

(No Model.)

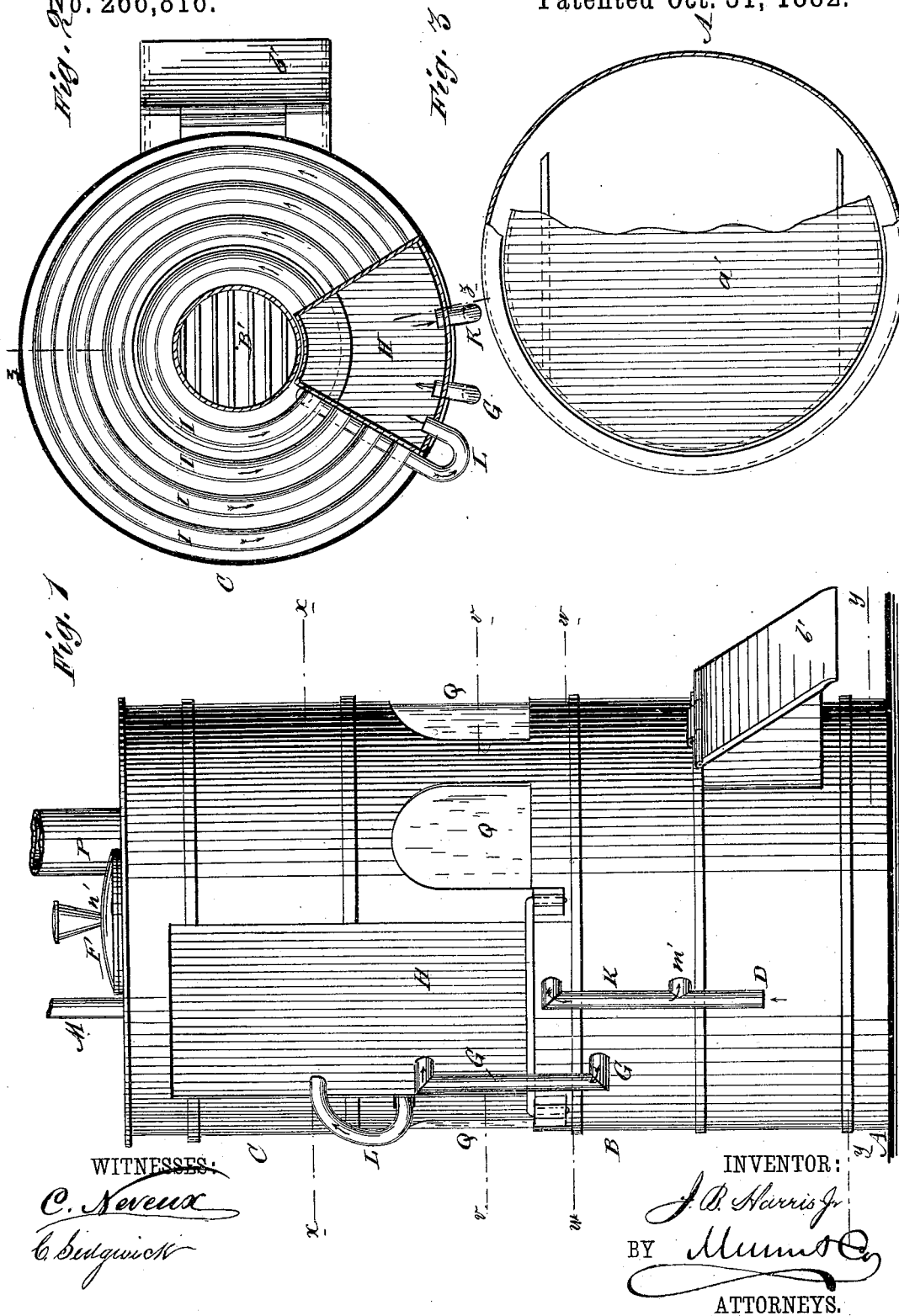
2 Sheets—Sheet 1.

J. B. HARRIS, Jr.

HEATER FOR DWELLING HOUSES.

No. 266,816.

Patented Oct. 31, 1882.



