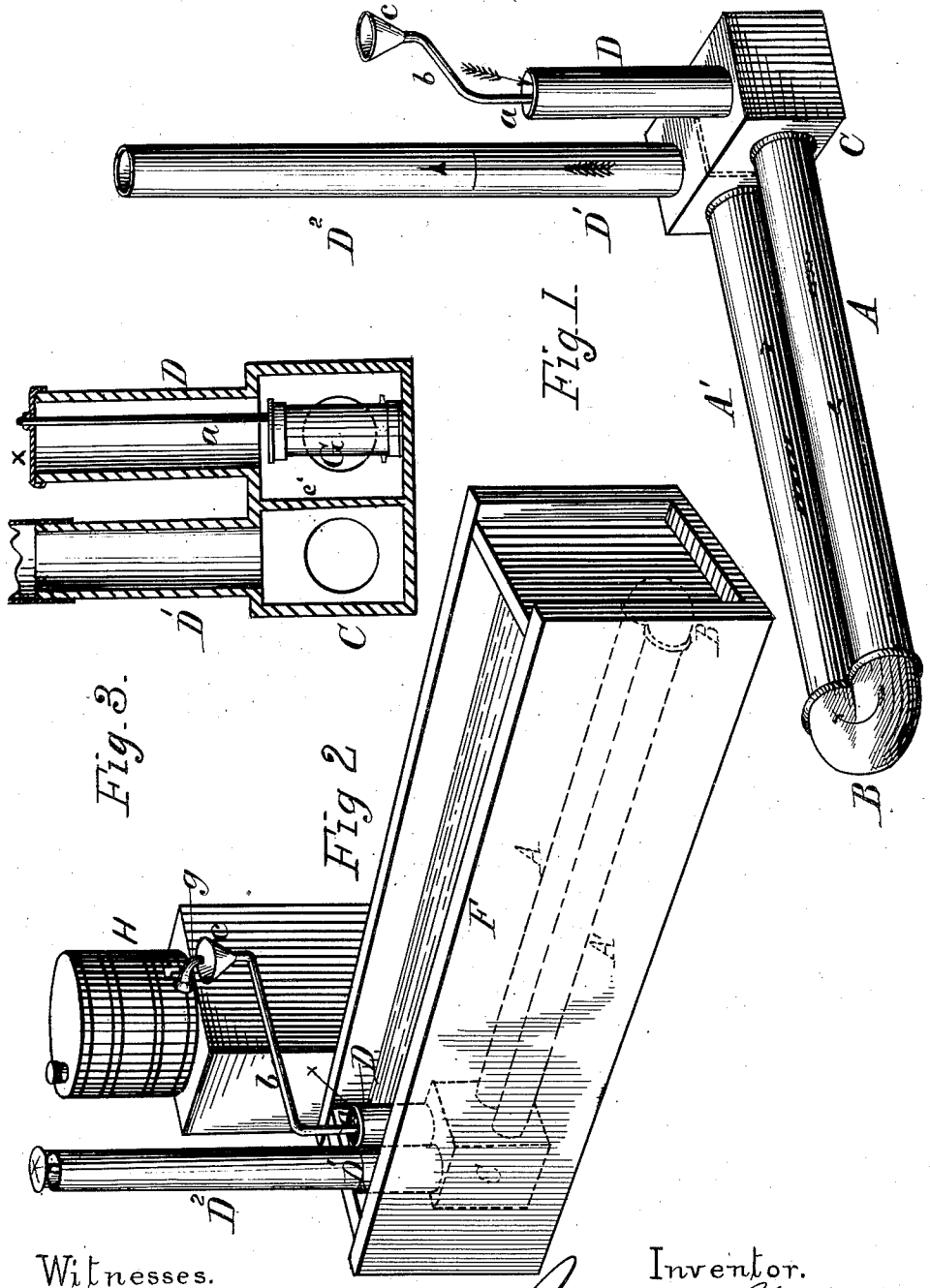
(No Model.) 2 Sheets—Sheet ..

J. A. WRIGHT.

AGRICULTURAL BOILER OR HEATER.

No. 412,821. Patented Oct. 15, 1889.



