

No. 741,885.

PATENTED OCT. 20, 1903.

O. CARNES & M. FARLEY.
BOILER.

APPLICATION FILED JAN. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

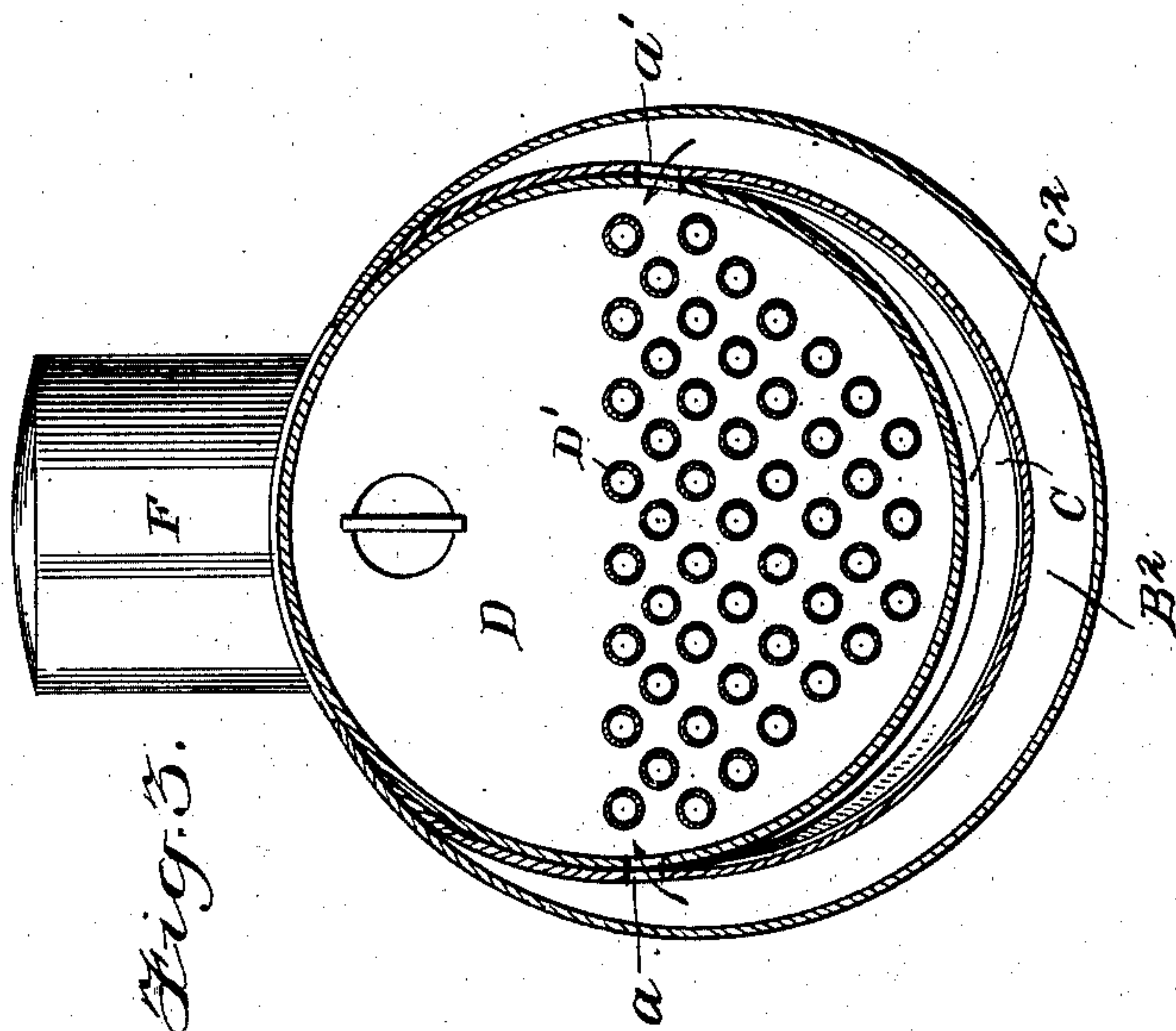


Fig. 3.

