April 16, 1929. J. P. LAWLOR ET AL 1,709,222

WELL CASING AND STRAINER

Filed Jan. 13, 1926

Fig. 1

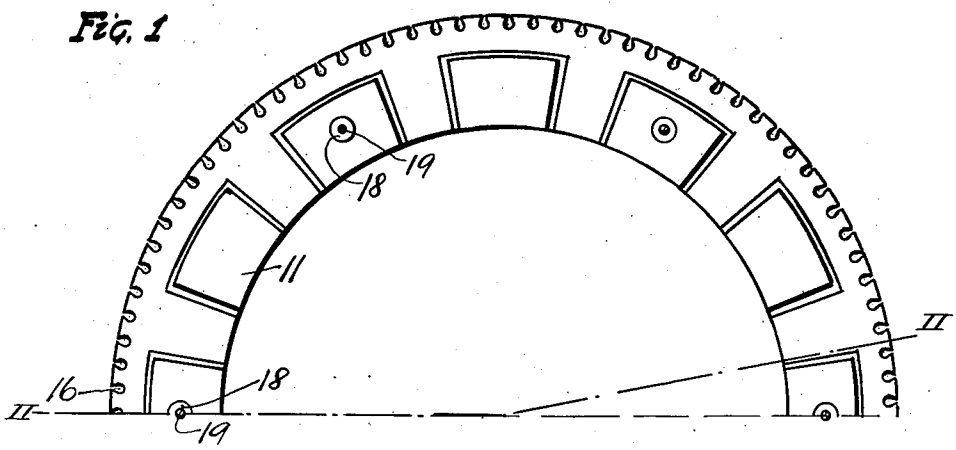
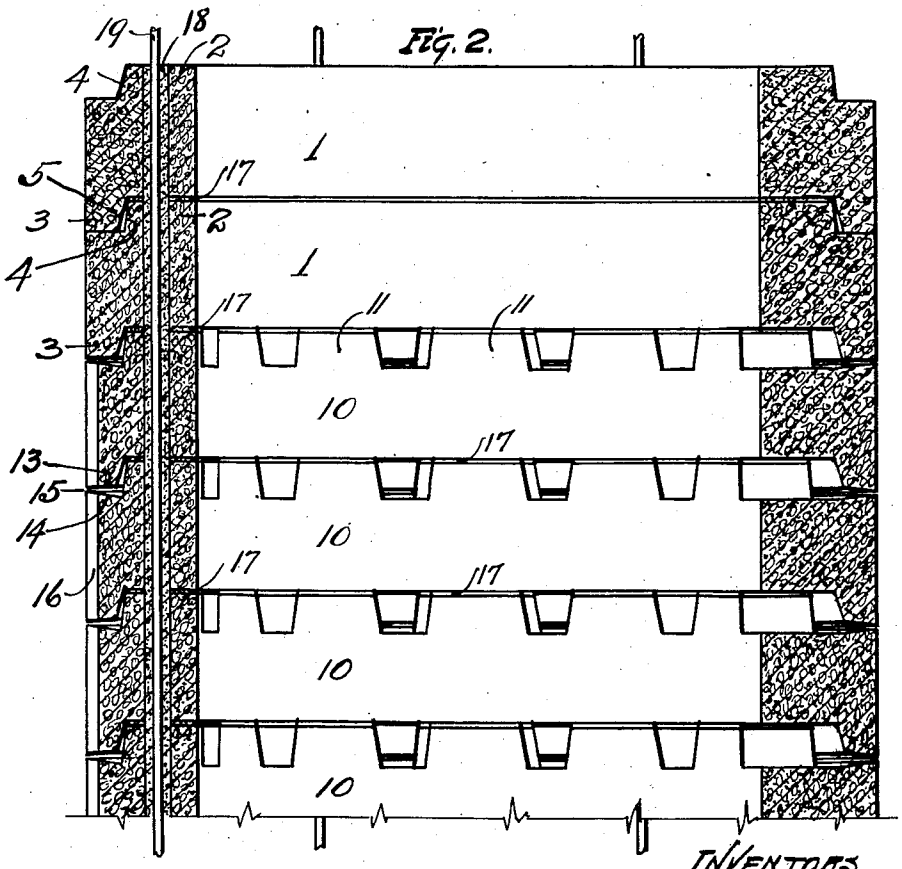


Fig. 2.



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Patented Apr. 16, 1929. 1,709,222

UNITED STATES PATENT OFFICE.

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WELL CASING AND STRAINER.

Application filed January 13, 1926. Serial No. 80,964.

This invention relates to a well casing and strainer for use in deep or shallow wells and has especial reference to such a casing and strainer made up respectively of a plurality of individual annular units preferably of concrete, tile, or the like material, which sections are joined together into a single unitary or monolithic member.

It relates further to the design and construction of the individual units which go to make up the monolithic structure.

There are at present in concrete well casings a number of inherent defects which it is the purpose of this construction to eliminate. The rings or sections in present construction if united at all, are united by cables or bolts, which ordinarily fit loosely, are unprotected, and serve at best a temporary purpose, losing their entire value shortly, through rusting, and leaving the well casing and strainer made up only of loosely connected and poorly aligned units, which being easily displaced, often cause destruction of the well through allowing at first minor infiltration of sand, thereby allowing lateral displacement and finally total collapse.

