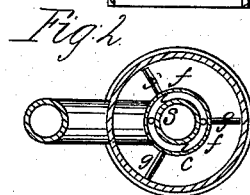
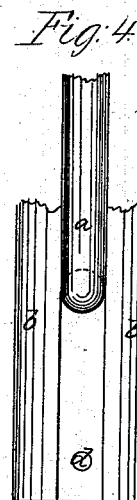
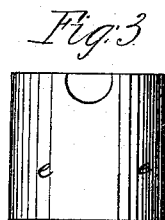
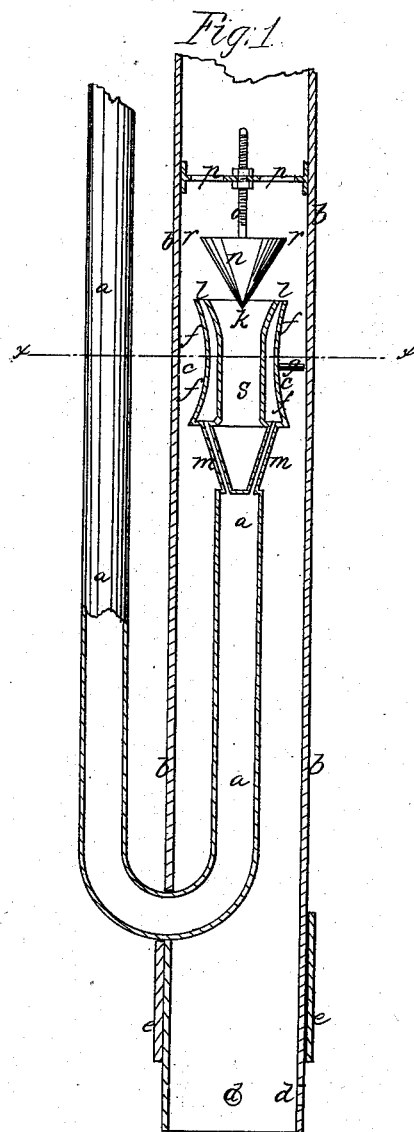


*S. F. Schoonmaker,*

*Ejecting Pump.*

*N<sup>o</sup> 47,226.*

*Patented Apr. 11, 1865.*



*Witnesses:*

*M. Ahern of  
Ohio Trench*

*Inventor:*

*S. F. Schoonmaker  
per *Munn & Co*  
attorneys*

# UNITED STATES PATENT OFFICE.

S. FRANKLIN SCHOONMAKER, OF NEW YORK, N. Y.

## IMPROVEMENT IN OIL-EJECTORS.

Specification forming part of Letters Patent No. 47,226, dated April 11, 1865.

*To all whom it may concern:*

Be it known that I, S. F. SCHOONMAKER, of the city, county, and State of New York, have invented a new and useful Improvement in Petroleum-Elevators; 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 make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates to certain new and useful improvements in apparatus to be used for the raising of liquids from great depths or to great heights, but are intended and more especially adapted to the raising of petroleum from deep wells, and therefore will be described herein with particular reference thereto.

Many apparatuses have been heretofore invented consisting of various arrangements of devices for forcing petroleum from wells by means of an air-blast, but have been only partially successful, and quite unsatisfactory in their operation, for the reason that the discharge of oil from the well was slow and tedious and in not such sufficient quantities as desired with the amount of air used.

To produce an apparatus by which the proportion of oil discharged from the well by means of an air-blast should be made to greatly exceed that heretofore possible by any of the apparatuses now in use for that purpose is the object of the present invention, and is accomplished thereby by means of a peculiar arrangement of the nozzle or discharging end of the air-pipe, whereby, in lieu of causing the air to issue in such a body or stream from the pipe that the oil could only come in contact with its exterior surface, it is discharged from its pipe through an annular opening or orifice, communication with the interior of which air-blast is had by the oil through any suitably-arranged aperture or apertures connecting it with the oil-chamber, thus necessarily increasing the suction and drawing up proportionally more oil from the well than heretofore possible.

