No. 730,386. PATENTED JUNE 9, 1903.

S. J. McDONALD.

COMBINED HEATING DRUM AND FUEL ECONOMIZER.

APPLICATION FILED FEB. 15, 1902.

NO MODEL.

Fig. 1.

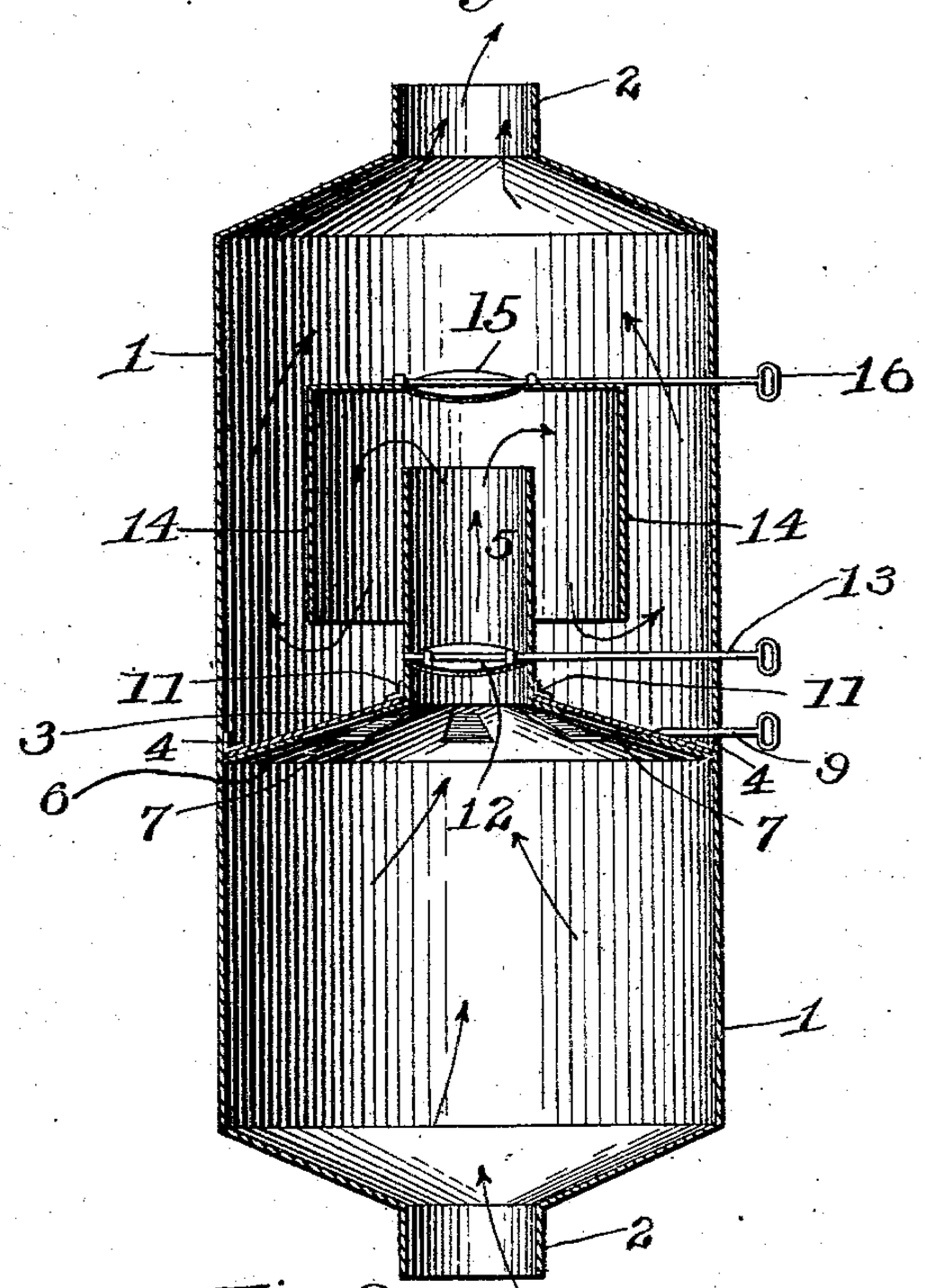


Fig. 2.

