March 21, 1933. T. I. GILBERT 1,901,956

WEIR STRUCTURE

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Fig. 1.

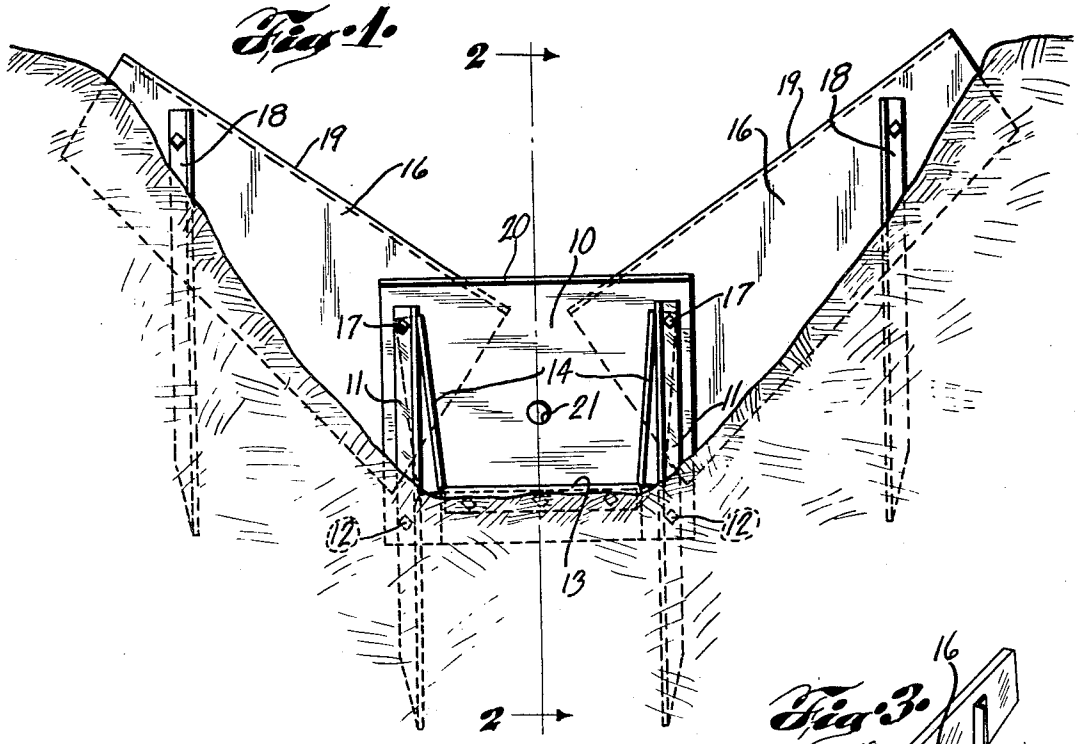


Fig. 3.

