

Michel G. Fagan.

Impt. in Heating Apparatus.

112233

Fig. 1.

PATENTED FEB 28 1871

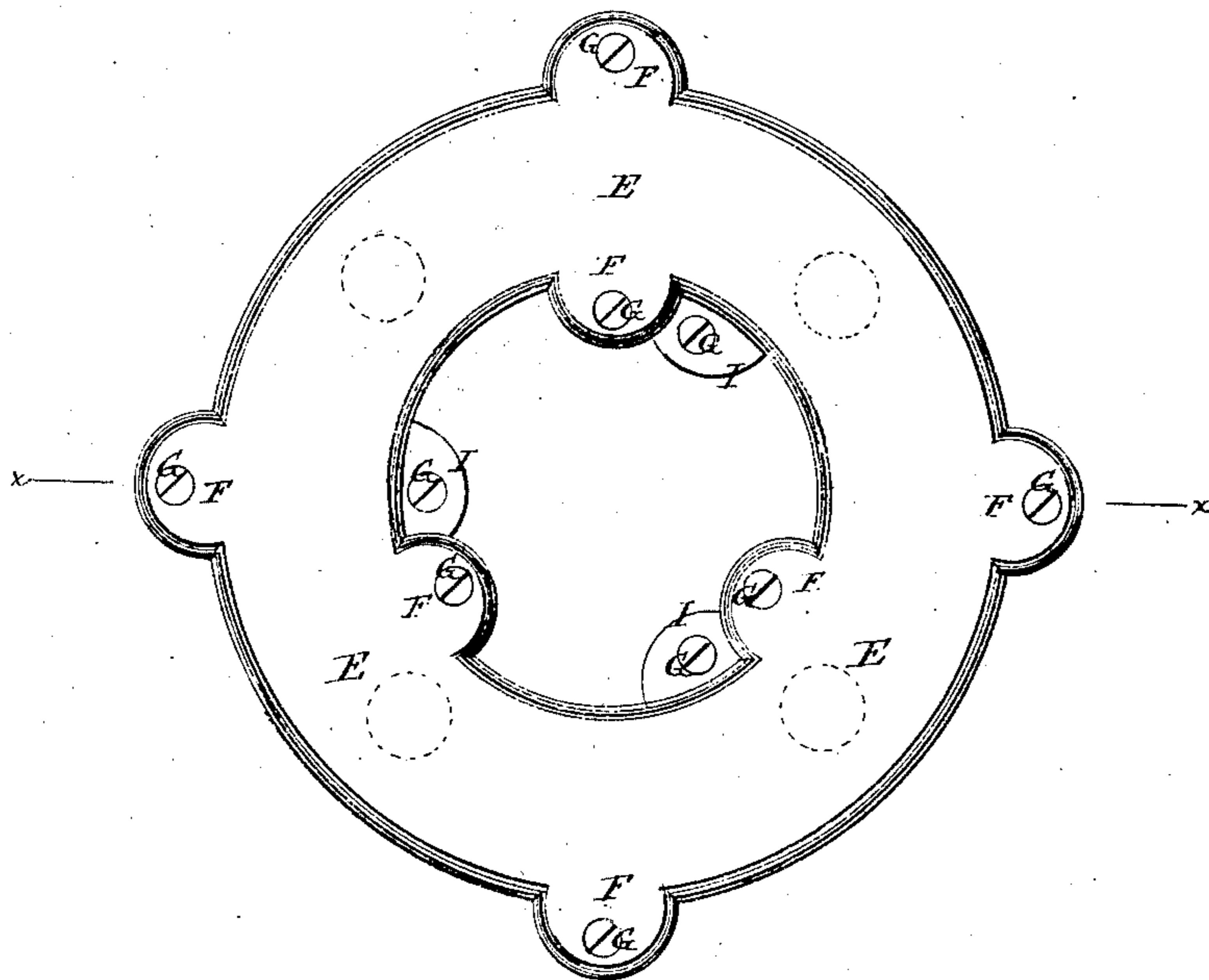
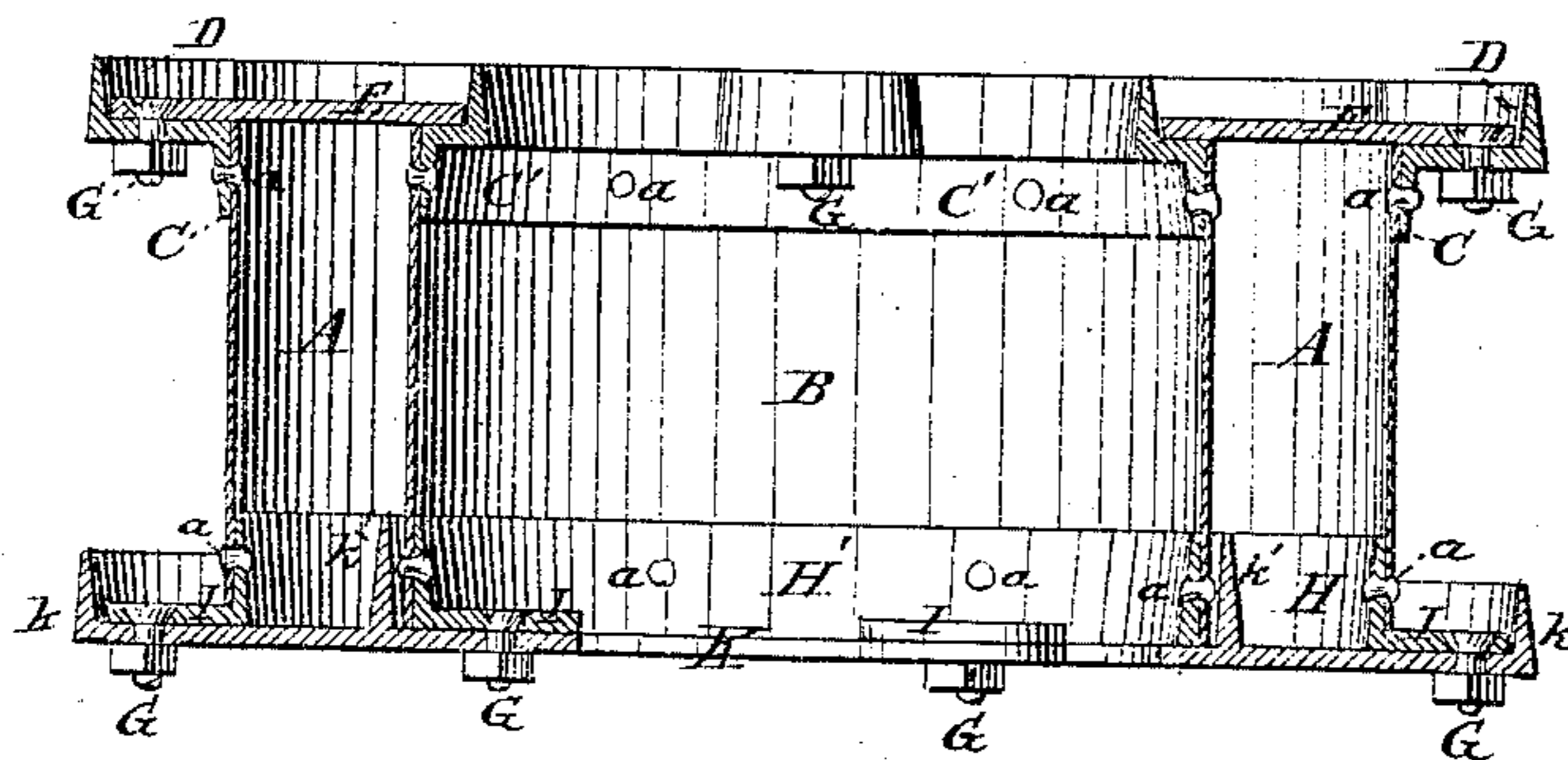


