Dec. 27, 1949 T. J. ANDREWS ET AL 2,492,825

COLLAPSIBLE HEAD GATE MOLD

Filed April 20, 1948

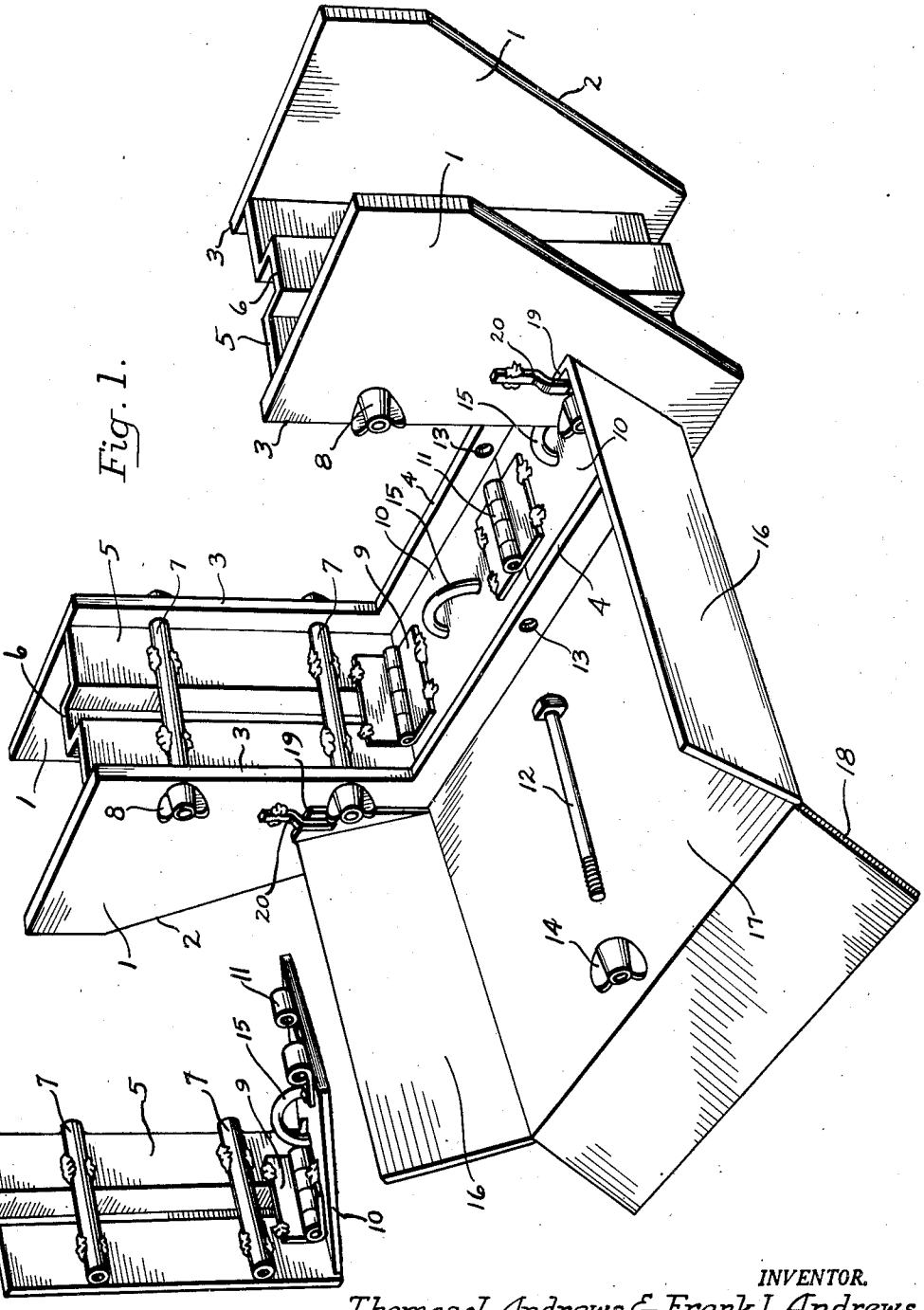


Fig. 1.

Fig. 2.

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Patented Dec. 27, 1949

2,492,825

UNITED STATES PATENT OFFICE

2,492,825

COLLAPSIBLE HEAD GATE MOLD

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Application April 20, 1948, Serial No. 22,054

6 Claims. (Cl. 25—118)

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This invention pertains to molds constructed for use in the casting of concrete gates and other structures defining a central aperture, and relates particularly to a collapsible mold of novel construction by means of which head gates are readily cast in irrigation systems.

