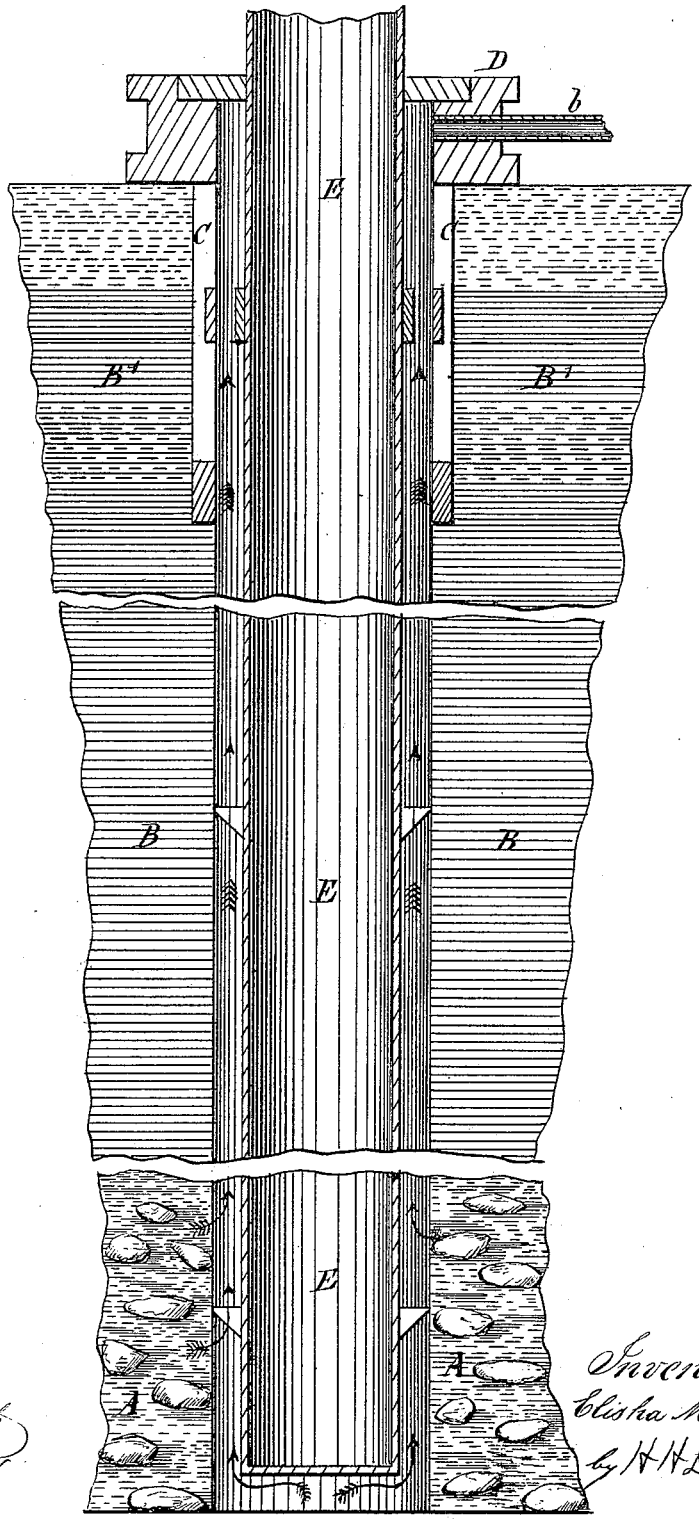
2 Sheets--Sheet 1.

E. McC. STEVENSON.

Petroleum Wells.

No. 166,425. *Fig. 1.* Patented Aug. 3, 1875.



Witnesses.
Henry Orth
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by H. H. Doubleday

2 Sheets--Sheet 2.

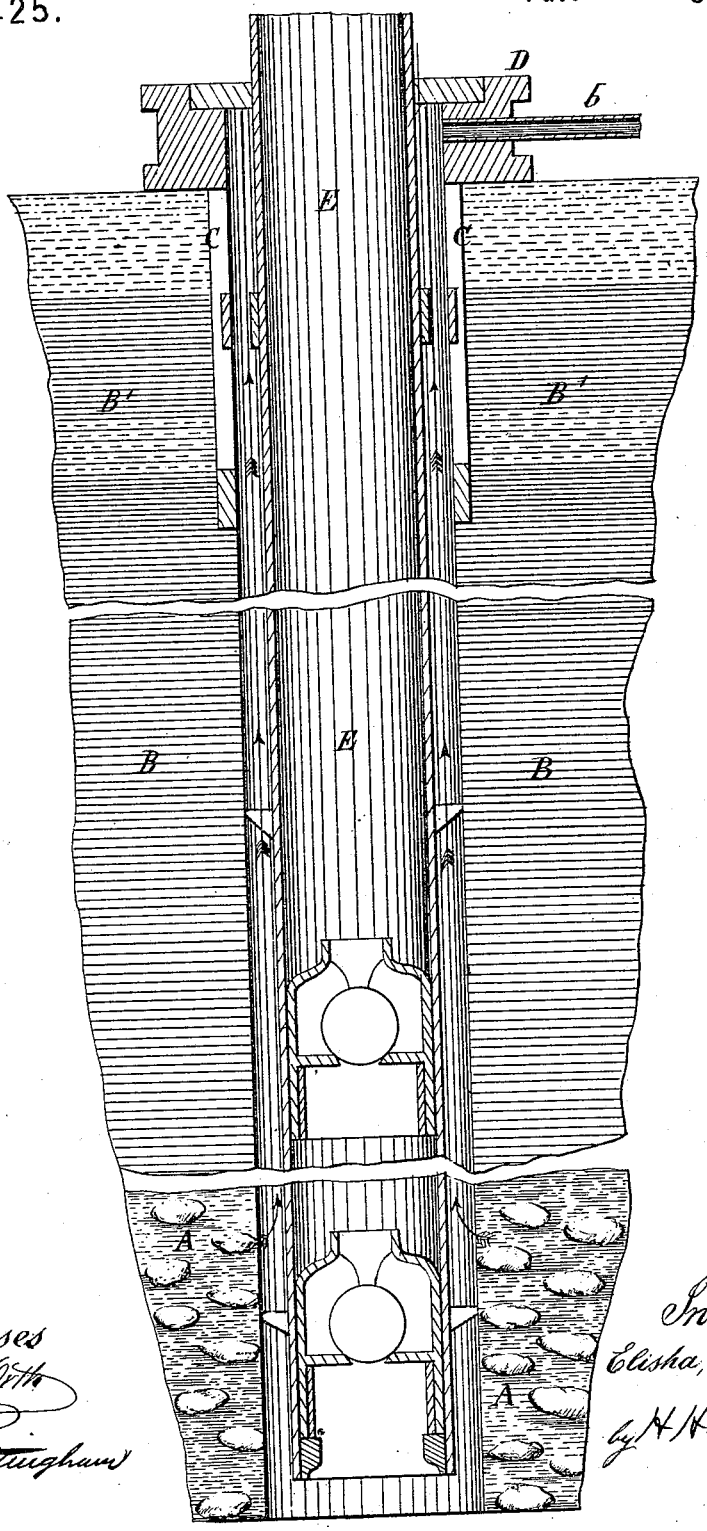
E. McC. STEVENSON.

