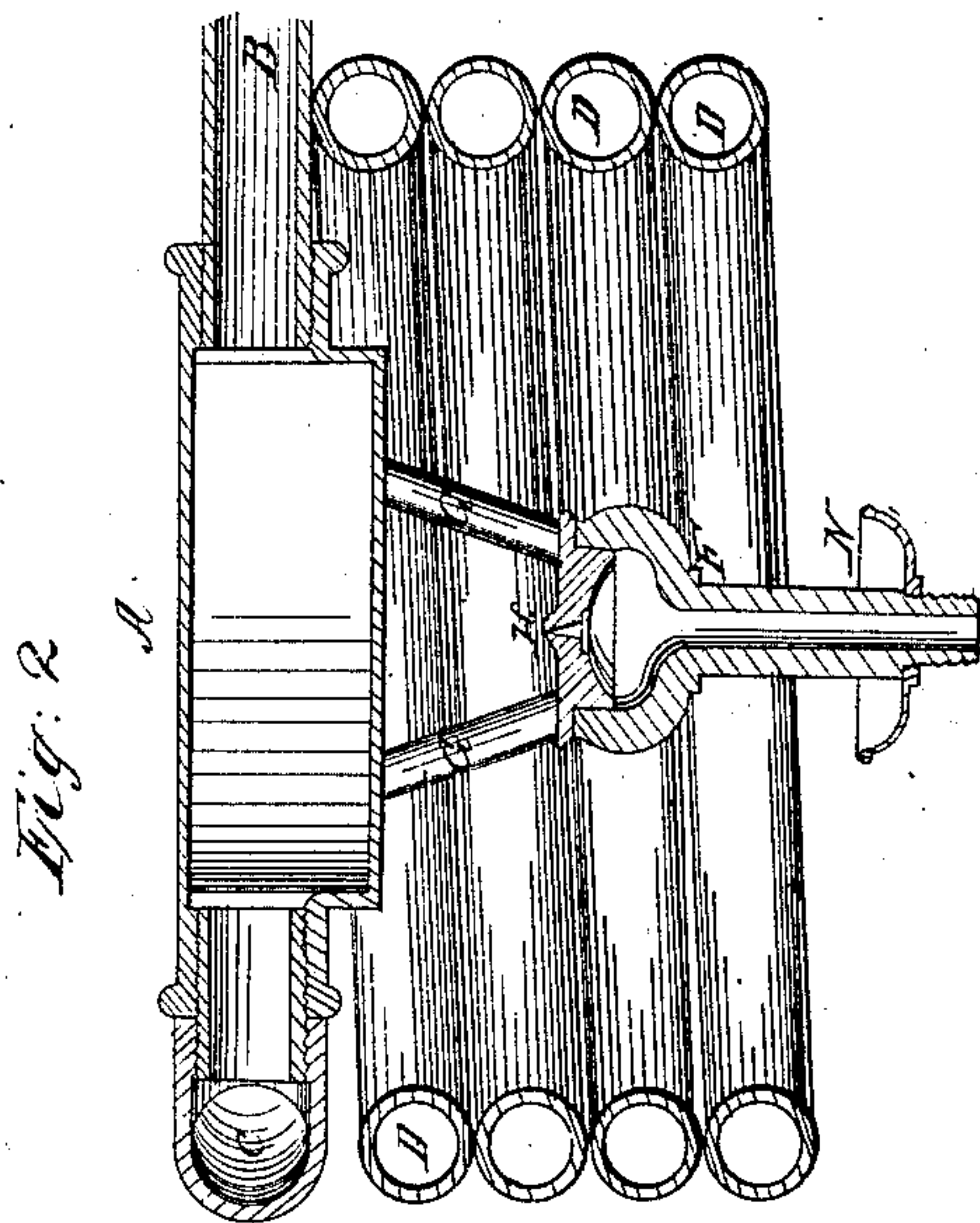
