Aug. 28, 1928. 1,682,697

T. W. THORPE ET AL

CONCRETE WELL STRAINER

Filed Aug. 18, 1927

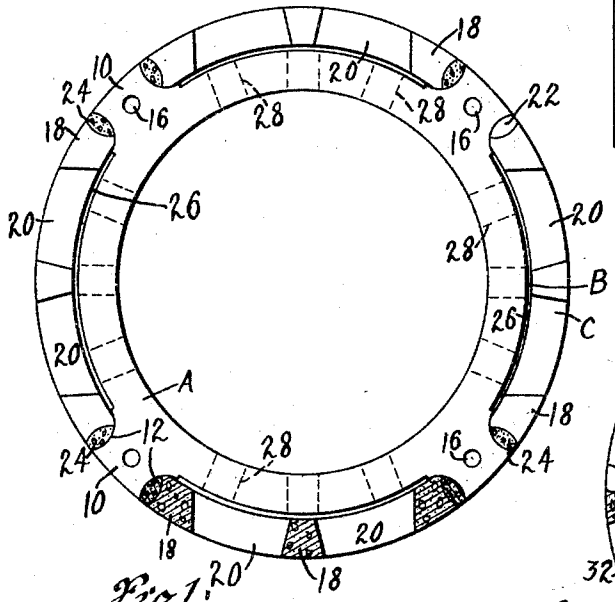


Fig. 1.

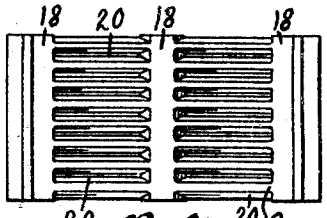


Fig. 3.

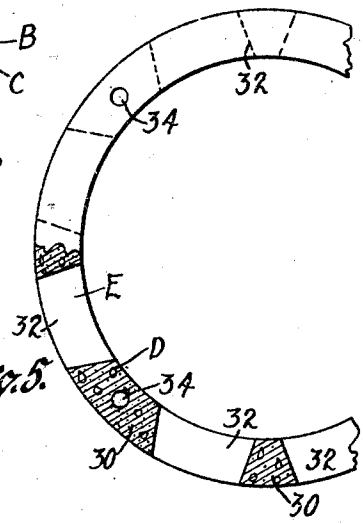


Fig. 5.

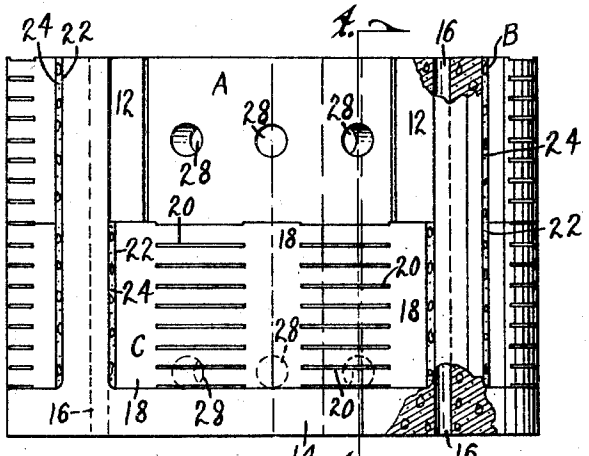


Fig. 2.

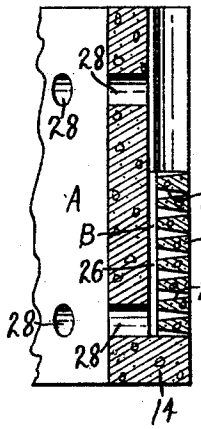


Fig. 4.

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UNITED STATES PATENT OFFICE.

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CONCRETE WELL STRAINER.

Application filed August 18, 1927. Serial No. 213,830.

The object of our invention is to provide a concrete well strainer of simple, durable and comparatively inexpensive construction which will operate efficiently.

Still a further object is to provide a concrete supporting member adapted to have sections mounted thereon and secured thereto which are formed with a plurality of openings whereby water may pass through said sections and pass through openings formed in the concrete supporting member.

Still a further object is to provide a supporting member formed of concrete and tubular in outline having a plurality of spaced ribs with a lower marginal supporting flange formed integral with the ribs whereby recesses are formed for receiving strainer sections.

