

A. EDWARDS.

Apparatus for Treating Offal.

No. 135,324.

Patented Jan. 28, 1873.

fig. 1.

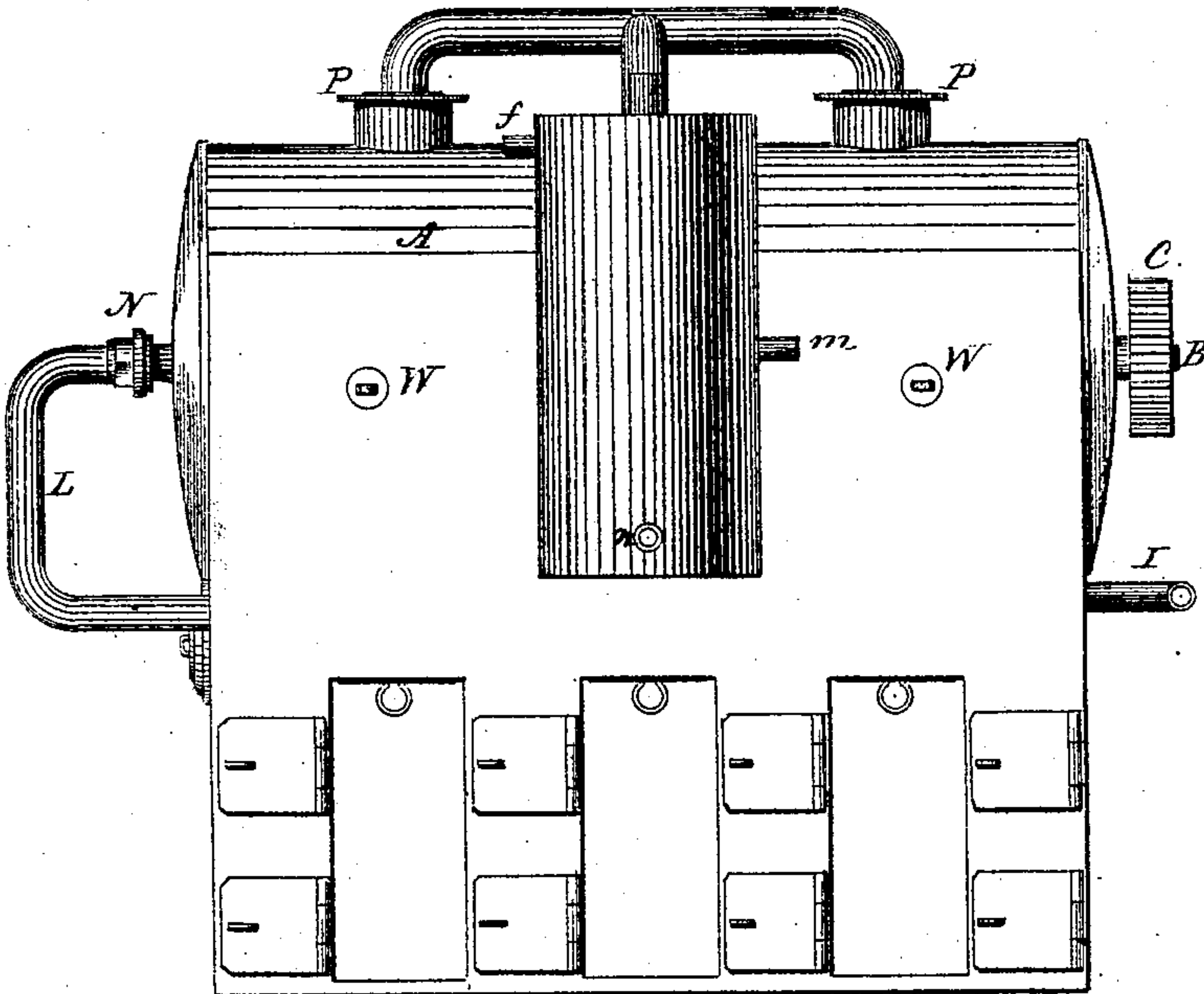
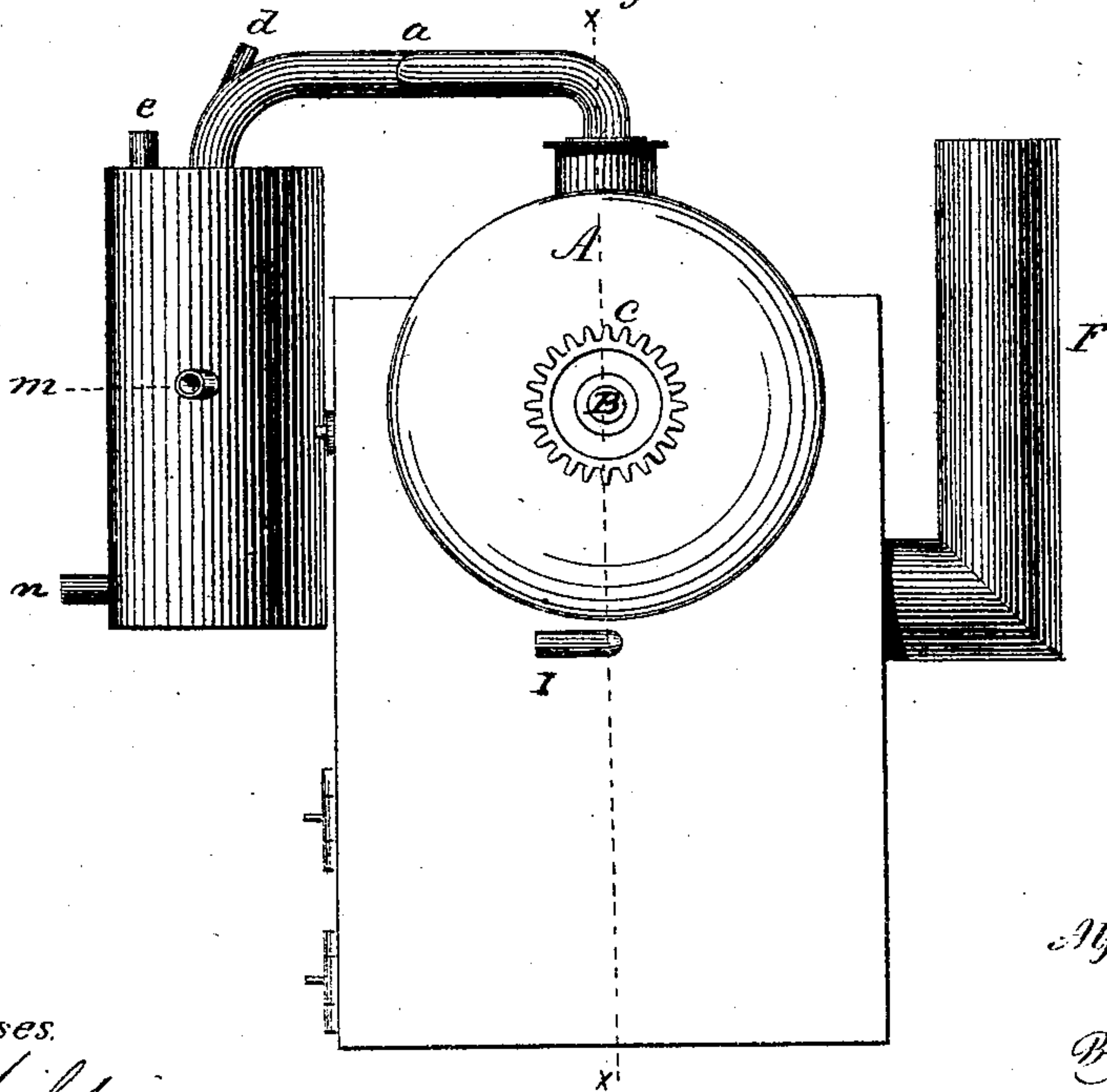