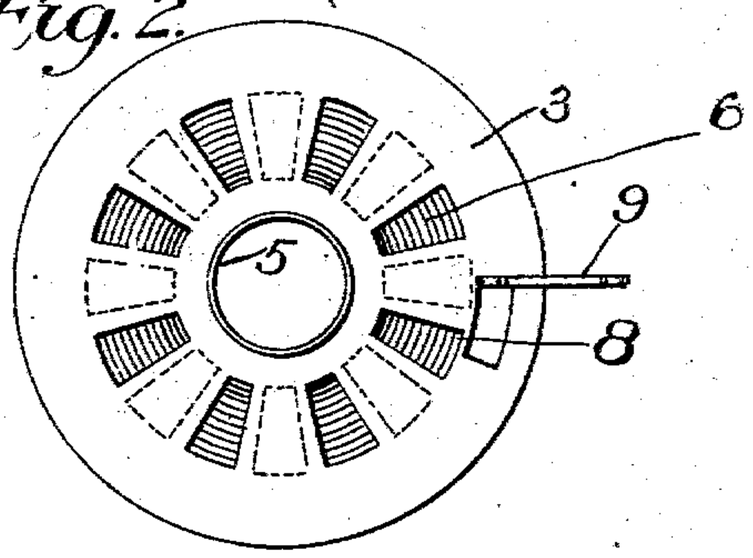
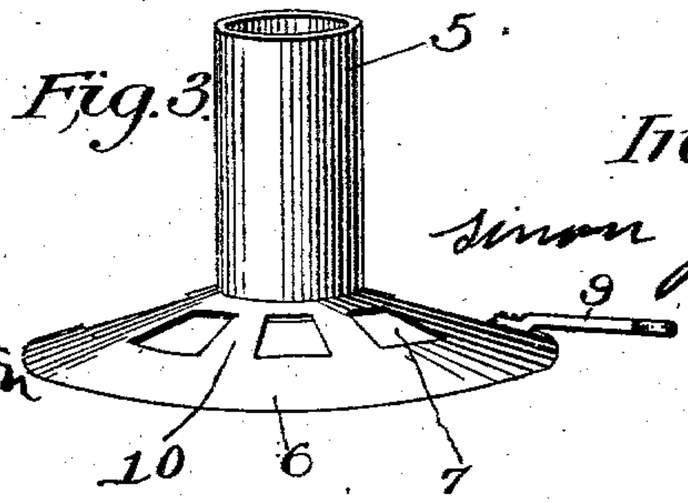


Fig. 3.



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No. 730,386. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

SIMON JOHN McDONALD, OF DETOUR, MICHIGAN.

COMBINED HEATING-DRUM AND FUEL-ECONOMIZER.

SPECIFICATION forming part of Letters Patent No. 730,386, dated June 9, 1903.

Application filed February 15, 1902. Serial No. 94,232. (No model.)

To all whom it may concern:

Be it known that I, SIMON JOHN McDONALD, a citizen of the United States, residing at Detour, in the county of Chippewa and State of Michigan, have invented certain new and useful Improvements in a Combined Heating-Drum and Fuel-Economizer; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to stove attachments, and relates more particularly to what I shall for convenience term my "fuel-economizer and heat-radiating drum;" and it consists of certain novel features of combination and construction of parts, as will be hereinafter fully described and claimed, reference being made to the accompanying drawings, which are submitted as a part of this application.

The object of my invention is to provide an appliance designed for the purpose specified which will be found reliably efficient in the performance of its office and the parts of which may be very cheaply and expeditiously manufactured and readily assembled in their respective operative positions.

In the accompanying drawings, Figure 1 is a vertical central section of my invention complete. Fig. 2 is a top plan view of the fixed diaphragm employed by me in my improved heating-drum and fuel-economizer. Fig. 3 is a side elevation, partly in perspective, of the movable section designed to cooperate with the diaphragm shown in Fig. 2.

