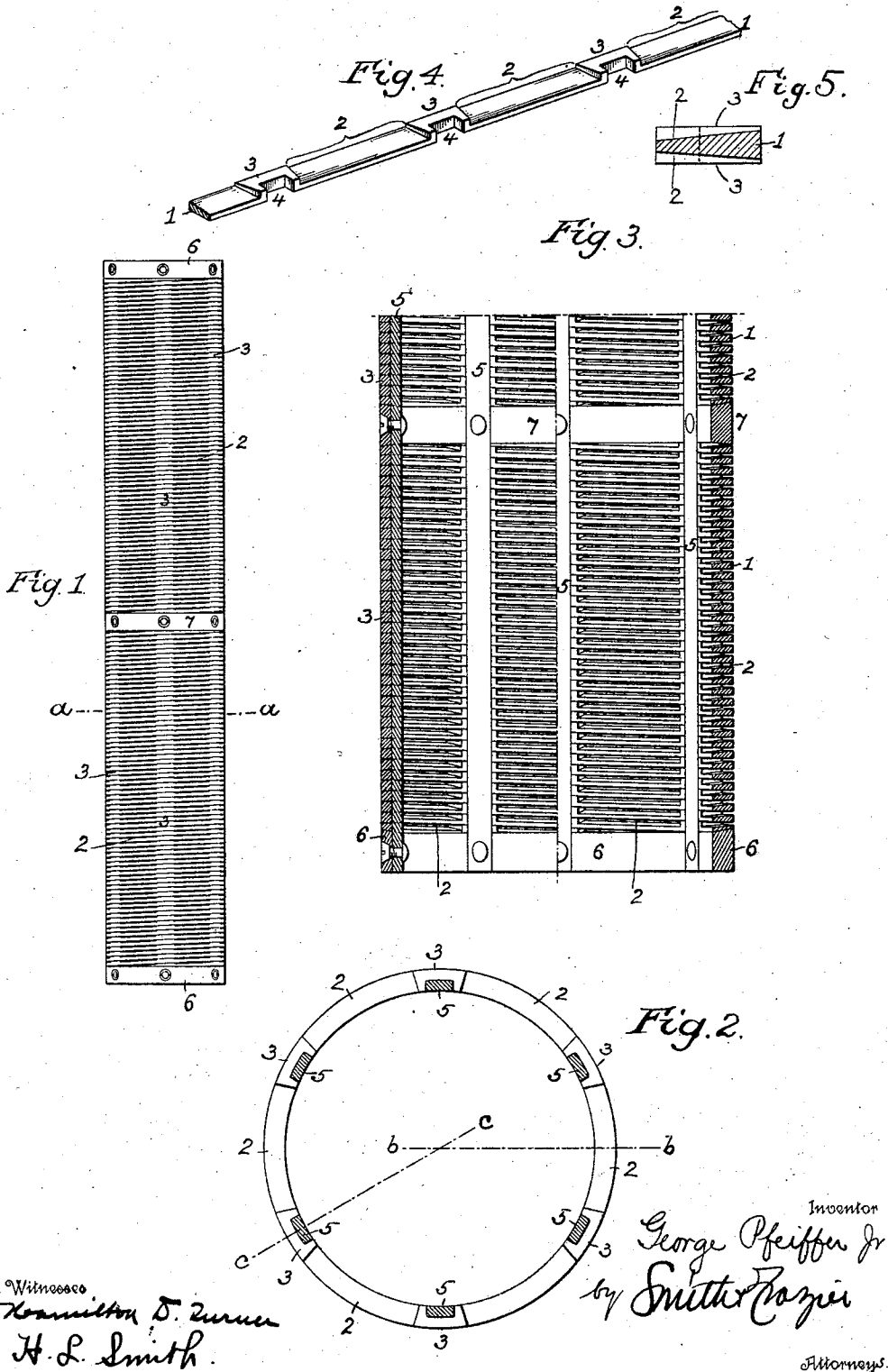


No. 859,836.

PATENTED JULY 9, 1907.

G. PFEIFFER, Jr.
WELL STRAINER.

APPLICATION FILED JULY 19, 1906.



Witnessed
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UNITED STATES PATENT OFFICE.

GEORGE PFEIFFER, JR., OF BROWN MILLS, NEW JERSEY.

WELL-STRAINER.

No. 859,836.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed July 19, 1906. Serial No. 326,867.

To all whom it may concern:

Be it known that I, GEORGE PFEIFFER, Jr., a citizen of the United States, residing in Brown Mills, New Jersey, have invented certain Improvements in Well-Strainers, of which the following is a specification.

The object of my invention is to provide a strong, cheap, simple, and effective screen of large capacity in proportion to its size. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which

Figure 1 is a side elevation of a well screen constructed in accordance with my invention; Fig. 2 is an enlarged sectional plan view of the same on the line *a-a*, Fig. 1; Fig. 3 is a vertical section of part of the screen, partly on the line *b-b*, and partly on the line *c-c*, Fig. 2, Fig. 4 is a perspective view of part of a wire intended for the production of a well screen in accordance with my invention, and Fig. 5 is a sectional view of a modified form of the wire.

