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CREOSOTED WOOD CULVERT

Filed May 18, 1931

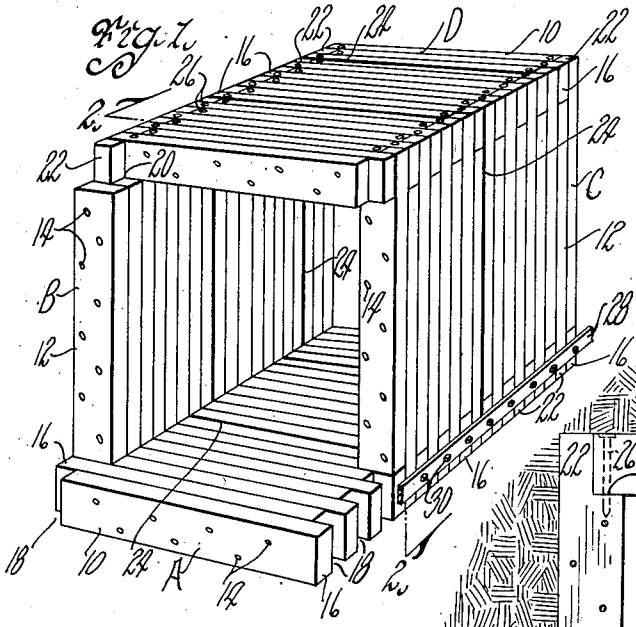


Fig. 1.

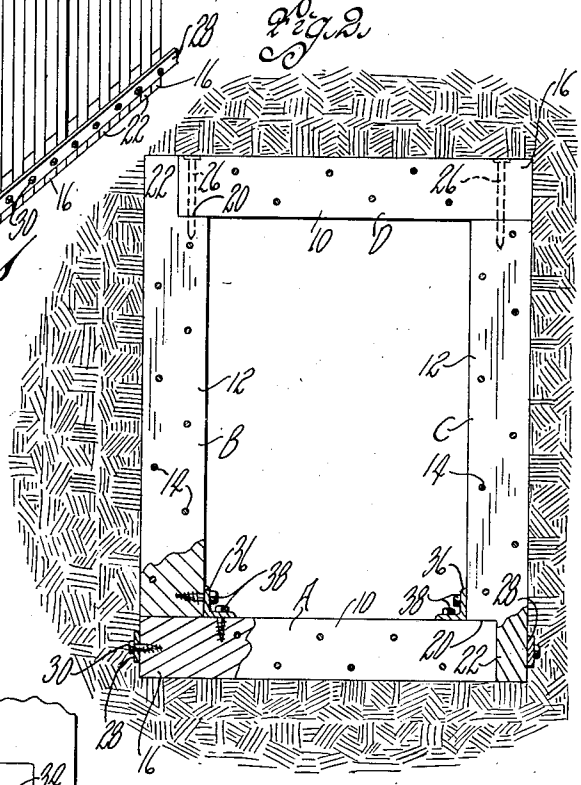


Fig. 2.

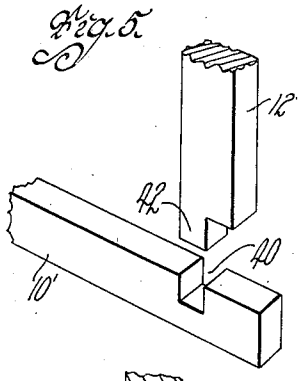


Fig. 5.

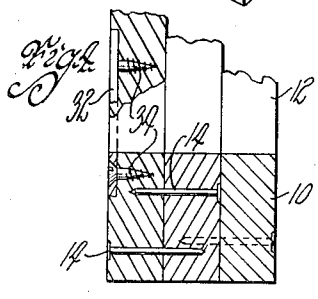


Fig. 4.

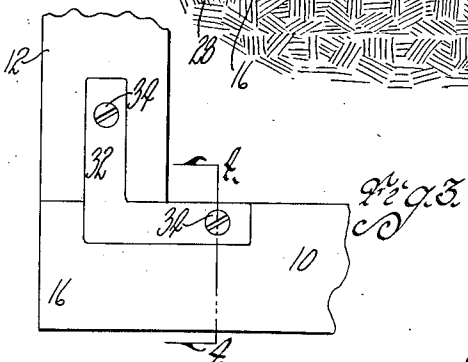


Fig. 3.

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UNITED STATES PATENT OFFICE

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CREOSOTED WOOD CULVERT

Application filed May 18, 1931. Serial No. 538,054.

