

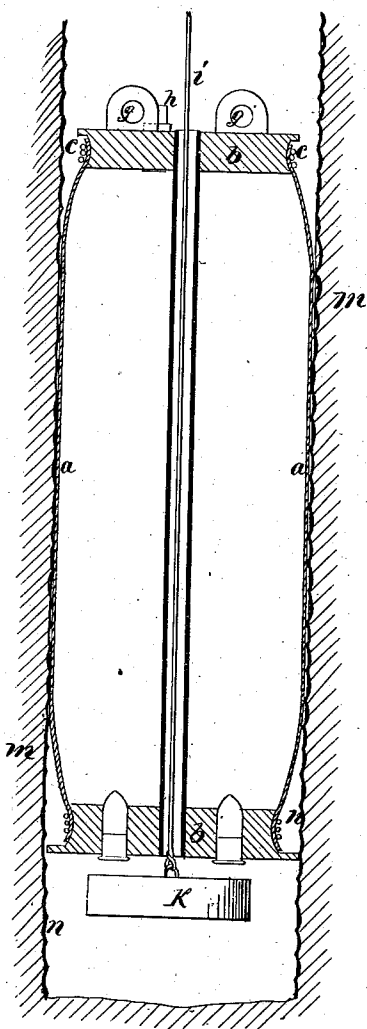
J. C. DICKEY.

Improvement in Torpedoes for Oil Wells.

No. 119,330.

Patented Sep. 26, 1871.

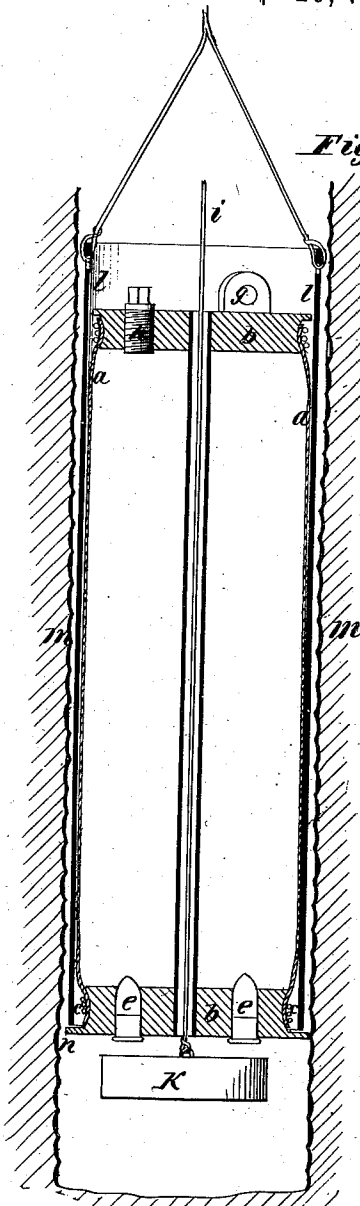
Fig. 1.



Witnesses.

*T. A. Morrison.
J. D. Wright.*

Fig. 2.



Inventor.

J. C. Dickey.

UNITED STATES PATENT OFFICE.

JULIUS C. DICKEY, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. 119,330, dated September 26, 1871.

To all whom it may concern:

Be it known that I, JULIUS C. DICKEY, of Titusville, in the county of Crawford and State of Pennsylvania, have invented certain Improvements in Torpedoes for Increasing the Production and Enlarging the Diameter of Oil-Wells, of which the following is a specification:

The nature of my invention consists in making a torpedo that will expand to the size of the well, so as to do away with the use of water-tamping, by bringing the explosive in close contact with the rock, and also secure a much more important result in shattering the rock and enlarging the diameter of the well than has been obtained by the use of torpedoes heretofore used.

Figures 1 and 2 are longitudinal sections.

I make the flexible bag *a*, which contains the explosive, of water-tight rubber cloth or other suitable material which will keep the powder or other explosive used in a dry condition, the bag *a* being made a little larger than the diameter of the well and secured to the frame *b* by the wire *c* or other suitable and substantial manner, the cartridges *e* being soldered into the frame *b*, the holes *g* being for the purpose of receiving a wire to suspend the torpedo in the well. The torpedo is filled by removing the set-screw *h*. In exploding the torpedo a wire, *i*, is passed through the hollow tube of the frame *b*, which connects with a weight, *k*, said wire *i* being connected with the tin case *l*, the weight *k* being three or more feet below the torpedo when it is inclosed with the case. When an explosion is to take place the wire *i* is drawn up, when the case *l* is raised and the torpedo is allowed to fill the well, as shown in Fig. 1, and the weight *k* strikes the cartridges *e*, which produces an explosion. I contemplate exploding the torpedo by electricity, in which case the wire which suspends the torpedo in the well may be passed into the explosive through the top of the frame *b*. Fig. 1 shows a torpedo in the well with the case *l* removed, the lines *m* showing the formation of the sides of the well, the recesses *n* being formed by the action of the drill in drilling the well. These recesses will vary in size and formation, according to the depth of the well and hardness of the rock. They are usually from eight to eighteen inches in length. The torpedo fills these recesses formed by the drill, or any others which may be in the rock, which recesses answer the purpose of tamping for the torpe-

do, and also make the torpedo much more effective in shattering the rock. I make the torpedo three feet in length and upward, the size depending on the size of the well and the work to be performed. I contemplate varying the general construction of the torpedo somewhat, so as to secure the flexible bag *a* to the frame *b* in a more economical or substantial manner. I also make the frame *b* of any suitable construction which will enable me to bring the flexible receptacle for the explosive in close contact with the rock in an effective manner. In some cases, when a well is considerably enlarged, I inclose the explosive in a hollow rubber hose or other flexible receptacle and lower it into the cavity formed in the oil-bearing sand-rock in the well, and explode or suspend it at the top of or upper end of this rubber hose; but in most cases the bag *a* secured to the frame *b* will answer.

By introducing a torpedo into a well made of a flexible material I am able to enlarge the diameter of a well to the extent of from four to six feet, which cannot be done by the use of a torpedo otherwise constructed. In this manner, when wells are put down near to each other, I am able to remove the oil-bearing sand-rock between two or more wells, so that two or more wells can be pumped by the tubing in one well, the wells being connected together by removing the sand-rock between them.

The most important feature of my invention consists in inclosing the explosive material in a flexible bag or other flexible receptacle so as to bring the explosive in close contact with the rock, so as to secure a much more important result in shattering the rock and enlarging the diameter of the well than can be obtained by suspending a torpedo in the center of the well.

I claim as my invention—

1. A torpedo, having the explosive compound inclosed in a bag or pouch which will spread or expand so as to fill the bore of the well when in position, and thereby bring the charge in close contact with the rock, substantially as set forth.

2. The combination, in a torpedo, of the frame *b*, expanding sack *a*, and the inclosing case *l*, substantially as set forth.

J. C. DICKEY.

Witnesses:

T. A. MORRISON,
J. B. WRIGHT.