In order to conveniently refer to the various details of my invention and coöperating accessories, numerals will be employed, of which 1 indicates the body portion of my combined heating-drum and fuel-economizer, which may be made of any preferred material and of any desired size and is provided at each end with the constricted neck or orifice 2, designed to connect with an ordinary stovepipe or other form of piping leading from the stove or furnace to the chimney. Located, preferably, near the central portion of the drum thus or otherwise provided is the fixed diaphragm 3, which is held in a suspended position by means of the angle-plate 4, which latter is riveted to a contiguous part of the inner surface of the wall of the drum, while the inwardly-directed branch or lip thereof is riveted to the outer edge of the diaphragm 3, or, if preferred, the outer edge of said diaphragm may rest upon said lip. The diaphragm 3 is provided with a central aperture of proper size to snugly receive the tubular extension 5 of the movable diaphragm 6, which latter is shaped to fit snugly against the under side of the fixed diaphragm 3 and is provided with the plurality of apertures 7, designed to be brought into registration with similarly-formed apertures or slots 8 in said fixed diaphragm.

In order that the movable diaphragm 6 may be partially rotated, so as to bring the apertures 7 into registration with the apertures 8, I provide the handle 9, properly attached to the member 6 and extending upward through a slot provided in the fixed diaphragm and outward through a slot provided in the wall of the drum, and it is therefore obvious that when the said handle is moved laterally in one direction or the other the movable diaphragm may be readily moved so that the openings 7 and 8 will be in registration or that the openings 8 will be closed by the portion 10 of the movable member 6 when said portion is brought immediately under the openings 8, as will be obvious. In order that the movable diaphragm 6 may be thus reliably though rotatably suspended, I connect to the lower end of the tubular section 5 the collar 11, having a radial flange at its lower edge, said flange being designed to rest upon or engage the contiguous edge of the fixed diaphragm. It is therefore obvious that the movable diaphragm may be freely moved in either direction sufficiently to bring the apertures 7 and 8 into or out of registration with each other, as above explained.

The tubular throat 5 is provided, preferably near its lower end, with the damper 12, which is controlled by the rod 13, that extends outward through a horizontally-disposed slot in the drum, thus enabling the damper 12 to be readily opened or closed, as desired. I also secure in any preferred way within the drum 1 the inverted-cup-shaped member 14, said member being located above the free end of the tubular throat 5 and is provided in the central portion of its upper end with

an opening which is filled by the damper 15, said damper being controlled by the rod 16, as clearly presented.

By the arrangement just described it is therefore obvious that by opening the dampers 12 and 15 a direct line of draft is provided for the products of combustion, and the smoke will therefore pass directly through the central portion of the drum and thence outward into the chimney. This direct line of draft may also be augmented by bringing the apertures 7 into registration with the apertures 8, thus permitting the smoke to pass freely upward through the drum both through and around the cup-like member 14. When, however, the fire in the furnace or stove is sufficiently hot to insure a perfect draft and that the gases, smoke, &c., will be thoroughly carried off, I regulate or operate my improved fuel-economizer and heating-drum by partially rotating the member 6, so as to close all of the openings 7 and 8. I also open the damper 12 and close the damper 15, and it will therefore be seen that the line of draft will thus be upward through the tubular throat 5 and thence downward under the lower edge of the cup-shaped member 14 and thence outward, as indicated by the arrows shown in Fig. 1. The line of draft, it is therefore clear, may be very readily and easily controlled by the operator by a proper manipulation of the movable parts above referred to, and while I have described the preferred construction and combination of parts deemed necessary in materializing my invention I wish to comprehend all substantial equivalents and substitutes that may be considered as falling fairly within the scope of my invention.

Having thus fully described the construction and manner of using my improved combined heating-drum and fuel-economizer, further reference to the details is deemed unnecessary.

What I claim as new, and desire to secure by Letters Patent, is—

The herein-described heating-drum and fuel-economizer, consisting of the drum-like body with restricted orifices at opposite ends, a fixed diaphragm suspended within and from the sides of said body, a movable apertured diaphragm having an upwardly-extending tubular portion passed through an opening in the apex of the fixed diaphragm, a damper in said extension, a handle connected with the movable diaphragm and passed through a slot in the fixed diaphragm and through a slot in the wall of the drum, an inverted-cup-shaped member of greater diameter than the extension of the movable diaphragm, and embracing the same, and a damper controlling an opening in the upper end of said member, as substantially herein shown and described.

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

SIMON JOHN McDONALD.

Witnesses:

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