

No. 619,162.

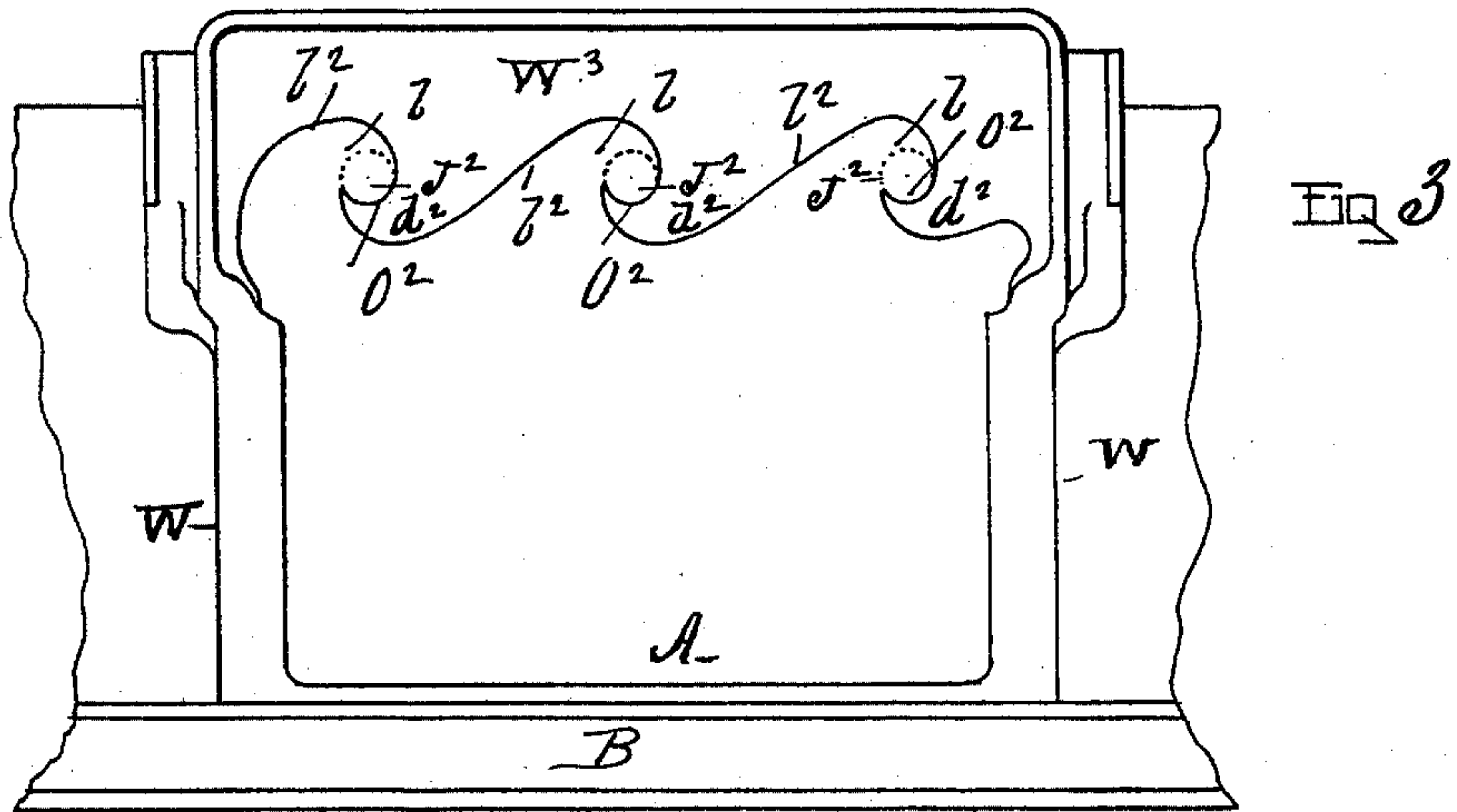
