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PATENTED APR. 24, 1906.

D. M. FLORY & J. H. BARNHART.

SUBMERGED HEATER.

APPLICATION FILED JULY 31, 1905.

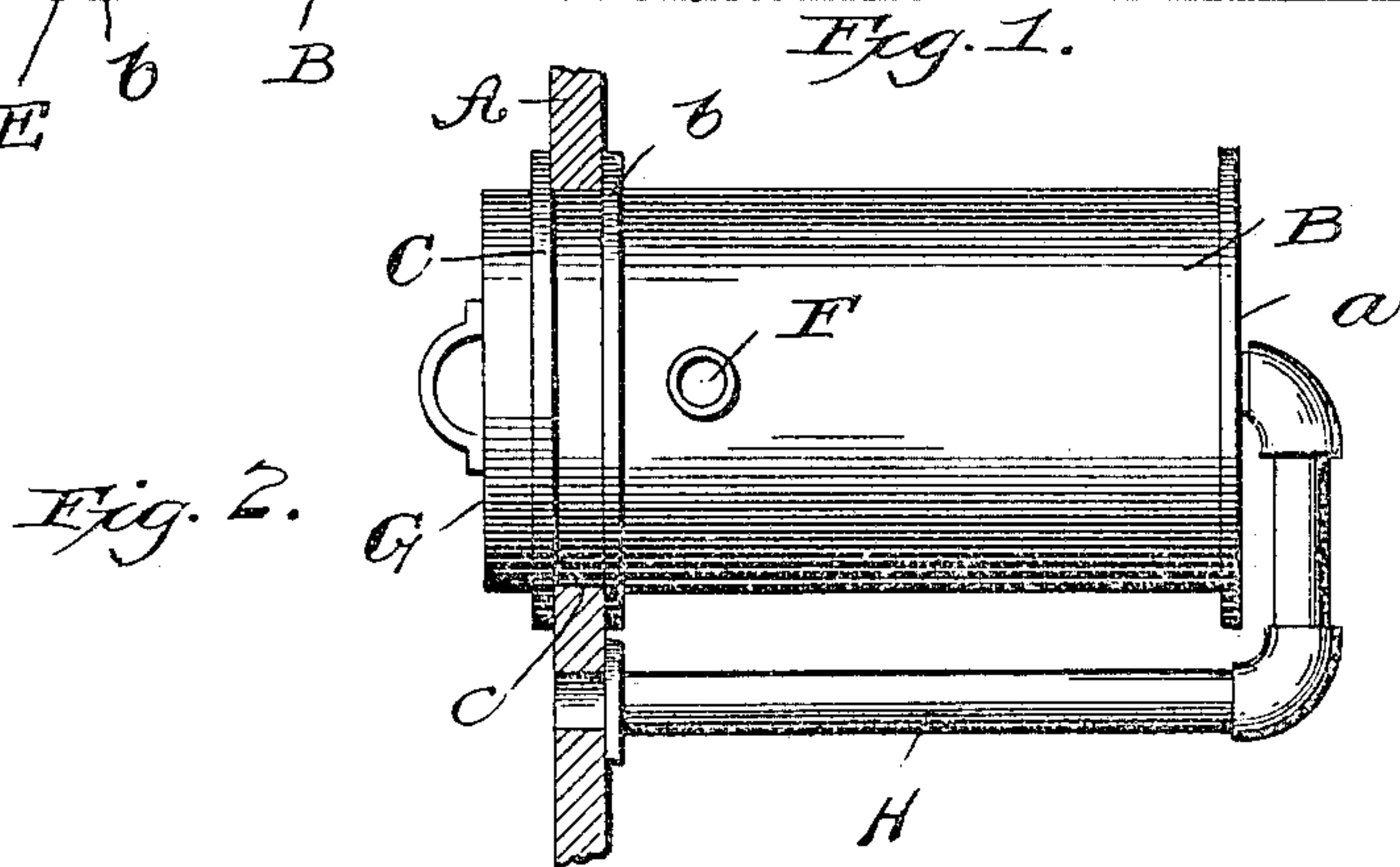
