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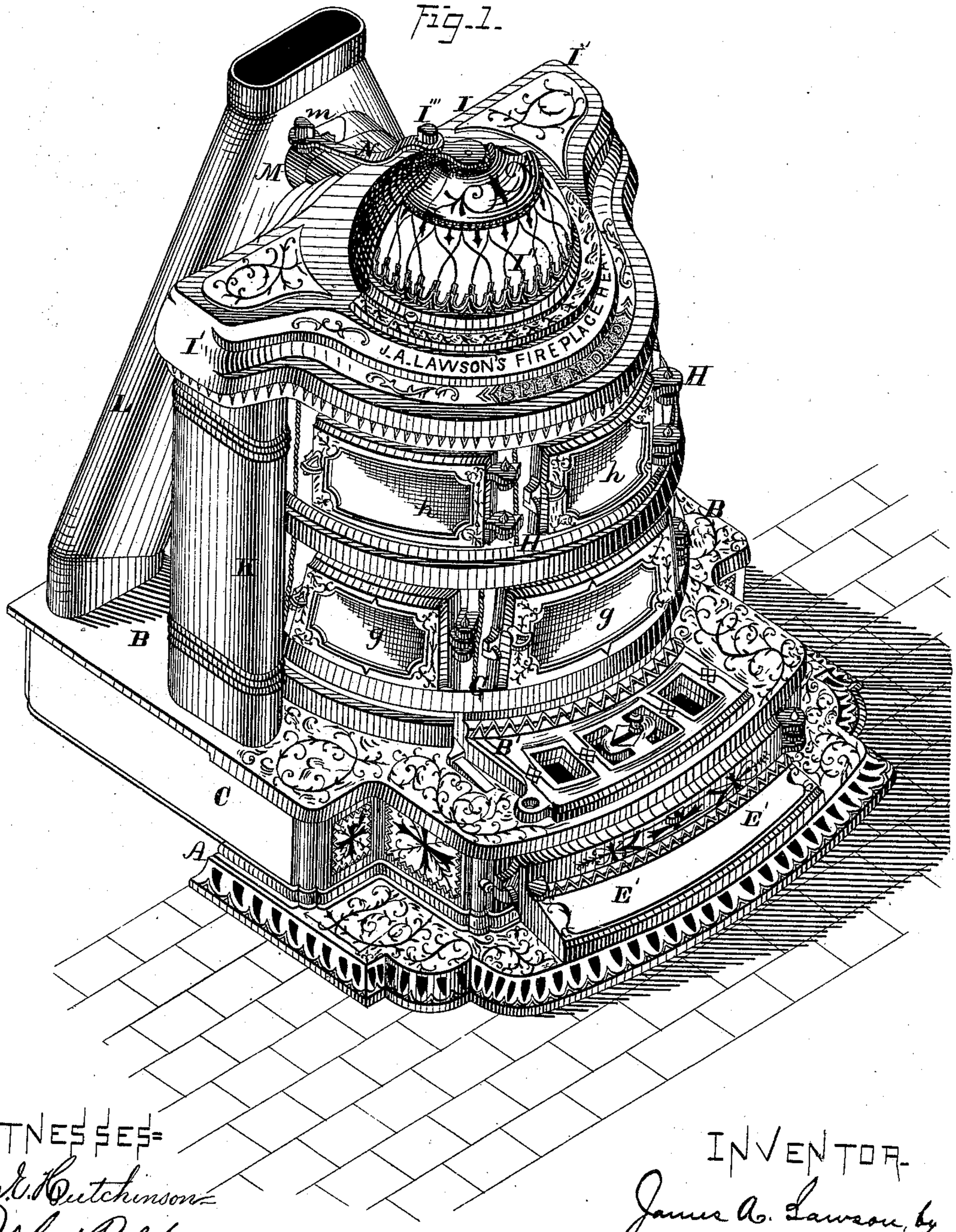
J. A. LAWSON.

FIRE-PLACE HEATER.

No. 176,970. Patented May 2, 1876.

Fig. 1.



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8 Sheets—Sheet 2.

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FIRE-PLACE HEATER.

