

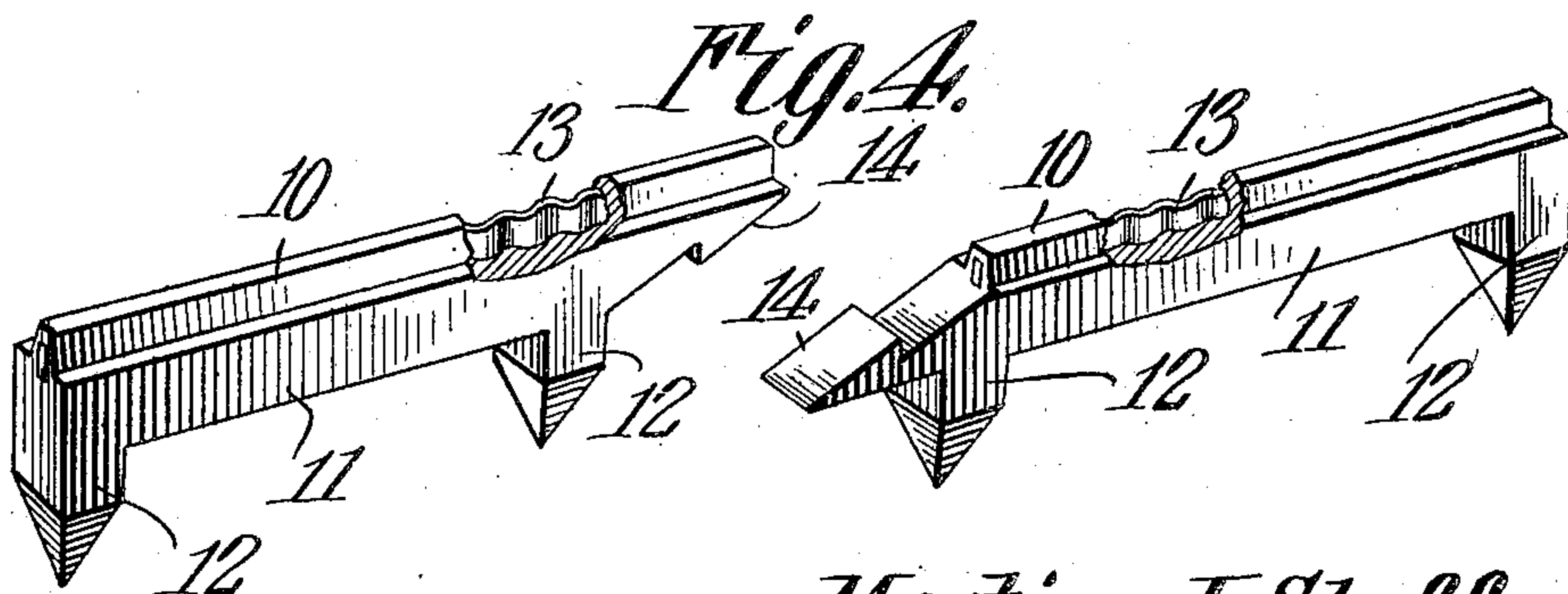
