Sept. 14, 1926. 1,599,744

J. V. CHAPMON

WELL CLEANER AND DEVELOPER

Filed Nov. 19, 1925 2 Sheets-Sheet 1

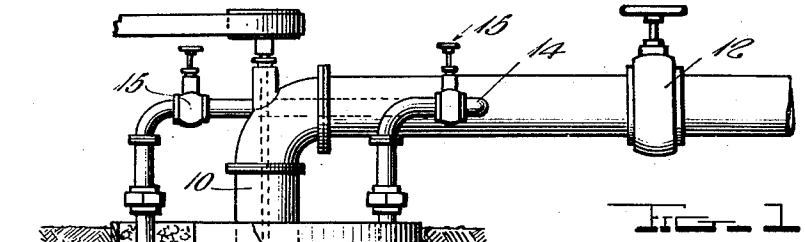


Fig. 1

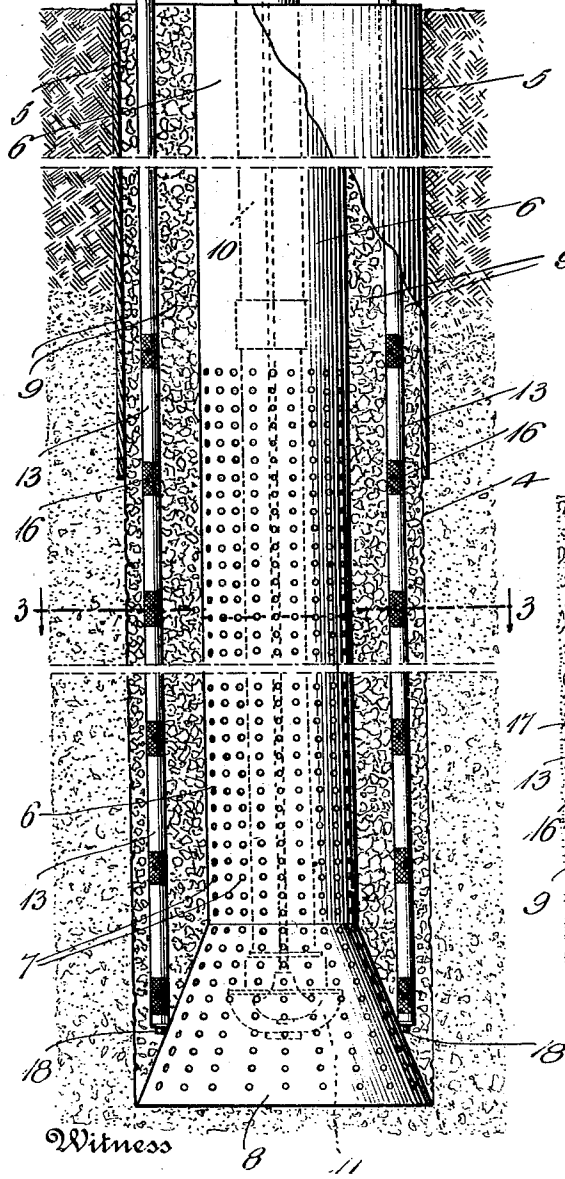
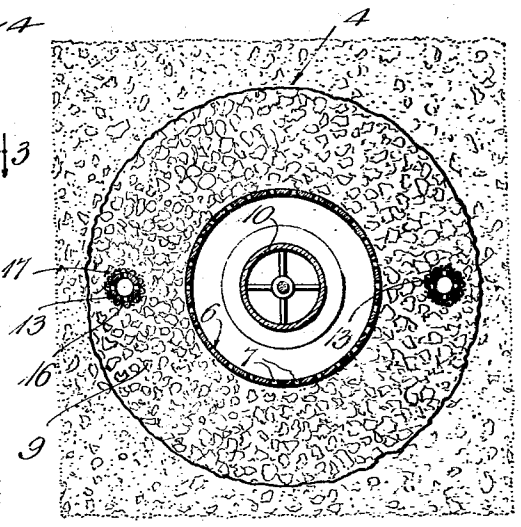