Still another object is to form the adjacent edges of the ribs of the supporting member and the strainer sections with concave surfaces so that pockets are formed whereby soft cement may be packed or placed therein for forming a bond between the strainer sections and the supporting member.

Still a further object is to provide each strainer section with a plurality of elongated slit openings, each of said openings being smaller at their receiving end than at their discharge end so that any material passing into said openings will be free to continue to pass through said openings.

Still a further object is to provide a modified form of structure wherein the strainer sections and supporting member are formed integral as a single unitary structure.

With these and other objects in view, our invention consists in the construction, arrangement and combination of the various parts of our invention, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of our improved concrete well strainer.

Figure 2 is a side view of the same with one strainer section removed therefrom and parts shown in section to better illustrate the construction thereof.

Figure 3 is a side view looking at the inside of one of the strainer sections.

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 2 and

Figure 5 is a top view of a modified form wherein the strainer sections and supporting member are cast integral.

In the accompanying drawings we have used the reference character A to indicate generally the supporting member forming a part of our well strainer in the embodiment of the supporting member A illustrated in the accompanying drawings we have shown a supporting member formed with concrete and substantially tubular in shape.

The supporting member A is formed with a plurality of vertically arranged outside ribs 10 having their opposite side walls curved or concave as at 12. The purpose of the concave walls 12 of the ribs 10 will hereinafter be more fully set forth.

The ribs 10 serve a two fold function in that they assist in the retaining of the strainer sections in the position as will hereinafter be more fully set forth and at the same time serve to vertically reinforce the concrete support A.

A lower marginal flange 14 is formed along the bottom edge of the supporting member A and is integral with the lower ends of each of the ribs 10. The vertical ribs 10 and the lower marginal flange 14 form strainer receiving section pockets B.

The support A may be reinforced with iron rods or wire reinforcings as desired depending upon the size of the completed well strainer. The ribs 12 materially increase the thickness of the material of the support A in the place where the ribs 10 are and this makes it possible to easily reinforce the completed supporting member A.

The ribs 10 also have central openings 16 vertically arranged whereby suitable tools may be inserted therein for permitting the completed strainer to be lowered into the well opening and set for use. Inserted within each of the strainer section pockets B are strainer sections C.

Each strainer section C is curved in horizontal cross section or in the form of an arc so that when placed within the strainer sec-

tion pockets B they will conform to the general contour and outline of the support A as clearly illustrated in Figure 1 of the drawings. Each strainer section C is formed of poured concrete and has three vertical ribs or solid portions 18.

Between the solid portions 18 are formed a number of longitudinally arranged slit openings 20. The openings 20 are long and narrow and comparatively small on their outside end which may be referred to as the receiving end of the openings 20. The inner or discharge ends of the openings 20 are comparatively large so that as a matter of fact the walls of the openings 20 are inclined and wider at their inner ends.

The openings 20 gradually increase in size from the outer wall towards the inner wall of the strainer section proper. Each of the two vertical ends of the strainer section C are formed with concave surfaces so that when a strainer section is set in between two adjacent ribs 10 and upon the lower marginal flange 14, a pocket 22 will be formed which may be filled with soft concrete 24.

The pocket 22 having its sides curved or concave, will allow the concrete 24 when it hardens to firmly hold the strainer sections C in proper relationship to the support A. The strainer sections C may be made of any height and in the embodiment as illustrated in the accompanying drawings, we have shown two strainer sections placed in each pocket B one upon the other.

It may be here mentioned that the strainer sections may be of any height and one strainer section may be used or more, depending uopn the manufacturing facilities. The wall of the support A between the ribs 10 is recessed a small amount as at 26 so that when the strainer sections C are in position, a narrow vertical pocket is formed by the recesses 26 as clearly illustrated in Figure 1 of the drawings.

The pocket formed by the recess 26 is in communication with the inner or discharge ends of each of the slit openings 20. The wall of the support A between the ribs 10 and adjacent the strainer section C is formed of a plurality of spaced openings 28 for permitting water and the like to pass therethrough and into the interior of the support A.

We have illustrated a set of openings near the lower ends of the strainer sections in substantial alignment with the upper surface of the marginal supporting flange 14 so that when water or the like passes through the strainer section C and the pocket 26 it will continue to pass into the interior of the support A through the openings 28.

Any sand or the like passing through the strainer openings 20 will pass into the interior of the support A due to the fact that the lower openings 28 are so arranged as to permit no collecting pocket to be formed between the lower openings 28 and the strainer sections C.

