Aug. 11, 1931. E. R. ODEN 1,818,005

CONCRETE STORAGE RESERVOIR

Filed May 31, 1930

Fig. 1.

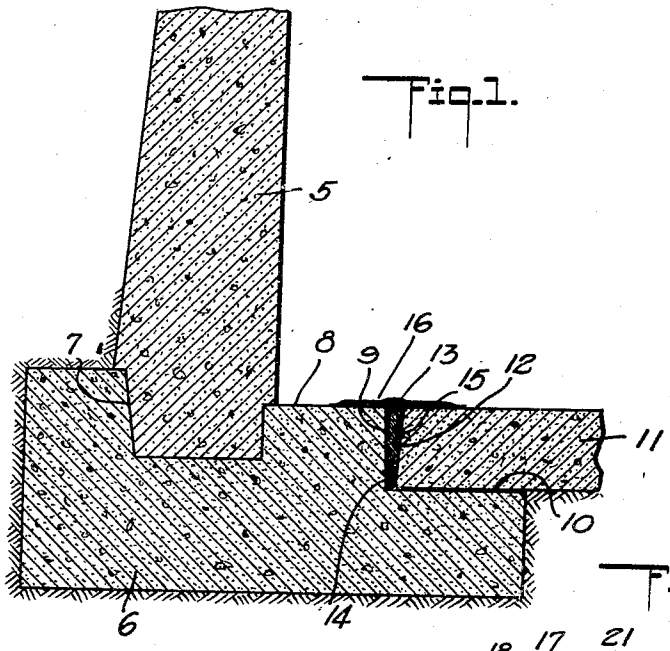


Fig. 3.

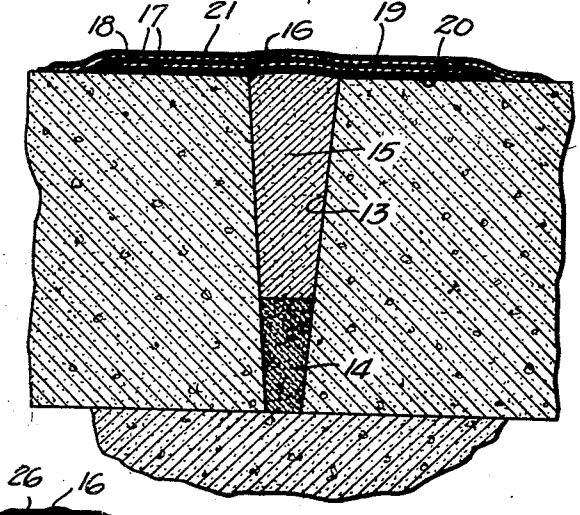
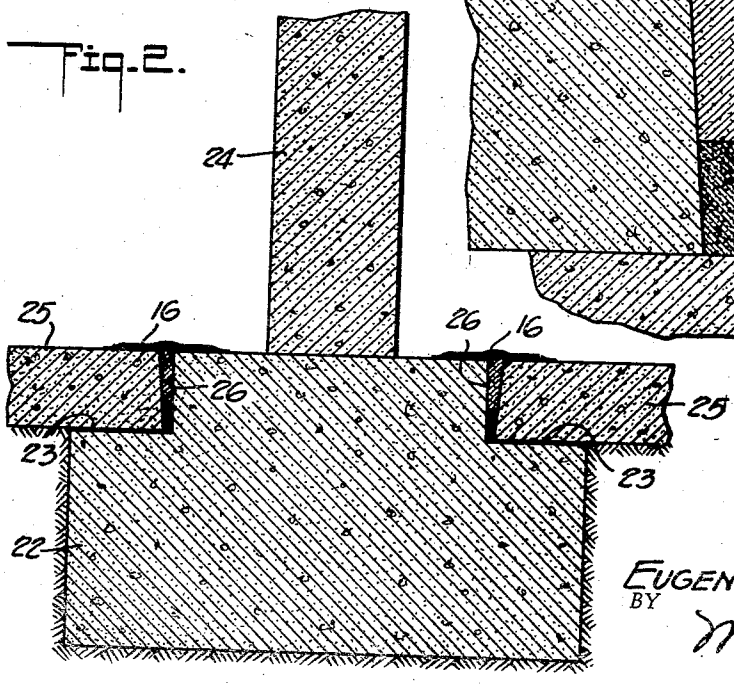


Fig. 2.



INVENTOR.
EUGENE R. ODEN
BY
ATTORNEYS.

Patented Aug. 11, 1931 1,818,005

UNITED STATES PATENT OFFICE

EUGENE R. ODEN, OF NORTH HOLLYWOOD, CALIFORNIA

CONCRETE STORAGE RESERVOIR

Application filed May 31, 1930. Serial No. 458,474.

My invention relates to concrete storage reservoirs, and particularly to a novel arrangement and design of footing which I employ in connection with the vertical walls of the reservoir and the roof columns, and an object of the invention is directed to a footing characterized by means which will accommodate the vertical walls of the reservoir and the roof columns in a manner to permit of that correlation between the structural parts of the reservoir whereby when the waterproof joints are formed therebetween, maximum load-sustaining surfaces will be provided that are capable of withstanding the effect of precalculated water pressures and without fear of fatal fractures or breakage of the reservoir at the joints.

