No. 746,096. PATENTED DEC. 8, 1903.

G. J. KARSCH.

WELL SCREEN.

APPLICATION FILED NOV. 4, 1901.

NO MODEL.

Fig. I.

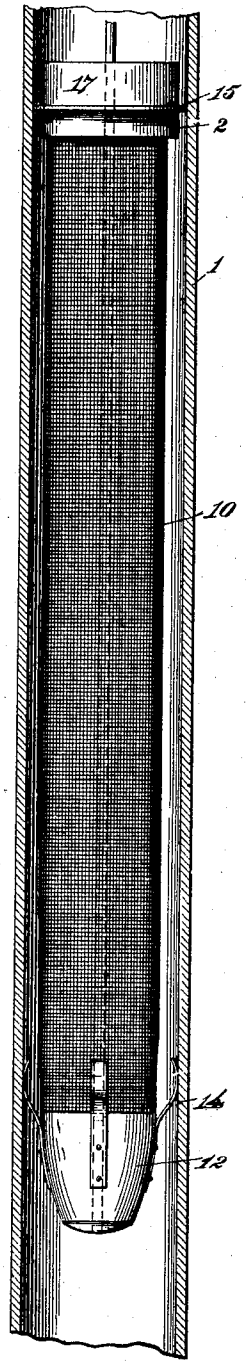
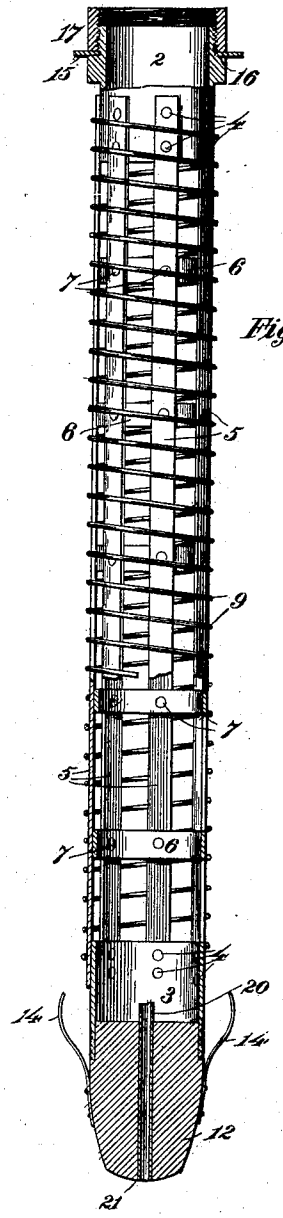


Fig. II.



Witnesses

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No. 746,096. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

GEORGE J. KARSCH, OF ROCKISLAND, TEXAS.

WELL-SCREEN.

SPECIFICATION forming part of Letters Patent No. 746,096, dated December 8, 1903.

Application filed November 4, 1901. Serial No. 81,059. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. KARSCH, of Rockisland, in the county of Colorado, State of Texas, have invented certain new and useful Improvements in Well-Screens, of which the following is a complete specification, reference being had to the accompanying drawings.

My invention relates to improvements in screens for wells of comparatively narrow diameter which, being bored, driven, or otherwise formed, are provided with metallic or other symmetrical casing advanced into the well as the operation of sinking it proceeds.

Devices of the same general type as my invention are employed within well-casings for straining and separating the liquid within the well from gravel, sand, or other solid particles lying loose therein.

The object of my invention is to produce improvements in such devices whereby a symmetrical strainer is provided having an exceedingly firm and rigid frame, which, however, is so constructed as to interpose the least obstruction to the straining operation and in which provision is made to afford a full and free supply to the pump with which the strainer is connected.

In the accompanying drawings, Figure I is a sectional view of a portion of a well-casing, showing in elevation within the same a terminal section of my strainer. Fig. II is a side elevation of the strainer shown in Fig. I with the outer covering thereof removed, portions of its frame being shown in section.

Referring to the numerals on the drawings, 1 indicates, by way of illustration, a portion of a well-casing within which in practice my strainer operates.

My strainer may consist of a number of sections, one screwed to the other, and as such sections are substantially identical in construction I illustrate and describe a single terminal section.

Referring to Fig. II of the drawings, 2 indicates the head-piece, and 3 the end piece, of a strainer-section. These preferably consist of short tubular metallic members, to which are rigidly united, as by rivets 4, a series of parallel connecting members 5. The number of the connecting members 5, which constitute the complete series in a frame-section, may be varied in proportion to the length and diameter of the frame. The members 5 are designed to afford a rigid frame and are placed at such distances apart as will afford free and unobstructed openings between them.