Witnesses.
R. F. Campbell.
J. Campbell

Inventor.
John A. Wright.
By Atty. G. W. Pollock

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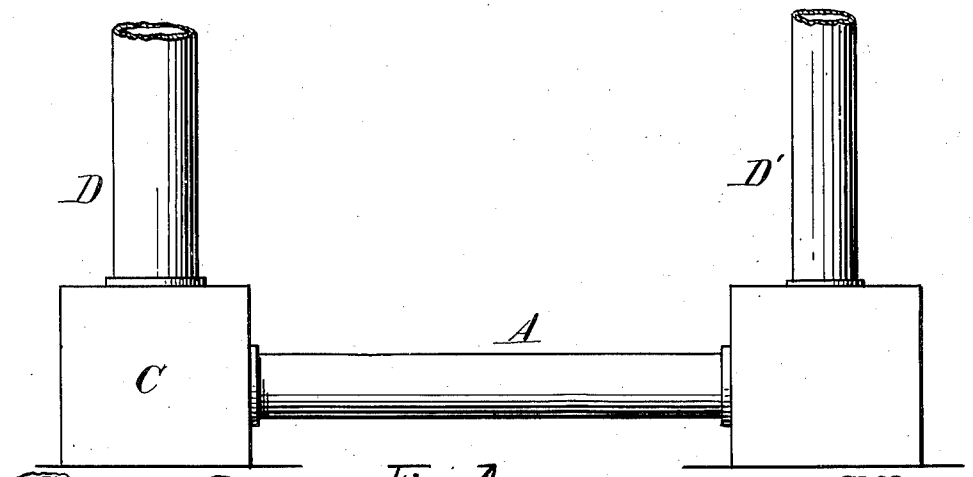


Fig. 4.

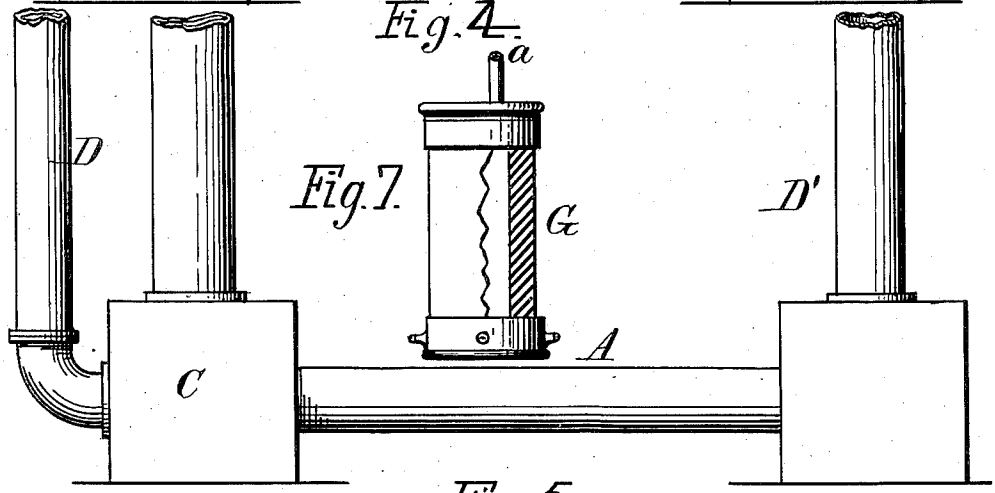


Fig. 7.

Fig. 5.

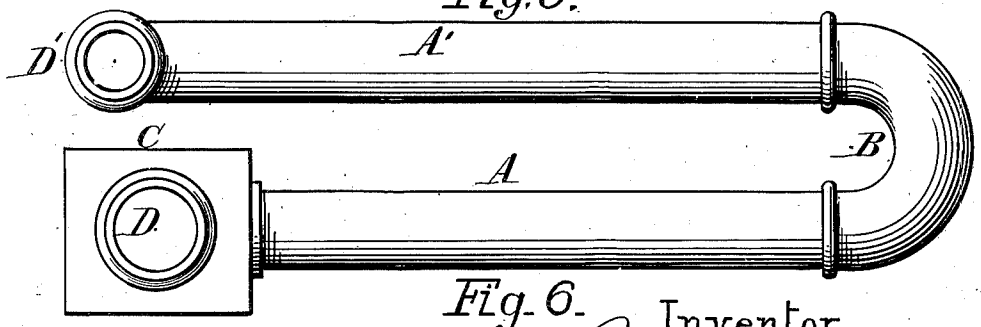


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN ARTEMAS WRIGHT, OF KEENE, NEW HAMPSHIRE.

AGRICULTURAL BOILER OR HEATER.

SPECIFICATION forming part of Letters Patent No. 412,821, dated October 15, 1889.

Application filed February 8, 1889. Serial No. 299,217. (No model.)

To all whom it may concern:

Be it known that I, JOHN ARTEMAS WRIGHT, of Keene, in the county of Cheshire and State of New Hampshire, have invented a new and useful Improvement in Agricultural Boilers or Heaters; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to provide novel means for heating water in tanks or troughs for cattle, horses, and for other purposes; and my invention consists in the device, which will be fully understood from the following description and claim, taken in connection with the annexed drawings, in which—

Figure 1 is a perspective view of that portion of my device which is designed to be submerged in a tank of water; Fig. 2, a perspective view showing the device represented by Fig. 1 submerged in a tank, also showing a fuel fluid-supply reservoir and a feed-funnel tube. Fig. 3 is a sectional detail showing a firing-cartridge in the fire-box of the heater. Figs. 4, 5, and 6 are modifications of my improvement, showing some of the different forms in which I contemplate carrying my invention into effect; Fig. 7, a diametrical half-sectional view of a firing-cartridge adapted for use in the fire-box of the heater.

