

May 21, 1935.

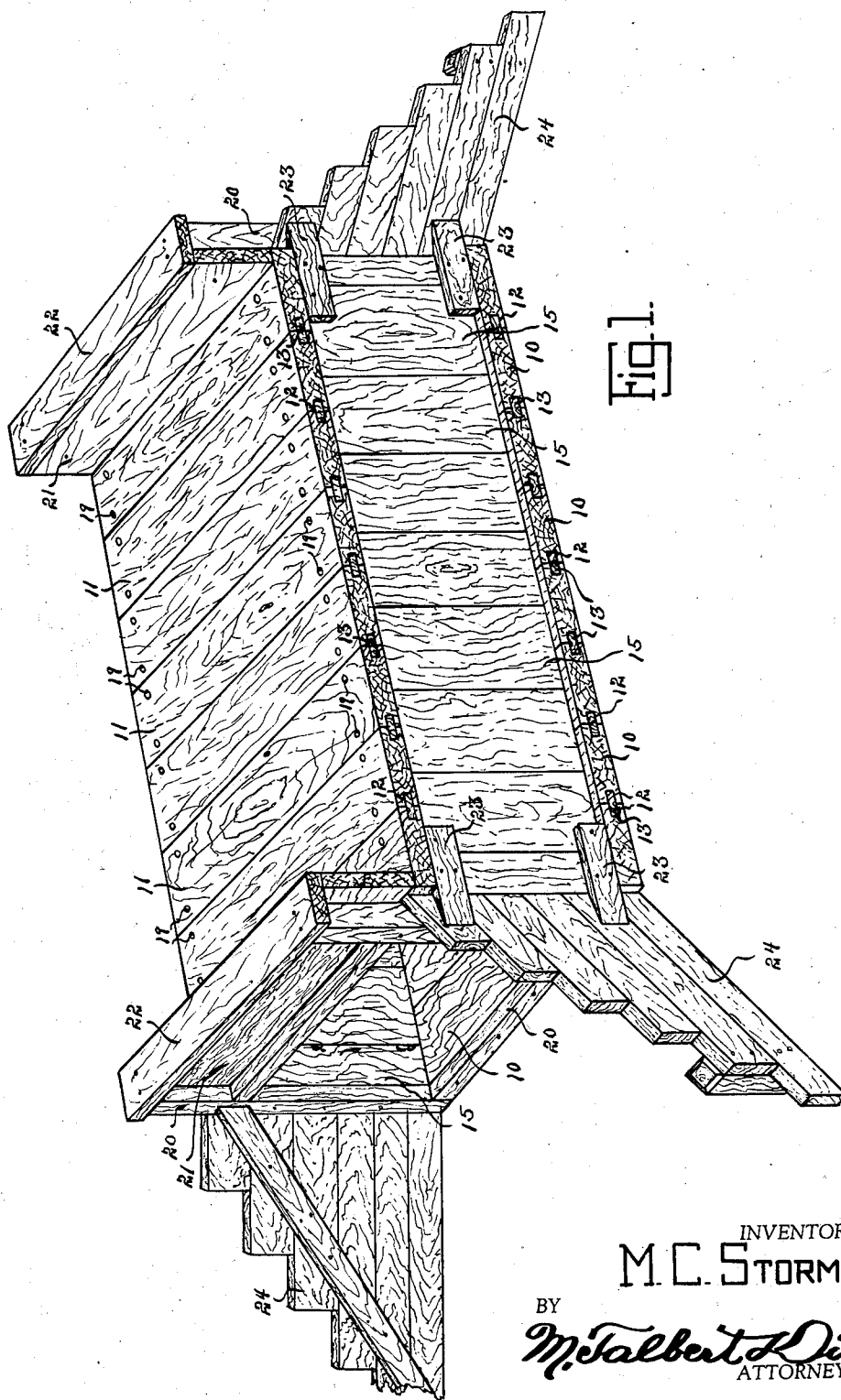
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2,002,301

CULVERT

Filed April 24, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

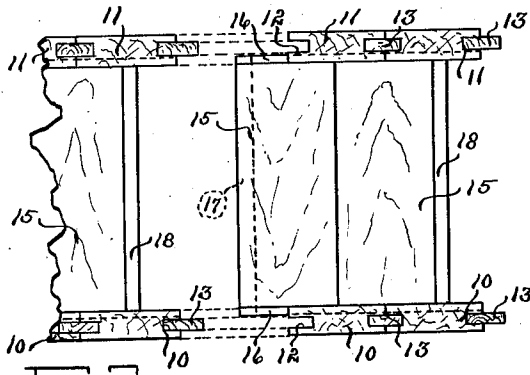


Fig. 2.