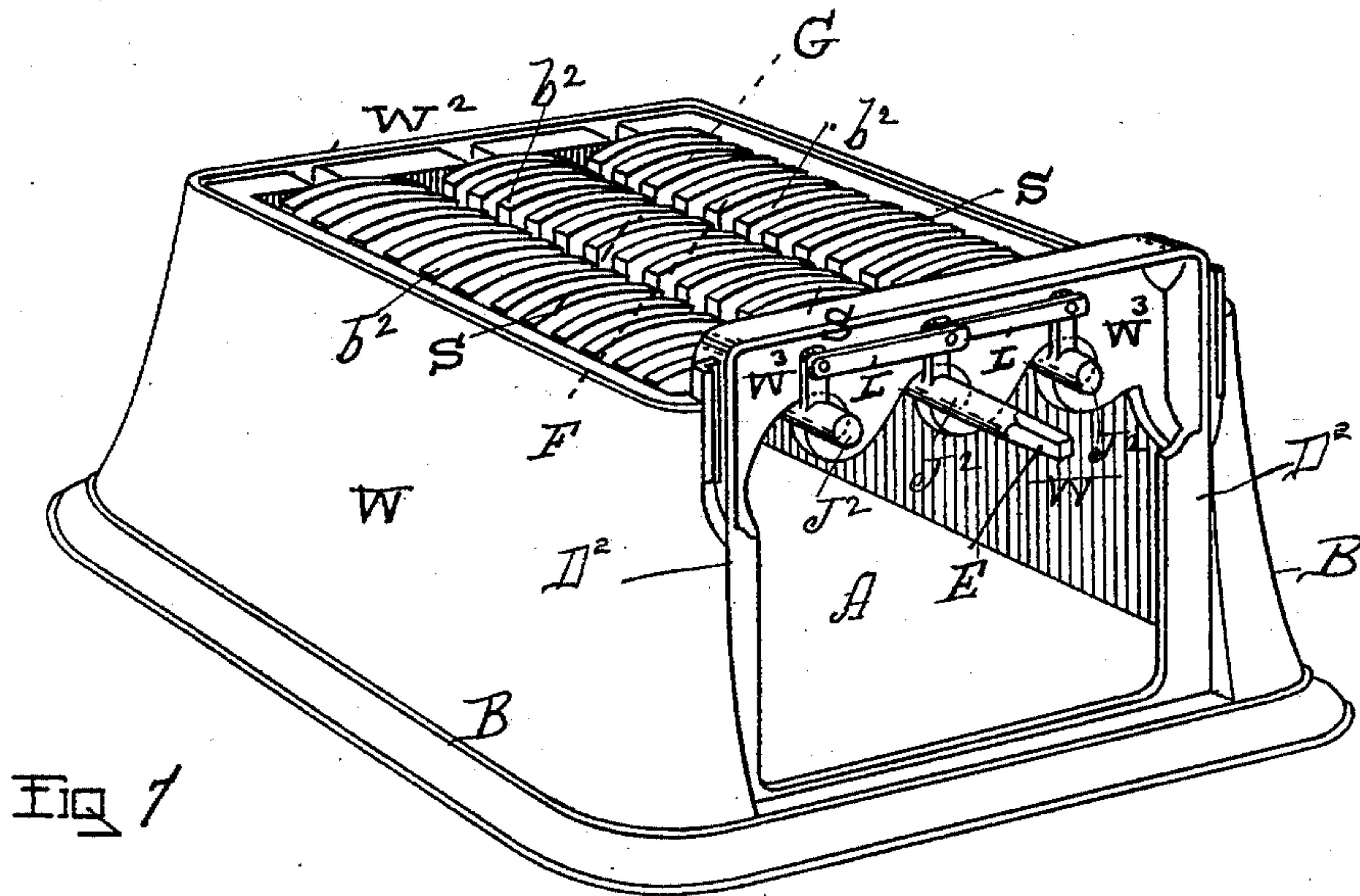
Patented Feb. 7, 1899.

