No. 857,313. PATENTED JUNE 18, 1907.

G. W. STANCLIFF.

WELL SCREEN.

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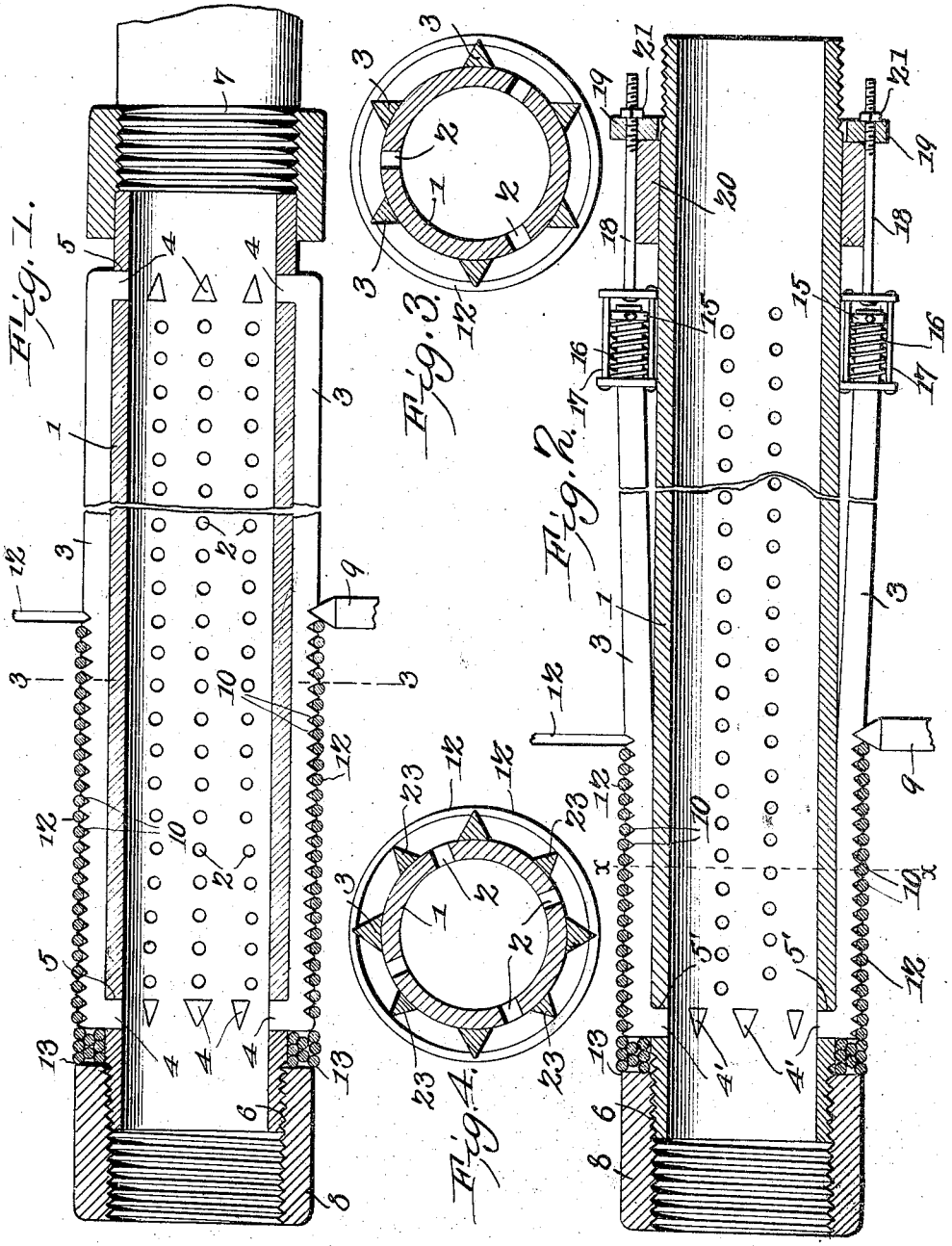


Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

WITNESSES:

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WELL-SCREEN.

No. 857,313. Specification of Letters Patent. Patented June 18, 1907.

Application filed March 12, 1906. Serial No. 305,673.

To all whom it may concern:

Be it known that I, GEORGE W. STANCLIFF, a citizen of the United States, residing at El Campo, in the county of Wharton and State of Texas, have invented a new and useful Well-Screen, of which the following is a specification.

This invention relates to screens, such as are used in connection with driven and other deep wells, for the purpose of preventing the admission of sand or gravel and other like material into the well casing; and it has particular reference to that class of well screens which are composed of wire wound around a section of tubing and spaced from the latter by means of a plurality of interposed ribs, an example of this class of screens being found in the patent issued to myself on the eighteenth day of October, 1904, #772,843.

The objects of the present invention are to simplify the construction of this class of screens; and with this and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be made, when desired.

In the drawings, Figure 1 is a longitudinal sectional view illustrating one form of the improved screen in process of being manufactured. Fig. 2 is a similar view illustrating another form of screen. Fig. 3 is a transverse sectional view taken on the plane indicated by the line 3—3 in Fig. 1. Fig. 4 is a section on line x—x, Fig. 2.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The improved screen, or strainer as it is sometimes called, is composed of a section of tubing 1 of suitable dimensions, having a plurality of apertures 2, 2 which may be of any desired size and shape, and which may be located as closely together as may be desired and in any preferred order or arrangement.

