

(No Model.)

J. T. LANGFORD.  
SYSTEM OF EXHAUSTING AIR FROM ARTESIAN WELLS AND  
CONNECTING PIPES.

No. 495,812.

Fig. 1. Patented Apr. 18, 1893.

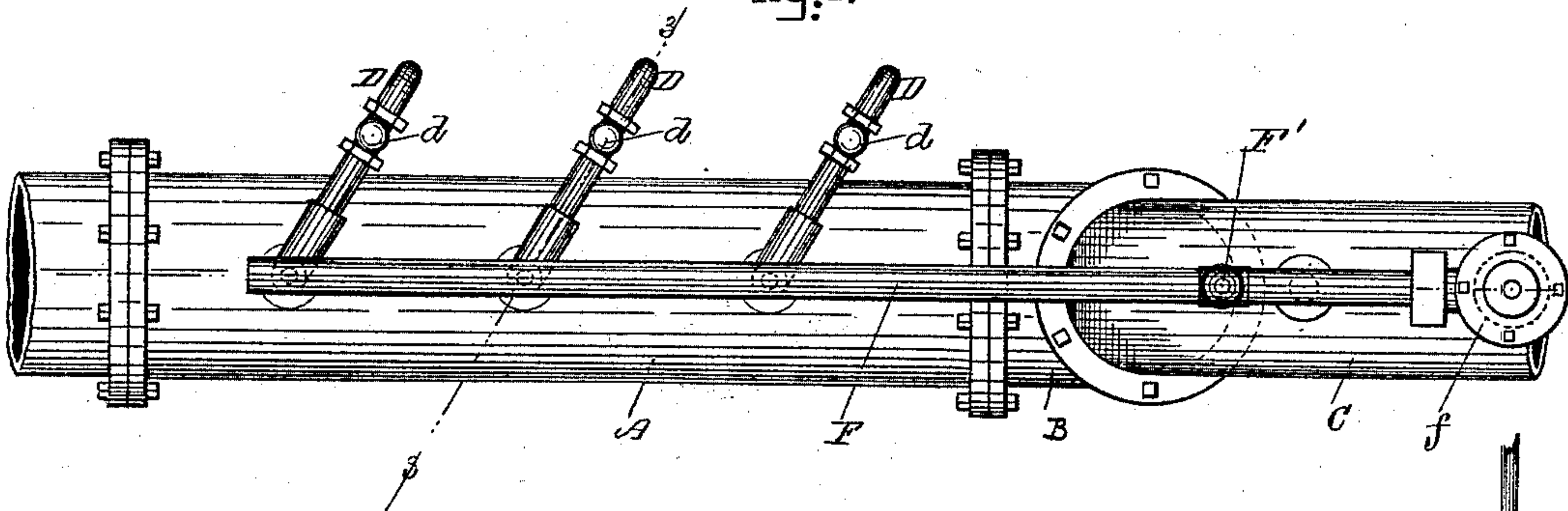


Fig. 2.