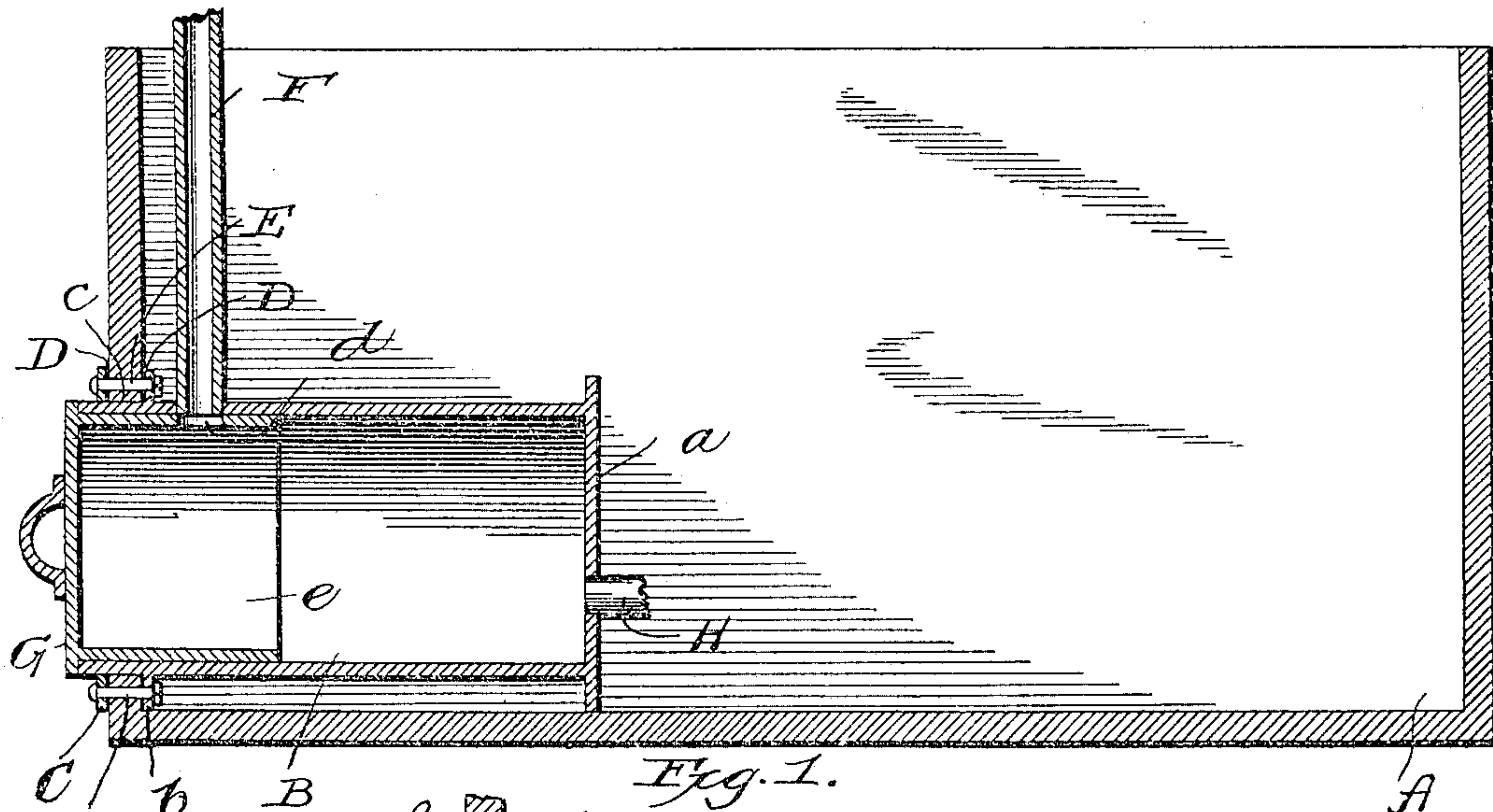
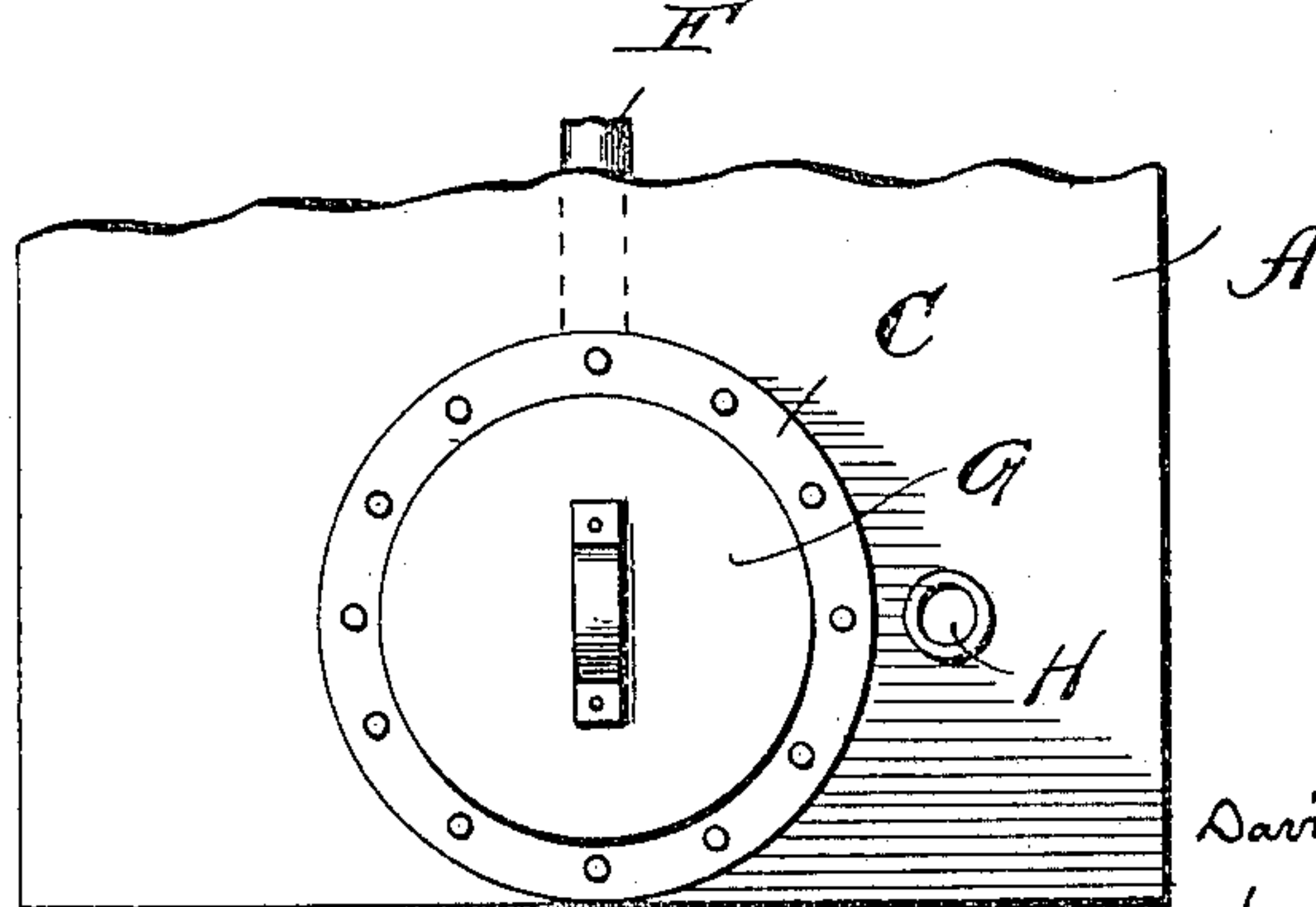


