T. L. DECKER.

DRIVE WELL POINT.

APPLICATION FILED JULY 10, 1909.

945,490. Patented Jan. 4, 1910.

Fig. 1.

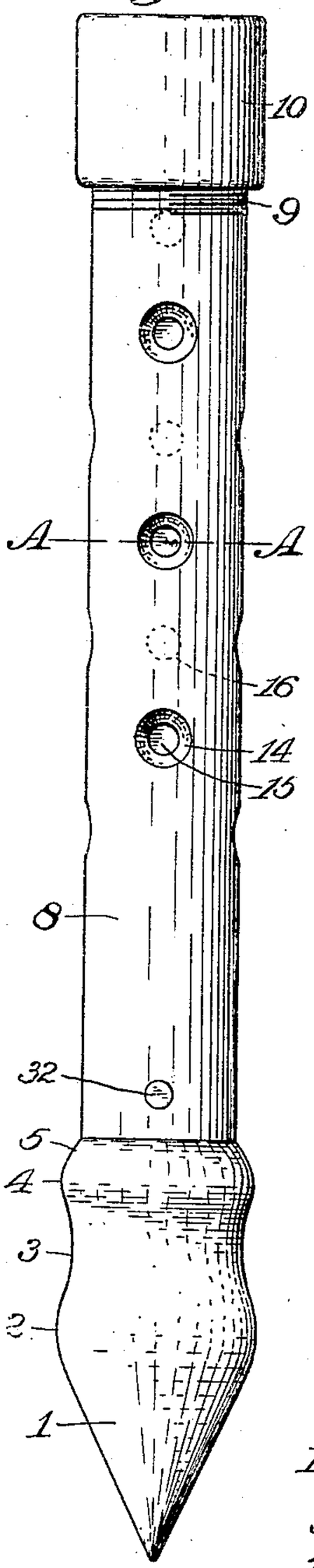


Fig. 2.

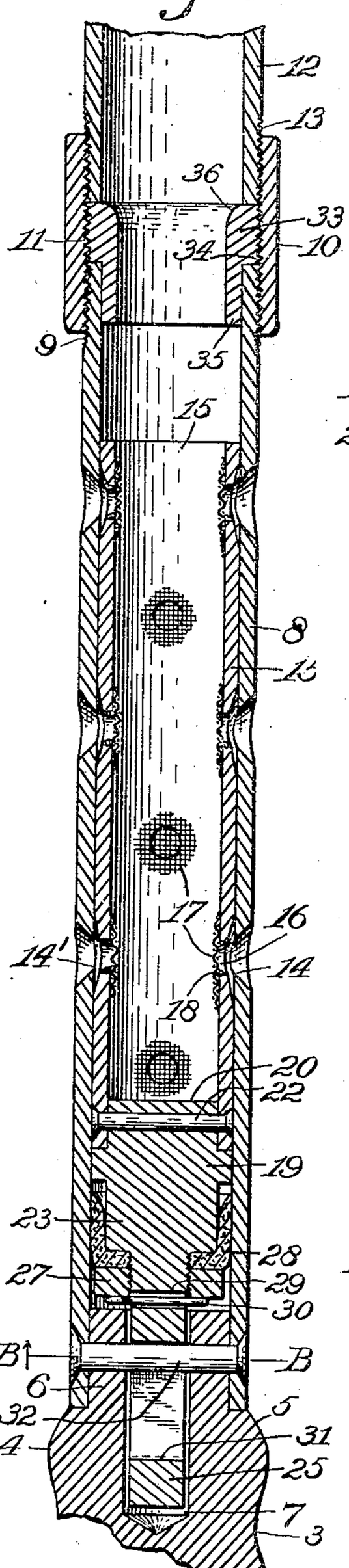


Fig. 3.

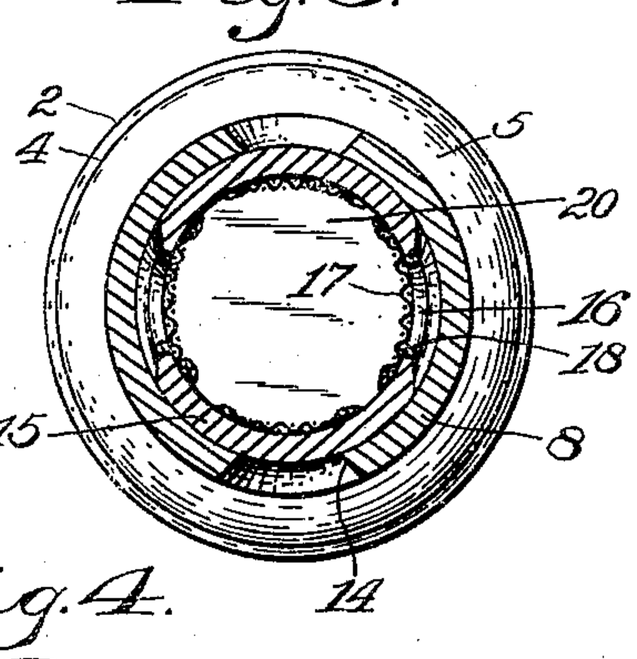


Fig. 4.