These designs also, provide only a minor amount of supporting area between sections, and where the well is of even usual depth often fail through crushing of these areas.

The objects of our invention are,

First:—To provide strainer and well sections which are self centering and are placeable without undue trouble.

Second:—To provide such sections having a large amount of bearing surface.

Third:—To provide means for securing the maximum advantage from the available bearing surface.

Fourth:—To provide simple and adequate means for joining the sections together to form a monolithic well structure, and

Fifth:—To protect the reinforcing means used against rusting.

We accomplish these objects as will be more fully, hereinafter set out in the drawings, specifications and claims.

In the drawings:

Fig. 1 is a half plan of one of the strainer sections.

Fig. 2 is a sectional elevation on the line II—II of Fig. 1 showing strainer and well casing sections assembled and joined in a monolithic assembly.

Referring now to the drawings in which the various parts are indicated by numerals. 1, 1 are well casing sections, each being an annular ring, preferably of concrete, having an annular male end 2 of less diameter than the body of the section, extending upward therefrom, and a corresponding and complementary annular female end 3 projecting downward.

The exterior surface 4 of the male end is a truncated conical surface and the corresponding interior surface 5 of the female end is a similar truncated conical surface of slightly flatter slope, whereby when the two surfaces are being engaged, the entering end of the male section will be of considerably less diameter than the opening in the female end which is to be lowered thereover and will thus readily be assembled.

The smaller diameter of these truncated sections is approximately the same so that when assembled they will fit closely and snugly, and correctly center the sections.

10 are strainer sections which are provided with a male end which is a similar annular ring, portions of which have been cut away to form channel-ways lying between the supporting members 11, the exterior surface of these members being a portion of a conical surface substantially the same as the surface 4 of the solid sections. Preferably the channel-ways are considerably less in area than the adjacent supporting members.

The female end 12 of these strainer sections is substantially identical with the corresponding end of the solid sections having the same truncated conical interior surface, but, its depth is slightly less than the depth of the male sections and the lower end 13 is slightly bevelled, the upper surface 14 of the body portion of the section being oppositely bevelled, so that when adjacent sections are assembled the annular opening 15 formed will be smaller at the outer edge or periphery than adjacent the male portion thereof.

16 are vertical or longitudinal corrugations or channels in the outer portion of the strainer sections. These channels are preferably circular in cross section, and connected with the outer surface by V shaped slots having the apex of the V outward. No corrugations of course are needed or used in the well casing sections.

In the assembled strainer and well casing, 17, is a grout or mortar joint forming a bed or seat to adjust the bearing of each section

on that below and join them together, thus not only uniting the sections but equalizing the bearing.

Each of these sections is provided with a plurality of vertical holes 18, ordinarily four or six being used; in any event the same number and spacing being used in all the sections, 19 are reinforcing rods, very considerably smaller than the holes and 20 a grout filler. This grout filler bonds the rods to the sections, and therefore ties the sections together and at the same time protects the rods against rusting.

In assembling; a strainer section is first placed in position, and ordinarily sections of reinforcing rods preferably of unequal lengths are set in the holes, the upper surface of the supporting members is covered with, and the holes filled with, mortar and a second section lowered along the rods into place, the conical shape of the male and female ends serving to perfectly align the sections. Mortar is then used as before and the procedure repeated. When the end of one of the rods is reached a new length of rod is forced into the soft mortar such depth so as to give the desired lap of the rods and additional sections are placed until the desired strainer length is reached, after which well casing sections instead of strainer sections are used.

Preferably in this work a quick setting cement is used so that the joints may harden before strain is placed on them.

It will readily be understood that when thus assembled and joined together the well casing and strainer become one monolithic structure.

The well casing sections are shown as of the same length as the strainer section but this is not necessary, and preferably they are much longer.

It will also be understood, in a monolithic structure, that while the unit types shown are preferred, other unit forms may be substituted if desired, and that while the structure is designed primarily with concrete as a material in mind, that sections of other materials such as tile may readily and satisfactorily, be used, and that it is not our intention to limit ourselves to any one material.

Having thus disclosed our invention, what is claimed is:—

1. A well strainer, comprising a plurality of self-aligning unit sections, each section having an uninterrupted annular bottom surface, and an annular top surface engaging with and supporting the annular bottom surface of a superposed section, said annular top surface being interrupted at intervals by water channels, a mortar joint bedding said engaging surfaces, said sections having a plurality of holes through said engaging surfaces in alignment with corresponding holes in adjacent section, reinforcing rods in said holes, and mortar surrounding said rods and filling said holes to anchor said rods to said sections and tie the same together into a monolithic unit comprising metal-reinforced mortar construction.

2. A well strainer, comprising a plurality of self aligning unit sections, each section having an annular bottom surface, and an annular top surface engaging and supporting the annular bottom surface of a superposed section, one only of said surfaces being interrupted at intervals by water channels, a mortar joint bedding said engaging surfaces, said sections having a plurality of holes through said engaging surfaces in alignment with corresponding holes in adjacent sections, reinforcing rods in said holes, and mortar surrounding said rods and filling said holes to anchor said rods to said sections and tie same together into a monolithic, metal-reinforced unit.

In testimony whereof we have hereunto set our names.

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