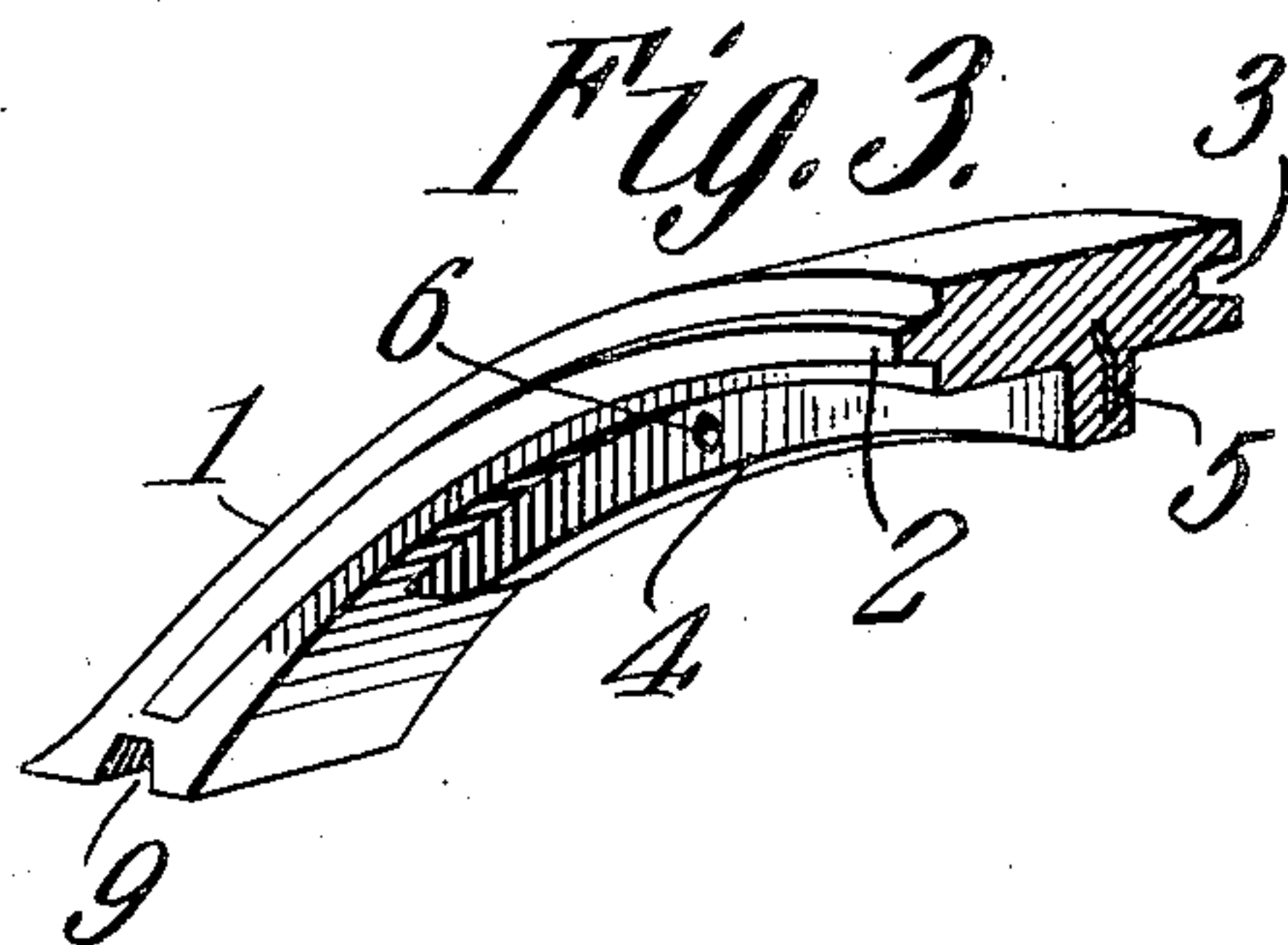
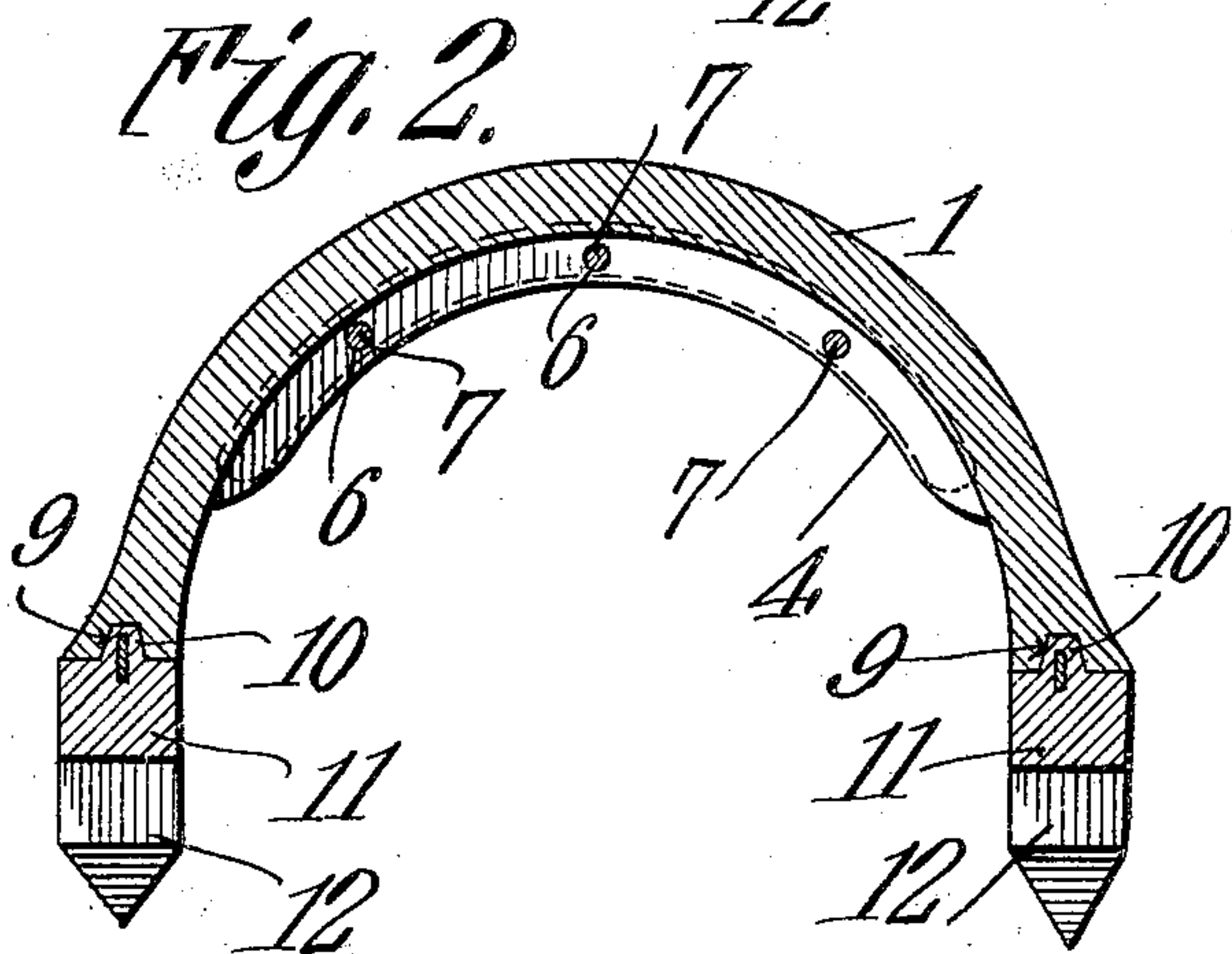