R. GALBRAITH.
GRATE MOUNTING FOR FURNACES.

(Application filed Nov. 12, 1897.)

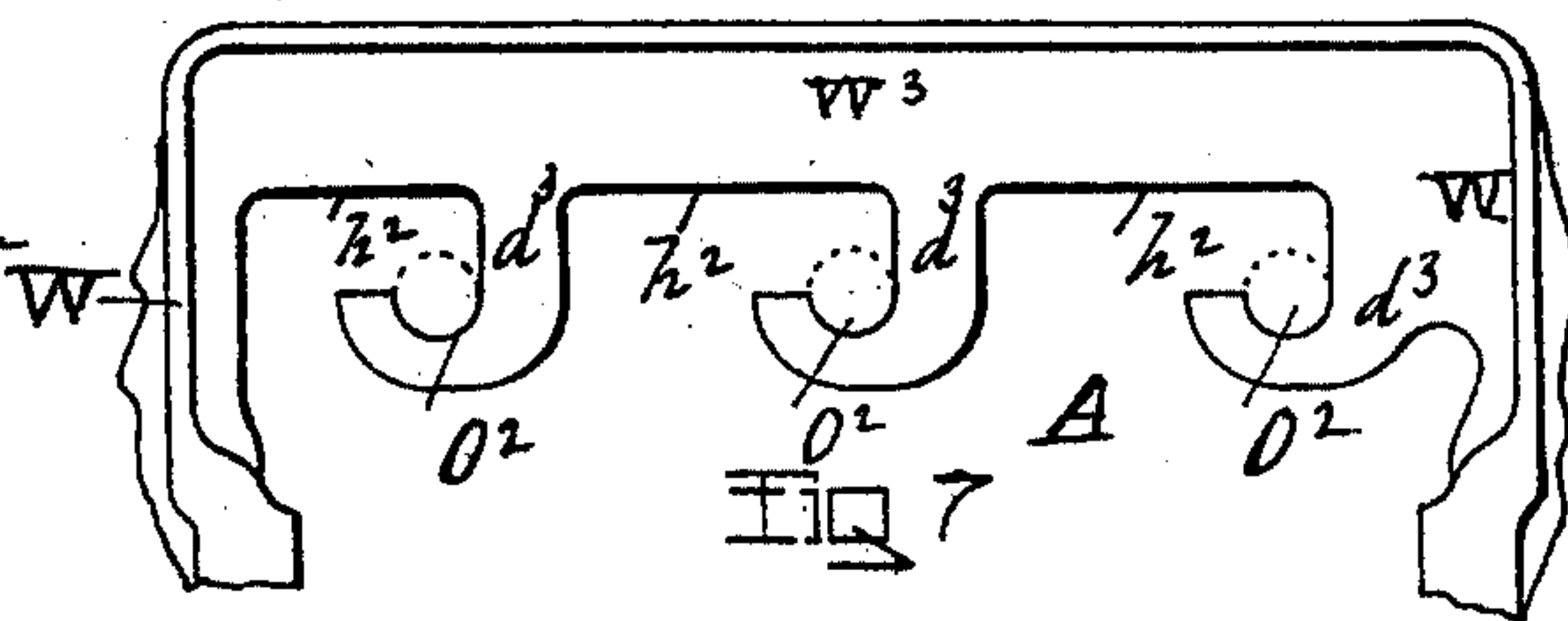
(No Model.)

2 Sheets—Sheet 1.



WITNESSES

Geo. M. Puffer
Raphaela Parkinson



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Robert Galbraith
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2 Sheets—Sheet 2.

