

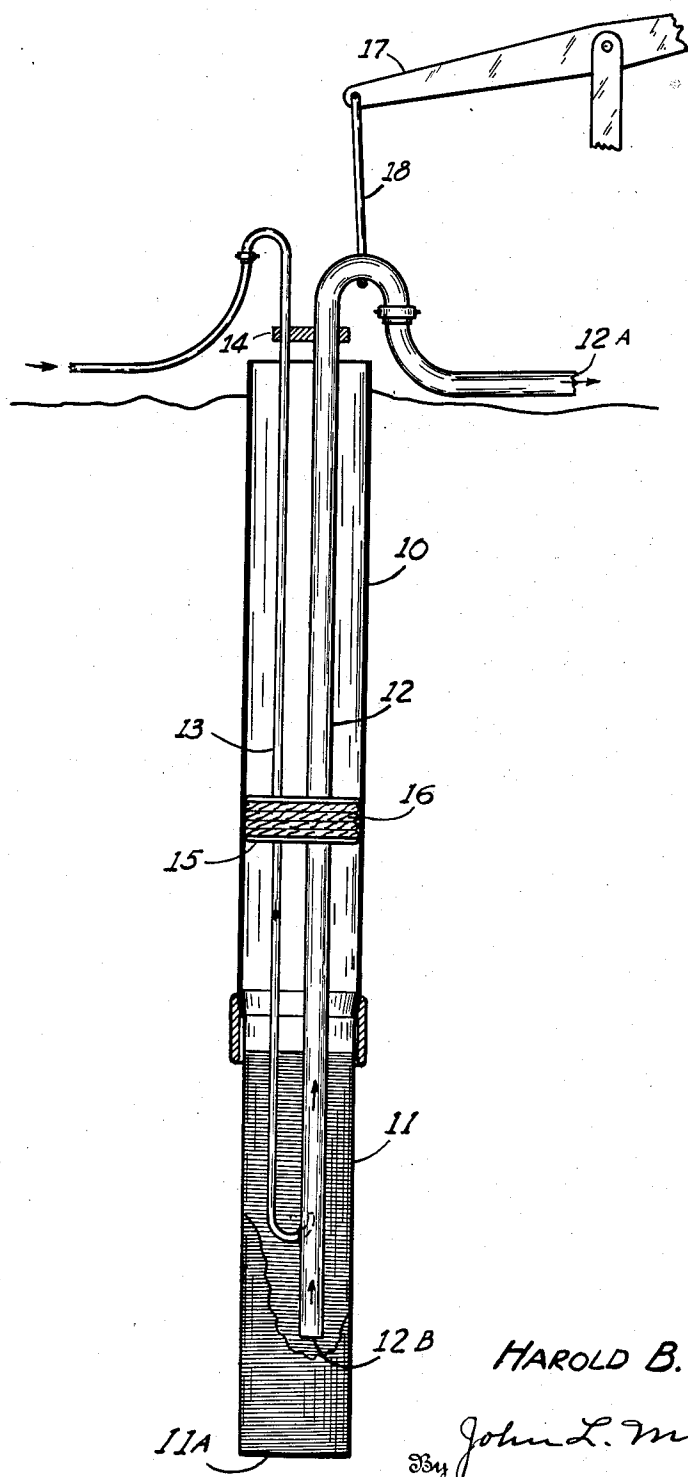
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METHOD AND APPARATUS FOR FORMING WELLS

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METHOD AND APPARATUS FOR FORMING
WELLS

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5 Claims. (Cl. 166—21)

This invention relates to a method and apparatus for "forming" driven or tube wells, i. e. removing alluvium and other relatively fine material from the adjacent subterranean area from which the liquid is to be drawn.

An object of this invention is to provide simple and efficient means for expediting the completion of wells immediately following installation of the tube or casing and a strainer, without having to resort to the usual relatively tedious and expensive expedient of agitating the area adjacent the strainer by various means in order that the alluvium will be dislodged, put into suspension and carried within the strainer where it is brought to the surface by means of a bailer.