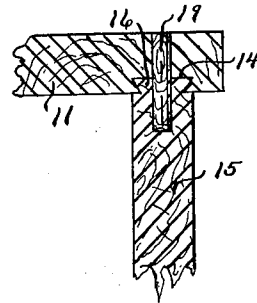


Fig. 3.

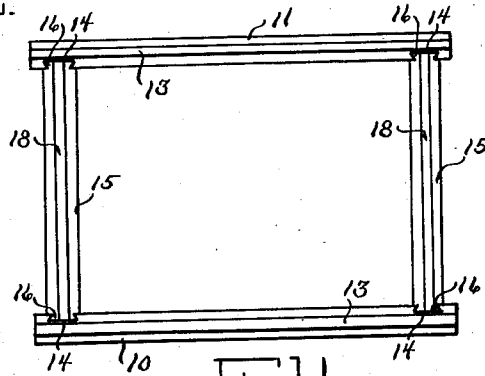


Fig. 4.

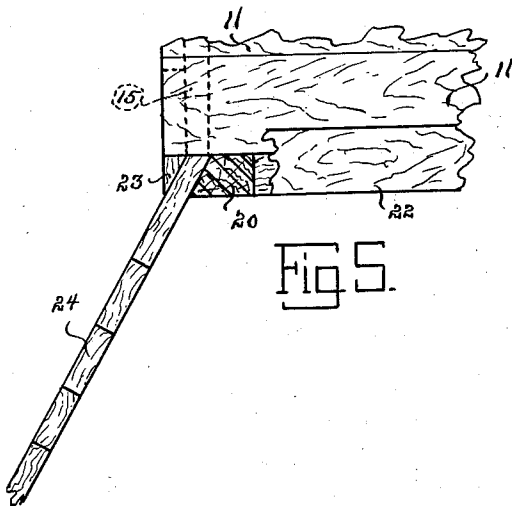


Fig. 5.

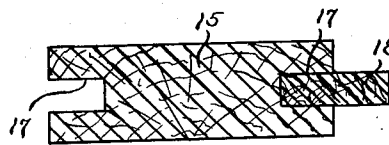


Fig. 6.

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UNITED STATES PATENT OFFICE

2,002,301

CULVERT

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2 Claims. (Cl. 61—16)

This invention relates to culverts, bridges, conduits, and like for use under roadways etc. and has for one of its objects the providing of a rigid interlocking construction arranged in attachable and detachable sections.

A further object of this invention is to provide a culvert or like that has separate preformed units thereby making it possible to assemble culverts of various lengths.

A still further object of my invention is to provide a sectional culvert that when once installed is of great strength, is held from longitudinal movements and from transverse movements in any direction.

A still further object of this invention is to provide a culvert that is easily and quickly installed without the services of a skilled workman.

A still further object of this invention is to provide a culvert or like that is economical in manufacture and durable in use.

These and other objects will be apparent to those skilled in the art.

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

Fig. 1 is a perspective view of my complete, assembled culvert ready for use.

Fig. 2 is a side view of some of the portions that make up the central body portion of the culvert and more fully illustrates their interlocking features.

Fig. 3 is an enlarged cross-sectional view of one of the upper edge portions of the device and shows the dove-tail method of locking the sides of the same with the top of the culvert.

Fig. 4 is an end view of one of the central sections of the culvert.

Fig. 5 is a top plan sectional view of one corner of the culvert showing one of the wings in position.

Fig. 6 is a cross-sectional view of one of the side planks.

The chief objections to most sectional culverts now on the market are that they are not of sufficient strength and are not interlocked against movement in all directions. A study of the construction of my culvert will disclose that its main body portion is of great strength and is locked against movement in all directions without the use of metal bolts, screws, or nails.

Referring to the drawings, I have used the

numeral 10 to designate the bottom planks of my culvert. These planks 10 have their longitudinal axes extending parallel with the roadway and are the exact duplicates of the top planks of the culvert which I have designated by the numeral 11. Each of these planks 10 and 11 has longitudinal grooves 12 in each of its two side edges, as shown in Fig. 2.

The numeral 13 designates an elongated tongue designed to extend into and rest in the two adjacent grooves 12 of any two adjacent planks, as shown in Fig. 1. By this construction for holding the upper planks together and the bottom planks together it is evident that the planks, either bottom or top, will be held and locked against independent upward or downward movement. If it is desired, the tongue 13 may be formed as an integral part of a plank adjacent to it. This is also true of the side planks.

Near the outer ends of each of the planks 10 and 11 is a dove-tail groove 14 extending transversely and completely across the plank. The numeral 15 designates the side planks of the culvert. The numeral 16 designates a dove-tailed tongue formed on each end of each of the side planks 15. These dove-tailed tongues extend with and progress the entire width of the plank.