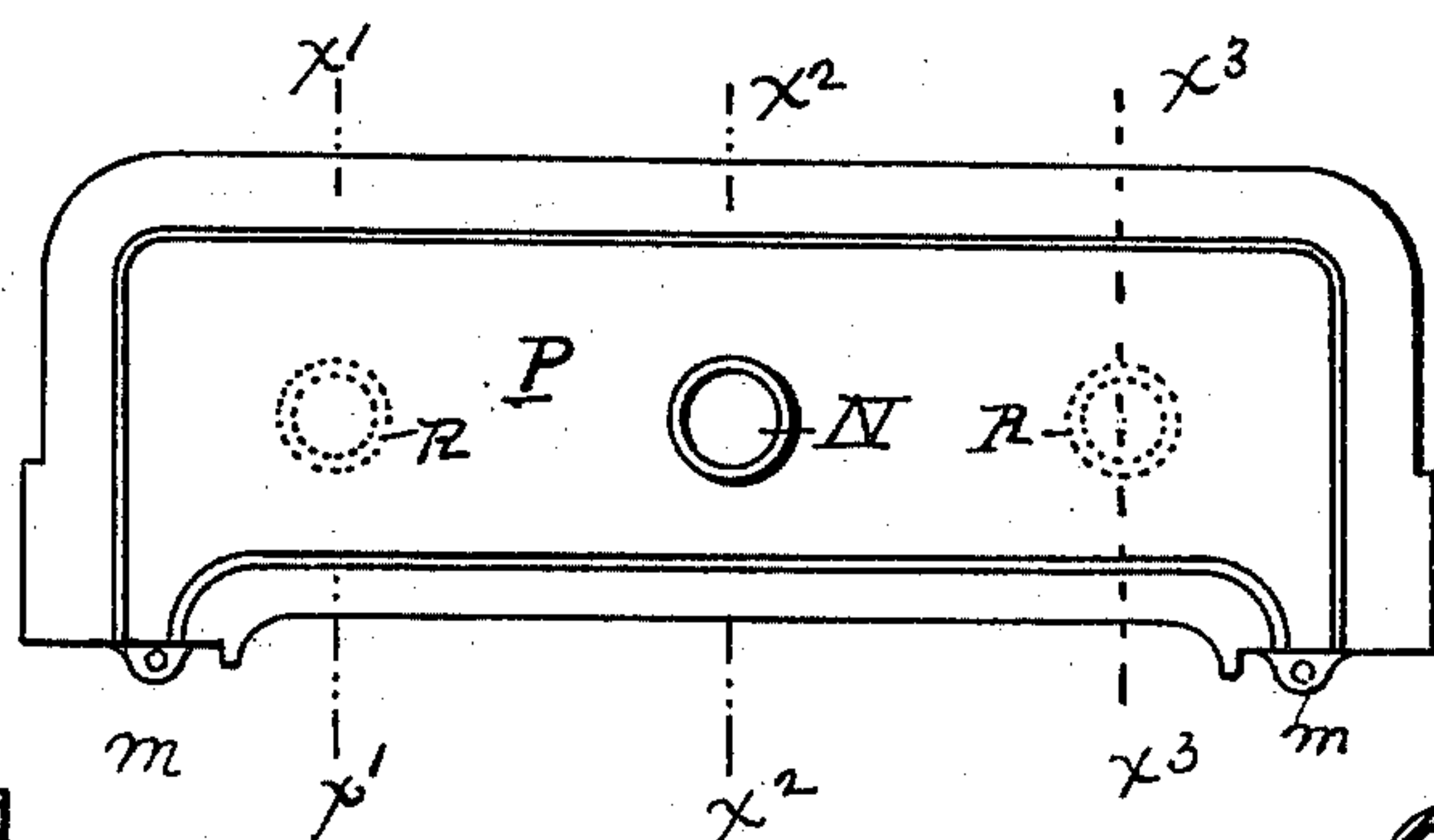


Fig 4

Fig 5