The most effective form of Artesian well screen now in use is one composed of a cylindrical tube having segmental slots milled therein for the passage of the water, but such screen is expensive and does not provide as large an area of water passage as is desirable. Attempts have been made to overcome this objection by making screens of wire coiled around an internal frame so as to form passages between the successive convolutions, but screens of this type, besides lacking stability and rigidity, are deficient in capacity because of the relatively large area of water passage occupied by the members of the internal frame upon which the wire is coiled. It is also difficult to produce screens of this type having fine slots, the fineness of the latter being dependent upon the fineness of the thread which can be cut upon the internal frame for the support of the wire. Screens have also been proposed in which wires having alternating full and recessed portions have been coiled upon the outside of a perforated tube so as to form slots between successive convolutions of the wire, but the capacity of a screen of this type is limited to the area of the perforations in the inner tube, and even this area is not available unless the convolutions of the wire are held free from contact with the surface of the tube.

My invention consists of a screen of the coiled wire type, having recesses formed in the wire before coiling the same, the recesses alternating with solid portions of the wire, whereby, in coiling the latter, one convolution can rest in direct contact with the next, the recessed portions alining with one another in the successive convolutions, so that, when the coiling of the wire is completed, slots are formed between said successive convolutions, and longitudinal bars are presented for stiffening the screen, and, for engagement with an internal supporting frame, which is, by preference, let into recesses in the longitudinal bars of the

screen in order that it may not contract the internal area of the latter and thus lessen its capacity.

In Fig. 4 of the drawing, 1 represents a piece of wire for the production of a well screen in accordance with my invention, this wire being, by preference, of rectangular cross section and of greater transverse width than vertical thickness. In the upper face of this wire or, if desired, in both the upper and lower faces of the same, as in Fig. 5 are formed recesses 2 which alternate with portions 3 of the full thickness of the wire, the recesses being, by preference, somewhat deeper on that side of the wire which is to constitute the inner side of the coil than on the outer side of the latter, in order to provide a flaring passage for the water and prevent clogging of the screen by particles of solid matter. These recesses may be formed in the face or faces of the wire by cutting, pressing, or in any other desired manner, preference being given to the formation of the recesses by pressing the wire between rolls in order to reduce to a minimum the expense of production. A wire of this character can be made relatively thin, so as to provide for the maximum number of convolutions in a given length of coil, and, as each coil has rigid bearing upon the adjoining coils at various points in each convolution, a rigid tubular screen can be produced by the simple coiling of the wire around a mandrel of the proper size, and then uniting the end coils and, if desired, also uniting adjoining coils at any desired number of points in the length of the screen, as by soldering or brazing. In order to increase the rigidity of the screen, however, I combine the wire coils with an internal supporting frame, and, for this purpose, I form in that side of each of the portions 3 which is to constitute the inner part of a coil a recess 4 for the reception of a longitudinal bar 5 of said internal supporting frame, as shown in Fig. 2, in order that the bar may not project into the bore of the screen and thereby lessen the capacity of the same.

The bars 5 may be secured to top and bottom brace rings 6, and at the center or other points in the length of the internal frame thus provided said frame may be stiffened by other brace rings 7, all of the rings being secured to the bars 5 by means of transverse bolts and nuts, as shown in Fig. 3, or by other suitable means, the rings 6 and 7 also bearing upon the end convolutions of the coils of wire 1, and being preferably beveled on their contact faces, in order to exert both longitudinal and lateral pressure upon said coils, and thus tend to retain the latter in both directions.

The wire 1 may be coiled directly on the internal frame, or it may be separately coiled, and then slipped onto the frame from the ends of the same.

By reason of my improved method of forming the screen I am enabled to provide a maximum number of convolutions in a given length and thereby secure an amply sufficient slot area, while at the same time em-

ploying very fine slots, my improved screen in this respect being more acceptable than any other screen of the coil type with which I am familiar.

In the drawing no attempt has been made to represent the relative proportions of the parts, as, owing to the limitations upon the draftsman, a scale drawing would of necessity have some of its parts so small as to prevent their proper reproduction.

I claim:—

- 10 1. A well screen consisting of a closely coiled wire having portions of full depth alternating with portions recessed to form slots between successive convolutions, and an internal supporting frame having bars forming bearings for the full portions only of the wire, the intervening recessed portions being without backing.
- 15 2. A well screen consisting of a closely coiled wire having portions of full depth but with recesses in their inner peripheries, said full portions alternating with portions recessed to form slots between successive convolutions, and an internal supporting frame having bars fitted to the in-
- 20

ternal peripheral recesses of the full portions of the wire.

3. A well screen consisting of a closely coiled wire having alternating recessed and full portions, and an internal supporting frame having vertical bars and end and intervening rings, said rings bearing upon end convolutions of the coil. 25

4. A well screen consisting of a closely coiled wire having alternating recessed and full portions and beveled end convolution, an internal supporting frame, and a ring secured thereto and having a beveled face bearing upon said beveled end convolution of the coil. 30

5. A well screen consisting of a closely coiled wire having alternating recessed and full portions and beveled end convolutions, an internal supporting frame, and a series of rings secured thereto and having beveled faces which bear upon said beveled end convolutions of the coiled wire. 35

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

GEORGE PFEIFFER, Jr.

Witnesses:

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