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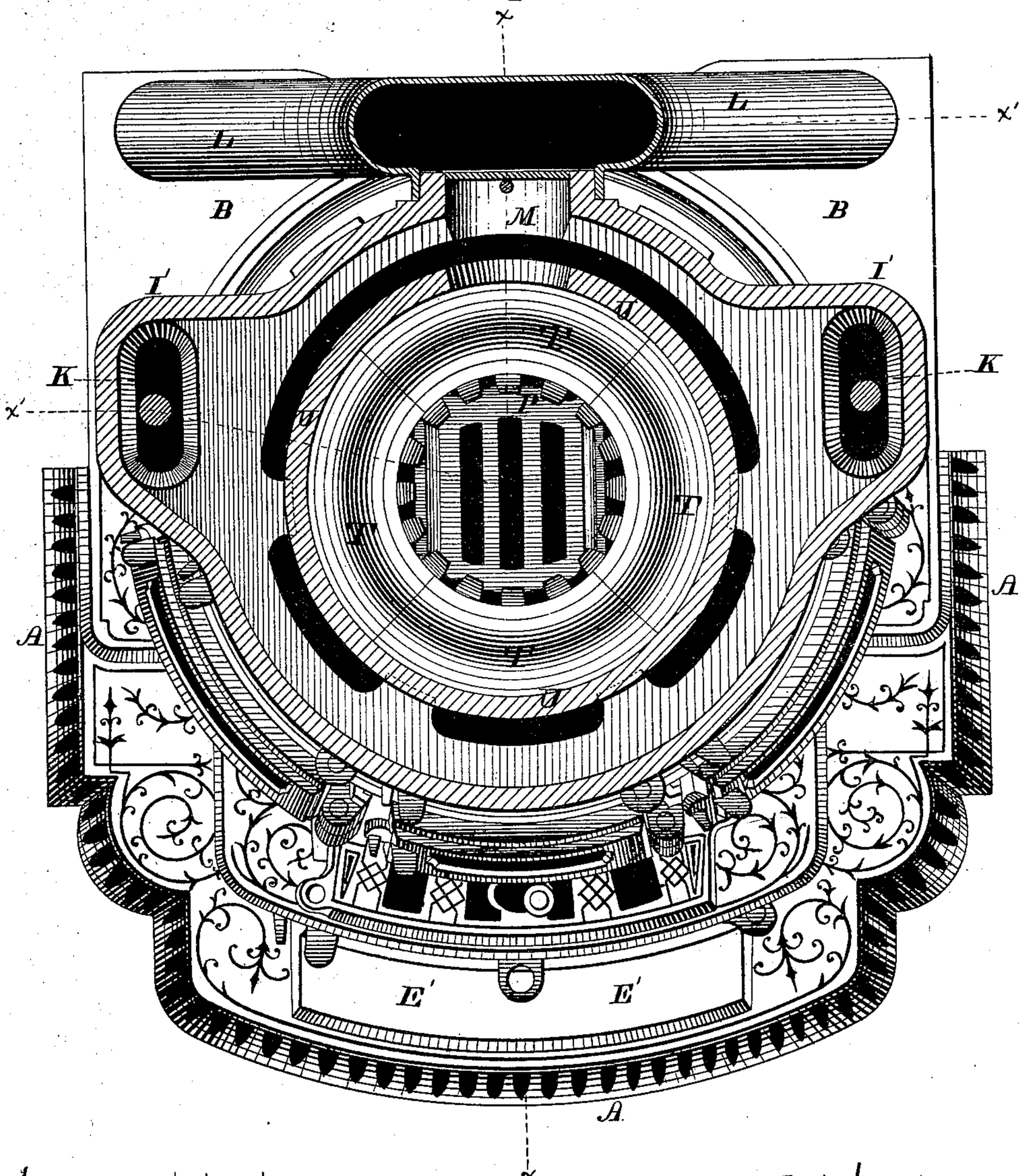
Fig 2.



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FIRE-PLACE HEATER.

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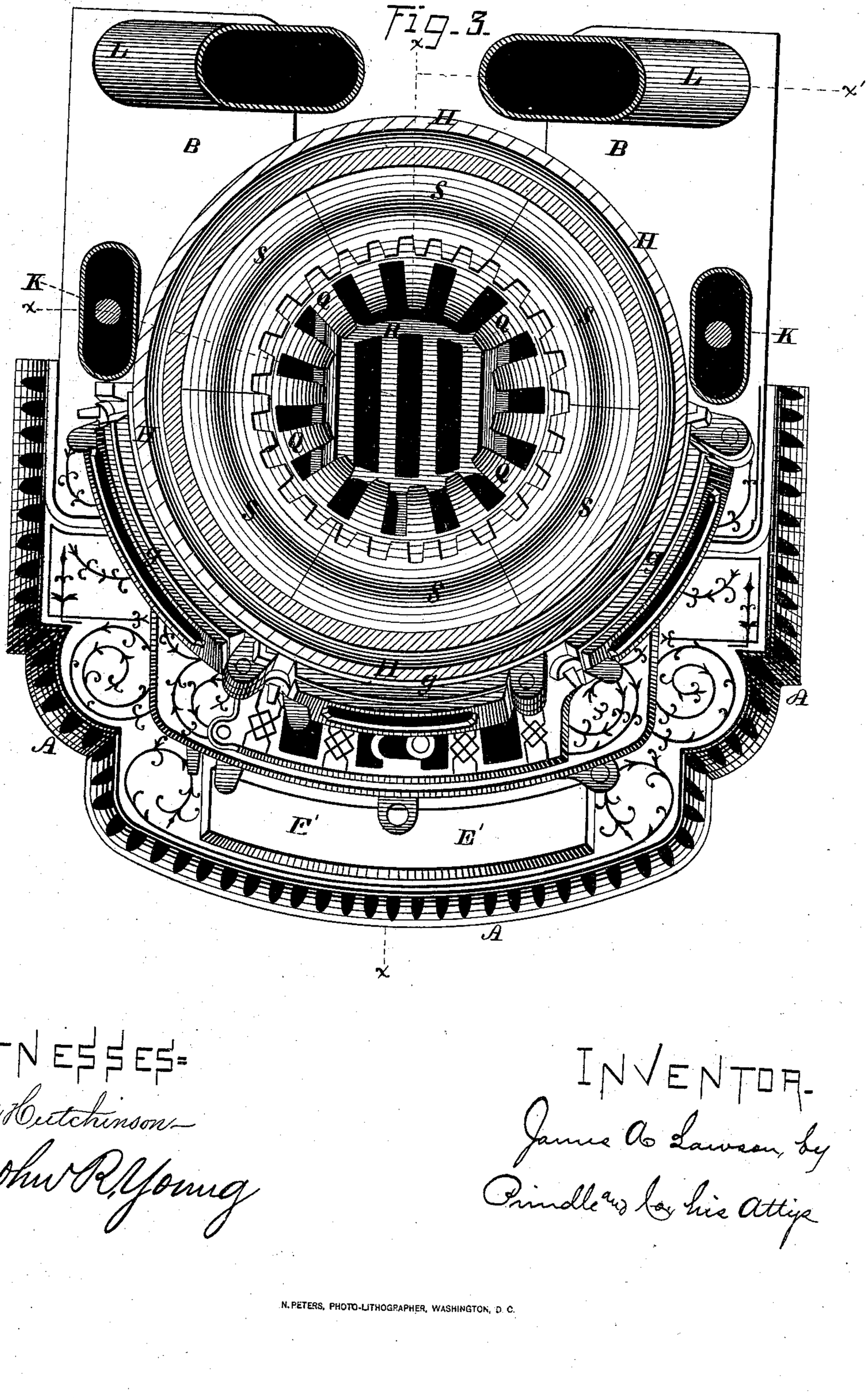
Fig. 3.



