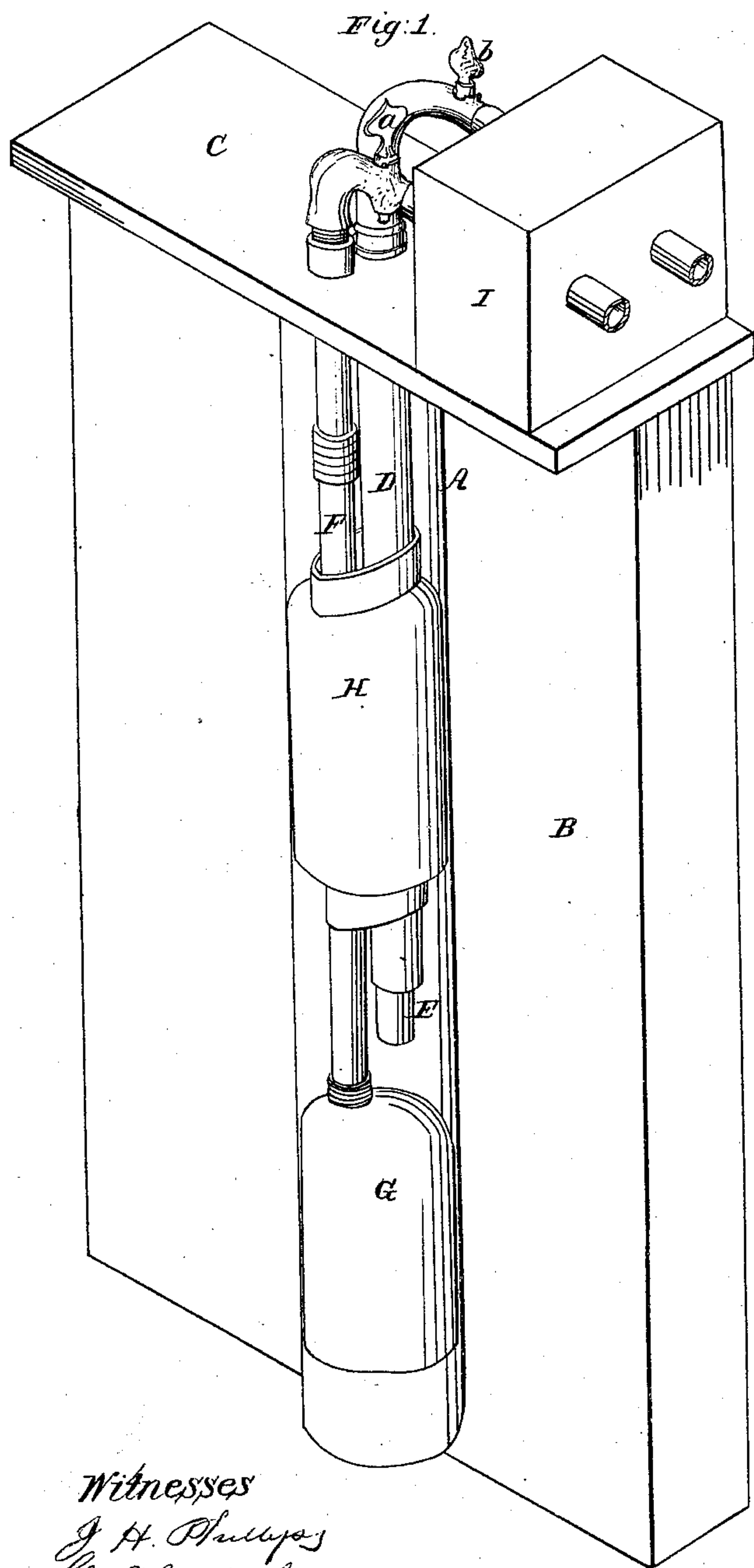
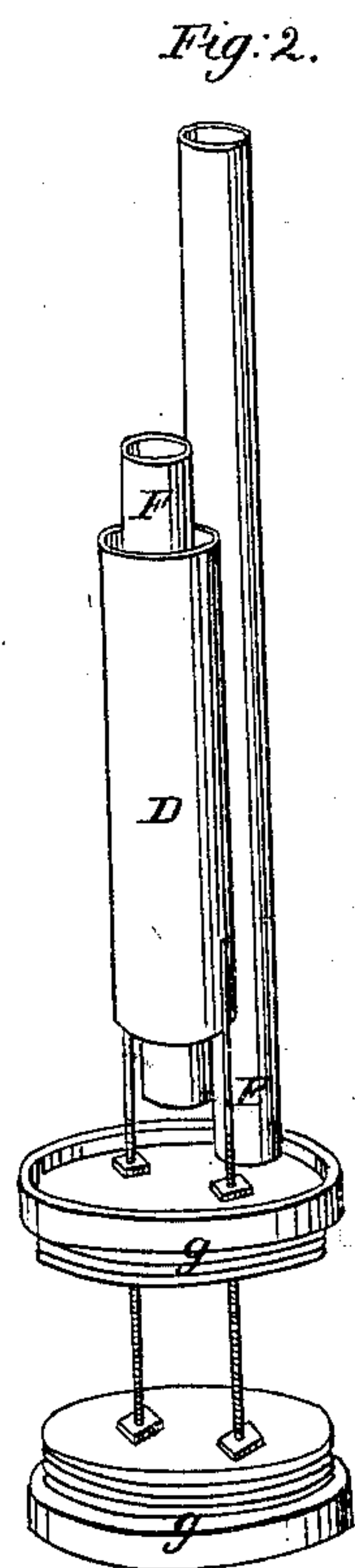


*J.C. Lyon,*  
*Testing Oil Wells,*  
*No. 46, 124,* *Patented Jan. 31, 1865.*



*Witnesses*  
*J. H. Phillips*  
*Geo. C. Lambright*



*Inventor;*  
*Joseph C. Lyons*  
*By Atty J. B. Woodruff*

# UNITED STATES PATENT OFFICE.

JOSEPH C. LYONS, OF AUBURN, NEW YORK.

