Oct. 19, 1937. F. R. LAYNG 2,096,185

DOCK CONSTRUCTION

Filed Sept. 1, 1936 2 Sheets-Sheet 1

Fig. 1.

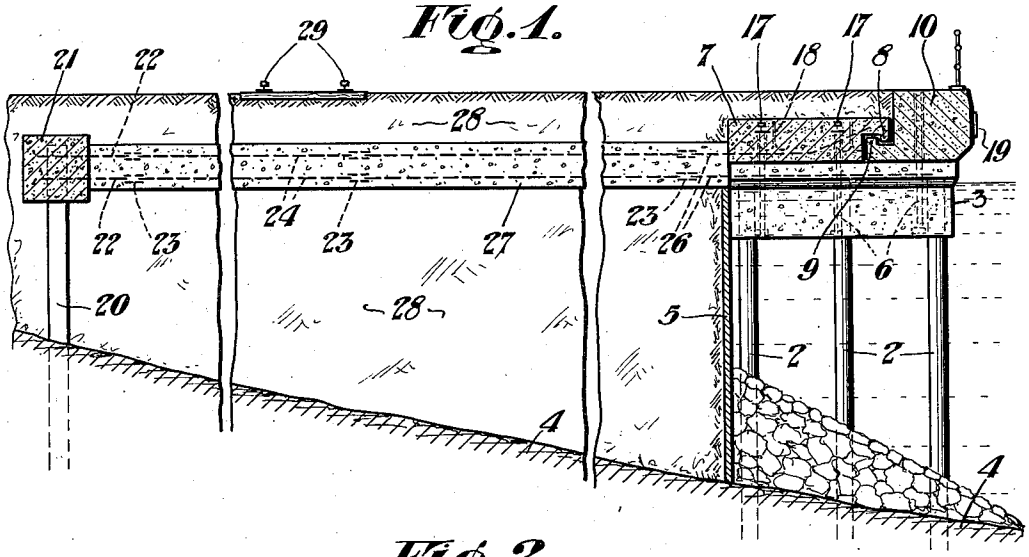
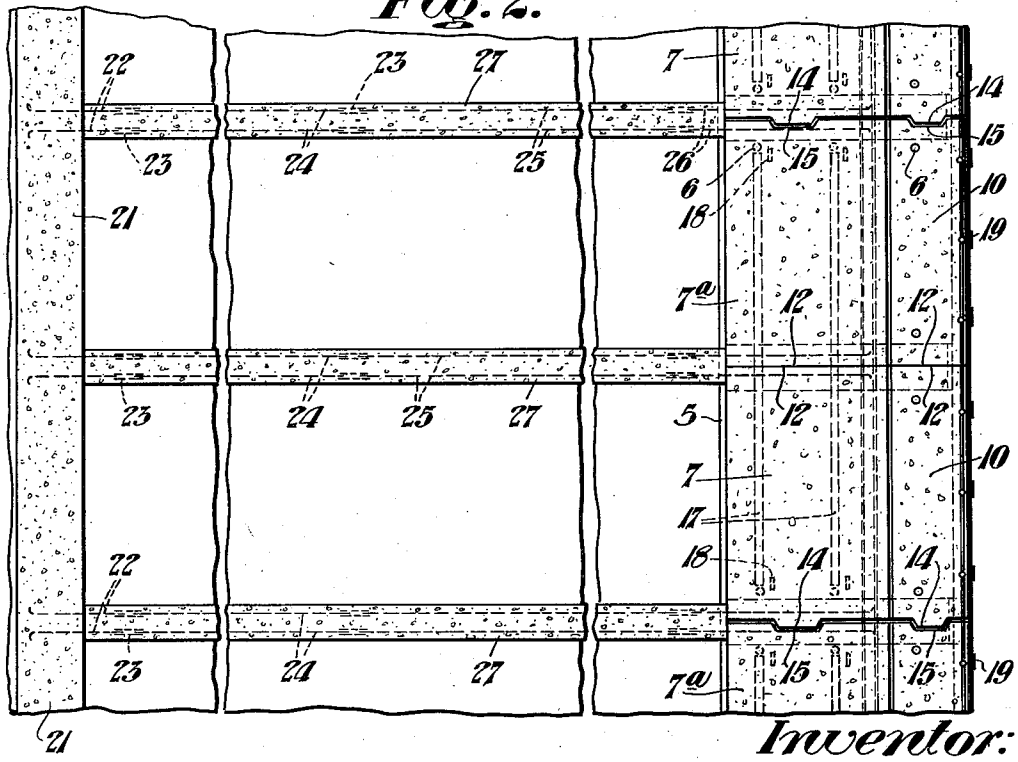


Fig. 2.