The object of this invention is to provide an improved construction for a creosoted wood culvert, which may conveniently be constructed in sections, each made up of a plurality of strips or bars nailed together in side by side relationship.

Another object of the invention is to provide an improved construction for a creosoted wood culvert having peculiar and efficient means for marginal interengagement of sections at the corners of the culvert.

Still another object is to provide means for securing together and bracing the sections of a wood culvert.

Another object of the invention is to provide an improved construction for a wood culvert involving particularly economy of cost because the culvert sections are made up of relatively inexpensive materials and the cost of assembly and installation is kept at a minimum.

With these and other objects in view our invention consists in the construction, arrangement and combination of the various parts of our device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of a portion of a culvert embodying our invention.

Figure 2 is a transverse sectional view taken substantially on the line 2—2 of Figure 1 and showing the culvert installed and in position for use.

Figure 3 is a detail elevation of a corner portion of the culvert, showing one method of connecting and bracing a bottom section and a side wall section.

Figure 4 is a cross section on the line 4—4 of Figure 3, illustrating also the method of connecting units to make the culvert sections.

Figure 5 is a perspective view illustrating two units of a modified form of culvert construction embodying a tongue and groove method of connecting the parts.

In carrying out our invention we employ a plurality of sections which may be arranged to form a bottom wall A, side walls B and C, and a top wall D of a culvert which is rectangular in section. Any desired number of the sections may be employed to produce the desired length of the culvert and the sections may of course be of any desired width and length to produce the required dimensions for the finished culvert.

Each section is made up of a plurality of strips or bars 10 or 12 preferably of wood, and these bars preferably are suitably treated with creosote to render them impregnable to moisture and thus prevent decay and prolong their life. An important feature residing in our improved construction is to be found in the fact that small dimension lumber may be employed for the bars 10 and 12, such for instance as the common two by four scantlings or so-called dimension lumber. By using lumber in this form it is possible to materially reduce the cost of the finished product.

The bars 10 and 12 are placed in side by side relation and secured together successively by the use of spikes 14 to form the sections.

The bars or units 10 of certain of the sections are arranged in mutually staggered relation, thereby producing at each end of each section successive projecting ends 16 and recesses 18 of like dimensions. The degree of staggering corresponds approximately to one half the width of each bar. This arrangement applies particularly to the sections which are employed for the bottom wall A and top wall D and may be accomplished by using bars 10 of equal length and successively placing them in uniformly staggered relation, as illustrated particularly in Figure 1.

The bars 12 which are employed for the sections of the side walls B and C also are arranged in staggered relation in a similar manner, and in addition each bar is formed at one end with a notch or rabbet 20. The notches or rabbets 20 of successive bars of the sections are alternately arranged so that the notch or rabbet of one bar occurs at one edge of the section, while the notch or rabbet of the next bar occurs at the opposite edge of the section.

This arrangement of the bars 12 provides relatively narrow tongues 22 at one end of each bar with the tongues appearing at opposite ends of successive bars in each section.

For installing a culvert in accordance with our invention a trench is first prepared in the ordinary manner and then sections made up of bars 10 are laid in the bottom of the trench to produce the bottom wall A.

The sections composed of the bars 12 are erected at the respective side edges of the bottom wall A to produce the side walls B and C, and these sections are so placed that the narrow tongues 22 of the bars 12 enter the recesses 18 between successive bars of the bottom wall sections, which recesses are of such dimensions as to snugly receive said tongues.

Thereafter, sections composed of bars 10 are laid upon and bridge the space between the upper edges of the side walls B and C to produce the top wall D. The sections of the top wall D are arranged in a similar manner as before indicated, namely with their recesses 18 engaging narrow tongues 22 of the side wall sections and their projections such as 16 entering the spaces between the opposite ends of the bars on which said tongues 22 are formed.

It will be noted that each wall section is composed of a plurality of bars arranged side by side in the same plane and successively secured together to form a unitary member. This unitary arrangement is of importance because it permits the sections to be fabricated in the factory and carried to the desired location where they may be easily and quickly assembled by causing the projections at the end of one section to engage in the notches of another section. Furthermore, because of the staggered arrangement of the bars and the projection of the narrow tongues 22 on the side wall sections, there is provided a supporting engagement for each bar of each side wall section with respect to the corresponding bars of the bottom and top wall sections.