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FIRE-PLACE HEATER.

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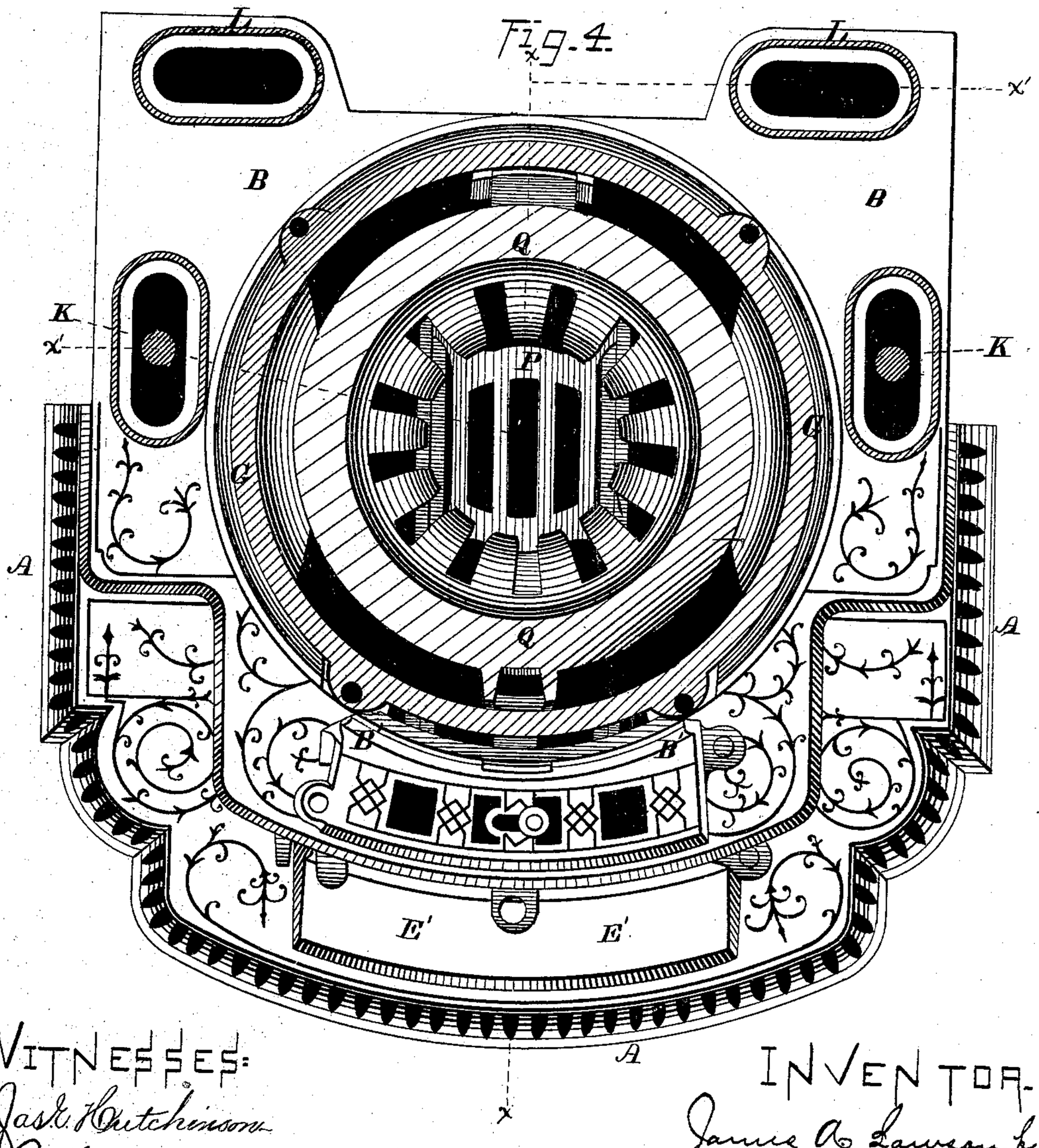
Fig. 4.