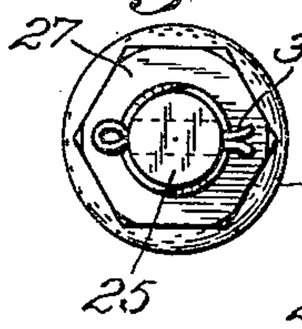


Fig. 5.

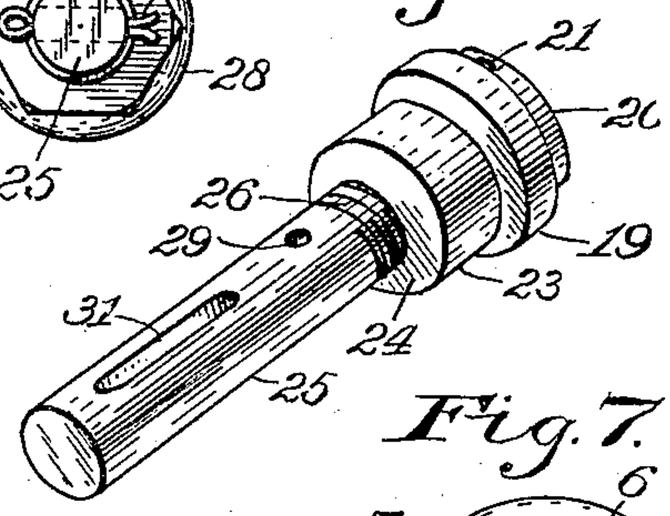


Fig. 6.

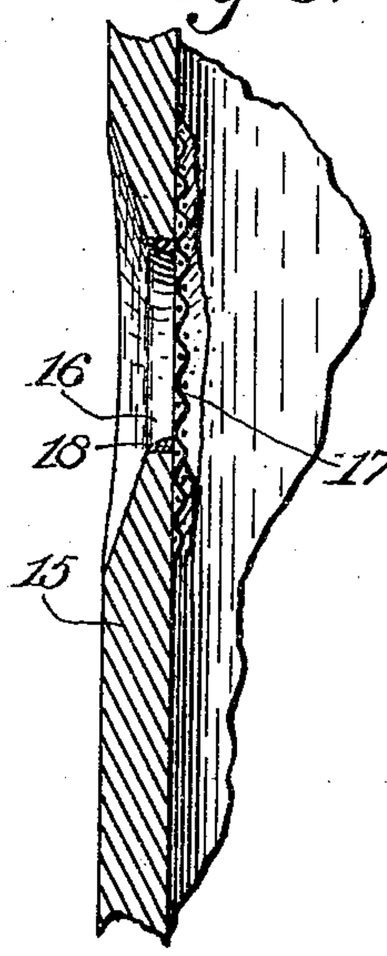


Fig. 7.

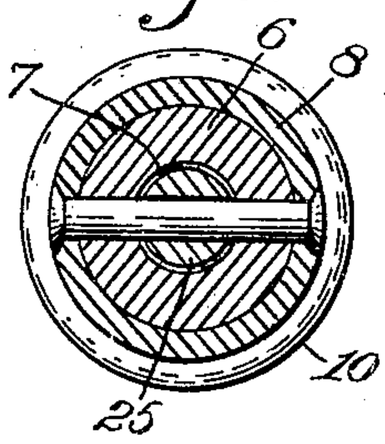
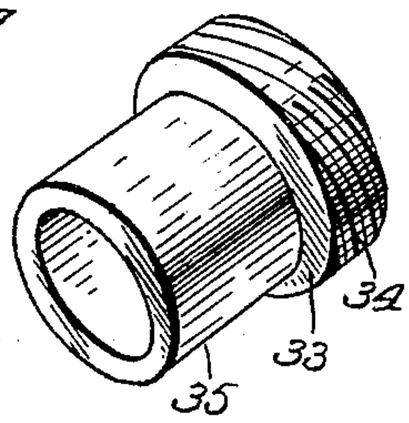


Fig. 8.



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DRIVE WELL-POINT.

945,490. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed July 10, 1909. Serial No. 506,917.

