H. VOTH, G. P. SACKENREUTHER & C. HEFFT.

Agricultural-Boiler.

No. 210,231. Patented Nov. 26, 1878.

Fig. 1.

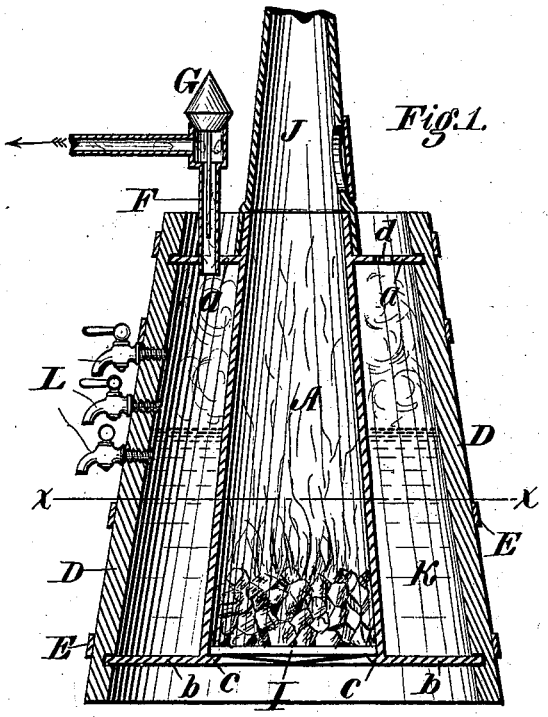
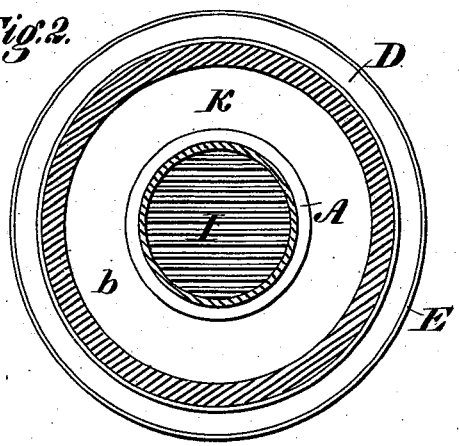


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY VOTH, GEORG P. SACKENREUTHER, AND CHRISTOPHER HEFFT, OF PEKIN, ILLINOIS.

IMPROVEMENT IN AGRICULTURAL BOILERS.

Specification forming part of Letters Patent No. **210,231**, dated November 26, 1878; application filed April 10, 1878.

To all whom it may concern:

Be it known that we, HENRY VOTH, G. P. SACKENREUTHER, and CHRISTOPHER HEFFT, of Pekin, in the county of Tazewell and State of Illinois, have invented certain Improvements in Agricultural Boilers, of which the following is a specification:

This invention relates to an improved method of constructing boilers for producing steam for agricultural and other purposes requiring only a comparatively low pressure.

The invention consists in constructing the fire-pot in one piece, of a vertical tubular form, open at its base, and with outwardly-extending flanges at its two ends, and in combining with the pot thus constructed an internal grate and an external series of staves secured at top and bottom directly against the above-mentioned flanges.

Figure 1 represents a vertical central cross-section of the boiler; Fig. 2, a horizontal cross-section of the same on the line *x x*.

A represents an upright cast-metal tube or fire-pot, preferably of decreasing diameter toward its upper end, and provided near its upper end with an outside annular flange, *a*, and at its base with a corresponding flange, *b*, and also provided at or near its base with an internal flange or shoulder, *c*, to support the fire-grate or grate-bars I, in the manner shown in the drawing.

The object of extending the upper end of the tube or fire-pot above the flange *a* is to admit of the application of the smoke-stack or chimney J over the same, in the manner shown in Fig. 1; but the upward extension of the tube may be omitted and the pipe inserted within the same.

D represents an outside wooden body, consisting of a series of upright staves grooved in their inner faces, and fitted closely around and upon the outer edges of the flanges *a b*, and secured in place by outside hoops or bands E, in the manner shown in Fig. 1; the staves thus applied forming a close body or jacket around the outside of the fire-pot, and producing a closed annular water-chamber, K, around the fire-pot, between the flanges *a b*. The upper ends of the staves D are extended above the flange *a* a suitable distance, so that an annular space or depression exists above said flange between the upper ends of the staves and the upper end of the fire-pot, into which water may be poured for the purpose of filling the boiler, a hole, *d*, being made through the flange *a* to permit the water to descend into the boiler-space K. A cock, screw-plug, or other device will be provided for the purpose of closing the hole *d* after the introduction of the water.

F represents a steam outlet-pipe, inserted through the flange *a*, and provided with a branch or seat having a safety-valve, G, mounted thereon, as shown in Fig. 1, to prevent the steam in the boiler from attaining an excessive pressure.

Gage-cocks L or other devices will be inserted through the side of the boiler as a means of ascertaining or indicating the height of the water, the surface of which should be at such distance below the flange *a* as to leave a suitable steam-space in the top of the boiler.

In operating the boiler, the fire is built within the tube A, upon the grate I, the products of combustion ascending and escaping through the stack J. The water completely surrounding the fire-pot, and being subjected to the direct action action of the fire, is heated rapidly and economically.

By constructing the boiler, as above described, of the cast-metal center and surrounding staves, it is rendered extremely cheap and strong.

For the purpose of regulating the draft, a suitable damper may be arranged either in the smoke-stack or below the grate-bars; and for the purpose of giving access to the fire-pot in order to charge the same, a door may be made in the side of the smoke-stack, as represented in the drawings.

Having thus described the invention, what is claimed is—

1. The boiler consisting of the open tubular fire-pot, cast in one piece, with top and bottom flanges, *a b*, the internal grates, and the outside wooden staves, seated at their upper and lower ends upon the flanges of the fire-pot, as shown.

2. The fire-pot A, cast in one piece, of a conical or tapering form, with the flanges *a b c*, as described and shown.

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