M. E. LAYNE.

WELL STRAINER.

APPLICATION FILED NOV. 11, 1909.

1,001,655.

Patented Aug. 29, 1911.

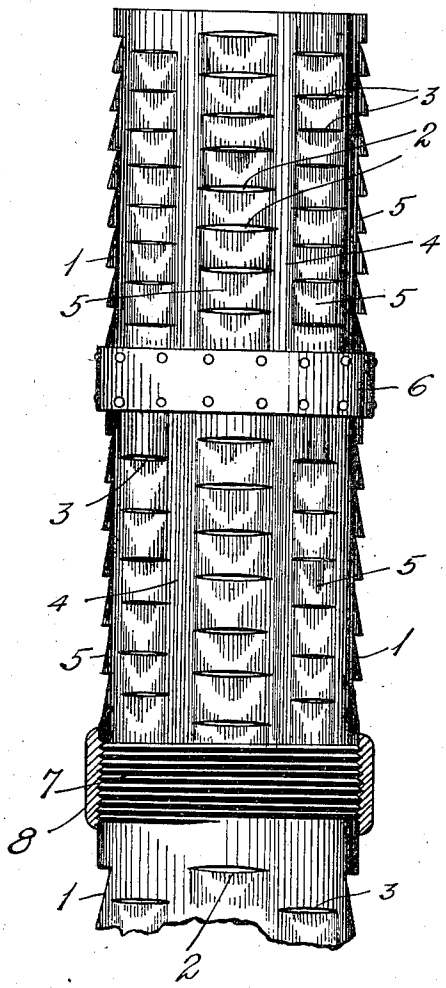

Fig. 1.

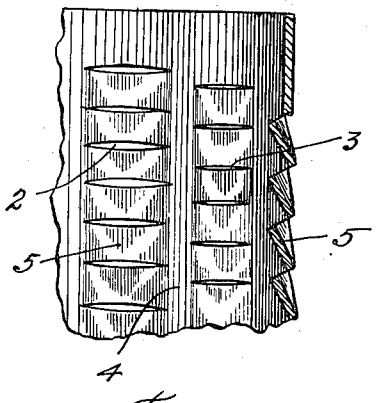

Fig. 2.

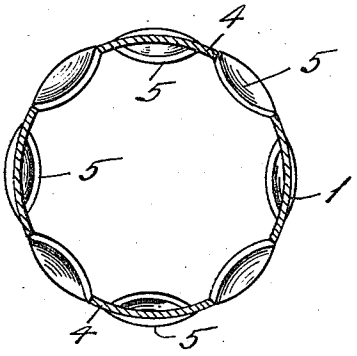

Fig. 3.

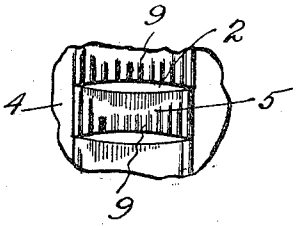

Fig. 4.

WITNESSES:
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UNITED STATES PATENT OFFICE.

MAHLON E. LAYNE, OF HOUSTON, TEXAS.

WELL-STRAINER.

1,001,655. Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed November 11, 1909. Serial No. 527,363.

To all whom it may concern:

Be it known that I, MAHLON E. LAYNE, citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Well-Strainers, of which the following is a specification.

This invention has relation to well screens.

A better screen than the wire wound strainer now commonly in use has been sought for a long time. The wire wound strainer is practical and efficient, but it has some objections. It is expensive and the wire coils are often dislodged thus spoiling the "gage" of the strainer. It is necessary to solder the coils and very often the wire becomes unfastened and the screen ineffective. While certain devices have been patented they have not proved satisfactory or as effective as the wire wound strainer.

The objects of the invention are the provision of a screen or strainer formed without the use of wire or wire fabric; the provision of a strainer having a plurality of horizontal openings in staggered relation; the provision of interior braces; the provision of inclined deflecting walls; and the provision of a strainer offering comparatively no resistance to an upward passage of liquid, but obstructing a horizontal passage of liquid or foreign matter.