## IMPROVEMENT IN TESTING OIL-WELLS.

Specification forming part of Letters Patent No. 46,124, dated January 31, 1865.

*To all whom it may concern:*

Be it known that I, JOSEPH C. LYONS, of Auburn, in the county of Cayuga, in the State of New York, have invented a new and useful Apparatus for Testing Oil-Wells; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 represents a perspective view of the apparatus, showing the two flexible air-chambers as inflated in the bore, with the discharge and air pipes. Fig. 2 shows a detached view of a section of the discharge and air pipes, with the frame-work *g g* attached, for forcing the lower air-chamber, *G*, down into the well.

The object of my invention is to find where water, oil, and gas veins or fissures are, and to effect a cut-off above and below at any desired point or place in the walls of oil-wells, and to enable a change in the position of the cut off to be made at any time and at any depth below the surface, and also to convey the oil or other fluids contained between the flexible air-chambers forming the cut-off, to be discharged at the surface.

My invention consists in placing within the walls of oil-wells two flexible air-chambers, the upper air-chamber surrounding the air and discharge pipes, the same being so connected with the pipes that they may be forced down by them into the well to any desired point or depth, and there inflated, both at the same time, very speedily, so as to close the communication from above and below, thereby testing the different strata and ascertaining what and where the different fluids find their vent into the shaft of the well, thus enabling the water and gas courses to be effectually shut off from the oil-veins, both from above and below, causing the oil to be discharged from the surface of the wells free from other admixtures.

To enable others skilled in the art to construct and use my apparatus for testing Artesian oil-wells, I will describe it and its operation more fully, referring to the drawings, and to the letters of reference marked thereon.

To illustrate the interior of the shaft or hole bored into the earth for the purpose of obtaining pure water and (more recently) oil, called "Artesian wells," I use a glass tube, *A*, secured in a vertical position to a plank, *B*,

which may be so shaded as to represent the different strata and veins of fluids. In the shaft *A*, extending down from the top or surface of the ground *C*, I suspend the discharge pipe or tubing *D*, through which passes an air-pipe, *E*, extending a little below the bottom of the discharge-pipe *D*. The air-pipe *E* may be dispensed with in free-flowing wells, but where the fluid to be raised is of a thick and adhesive quality, by forcing down a strong current of air, creates an ebullition and greatly facilitates bringing the substance to the surface.

On the side of the discharge-pipe *D*, and secured to it at intervals, I place another smaller tube or air-pipe, *F*, it extending down some considerable distance below the bottom of the pipes *D* and *E*, the pipe *F* having attached to its lower end a frame or basket, *g g*, somewhat smaller than the caliber of the well, around which frame *g* is secured a bag, *G*, made of strong flexible material, which, being inflated by forcing air down the pipe *F*, fills out and presses hard against the sides of the shaft *A*, shutting off the communication below entirely while the air chamber *G g* is inflated. A short distance above the lower end of the discharge-pipe *D*, and entirely surrounding it and the air-pipe *F*, is secured another flexible air-chamber, *H*, into which the air is forced through an orifice in the side of the tube *F*, so that it is inflated and fills the wall of the well above at the same time the lower chamber, *G g*, does below. This process of trying and testing the different strata, and separating the fluids which find vent in the shaft of an Artesian or oil well, can be very easily effected by my apparatus, the air pump and receiver *I* being placed new on one side of the top of the well, the stop-cocks *a* and *b* being connected with the receiver *I* so that the air-tubes *E* and *F* can be easily coupled on in sections as the apparatus is being let down, so that tests can be made at every ten or twelve feet the whole length of the shaft after it is bored to any desired depth.

It will readily be seen that by my invention a sure and certain test of all of the fluids can be effected, and the location of every different ingredient accurately ascertained, and that any one of them can be separated from the others and brought to the surface at the will of the operator; and among other advantages



to be derived by inflating air-chambers to be used as cut-offs (in the place of the seed-bags which are in use) is that they can at any time be changed in their position in the shaft of the well, or taken out of one well and used in another, without any damage to the apparatus, which is not the case with the seed-bags.

Having thus described my invention, the mode of applying the same, and its operation and effect, what I claim as new and useful, and desire to secure by Letters Patent, is—

The combination and arrangement of two flexible air-chambers with the air and dis-

charge pipes so that the air-chambers can be placed at any point within the walls of oil-wells, and there be inflated, whereby to cut off above the upper and below the lower chambers water, gas, and other substances, and thereby allow the oil to pass from a fissure between the two chambers and out of the discharge pipe, substantially as herein set forth.

JOSEPH C. LYONS.

Witnesses:

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