A principal object of the present invention is to provide a head gate mold which may be readily removed from the concrete structure formed therein after the latter has become initially set without disturbing or disfiguring the surface contour of the structure.

Another object of the invention is to provide a collapsible mold for the casting of concrete structures defining a central aperture, which mold is of simple and sturdy construction, permitting rapid assembly and disassembly of the parts.

A further object of the invention is to provide, in combination with a head gate mold, a splash apron for diverting water passing through the gate opening in said mold away from the ends of said mold, thereby to prevent the washing away of soil from about the gate structure to be formed.

These and other objects of the present invention will appear from the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of the assembled mold of the invention for use in casting a head gate in an irrigation canal; and

Fig. 2 is a perspective view showing one of the inner sections of the mold structure of Fig. 1.

Referring to the drawing, the structure illustrated is preferably made of metal in order that it be of substantial strength and may thus be used indefinitely without being broken or otherwise injured. The side plates 1 of the mold define the longitudinal and lateral dimensions of the concrete dam structure to be formed transversely within an irrigation canal. The side plates are held in spaced relation with each other by transverse spacer members to be presently described. The ends of the side plates may be beveled inwardly toward the bottoms thereof, as at 2, to conform to the contour of the walls of the canal. A U-shaped opening is provided in the central portion of each side plate to provide for the passage of water therethrough while the mold is in the canal, said opening being defined by vertical side edges 3 and horizontal bottom edge 4. Spacer plates 5 are disposed transversely between the side plates adjacent the aligned vertical edges of the central openings, and define the vertical sides of the gate opening to be formed. The spacer plates are offset to form a vertically extending ridge 6 projecting outwardly into the space between the ends of the side plates 1. These ridges provide for the formation

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of vertical grooves in the sides of the gate for receiving the ends of the usual gate boards placed edgewise one upon another across the opening.

The spacer plates 5 are detachably secured in position between the side plates by means of spanner bolts inserted through holes provided in the side plates aligning with loops or pieces of tubing 7 welded to the spacer plates. The bolts are provided with wing nuts 8 to aid in easy removal from the former.

Each of the vertical spacer plates 5 is joined at its bottom edge by means of a hinge 9 to its complementing bottom plate 10 which extends horizontally therefrom between the side plates adjacent the edge 4 of the central opening. The two halves comprising the bottom section of the mold are secured together at their abutting edges by means of a split hinge 11 which is adapted to receive a pin 12 through the axial opening formed by joining the halves of said hinge. The pin 12 may be disposed solely within the hinge, or it may be of sufficient length to be inserted through the holes 13 provided in the side plates 1 aligning with the bore of the hinge 11, as illustrated. By this latter arrangement the bottom plates are held in fixed position with regard to the bottom edge of the central opening. The pin may be threaded at its end to accommodate the wing nut 14 by means of which the pin is removably secured in position. Handle members 15 project upwardly from the bottom plates to provide means by which the operator may manipulate the latter during assembly and disassembly of the mold.

The combination of the central opening formed by the edges 3 and 4 of the spaced side plates 1 and the vertical spacers 5 and bottom plates 10 provides a channel through which the water in the irrigation system is permitted to flow during the time in which the mold is disposed therein. As the water rushes from the channel it tends to spread immediately to the banks of the irrigation canal. The force with which the water strikes the banks causes the soil adjacent the ends of the mold to be dislodged and carried away with the stream. In order to prevent the possibility of this occurrence, a splash apron is provided, by means of which the stream of water is carried a sufficient distance from the mold before it is allowed to enter and spread within the canal. The splash apron illustrated in the drawing comprises side plates 16 rising obliquely from a bottom plate 17. The latter plate may be bent downwardly at its forward end to form a leg 18 which rests upon the bottom of the canal. The ends of the side plates 16 are turned inwardly, as at 19, to be slidably received in the clamps 20 secured to the side wall 1 of the mold. The forward leg 18 functions to take the weight of the apron and the water passing thereover,

thereby relieving the strain otherwise imposed upon the inturned ends 19 and the clamps 20.

