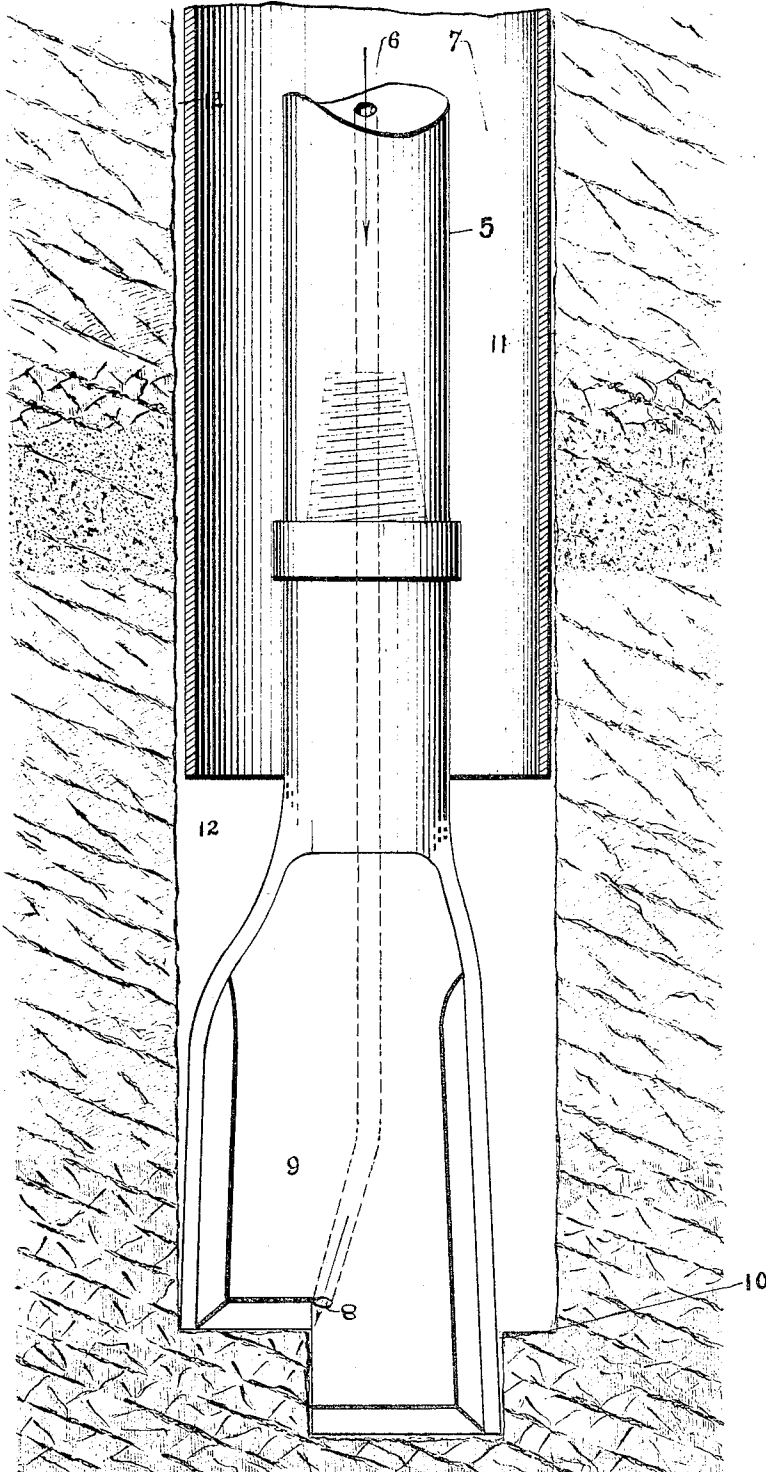


R. VAN SICKLE.
BORING PROCESS FOR DEEP WELLS.
APPLICATION FILED DEC. 18, 1911.

1,065,409.

Patented June 24, 1913.



WITNESSES

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RICHARD VAN SICKLE, OF CAMPINA, ROUMANIA.

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1,065,409.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed December 16, 1911. Serial No. 666,239.

To all whom it may concern:

Be it known that I, RICHARD VAN SICKLE, subject of the King of Great Britain and Ireland, residing at Campina, Roumania, have invented a new and useful Improvement in Boring Processes for Deep Wells; and I do hereby declare the following to be a full, clear, and exact description of the same.