To all whom it may concern:

Be it known that I, THEODORE L. DECKER, a citizen of the United States, residing at Charlottesville, in the county of Hancock and State of Indiana, have invented certain new and useful Improvements in Drive Well-Points; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to the type of well-points that are designed to be attached to a well-tube and driven into the ground, the invention having reference particularly to a well-point having apertures in the side and provided with means for closing the apertures while the well-point is being driven, the closing means being movable so as to open the apertures after having driven the well-point to the desired depth.

The object of the invention is to provide an improved and reliable well-point that may be adapted to be manufactured of simple parts and at relatively small cost, and which may be driven without liability to injury or filling of the interior of the well-point with earth or sand, a further object being to provide an improved strainer for well points, and means for protecting the strainer while the well-point is being driven.

The invention consists in a well point comprising an apertured main-tube provided with a penetrating point of novel construction, an aperture-closing tube movable within the main tube and having apertures therein that normally register with the apertures that are in the main tube, there being strainers on the inner side of the aperture-closing tube that extend across the apertures therein, the aperture-closing tube being provided with a guide-head whereby it is guided in the main tube, the head having packing thereon engaging the main tube, and the main tube being provided with stops for limiting the movement of the aperture-closing tube; and the invention consists further in the novel parts, and combinations and arrangements of parts, as hereinafter particularly described and then pointed out in the accompanying claims.

Referring to the drawing, the Figure 1 is an elevation of one of the complete drive well points constructed substantially in accordance with the invention, the apertures in the main tube thereof being closed; Fig. 2, a vertical central sectional view of the complete point connected to a well tube and the penetrating point broken away, the aperture-closing tube being shown in proper position for opening the apertures in the main tube; Fig. 3, a horizontal sectional view on the line A A in Fig. 1; Fig. 4 an end view of the guide head of the aperture closing tube; Fig. 5, a perspective view of the main part of the guide head; Fig. 6, a fragmentary sectional detail of the aperture-closing tube on an enlarged scale; Fig. 7, a transverse sectional view on the line B B in Fig. 2, looking upward; and Fig. 8, a perspective view of an annular stop device for limiting the upward movement of the aperture-closing tube while driving the well-point.

Similar reference characters throughout the various figures of the drawings indicate like parts or features of construction referred to herein.

The improved well-point comprises a penetrating point that is circular in cross-section and has a tapering or conical end 1, and body portion 2 that is somewhat greater in diameter than the remaining portions of the point proper, being designed to be slightly larger than the pipe couplings of the well tube, the point proper having a relatively smaller body portion 3 above the larger portion 2 and a relatively larger portion 4 above the portion 3, the portion 4, however, being of slightly less diameter than the portion 2, a tapering portion 5 extending upward from the portion 4, so as to adapt the point proper to be withdrawn if necessary with the minimum amount of resistance in the earth. The upper end of the point proper has a shank 6 thereon and a bore 7 extending downward through the shank into the body portion of the point. A main tube 8 is fitted tightly over the shank 6, and the upper end of the tube has screw-threads 9 thereon. A pipe-coupling 10 has screw-threads 11 extending therethrough and the threads at one end of the coupling engage the screw-threads 9, the coupling being adapted to be connected to a well-tube 12 having screw-threads 13 on its lower end.

The main tube 8 has a suitable number of apertures 14 in the wall thereof that are preferably counter-sunk at their outer ends, the apertures being spaced at uniform dis-

tances apart. An aperture-closing tube 15 is arranged movably within the main tube so as to fit closely therein and be held frictionally from free movement, but permitting of forcible movement of either tube relatively to the other one. The tube 15 has a suitable number of apertures 16 therein at the inner ends of which screens 17 are secured to the inner side of the wall of the tube by solder 18, the screens extending across the apertures, so as to exclude sand or earth from the interior of the tube. For economical reasons separate pieces of wire-screen are placed at each aperture, but obviously a single screen may extend along the whole interior of the wall of the tube 15 and across all of the apertures therein, if desired.

A guide-head 19 is constructed so as to be relatively heavy and is adapted to fit closely in the main tube 8, and has a reduced upper end portion 20 that extends into the tube 15 and has a transverse hole 21 therein to receive a rivet 22 whereby it is secured in the lower end portion of the tube 15, the guide-head having a relatively smaller portion 23 at the end of which is a shoulder 24, from which extends a relatively long guide-part 25 that is relatively smaller in diameter than the portion 23 and has screw-threads 26 thereon near the shoulder 24, a nut 27 being placed on the screw-threads and securing a cup shaped packing 28 against the shoulder 24, the packing extending around the portion 23 and against the inner side of the wall of the main tube 8 to produce frictional resistance as between the main tube and the aperture-closing tube, for ordinarily preventing longitudinal movement of the latter tube. The guide portion 25 preferably has a pin-hole 29 therein adjacent to the nut in which a cotter 30 is placed, so as to engage and hold the nut to prevent it from becoming loose. The guide portion 25 has also a slot 31 arranged longitudinally therein through which a rivet 32 extends whereby the shank 6 is secured in the lower end of the main tube 8, the rivet serving as a stop for the aperture-closing tube, the arrangement being such that the rivet is in the upper end of the slot when the apertures are open to admit water into the tubes as in Fig. 2, and the rivet extends through the lower end of the slot when the tube 15 is moved upward and closes the apertures 14.