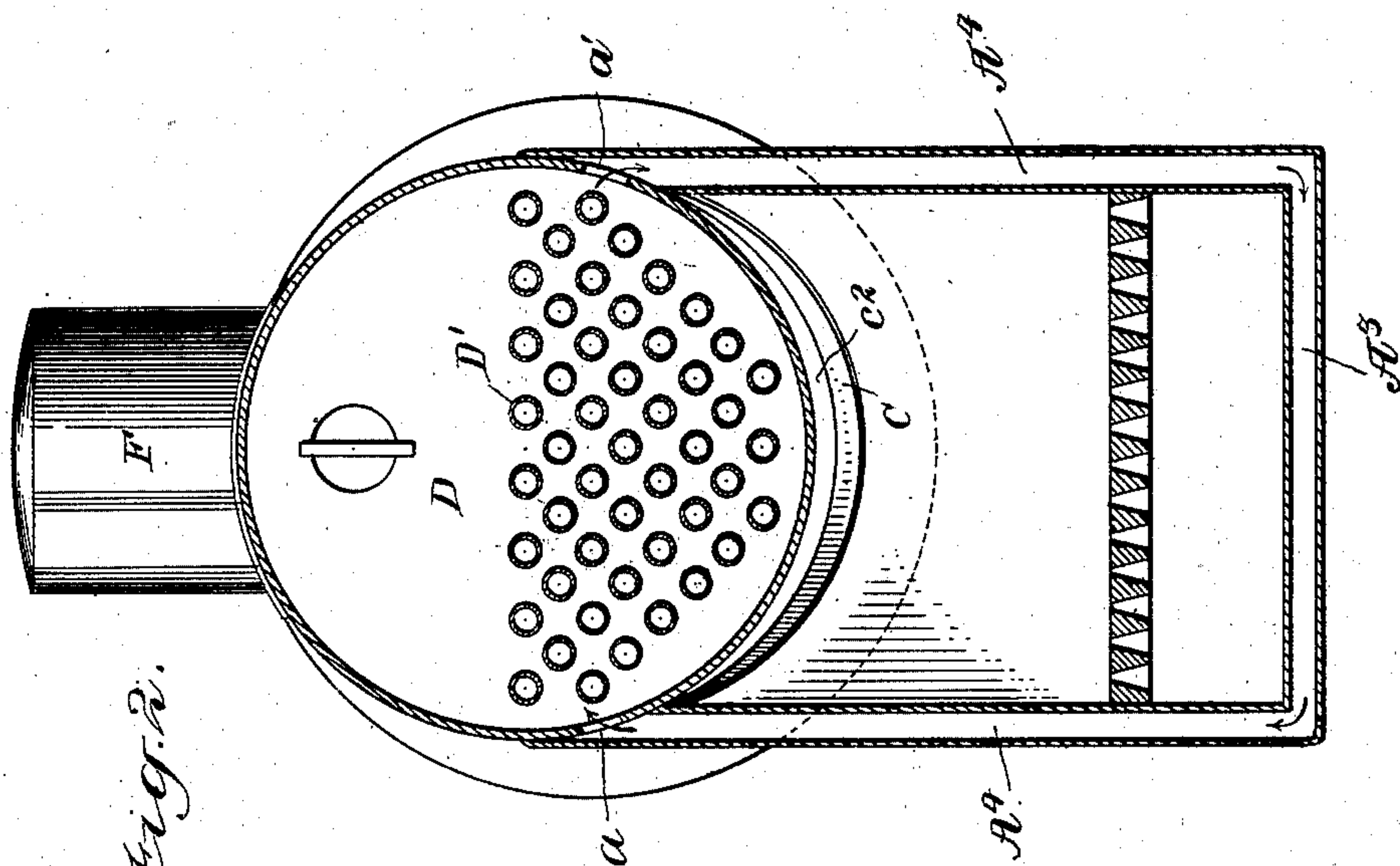


Fig. 2.

Witnesses
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By their Attorneys
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UNITED STATES PATENT OFFICE.

OSCAR CARNES AND MICHAEL FARLEY, OF PRESTON, IOWA.

BOILER.

SPECIFICATION forming part of Letters Patent No. 741,885, dated October 20, 1903.

Application filed January 2, 1903. Serial No. 137,425. (No model.)

To all whom it may concern:

Be it known that we, OSCAR CARNES and MICHAEL FARLEY, citizens of the United States, and residents of Preston, county of Jackson, and State of Iowa, have invented certain new and useful Improvements in Agricultural Boilers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts in all the figures.

The subject of the present invention is an agricultural boiler having for its more prominent objects adequate water-jacketing provision and extended heat-circulating surface.

