of said ribs being made in sections secured at their outer ends to the side bars and having their inner ends free to overlap one another, the said inner free ends being provided with registering apertures, locking pins adaptable for engagement through the registering apertures in order to lock the ribs, and a member carrying said locking pins in order that they may be simultaneously withdrawn, said member extending beneath the overlapped ends of the rib sections and receiving said ends directly thereon whereby to form a supplemental support for the same.

2. A skeleton frame constituting a collapsible frame for concrete culverts and comprising side bars, a plurality of arch ribs, each of said ribs being made in sections secured at their outer ends to the side bars and having their inner ends free to overlap one another, the said inner free ends being provided with registering apertures, a top bar extending beneath the overlapping ends of the plurality of ribs, and pins attached to the said top bar and adapted to simultaneously engage the registering apertures of the ribs, said pins being so spaced from said bar that the latter receives thereagainst, and forms a support for, the said ribs.

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

WILLIAM BURGNER.

Witnesses:

WM. B. RISSE,
GEO. W. PAYNE.

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