

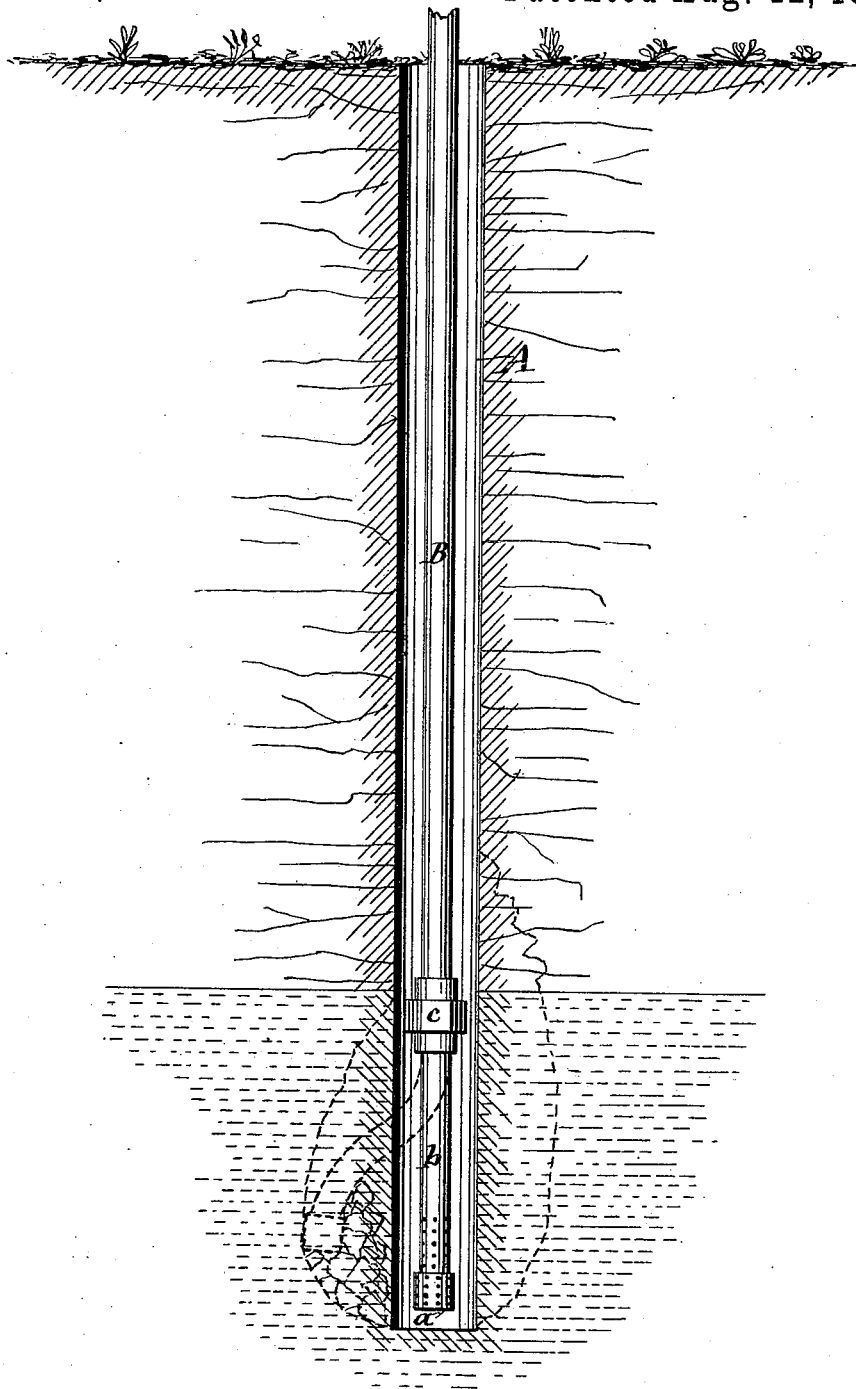
(No Model.)

J. M. DUNCAN & E. O. McNAIR.

WELL TUBING.

No. 303,423.

Patented Aug. 12, 1884.



ATTEST—

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UNITED STATES PATENT OFFICE.

JOSEPH M. DUNCAN AND EBEN O. McNAIR, OF WARSAW, NEW YORK.

WELL-TUBING.

SPECIFICATION forming part of Letters Patent No. 303,423, dated August 12, 1884.

Application filed April 23, 1884. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. DUNCAN and EBEN O. McNAIR, of Warsaw, in the county of Wyoming, in the State of New York, have invented new and useful Improvements in Well-Tubing, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Experience has proven that in wells, especially when sunken through rock, and when the pipe or tubing is composed of metal, the lower section of said tubing is occasionally broken by rocks falling from the side of the well, and in their descent to the bottom of the well crushing the aforesaid section of the tube. In withdrawing the tubing from the well for renewal of the broken section of the tube, more or less of the metal chips or pieces of the broken tube-section remain in the well and obstruct it, and this obstruction is exceedingly difficult to remove either by drilling or otherwise.

It is to overcome the aforesaid difficulty which our invention has for its object; and to that end it consists, essentially, of a well-tubing having its lower section composed of flexible material which will yield to side pressure, and in case of disrapture can be readily extracted from the well; and the invention also consists in the combination, with the aforesaid flexible tube-section, of a weight applied to the lower end thereof, to sink the same to the bottom of the well, all as hereinafter more fully explained, and specifically set forth in the claims.

The annexed drawings represent a vertical section of a well provided with our improved tubing.

A designates the well sunken through a stratum of rock and into a stratum of salt or stratum of water or oil bearing material.

B denotes the tubing through which to draw or force the water or oil from the well, the particular means for effecting the flow being immaterial to our invention, and therefore not necessary to be here illustrated. The upper

portion of the tubing consists of the usual iron pipe, to the lower end of which we connect, by a suitable coupling, *c*, a flexible tube, *b*, which may consist of either a rubber or a canvas hose, said hose depending from the metal tube and extending to or near the bottom of the well. In case the liquid in the well is of such density as to prevent the hose from sinking by its own gravity, we connect to the lower or free end of the hose a weight, *a*, as shown in the annexed drawings. Either the hose or the weight *a*, or both, may be perforated to allow the liquid to enter the hose.

In case a rock falls from the upper stratum penetrated by the well and falls to the bottom of the well the lower flexible section, *b*, of the tube yields, as represented by dotted lines in the drawings, and if a cavity is formed in the lower stratum the flexible tube-section will swing to one side without becoming disrupted from the upper tube-section, thus maintaining the well in operation, and if the flexible tube-section does become disrupted it is easily extracted from the well.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A well-tubing having its lower section composed of flexible material, substantially as and for the purpose specified.

2. The combination, with a rigid well-tube, of a hose or flexible tube coupled to and suspended from the lower end of the rigid tube, and a weight applied to the free end of the flexible tube, substantially as described, for the purpose set forth.

In testimony whereof we have hereunto signed our names and affixed our seals, in the presence of two attesting witnesses, at Warsaw, in the county of Wyoming, in the State of New York, this 17th day of April, 1884.

JOSEPH M. DUNCAN. [L. S.]

EBEN O. McNAIR. [L. S.]

Witnesses:

J. C. BUXTON,

F. C. DAVIE.