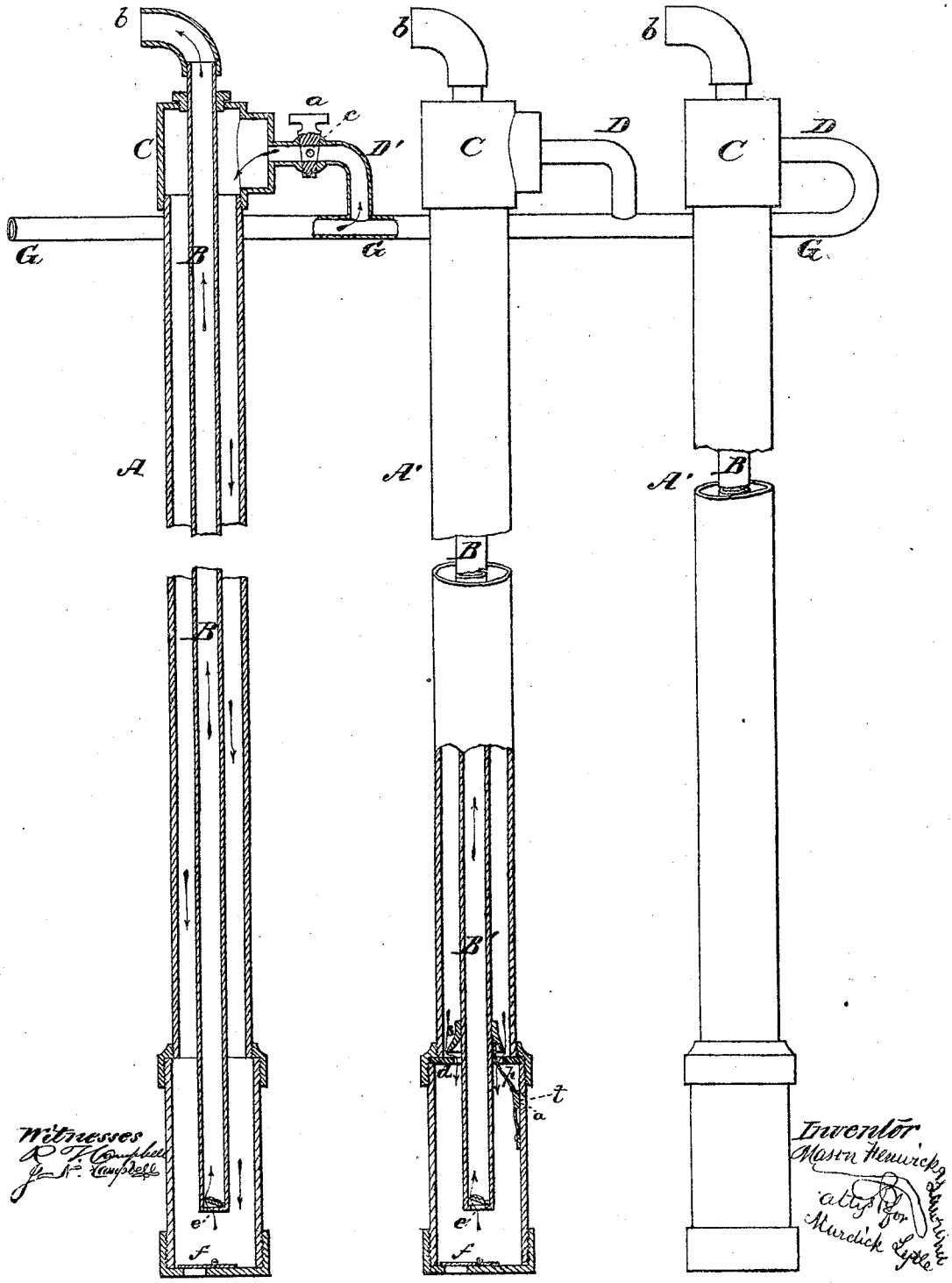
M. LYTLE.

Operating Oil-Wells by Compressed Air.

No. 129,353. Patented July 16, 1872.



UNITED STATES PATENT OFFICE.

MURDICK LYTLE, OF OIL CITY, PENNSYLVANIA.

IMPROVEMENT IN OPERATING OIL-WELLS BY COMPRESSED AIR.

Specification forming part of Letters Patent No. 129,353, dated July 16, 1872.

To all whom it may concern:

Be it known that I, MURDICK LYTLE, of Oil City, in the county of Venango and State of Pennsylvania, have invented an Improvement in Operating Oil-Wells by Compressed Air; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which represents three oil-well ejectors connected to a single pipe leading to an engine.