I have also made other improvements, which will be hereinafter particularly alluded to.

In the accompanying drawings my improvements are illustrated, Figure 1 being a central longitudinal vertical section, and Fig. 2 a transverse horizontal section in plane of line X X, Fig. 1; Figs. 3 and 4, detail views.

*a a* in the drawings represent an air-pipe,

made of any desired size and material, and of sufficient length to reach nearly to the bottom of the petroleum-well in which the apparatus is to be inserted. To the upper end of this air-pipe any suitable air-pump is to be attached, and its lower end is bent into the form of an inserted siphon, and passes into the lower end of oil-pipe *b b* and a short distance upward in the same, terminating in a peculiar-shaped nozzle, *c c*, to be presently described. The oil-pipe *b b* rests on the bottom of the well, and is to be made of sufficient length to extend to or above the top of the same; *d d* and *e*, a series of apertures in lower end of pipe *b b*, through which the oil passes from the well into the same.

The nozzle *c c* is made as follows, viz:

*f f* is a hollow cylindrical drum of considerably less diameter than the oil-pipe *b b*, open at each end to the oil in same, and placed vertically within its axis, in which position it is held by short radial arms or pins *g g*, &c. In the upper end of drum *f* and around its central opening, *k*, is an annular orifice or aperture, *l*, extending nearly through its length, and communicating at its lower end by means of two short connecting-pipes, *m m*, with the upper end of air-pipe *a a*.

*n* is a conical-shaped plug attached to lower end of a short vertical rod, *o*, hung at its upper end in the center of a fixed cross-bar, *p*, of oil-pipe *b*. The plug *n* is over the nozzle *c c*, and has its apex toward the same.

*e e* is a ring on lower end of oil-pipe *b b*, on upper edge of which the air-pipe *a a* rests, said ring being loose on its pipe, so as to be easily moved up or down upon the same, and thus by raising or lowering the pipe *a a* bring its air-nozzle *c c* as near to or as far from the conical plug *n* as may be desired, a set-screw or any other suitable device being used to securely hold it in the desired position.

Into the pipe *a a* air is forced under great pressure, first passing downward through the same, and then out at its annular orifice or nozzle *c c*, constructed as described, into the oil-pipe *b*, impinging against the surrounding oil therein, and forcing and drawing it up through the space *r* between the edge of conical plug *n* and pipe *b*, and the whole length of the pipe, issuing at the top, and there delivering the oil into any proper tank or vessel.

From the above description it is evident

that by my improved apparatus the oil not only comes in contact with the exterior surface of the air-blast, as heretofore, but through its interior communication, *s*, with the interior surface of the same, thereby proportionally increasing the suction of the oil by the blast, and causing a corresponding larger quantity of oil to be delivered from the well through its oil-pipe.

The nozzle *cc* can be made of various shapes other than herein described, it being only necessary that its discharging-orifice should be of an annular shape, and that there should be an interior communication for the oil in the pipe to the same. It is also evident that the conical plug *n* serves not only as a guide to the air-blast, but also relieves the backward pressure of the oil upon the same, as its base is a support and sustains a column of oil having a diameter equal thereto.

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

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The use, in apparatus employed for the raising of liquids from great depths or to great heights, of an annular-shaped orifice or opening for producing an air-blast in the same, said orifice being so arranged as to allow the liquid to be raised to come in contact with both the exterior and interior surfaces of the air-blast, substantially as described, and for the purpose specified.

2. In combination with the nozzle *cc*, having an interior oil-passage, the conical plug *n*, or its equivalent, arranged and operating substantially as and for the purpose specified.

3. Adjusting the height of the nozzle of the air-pipe in the oil or liquid pipe, the same consisting in the use of the movable plate or ring *ee*, arranged and operating substantially as described.

S. FRANKLIN SCHOONMAKER.

Witnesses:

M. M. LIVINGSTON,  
C. L. TOPLETT.