Petroleum Wells.

No. 166,425.

Fig. 2

Patented Aug. 3, 1875.



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UNITED STATES PATENT OFFICE.

ELISHA McCURDY STEVENSON, OF PULASKI TOWNSHIP, LAWRENCE COUNTY, PENNSYLVANIA.

IMPROVEMENT IN PETROLEUM-WELLS.

Specification forming part of Letters Patent No. **166,425**, dated August 3, 1875; application filed April 21, 1875.

To all whom it may concern:

Be it known that I, ELISHA McCURDY STEVENSON, of Pulaski township, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Petroleum-Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has for its object an increased yield from an oil-well, and the discharging of the oil from the well by the expansive action of the gas; and it consists in reducing the flowing space within the well by the introduction within the well or casing of a pipe-tube, cylinder, or their equivalent, whereby the gas (which is intimately incorporated with the oil when said oil enters the well from the oil-bearing rock) is compelled, as it expands and passes out from the well, to carry the oil with it, instead of separating from the oil and escaping without it, in which latter case the oil would be left in the bottom of the well, as a comparatively solid, dead, heavy mass, requiring to be pumped out by mechanical appliances.

In the drawings, A represents the oil-bearing rock, and B B′ the strata of slate, sandstone, and soil above. C represents a casing, usually employed at the upper part of the well, and extending to such depth as will shut out the water, or, at least, the fresh water. Where it is convenient I prefer that the casing should extend below the point at which either fresh or salt water would otherwise enter, in order to do away with the necessity of the pumping hereinafter referred to. D is a T-piece or capping at the top of the well, by means of which the oil is conducted into suitable outlet-pipes. E is the reducing pipe, tube, or cylinder, of substantially the same size from end to end, except at the joints, and of such diameter as to nearly fill the bore of the well, or will at least so diminish the space through which the oil can pass that said oil shall be discharged by the action of the gas operating substantially in the manner set forth and described in Letters Patent granted to me December 8, 1874, No. 157,648.

Under some circumstances I propose to extend pipe or tube E, which is closed at the lower end, down only to the upper line of the oil-bearing rock, and, in fact, satisfactory results will sometimes be produced without introducing it to even that point, as when the yield of oil is quite large a short section of the well will be filled by the oil before such a change in the condition or relation of the oil and gas as will materially affect the discharge of the oil through the annular space between the pipe E and the walls of the well. Nor do I wish to be confined to arranging pipe E centrally within the well, although I prefer that arrangement; and for this purpose I propose to employ short studs projecting from the sides of the pipe.

In a well of five and a half inches diameter, and yielding twenty barrels per day, I propose to use a reducing pipe or cylinder of five and a quarter inches outside diameter, as this size will ordinarily confine the oil and gas to such an extent that they will not separate during their passage to the top of the well, but will be discharged together.

I do not wish to be confined to the exact proportions between the pipe and the well for the yield above given, as they will vary with the depth of the well, but I prefer these sizes for a well of, say, one thousand feet deep.

In wells where it is not practicable to shut out the salt water, and where such water would, if allowed to remain, fill the well to such an extent as to materially retard the flow of oil, a working or pumping barrel, with suitable piston and valves, may be constructed at the lower end of the reducing-tube, as shown in Fig. 2, by means of which this water can be pumped out when required.

When this construction is employed a little water may be left in the bottom of the well, to close the lower end of the tube, or the same effect substantially will be produced by the filling of the lower end of the tube with oil from which the gas has separated.

What I claim is—

In a petroleum-well, a reducing tube, pipe, or cylinder, closed or sealed at its lower end, and employed substantially as herein described, for diminishing the sectional area of the space within the walls of the well, so as to prevent the separation of the gas from the oil, whereby the gas, when passing from the well by the annular space between the tube and the well, is caused to carry with it the oil with which it is incorporated, substantially as set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

ELISHA McCURDY STEVENSON.

Witnesses:

E. M. STEVESON,

T. D. STEVENSON.