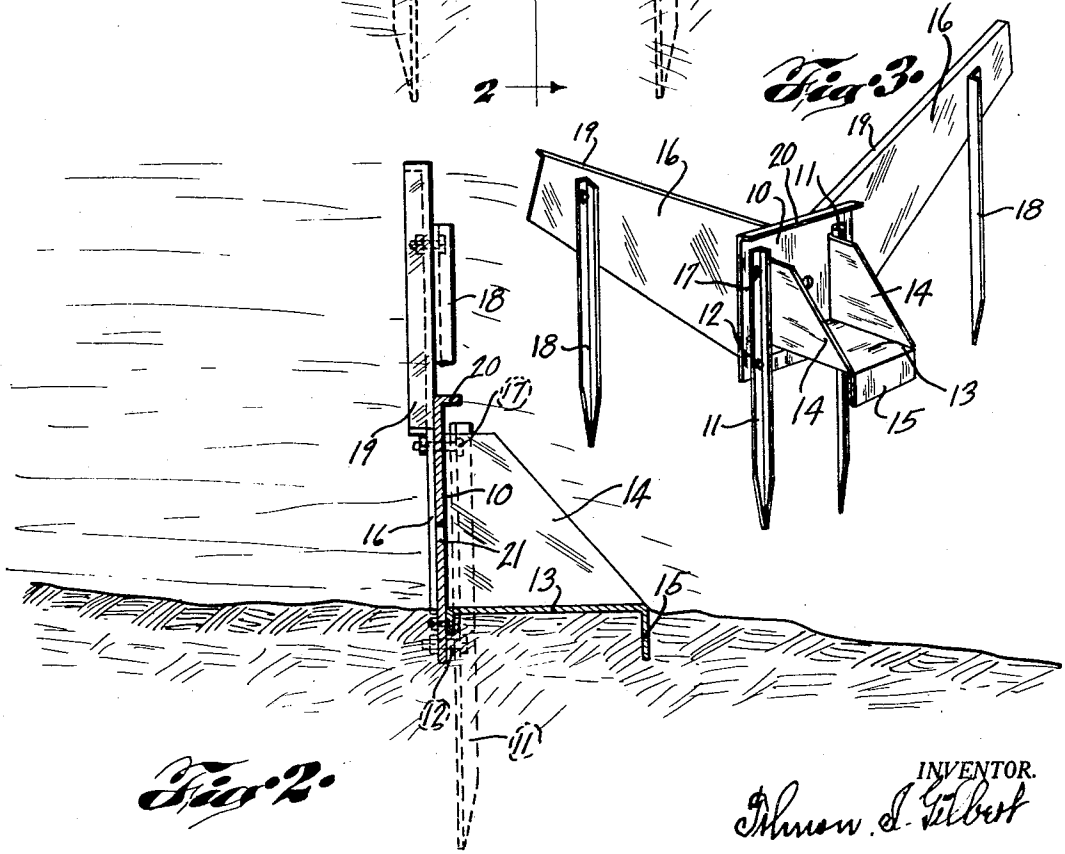


Fig. 2.

INVENTOR.

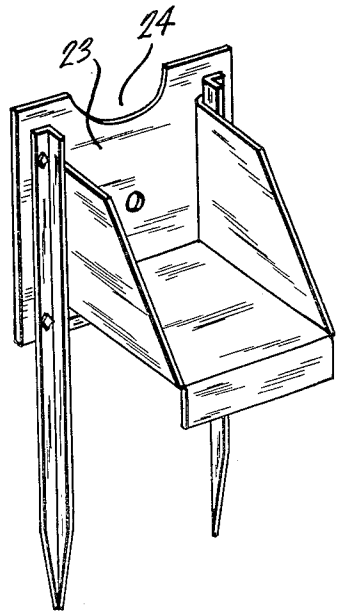
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WEIR STRUCTURE

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Fig. 4.



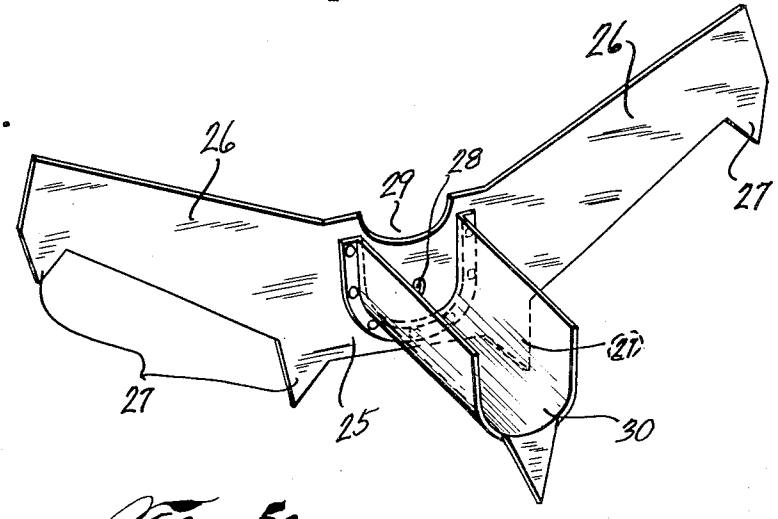


Fig. 5.

INVENTOR

Tilmon I. Gilbert

Patented Mar. 21, 1933 1,901,956

UNITED STATES PATENT OFFICE

TILMON I. GILBERT, OF MOUNT VERNON, ILLINOIS

WEIR STRUCTURE

Application filed October 21, 1932. Serial No. 638,239.

My invention relates, generally, to means for preserving drainage canals and ditches, and more particularly to an improved weir structure which is adapted to check soil erosion in small drainage canals. When properly positioned, the device of my invention forms a retaining-wall for the soil constituting the bed of the canal.

An object of my invention is to provide an improved device of the character described which is simple and economical of manufacture, which may be readily removed and repositioned, and which may be adjusted to conform to the slope of the banks of the canal.

Another object of my invention is to provide an improved weir structure for the aforementioned purpose, having a trough, or spout adapted to receive and direct the water after its passage over and/or through the weir, such trough serving to prevent a hollow in the bed of the canal at the lower, or down stream side of the weir.