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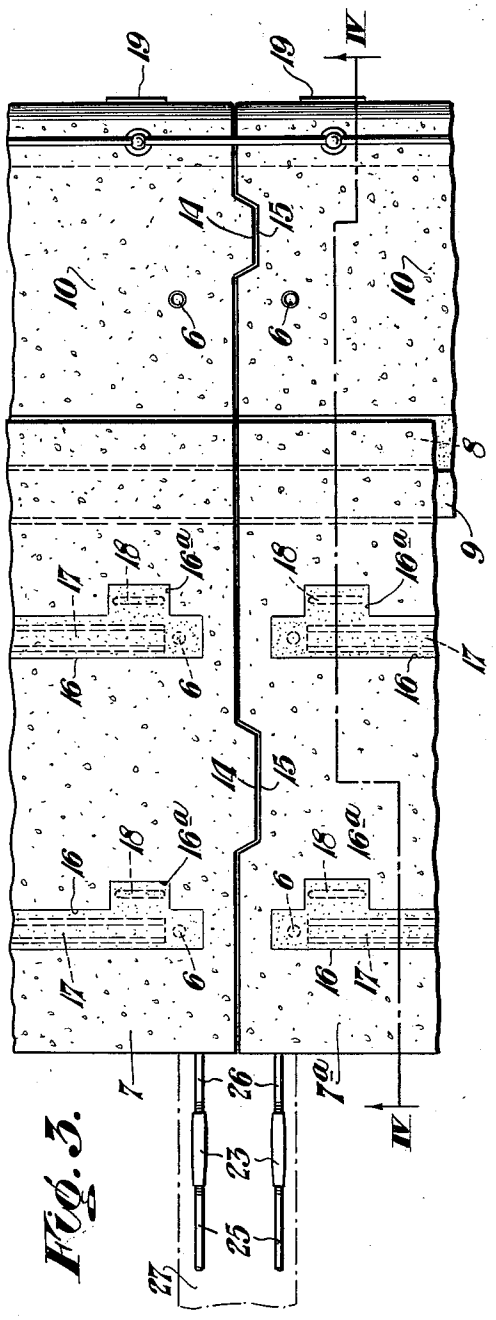


Fig. 3.

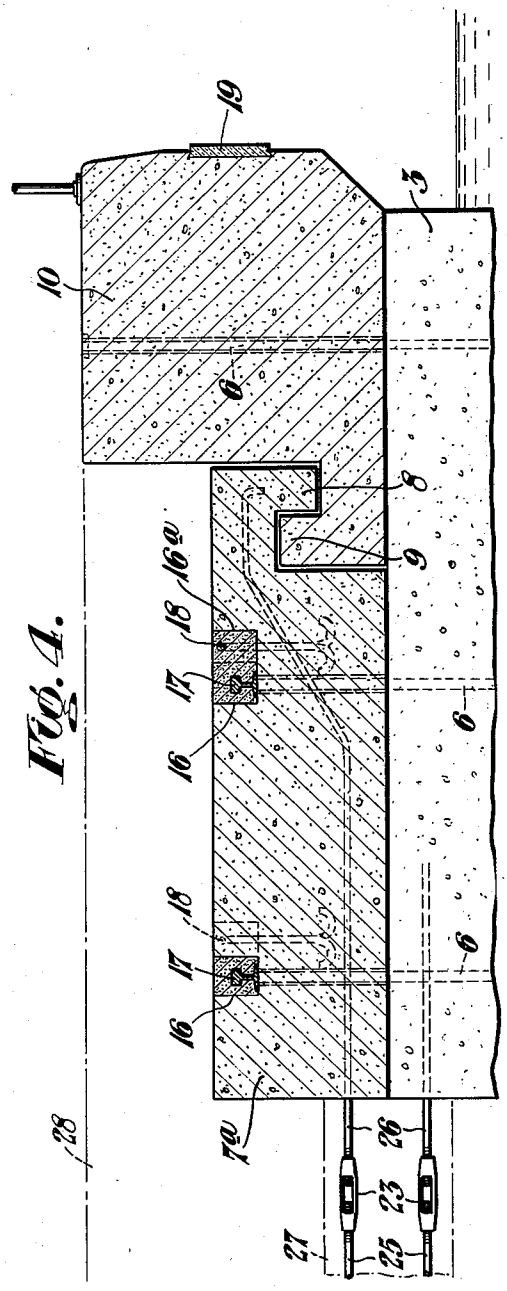


Fig. 4.

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DOCK CONSTRUCTION

Frank R. Layng, Greenville, Pa.

Application September 1, 1936, Serial No. 98,989

1 Claim. (Cl. 61—48)

This invention relates to reenforced concrete docks or piers.

An object of this invention is to provide a reenforced deck slab designed for the loads to be carried and to provide the necessary weight and strength to resist the horizontal forces of boats and other loads.

A further object is to provide a plurality of pre-cast deck sections having an interlocking engagement when in final position on a supporting structure.

With these and other advantages, which will become apparent as the disclosure proceeds, in which:

Figure 1 is a side elevation, partly in section, of the assembled dock construction;

Figure 2 is a top plan before the filling material has been placed;

Figure 3 is an enlarged detailed plan of the deck slabs in position before grouting of the reenforcing members; and

Figure 4 is a section on line IV—IV of Figure 3.

