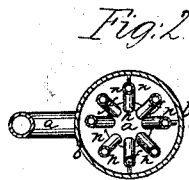
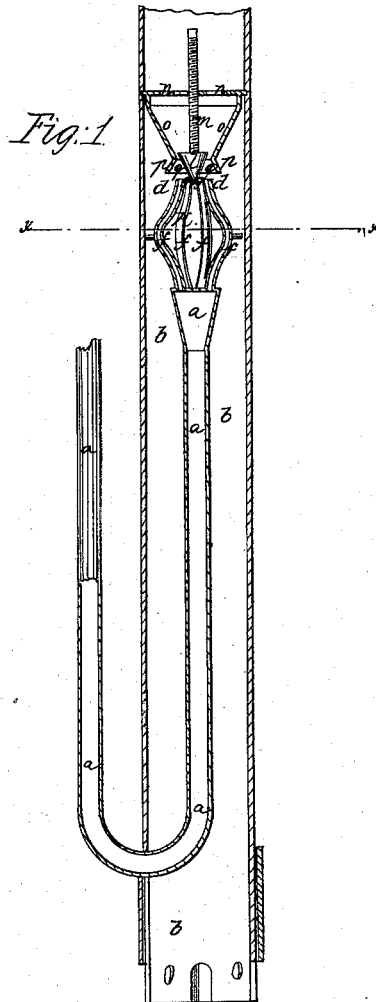


S. F. Schoonmaker,

Ejecting Pump.

N^o 47,227.

Patented Apr. 11, 1865.



Witnesses:

*W. A. Hearn &
Thos. J. J. J.*

*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. 47,227, 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 part of this specification.

The present invention relates to a new and useful improvement in apparatuses used for raising for petroleum from deep wells, but which are applicable to the raising of any liquids to great heights or from great depths; and it consists in delivering the air to the oil, which is to be forced up through the oil-pipe and out of the well by the force of its blast, through a series of small pipes having their delivery ends arranged around in a circle, and so that as the air issues from the various pipes it shall form an annular blast, the space around and between the said pipes being open and communication had for the oil to the interior of the blast, the advantages of which have been particularly set forth in the specification accompanying another application dated February 22, 1865, made by me for a patent on an improved petroleum-elevator. I have also made another improvement in elevators for petroleum, which can be used in connection with the air-blast herein described, or with the blast described in the specification before referred to, and which will be presently described.

In the accompanying drawings my improvement is represented, Figure 1 being a central vertical section of the elevator; Fig. 2, a cross-section in the plane of line *x x*, Fig. 1.

Similar letters of reference indicate like parts.

a is an air-pipe extending from top of well nearly to its bottom, and, entering the oil-pipe *c* at or near its lower end, passes upward a short distance in the central axis of the same, terminating in a nozzle, *d*, formed by a series of radiating projecting bent pipes, *f f f* &c., secured together at their upper ends in any proper manner, so that they shall all be in the same horizontal plane and with their delivery-apertures in the form of a circle, or in any other described form. The space *g g* between the pipes *f f*, &c., at their upper ends, is open,

and communicates by the spaces *h h*, &c., between the said pipes, with the oil-chamber of the pipe *b* surrounding the air-pipe *a*.

Above the nozzle *d* of air-pipe, with its apex toward the same, is an inverted cone, *l*, hung by its base to a vertical screw-rod, *m*, of a cross-bar, *n*, secured in oil-pipe *b*, said cone being susceptible of adjustment at pleasure.

To the interior periphery of the oil-pipe *b*, projecting therefrom toward the adjustable cone *l*, and by its larger base a hollow truncated conical diaphragm, *o*, is secured, to the lower or smaller base of which is attached a similar hollow truncated conical diaphragm, *p*, and with its smaller base extending only a short distance toward the interior surface of the oil-pipe, but sufficiently to form a guard, as it were, to the air-blast, and prevent its being diverted from its direct passage up and through the opening *q*, between the said adjustable cone and double diaphragm *o p*. The opening *q* may be increased or diminished in size at pleasure by simply raising or lowering the conical plug, as is evident.

The operation of the above elevator is as follows, viz: Air is first forced by means of any suitable air-pump down through the air-pipe, passing out of the same at its nozzle, and up through the space *q*, around the cone *l*, drawing and forcing up the oil contained in the oil-pipe, in the usual manner, by its great velocity, and which, in the present air-blast, is greatly increased, as the oil not only communicates with the exterior surface of the blast, but also with its interior, as herein described, whereby a greater proportion of oil is forced up through the pipe *b* than would be were the oil to communicate only with the exterior surface of the blast, as has heretofore been the case, because a corresponding greater suction is produced.

By the use of the double hollow truncated cone or diaphragm, in connection with the adjustable cone, arranged so as to have an open space between the two, a better guiding-passage for the oil is provided than would be the case were the space between the cone and the interior surface of the pipe to be left entirely open, as is evident without further description, and, furthermore, the full capacity of the oil-tube up to the orifice of the air-blast is allowed and given to the oil within the tube.

It is obvious that by the use of the double

truncated and guiding diaphragm and the adjustable cone, the parts of the apparatus can be adjusted together without reference to the size of the oil-tube below or above the air-nozzle, thus allowing a large or small pipe to be used, as may be desired, the advantages of which are evident.

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

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

1. Forming the delivery-nozzle of an air-blast-pipe in elevators for petroleum or other liquids of a series of pipes of any desired number and size, with their delivery ends in the same horizontal plane, and having the form

of a circle or any other suitable form, and so arranged as to give the oil in the oil-tube and surrounding the air-pipe a passage through which to communicate with and to approach the interior surface or surfaces of the air-blast, substantially in the manner and for the purpose specified.

2. The combination, with the double truncated conical diaphragm *op*, of the adjustable cone *l*, arranged together substantially as described, and for the purposes specified.

S. FRANKLIN SCHOONMAKER.

Witnesses:

ALBERT W. BROWN,
M. M. LIVINGSTON.