Finally the object of the invention is to provide a strainer that will be strong, durable, efficient and simple and comparatively inexpensive to produce, also one in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in the following specification and illustrated in the accompanying drawings, wherein:

Figure 1 is a view in elevation showing a plurality of sections of the strainer secured together, Fig. 2 is a partial vertical section of the strainer, Fig. 3 is a horizontal cross sectional view, and Fig. 4 is a detail of a modified form.

In the drawings the numeral 1 designates the strainer which is preferably formed of sheet metal. The strainer is made in tubular form and is produced by bending a sheet of metal into form and suitably securing the longitudinal edges in a seam.

The body after being suitably formed is provided with a plurality of horizontal openings 2 and 3. These openings are arranged in vertical rows with vertical solid portions 4 therebetween. These solid portions are comparatively narrow especially when compared with the length of the openings. The openings 2 are disposed in staggered relation to the openings 3, that is each alternate row has its openings substantially parallel with the next alternate row. This arrangement is provided so as not to weaken the strainer and to prevent the openings of adjacent rows breaking through the portions 4.

It is to be noted that in forming the openings nothing more than slits are made, no metal being cut away. By suitable means the webs 5 between the openings of a row are bent inward at their upper ends and forced slightly outward at their lower ends thus providing upwardly and inwardly inclined walls or webs formed at an angle to the vertical side of the strainer. It is obvious that by this construction extremely narrow openings are presented to a lateral force, while on the other hand comparatively no obstruction is presented to an upward passage, the inclined webs having a tendency to deflect a liquid passing therethrough, to the center of the strainer. Another advantage incident to my construction resides in the fact that amount of power necessary to slit the metal and press it out is very much less than would be necessary to cut out sections of metal to form slots. Furthermore it will be seen that the width of slots may be varied by simply varying the distance which the dies pass each other, in the formation of the slits, so that only one set of dies is necessary.

By observing Fig. 3 it will be noted that the upper portions of the webs being projected inward and curved form interior braces which greatly strengthen the strainer and add to its stability. It has been shown by a test that a strainer constructed as herein described is considerably stronger in collapsible strength than a similar body having no openings or cuts. This is due to the bending of the webs and the interior braces formed thereby.

This strainer is designed for gravel and coarse sand and it is apparent that by varying the angle at which the webs are bent, the openings therebetween may be increased or diminished in size so that different gages of

coarse or fine strainers may be had. It is to be understood that this strainer may be made of sheet metal or cast or produced in any other manner according to the desires of the manufacturer.

The strainer is made in sections and these sections secured together by a band riveted thereto as shown at 6 in Fig. 1, or the ends of the sections may be threaded as shown at 7 in the said figure and connected by a collar 8. However it is to be understood that the sections may be connected in any suitable way.

In Fig. 4 I have shown a slightly modified form in which the lower portion of the webs 5 are corrugated longitudinally of the strainer as shown at 9. This may be done so that where a flat obstruction rests against the lower edges of the webs, it will not prohibit the upward passage of a liquid.

It will be noted that in the strainer as just described, the tendency of sand or dirt to collect at the slits and clog them is reduced by reason of the fact that the slits open downwardly, so that the tendency of particles of sand or dirt is to drop away from the opening instead of settling therein, and that in the case of those particles which are of sufficient size to pass the slit there is no tendency to clog after the narrowest portion thereof is passed due to the fact that the size of the passage or opening increases after the narrow portion is passed.

While the screening slits are shown as horizontal, it will be understood that the invention broadly contemplates other arrangements, the only requirement being that the slits extend circumferentially, that is, at an angle to the axis of the screen instead of parallel thereto, the scope of the invention, in so far as angle of the slits is concerned, being indicated by the claims.

What I claim, is:

1. A well screen comprising a tubular metal member provided in its sides with a series of circumferential slits, with the edge of the metal below each slit lying to the inside of the edge above the slit, and with the inner corner of the edge above each slit opposite the outer corner of the edge below the slit.

2. A well screen comprising a tubular member provided in its sides with a series of adjacent slits substantially parallel with each other, and directed circumferentially, with the strips of metal between the slits inclined outwardly from their upper to their lower edges, so that the inner corner of the edge above each slit lies opposite and adjacent the outer corner of the edge below the slit.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAHLON E. LAYNE.

Witnesses:
T. S. DAVISON,
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