(No Model.)

P. J. TRACY.

HEATING DRUM.

No. 444,078. Patented Jan. 6, 1891.

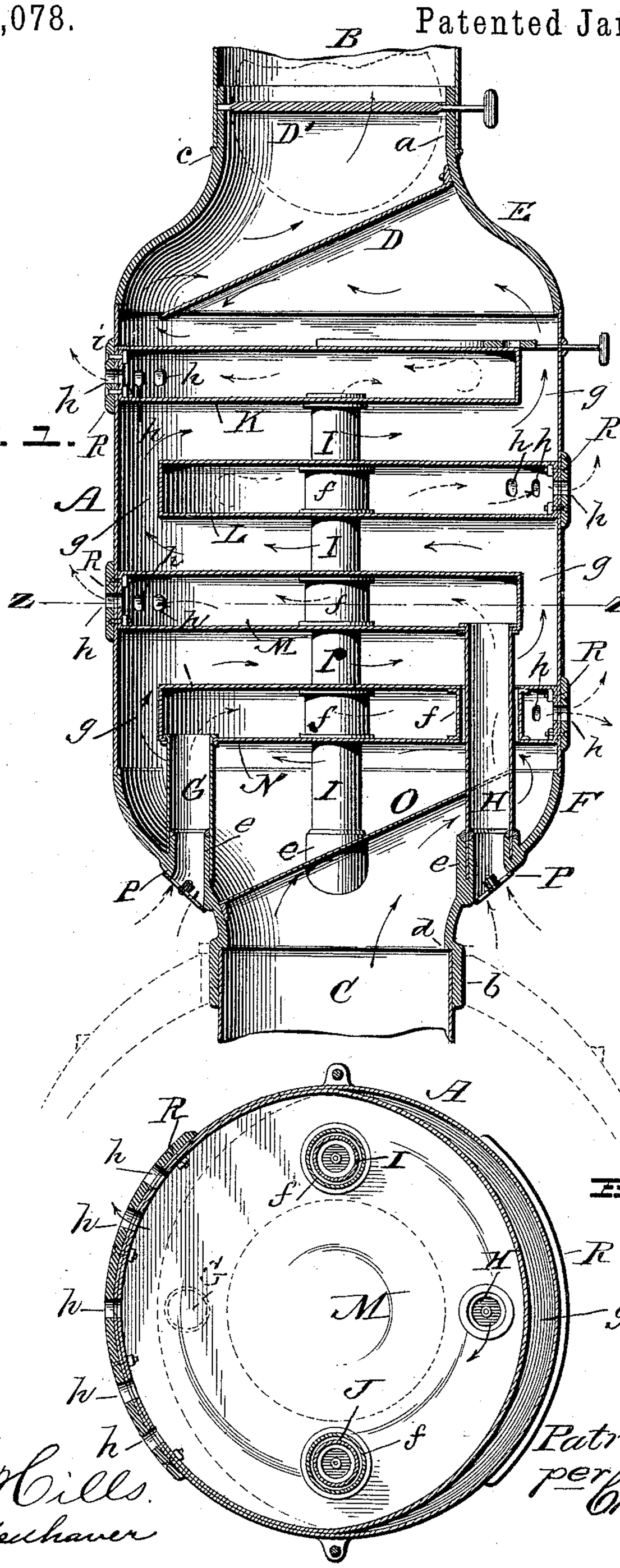

Fig. 1.

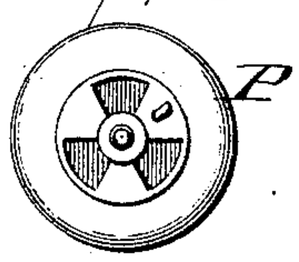

Fig. 5.

Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

PATRICK J. TRACY, OF RACINE, WISCONSIN.

HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 444,078, dated January 6, 1891.

Application filed November 3, 1890. Serial No. 370,117. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. TRACY, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Heating-Drums; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 of the drawings represents a sectional elevation of my improved heating-drum, showing by arrows the course of the air to be heated, also the course of the smoke and products of combustion. Fig. 2 represents a horizontal section taken on line *z z* of Fig. 1; and Fig. 3 a detail view, on an enlarged scale, of one of the regulators.

The present invention has reference to that class of heat radiators or drums for heat-generating devices, such as stoves, and which are adapted to be connected thereto or disposed at any convenient point in the line of stove-pipe, and in which air tubes or passages are provided extending from side to side of the drum for the passage of the currents of air to be heated.

The invention has for its object to improve the construction of the above-mentioned class of heat radiators or drums, whereby the current of air is effectually heated and the waste heat from the products of combustion perfectly utilized; and it consists in the details of construction substantially as shown in the drawings, and hereinafter described and claimed.

In the accompanying drawings, A represents the drum, which may be of any suitable size or shape, and is provided at its ends with sleeves *a b*, respectively, for connecting thereto the section of stove-pipe, as shown at B C. These sleeves may be of any suitable construction, or any well-known means may be provided for making a connection between the drum and sections of stove-pipe; but in the present instance I have shown sleeves, as above described, and which I prefer to provide with shoulders *c d*, against which the edges of the stove-pipe sections will abut when coupled to the sleeves. These shoulders, as will be seen, are located upon the outside and inside of the sleeves, respectively, the sleeve *b* having its shoulder *d* upon the interior thereof and the section C of stove-pipe inserted within the sleeve, so that, if desired, the drum at the sleeve may be provided with suitable legs or supports, (shown in dotted lines,) when found desirable.

The sleeve *a* of the drum is provided with a suitable damper D′, of any well-known construction, and below this damper is an inclined deflector E, for the upwardly-passing smoke or escaping products of combustion, so as to cause it to pass over a greater area of surface before it escapes from the drum, thus utilizing it to the greastest possible extent as a heating medium.