To assemble the top, bottom, and side planks to form the conduit portion of the culvert, the dove-tailed tongues of the side planks are slid into the dovetailed grooves of the top and bottom planks, as shown in Fig. 4. In order that the culvert be very rigid and strong, care should be taken that the side edges of the top and bottom planks and tongues 13 are positioned near the center lines of the side planks, as shown in Fig. 2. If it is desired, the body portion of the culvert may be initially assembled in sections. In Fig. 2 a section and a portion of a section are shown with dotted lines showing the ultimate position of the sections when they are placed together. By this arrangement, it is very easy to assemble the culvert at the place of use, and any length of culvert is possible merely by reducing or increasing the interlocking sections.

In each of the side edges of the side planks 15 is a longitudinal groove 17, as shown in Fig. 6. The numeral 18 designates an elongated tongue designed to rest in and engage each of the two grooves 17 that are adjacent each other when the device is completely assembled. This manner of securing the side planks 15 together is

similar to the method of securing the top planks together and the bottom planks together. After the culvert is assembled, holes are drilled in the horizontal planks and into the vertical side planks 15, as shown in Fig. 3. In each of these holes wooden pins 19 are driven. After these pins are in place all the sections and parts of the main portion of the culvert are securely locked against detachment. If the occasion ever arises when it is desired to disassemble the culvert, the pins 19 are drilled out.

By the use of the dove-tailed grooves 14 and dove-tailed tongues 16, the top and bottom planks are securely held from drawing away from the side planks. This means that the top and bottom planks will be rigidly held in spaced relationship throughout the long life of the culvert. The top planks 11 will never become loose. From the foregoing, it will readily be seen that I have provided a highly desirable culvert of easy assembly and exceptionally strong construction.

My culvert is also readily adaptable to the attachment of railings and wings. In this connection I secure a rectangular frame 20 at each end of the body of the culvert. These frames extend beyond the upper surface of the body of the culvert, as shown in Fig. 1, for supporting the side railing. This side railing consists of a vertical plank 21 and a top horizontal beam 22 secured to each of the frames 20, as shown in Fig. 1.

In attaching the side wings, it will be noted that the two outer side edges of each of the frames 20 extend outwardly and laterally, as shown in Fig. 5. The numeral 23 designates brackets secured to the sides of the culvert, each having their end inner sides extending parallel with the outer side edges of the frame 20 to which they are adjacently spaced apart. The four side wings 24 are inserted into the spaces between the brackets and frames and secured. Due to the construction of the frames and brackets just described, the wings assume the proper positions of extending outwardly and laterally from each corner of the culvert, as shown in Fig. 1.

Although I have intimated that my culvert is of wood construction, it may be successfully made of other suitable material.

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

I claim:

1. In a device of the class described, a plurality of four-sided box units each having a flat

bottom portion, two spaced apart dove-tailed grooves in the upper surface of said bottom portion, a flat upper portion, two spaced apart dove-tailed grooves in the under surface of said upper portion, a side portion having a dove-tailed tongue at one end to engage one of the dove-tailed grooves in the bottom portion, and a dove-tailed tongue at its other end to engage one of the dove-tailed grooves in the upper portion, a second side portion having a dove-tailed tongue at one end to engage the other dove-tailed groove in the said bottom portion, and a dove-tailed tongue at its other end to engage the other dove-tailed groove in the upper portion; said upper portion and said lower portion over-lapping said side portions, a tongue and groove means for fitting and securing each of said units to each other to form an elongated conduit, and end portions secured to each end of the assembled units designed to form wings.

2. In a device of the class described, a plurality of four-sided box units each having a flat bottom portion, two spaced apart dove-tailed grooves in the upper surface of said bottom portion, a flat upper portion, two spaced apart dove-tailed grooves in the under surface of said upper portion, a side portion having a dove-tailed tongue at one end to engage one of the dove-tailed grooves in the bottom portion, and a dove-tailed tongue at its other end to engage one of the dove-tailed grooves in the upper portion, a second side portion having a dove-tailed tongue at one end to engage the other dove-tailed groove in the said bottom portion, and a dove-tailed tongue at its other end to engage the other dove-tailed groove in the upper portion; said units each having grooves in their end marginal edges, tongue members each engaging one of said last-mentioned grooves in one of said units and one of said grooves in another unit for securing said units together to form an elongated conduit, a frame and guard railing portion secured to each end of the formed elongated conduit; said frame and guard railing portions each having at its two outer side edges an outwardly and laterally extending portion, bracket elements secured to the sides of the conduit formed by the units extending in spaced parallel relationship with said outwardly and laterally extending portions of said two frame and guard railings, and an outwardly and laterally extending wing portion vertically slidably engaging the space between each of said outwardly and laterally extending portions of said frame and guard railing and said brackets adjacent thereto.

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