It will of course, be understood that the well strainer is ordinarily placed in a body of gravel and sand and that some fine sand will pass into the openings 20 and thus into the interior of the strainer support A.

We will hereinafter describe the method of installation and how the strainer member functions. In Figure 5 of the drawings we have shown a modified strainer E integrally formed with ribs 30 forming a part of the strainer D. The ribs 30 are formed at equal distances apart and the space in between the adjacent ribs 30 have strainer openings 32 formed therein which are of substantially the same shape as the openings 20.

In Figure 5 we have illustrated an embodiment of our invention wherein the strainer section and supporting member are formed as a single unit. The ribs 30 in the strainer 5 are formed with suitable openings 32 whereby the strainer may be engaged for positioning it within the well.

Practical operation and installation.

After the strainer sections C are placed upon the support A and securely fastened therein by the concrete 24, then the strainer is in condition to be set or lowered into the well opening. The strainer as illustrated in Figure 1 is lowered by means of a cable or the like fastened in the openings 16 into the well opening.

Water and sand as well as fine silt will pass in through the openings 20 and into the interior of the support A through the openings 28. After the strainer has been properly positioned, a test pump is placed in operation which sucks or draws the water from within the support A and with the water so drawn is the fine sand and silt.

The test pumping continues for some time until all the fine sand and silt is drawn through the openings 20 and withdrawn from in and around the strainer leaving only the heavier materials such as gravel around the outside of the strainer. This forms a natural "gravel pack" or strainer effect and there is no danger of having fine sand and silt pumped up with water after the well has been completed and the regular pump equipment installed. The gravel pack around the strainer insures a quick flow of water to the strainer.

A concrete strainer is very desirable in that it is more or less porous and does not become worn with age but as a matter of fact the longer it is in use the better it becomes. The narrow outside openings in the strainer insures us that the openings will not become stopped up because they gradually

increase in size towards the discharge end of each opening.

Any mineral growth that forms on the outside of the strainer openings may be forced therefrom by dropping a heavy bailer or plunger into the strainer and the force will break away any foreign growth upon the outside.

Water within the strainer is in direct contact with water on the outside due to the arrangement of the openings 20 and 28 which enables us to clear openings 20 by using the force of a bailer or plunger.

Some changes may be made in the construction and arrangement of the various parts of our invention, without departing from the real spirit and purpose of our invention and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

We claim as our invention:

1. A well strainer comprising a tubular concrete wall for forming a support, vertical ribs on the outside of said support, a marginal flange on said support connecting the lower ends of the ribs together, the wall of the support between said ribs having openings therein and strainer sections placed between said ribs and spaced from said wall.

2. A well strainer comprising a tubular shaped support, the walls of said support having openings therein, strainer sections mounted on the outside of said walls and spaced therefrom forming thereby a pocket between the support and strainer sections, ribs on the walls of said support between said strainer sections, the edges of said strainer sections being connected with said ribs whereby the sections are supported on the support, the strainer sections and said openings being in communication with said pocket.

3. A well strainer comprising a tubular shaped support, the walls of said support having openings therein, strainer sections mounted on the outside of said walls and spaced therefrom forming thereby a pocket between the support and strainer sections, ribs on the walls of said support between said strainer sections, the adjacent surfaces of the strainer sections and ribs being arranged to form a cement receiving pocket therebetween.

4. A well strainer comprising a tubular shaped support, longitudinal ribs thereon having longitudinal grooves therein, the ribs having shouldered portions on each of their sides adjacent the point of their connection to the tubular shaped support, strainer sections secured to said support between said ribs, the ends of said strainer sections engaging said shouldered portions whereby the strainer sections are spaced from the tubular support for forming pockets between the tubular support and the strainer sections said ends of the strainer sections being provided with grooves which in conjunction with said grooved ribs form cement receiving pockets, and means whereby liquid may pass through said strainer and tubular support to the interior of the tubular support.

5. A well strainer comprising a concrete tubular shaped member formed with vertically arranged grooved rib portions and strainer sections therebetween, each of said strainer sections having its side edges arranged with vertical grooves which in conjunction with the grooved ribs form a pocket for receiving cement whereby the strainer sections are supported relative to said tubular shaped member.

Des Moines, Iowa, December 15, 1926.

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