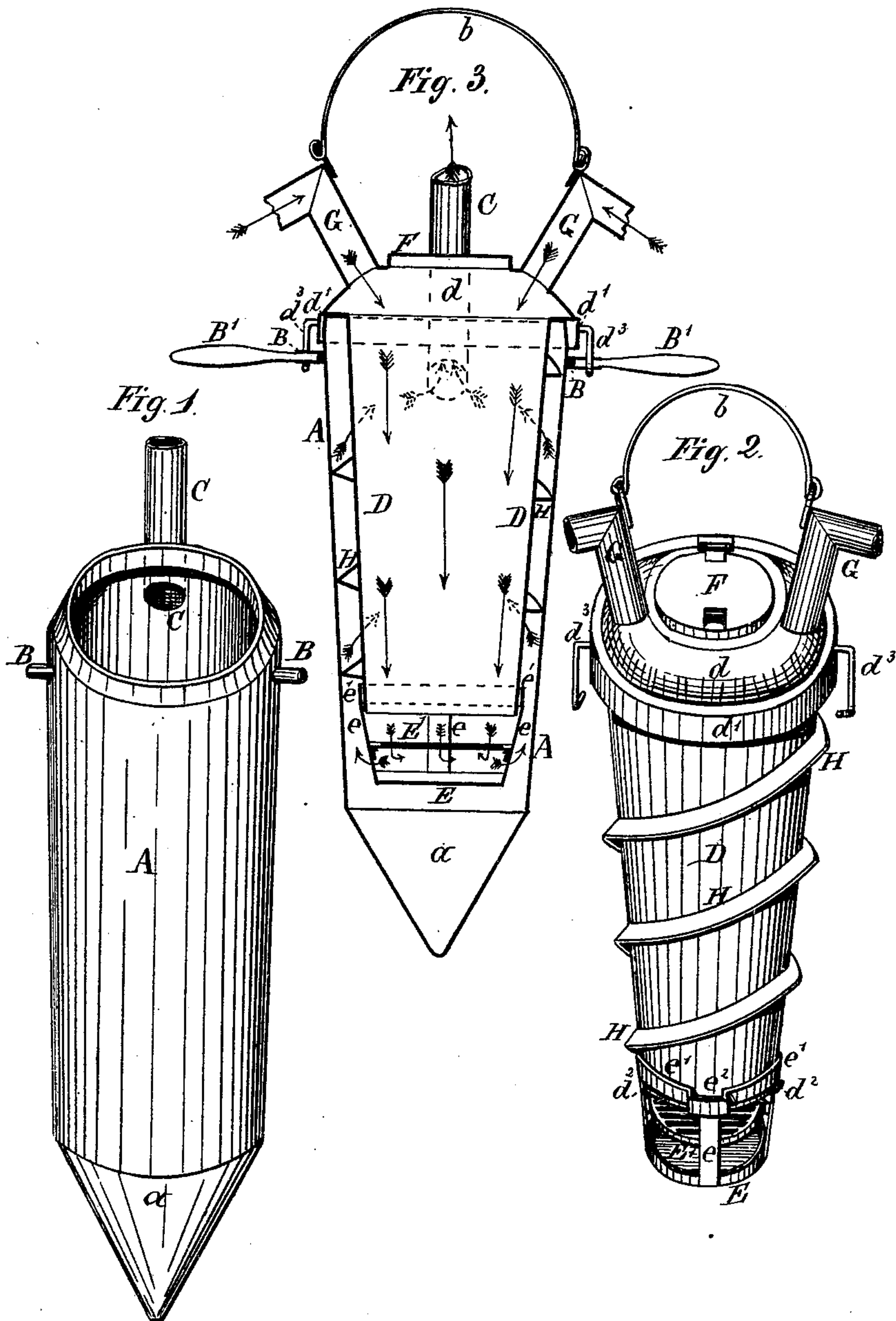


B. G. DEVOE.  
HEATER.

No. 188,869.

Patented March 27, 1877.



Witnesses.  
Henri Guillaume  
Alfred E. Leonard

Inventor  
Benjamin G. Devoe.  
J. Henry Orth  
att'y.



# UNITED STATES PATENT OFFICE

BENJAMIN G. DEVOE, OF KENTON, OHIO, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO EMI PARKINSON AND WILLIAM WILSON McLEAN, OF SAME PLACE.

## IMPROVEMENT IN HEATERS.

Specification forming part of Letters Patent No. 188,869, dated March 27, 1877; application filed September 29, 1876.