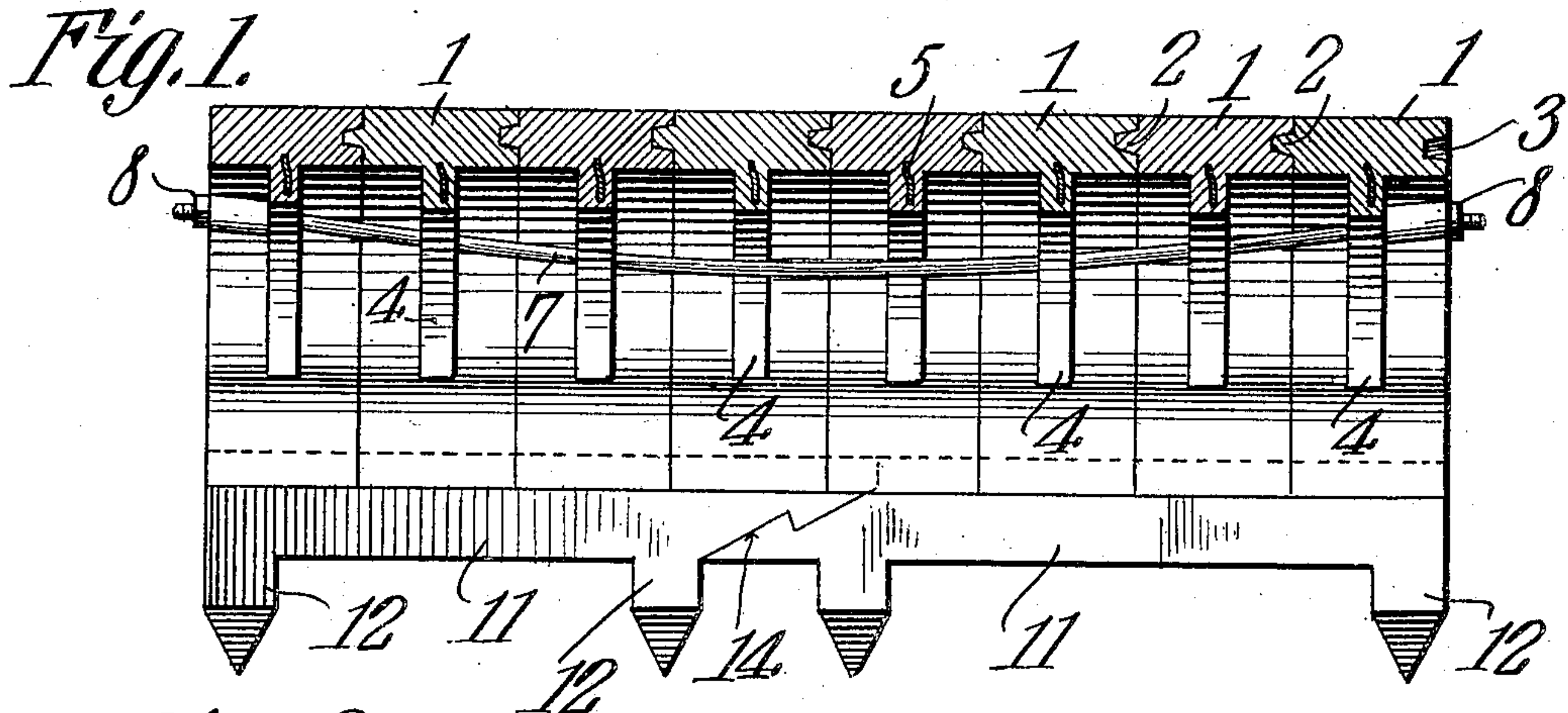
No. 887,284.