Fig. 2.



Witnesses.

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# United States Patent Office.

MICHEL G. FAGAN, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF  
AND ALBERT C. CORSE, OF SAME PLACE.

Letters Patent No. 112,233, dated February 28, 1871.

## IMPROVEMENT IN HEATING APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, MICHEL G. FAGAN, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Heating Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of the upper side of a drum constructed in accordance with my improved method, and

Figure 2 is a vertical central section of the same on the line *x x* of fig. 1.

Letters of like name and kind refer to like parts in each of the figures.

As commonly constructed the drums or sections of heating-furnaces above the fuel-chamber are composed of sheet-iron cylinders inclosed at either end by cast-iron plates resting upon or against the same, and the whole secured together by means of a number of bolts passing through both plates and the cylinder, and confining the latter between the former.

This construction is, however, open to serious objections, among which are—

First, the impossibility of making a joint between the ends of the cylinder and the plates that shall retain a sufficient amount of cement to insure a gas-tight drum, and

Second, the unequal vertical expansion of the parts, by means of which, at certain temperatures, the bolts are slackened, so as not to confine said parts closely together, while at other temperatures said bolts are subjected to a sufficient strain to occasionally cause them to break, and thereby derange the heating apparatus and render repairs necessary.

To obviate these difficulties is the design of my invention, which consists in the employment of cast-metal rings fitted around or within, and secured to the ends of the cylinders, and combined with the end covers, substantially as and for the purpose hereinafter shown.

In the annexed drawing—

A and B represent the outer and inner cylinders, respectively, of a drum, corresponding in length and arranged concentrically.

Secured to and around the upper end of the outer cylinder A is a cast-metal ring, C, the outer edge of which coincides with that of said cylinder, from whence it extends downward upon the same to a sufficient distance to permit of the insertion of rivets *a*, bolts, or other equivalent devices, by means of which said parts are attached together.

From its upper edge the ring C extends horizontally outward and then vertically upward, so as to

form a right-angled rebate, D, within and upon which is placed the top plate E, which, as seen in fig. 2, consists of a plane disk of cast metal, provided with a number of horizontally-projecting lugs, F, through which pass the bolts G, used for securing said plate to or upon said ring, the radial conformation of said rebate D being suited to the exterior shape of said plate with its lugs.

The ring C', attached to the upper end of the inner cylinder B, is constructed in a similar manner to that before described of C, except that it fits within instead of around said cylinder, and projects inward instead of outward from the same.

As thus constructed a suitable layer of cement is spread upon the seat or horizontal portion of each ring, and the top plate placed thereon, and secured firmly thereto by means of bolts passing through both parts.

The rings H and H', attached respectively to the lower ends of the outer and inner cylinders, are fitted to or upon the inside of the same, and from thence, extending horizontally outward or inward, are provided with lugs I, corresponding with those forming a part of the top plate, but have no upward-projecting flanges.

The bottom plate K corresponds, in exterior size and shape, with the top plate, but has, in addition, a flange, *k*, projecting upward from its outer edge, so as to embrace the edge of the ring H, and a second flange, *K*, projecting upward just outside of the inner cylinder B.

In attaching together the bottom plate and drum the cement is spread upon the former, immediately beneath each ring, and is held in place by means of the vertical flanges.

If desired, in order to render more certain the closeness of joints, cement may be placed within the spaces left between the cylinders and vertical flanges, at the lower end of the drum, and upon and around the inner and outer edges of the top plate, where, from the peculiar shape of the parts, said cement will be securely held in place.

It will be seen that, in attaching the bottom plate to the cylinders, it is necessary to form the seat for the reception of the cement upon and to attach the upward-projecting flanges to said plate, instead of the ring, as before; but as this arrangement of parts is just the reverse of that employed at the upper end of the drum, it is considered only a necessary modification of the same.

The drum above described is intended for use in a hot-air furnace, where it would be placed above the fuel-chamber, and connected therewith by means of one or more pipes opening from the upper end of said chamber into the space between the cylinders

and the top and bottom plates, so as to cause the heated escaping products of combustion to pass through the same and into an exit-pipe passing outward through the side or from the top of said drum, and thereby imparting a portion of their heat to the air surrounding the latter.

This device is, however, only shown for the purpose of illustrating my invention, which, as will be readily seen, is equally applicable to any portions of heating apparatus where it is desired to form a permanent joint between the end of a sheet-metal section or cylinder and a cast-metal cover.

The especial advantages possessed by this construction of a drum are—

First, the joint at either end is rendered entirely independent of and cannot be affected by the expansion or contraction of other parts of the device, and, being made with very short bolts, is not liable to derangement from or by changes of temperature.

Second, each joint is horizontal, and no change of temperature or ordinary use of the heating apparatus can in any manner loosen or remove the cement, so that, if well made originally, said joints are certain to continue gas-tight while the metal remains intact.

Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

In a stove-drum or other equivalent parts of heating apparatus, the means employed, or their equivalent, for securing a permanent gas-tight joint between the ends of the cylindrical portions thereof and the end plates or other contiguous portions of said apparatus, consisting of the rings O and O', attached to or upon the ends of said cylinders A and B, respectively, and from thence projecting horizontally outward or inward and thence upward, so as to form a rebate, D, for the reception of the cover E, in combination with said cover, and with suitable bolts G passing through said parts, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of February, 1871.

MICHEL G. FAGAN.

Witnesses:

W. P. ALLENDORPH,  
AUG. P. CORSE.