E. G. WATSON.

COLLAPSIBLE CONCRETE FORM.

APPLICATION FILED APR. 14, 1913.

**1,130,947.** Patented Mar. 9, 1915.

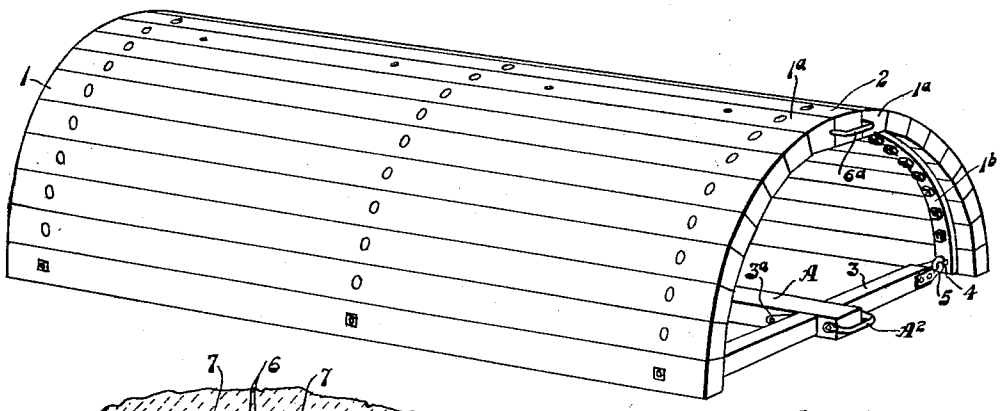


*Fig. 1.*

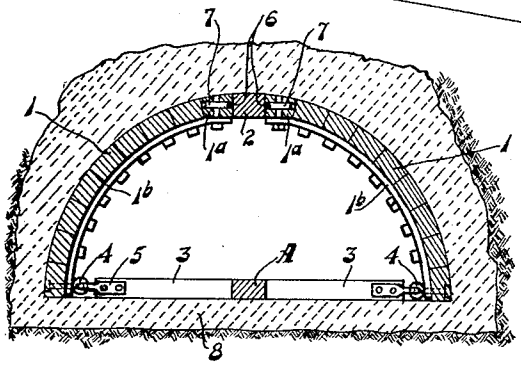


*Fig. 2.*

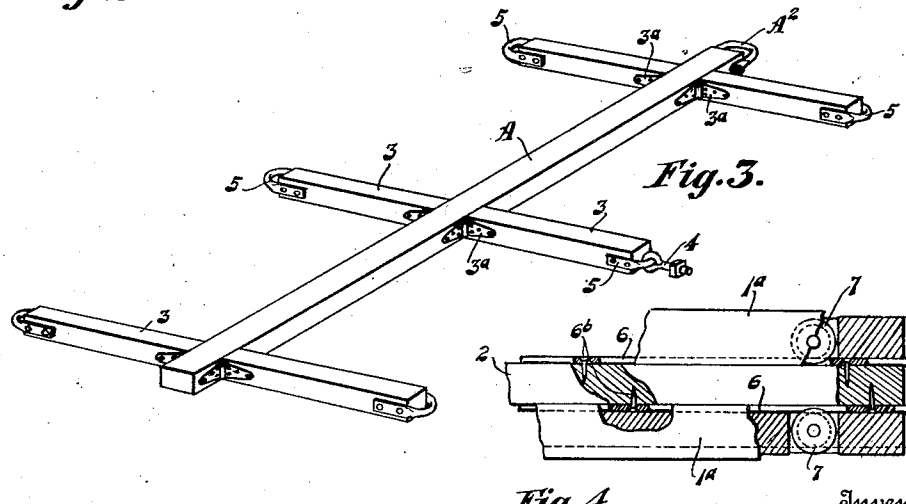


*Fig. 3.*

*Fig. 4.*

Witnesses

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# UNITED STATES PATENT OFFICE.

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## COLLAPSIBLE CONCRETE-FORM.

1,130,947. Specification of Letters Patent. Patented Mar. 9, 1915.

Application filed April 14, 1913. Serial No. 760,869.

*To all whom it may concern:*

Be it known that I, ELMER G. WATSON, a citizen of the United States, residing at College Place, in the county of Walla Walla and State of Washington, have invented certain new and useful Improvements in Collapsible Concrete-Forms, of which the following is a specification.