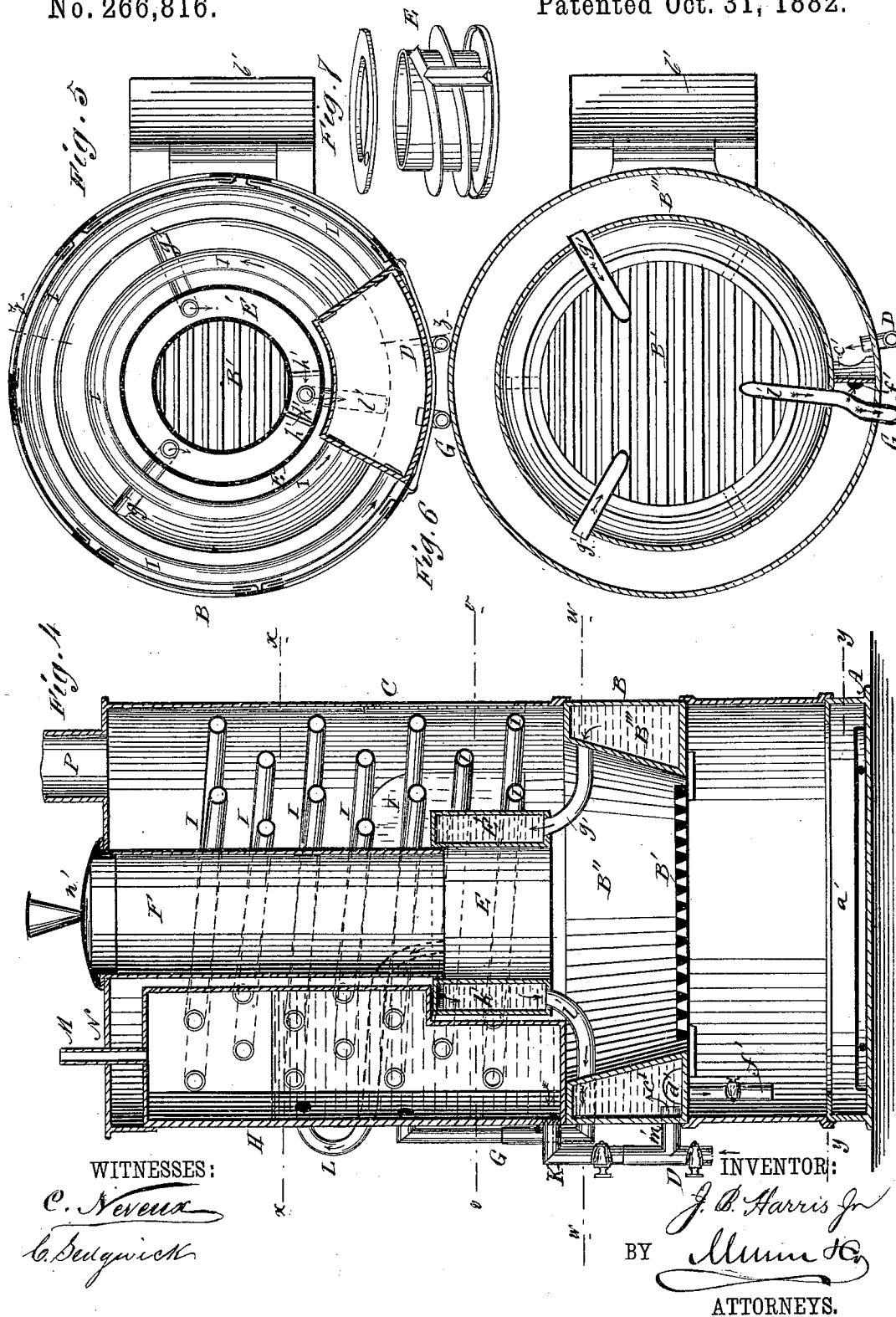
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HEATER FOR DWELLING HOUSES.

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UNITED STATES PATENT OFFICE.

JAMES B. HARRIS, JR., OF GENESEO, NEW YORK.

HEATER FOR DWELLING-HOUSES.

SPECIFICATION forming part of Letters Patent No. 266,816, dated October 31, 1882.

Application filed April 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. HARRIS, JR., of Geneseo, in the county of Livingston and State of New York, have invented a new and Improved Heater for Dwelling-Houses and other Buildings, of which the following is a specification.

Figure 1 is an elevation of the device. Fig. 2 is a transverse section on line *x x*, Fig. 1. Fig. 3 is a transverse section on line *y y*, Figs. 1 and 4. Fig. 4 is a vertical sectional elevation on line *z z*, Fig. 2. Fig. 5 is a transverse section on line *v v*, Fig. 1. Fig. 6 is a transverse section on *w w*, Fig. 1. Fig. 7 is a perspective view of a modified device for the base of the coal-feeder.

Similar letters of reference indicate corresponding parts.

My invention relates to heaters; and it consists in the peculiar construction and arrangement of parts, as hereinafter more fully set forth.

The heater-shell is preferably constructed in three sections, of which A is the lower, B the central, and C the upper, section. The lower section, A, constitutes an air-tight ash-pit, into which water is admitted to moisten the ashes and to assist by its evaporation in the combustion of the fuel in the fire-pot above. *a'* is a removable plate, set on the bottom of the ash-pit A to protect it from the intense heat of the fire above it, lest it might become so hot that it may crack from the heat, or, when hot, from the introduction of water upon it. The central section, B, carries the ash-pan door *b'*, and contains the grate *B'*, the fire-pot *B''*, and the water-ring *B'''*, which water-ring *B'''* is the covered annular space between the fire-pot *B''* and the shell of the boiler. Water is introduced into this ring *B'''* by the water-supply pipe D, and near the water-entrance is fixed within the ring a vertical partition, *c'*, that is provided with an opening, *d'*, near its bottom, to permit of the circulation of the water. The perforated diaphragm *c'* aids in creating a proper circulation of the water within the ring *B'''* when the device is in operation.

f' indicates a blow-off pipe for the removal of the sediment and scale that may form in the boiler, and this pipe *f'* will be provided with a suitable cock.