PATENTED MAY 12, 1908.

M. J. STOFFER.

CULVERT.

APPLICATION FILED SEPT. 16, 1907.



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UNITED STATES PATENT OFFICE.

MARTIN J. STOFFER, OF CAPAC, MICHIGAN.

CULVERT.

No. 887,284.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed September 16, 1907. Serial No. 393,219.

To all whom it may concern:

Be it known that I, MARTIN J. STOFFER, a citizen of the United States, residing at Capac, in the county of St. Clair and State of Michigan, have invented a new and useful Culvert, of which the following is a specification.

This invention relates to culverts, of that class employed in connection with railway tracks, railroad ways and the like, or in the construction of conduits, sewers and other underground structures, and is designed as an improvement on a culvert of this character for which I obtained Letters-Patent of the United States, dated August 6, 1907, #862,292.

The object of the present invention is in a novel, ready and practical manner, and without materially adding to the weight or increasing the cost of production of the arch sections and butments, measurably to increase their strength and largely to reduce liability of breakage, and further to improve the butments in such manner as to render them self anchoring, and also capable of being assembled in sections.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists, generally stated, in providing the inner walls of the arch sections with longitudinal bracing ribs having metallic reinforces embedded therein, whereby the arch sections will be most effectively braced at the points subjected to the greatest strains.

The invention consists further in providing the springers or faces of the arch terminals with transverse grooves to engage longitudinal tongues on the butments, thereby to effect the most stable union between the parts, and also to protect the arch sections from injury when being handled or shipped.

The invention consists further in providing the butments with pointed posts, whereby to render them self anchoring, and further in forming the butments with reinforced tongues to engage the grooves in the arch springers.

The invention consists further in forming the butments in sections and in connecting the same by scarf joints, thereby to insure positive and thoroughly substantial assemblage of the parts, and further in providing the butments with pointed anchoring posts.

The invention consists finally in the various novel details of construction and com-

bination of parts of a culvert, as will be hereinafter fully described and claimed.