With the above and other purposes in view the invention contemplates a boiler of the horizontal return-flue type adapted for portability and capable of being loaded on a truck or other platform conveyance without liability of charring.

With the above and other purposes in view the invention consists in a boiler structure having an extended horizontal tubular body, a fire-box located at and immediately below the front portion thereof, and arrangement of water-jacketing that conduces to the rapid generation of steam, the liberation of heated air, and circulation of the water.

The details and special features involved in the novel boiler are exploited at length in the subsequent extended description.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal sectional view of an agricultural boiler embodying our invention. Fig. 2 is a vertical transverse section of the boiler structure disclosed in Fig. 1. Fig. 3 is a transverse section on the line 3 3.

In the improved construction of improved steam-boiler we have adapted a horizontal-tube return-flue type. The fire-box A is of the vertical rectangular arrangement and is located beneath the forward end of the horizontal boiler-body B. Said fire-box besides containing a suitable complement of grate-bars A' has the bottom and rear water-spaces A² A³, besides the vertical water-legs A⁴, which communicate with said bottom space A², as indicated in Fig. 2, and consequently are in communication with the rear water-space A³. It will be observed that the

bottom sheet B' of the boiler-body is arranged in such relation to the fire-box that, in connection with a supplemental sheet B², disposed as illustrated, an extended horizontal flue B³ is provided for the circulation of the products of combustion from the upper rear portion of the fire-box to the space B⁴ at the rear of the tube-header B⁵.

An external supplemental body-sheet B⁶ beneath and concentric with the sheet B² provides an extended rearward horizontal water-space B⁷, communicating with the rear space A³ of the fire-box.

With a view of baffling the circulation of the products of combustion as they flow rearwardly from the upper portion of the fire-box and with a view of developing the maximum heat efficiency therefrom we have located in the flue B³ a metal bridge C, embodying the extended base c and vertical web c', the latter being of such height as to provide, in connection with the bottom of the sheet B³, a restricted heat-passage c².

The group or battery of horizontal tubular flues D extend from the header B⁵ forwardly, where they discharge through the forward header B⁸, the latter forming, in connection with the breeching B⁹, a soot-box B¹⁰, from which the soot may be readily removed when desired through an opening normally closed by a depending hinged door B¹¹.

The products of combustion, while afforded ample opportunity for free development in the rear space B⁴, are nevertheless positively directed into the tubular flues D by means of an upper baffling-plate d.

It will be appreciated from the several figures of the drawings that the improved boiler construction, while being efficiently water-jacketed both with reference to its fire-box and extended body, also provides an ample water-chamber D', in the lower part of which is disposed a group or battery of flues. Moreover, the arrangement of side water-legs A⁴ and their communicating openings a a', located with respect to the water-chamber, provides for a highly-satisfactory circulation of the water at the point where it is liable to become the hottest—in the vicinity of the fire-box. The large body of water which will normally be contained within the horizontal chamber D' serves to neutralize the highly-

heated condition of the water ascending in the one leg A⁴, so that descending in the other will be assured such a moderately-reduced temperature as will preclude external heating or charring. Again, the extended water-space B⁷ beneath the extended flue B³ will also operate to prevent the external manifestation of undue heating or charring.

E is the stack leading from the upper end of the soot-box, while F is the dome immediately on the horizontal body and communicating with the water-space D' therein.

From the foregoing it will be readily comprehended that a boiler structure such as that described is of highly-portable character, thus adapting it for mounting on a truck or other suitable vehicle, whereby it may be transported from one point to another to serve for agricultural purposes.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In an agricultural boiler, the combination of the horizontal body containing rear and front

heat-spaces, and return-flues connecting the same, of a lower forward fire-box communicating with the rear heat-space by means of the lower extended horizontal flue, water-jacketing both for said fire-box and for the horizontal body below the extended flue thereof, the jacketing of the box including lower space A², and vertical legs A⁴, the latter communicating at their tops with the water-chamber containing the return-flues, and a baffling-bridge C, located in the lower extended horizontal flue, and the baffle d, located in the rear heat-space, above the openings of the said return-flues.

In testimony that we claim the foregoing as our invention we have signed our names, in the presence of two witnesses, this 12th day of December, 1902.

OSCAR CARNES.
MICHAEL FARLEY.

Witnesses:

G. D. FOSTER,
WILLIAM HASSON.