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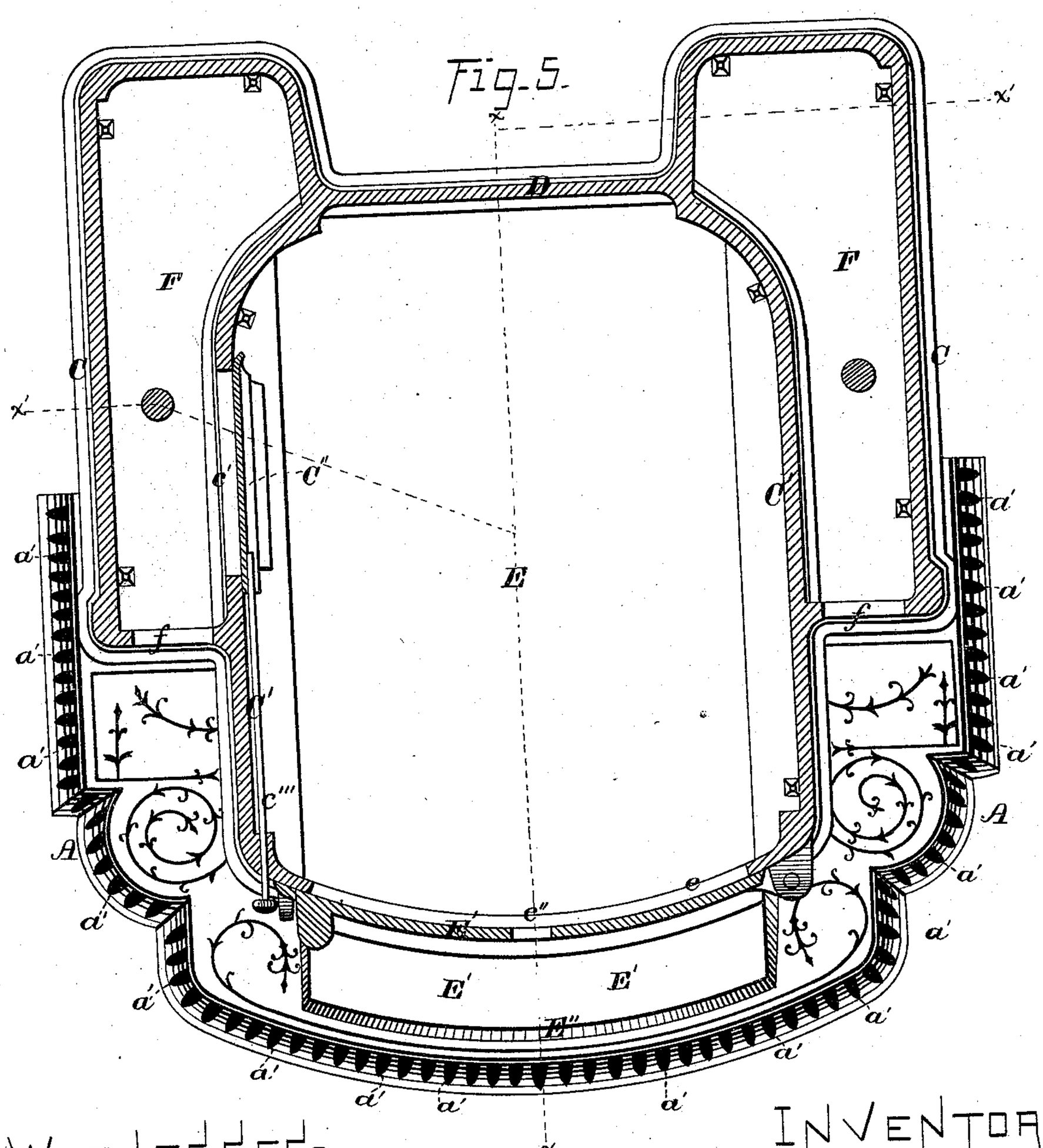
FIRE-PLACE HEATER.

Patented May 2, 1876.

No. 176,970.

Fig. 5.



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FIRE-PLACE HEATER.

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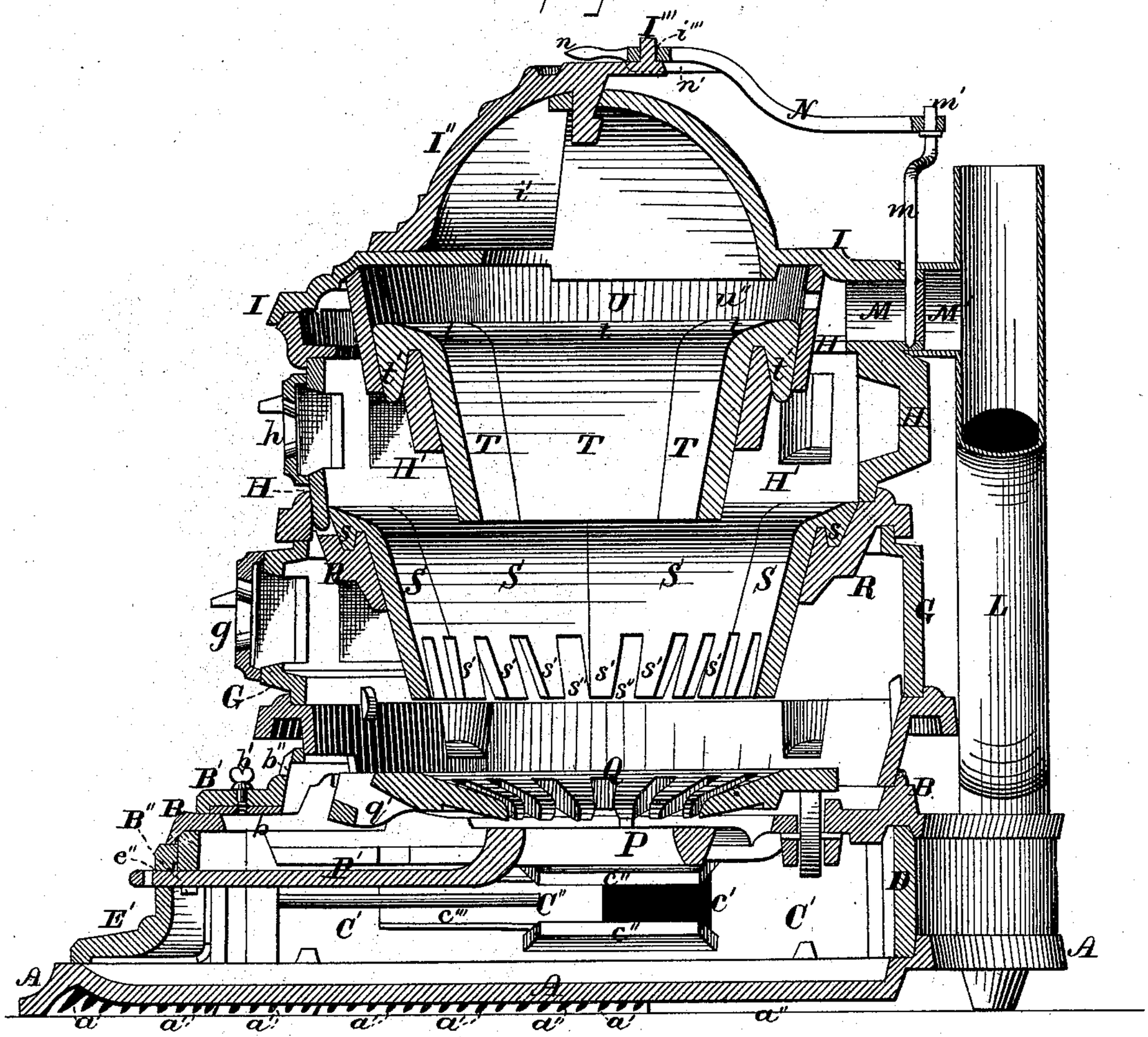
Fig. 6.