*To all whom it may concern:*

Be it known that I, BENJAMIN G. DEVOE, of Kenton, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Heaters, of which the following is a specification:

My invention relates to that class of heaters or boilers particularly applicable for farm purposes, such as the heating of water or the boiling of feed for stock, as fully described hereinafter, and shown in the accompanying drawings, in which—

Figure 1 is an elevation of the outer cylinder or inclosing-casing in perspective. Fig. 2 is a similar view in perspective of the inner cylinder, and Fig. 3 is a vertical transverse section of the whole apparatus when constructed according to my invention.

A is the inclosing cylinder or casing of tapering form, and having a pointed or conical bottom, *a*. B B are two sockets for the reception of the handles B', and C is the flue or smoke-pipe, through which the products of combustion escape, as will be described hereinafter. This cylinder may be made of equal diameter throughout its length; but for the purpose of cooking feed this form does not answer as well, as the cylinder would have to be placed in the vessel in which the feed is to be boiled before introducing said feed into such vessel, and the cylinder would, consequently, prevent the thorough mixing of such feed with the water.

By giving the cylinder or inclosing-casing of the heater a conical tapering form the feed may be first well mixed in the vessel in which it is to be boiled, and the heater may then be inserted into the mixed feed with ease, as will be readily understood.

D is the interior smaller cylinder of a truncated-cone shape, and open at bottom. It is provided with a head or cap, *d*, which latter has a projecting flange and rim, *d*<sup>1</sup>, so constructed as to fit tightly onto and over the outer inclosing-case A when the cylinder D is in its proper position within the casing A. E is an ash-pan, and E' a fire-grate, both of which are connected to the vertical strips or

supports *e*, one above the other. The strips or supports *e* are connected with a ring, *e*<sup>1</sup>, having two or more recesses, *e*<sup>2</sup>, so as to enable said ring to be slipped over the projections or lips *d*<sup>2</sup> formed on the lower part of the inner cylinder D, from which the fire-grate and ash-pan are thus removably suspended, when a half-turn is given to the ring *e*<sup>1</sup> after it has passed over the lips *d*<sup>2</sup>, as will be readily understood. The head of the cylinder D is provided with a door, F, through which the fuel is fed to the fire-grate E'. It also has two pipes, G G, which communicate with its interior, and serve the purpose of supplying the necessary atmospheric air to the fuel for its proper combustion by downward draft, as fully indicated by arrows in Fig. 3.

The pipes G as well as the pipe C may have suitable dampers to regulate the draft.

The cylinder D has on its periphery a spirally-winding flange or deflector, H, which serves to force the heat and products of combustion to follow a spiral path around the circumference of the outer and inner cylinders between the two before such heat and products of combustion are allowed to escape through the pipe C, thus distributing the heat equally over the whole surface of the outer cylinder or inclosing-casing A. The head of the cylinder D has two hooks, *d*<sup>3</sup>, formed or affixed to opposite sides thereof, and which are made to grasp or lock the handle-sockets B B, to hold the two cylinders firmly together. A bail, *b*, is also connected to the head of the cylinder D, to lift it out of the cylinder or casing A when required, and by means of which bail the two cylinders may also be lifted out of any vessel in which the heater may be placed, or the handles B' may be used to that end.

From what has been said above and shown in the drawings, the operation of the heater will be readily understood, and needs, therefore, no further description.

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

1. In a heater, the outer cylinder or inclosing-case A of a tapering form, and having a con-



ical or pointed closed bottom, substantially as described, for the purpose specified.

2. The combination, with the inclosing-cylinder A, of an inner smaller cylinder, D, of tapering shape, open at bottom, and having a fire-grate and ash-pan suspended therefrom, the top or upper part of such cylinder D being constructed as described, to form a head for both cylinders, substantially as specified.

3. A heater consisting of an inclosing-casing, A, and an inner smaller cylinder, D, carrying an ash-pan and fire-grate, and having a charging-door, F, in its head, in combination with the pipes G G and C, to impart a downward draft through the inner cylinder, all constructed and arranged to operate substantially as described.

4. The combination of the ash-pan and fire-grate and their supporting-ring  $e^1$ , constructed as described, with the inner cylinder D, from which said ash-pan and fire-grate are remova-

bly suspended, all arranged and operating as specified.

5. The combination of the cylinders A D, of varying diameter, to form a heating-chamber between the two, and a passage-way for the heat and products of combustion, with the spiral flange or deflector H, substantially as described, for the purpose set forth.

6. The combination of the outer casing A, having handle-sockets B, with the inner cylinder D, the head of which is provided with hooks  $d^3$ , to lock the two cylinders together, substantially as described, for the purpose specified.

In witness that I claim the foregoing I have hereunto set my hand this 27th day of September, 1876.

BENJAMIN G. DEVOE.

Witnesses:

W. L. WALKER,  
HERMAN WALKER.