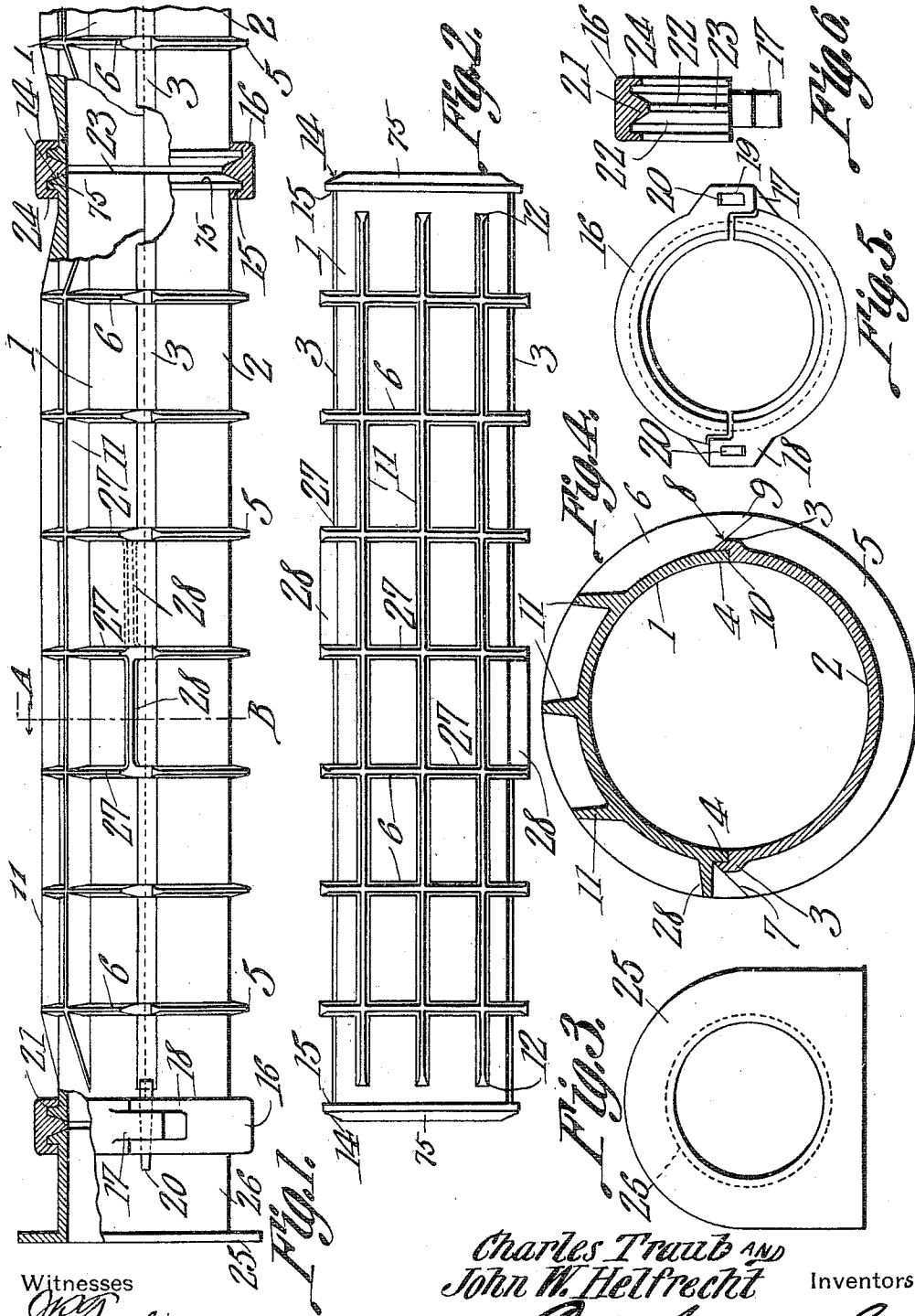


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 CULVERT CONSTRUCTION.
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Patented July 19, 1910.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CHARLES TRAUB and JOHN W. HELFRECHT, citizens of the United States, residing at Galeton, in the county of Potter and State of Pennsylvania, have invented a new and useful Culvert Construction, of which the following is a specification.