Fig. 3.



Witnesses  
T. L. Mochape  
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By

Inventors  
David M. Flory and  
John H. Barnhart,  
their Attorney



# UNITED STATES PATENT OFFICE.

DAVID M. FLORY AND JOHN H. BARNHART, OF LOGANSPORT, INDIANA.

## SUBMERGED HEATER.

No. 818,677.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed July 31, 1905. Serial No. 272,019.

*To all whom it may concern:*

Be it known that we, DAVID M. FLORY and JOHN H. BARNHART, citizens of the United States, residing at Logansport, in the county of Cass and State of Indiana, have invented certain new and useful Improvements in Submerged Heaters, of which the following is a specification.

This invention has reference to submerged heaters or heaters for keeping the water in exposed tanks sufficiently warm for stock to drink; and it consists in the simple and inexpensive construction disclosed, which in proportion to the space it takes up in a tank is highly efficient in heating and preventing freezing of the water even in the most severe weather.

In the drawings accompanying this specification, Figure 1 is a longitudinal vertical section of a tank provided with the novel heater; Fig. 2, a similar view taken in a plane at one side of the heater-body, and Fig. 3 a front elevation of the tank.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is a stock-watering tank which is preferably of oblong form and open throughout at its top, as shown, and B is the body of the heater, which is arranged in the lower portion of the tank at one end thereof. The said body is provided at its rear end with a head *a*, arranged to bear on the bottom of the tank, and its forward end is open and provided with a flange *b*, which is disposed at the inner side of the front wall of the tank and surrounds an opening *c* in said wall.

C is an annulus surrounding the opening *c* at the outer side of the front wall of the tank. D D are suitable packings interposed between the flange *b* and annulus C and the said front wall of the tank and designed to render the connection water-tight, and E E are bolts extending through and connecting the annulus C, the tank-wall, and the flange *b* of the heater-body. It will thus be seen that the heater-body is connected to the tank in a thoroughly water-tight manner, and yet may be readily removed when occasion demands for repairs or other purposes.

F is a smoke-pipe carried by and extending upwardly from the forward portion of the heater-body.

G is a door, preferably a flanged plug, arranged to normally close the forward end of the body B and having an opening *d* in its

flange *e* registered with the lower end of the smoke-pipe F, and H is an air-supply pipe which extends from an opening in the front wall of the tank rearwardly alongside the heater-body and thence laterally and forwardly, so as to communicate with the lower portion of the rear end of the body, as illustrated. The forward end of the pipe H is suitably packed and detachably connected to the forward wall of the tank A, and the described arrangement of said pipe relative to the heater-body is advantageous, because the pipe is not exposed to and liable to be deteriorated by the high heat in the heater-body and also because it is adapted to discharge air into the lower portion of the body at a point remote from the smoke-pipe, and thereby promote proper combustion of fuel in the body.

It will be gathered from the foregoing that the heater takes up but little space in the tank, is efficient in heating the water, and is adapted to be quickly and easily supplied with fuel and discharged of ashes. It will also be gathered that the supply of air to the heater-body at the point stated in the foregoing will assure proper combustion of fuel in the heater-body without liability of the fuel or heat values being wasted.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a submerged heater, the combination of a tank having an opening in its front wall, a heater-body arranged in the tank and having its forward end open and registered with the opening in the front wall of the body and also having a flange surrounding the said opening, an annulus surrounding the opening in the front wall of the body and disposed at the outer side of said wall, packing interposed between the body-flange and annulus and the front wall of the body, bolts connecting the annulus, wall and flange, a smoke-pipe extending upwardly from the forward portion of the body, a plug-like flanged door having an opening in its flange registered with the smoke-pipe, and an air-supply pipe connected to and extending from the front wall of the tank and alongside the heater-body and communicating with the lower portion of the rear end of said body.

2. In a submerged heater, the combination of a tank having an opening in its front wall, a heater-body arranged in the tank and having its forward end open and registered with



the opening in the front wall of the body and also having a flange surrounding the said opening, an annulus surrounding the opening in the front wall of the body and disposed at  
5 the outer side of said wall, packing interposed between the body-flange and annulus and the front wall of the body, bolts connecting the annulus, wall and flange, a smoke-pipe  
10 extending upwardly from the forward portion of the body, a door for normally closing the forward end of the heater-body, and a pipe communicating with the atmosphere and the interior of the heater-body so as to supply  
15 3. In a submerged heater, the combination of a tank having an opening in its forward

wall, a heater-body arranged in said tank and having its forward end open and registered with the opening in the tank-wall, a door for normally closing the said opening, a  
20 smoke-pipe extending upwardly from the forward portion of the heater-body, and an air-supply pipe extending from a point outside of the tank to the rear portion of the  
25 heater-body.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID M. FLORY.  
JOHN H. BARNHART

Witnesses:

GEO. A. CUSTER,  
BEATRICE LIGGETT.