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8 Sheets—Sheet 7.

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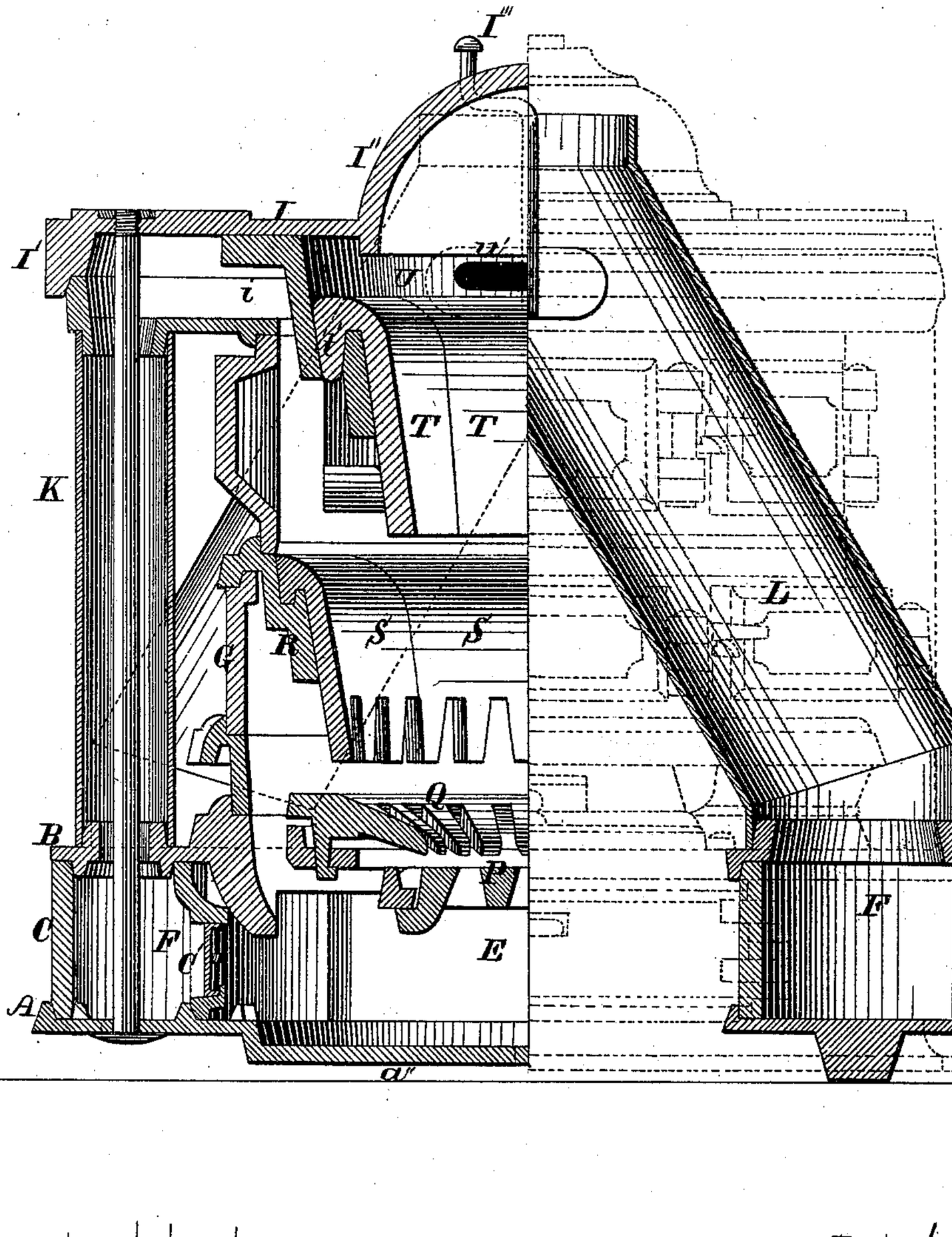
FIRE-PLACE HEATER.