In the State of Pennsylvania, as well as in other regions where coal-oil is abundant, there are great numbers of artesian wells which are in close proximity to each other, many of which afford oil in such small quantities that it would not be profitable to work them separately.

The object of my invention is to provide certain means whereby the pumping of a number of wells at one and the same time can be effected by a single engine communicating by means of a pipe with the ejectors in the wells, through which pipe air, under considerable pressure, is forced, and to combine with such pipe a contrivance whereby any one or more of the ejectors can be cut off from the engine at pleasure, and, at the same time, the compressed air left in such ejector or ejectors allowed to escape, as will be hereinafter explained.

The following description will enable others skilled in the art to understand my invention.

In the accompanying drawing I have represented a pipe, G, communicating, by means of branch pipes D D D′, with three ejectors, which, it may be supposed, are applied in oil-wells, located at different distances from each other.

It will be obvious, however, from the following description, that pipe G may communicate with a great number of pumps or ejectors in wells which afford different quantities of oil. Some of these wells may be intermitting in their supply of oil; others may flow continuously. Some of the wells may supply but a few gallons of oil in the course of twenty-four hours; others may supply a much larger quantity during the same period of time.

The pumps or ejectors are all operated by means of condensed air forced into them by means of a single condensing-engine, to which one end of the pipe G is connected. This pipe is carried along from one well to another, and it communicates with the heads C of the ejectors by means of branch pipes. The branch pipes D D communicate with the heads of the ejectors A. This latter branch pipe D′ has a cock, *a*, applied to it, through which is an outlet-vent, *c*, for the escape of air through one side of pipe D′ when cock *a* is turned so as to cut off communication between pipe G and the interior of the ejector. By means of this stop-cock vent condensed air, left in the ejector when cut off from the engine-pipe G, is allowed to escape so as not to offer any resistance to the influx of oil into the ejector. As the object of my invention is to utilize wells each one of which affords only a small quantity of oil per diem, and as the supply of the wells will vary in many cases very much — some giving but a few gallons of oil per diem, and others a much larger quantity—it is important to provide a cut-off for each ejector, so that when any one or more of the wells ceases to flow oil for a time it or they can be cut off from the engine-pipe G until there is a fresh supply, when the communication can be again established. This may be done by means of a contrivance shown attached to the middle ejector A′. The external tubes of all the ejectors contain within them smaller tubes, B. Each one of these tubes B terminates below in a valve, *e*, opening upwardly, and above in an elbow, *b*, arranged outside of the head C. The condensed air, which enters each ejector from a branch pipe communicating with the engine-pipe G, closes valve *f* and forces the oil up through the pipe B. The pipe B of the middle ejector A′ is vertically movable, and when raised allows the condensed air to flow through a diaphragm, *d*, into the base section of the outer tube. When pipe B is depressed an inverted funnel-shaped valve, *s*, shuts the opening through diaphragm *d* and, at the same time, by acting on a spring extension, *p*, of a small valve or cut-off, *a*, opens a vent, *t*, and allows the compressed air in the base of the pump to escape through it into the well-chambers.

It will be seen that both plans, above described, for cutting off the ejectors from the engine-pipe are under the control of an attendant, who should know when and what pumps to cut off and when to again put them in communication with the engine-pipe.

I am aware that the broad idea of transmitting power from one prime source to several machines is not new, and this I do not claim; as, for instance, it is very common in machine-shops and manufactories to drive a number of machines by means of a single line of shafting. It is also a very old practice of operating a gang of pumps by a single engine. My invention is designed to supply a practical means whereby oil-wells can be utilized which are now lying idle for the reason that their supply of oil is so small it is not profitable to work them. This I do, not by simply communicating a number of wells with a single engine, but by the addition of devices, hereinabove explained, whereby the object stated can be practically carried into effect.

I do not claim a single pump, such as I have shown, connected with a compressed-air apparatus; neither do I claim a pair of pumps, alternately acting as receivers and dischargers; nor any number of pumps thus worked in pairs and connected with a compressed-air apparatus; neither do I claim a nest of pumps discharging simultaneously into a common chamber which has a single discharge; neither do I claim a paddle-wheel, an air-condenser, and a series of engines combined.

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

A series of ejectors, constructed each with a branch pipe and cut off combined with an engine-pipe, G, in the manner described, one ejector, or any number of the series, or the whole series, being capable of operation at the will of the attendant, substantially as described.

MURDICK LYTLE.

Witnesses:
J. N. CAMPBELL,
EDM. F. BROWN.