In order to relieve the rivet 32 of destructive strains while driving the well-point, an annular stop 33 is provided that has external screw threads 34 and is screwed into the coupling 10 so as to be approximately midway of the ends of the coupling, the internal diameter of the stop being somewhat less than the internal diameter of the tube 8 or so as to be approximately equal in diameter to that of the tube 15, so that the upper end of the tube 15 shall be prevented from passing the stop, the stop-ring preferably having an annular projection 35 thereon extending downward into the main tube 8, so as to serve as a substantial abutment which is reinforced by the well tube 12 that extends into the coupling 10 against the stop-ring 33, the upper end of the stop-ring preferably having a beveled inner side 36, so that no abrupt obstacle may be presented to a rod or weight that may be lowered through the well tube down to the end 20 of the guide-head of the aperture-closing tube.

In practical use the aperture-closing tube is caused to rise against the projection 35 of the annular stop when the driving blow is struck on the well tube and is so retained by frictional resistance, as will be understood, the tube 15 being prevented from turning rotatively by reason of the rivet 32 extending through the slot 31. After the well has been driven to the desired depth a rod or bar may be let down into the well-tube and permitted to forcibly strike the end 20 of the guide-head, which will drive the tube 15 down until stopped by the rivet or stop-pin 32 as in Fig. 2, the pump may then be applied and after testing for water if it be desired to drive farther it is evident that on the first blow on the well tube the tube 15 will be forced up again, so as to close the apertures 14, and driving may continue as before, and as before the apertures may again be opened when required, as above described.

Having thus described the invention, what I claim as new, is:—

1. A drive-well point including an apertured main tube that is closed at one end thereof, an aperture-closing tube movable in the main tube toward or from the closed end and having apertures therein, screens on the inner side of the aperture-closing tube extending across the apertures therein, an annular stop secured in the opposite end of the main tube opposite the aperture-closing tube, and means for guiding the aperture-closing tube to prevent rotation thereof.

2. A drive-well point including an apertured main tube, a coupling on one end of the main tube, an annular stop screwed into the coupling at the end of the main tube, an aperture-closing tube movable in the main tube to or from the annular stop and having screened apertures therein registering with the apertures of the main tube when moved away from the stop, and a stop in the main tube limiting the movement of the aperture-closing tube away from the annular stop.

3. A drive-well point including an apertured main tube provided with a penetrating point having a recess in its inner end, the tube having apertures in its side, an aperture-closing tube movable in the main tube to close the apertures therein and itself

having apertures to register with the apertures of the main tube, screens on the inner side of the aperture-closing tube opposite the apertures thereof, a guide-head attached to the aperture-closing tube and having a slot therein, the guide-head extending into the recess of the point, and a stop-pin extending through the slot and securing the point to the main tube.

4. A drive-well point including an apertured main tube, a penetrating point attached to one end of the main tube and having two portions that are greater in diameter than the remaining portions thereof, the one of the two portions that is the nearer to the tube being slightly less in diameter than the other one of the two larger portions, an aperture-closing tube movable within the main tube and having a guide-head that is normally stopped at the inner end of the penetrating point, the aperture-closing tube having screened apertures therein registering with the apertures of the main tube, a stop in the opposite end of the main tube opposite the aperture-closing tube, and means for guiding the aperture-closing tube to prevent rotation thereof.

5. A drive-well point including a main tube having apertures therein, an aperture-closing tube movable in the main tube and having a guide-head secured to one end thereof, the aperture-closing tube having apertures therein provided each with a separate screen, the guide-head having a guide portion provided with a slot, a packing secured to the guide-head in contact with the main tube, a penetrating point having a shank extending into the main tube and having also a recess therein extending through the shank and receiving the guide portion of the guide-head, and a rivet extending through the walls of the main tube and the shank and through the slot in the guide portion.

In testimony whereof, I affix my signature in presence of two witnesses.

THEODORE L. DECKER.

Witnesses:

VAN W. GLASCOCK,

WM. R. WHITE.