At frequent intervals between the members 2 and 3 I provide, preferably within the connecting members 5, rings 6, which are preferably made of such a weight of metal as will render the frame structure of which they form a part rigid and unyielding, the rings 6 being fixedly secured to each of the members 5, as by rivets 7. The rings 6, being intended as reinforcing or bracing members, are separated by such distances as to add no material obstruction to the passage of water or other liquid into the interior of the frame.

The frame of the strainer-section, consisting of the members 2, 3, 5, and 6, united as specified, constitutes an oblong structure of a general polygonal contour in cross-section. To convert its polygonal contour into a substantially cylindrical one, I provide a spiral wrapping 9, preferably extending from the member 2 to the member 3, to which, respectively, the ends of the wrapping are firmly secured. The wrapping 9 is preferably made of a wire sufficiently heavy to withstand the necessary strain and to constitute a support for holding the covering 10 (see Fig. I) well out of contact with the outer faces of the members 5, respectively. The wrapping 9 is distinguished from spiral wrappings used in similar devices heretofore employed in that each winding of the spirally-disposed wrapping is widely separated from the next winding, the spaces between adjacent windings being preferably substantially equal to the spaces between adjacent members 5.

The covering 10, above alluded to, consists of a close-fitting tubular sheath of fine-mesh wire fabric. It constitutes the strainer proper and being secured at its opposite ends to the members 2 and 3, respectively, affords means for straining any liquid which may pass through it. Free passage of liquid through the covering or sheath 10 is permitted by the wide openings between the various members, including the wrapping 9, which constitute the frame of my device. Moreover, the wrapping 9, as has already been suggested, serves

not only to hold the sheath 10 in symmetrical shape, but holds it out of contact with the members 5, so that practically the entire area of the sheath is made available as a strainer.

In addition to the structure previously specified I employ a terminal plug 12, which fits snugly within the end of the member 3 and which is provided around its periphery with a series of resilient guide members 14. These serve by contact with the inner sides of the casing 1 to hold the strainer concentric therewith and to keep the sheath 10 free and unobstructed for the performance of its office. At the upper end I provide a similar guide member 15, which performs the function, in addition to that of keeping the strainer concentric with the inner walls of the casing 1, of preventing a liquid within the casing from rising above the top of the strainer, thereby insuring that all liquid which passes into the interior of the strainer or pipe connected therewith shall find access into it through the sheath 10 or strainer proper.

The guide member 15 for the reasons stated preferably consists of an annular gasket resting upon an annular projection 16 upon the member 2 and secured in place thereto, as by a ring 17, threaded to the upper end of the member 2. The outer periphery of the member 15 or gasket extends so far beyond the periphery of the annular projection 16 and ring 17 as to make close but yielding contact with the inner wall of the casing to which it is fitted. The ring 17, internally threaded, preferably extends sufficiently beyond the upper end of the member 2 to afford a union for the pipe connection with the strainer-section or with an additional strainer-section, as required. Of course an intermediate strainer-section intended to thread to the ring 17 would have its lower member 3 externally threaded, as indicated by dotted lines 18 in Fig. II.

As a means for facilitating the descent of the strainer through comparatively loose earth I prefer to provide within the strainer a pipe 20, which, passing through the plug 12, as indicated at 21, is adapted to discharge a stream under pressure ahead of the strainer. By this means the strainer is enabled to descend, the water discharged by the pipe 20 being returned through the screen and thence pumped out in the usual manner. The pipe 20 ascends to the surface and connects with a source of water-supply. (Not illustrated.)

In operation my strainer, as shown in Fig. I, or a plurality of united strainer-sections, if necessary, are attached to the end of the suction-pipe of a pump and being introduced into the casing 1 of a well are lowered into the liquid contained therein. Being in required position, liquid passing into the interior of the strainer exclusively through the foraminous sheath 10 is strained thereby and is in condition to respond to the operation of the pumping mechanism, to which it is attached, without tendency to interfere with its operation—as, for example, by clogging or cutting the valve.

What I claim is—

In a well-strainer, the combination with upper and lower members rigidly united by a series of widely-spaced parallel connecting members and a number of reinforcing members secured at frequent intervals to and within the connecting members, whereby a rigid frame of comparatively unobstructed permeability throughout is provided, of a wrapping surrounding the connecting members and a sheath surrounding and supported by the wrapping.

In testimony of all which I have hereunto subscribed my name.

GEORGE J. KARSCH.

Witnesses:
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A. C. MCFALL.