Referring to the annexed drawings by letters, A A′ designate two pipes, which may be made of cast or wrought metal. These pipes are connected together by a U-shaped coupling B. The inner end of the limb A is coupled to a fire-box C, and the other end of the coil is coupled to said box, as shown in the annexed drawings. This box C has a partition C′ in it, which subdivides it into a fire-chamber and a heat-expansion chamber, so that the air entering pipe D shall descend into the fire-chamber compartment, pass through the limb A, through the coupling B, and escape through the pipe D′ and its chimney-section D^2. It will be seen by reference to Fig. 1 that the pipes A A′, the coupling B, the expansion-chamber of the fire-box, and the pipes D′ D^2 afford a common flue. The fire-box and portions of the pipes D D′ and the coil are in practice submerged in water in a suitable tub F, leaving the upper ends of the pipes D D′ above the water. The shortest pipe D affords a descending flue for air to supply oxygen to the flame of a burner or fire-cartridge G, hereinafter again referred to, and also means for the ready introduction and removal of this fire-cartridge. It is obvious that there may be several coils of pipes, all communicating with one fire-box subdivided in such manner that a continuous flue is obtained for heated air and products of combustion, which latter are without sparks.

The cartridge G may be made of any suitable porous material which is an absorbent and indestructible by heat. Preferably this incombustible cartridge is interiorly hollow and provided with a vertical tube *a*. This cartridge is removable from the fire-chamber of the box C through the tube D, and the upper end of the tube *a* is connected to a laterally-extended branch tube *b*, having a funnel *c* applied to it, which latter is adjusted to the drip-regulating cock of a coal-oil reservoir H.

By reference to Figs. 2 and 3 it will be observed that I show a cock by means of which the flow of the hydrocarbon fluid to the cartridge can be regulated; also, that I show at the upper end of the pipe D the gauze-wire cap *x* for the purpose of positively preventing accidents by fire.

It is obvious that a fire can be maintained in the fire-box C as long as there is coal-oil in the reservoir H, the feed of oil being regulated by means of the cock *g*.

Instead of subdividing the fire-box C, I may use a single undivided fire-box with a vertical air-supply pipe and connect one limb A to this box and the other limb to a coupling having the uptake applied to it; or I may employ a single fire-box at one end of a pipe with an air-feeding tube applied to this box and an enlarged box or heat-expansion radiator at the opposite end of said pipe, to which radiator the uptake is applied; or I may employ a single fire-box with an auxiliary descending tube for supplying air. In all cases I shall employ a wire-gauze cap *x* for the air-supply pipe to effectually guard against explosion.

One of the main objects of my invention is to provide an agricultural boiler or heater which can be safely used in a barn and to provide certain means, in combination with a heater which is submerged in water, whereby

coal-oil can be used without danger of fire. I combine, as will be seen from the above description, several devices which all co-operate to the accomplishment of my object—to wit, perfect safety from sparks, explosion, or fire in any manner to the hay, straw, or other combustible and inflammable contents of the barn. The essential feature of my invention is, therefore, first, a submerged heater, a pipe-coil for radiating the heat, provided with a smoke-outlet and an air-inlet, a gauze-wire covering therefor, a feed-pipe, and a drip supply-cock leading from a coal-oil reservoir.

It is essential that a fire-guard or reticulated cap *x* be employed at the upper end of the pipe D for the purpose of guarding against the possibility of fire.

It will be observed from the foregoing description that I provide an agricultural boiler or heater with safety means for preventing accident from fire in barns or about hay-stacks, &c.

I am aware that it is not new to employ in a heating apparatus a tank composed of a combustion-chamber and U-shaped radiating-pipes extending therefrom and smoke-escape pipes connected to the end thereof, said combustion-chamber containing a grate for a coal fire. I am also aware that fuel-cartridges of various kinds are old and well known. I am also aware that it is well known to employ wire-gauze upon the well-known Humphrey Davy principle for protection against fire. These devices, separately considered, I broadly disclaim.

The novelty of my invention consists in a peculiar organization and combination of said elements, whereby a new and a useful agricultural boiler or heater is produced which is especially designed for use in barns and other places containing inflammable material.

Having described my invention, I claim—

The within-described agricultural boiler or heater, consisting of the following instrumentalities in combination: a water-tank, a fire-chamber therein provided with a pipe-coil having an outlet and also an inlet, a gauze-wire covering for this inlet, a feed-pipe leading to a fuel-cartridge, and a reservoir provided with a regulating-cock, all as specified.

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

JOHN ARTEMAS WRIGHT.

Witnesses:

BEN S. OSGOOD,

W. L. MASON.