Fig. 3



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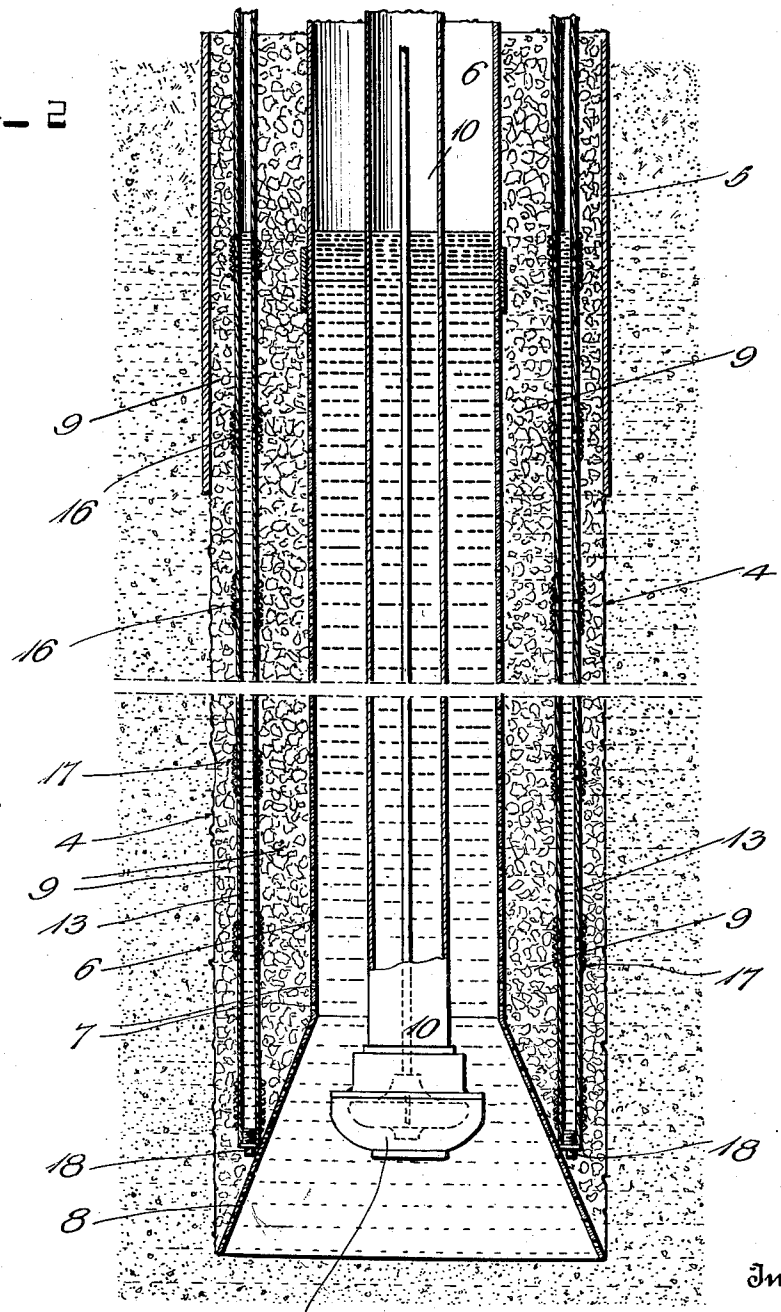
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Fig. 2



Witness

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UNITED STATES PATENT OFFICE.

JOHN V. CHAPMON, OF ROSELLE, NEW JERSEY, ASSIGNOR TO LAYNE-NEW YORK COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

WELL CLEANER AND DEVELOPER.

Application filed November 19, 1925. Serial No. 70,162.

With present day apparatuses, difficulty is encountered in cleaning the thin mud and muddy water from wells which have been drilled by the rotary process, and even after the water has become clear and the well used for sometime, its flow is often diminished by an accumulation of sand and the like in the water bearing strata, particularly directly around the screen or perforated liner which is commonly employed. Then, in order to clean out the accumulated sand, it is customary to reciprocate a swab or the like in the well, causing the water to alternately flow inwardly and outwardly, so that it loosens the accumulation of sand or the like and permits it to be removed. Such a cleaning process very often requires a number of days and in addition to the trouble and expense thus incurred, the owner is deprived of the use of the well.

It is the object of my invention to provide a new and improved means for loosening accumulated sand or the like without the necessity of performing the arduous method heretofore employed, provision being made whereby the ordinary water discharge pump for the well is utilized to force water downwardly through one or more wash lines, the latter being so positioned as to cause effective loosening of any sand or other matter which may have accumulated around the screen or liner, permitting the loosened material to be pumped out with the water.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawings.

Figure 1 is a sectional view partly in elevation disclosing the invention.

Figure 2 is an enlarged vertical sectional view through the parts at the lower portion of Fig. 1.

Figure 3 is a horizontal section as indicated by line 3—3 of Fig. 1.