Another object of the invention is to provide a footing which will allow for a quick and inexpensive knocking down of the form boards generally employed in concrete or poured constructions and which will allow for the forming of all joints at that distance from the base portions of the walls or the columns, as the case may be, where they will not be obstructed or their functional characteristics in any way impaired by the customary inevitable bulging in of the form boards under the loads and during the setting of the concrete.

A still further object of the invention is to provide a combination of structural parts of a reservoir which will permit of arranging the waterproofed expansible membranes in horizontal positions where they will constitute reliable horizontal seals and thereby evenly carry the loads placed upon them.

A still further object of the invention resides in reservoir construction which allows all joints to be properly formed by unskilled labor and which, when formed, are so exposed that they can be easily observed and examined when the reservoir is inspected.

In the accompanying drawings,

Figure 1 is a vertical section through a portion of a reservoir showing my improved footing associated with a vertical wall and illustrating the manner of forming a waterproof horizontally expansible seal at a position entirely to one side of the wall;

Figure 2 is a view similar to Figure 1, showing the form of footing under a roof column; and

Figure 3 is a vertical section on an enlarged scale of the joint and the membrane between the two floor slabs.

Upon reference to Figure 1, 5 indicates a vertical concrete wall and 6 a concrete footing from which the wall rises, the base of the wall being preferably stepped into the footing as at 7. The said footing extends horizontally from the base of the wall, as shown at 8, thence downwardly in an angular direction, preferably slightly off the vertical, as at 9, thence horizontally in an inward direction, as at 10, the arrangement being such that the footing is rabbeted for the reception of a concrete slab 11.

This concrete slab is provided with an angularly disposed edge 12 which also extends along a line slightly off the perpendicular, so that when it is in mating relation to the downwardly extending portion 9 of the footing there will be formed an intervening substantially wedge-shaped cavity 13.

Poured into the cavity 13 is a relatively soft, non-hardening compound 14, such as hot poured asphalt or asbestos paste or oakum, the same being tightly hammered or pressed into the bottom of the cavity, preferably to about one-third of the depth thereof. This non-hardening compound is saturated with an elastic preservative, such as carbon black, which renders the compound thoroughly waterproof. In the remainder of the cavity 13 is placed a composition 15 of elastic carbon black paint, intermixed preferably with a long filler asbestos, in approximately equal parts, so as to produce a putty-like substance which may be easily handled and which never hardens, so that it remains soft and flexible.

The joint formed as above described is now covered with a membrane 16 which preferably comprises a plurality of strips of burlap 17 or cotton cord fabric, felt or the like, between which is interposed a layer of wax composition 18. A similar wax composition 19 is placed under the bottom sheet, and the under surface of the composition 19 is coated

with suitable well-known asphaltic matter 20. Over the top sheet of the membrane is placed a coating 21 of waxy or flexible waterproof matter. The sheets comprising the membrane are of graduated sizes, the smallest one being at the bottom. A membrane constructed as above set forth may now be secured to the reservoir floor by means of some gummy or waterproof substance, such as asphalt, pitch, or the like, which is hot when applied, and which when cold firmly holds the membrane in its applied position.

It will now be observed that the membrane occupies solely a horizontal position so that the water pressure will act evenly over the fabric. The membrane is also such that it can be installed by unskilled labor and by arranging it in the position where it is entirely to one side of the vertical inner face of the wall 5 it is not liable to be ruptured or disorganized with respect to the joint. It is also of a construction which, when located at the place indicated, may be easily inspected after the reservoir is erected. A feature of the joint herein set forth is that when combined with a flat elastic membrane the joint is freely expansible, is inexpensive and decidedly practical for the purpose referred to. By offsetting the diaphragm with respect to the inner vertical face of the wall 5, the space between the footing 6 and the concrete floor slab is at no time obstructed when knocking down the form boards after the concrete is set and hardened.

In Figure 2, the footing 22 is rabbeted at 23 at the respective sides of the column 24, so as to receive the concrete slabs 25. The joints 26 between the slabs and the vertical faces of the rabbeted portions are precisely the same as the joint described in Figure 1. The membranes 26, which cover the upper ends of the joints, are horizontally disposed and are positioned at some distance from the vertical side faces of the column 24.

Both as regards the arrangement of the footing when associated with the vertical wall of the reservoir or when associated with the column 24, the important feature of the invention resides in positioning the joints vertically of the footing and at such distance with respect to the wall or the column, as the case may be, as to permit the membranes to be remotely situated with respect to the vertical faces of the column or the side wall, where the joints will not be obstructed by the bulging out of the form boards during the molding operation.

I claim as my invention:

1. In concrete reservoir construction, a footing provided with a stepped portion to receive a concrete floor slab, an elastic waterproof joint-forming material interposed between the vertical face of the stepped portion and the adjacent face of the slab, and a waterproof elastic membrane extending over the joint and secured to the upper faces of the footing and the slab, respectively, one edge of the membrane occupying a position in spaced relation to a line drawn vertically through the frame and representing one face of a wall or column.

2. In reservoir construction, a footing constituting the base of the reservoir and having a stepped portion, a slab received in the stepped portion of the footing and having its upper face flush with the upper face of the footing, an elastic waterproof substance interposed in the joint between the footing and adjacent edge of the slab, and a flexible horizontally disposed membrane extending over the joint between the slab and the footing and wholly spaced apart from the inner vertical surfaces of the superstructure of the reservoir.

EUGENE R. ODEN.