Exteriorly upon the tube section 1 there are placed a plurality of spacing ribs 3, 3, said ribs being disposed longitudinally of the tube. These ribs have been illustrated as being of triangular cross section, but it is not to be understood that they are necessarily of this shape. It is also to be understood that any desired number of such ribs may be used; that they may be spaced any desired distance apart; and that they may be made of any desired dimensions.

Under the construction illustrated in Fig. 1 of the drawings, the ribs 3 are provided with downturned ends 4, 4 at both extremities; said downturned ends constituting lugs which are inserted into notches or slots 5 in the tube 1 with which said ribs are thereby connected.

The tube 1 has been shown as exteriorly threaded at the ends thereof, as will be seen at 6 and 7; upon the threaded end 6 there is fitted a coupling sleeve or collar 8 whereby the tube may be connected with the next adjoining section of the well casing; the opposite end of the tube is adapted to be connected by means of a collar 8′ with the drive point of the tubing or casing. Both of the collars are disposed close to the ends of the ribs 3 for the purpose hereinafter set forth. After the ribs have been applied, they are to be notched to form seats for the whirls of the wire constituting the screen proper, and this notching is accomplished by means of a cutting tool, as 9, whereby notches 10 of any desired size and shape may be formed.

The winding of the wire, which latter is designated 12, is preferably commenced in the space 13 between the ends of the ribs and the collar 8, and wire is wound in said space until the latter is filled, and the wire is flush with the surface of the ribs; the wire is then secured by soldering, and it may then be wound under such tension as may be necessary to secure the most satisfactory result. After the winding of the wire has been finished, the end of the wire may be secured by soldering or in any suitable manner. It will be noted that by filling the space 13 with the first whirls of the wire the exterior diameter of the screen is made substantially uniform throughout the length thereof.

In the form of device shown in Fig. 2 of the drawings, the ribs are connected with the tube at one end only by means of downturned portions or lugs, here designated 4′, that are inserted into slots, here designated 5′. Upon the opposite or free ends of the ribs are mounted set collars 15 adjacent to

which are placed short, but strong, coiled springs 16 inclosed within connecting frames 17 which are connected by means of bolts 18 with a ring or annulus 19 adjusted upon the tube 1 and bearing against a collar 20 which may be shrunk or threaded upon said tube. By tightening the nuts 21 upon the bolts 18 against the ring or annulus 19, the connecting frames 17 will be drawn in the direction of said ring or annulus, thus causing the springs 16 to exert pressure against the collars 15 and thereby exerting tension in an outward direction upon the ribs 3. Thus, if said ribs should be displaced laterally by the action of the cutting tool, the action of the springs will instantly restore them to normal position. By this simple mechanism, the ribs may be held under strong tension while they are being subjected to the notching operation, as will be readily understood. By providing ribs which are tensioned by springs in this manner the same will obviously exert a constant outward pressure upon the coiled wire so that the same will be held taut under all conditions. It would be possible to dispense with the springs 16, but it might then become necessary, in the event of displacement of the ribs, to temporarily suspend operations while the screws or bolts 18 are being tightened for the purpose of taking up slack and restoring the ribs to a perfectly straight condition, or, in other words, putting the ribs under tension.

As illustrated in Fig. 4 of the drawings, there are interposed between the ribs 3, 3 auxiliary ribs 23, 23, which have been illustrated as being trapezoidal in cross-section, and which are sufficiently smaller than the ribs 3 to insure their not being touched by the cutting tool. By employing these intermediate filling ribs, as they may be termed, the wire will be spaced from the body of the tube 1 with equal efficiency as though each rib were notched to form wire seats, while the work and strain upon the cutting mechanism is obviously reduced to a considerable extent.

Having thus described the invention, what is claimed is:—

1. In a well screen the combination with an apertured strainer tube and a collar upon one end portion thereof; of ribs disposed longitudinally upon the tube and engaging it adjacent the collar there being a space between said ribs and collar, said ribs having notches in their outer edges, and a wire coiled around the tube and ribs and seated in the notches in the ribs, the first whirls of the coil being secured within and entirely filling the space between the collar and the ribs.

2. In a well screen the combination with an apertured strainer tube and collars upon the end portions of the tube; of ribs disposed longitudinally upon and engaging the tube between the collars, said ribs having notches in the outer edges, a wire coiled around the tube and ribs and seated in the notches in the ribs, the first whirls of the coil being secured within and entirely filling the space between one of the coils and the ribs, and ribs interposed between and parallel with the first-mentioned ribs and having smooth outer faces contacting with the coiled wire.

3. In a well screen the combination with an apertured tube; of ribs disposed longitudinally upon and having one end engaging the tube, means engaging the other end of the ribs for exerting a constant pull thereon, and a wire coiled around the tube and ribs and holding said ribs under lateral tension.

4. In a well screen the combination with an apertured strainer tube; of a plurality of ribs disposed longitudinally upon and having one end seated in the apertures within the tube, said ribs having notches in their outer portions, means secured to the tube for exerting a constant pull upon the ribs, and a wire coiled around the ribs and tube and seated within the notches, said wire being held constantly under tension by the ribs.

5. In a well screen the combination with a strainer tube and a collar upon one end portion thereof; of ribs disposed longitudinally upon the tube and engaging it adjacent the collar, there being a space between the ribs and collar, said ribs having notches in their outer edges, a wire coiled around the tube and seated in the notches in the ribs, one end portion of the wire being coiled within the space between the ribs and collar and ribs interposed between and parallel with the first mentioned ribs and having smooth outer faces contacting with but not engaging the coiled wire.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE W. STANCLIFF.

Witnesses:

J. A. DANIELSEN,

C. B. WILLIAMS.