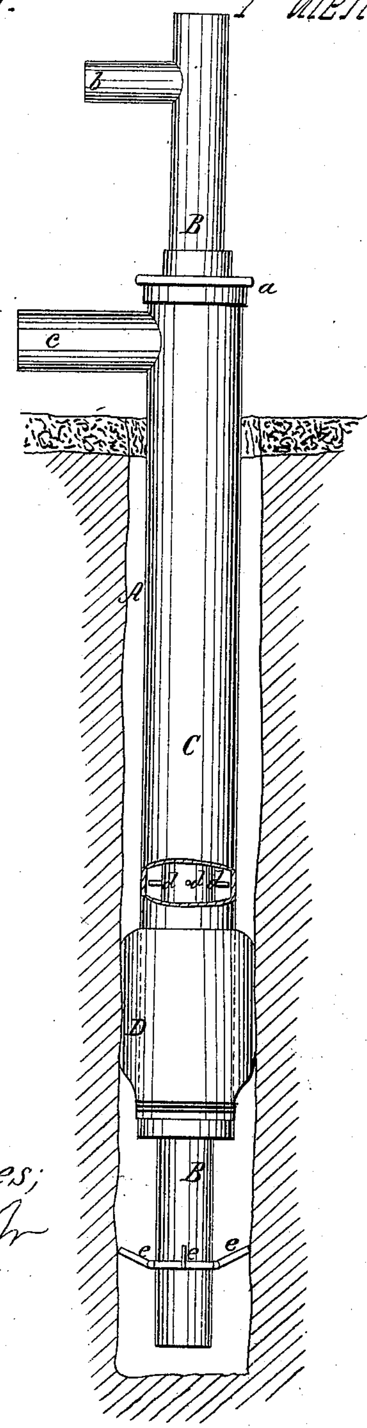
J. D. Bryson,

Well Packing.

No. 52,523. Patented Feb. 13, 1866.



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JAMES D. BRYSON, PETROLEUM CENTRE, PENNSYLVANIA.

IMPROVEMENT IN TUBING FOR OIL-WELLS.

Specification forming part of Letters Patent No. **52,523**, dated February 13, 1866.

To all whom it may concern:

Be it known that I, JAMES D. BRYSON, of Petroleum Centre, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Tubing Oil and other Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing, consisting of only one figure, represents a section of a well to which my invention has been applied.

This invention consists in surrounding the well-tube of an oil or other deep well through which oil or other liquid is usually raised from the bottom of the well with an outer supplementary tube extending downward from above the surface of the earth to a point below the place for applying the usual water packing and applying such packing around the said outer tube instead of to the well or pump tube.

In tubing oil and other deep wells it has been usual hitherto to surround the pump-tube with a seed-bag or other packing device at such a point in the well as will cut off water from springs and other sources and prevent it from reaching the bottom of the well. This method is attended with difficulties, both in operating the well and in withdrawing the pump-tube for repairs and other purposes, which are removed by my invention.

A designates a well, and B the usual well-tube, which extends to the bottom of the well and receives the valves and piston of a pump. C is a supplementary tube or cylinder, which is carried down around the well-tube to a point below where the usual packing is to be applied. A collar, *a*, is fitted around the well-tube B where it enters the outer tube, and the collar may be fitted like a stuffing-box, if thought desirable.

D represents the usual seed-bag packing applied about the lower part of the outer tube at such a depth in the well as to prevent fresh water from running into the lower part of the well. The said tube C has a spout, *c*. The well-tube B is steadied within the outer tube and kept in a central position by means of steady-pins *d*, (three or more,) which may be placed at any suitable point on it, and the lower part of said well-tube is provided with jointed arms *e*, (three or more,) setting forth from a band which surrounds said tube, which arms are of such a length as to reach the sides of the well and keep the tube from being vibrated and displaced by the operation of the pump and the pressure of gas and liquid in the well. The said arms are inclined upward toward the sides of the well-tube when the tube is lowered within the outer tube, and their gravity will cause them to fall outward against the sides of the well when they pass the bottom of the outer tube. They are to be made of such light proportions and small strength as to offer no serious resistance to the withdrawal of the well-tube upward through the upper tube, it being intended that they shall be broken or bent against the sides of the well or against the bottom of the outer tube when the well-tube is drawn upward.

The well-tube has the usual spout *b* for the discharge of oil or other liquid from the well.

By this construction I provide an unobstructed annular space around the well-tube from the top to the bottom of the well, and yet effectually cut off fresh water from the well and leave the bottom of the well open to the pressure of the atmosphere, and thereby assist the operation of the pump by allowing the pressure of the atmosphere to act upon the liquids which surround the well-tube.

By means of this construction I also provide for the speedy and easy withdrawal of the well-tube for repairing its valve or for other purposes without disturbing the packing.

When the well-tube has been taken up and its arms *e* broken off or bent in pulling it through the outer tube it will be necessary to fit a new collar and jointed arms about it before lowering it again into the well. When a well is tubed in this manner oil and other liquids may be obtained therefrom by pumping or by any other appliance for raising liquids from deep wells—such, for instance, as the appliance known by the name of "ejector"—and when the pressure of gas or liquid is sufficient to overcome the pressure of the atmosphere and to force them to the top of the well they are free to ascend without obstruction from the packing or from the valves of the pump and without disturbing the well-tube.

This construction also, by means of the unobstructed space around the well-tube extending from the top to the bottom of the well, en-

ables me to apply steam or hot air or other appliances to the bottom of the well in order to dissolve or remove the paraffine or whatever other substance may obstruct or cover the veins and crevices of the rock and prevent the flow of oil.

Wells in which the packing is applied directly to the well-tube, so that the only access to the bottoms of the wells is through the well-tube, are often obstructed and their pumping apparatus made inoperative by reason of the presence of gas in the tube, which sometimes forces the piston upward and puts a stop to the operation of pumping. This cannot occur where a well is tubed according to my invention, since the gas may always escape upward through the space outside of the well-tube and be discharged through the spout *c*.

If the oil or other liquid found in the well is at any time forced upward by pressure from below or from its source, such oil or other liquid is not, when my invention is used, compelled to pass through the well-tube, but it may also pass upward through the said annular space and be discharged through the spout *c* into a tank or reservoir, and consequently the pumping apparatus will not be interfered with or injured by the pressure of the gas or of the oil or other liquid, neither will it become necessary to remove the valves or piston or other parts of the pumping apparatus from the well-tube when gas or oil or other liquid is forced up under pressure from below, as aforesaid.

Another advantage which arises from the use of my invention is the protection it gives to neighboring wells, which are often flooded so as to be destroyed when a well-tube with its packing is removed from a well. In such cases it is supposed that the water which is allowed to run into the bottom of the well draws out the oil or forces it into new directions, so that neighboring wells which have been drawing oil from the same veins or crevices or from reservoirs or fissures in the rock connected with each other are affected in the same way as the well whose well-tube has been removed; but when my invention is used this cannot occur by reason of the removal of a well-tube, since it is independent of the packing of the well.

I do not claim the use of steam or compressed air for raising oil or other liquids from wells.

I claim as new and desire to secure by Letters Patent—

1. The combination of the pump-tube B, the shorter supplemental tube C, and steady-pins *d d d*, adapted to operate substantially as and for the purposes set forth.

2. The arms *e e e*, hinged around the tube B so as to operate as described.

JAMES D. BRYSON.

Witnesses:
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