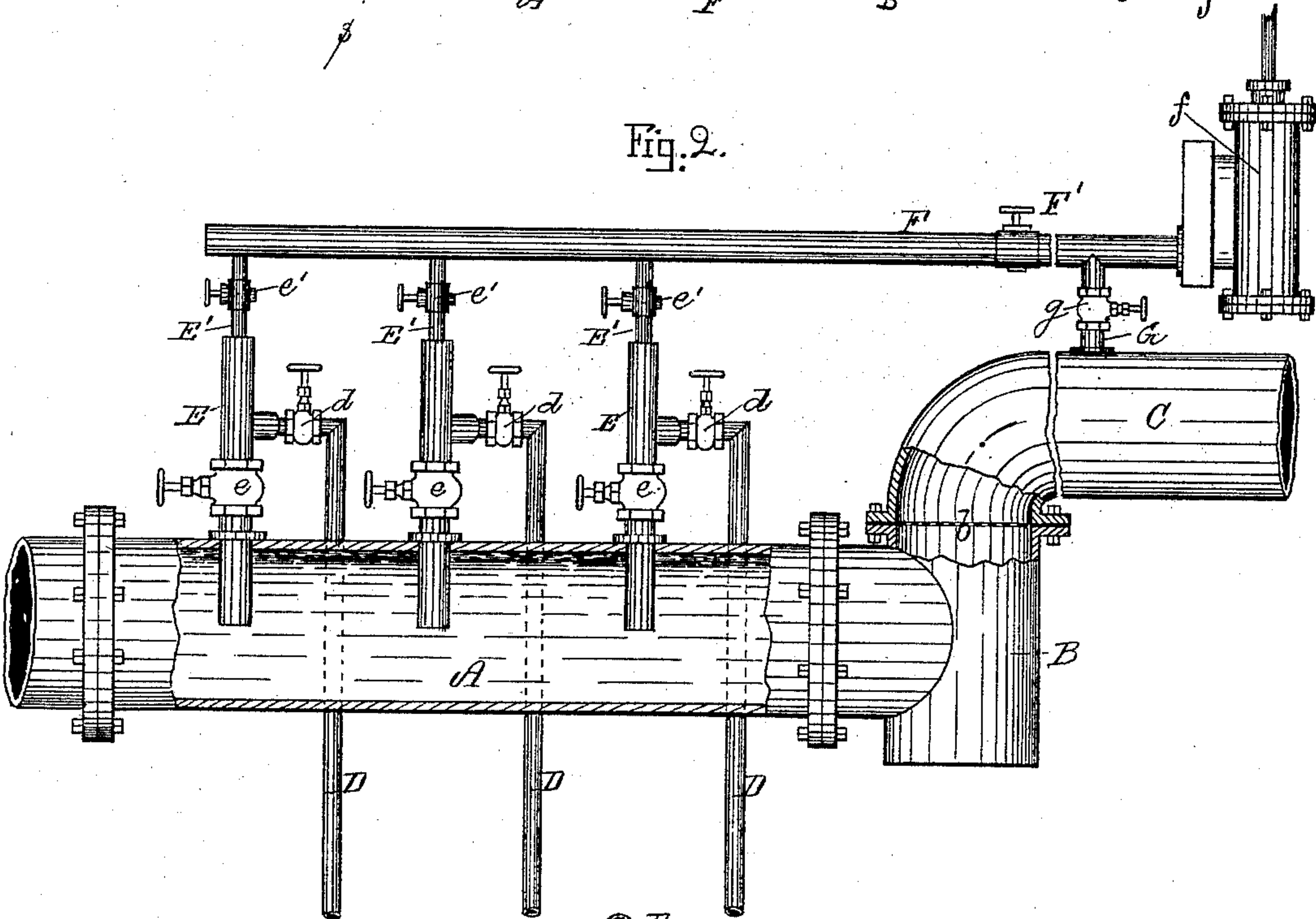
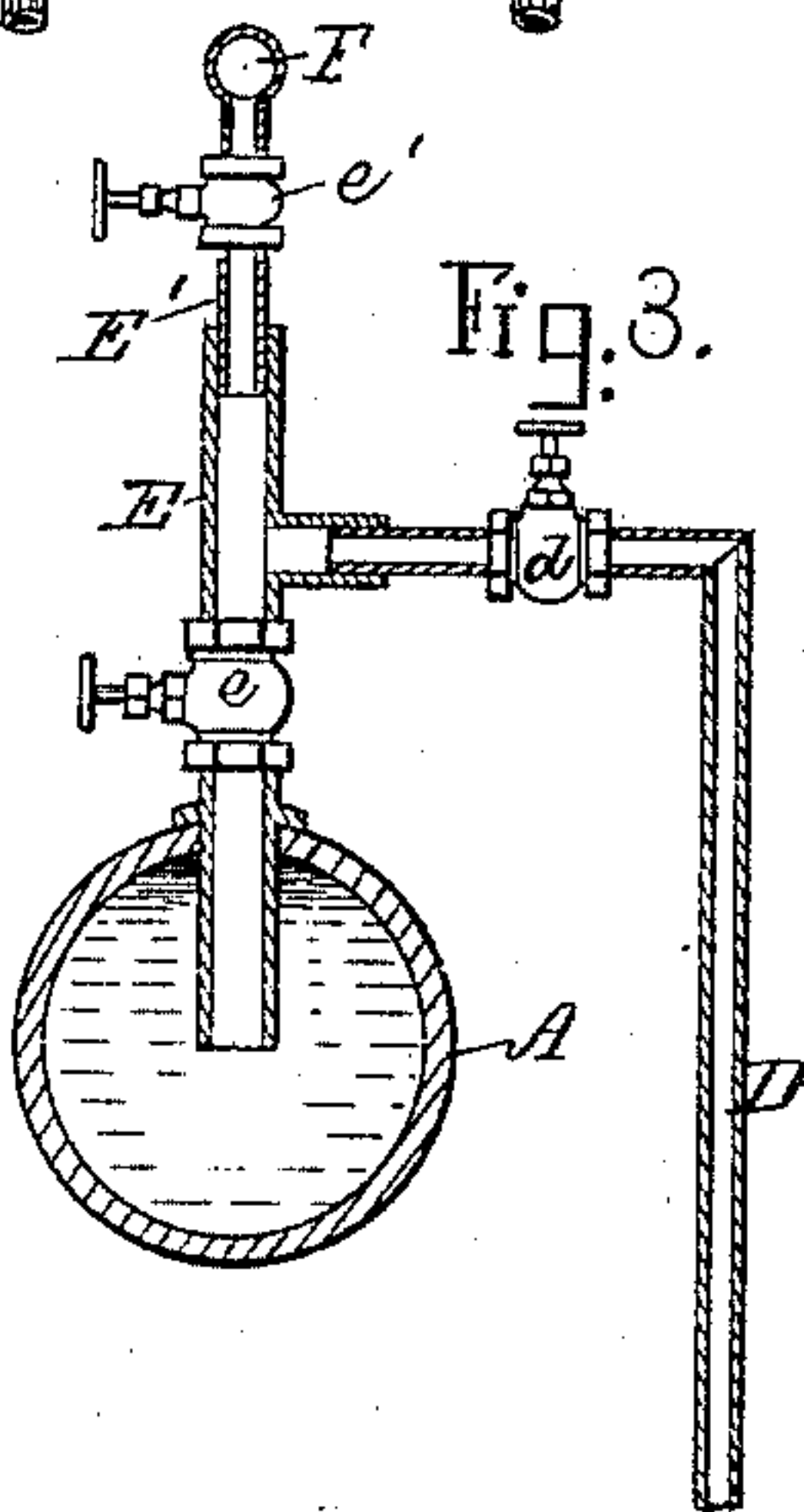


Fig. 3.