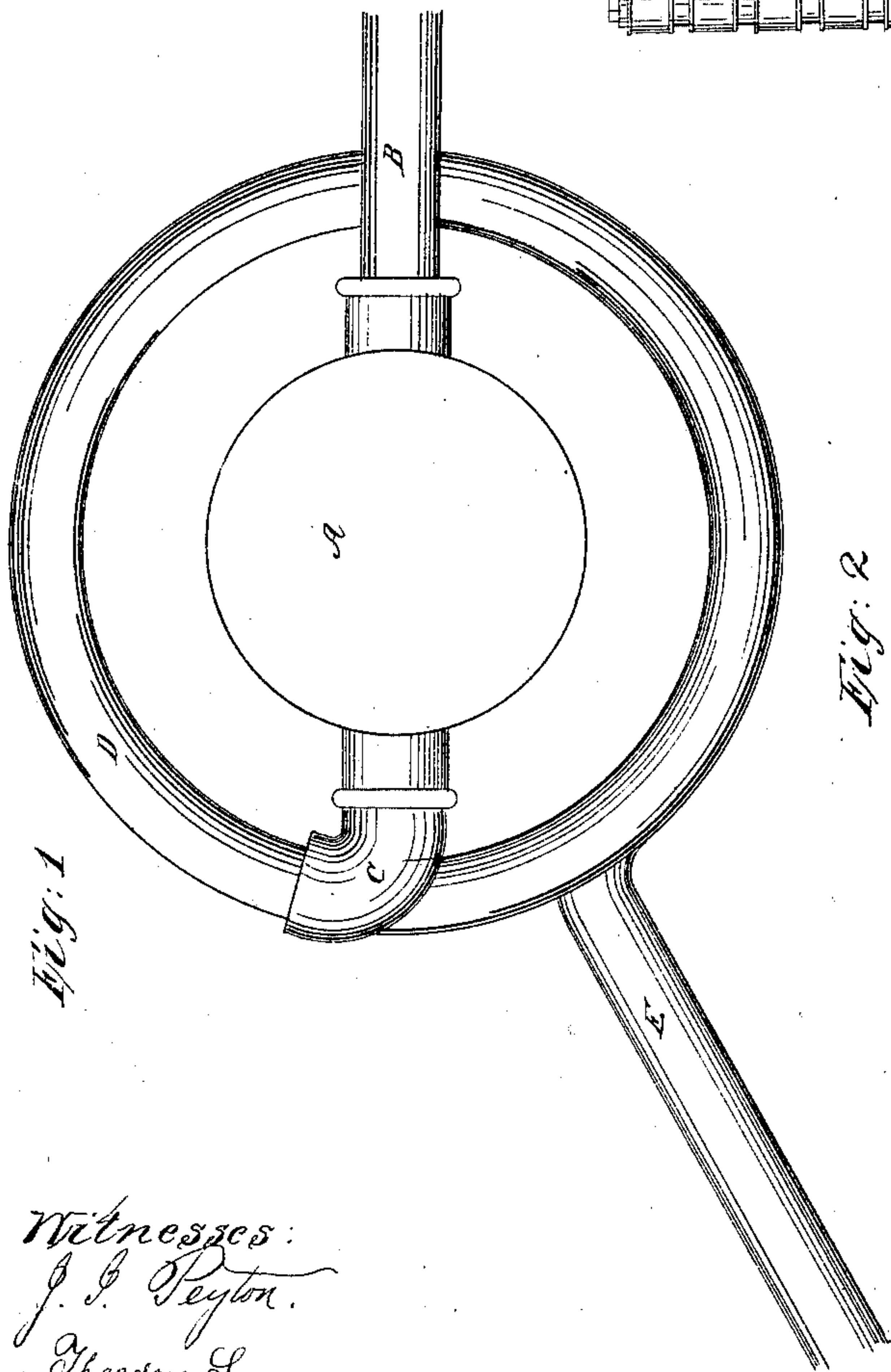