It is the object of this invention to provide a culvert so constructed that it may be laid in sections of any desired length, the culvert-forming sections being divided horizontally, into upper and lower parts, each of which may be placed separately, the parts interlocking to form a rigid and permanent structure.

Another object of the invention is to provide a novel means whereby two culvert-forming elements may be terminally united.

Another object of the invention is to provide a device for uniting the ends of a pair of culvert-forming elements, the device serving to space the said elements apart, so that, when the device is removed, the said parts may be removed individually, without contacting terminally with the next adjacent part.

Another object of the invention is to provide a multi-part culvert, the upper element of which is adapted to be handled readily.

The drawings show typical embodiments merely, and it is to be understood that changes, properly falling within the scope of what is claimed, may be made, without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 is a side elevation of a section of culvert constructed in accordance with the invention, parts being broken away; Fig. 2 is a top plan of a portion of the culvert; Fig. 3 is an end elevation of the portal; Fig. 4 is a vertical transverse section upon the line A—B of Fig. 1; Fig. 5 is an elevation of the securing device, whereby portions of the culvert are held together; and Fig. 6 is a fragmental transverse section of the securing device delineated in Fig. 5.

The device forming the subject matter of this application, consists of an upper part 1 and lower part 2. These parts 1 and 2 may be roughly described as being trough shaped, each forming approximately one-half of the culvert. Extended along the upper edge of the lower part 2, is an upstanding tongue 3,

adapted to receive the lower edge 4 of the upper part 1 of the structure.

The lower member 2 carries a plurality of spaced, transverse ribs 5, and upon the upper part 1, there are transverse ribs 6, adapted to be brought into alinement with the ribs 5 upon the lower portion 2. As seen to best advantage in Fig. 4, the ribs 5 upon the section 2, are beveled at their upper ends, as shown at 7. The lower ends of the transverse ribs 6 of the portion 1 are beveled at their lower ends, as denoted by the numeral 8, to correspond with the beveled portions 7 of the ribs 5, the ribs 6 being thus constructed in such a manner that, as shown at 9, they extend downwardly beyond the meeting edges 10 of the culvert parts 1 and 2. Obviously, the tongues 3 serve to retain the parts 1 and 2 against slipping transversely upon each other; and transverse movement is further prevented by the fact that the portions 9 of the ribs 6 extend downwardly below the meeting edges 10 of the culvert parts.

Upon the upper surface of the portion 1 there are longitudinally disposed upstanding ribs 11. These ribs terminate, as shown at 12, a short distance from the ends of the part 1. These ribs 11 serve to strengthen the part 1, and to adapt it to withstand the weight of the superposed earth. Owing to the fact that there are no longitudinal ribs upon the lower part 2, the said part may readily be rotated transversely, so that its upper edges are disposed in a horizontal plane and adapted to receive the upper part 1, when the same is mounted in place.

At the ends of the parts 1 and 2 there are transversely alined circumscribing ribs 13, and when two parts of culvert are brought together, the adjacent faces 14 of the ribs upon the two meeting portions, converge toward the center of the culvert, as seen most clearly in Fig. 1. The remote faces of the ribs are upright, and disposed at right angles to the axis of the culvert, as denoted by the numeral 15.

A securing device for holding one length of culvert to another is provided, the same consisting of semi-annular parts 16, each of which is provided at one end with an out-standing tongue 17 and at the other end are outstanding spaced arms 18 between which the tongue 17 of the other part is adapted to

