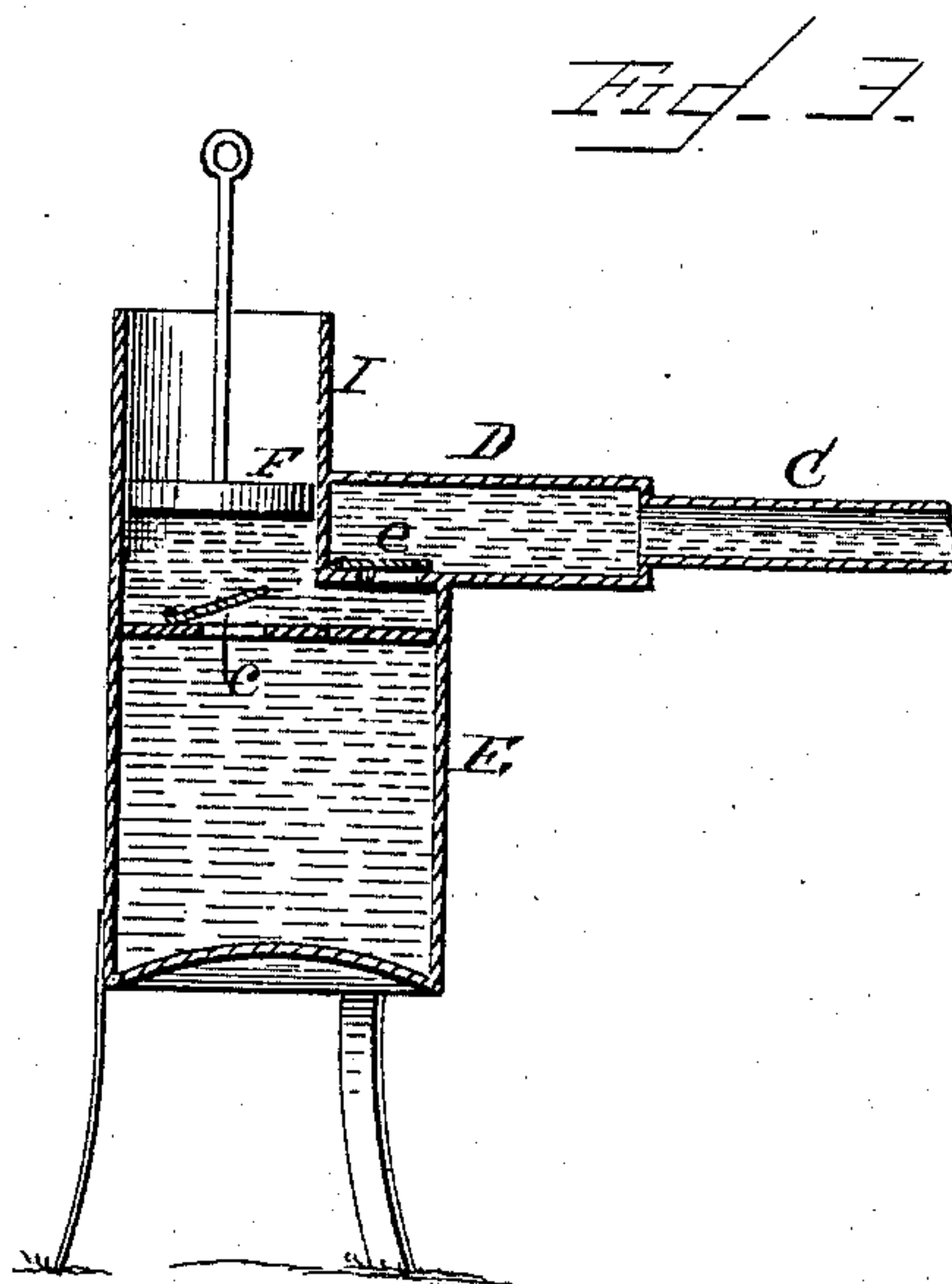
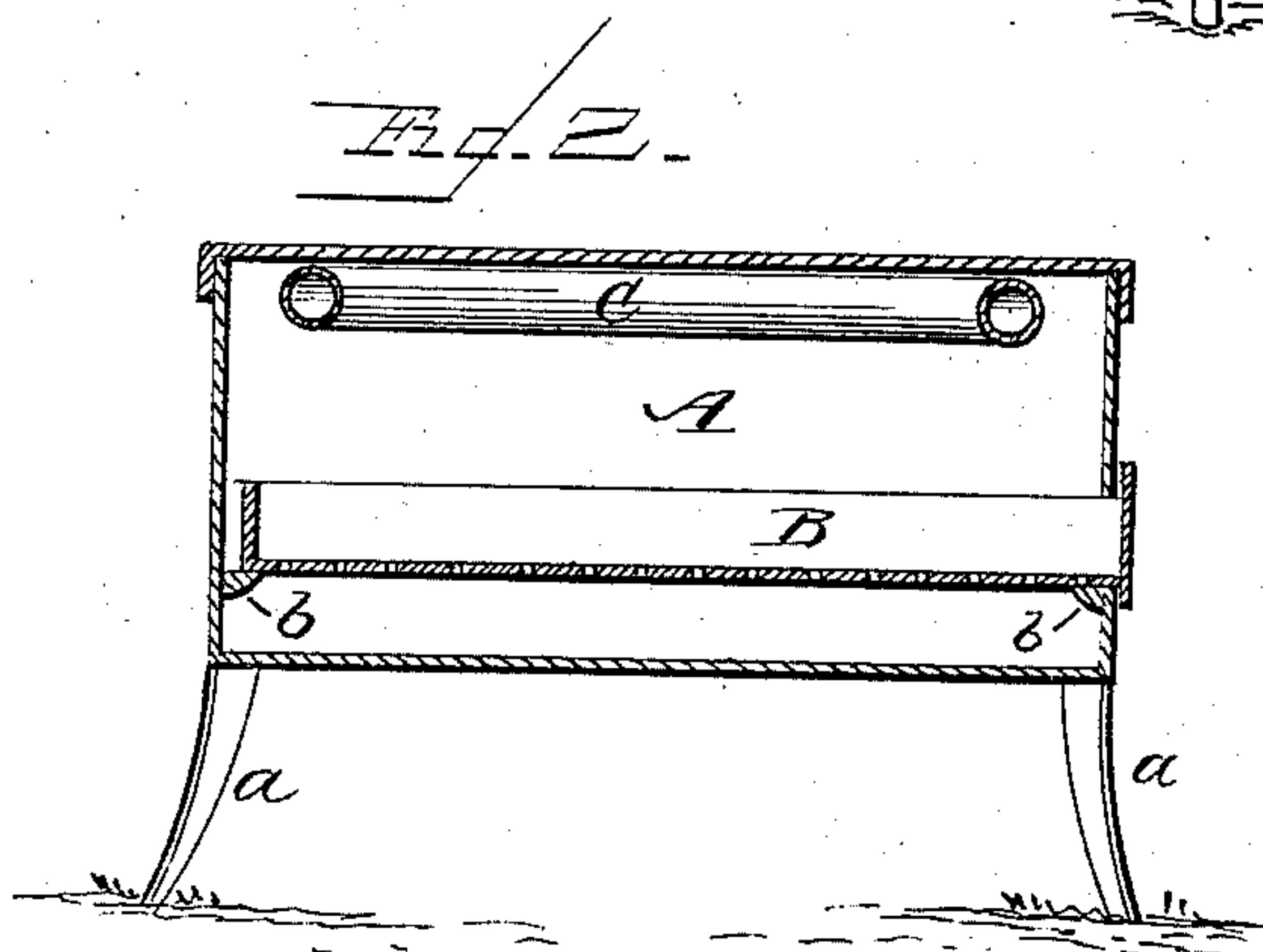