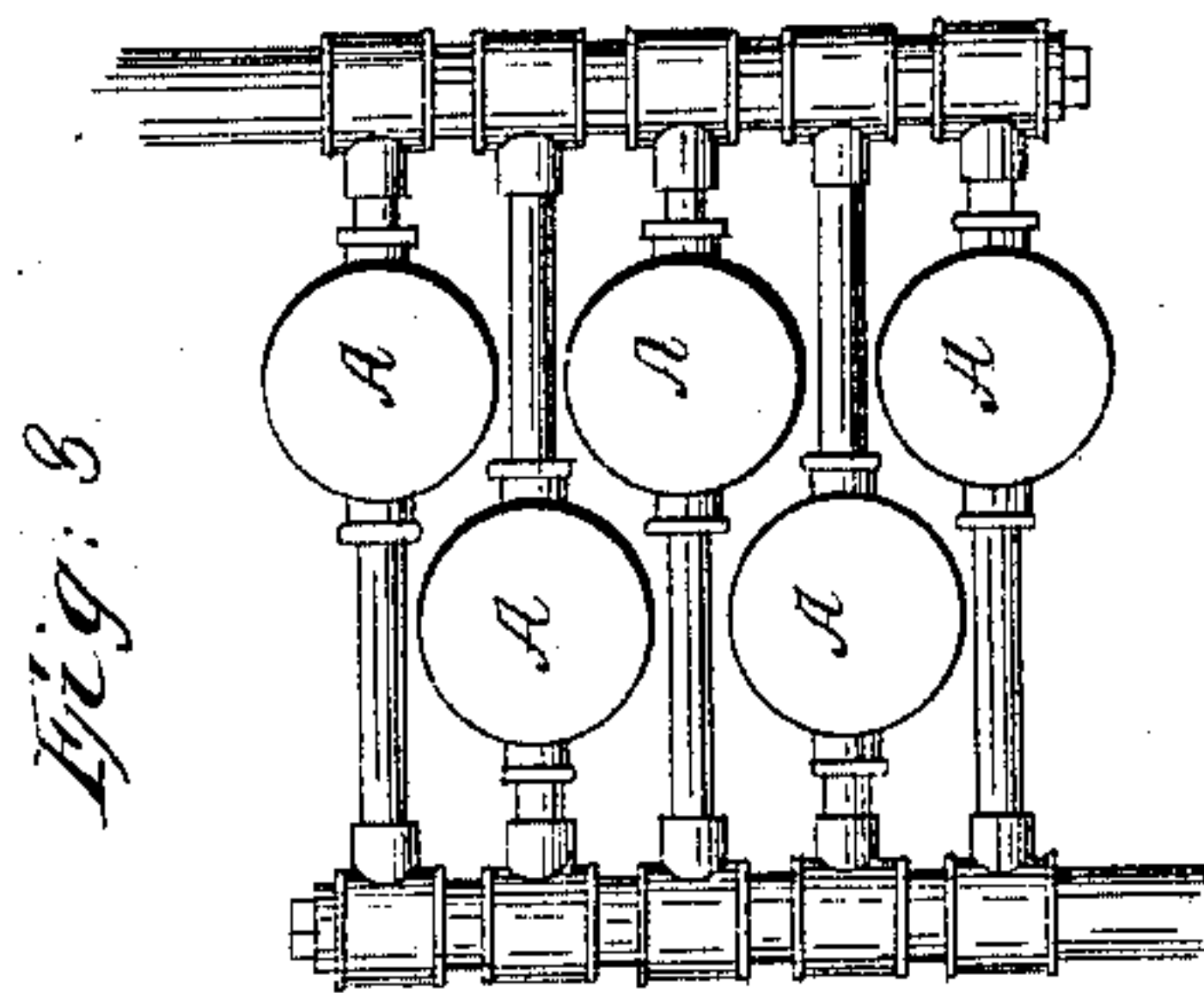