No. 176,970. Patented May 2, 1876.

Fig-7-



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FIRE-PLACE HEATER.

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Fig. 8.

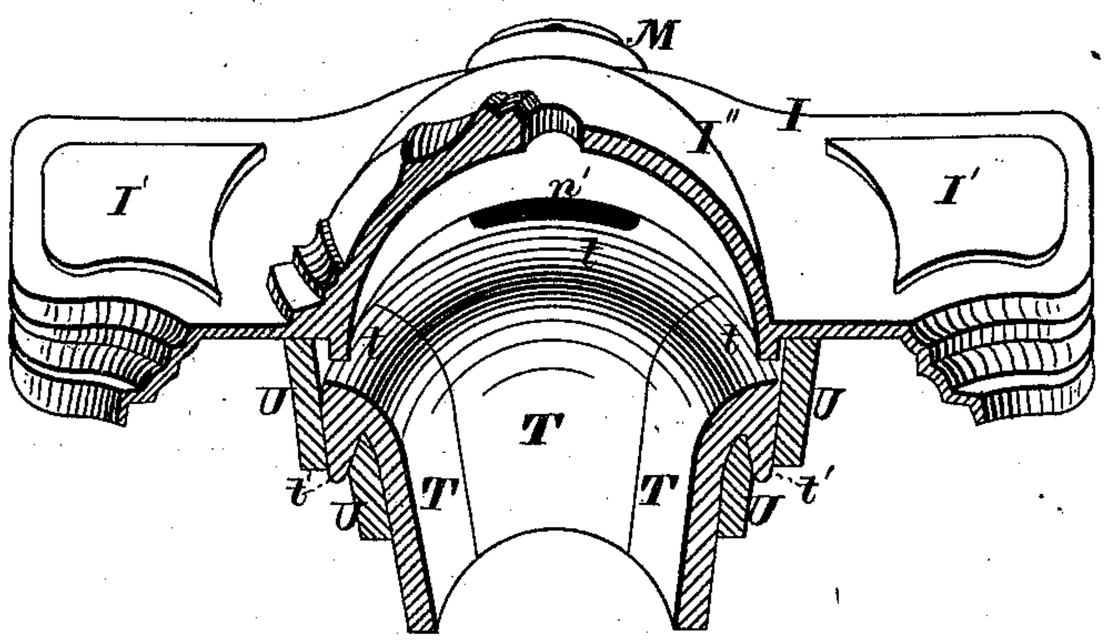


Fig. 9.

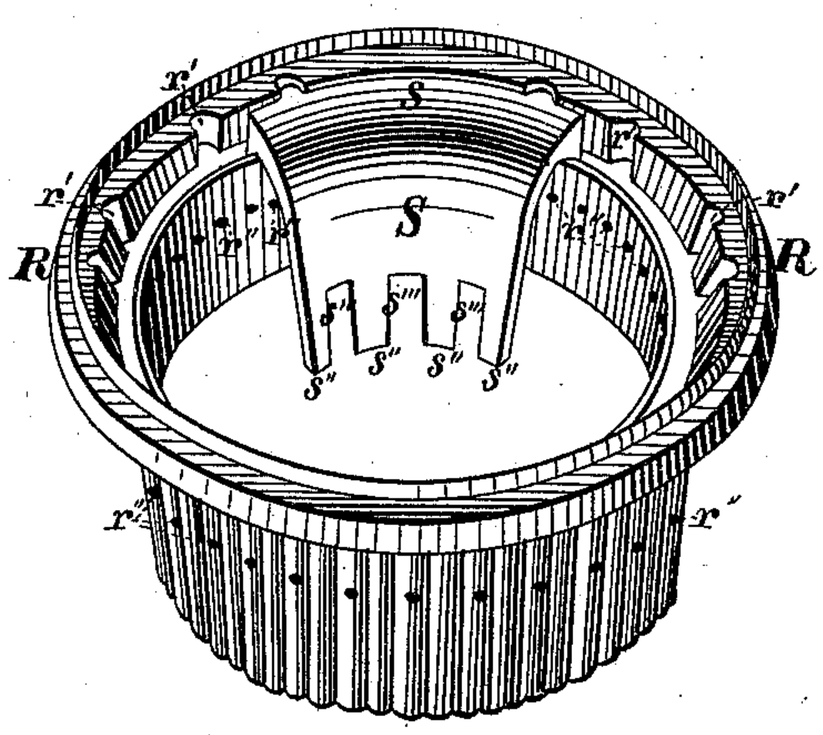
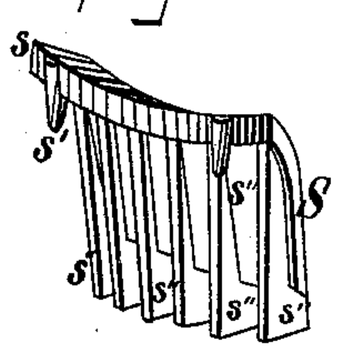


Fig. 10.



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INVENTOR.

Jas. A. Lawson, by

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UNITED STATES PATENT OFFICE.

JAMES A. LAWSON, OF TROY, NEW YORK.

IMPROVEMENT IN FIRE-PLACE HEATERS.

Specification forming part of Letters Patent No. **176,970**, dated May 2, 1876; application filed January 3, 1876.