In operation, the mold is assembled, as shown in Fig. 1 of the drawing, and positioned across an irrigation canal. Concrete material is then poured into the end spaces of the mold between the inner faces of the side plates 1 and exteriorly of the spacer plates 5. The fluid concrete flows to fill the space beneath the bottom plates 10 and the upper end spaces just described, and the head gate thus formed is permitted to attain its initial set. While the concrete is still green, but initially set, the splash apron is removed by disengaging the inturned ends 19 from the clamps 20. Wing nuts 8 are then removed, the spanner bolts are withdrawn from the tubing 7 secured to the spacer plates 5, and pin 12 is removed from hinge 11, whereupon the side plates 1 are stripped from the faces of the concrete casting. Each of the bottom plates 10 is then lifted, by means of handles 15, from engagement with the concrete therebelow, and the vertical spacer plate 5 hinged thereto is carefully slid away from the vertical concrete wall in such manner as to prevent injury to the groove formed by the vertical ridge 6. After the casting is thoroughly set the gate boards may be placed edgewise across the gate opening, the ends of the boards being received in the vertical grooves provided therefor. Since the mold may be removed from the casting while the latter is still green, the grooves provided for the gate boards are perfectly smooth, and the boards fit closely therein to prevent leakage of water around the ends of the gate.

We claim:

1. A collapsible mold for the casting of concrete structures defining a central aperture, comprising side plates defining the outside walls of said structure, transverse spacer members between said side plates, said spacer members comprising spaced vertical plates defining the sides of said central opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, means detachably securing said vertical plates to said side plates, and means releasably joining the abutting ends of said horizontal plates and detachably securing the latter to said side plates.

2. A collapsible mold for the casting of concrete structures defining a central aperture, comprising side plates defining the outside walls of said structure and having complementing U-shaped openings therein, transverse spacer members between said side plates adjacent the edges of said U-shaped openings, said spacer members comprising vertical plates defining the sides of said central opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, means on said vertical plates for forming vertical grooves in the sides of said opening, means on said vertical plates engaging spanner bolts in said side plates for detachably securing said vertical plates to said side plates, and hinge means releasably joining the abutting ends of said horizontal plates.

3. A collapsible mold for the casting of head gate structures in irrigation systems, comprising side plates defining the outside walls of said gate structure and having complementing U-shaped openings therein for the passage of water therethrough, transverse spacer members between said side plates, said spacer members comprising vertical plates defining the sides of said head gate opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, offset members on said vertical plates for forming vertical grooves in the sides of said opening, means detachably securing said vertical plates to said side plates, and means releasably joining the abutting ends of said horizontal plates and detachably securing the latter to said side plates.

4. A collapsible mold for the casting of head gate structures in irrigation systems, comprising U-shaped side plates defining the outside walls of said gate structure, transverse spacer members between said side plates adjacent the edges of said U-shaped openings, said spacer members comprising vertical plates defining the sides of said head gate opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, means on said vertical plates for forming vertical grooves in the sides of said opening, means on said vertical plates engaging spanner bolts in said side plates for detachably securing said vertical plates to said side plates, and hinge means releasably joining the abutting ends of said horizontal plates.

5. A collapsible mold for the casting of head gate structures in irrigation systems, comprising spaced side plates defining the outside walls of said gate structure and having complementing U-shaped openings therein, transverse spacer members between said side plates adjacent the edges of said U-shaped openings, said spacer members comprising vertical plates defining the sides of said head gate opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, offset members on said vertical plates for forming vertical grooves in the sides of said opening, loops on said vertical plates engaging spanner bolts in said side plates for detachably securing said vertical plates to said side plates, and hinge means releasably joining the abutting ends of said horizontal plates and detachably securing the latter to said side plates.

6. A collapsible mold for the casting of head gate structures in irrigation systems, comprising side plates defining the outside walls of said gate structure and having complementing U-shaped openings therein for the passage of water therethrough, transverse spacer members between said side plates, said spacer members comprising spaced parallel vertical plates defining the sides of said head gate opening and horizontal plates defining the bottom of said opening, said vertical and horizontal plates being pivotally connected at their adjoining ends, offset members on said vertical plates for forming vertical grooves in the sides of said opening, means on said vertical plates engaging spanner bolts in said side plates for detachably securing said vertical plates to said side plates, means releasably joining the abutting ends of said horizontal plates and detachably securing the latter to said side plates, and a splash apron detachably secured to and extending normally from one of said side plates for diverting water away from the ends of said mold.

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No references cited.