My invention relates to improvements in collapsible concrete forms, the present embodiment being particularly designed and adapted for use in the formation of concrete structures where an arch or vaulted passageway is desired, as in bridges, culverts, drainage and sewer structures, flumes, and the like.

The primary object of the invention is to provide a generally improved collapsible form for such concrete structures of exceedingly simple, cheap, and efficient construction, which may be readily set up for use, and when the concrete has become sufficiently set or hardened, may be readily collapsed and removed.

With the above mentioned and other ends in view, the invention consists in the novel construction, arrangement, and combination of parts, hereinafter described, illustrated in one of its embodiments in the accompanying drawings, and particularly pointed out in the appended claims.

Referring to the drawings, forming a part of this specification, Figure 1, is a perspective view of the improved form set up for use. Fig. 2, a cross sectional view of the same surrounded by a completed concrete structure, and illustrating its application and use. Fig. 3, a perspective view of the improved collapsible base structure or support detached from the arch or flank members. Fig. 4, a top plan view of the adjacent or crown portions of the arch members and the interposed removable key member, certain portions being broken away for the purpose of clearer illustration.

Similar numerals of reference designate like parts throughout all the figures of the drawings.

The improved collapsible concrete form, in its present embodiment, comprises segmental arch or flank members 1, adapted to be supported in their set up position by means of a removable key member 2, said key member 2, being interposed between the crown portions $1^a$, of the arch members and preferably slidably mounted between the same, as hereinafter described.

The curved arch members may be formed of any suitable and convenient material, and, in the present instance, comprise curved metallic straps $1^b$, and a plurality of surrounding or superposed longitudinally extending strips bolted to the curved straps or supports $1^b$.

As a means for supporting or expanding and contracting the base portions of the segmental arch members 1, a contractible support is movably connected to the base portions of the arch members, said contractible support comprising a longitudinally extending king beam or operating member A, provided at its sides with a plurality of laterally extending tie beams or members 3, the latter being hingedly or pivotally connected to the sides of the operating member A, in the present instance, by means of hinge members $3^a$. As a means for connecting the outer ends of the tie beams 3, to the base portions of the segmental arch members, the latter are provided with eye bolts 4, connected to clevis members 5, on the outer ends of the tie members 3.

As a convenient means for removably and slidably mounting the key member 2, between the crown portions $1^a$, of the segmental arch members, said key member is preferably provided at its sides with track or guideways 6, formed, in the present instance, by means of a round bar or rod bent upon itself forming a loop handle $6^a$, for the convenient removal of the key member, said track or guide members 6, being secured to the key member in any suitable and convenient manner, as for example,—by means of screws $6^b$. The crown portions $1^a$, of the segmental arch members are provided with guide pulleys 7, receiving and taking over the track members 6, said pulleys 7, being adapted to ride upon the track or guide members 6, for the ready and convenient removal or insertion of the key member 2.

When it is desired to bring the improved concrete form into use, as for example,—in forming a concrete culvert or tile, as illustrated in Fig. 2, of the drawings, the ditch or excavation is first made, after which the bottom 8, of the concrete structure is first formed and leveled off, and the improved concrete form is then placed thereon and set up and the remaining portions of the

concrete structure completed about the improved form, and when the concrete is sufficiently hardened or "set," the key member 2, may be withdrawn longitudinally by means of the handle $6^a$, and the operating beam or member A, may be drawn longitudinally or outwardly by means of the loop handle $A^2$, thereon, thereby contracting the contractible support and drawing the base portions of the segmental arch members inwardly so that the latter may be collapsed and the entire concrete form removed.

From the foregoing description, taken in connection with the accompanying drawings, the operation and advantages of my invention will be readily understood.

Having thus described one of the embodiments of my invention, what I claim and desire to secure by Letters Patent is,—

1. In a collapsible concrete form, the combination with segmental arch members provided at their crown portions with guide pulleys and at their base portions with contractible tie supports; of a key member interposed between the crown portions of said arch members and provided with longitudinally extending guide ways for said guide pulleys.

2. A collapsible concrete form, comprising segmental arch members provided with guide pulleys at their crown portions, a key member provided with track or guide members interposed between said guide pulleys, and a longitudinally extending operating member provided with a plurality of pivotally mounted tie members connected to the base portions of said segmental arch members.

In testimony whereof I have affixed my signature in presence of two witnesses.

ELMER G. WATSON.

Witnesses:
ED. DERRY,
ALBERT C. HARBAUGH.

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