fig. 2.



Witnesses.

*A. J. Schmitt*  
*J. H. Shumway*

Alfred Edwards  
Inventor

By Atty.

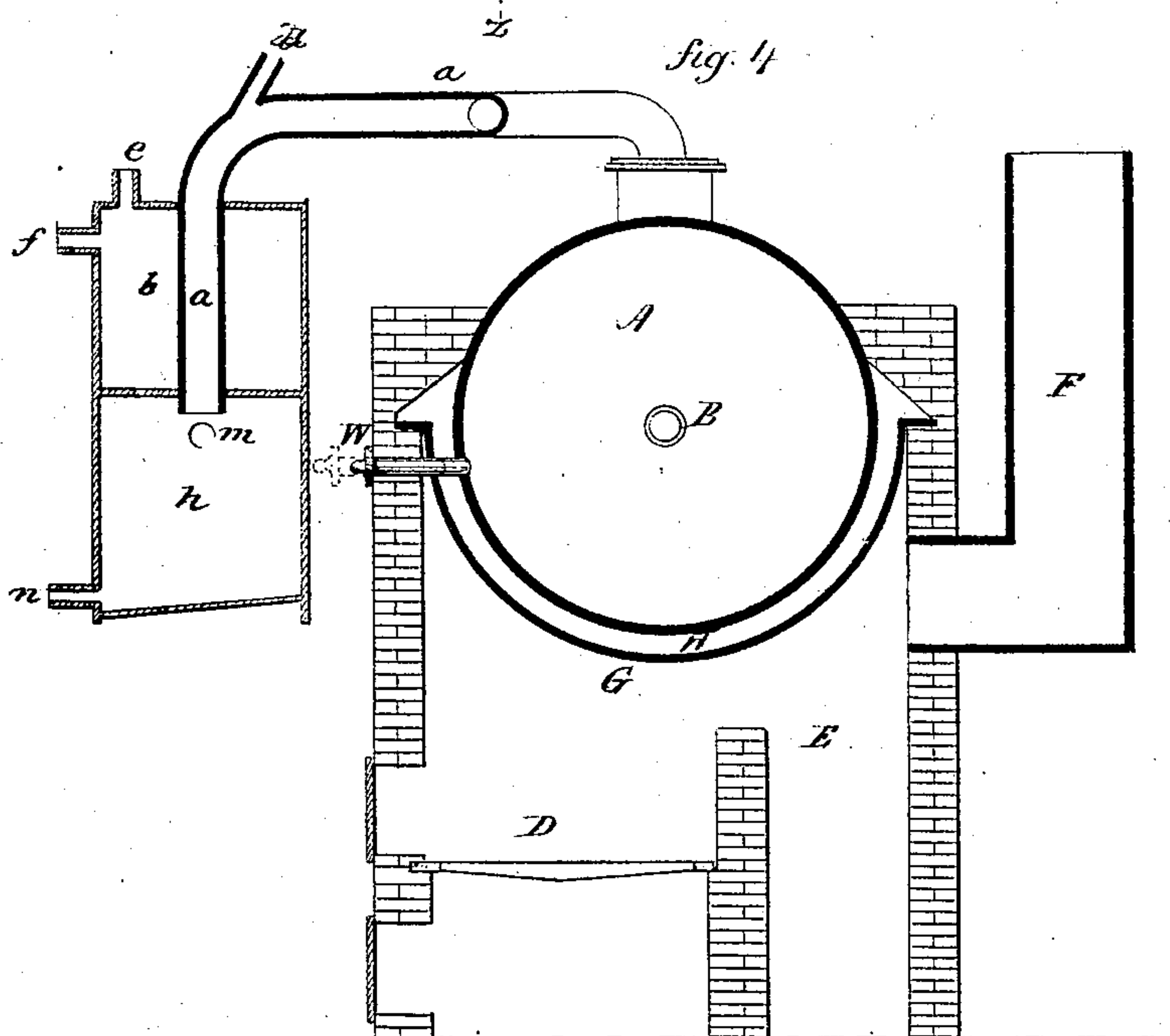
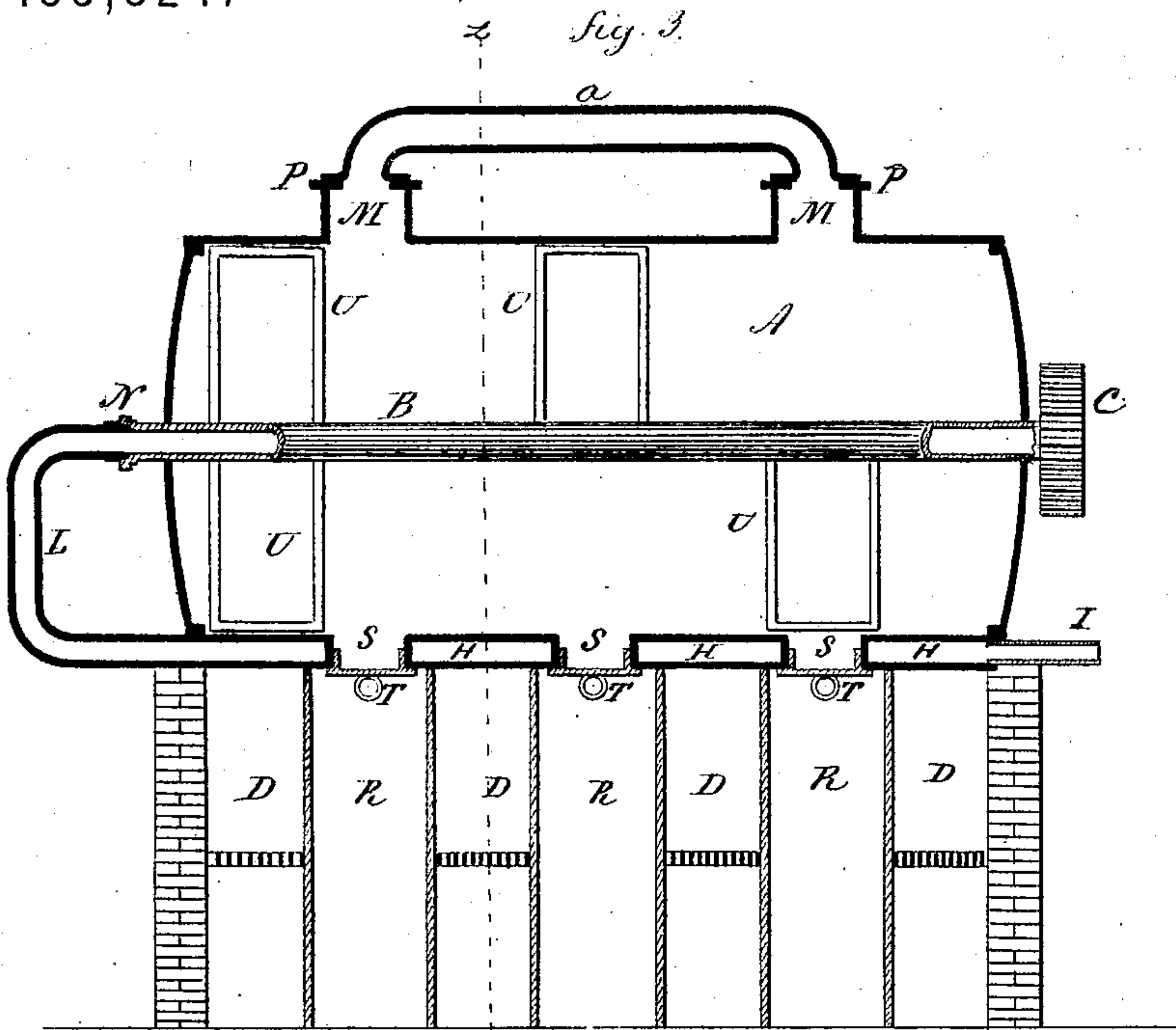
*John S. Earle*