H. S. Saroni,

Steam-Boiler Water-Heater.

N^o 57,576.

Patented Aug. 28, 1866.



Witnesses:
J. B. Peyton.
Thos. Lang

Inventor:
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by his atty
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UNITED STATES PATENT OFFICE.

HERRMAN S. SARONI, OF MARIETTA, OHIO.

IMPROVEMENT IN FEED-WATER HEATERS FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. 57,576, dated August 28, 1866.

To all whom it may concern:

Be it known that I, HERRMAN S. SARONI, of Marietta, in the county of Washington and State of Ohio, have invented a new and useful Improvement in Apparatus for Generating Steam, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a plan or top view of so much of one of my improved generators as is necessary to illustrate my invention. Fig. 2 represents a vertical central section through the same. Fig. 3 represents a modification of my invention.

It is the object of my invention to generate steam rapidly with a vapor-burner adapted to the use of mineral oils or other hydrocarbons as fuel; to which end the improvement herein claimed consists, first, in a heater consisting of a shallow metallic box or drum interposed between the feed-pump or reservoir and the engine or boiler; second, in combining with a generating-drum, such as described, a vapor-burner so constructed and arranged that its prongs or conductors shall touch the heater, which thus forms a heater-cap for the burner; third, in combining with a heater, drum, and burner, constructed and operating as described, a feed-water pipe to absorb the surplus heat of the burner, and thus to heat the feed-water; fourth, in combining with a main feed-pipe and a steam-pipe a series of drums or heaters, each having its own entrance and exit pipe and burner, whereby I am enabled to increase or diminish the generating capacity of the boiler at will.

In the accompanying drawings, which exemplify one convenient mode of carrying out the objects of my invention, a generator or drum, A, is shown as provided with a pipe, C, for the entrance of the feed-water, and with an exit-pipe, B, for the passage of the hot water to the boiler. These pipes may of course be constructed in any suitable manner.

In this instance the water as fed from the pump or reservoir passes through the pipe E and through a coil, D, encircling the burner and generator, passing in at one side of the generator and out at the other.

A vapor-burner, F, is arranged directly beneath the generator, and provided with a jet, H, and igniting-cup N, of the usual construction. The conductors G, however, consisting of two or more prongs, touch the bottom of the generator, which thus forms the heater-cap.

The operation will readily be understood from the above description. The apparatus is, of course, to be provided with suitable regulating-cocks and safety-valves. The vapor from the jet impinges and burns against the under surface of the generator, which thus becomes highly heated. The conductors G conduct sufficient heat to the burner to vaporize the fluid. The feed-water becomes warmed in passing through the coil, and is highly heated in passing through the generator, whence it passes into the boiler.

It is obvious that the details of this arrangement may be modified in various ways without departing from the spirit of my invention. I have, for instance, described but one burner and generator; but the number may be increased at pleasure.

The apparatus may be used as auxiliary to the main boiler, or may itself form the boiler by providing a suitable steam-space; or the water from the boiler might be made to circulate through a generator.

In Fig. 3 I have shown a series of generators, A, each having its own independent supply and escape pipes, but all connected with the same main feed-pipe and escape-pipe.

By my invention I am enabled to raise steam rapidly with a small expenditure of fuel, and, when desired, instantaneously to extinguish the flame, and thus economize fuel, while, by increasing the number of burners, any required amount of steam can be generated.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The generator-drum A, arranged between the feed-pump and boiler, as described.

2. The arrangement of the drum and burner so that the drum serves as the heater-cap for the burner, as described.

3. The arrangement of the drum, the burner, and the feed-pipe, substantially as and for the purpose described.

4. The combination, substantially as described, of a series of generators or drums, each having its own burner and entrance and exit pipe, but all having the same main feed-pipe and escape-pipe.

In testimony whereof I have hereunto subscribed my name.

H. S. SARONI.

Witnesses:

EDM. F. BROWN,
J. I. PEYTON.