In placing all of the sections for the various walls of the culvert, care is taken to break or stagger the joints between sections, which joints are indicated by the heavy lines 24 in Figure 1. This arrangement may be facilitated by making some of the sections of greater length than others in order that the ends of the culvert may be flush.

Suitable means is provided for securing and interconnecting the adjacent edges of the respective sections which go to make up the culvert. Inasmuch as the culvert is usually built in an open trench it is convenient to secure the sections of the top wall D to the upper edges of the side walls by means of spikes 26 driven in from above.

There is not usually room, however, within the trench to spike the sections from the sides and for that reason other securing means should be provided.

One form of securing and bracing means may consist in the use of metal bars or straps 28 extending along the side edges of the sections of the bottom wall A and secured thereto by any suitable means such as lag screws 30. The securing means such as 30 may pass through the bars 28 and enter the projecting ends of alternate bars 10. The bars 28 thus serve to bridge the outer ends of the recesses 18 to produce upwardly opening sockets into which the tongues 22 of the side wall sections may be inserted from above. When the sections are thus installed, the bars 28 serve to prevent outward movement of the side wall sections and also prevent weaving and distortion of the structure.

Other bracing means between the ends of bars 10 and 12 may consist of flat angle plates 32 countersunk in the faces of the bars and secured thereto by means of screws 34.

Still other bracing means for the corners between the bottom wall A and side walls B and C may consist of angle plates 36 mounted in the corners after the side walls have been erected and secured to the bars 10 and 12 by means of lag screws 38.

It will be understood that suitable bracing means such as we have shown and described may be used either selectively or conjunctively to produce a rigid and stable structure for the culvert. However, it has been found that under ordinary circumstances the interlocking connection at the corners is sufficient to hold the culvert in assembled relation and that no bracing means is required. In fact, it is not usually necessary to use even the spikes 26 between sections.

In Figure 5 we have shown a different means for interconnecting the bars of the horizontal and vertical sections, which bars are designated respectively by the numerals 10′ and 12′, and it is to be understood that these bars will likewise be suitably connected together to form sections.

According to this construction the bars 10′ are formed with upwardly opening grooves 40 suitably spaced from their ends and the ends of the bars 12′ are shaped to form tongues 42 adapted to fit within said grooves. The grooves 40 preferably are spaced inwardly a material distance from the ends of the bars 10′ so that the ends of said bars will project beyond the outer faces of the vertical bars 12′, thus affording a considerable amount of material between the grooves and the ends of the bars 10′. This method of connecting the bars prevents outward movement of the side wall sections and serves to effectively interconnect the horizontal and vertical sections of the structure without the necessity of using additional bracing or connecting means.

Our culvert structure is relatively inex-

pensive and economical not only from the standpoint of the original expense of the materials but also because it saves labor cost in the operation of installation inasmuch as the sections may be easily and quickly put in place and interconnected.

Some changes may be made in the construction and arrangement of the parts of our device without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

Although we have specifically referred to the use of creosoted wood as suitable material for our culvert, yet it is to be understood that wood treated by other preservative methods may be employed, and in fact woods which are naturally of high durability, such as cyprus and redwood.

We claim as our invention:—

1. A culvert, comprising bottom, top and side sections, each consisting of a plurality of bars secured together side by side in succession, the bars of each top and bottom section being successively staggered lengthwise to form alternate recesses and projecting ends, of less depth and length horizontally than the lateral widths of the bars of the side sections, the bars of each side section being successively staggered vertically to form alternate recesses and projecting ends, the last named ends being formed with rabbets at their inner sides to provide horizontal shoulders to engage the top and bottom sections.

2. A culvert, comprising bottom, top and side sections, each consisting of a plurality of bars secured together side by side in succession, the bars of each top and bottom section being successively staggered lengthwise to form alternate recesses and projecting ends, of less depth and length horizontally than the lateral widths of the bars of the side sections, the bars of each side section being successively staggered vertically to form alternate recesses and projecting ends, the last named ends being formed with rabbets at their inner sides to provide horizontal shoulders to engage the top and bottom sections, the sections of one aligned row being staggered with relation to the sections of an adjacent aligned row.

3. In a culvert structure, sections each made up of wooden bars arranged side by side and secured together, each section being formed at its side margins with alternate projections and recesses, said sections being assembled to form an enclosure, with the projections of one section engaging in the recesses of another section at right angles thereto, and straps fixed to the ends of the projections on some of said sections to bridge the recesses thereof and form sockets into which the projections of other sections may be inserted by endwise movement, and whereby lateral movement of such other sections is prevented.

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