Another object is to simultaneously remove the suspended alluvium simultaneously with the agitation, without allowing a precipitation which has regularly followed the old methods during the period when the agitating means was being cleared from the well tube and the bailer brought into use.

A still further object resides in utilizing the spudder of the drilling rig to supply the force which is applied to the area from which the liquid is to be drawn.

The figure shown in the accompanying drawing is a more or less diagrammatic, vertical sectional view of a well tube in which is lodged the equipment employed to practice this invention.

Numerals 10 indicates a well tube, 11 a strainer, 12 a water pipe or line, 13 an air line, the upper end of which is to be attached to a source of relatively high air pressure, while the lower end terminates in the water line and projects or "looks" vertically upward. Both of these lines are held together adjacent the top by a tie member 14 and a piston 15, tightly fixed thereto and disposed well down in the tube. Piston 15 is provided with a packing such as hemp rope 16, to effectively seal and at the same time is freely slidable within the tube 10. Line 12 is attached to a spudder 17 by a linkage 18 in order that the piston can be reciprocated within the tube after a satisfactory water level has been established within said tube.

This reciprocating action forces the water to follow its motion with the result that a churning or vigorous action results, not only within the tube and the strainer, but the indigenous water lying adjacent the exterior of the lower end of the well equipment. The alluvium is thereby forced into suspension and into the lower end of the casing and within the strainer wall. At this state of the development air pressure is re-

leased which starts the discharge of the water at 12A with the suspended alluvium.

It can readily be seen that this method results in a highly efficient means for removing the alluvium and thereby forming the area from which the water is to be drawn.

It is, of course, understood that line 12 must be reciprocated without permitting inlet 12B to contact the lower surface 11A of the strainer 11.

It will thus be perceived that the reciprocating action with the applied air pressure, can be continued until clear water flows from outlet 12A without any physical exertion on the part of the operator.

With the production of clear water, the well has been completed and the apparatus employed to effect the result can be removed and the permanent pumping equipment installed.

While I have explained this system in terms of forming a new well, it is also applicable to reconditioning an old one.

It has been my experience with this invention that a given result is attained within a period of hours in contrast to former experiences which involved days of time, when employing the old methods.

I claim:

1. The process of enlarging the normal subterranean liquid capacity of the supply area of a tube well, consisting in oscillating indigenous liquid of said area by pumping forces set up in the tube to dislodge alluvium and simultaneously applying air pressure to remove said alluvium from said well.

2. The process of enlarging the normal subterranean liquid capacity of the supply area of a tube well, consisting in oscillating indigenous liquid of said area by pumping forces set up in the tube to dislodge alluvium and suspend same in said water and simultaneously applying air pressure so as to remove said suspended alluvium from said well.

3. The method of removing alluvium from the supply area of a tube well, consisting in oscillating indigenous liquid of said area by pumping forces set up in the tube to dislodge alluvium and suspend same in said water and simultaneously applying air pressure so as to remove said suspended alluvium from said well.

4. In an apparatus for removing alluvium from the supply area of a tube well, consisting of a well tube equipped with a strainer, a water line and an air line extending through said tube and terminating adjacent said strainer, a piston attached to one of said lines and slidably engaging

said tube, a source of relatively high air pressure applied to the screen area through said air line, means cooperating with one of said lines to reciprocate said piston to agitate indigenous liquid within and externally adjacent said strainer to dislodge alluvium and cause same to be suspended in said water and to travel to the interior of said strainer and within reach of the suction force established by said air pressure so as to be ejected from said well via said water line.

5. In an apparatus for enlarging the normal subterranean liquid capacity of the supply area of a tube well, consisting of a well tube equipped with a strainer, a water line and an air line

extending through said tube and terminating adjacent said strainer, a piston attached to one of said lines and slidably engaging said tube, a source of relatively high air pressure which is applied to the screen area through said air line, means cooperating with one of said lines to reciprocate said piston to agitate indigenous liquid within and externally adjacent said strainer to dislodge alluvium and cause same to be suspended in said water and to travel to the interior of said strainer and within reach of the force of said air pressure so as to be ejected from said well via said water line.

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