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Witnesses

*A. J. Libbitts*  
*J. H. Chumway*

Alfred Edwards  
Inventor

By Atty.

*Wm. E. Earle*



# UNITED STATES PATENT OFFICE.

ALFRED EDWARDS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO ALFRED R. EDWARDS, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN APPARATUS FOR TREATING OFFAL.

Specification forming part of Letters Patent No. 135,324, dated January 28, 1873.

*To all whom it may concern:*

Be it known that I, ALFRED EDWARDS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Apparatus for Treating Animal Matters for Fertilizers; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification and represents in—

Figure 1, a side view; Fig. 2, an end view; Fig. 3, a longitudinal central section on line  $x$   $x$ ; and in Fig. 4, a vertical section on line  $z$   $z$ .

This invention relates to the construction of an apparatus for utilizing blood and other animal matter; and it consists in a cylinder to receive the material, having arranged therein a rotating device to agitate or stir the material, and the cylinder constructed with an air-chamber partially around its surface, which said air-chamber is heated by a furnace below, air being forced into the said chamber to be there heated, and which, while it prevents the direct contact of the fire with the cylinder, is, after being heated, at the required time during the operation, permitted to pass directly into the cylinder to facilitate the rendering operation, as more fully hereinafter described.

A is the cylinder, which may be of any size desired, proportionate to the work to be done, and may be of other than cylindrical shape; but this I prefer. Centrally through this cylinder, and in suitable bearings, a hollow or solid shaft, B, is arranged, which is caused to rotate by the application of power thereto through the gear-wheel C or otherwise. The cylinder A is arranged in a suitable work of brick or other material, in which are several furnaces, D, more or less in number, the several furnaces communicating with a common flue, E, the products of combustion passing off through the flue F. Directly above the fire, and below the cylinder, is arranged a semi-cylindrical sheet, G, which forms a chamber, H, between the said sheet and the cylinder, the fire coming in contact only with the outer sheet G. Into this chamber H a tube, I, leads, through which air is supplied by any known device, and from the chamber at the opposite

end another tube, L, leads to the hollow shaft B, and is connected with the said shaft at N, so as to allow the free revolution of the shaft and prevent the escape of air; or in case of a solid shaft this tube may open directly to the atmosphere. In the top of the cylinder openings M are formed, through which the material to be operated upon is introduced, and these are closed by a tight cap, P. At the bottom of the cylinder between the furnaces are man-holes S, opening into chambers R, as seen in Fig. 3, these openings closed by a suitable cover, T. Through these openings S the material, after having been rendered or operated upon, is taken out. The shaft B is provided with arms U, or other irregularities, which will agitate or stir the material within the cylinder. W is a plug—may be several—which runs through the sheet G into the cylinder, as denoted in Fig. 4, the plug closing the perforation in the cylinder, but when drawn out, as denoted in broken lines, Fig. 4, opens a communication directly from the chamber H into the cylinder. While preferring plugs, as described, other valves may be used instead to open communication from the chamber H directly to the cylinder.

The material to be rendered having been placed in the cylinder and the openings M securely closed, the fire is kindled in the furnaces below and the agitator put in motion; the chamber H becomes heated, and the air driven therein, as before described, circulates through the said chamber, is heated, and communicates its heat to the cylinder, passes on through the tube L, thence through the hollow shaft B, or otherwise, and escapes; and at such stages in the process of operation as the hot air is required to mingle with the material the plugs W are drawn and the heated air is driven directly into the vessel to mingle with the material therein contained and being operated upon. The quantity of air supplied to the chamber H must be regulated proportionate to the heat, sufficient only being required to prevent the heating of the inner cylinder to too high a degree.

The steam or gases which arise from the rendering process are led off through suitable pipes. This is best done, as I have represented, by a pipe,  $a$ , leading from one or both of



the covers P, thence turning down through a condenser-chamber, *b*. Into this tube, above the condenser and through an aperture, *d*, a spray of cold water is injected, to mingle with the flowing steam or gases to aid in their condensation; and into the condenser-chamber *b*, through an opening, *e*, cold water is introduced to fill the said chamber around the escape-tube *a*, to further condense the vapors, and which water, becoming heated from the pipe *a*, passes out through an escape, *f*; the condensed vapors fall into a receptacle, *h*, below the condenser, and are there drawn off through an aperture, *n*. In localities where the discharge can pass to a sewer or other suitable drainage a constant flow of cold water is kept up through the chamber *h*, the water entering through the aperture *m*.

By this construction and arrangement of the air-chamber H heat is applied more directly than can be in other known apparatus, and all liability to burn the material in the cylinder is avoided; the expense of the apparatus is considerably reduced, as this is complete in

itself, and requires no auxiliary heating apparatus; and the condensing device described avoids all offensive odors which must otherwise escape into the atmosphere.

I claim as my invention—

1. The cylinder A, provided with the shaft B carrying suitable agitators, combined with the air-chamber H beneath the cylinder and the furnaces D, more or less in number, the fires in which act directly upon the casing G of the said chamber H, and plugs W opening communication from the said chamber directly into the cylinder to allow the passage of heated air directly from the said chamber into the said cylinder, substantially as set forth.

2. In combination with the rendering-cylinder A and an agitating device working within, the escape-pipe *a* and condenser-chamber *b*, the receiving-chamber *h*, outlet *n*, and with the water-supply *m*, substantially as set forth.

ALFRED EDWARDS.

Witnesses:

A. J. TIBBITS,  
J. H. SHUMWAY.