

UNITED STATES PATENT OFFICE.

W. C. SHERWOOD, OF BUFFALO, NEW YORK.

IMPROVED METHOD OF REMOVING OBSTRUCTIONS FROM OIL-WELLS.

Specification forming part of Letters Patent No. **57,982**, dated September 11, 1866.

To all whom it may concern:

Be it known that I, WILLIAM C. SHERWOOD, of the city of Buffalo, county of Erie, and State of New York, have invented a new and improved method of cleaning oil-wells and other deep Artesian wells from obstructions occasioned by drills, reamers, or other tools or tubing which may become broken, wedged, or otherwise fastened in the well; and I do hereby declare that the following is a full and exact description of such invention and improvement.

The nature of my invention consists in the application and use of sulphuric acid or its equivalent admitted into the well in a manner to bring the acid in contact with the obstructing tool, so that the acid will eat away, corrode, or decompose and destroy the tool, or loosen it sufficiently so that it may be removed easily by the use of ordinary grappling devices.

To enable others skilled in the art to understand and use my invention, I will proceed to describe it.

It is well known to persons engaged in sinking or boring oil and other deep wells that the drill, reamer, or other tool used for such purpose frequently breaks, leaving the broken part in the well, or the tool becomes wedged or so firmly fastened in the rock as to resist all methods heretofore known to remove it. This necessitates an abandonment of the well at a great loss of time and money, because the boring cannot proceed nor the well be made available until the obstruction is removed. This fact has been shown in many instances within a few years past in the extensive boring or sinking of petroleum-oil wells, and there are now many thousands of dollars wasted in these obstructed wells which may be recovered by the application and use of my improvement.

The corroding and decomposing action of sulphuric acid upon iron and steel is well known, and if this or any equivalent acid can be brought in contact with the obstructing tool or other obstruction in the well, its action upon the tool or other thing, to corrode, eat

away, and thereby loosen it, or to wholly decompose and destroy it, is certain.

The only difficulty to be encountered is to get the acid in contact with the obstructing tool; and this may be accomplished in several ways. One way is to let down into the well a small tube till its lower end reaches the obstructing tool, and then to admit through this tube a sufficient quantity of acid to eat away, corrode, and loosen or wholly destroy the tool or other obstruction. Another way is to provide a glass bottle or cylinder of less diameter than the bore of the well, so that it will easily pass into the well, and fill this bottle with acid, and then lower it into the well by means of a suitable rope or chain, so that when the bottle strikes the tool it will break and empty its acid contents upon the obstructing tool. Another way is to provide a copper barrel of less diameter than the bore of the well, and of sufficient length to hold a gallon (more or less) of acid, having a valve in the bottom with a stem projecting downwardly. This copper barrel is then filled with acid and lowered into the well by a suitable rope or chain until the projecting valve-stem strikes the obstructing tool. This will open the valve and allow the acid to be discharged directly onto the obstructing tool, and the copper barrel may then be drawn up and filled, and again used in the same well, if need be, and in other wells. Other analogous plans may be used.

The acid thus applied will trickle down and get between the obstructing tool and the rock, and will soon corrode or eat away from the outer surface thereof sufficient to loosen it, so that if ordinary grappling-tools are then used the obstructing tool may be drawn up and removed; but if such grappling-tools are not at hand a larger quantity of acid may be used, and its action continued until the obstructing tool is entirely decomposed and destroyed. The acid will also act upon the rock, and will decompose portions thereof in which the tool is wedged, and thereby quicken and render more easy this method.

To prevent any injurious effects of the acid which is thus put into the well upon new tools

which may be subsequently used to complete the boring of the well, I immediately neutralize it, after the obstructing tool is removed, by introducing into the well alkali or other neutralizing liquids. These neutralizing liquids may be put into the well by the same means as are used for the admission of the acids, and then the whole of these substances may be pumped out without any injurious effects from the acid.

Sulphuric acid, on account of its cheapness and rapid action, will best meet the purpose of this method; but my method also contem-

plates and includes the use of other acids of similar power.

What I claim as my invention, and desire to secure by Letters Patent, is—

The method of loosening and removing or wholly destroying such obstructing tools, tubing, or other obstructions which may be lodged in artesian and other wells by the application and use of sulphuric acid and other equivalent acids, substantially as herein set forth.

Witnesses: W. C. SHERWOOD.

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