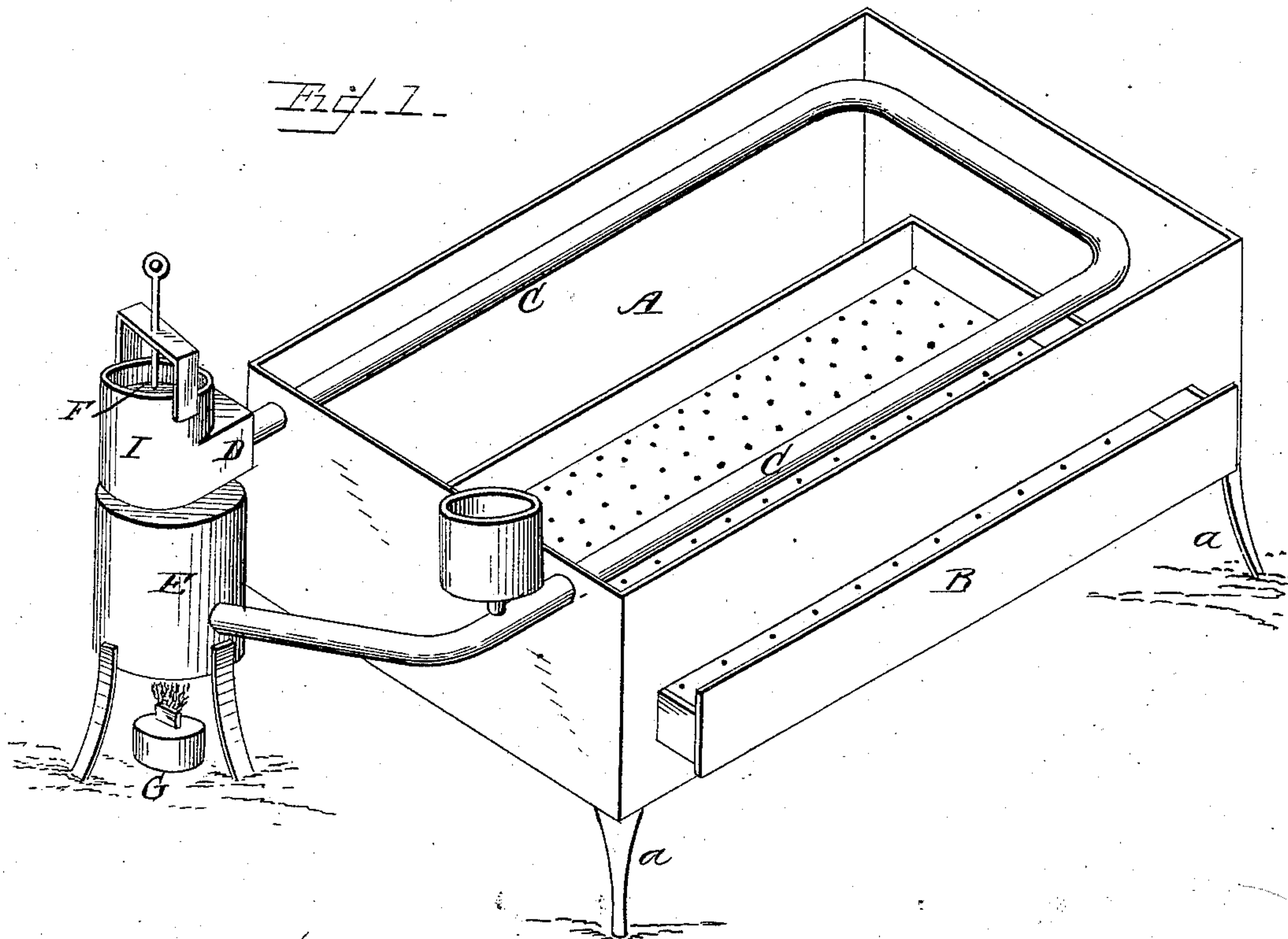