Curved pipes *g'* connect the water-ring *B'''*

with the water-space *E'*, surrounding the base E of the coal-feeder F, the said pipes *g'* being made to pass through the fire-pot *B''* for this purpose. This water-space *E'* is an annular metallic box having only two vertical diaphragms, *h'*, within it, as shown in Fig. 5, or having in addition thereto a spiral diaphragm, as shown in Fig. 7, said diaphragm being placed within the space *E'* for the purpose of insuring a free circulation of the water therein. It will be seen that these vertical diaphragms *h'* extend from the bottom to the top of the water-space *E'* in the base E, and it is intended also that they should extend to the outer shell of the said base E, so as to form a vertical water-passage, *k'*, into the top of which the hottest water in the water-space *E'* will constantly flow in the course of the water-circulation through the heater.

Connected with the bottom of the water-passage *k'* is the pipe *l'*, that is similar to the pipes *g'*, and that connects across the water-ring *B'''* with the pipe G that extends upward on the outside of the heater to about mid-height of the vertical drum H, with which it connects. This drum H extends upward from a point a little above the bottom of the water-base E, to the top of the heater, and is of nearly triangular cross-section, being a segment of a ring, and presents its convex face to the front.

I represent several series of circular steam and water pipes that connect at each end with opposite sides of the drum H, and are set so that each pipe I inclines slightly from one end to the other, in order to induce free circulation of the water, and at the same time prevent deposit therefrom. The inmost circle of these pipes I is nearly in contact with the water-base E and coal feeder F, while the outer pipes I are nearly in contact with the shell of the heater, so that the fire-chamber of the boiler is almost filled with the pipes I, sufficient room of course being therein left for the escape of the products of combustion.

When the heater is in operation water admitted through pipe D enters through connection *m'* into the water-ring *B'''*, and thence through the pipes *g'* into the water-space *E'*. Thence the course of the current is over the diaphragms *h'* into the passage *k'*, and through the pipe *l'* to the pipe G, and thence to the vertical drum H. From the drum H the circula-

tion is through the pipes I I back to the said drum H, and thence through the pipe K, that connects with drum H near its bottom, to the pipe-connection *m'*, and into the water-ring B'''.
 5 Thus a complete and constant circulation of water is maintained within the heater while it is in operation, and the positions of the water-pipes over the fire-pot B'' and within the fire-chamber insure the maximum utilization of
 10 the heat from the fire. The pipe L, that connects the water-space E' with the drum H, serves for the escape of air or steam from the former to the latter. The upper part of the drum H, and it may be some of the upper pipes
 15 I, serves as a steam-chamber, from which the steam escapes to be conducted through the steam-pipes of the house through the pipe M, that proceeds from the removable drum-top or man-hole plate N. The sections B and C of
 20 the heater-shell inclose all the internal pipe system and fire-chamber. Centrally through the top of this shell C the coal-feeder F, provided with cover *n'*, projects downwardly into the water-base E, and the smoke-pipe P leads
 25 upward from the said shell C. The pipes D and K will be provided with cocks below and above the connection *m'*, respectively, so that when water is to be supplied through the pipe D the flow through K may be checked, and
 30 that the pipe D may be closed when free circulation throughout the heater is desired.

This heater is especially adapted for use in some room in a house, as it will heat the room it may be placed in and also by steam-pipes
 35 all the other rooms of the house, and as panes Q, of mica, are set in the shell C the light from

the fire in the heater will make the room more pleasant.

Having thus described my invention, what I claim as new, and desire to secure by Letters 40 Patent, is—

1. In a water-ring, B''', the vertical partition *e'*, provided with opening *d'*, substantially as herein shown and described, for the purpose of aiding in the circulation of the water within 45 the heater.

2. The water-base E, provided with vertical diaphragms *h' h'*, in combination with the pipes G *g' l' L*, substantially as and for the purpose described. 50

3. In a heater, the combination, with the fire-pot B'', the pipes *g' l' G*, and the water-space E', of the drum H and the inclined circular pipes I, substantially as and for the purpose set forth. 55

4. In a heater, the combination, with the fire-pot B'', the water-ring B''', the pipes *g' l' G*, and the water-space E', of the drum H, the inclined circular pipes I, and the pipes K *m'*, substantially as and for the purpose set forth. 60

5. In a heater, the combination, with the water-space E', surrounding the base E, and the drum H, of the curved pipe L, extending from the water-space E' radially through the heater, and thence curved inwardly into the 65 drum H, substantially as and for the purpose set forth.

JAMES B. HARRIS, JR.

Witnesses:

WM. J. MILNE,
 OTTO KELSEY.