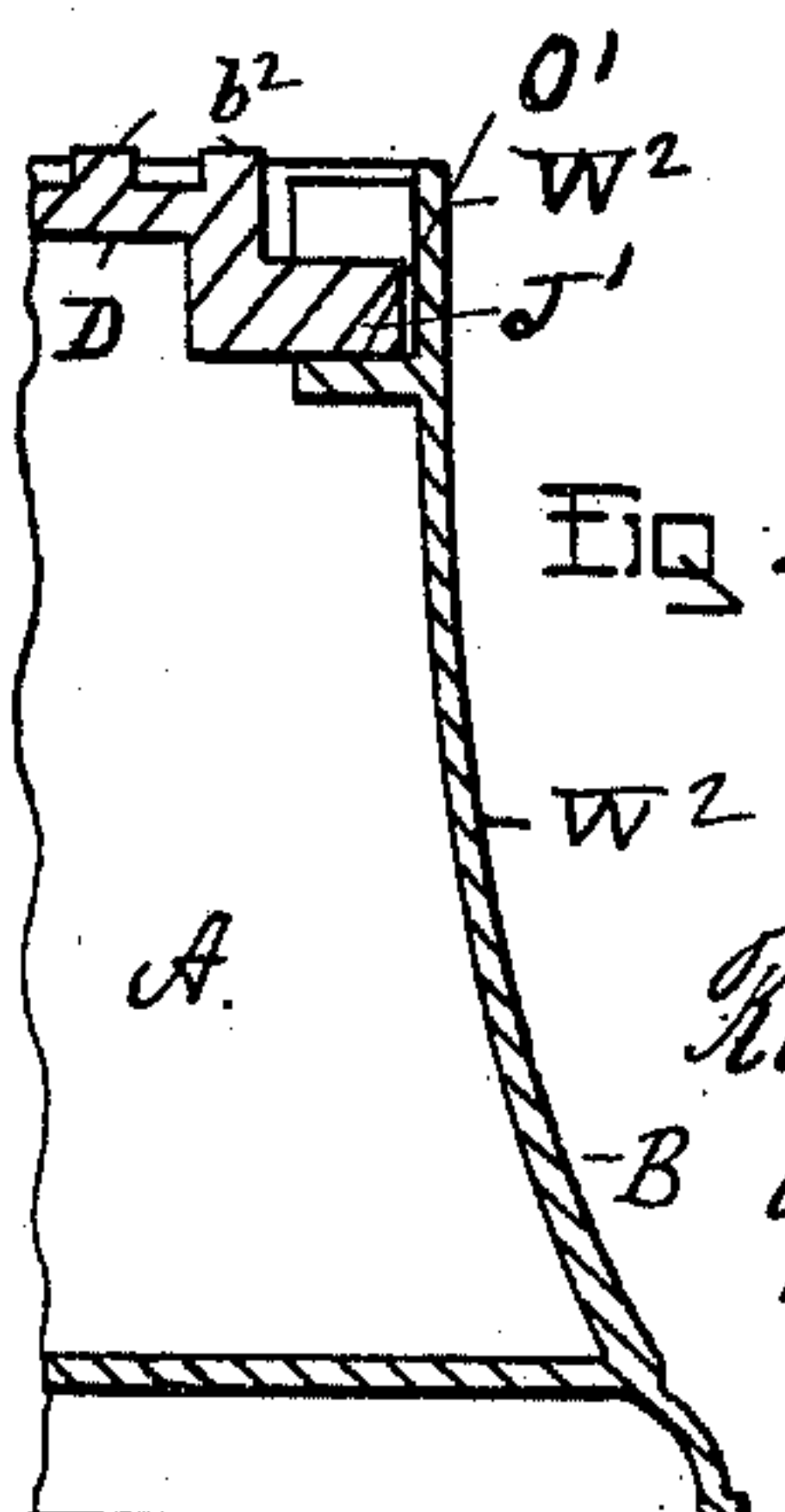
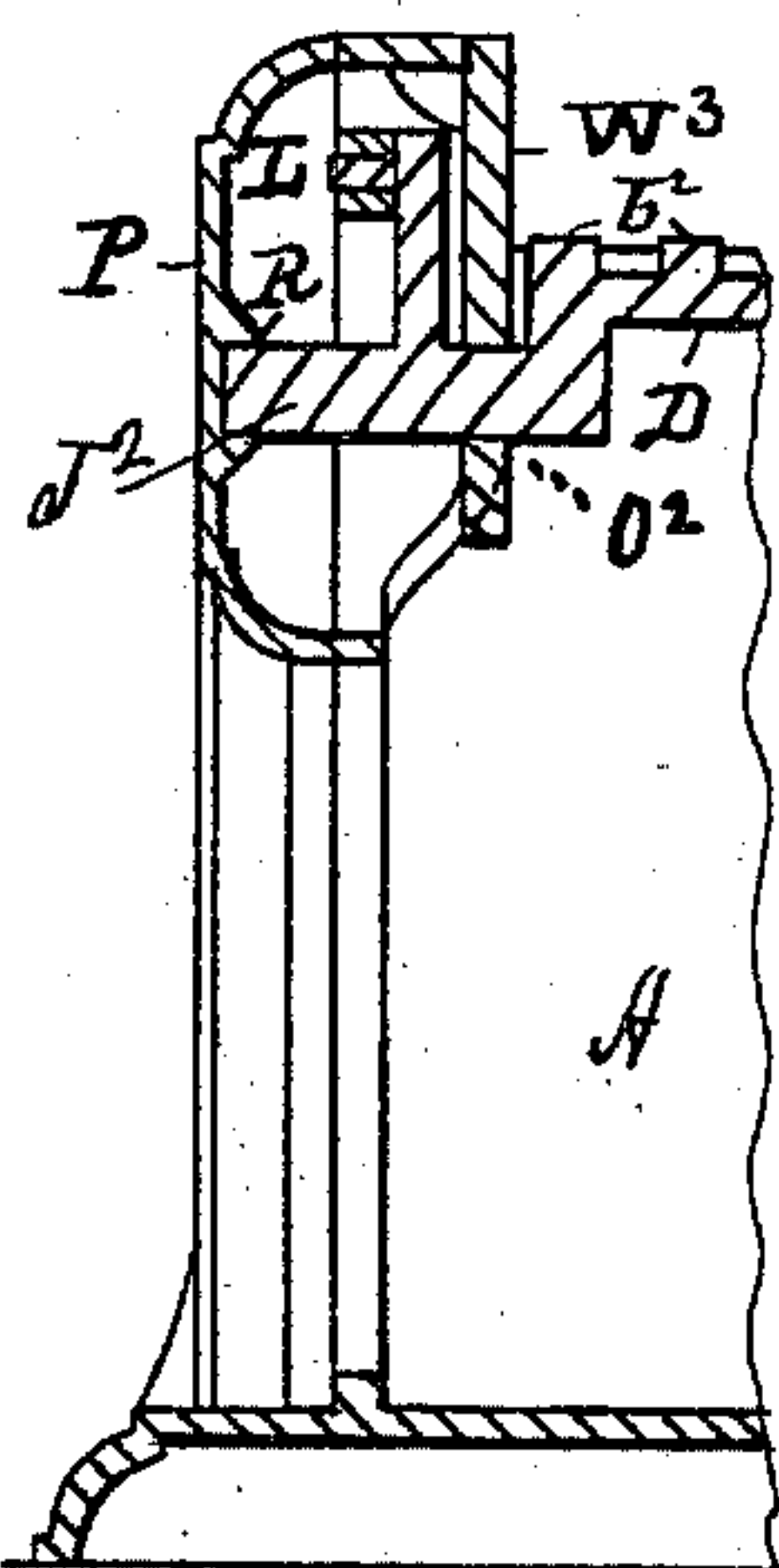
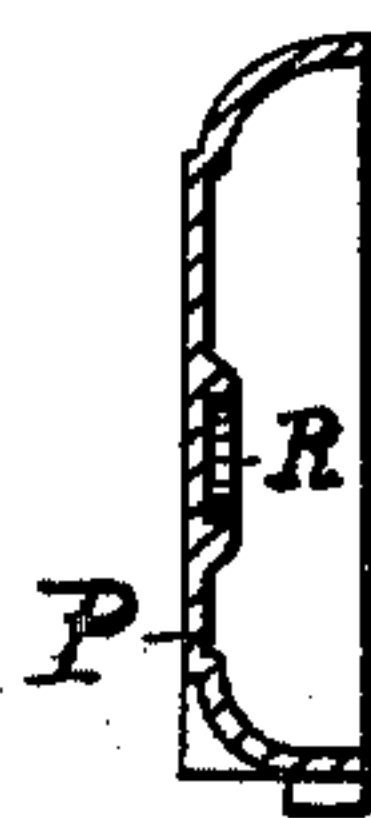