These and other objects and advantages will appear from the following detailed description of several presently preferred embodiments of my invention, which description is to be considered in connection with the drawings, Fig. 1 of which is a front view illustrating one form of my device as installed in a drainage canal; Fig. 2 is a sectional elevation as viewed along line 2—2 of Fig. 1; Fig. 3 is an elevational view in perspective of the device of Fig. 1, and Figs. 4 and 5 are elevational views in perspective of modified embodiments of my invention.

Referring now by characters of reference to the drawings, in Figs. 1, 2 and 3, which illustrate one embodiment of my invention, 10 indicates a rectangular plate formed by preference of suitable, rust proof sheet metal. The plate 10 is adapted to be anchored in the bed of a canal, or ditch by means of a pair of posts or stakes 11, secured as by means of bolts 12, or the equivalent, at opposite ends of the plate 10. Projecting from the forward or down stream face of the plate 10 is a channel-shaped trough or spout having a floor 13, and side walls 14. The floor 13 of the spout is located a substantial distance above the lower end of the plate 10, the portion of the plate 10 extending below the floor of the trough being adapted to penetrate the bed of the canal. A depending flange 15 at the forward edge of the trough floor prevents water from washing under, and eroding the soil below the spout.

Projecting from opposite ends of the plate 10 are wing plates 16, each of which is pivotally secured to the plate 10 as by means of a single bolt 17. Each wing plate 16 may be adjusted angularly relative to the plate 10 to enable it to conform with the slope of the canal bank. Supporting posts 18, secured for pivotal adjustment to the wing plates 16 near the outer end thereof, may be driven at any suitable angle into the banks. By preference the upper margins of the wing plates 16 and the central plate 10 are suitably turned to provide, as in the present example, reinforcing flanges 19 and 20, respectively.

As best appears in Fig. 1, the lower portions of the wing plates 16 are adapted to be pressed a substantial distance into the banks of the canal. The subterranean portion of the central and wing plates 10 and 15 prevents the drainage water from washing underneath the weir structure.

The plate 10 is provided with a central orifice 21 of size sufficient to pass the drainage water under normal conditions of flow. During a heavy rain, or under other conditions causing a large flow of water in the drainage canal, the water will flow over the upper edges of the plate constituting the weir structure. The obstruction results in a deposition of the sediment entrained in the stream, and in time, the level of the stream bed will raise and be maintained at the level of the upper margins of the weir structure. Obviously, when it is desired to preserve a drainage ditch of substantial length, a number of my improved weir structures should be employed, spaced at suitable intervals along the bed of the canal. After its passage over or through the weir structure, the water impinges on the apron or floor portion 13 of the trough which prevents the formation of a hollow in the bed of the stream, and ultimately a tunnel underneath the weir.

A modified embodiment of my invention,

applicable for preserving ditches or canals of relatively small cross-sectional area is illustrated in Fig. 4. In this form of weir structure, the sheet metal body portion or plate 23, which corresponds to the plate 10 of the device of Fig. 1, is provided with a recess 24 in its upper edge, such recess serving to direct water passing over the plate onto the floor of the discharge-piece or spout. Except for the absence of wing plates, the device of Fig. 4 is substantially identical with that of Fig. 3.

In the modified form of my invention, illustrated in Fig. 5, central and wing portions 25 and 26, respectively, and leg portions 27 are fashioned from a single piece of rust proof sheet metal. The central portion 25, by preference, is provided with an orifice 28 and a recess 29, such recess serving to direct water overflowing the structure into the trough or discharge-piece 30.

While I have shown and described my invention with reference to several presently preferred embodiments thereof, I am aware that various changes may be made in the structure, as herein shown and described without departing from the spirit and full intended scope of my invention as defined by the appended claim.

I claim as my invention:

A weir structure for checking soil erosion in drainage canals and the like, comprising a plate having an aperture of restricted size, adapted to be anchored centrally of the canal, said plate having anchoring posts fixedly secured thereto, a channeled spout projecting from one face of the plate, and positioned to receive water flowing through the aperture in the plate, the floor of said spout being spaced above the lower edge of said plate and adapted to lie flush with the bed of the canal, said aperture in said plate being spaced a distance above the floor of said spout, a depending flange formed on the forward margin of the floor of said spout, said flange being adapted to penetrate the bed of the canal; wings secured for pivotal adjustment at opposite ends of said plate, an anchoring post near the outer end of each wing, and means pivotally securing the anchor posts to said wings.

TILMON I. GILBERT.