It is well known that the Canadian system of deep-well boring, which is generally designated as dry boring can not be carried out in an entirely dry manner. On the contrary, a certain amount of water, according to circumstances, is introduced into the bore and contained therein during the boring. The drill, therefore, works in the water and this latter mixed with the bored stone or earth forms a thick liquid mass, the sludge which, after boring a certain depth, is removed from the bore by means of the well known Canadian sludge-spoon. The sludge, as is well known, is of the greatest hindrance; because it checks the falling drill and covers the bottom of the bore, to great disadvantage, with its hardest constituents, and thus forms an additional hindrance to the drill. It has been sought to overcome this difficulty by the so called rinsing process, in which water is introduced into the hollow rod of the tool down to the base of the bore, or in reverse fashion, in which the rinsing water is conducted through the bore itself to its base. In the first case the sludge, which is very much thinned out by the constantly flowing water flows out of the bore, and in the second case out of the hollow rod. Although these methods of keeping the bore clean present advantages, still in certain case, for instance, boring for petroleum, when the base of the bore must be loaded as little as possible, it is not always advisable to make use of water rinsing.

The purpose of the present invention is, when boring with the Canadian tool or other form of tool to keep the bore clean without the use of water rinsing, so that the tool can act directly upon the base of the bore without too great a loading of the tool. For this purpose, as in the water rinsing process the rod as also the bore, is made hollow and suspended to the mechanism operating it in known fashion and moved in any desired manner, while the quantity of water necessary according to the circumstances is poured into the bore in accordance with the period

of the boring, and then during the boring, instead of water compressed air or any compressed gas unaffected by the pressure required, is forced through the drill rod and the tool in such a manner that it can blow through the water found in the bore.

The figure illustrates by way of example a central vertical section view partially in elevation of a boring tool that may be used for carrying out the improved process.

The drill comprises an inner rod 5 and an outer cylinder 7, the rod 5 being provided with a small opening 6, while the rod 5 and the cylinder together form a larger opening of annular cross-section. Water or compressed air may be forced out through these openings, the discharge from the small opening taking place through the outlet 8 at the lower part of the foot 9, while the discharge from the larger opening takes place above the foot. If compressed air alone is used the larger opening need not be provided. It is, of course, understood that any suitable fluid other than air may be used.

It is immaterial whether the compressed air or gas is conducted through the tool to the foot of the bore by one or more holes, it is also immaterial what the shape of these holes is, the main thing is that the air be conducted with sufficient pressure to the deepest or close to the deepest point 10 of the bore 11 and can there issue freely from the tool. The effect of the air is as follows: First the stone or earth separated by the tool is blown to one side and into the sludge 12. The sludge is thoroughly mixed together by the medium introduced, so that in the immediate vicinity of the tool there is a more or less hollow space the height of which depends upon the pressure of the medium introduced. The water found above this hollow space will be strongly whipped up by the medium permeating it and in relation to the sludge of much less specific gravity and of less consistency whereby the friction of the falling tool on the sludge becomes less as the latter loses consistency, moreover the sludge does not surround the tool to such a degree as in the ordinary bores but rather the rod above which is thinner, and it therefore has less influence upon the movement of the drill.

After boring to a certain depth the tool, as in the Canadian system, is withdrawn from the bore, and immediately after removal of the air-pressure the sludge falls to

the bottom of the hole, and can as usual be removed by the sludge spoon. Cases might arise in which it appears desirable to combine the usual well known water rinsing with the system just described. In these cases water and air could be simultaneously or alternately introduced through the rod into the bore. This process is new and has the advantage that the bottom of the bore, which in the rinsing process is loaded down by the column consisting of sludge thinned by water, is loaded down much less by the air introduced because the mixture of sludge and air is much lighter than the sludge thinned by water.

I claim as my invention:

1. A boring process consisting in simultaneously passing compressed air to the extreme bottom of the bore, and water to a point above the bottom of the bore while the boring is uninterrupted, whereby air and water are mixed with the sludge and the sludge is continuously held away from the bottom of the bore during the boring process, the air serving to lighten the sludge and the water serving to entrain the sludge mixture.

2. A process for sinking deep wells, consisting in boring a bore with a suitable tool, whereby sludge is formed, and forcing the sludge away from the working position and the path of the tool and the bottom of the

bore while the tool is uninterruptedly working by passing compressed air to the bottom of the bore and water to a point near the bottom of the bore, whereby the air is entrained in and lightens the sludge and the sludge mixture is forced away from the path and working portion of the tool during the uninterrupted working of the tool.

3. A process for sinking deep wells, said process consisting in boring a bore with a suitable tool, whereby sludge is formed, and forcing the sludge away from the working portion and the path of the tool by forcing compressed air to the bottom of the bore and passing water into the bore.

4. A process for sinking deep wells, said process consisting in boring a bore with a suitable tool, whereby sludge is formed, and forcing the sludge away from the working portion and the path of the tool by forcing compressed air to the bottom of the bore and passing water into the bore, said boring, forcing and passing taking place simultaneously.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD VAN SICKLE.

Witnesses:

T. RUSSELL,
THEO. H. WELLS.