To all whom it may concern:

Be it known that I, JAMES A. LAWSON, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Fire-Place Heaters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved heater. Figs. 2, 3, 4, and 5 are, respectively, horizontal sections of the same upon lines passing through the center of the cross-pipe, the upper end of the fire-pot, immediately above the grate, and midway between the latter and the base-plate. Fig. 6 is a vertical section upon line *x x* of Figs. 2, 3, 4, and 5. Fig. 7 is a like view upon lines *x' x'* of said figures. Fig. 8 is a perspective view of the upper portion of the heater-casing, and shows the construction of the sectional magazine. Fig. 9 is a like view of the supporting-ring of the sectional fire-pot; and Fig. 10 is a perspective view of the outer side of one of the fire-pot sections.

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

The design of my invention is to increase the efficiency and economy of fire-place heaters; and it consists principally in the peculiar construction of the supporting-frame of the sectional fire-pot, substantially as and for the purpose hereinafter specified.

It consists, further, in the construction of the sectional fire-pot, and its combination with the supporting-ring, substantially as and for the purpose hereinafter shown.

It consists, further, in the means employed for causing a circulation of air between the sectional fire-pot and its inclosing supporting-ring, substantially as is hereinafter set forth.

It consists, further, in a supporting ring or frame for a fire-pot, which ring, at its upper side and outer edge, forms part of the external frame or casing of the heater, and from thence extends downward and inward so as to form an air-space between its lower portion and said casing, substantially as and for the purpose hereinafter shown and described.

It consists, further, in the construction of the magazine, and its combination with the heater, substantially as and for the purpose hereinafter set forth.

It consists, further, in combining the cover of the magazine with the damper of a cross-pipe or direct-draft flue, so as to cause said damper to be automatically opened and closed by the opening or closing of said cover, substantially as and for the purpose hereinafter specified.

It consists, finally, in the construction of the rod for connecting the direct-draft damper and rotating cover of the magazine, whereby said rod may be disconnected from said cover, so as to permit said damper to be operated independently, and is afterward caused to automatically engage with said cover by the motion of either of said parts, substantially as and for the purpose hereinafter shown and described.

In the annexed drawings, A represents the bottom or base plate, B the top plate, C and C the side plates, and D the rear plate, of the base-section of my heater, which section contains an ash-pit, E, and two side bottom flues, F and F, as seen in Fig. 5. At a point somewhat in advance of the center of the heater the side flues F and F end, and are inclosed at their front ends by means of doors *f* and *f*, while the ash-pit E is continued forward, as shown, and its open front side *e* provided with a door, E', that swings horizontally outward and to one side. An opening, *b*, within the extended portion of the top plate B, is inclosed by an edgewise-swinging door, B', within which is a draft-damper *b'*. Immediately above the base-section is placed a fire-pot section, which, as seen in Figs. 1, 6, and 7, consists exteriorly of an outward-swelling casing, G, that at its front and sides is provided with mica doors *g*, *g*, and *g*, through which a view of the interior may be had. Above the fire-pot section described is a combustion-chamber section, H, which is somewhat smaller in horizontal dimensions, has vertical walls, and is provided with mica doors *h* and *h* that correspond in number and vertical positions to the doors *g* and *g*. The combustion-chamber section is surmounted by a top section, I, which has the form, in plan view, shown in Fig. 1, its front and rear sides

being conformed to the circular shape of said section, while laterally it extends outward to a point upon a line with the corresponding portions of the base, and within each of such extended portions I′ is formed a horizontal flue, *i*, that communicates at its lower side with a side pipe, K, which latter extends vertically to the bottom flue F, and furnishes communication between the same and said flue *i*. The upper central portion of the top section I is dome-shaped, and at the front side of said part is provided an opening, *i′*, which is inclosed, when desired, by a cover, I″, that is pivoted at its upper end to the axial center of said section, and is capable of being partially rotated around its pivotal bearing so as to inclose or uncover said opening. When closed, the cover I″ forms part of the finish of the top plate.

The side bottom flues F and F extend rearward beyond the central portion of the base-section, and from the upper side of each of such extended portions a back pipe, L, extends upward and laterally inward, and near the top of the heater unites with the pipe L from the opposite side. From the point of union of the back pipes L and L a cross-pipe, M, extends forward to the combustion-chamber H′, and furnishes communication between the same and said back pipes. A butterfly-damper, M′, is pivoted upon a vertical rod, *m*, within said pipe M, and enables the latter to be opened or closed.

In order that the cross-pipe M may be automatically opened whenever the cover I″ is opened, so as to furnish a direct communication between the upper portion of the combustion-chamber H, and the exit-flue, a crank-arm, *m′*, is formed upon the upper end of the pivotal rod *m* of the damper M′, and a crank-arm, I‴, is attached to the upper end at the pivotal center of said cover, and between said crank-arms extends a rod, N, which is pivoted to or upon each, as seen in Figs. 1 and 6.

If, now, the cover is turned so as to open or close the combustion-chamber, the damper will be correspondingly changed, it being impracticable to move the former without the latter. This arrangement causes gas contained within the combustion-chamber to be drawn into the exit-flue whenever the upper portion of said chamber is uncovered, while without such automatic opening of the cross-pipe gas would either ignite and explode or would escape into the room whenever it becomes necessary to open said magazine.

In order that the damper M may be opened independent of the cover I″, its forward end is extended so as to form a handle, *n*, and upon each side of said rod is provided a flange, *n′*, that extends vertically downward upon each side of the pintle *i‴* of the crank-arm I‴. If, now, said rod N be raised above said pintle, it may be moved longitudinally while resting upon the upper end of the latter, the flanges *n′* and *n′* operating to prevent lateral displacement. When the rod N is pushed rearward sufficiently to close the damper M said rod will automatically drop over and engage with the pintle *i‴*, but if not moved sufficiently far to the rear to insure such engagement the result will be secured whenever the cover I″ is moved so as to bring said pintle beneath its opening in said rod.