Witnesses.

*Lauritz N. Moeller.*  
*J. H. Cranford.*

Inventor.

*John T. Langford*  
*by Wm. H. H. H. H.*  
*his atty.*



# UNITED STATES PATENT OFFICE.

JOHN T. LANGFORD, OF NEWTON, MASSACHUSETTS.

SYSTEM OF EXHAUSTING AIR FROM ARTESIAN WELLS AND CONNECTING PIPES.

SPECIFICATION forming part of Letters Patent No. 495,812, dated April 18, 1893.

Application filed December 7, 1892. Serial No. 454,348. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. LANGFORD, a citizen of the United States, and a resident of Newton, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Systems of Exhausting Air from Artesian Wells and Connecting Pipes, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to apparatus for exhausting air from Artesian wells, and it has for its object to provide novel means for preventing the air entering the suction main and interfering with the working of the main pump.

To accomplish this object my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a plan view of the invention. Fig. 2 represents a longitudinal section of the same showing parts in elevation; and Fig. 3 represents a cross-section on the line 3—3 shown in Fig. 1.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In the drawings A represents the suction main connected to a sand chamber B of any suitable form or construction from which leads the main pipe C to the main pump at the pumping station as usual.

b is a sand arresting screen in the sand chamber B as shown in Fig. 2.

D, D, D, represent a series of Artesian well pipes each one of which is connected to an air chamber E, which passes through the shell of the suction main A and has its lower end sealed in the liquid contents thereof. The upper end of the air chamber E is connected to the air exhaust pipe F preferably by means of a reduced pipe E' having a valve or cut off e' as shown.

f is a vacuum pump located at the pumping station and connected to the air pipe F as shown in Fig. 2.

d is a valve or cut off on the upper end of each of the Artesian well pipes D; and e is a similar valve or cut off on the air chamber E

above the place where it enters the suction main A as shown in the drawings.

In practice I prefer to connect the air exhaust pipe F and main pipe C by means of a pipe G provided with a valve or cut off g as shown in Fig. 2. By this arrangement the following advantages are obtained, namely: By leaving the valves d, e, and e' open, the air that rises with the water from the Artesian wells D is exhausted therefrom by means of the air pipe F and air pump f, thus preventing its being conducted to and accumulated in the suction main A, by which the flow of the water from the Artesian wells is increased; and the main pump at the pumping station is enabled to perform the full capacity of its work; by having the air pipes E sealed in the liquid contents of the suction main A, a quiet flow of water from the well pipes D is insured. By opening the valve g, the air that may accumulate in the upper portion of the main pipe C from leakage can be exhausted by means of air pipe F and exhaustor f in which case I close a valve F' on the air exhaust pipe F as shown in Fig. 2. The direct exhaustion of air from the air chamber above each well will serve to increase the flow of water to the full capacity which the well will yield; and by the arrangement of the valves or cut offs d, e, each well is under the direct control of the engineer at the pumping station, who by closing all the valves in the series except the valves d and e' on the well that is to be examined and by running the vacuum pump connected only to said well for the time being can determine the yield of water from such well or its failure to yield water by which breaks and failures may be easily located in the series of wells for the purpose of repair.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a water supply system, the combination with a series of Artesian well pipes, and an air suction main, of an air suction pipe having a series of branches connected respectively with the well pipes and communicating with the suction main, and an air suction pump connected with the air suction pipe, substantially as described.

2. In a water supply system, the combination with a series of Artesian well pipes, and



an air suction main, of an air suction pipe having a series of branches extending into the suction main and sealed at their lower ends in the liquid therein, said branches being connected respectively with the well pipes at points between the air suction pipe and the suction main, substantially as described.

3. In a water supply system, the combination with a series of well pipes, of an air suction main having a pipe for connecting with a main pump, an air suction pipe located above the suction main and having a series of branches connected respectively with the well pipes above the suction main and extending into the liquid contents of the latter, and an air suction pump connected with the air suction pipe, substantially as described.

4. In a water supply system, the combination with a series of Artesian well pipes, of an air suction main having a pipe for connect-

ing with a main pump, an air suction pipe having a series of branches connected respectively with the well pipes and extending into the liquid contents of the suction main, said branches being connected respectively with the well pipes at points between the air suction pipes and the air suction main, an air suction pump connected with the air suction pipe, and a pipe connection between the air suction pipe and the pipe which connects the air suction main with the main pump, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 28th day of November, A. D. 1892.

JOHN T. LANGFORD.

Witnesses:

ALBAN ANDRÉN,  
CHAS. L. ABBOTT.