(No Model.)

G. L. ENGGREN.
INCUBATOR.

No. 305,065.

Patented Sept. 16, 1884.



WITNESSES
H. L. Ousand.
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UNITED STATES PATENT OFFICE

GUSTAVE L. ENGGREN, OF BERKELEY HEIGHTS, NEW JERSEY.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 305,065, dated September 16, 1884.

Application filed November 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE L. ENGGREN, a citizen of the United States, residing at Berkeley Heights, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Incubators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of an incubator constructed in accordance with my invention; Fig. 2, a cross-section thereof, and Fig. 3 a detail view, partly in section, of the boiler and attachments for creating a continuous circulation of the heating medium through the pipe in the hatching-chamber.

The present invention has relation to certain new and useful improvements in incubators for hatching eggs by artificial heat, and the object thereof is to improve the construction of this class of devices, whereby a continuous circulation of the heating medium through the pipes or tubes in the hatching-chamber is obtained, thereby heating the incubator to the desired temperature uniformly throughout the same level. These objects I attain by the construction substantially as shown in the drawings and hereinafter described and claimed.

In the accompanying drawings, A represents the hatching-chamber supported upon legs *a*, and provided at its ends with cleats *b*, upon which rests a suitable drawer, B, for holding the eggs.

For convenience of illustrating the operation of my invention, I have shown a single pipe, C, located within the hatching-chamber A, and through which the heating medium is caused to circulate, said pipe being bent, as shown in Fig. 1. It is evident, however, that one or more pipes or tubes may be used, as found desirable. The ends of the pipe C pass out through the end wall of the chamber A, and communicate, respectively, with a chamber, D, and a boiler, E, arranged beneath the chamber.

As a means for causing a circulation of the heated medium through the pipe, I have shown what I consider the simplest form of pump, which consists of a cylinder, I, located directly above the boiler E, and communicating therewith by means of a valve, *c*. Within the cylinder I works a piston, F, and on its upward stroke the valve *c* is raised, the heating medium passing up into the cylinder below the piston, and upon the downward stroke of said piston the valve is closed and the contents in the cylinder are forced into the chamber D, and thence through the pipe C back to the boiler E. Communication is made between the chamber D and cylinder E by a valve, *e*, so that when the valve *c* is closed by the downward stroke of the piston the valve *e* will be opened. The piston of the pump is set in operation by any suitable motive power with which the piston-rod is connected—such as clock-work, electric motor, or any other desirable means.

I do not wish to be understood as confining myself to the construction of pumping device shown, as it is evident that any well-known form of pump or like device may be substituted that will successfully cause a circulation of heated air or liquid through the pipe by force or suction.

The contents of the boiler E is preferably heated by a lamp, G, placed beneath it.

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

The combination, with an incubator and a pipe located in the hatching-chamber thereof, of means, substantially as described, for causing a continuous circulation of a heated medium through said pipe, which consists of a pump and a boiler for containing the heated medium communicating with each other and with the ends of the pipe, substantially as shown, and for the purpose set forth.

GUSTAVE L. ENGGREN.

Witnesses:

CHAS. A. ENGGREN,
C. E. SMITH.