In the accompanying drawings forming a part of this specification, and in which like characters of reference indicate corresponding parts,—Figure 1 is a view in vertical longitudinal section through a culvert constructed in accordance with the present invention. Fig. 2 is a vertical transverse section. Fig. 3 is a perspective detail view of a portion of one of the culvert sections or arches. Fig. 4 is a perspective view, partly in section, of one of the butments.

The culvert forming the subject-matter of this invention comprises a plurality of culvert sections or arches 1, of which there may be any number, one face of the intermediate sections of which is provided with a tongue 2 to engage a groove 3 in the adjacent section, the two terminal sections being provided, the one with a tongue and the other with a groove. These sections are constructed of concrete, and each is provided on its inner side with a longitudinally - disposed reinforcing rib 4, that corresponds in contour to the section which extends to within a short distance of the terminals or springers of the member, and has embedded therein a reinforcing strip or member 5 of corrugated iron or steel which, in all essential particulars, is the same as that shown in the patent referred to, except that it does not of necessity extend to the terminals of a section, but may terminate at or slightly beyond the reinforcing rib. Each of the ribs, with the exception of the two central ones, is provided with a plurality of orifices 6, in this instance three in number, through which pass truss-rods 7, the terminals of which pass beyond the outer faces of the two end sections and carry nuts 8 by which the truss-rods may be placed under requisite tension to cause the culvert sections closely and rigidly to impinge against each other, and at the same time force the tongues 2 to interlock with the grooves 3.

The truss rods bear against the exterior of the two central strengthening ribs, as clearly shown in Fig. 1, and this will operate to brace the center of the culvert in the most positive and effective manner.

The terminals or springers of the sections are provided with transverse grooves 9 that are adapted to engage tongues 10 formed on the upper edges of the butments 11, which latter are provided with four pointed posts 12 that are adapted to sink into the ground and

thus become self anchoring. As shown in Fig. 4, the tongues 10 house corrugated reinforcing strips 13, and this arrangement will operate to impart increased rigidity to the tongues, but as will be obvious these reinforcing strips may be omitted if preferred.

In order to facilitate handling of the butments, they are made in two sections, the meeting ends of which are formed with scarf joints 14, of the usual construction which, when interlocked, will serve positively to prevent the butments from having any longitudinal movement relatively to each other.

The advantage for having the arch members provided with grooves, instead of tongues, as shown in the patent referred to, is that when the sections are handled or shipped there is less danger of breakers than otherwise.

The improvements herein defined are simple in character, will be found thoroughly efficient for the purposes designed and will cooperate in the production of a highly durable and strain-resisting culvert.

What I claim is:—

1. A culvert comprising a plurality of sections each having a longitudinally reinforced strengthening rib, truss rods passing through certain of the ribs and bearing against certain of the others, and means engaging the truss rods for clamping the culvert sections together.

2. A culvert comprising a plurality of sections each having a longitudinally reinforced strengthening rib, truss rods bearing against the intermediate ribs and extending through the other ribs and projecting beyond the terminal sections, and nuts carried by the truss rods for assembling the sections.

3. A culvert comprising a plurality of sections extending transversely thereof, each having a longitudinally reinforced strength-

ening rib, truss rods engaging the ribs, and means engaging the truss rods for clamping the sections together.

4. A culvert comprising a plurality of sections extending transversely thereof, each having a longitudinally reinforced strengthening rib, means engaging the ribs for holding the sections assembled, and butments with which the sections are interlocked.

5. A culvert comprising a plurality of sections each provided at its terminals with grooves, and butments having reinforced tongues to engage the grooves.

6. The combination with a culvert embodying a plurality of connected sections provided at their terminals with grooves, of butments having tongues to engage the grooves and provided with integral pointed posts to anchor the culvert in position.

7. The combination with a culvert embodying a plurality of connected sections provided at their terminals with grooves, of butments having reinforced tongues to engage the grooves and provided with pointed posts to anchor the culvert in position.

8. A culvert comprising a plurality of sections each having a longitudinally reinforced strengthening rib terminating short of its springers, and provided in the faces of its springers with longitudinal grooves, truss rods for holding the sections assembled, and butments having tongues to engage the grooves of the sections and provided with anchoring posts.

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

MARTIN J. STOFFER.

Witnesses:

JAMES BURT,
W. C. WARREN.