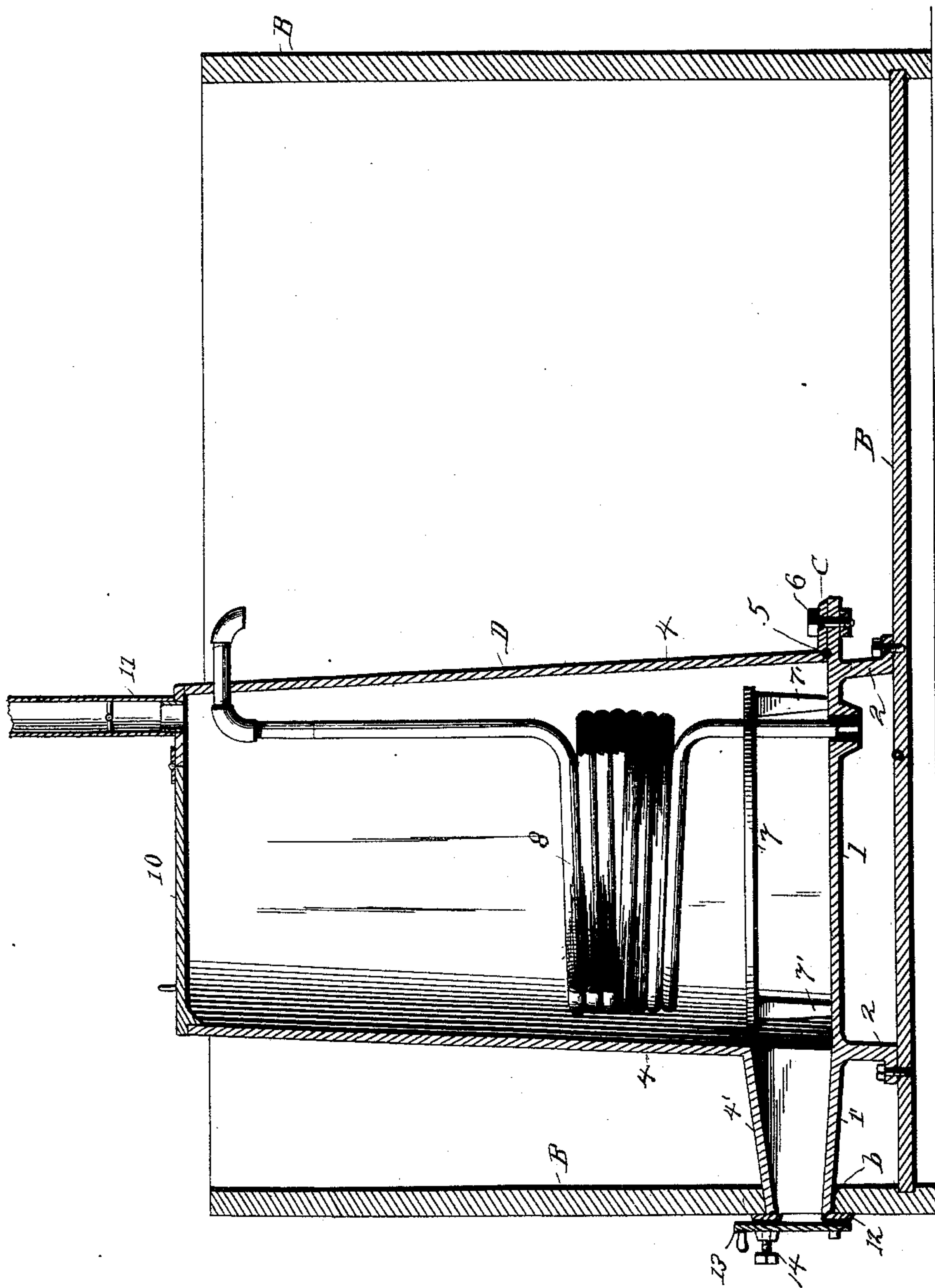


(No Model.)

G. W. PENN.
FEED WATER HEATER.

No. 415,254.

Patented Nov. 19, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. PENN, OF ONAWA, IOWA.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 415,254, dated November 19, 1889.

Application filed March 18, 1889. Serial No. 303,757. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. PENN, a citizen of the United States, residing at Onawa, in the county of Monona and State of Iowa, have invented certain new and useful Improvements in Feed-Water Heaters; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to means for heating water for stock and for agricultural or other purposes.

The improvement consists in a furnace placed in the stock-trough or water-tank and having a coil of pipe arranged in the furnace, the lower end of the pipe communicating with the bottom of the trough and the upper end with the top part of the trough, whereby the water in the tank will be forced to circulate through the said coil and be heated. The furnace has a tapering nose at its lower end, which passes through an opening in the side of the trough and forms a draft-flue for the furnace and a means to remove the ashes from the ash-pit and also reach the fire-grate to stir the fire.

The accompanying drawing is a longitudinal section, parts being broken away, of a feed-water heater embodying my invention.

The tank or water-tank, composed of the sides *a* and the bottom *B*, is of ordinary construction. The furnace *D* is placed in the trough and is secured therein by the bolts 3, which pass through the feet 2 of the furnace, and is provided with a tapering nose 4' 1', which extends through the opening *b* in the side of the trough. The bottom 1 is separate from the sides 4 of the furnace and is bolted thereto by the bolts 6, which pass through the lugs *C*, that extend from the lower edge of the sides 4. The opposing faces of the sides and bottom where they come together are grooved, and in this groove is fitted asbestos

packing 5 to make a water-tight joint. The part 4' is integral with the sides 4, and the part 1' is integral with the bottom 1. The nose 4' 1' is closed by the door 13, which is pivoted at one end to the frame 12 and held to place by the set-screw 14.

The fire-grate 7, having legs 7', rests on the bottom 1 and can be removed from the top of the furnace. The coil-pipe 8 is arranged directly above the grate 7, and one end projects below the bottom of the furnace and its other end extends from the top of the furnace. The escape-pipe 11 extends from the top of the cover 10.

The fire being started in the furnace and water being poured into the tank until it reaches a proper depth, the heating process will commence. The water will flow into the coil 8, and, being heated, will ascend and discharge from the upper end of the coil. Water will flow in to take the place of the water discharged, thereby effecting a continuous circulation of the water, which will be heated in a short time.

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

The herein shown and described agricultural boiler, composed of the water-tank *B*, the furnace placed in the tank and having a tapering nose, which extends through an opening in the side of the tank, the door 13, for closing the end of the nose, the fire-grate within the furnace, supported on legs, the coil 8, arranged in the furnace and having its lower end extended through the bottom of the furnace and communicating with the bottom of the tank, and having its upper end projecting through the upper part of the furnace, whereby a circulation of water through the coil 8 is effected and the water in the tank heated, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. PENN.

Witnesses:

PHILLIP ERB,
CARL E. MAUS.