In the drawings, the numeral 2 represents a series of parallel piles or supports spaced at suitable intervals and provided with a reenforced concrete member 3 adapted to support the deck construction. The piles 2 have their lower ends driven into the shale or supporting earth 4 while the other ends are embedded in the reenforced concrete member 3. While I have shown the piles 2 as being of a metallic construction, it is to be understood that, if desired for certain locations, such piles may be of reenforced concrete or wood. A sheet-piling wall 5 is positioned in back of the piles 2 and has its lower end driven into the supporting earth while the top rests against the deck slabs to hold up and support the pressure from the natural ground and other loads back of the dock. The sheet-piling is shown as of steel but it may be made from reenforced concrete or other suitable material.

A reenforced concrete deck designed to support loads and to provide the necessary weight and strength to resist the horizontal forces of boats and other loads is placed in proper position on said supporting member 3, and secured thereto by anchor-bolts 6 or any other desired fastening means. The deck comprises slabs or sections built or pre-cast at some place adjacent the point of installation which permits uninterruption to the general construction work involved in building a dock.

The deck construction of the present invention comprises one or more slabs 7 and positioned longitudinally on the member 3 and secured thereto by means of said anchor-bolts 6. One longitudinal face of said slabs is provided with a flange 8 adapted to interlock with a flange 9 of an adjoining deck section 10. The slabs are provided with smooth abutting faces 12 extending transversely thereof while the slab 7 is provided with a projection 14 adapted to interlock with a depression 15 in the adjacent slab 7a to provide adequate means of expansion and contraction of the interlocking slabs whereby lateral thrusts from a vessel or pressure from behind the dock will not permit the units to move independently in a transverse direction.

In order to provide longitudinal rigidity to the slabs 7 and 7a, suitable recesses 16 are provided in the upper surfaces thereof. The recesses 16, in the slab 7, extend longitudinally from a point adjacent the projection 14 through the remaining portion of said slab while the recesses in slab 7a extend longitudinally from a point adjacent the depression 15 through the remaining portion of the slab, so that the slabs 7 and 7a, abutting each other at their smooth faces 12, are provided with aligned longitudinal recesses in the upper surfaces of said slabs within which are positioned longitudinal steel reenforcing members 17 adapted to maintain a rigid cooperation of the slabs 7 and 7a between the expansion joints of said slabs. The slabs 7 and 7a are provided with lift-bars 18 embedded therein adapted to project into the recesses 16a, whereby said slabs can be easily handled by the workmen for proper positioning on the supporting member 3.

The deck sections 10, which adjoin and are interlocked with said slabs 7 and 7a, have their upper surfaces extending beyond the plane of the said slabs 7 and 7a to a point substantially in alignment with the ground line. The sections 10, having a greater vertical cross-sectional area than the slabs 7 and 7a, are provided with a plurality of encased rubber bumpers 19 which function when interlocked with the adjoining deck slabs 7 and 7a to cushion the horizontal forces of boats and other loads.

Suitable means are provided for anchoring the dock to the ground at the rear of the ground line. A plurality of piles 20, suitably spaced, are driven into the ground and provided with a reenforced concrete member 21 adapted to interconnect the piles into a single supporting unit. Embedded within said member 21 are steel rods 22 having turnbuckle connections 23 with adjoining rods 24 and 25. Rods 26, connected to one of the turnbuckles 23, extend into and are embedded in the pre-cast deck slabs 7 and 7a, as shown in Figure 4

of the drawings. Prior to being embedded in a reenforced concrete member 27, the turnbuckles are adjusted to secure a rigid connection between the dock and the land anchorage. This anchorage construction is positioned beneath the ground surface and, being a reenforced concrete structure, provides a homogenous construction whereby the dock can properly withstand all loads or forces to which it will be subjected.

After the deck slabs 7 and 7a are properly positioned, the recesses 16 are grouted in solid with the surface of the slabs and a surface fill 28 is provided over the anchoring means and deck slabs 7 and 7a to a point in substantial alignment with the surface of the sections 10.

Under the present invention, to pre-cast the deck sections for this purpose, there are many advantages obtained in certain locations, in that much of the work can be done so as not to interfere with traffic on the dock or of the vessels in the immediate vicinity of the construction. The deck sections can be pre-cast away from the site and then at a convenient time the construction started and very quickly assembled, thus reducing to a minimum the interruption to traffic due to the construction. If desired, railroad rails 29 may be located adjacent the dock to accommodate transfer machinery.

While I have shown and described a specific embodiment of the invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention as defined by the following claim.

I claim:

A reenforced concrete dock comprising a foundation of upright piles, a concrete deck supporting structure mounted on and secured to said piles, a plurality of interfitting and interlocking pre-cast deck slabs mounted upon said deck supporting structure, means for securing said deck slabs on said supporting structure and means connected to said deck supporting structure and pre-cast slabs for anchoring said dock to the shore, said deck slabs provided with longitudinal, parallel recesses formed in the upper surface thereof, reenforcing means positioned in said recesses, said reenforcing means extending longitudinally over said slabs and terminating points spaced from the edges thereof, some of said slabs having their upper surface extend beyond the plane of the other slabs to a point substantially in alignment with the ground line.

FRANK R. LAYNG.