be received. In these tongues 17 and arms 18, there are transverse, alined openings 19, adapted to receive wedges 20. These parts 16 are provided with inwardly extended
 5 tongues 21, the tongues in cross section, taking the form of a blunted wedge, the inclined faces 22 of which engage the converging faces 14 of the ribs upon the ends of the culvert sections, as seen most clearly in
 10 Fig. 1. The parts 16 of the securing device carry depending flanges 24 adapted to interlock behind the upright faces 15 of the ribs, and when the securing device is mounted in place, the blunted edge face 23 of the tongue
 15 21 will be alined with the flowline of the culvert. Thus, one section of culvert will be spaced apart terminally from the next alined section, and thus each section of culvert may be lifted out of its place without
 20 contacting with those sections which are terminally united with it; and thus, although each length of culvert is isolated from those which are alined with it, the flowline of the culvert is uninterrupted, by
 25 reason of the fact that the face 23 of the securing device serves to bridge the space between the meeting ends of the sections. It will be seen that by knocking out the wedges 20, the upper part of a single length
 30 of culvert may be lifted off without disturbing the remaining portions of the culvert, and, if desired, a single section of culvert comprising the upper part 1 and the lower part 2 may be removed without disturbing those sections of the culvert with
 35 which the removed parts 1 and 2 are connected. Thus, a single defective section may readily be replaced, without tearing up an extended portion of the culvert or interfering with the grade thereof, since the lower part 16 of the securing device may be left in place, the upper part 16 of the securing device, and the defective portions 1 and 2 being simply lifted from their
 40 mountings and replaced by other, perfect elements.

Certain of the transverse ribs upon the upper part 1, denoted specifically by the numeral 27, and preferably located intermediate the ends of the part 1, are connected, adjacent the meeting edges 10 of the parts 1 and 2, by outstanding flanges 28. These elements 28 serve as hand-holds, whereby the upper portion 1 may be lowered
 50 into place and removed, the manipulation of the said upper part 1 being thereby greatly facilitated. It is to be noted that these elements 28 do not extend the entire length of the portion of which they constitute a part.
 55 This fact is of importance, for the reason that the meeting edges 10 are unobscured throughout their lengths, saving only such portions thereof as lie between the ribs 27 and beneath the elements 28. Thus, the
 60 workman who is lowering the upper part 1

into place, will be able to see, from above the culvert, the meeting edges of the sections 1 and 2, so that he can readily guide the lower edges 4 of the part 1 into place within the upstanding tongues 3 of the part 2; the elements 28 thus rendering easy the manipulation of the part 1, without obscuring more than a small fraction of the meeting edges of the culvert parts.

The novel features of the invention are 75 shown in connection with two straight culvert lengths but it is obvious that these features may be applied with equal facility, to tees, crosses, bends, and the like. A specific delineation of these common elements is considered unnecessary, but, for the sake of illustration, a portal has been shown, the face plate thereof being denoted by the numeral 25, and the tubular portion thereof being denoted by the numeral 26, the 85 portal being shown in place in Fig. 1, and serving to illustrate the fact that the connecting members 16 may be employed to hold together any of those necessary elements which commonly enter into a pipe 90 line or culvert construction.

Having thus described the invention, what is claimed is:—

1. A two-part culvert, one part of which is provided along its edges with outstanding 95 tongues within which the edges of the other part are adapted to be received, there being transverse alining ribs upon the parts, the ends of the ribs upon one part being beveled, and the ends of the ribs upon the other part 100 being correspondingly beveled to extend beyond the meeting edges of the parts.

2. Culvert forming elements, having circumscribing ribs at their ends, the adjacent faces of the ribs of the separate elements 105 converging toward the center of the culvert; and a removable securing ring arranged to inclose the ribs to unite the culvert-forming elements, the ring having an annular tongue, the cross section of which takes the form of a blunted wedge, the inclined faces of the tongue being arranged to engage the converging faces of the ribs, to space the culvert-forming elements apart, the ring co-acting with the ribs to maintain the blunted 115 edge face of the tongue in alinement with the flowline of the culvert.

3. A securing device for culvert parts, consisting of semi-annular sections, one of which is provided with outstanding spaced 120 arms, the other of which is provided with a finger to register between the arms, there being transversely alined openings through the finger and through the arms; and a wedge insertible into the openings to draw the 125 parts together.

4. A culvert consisting of separable upper and lower parts, the lower of which is provided with transverse ribs only, the upper 130 of which is provided with transverse ribs

alining with the ribs of the lower parts,
and with longitudinal ribs upon its upper
face, there being outstanding hand-holds
uniting certain of the transverse ribs of the
5 upper part near the meeting edges of the
parts, the meeting edges of the culvert parts
being visible from above the culvert, be-
tween the remaining transverse ribs of the
upper part.

In testimony that we claim the foregoing 10
as our own, we have hereto affixed our signa-
tures in the presence of two witnesses.

CHARLES TRAUB.

JOHN WILLIAM HELFRECHT.

Witnesses:

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