Resting upon the upper edge of the casing G, which forms the fire-pot section, is a ring, R, which at its outer edge forms part of the finish of the heater, and from thence extends inward and downward in the form shown by Fig. 9. Around the interior of the ring R, just below its upper end, is formed an annular channel, *r*, from which extend downward a number of vertical openings, *r′* and *r′*, as shown. Below the channel *r* the interior face of the ring R is plane and substantially vertical, and within such portion are provided a number of radial openings, *r″* and *r″*, which extend around the entire ring, and are equidistant from each other. Within the ring R is placed a fire-pot, that is composed of a number of sections, S and S, each of which sections has a plane inner face that inclines downward and slightly inward, and at its upper end inclines outward and upward at an angle of about forty-five degrees, as seen in Fig. 9.

The upper edge of the section S projects outward and downward, and fits into the channel *r*, and at suitable points upon said projecting portion *s* are provided two studs, *s′* and *s′*, which extend downward into the openings *r′* and *r′*, said pins operating to maintain the position circumferentially of said section S, while said ledge *s* sustains the weight of the latter.

At the lower end of each fire-pot section S is provided a number of vertical bars, *s″* and *s″*, which are flush upon their inner faces with the inner face of said section, while their outer faces extend radially beyond the corresponding portion of the latter, and, being continued upward to the ledge *s*, form ribs above the lower edge of said section.

The bars *s″* and *s″* rest against the inner face of the lower portion of the ring R, while the grooves *s‴* and *s‴*, between the same and the outer face of the section S, form air-passages, which at their lower ends communicate with the space below the fire-pot, and at their upper ends through the openings *r″* and *r″* communicate with the space between said ring R and the casing, the result of such construction being to cause a constant circulation of air between said fire-pot and ring, and prevent the former from becoming unduly heated.

The fire-pot sections are held in position solely by their weight, and each may be removed by raising it upward until its pins *s′* and *s′* are disengaged from the openings *r′* and *r′*, and as said section has such dimensions as to permit it to be passed through either of the doors *h* and *h*, it will be seen that said fire-pot can be easily removed from, or placed

in position without disturbing other portions of the heater.

The magazine has the shape shown in Fig. 8, and is composed of a number of sections, T and T, each of which, like the fire-pot sections S and S, is provided at its upper end with an outward and a downward projecting ledge, *t*, and two vertical pins, *t'* and *t'*, while a ring, U, similar in general shape to the ring R, is secured to the lower face of the top plate I, and sustains said sections T and T, as seen in said figure.

This construction enables the magazine to be removed and replaced, through the opening *i'* of the top plate, with ease, and without derangement of other parts of the heater.

In order that gas may be prevented from accumulating within the magazine, an opening, *w''*, is provided between its upper end, at the rear, and the combustion-chamber, through which opening said gas passes and is carried into the cross or side pipes.

Within the plate C', which separates the ash-pit E from the left-hand-side flue F, is provided an opening, *c'*, that is inclosed by means of a damper, C'', which slides upon said face of the plate within guides *c''* and *c''*, and may be withdrawn from or replaced over said opening by a rod, *c'''*, that passes outward at some suitable point at the front side of the base.

The object of the dampered opening described is to afford direct communication between the ash-pit and flues during the time when the grates are being shaken, so as to prevent dust and ashes from passing outward into the room.

In heaters, as ordinarily constructed, the heat of the bottom plate is wasted because of the inability of air to come into contact with the lower side of said plate. To remedy this difficulty I raise the plate A inside of its molded edge *a*, and within said edge provide a number of openings, *a'* and *a'*, through which air may freely pass into the space *a''* beneath said plate, from which space said air, having become heated by contact with said plate, unites with and passes upward with air which is otherwise admitted at the rear side of the heater.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The supporting-ring R, provided with the annular chamber *r* and vertical openings *r'* and *r'*, in combination with the fire-pot sections S and S, having each a projecting ledge, *s*, and two vertical studs, *s'* and *s'*, substantially as and for the purpose specified.

2. In combination with the supporting-ring R, provided with the radial openings *r''* and *r''*, the fire-pot sections S and S, provided within their outer faces with parallel grooves *s'''* and *s'''*, which are formed by means of the bars or ribs *s''* and *s''*, substantially as and for the purpose shown.

3. In a fire-place heater, a supporting-ring for a sectional fire-pot, which ring at its upper side and outer edge forms part of the external frame or casing of the heater, and from thence extends downward and inward to form an air-space between its lower portion and said casing, substantially as and for the purpose set forth.

4. In combination with the supporting-ring U, attached to and depending from the top plate I, the magazine composed of the sections T and T, each of which is provided at its upper end with an outward and downward projecting ledge, *t*, and with two vertical pins, *t'* and *t'*, substantially as and for the purpose shown.

5. The cover I'', pivoted upon and revolving horizontally around the axial center of the heater, and provided with the crank-arm I''', and the butterfly-damper M', arranged within the cross-pipe M, and having the crank-arm *m'* combined with each other, so as to be simultaneously moved by means of the rod N, which is pivoted upon and extends between said crank-arms, substantially as and for the purpose shown and described.

6. The rod N, pivoted upon and extending between the damper-rod crank *m'*, and the magazine-cover crank I''', capable of being disconnected vertically from the latter, and provided with dependent side flanges *n'* and *n'*, which operate to prevent the lateral displacement of said rod from said crank, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

JAMES A. LAWSON.

Witnesses:
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ROBT. S. WOOD.