In the drawings above briefly described, the numeral 4 designates the usual hole dug or drilled in the earth in the formation of the well, the upper portion of this hole being preferably lined with an imperforate casing 5 which prevents the entrance of surface water. Within the hole 4, is the usual or any preferred liner 6 whose lower portion is perforated as at 7 within the water bearing strata. In the present showing, the lower end 8 of the liner 6 is flared. The usual filling 9 of gravel or the like has been shown in the hole 4, surrounding the liner 6, serving to hold back to a large extent sand and the like which might otherwise clog the screen portion or perforations of said liner. In time, however, sand and the like will accumulate to such an extent as to cut down the output from the well, but this difficulty may be readily overcome by the use of my invention. Moreover, the latter is of great advantage when initially cleaning the well of mud and sand in suspension, after it has first been drilled or dug.

A discharge pipe 10 has been shown within the liner 6, and any desired means such as a centrifugal pump 11, may be employed to force the discharge of water through said pipe. I provide the upper portion of this pipe with a gate valve 12 or with some other adequate type of valve which is normally open. I also provide one or more wash lines 13 for the well, these wash lines being preferably disposed at the outer side of the liner 6, as shown. These wash lines extend substantially to the bottom of the well and they have their upper ends connected at 14 with the water discharge pipe 10, at points between the inlet end of this pipe and the valve 12. These points are preferably disposed near the valve 12, so that the latter and normally closed valves 15 which are provided for said wash lines may all be readily accessible.

Ordinarily, the valve 12 is open and the valve 15 closed, so that the pump 11 will force discharge of water through the pipe 10. Whenever it is advisable however, to wash the well, the valve 12 is either totally or partially closed as occasion may demand, and the valves 15 are opened. Then, the water forced through the pipe 10 will be totally or partially checked by the valve 12, and as the valves 15 are open, some or all of this water will be returned to the well through the wash lines 13. The water, thus delivered to the well with force, effectively loosens any accumulated sand or the like so that it will enter the liner 6 and can be pumped out with the water. In operating the invention, it may be advisable first to entirely close the valve 12 and open the valves 15, so as to effect a very forcible dis-

charge of water into the well or into the strata around the well, as the case may be through the wash lines 13. This effectively loosens the accumulated sand or the like, and the supplying of the water under pressure at the outer side of the liner 6 at the same time water is being driven upwardly from the interior of said liner through the pipe 10, causes the loosened material to quickly enter the liner. The valve 12 may now be partially opened, so that some of the loosened material in the well may be discharged with the water as the latter discharges from the pipe 10. The valves 15 at this time may be kept entirely open, so that some of the water will be continuously returned through the wash lines, thoroughly agitating the sand and the like previously loosened, and causing it to flow into the liner with the water. When the cleaning operation has been performed, and practically no discharge of sand takes place with the water, the valve 12 may be completely opened and the valves 15 again closed. Effective cleaning of the well may thus be performed with my invention in a very limited time and it is not necessary to remove the discharge line from the well, operate swabs, etc., as is now necessary.

The wash lines 13 may be of any desired construction. In the present disclosure, they are provided at intervals with water discharge perforations 16 having suitable screens 17. The lower ends of these lines may be plugged as at 18 and if desired, secured to the flared end 8 of the liner 6. If the wash lines 8 are to be installed after the completion of a well, they may of course be provided with any known forms of driving points.

It will be seen from the foregoing that the invention is rather simple and inexpensive, may be easily installed and operated, and marks a distinct advance in the art to which it relates.

As excellent results are obtainable from the general construction shown, it is by preference followed. However, within the scope of the invention as claimed, modifications may be made.

I claim:—

1. In combination, a well, a liquid discharge pipe therefrom, means for forcing discharge of liquid through said discharge pipe, a normally open valve for the discharge pipe, a wash line for the well having its upper end connected to the discharge pipe at a point between the inlet end of the latter and said valve, and a normally closed valve for said wash line adapted to be opened when the discharge pipe valve is totally or partially closed, whereby to force liquid through said wash line into the well.

2. In combination, a well having a perforated liner, a liquid discharge pipe within said liner, means for forcing discharge of liquid through said discharge pipe, a normally open valve for said discharge pipe, a wash line for the well disposed at the outer side of said liner and connected at its upper end with said discharge pipe at a point between the inlet end of the latter and said valve, and a normally closed valve for said wash line adapted to be opened when the discharge pipe valve is totally or partially closed, whereby to force liquid through said wash line into the well.

In testimony whereof I have hereunto affixed my signature.

JOHN V. CHAPMON.