In the construction of the heating-drum A, I prefer to have the heads E F of cast metal and the body of suitable sheet metal connected to the heads in any suitable and well-known manner, said heads forming the upper and lower ends of the drum, respectively. The head F, as will be seen, is cast or otherwise provided with inwardly-extending flanges *e*, to which are suitably connected the air-tubes G H I J, the latter being shown only in Fig. 2 in cross-section, as the vertical section shown in Fig. 1 would cut away the tube J and the flange to which it is connected. Hence they would not be seen, except in cross-section, and then only the tube would be shown.

The tubes, as above described, are connected in any suitable manner with interior supplemental drums K L M N, respectively, with which the tubes communicate, as shown, and thimbles *f* are disposed between the walls of the supplemental drums L M N, through which pass the air-tubes, as shown, thereby forming an air-tight connection between the tubes and drums and preventing the escape of the heated air, except through its proper outlet.

It will be seen that the supplemental drums are substantially oval in cross-section, or of such shape as to present a space *g* for the passage of the smoke and products of combustion as they move upward to escape out through the top of the main drum. These supplemental drums are so disposed within the main drum that these spaces between the edges of the

former and walls of the latter will be on alternate sides of the main drum, whereby the smoke and products of combustion are compelled to take a circuitous course before escaping, thereby retaining these heating mediums within the main drum as long as they can be effectively utilized to impart heat to the currents of air passing into the supplemental drums and distributed into and throughout the room or apartment.

In describing more in detail the air-tubes with relation to the supplemental drums to which they are connected it should be understood that the head F is cast with four of the flanges *e*, each two being arranged diametrically opposite each other and form the four ducts for the supply of air to the tubes and thence to the supplemental drums. The air-tube G connects with the drum N, while the air-tube H passes up through said drum and connects with the drum M, and the air-tube I in like manner extends up through the drums N M L and connects with the upper one of the drums, as shown at K. The air-tube J, which is only shown in Fig. 2, extends up through the drums N M and connects with the drum L, thus each of the air-tubes having its respective drum and supplying air thereto, as hereinbefore described.

At the lower end of the main drum is a deflector O to direct the smoke and products of combustion upward in a lateral direction, or toward the side walls of the main drum, and the openings around the flanges *e* are provided with regulators P, of any well-known construction, whereby the supply of air to the supplemental drums is controlled, the construction of the regulators used in the present instance being shown in detail in Fig. 3.

The air, as will be understood, is supplied to the several supplemental drums at the base of the main drum through the openings in the regulators or registers when the same are open, and the air as it enters said drums and becomes heated passes out through the outlets or perforations *h*, said outlets being protected by cast-metal perforated plates arranged with relation to the outlets, so that the perforations in the plates will register therewith when the plates are secured by riveting or otherwise to the main drum.

The course of the air as it passes in and out of the supplemental drums is indicated by the broken arrows, while the course of the smoke and products of combustion is represented by arrows in full lines, thus distinguishing the course of the air therefrom. The smoke and products of combustion as they enter the main drum take the course indicated by the full arrows, first striking the inclined deflector O, passing against and over the surface thereof, thence between the deflector and inner wall of the main drum and against the under surface of the supplemental drum N, and up through the space *g* and in an opposite direction between the drums N M and in like manner between each of the supplemental drums until they pass up and impinge against the inclined deflector D, where their course is directed downward and around the deflector and out through the pipe B, the escape of the smoke and products of combustion being controlled by the damper D′.

The supplemental drum K is provided upon its top with a regulator S, which is of such shape as to close the space between the supplemental drum and the inner side or wall of the main drum and slides upon the supplemental drum in closing or opening the space *g*, said regulator being normally open, as shown. The hot-air or supplemental drums as hereinbefore described are so constructed as to have the greatest possible heating-surface, and to secure this end the outer rim of said drums is of the same radius as the main drum for about one-half of its circumference. Then they described a different circle to leave a crescent-shaped opening or space between them and the walls of the main drum, as clearly shown in Fig. 2.

The perforated protecting-plates R, which have been hereinbefore referred to, also serve as anchor-plates, by which the supplemental drums are held and supported in position within the main drum, rivets connecting the drums and plates to the body of main drum, so that the holes therein will register.

There are many changes in the details of construction that could be made without altering the essential features of the invention, and I therefore reserve the right to make any changes in the general construction of the heating-drum and its adaptation of the parts as would come within ordinary mechanical judgment, and although I have shown a specified number of supplemental drums any number may be used, as found desirable, and the tubes for supplying air thereto may be connected to the main drum in any suitable and well-known manner, and also the supplemental drums may be supported within the main drum, as found best adapted to the purpose.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A heating-drum containing a plurality of supplemental drums having flat sides and substantially oval shape in horizontal section, whereby a space is left for the passage of the smoke and products of combustion between it and the interior sides of the main drum, and means for the supply of air to said supplemental drums and also for its discharge therefrom, substantially as and for the purpose set forth.

2. In a heating-drum, the combination, with deflectors at the top and bottom thereof, of a plurality of supplemental drums substantially oval shape in cross-section, whereby a space or passage is left for the smoke and products of combustion between the main and supplemental drums, and means for supplying air to the supplemental drums and dis-

charging it therefrom, substantially as and for the purpose specified.

3. In a heating-drum, an outer shell adapted for attachment to a stove-pipe and provided with deflectors at its top and bottom, in combination with a plurality of supplemental drums substantially oval shape in cross-section and having suitable means for the escape of air therefrom, and air-supply pipes or tubes connected thereto and communicating with the outside atmosphere, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

PATRICK J. TRACY.

Witnesses:
GODFREY HAUB,
EDWIN H. FRUNDSEN.