Fig 2



Fig 6

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UNITED STATES PATENT OFFICE.

ROBERT GALBRAITH, OF LANSINGBURG, NEW YORK.

GRATE-MOUNTING FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 619,162, dated February 7, 1899.

Application filed November 12, 1897. Serial No. 658,224. (No model.)

To all whom it may concern:

Be it known that I, ROBERT GALBRAITH, of the village of Lansingburg, county of Rensselaer, and State of New York, have invented new and useful Improvements in Grate-Mountings for Furnaces, of which the following is a specification.

My invention relates to that class of furnace and other grates which are constructed in sections, having a journal-bar at each end on which to be oscillated, with a series of such grate-sections arranged side by side to form a fire-bed and so connected by gears or links as to be oscillated together; and my invention relates to a construction whereby the grate-sections can be journaled in such a manner as to be easily inserted in their bearings and easily detached therefrom, with the construction by which this is accomplished forming a part of the ash-chamber wall.

Accompanying this specification to form a part of it there are two plates of drawings containing seven figures illustrating my invention, with the same designation of parts by letter reference used in all of them.

Of the illustrations, Figure 1 is a perspective of a water-heater or furnace-base, showing a fire-bed provided with grate-sections arranged to journal in and connect with the furnace-base according to my improved construction. Fig. 2 is a section taken lengthwise on the line $x^3 x^3$ of Fig. 4, but illustrated as broken apart centrally. Fig. 3 is an elevation of the furnace-base, taken at its front, showing the opening left for the ash-door, illustrating the manner of constructing the front end bearings of the grate-section journals, with the latter indicated by dotted lines. Fig. 4 is an elevation of a plate which when in position forms a part of the front door-frame of the ash-chamber. Fig. 5 is a section of plate P, taken on the line $x' x'$ of Fig. 4. Fig. 6 is a section of the same, taken on the line $x^2 x^2$ of Fig. 4. Fig. 7 is an elevation of the front end of a furnace-base, showing a modification of my improved method of mounting the grate-sections of a furnace fire-bed.

The several parts of the apparatus thus illustrated are designated by letter reference, and the function of the parts is described as follows:

The letters B designate the furnace-base, having the side walls W, the rear wall W^2 , and with part of the front wall of the base where above the ash-chamber door-opening designated at W^3 , said walls inclosing the ash-chamber A.

The letters S designate the grate-sections, each of which is provided with grate-bars b^2 , mounted upon the top of and at right angles to the bars D, which latter at each of their ends is provided with a journal downwardly offset therefrom and arranged laterally where thus offset to be horizontally parallel to the body part of the bar D, with the series of the grate-sections so illustrated constituting the fire-bed F and grate G. The journals formed on the rear ends of the bars D are designated at J' , and the journals formed on the front ends of the bars D being shown at J^2 , and as illustrated at Figs. 1, 2, 3, and 7.

The letters O' designate the bearings formed in the base-wall W^2 for the rear end of each of the grate-sections S to journal in, and the letters O^2 designate the bearings formed in the under edge of the front wall W^3 where cut away for the ash-chamber door. These bearings O^2 are produced in the lower edge of the front wall of the base, as designated at d^2 , each of which is laterally extended in a curved direction, with convolute return in a hook form with the latter, having in its upper surface one of the bearings O^2 so arranged as to leave a space l above the bearing, between the latter and the curved part l^2 , for the insertion of the journal J^2 of one of the grate-sections therein.

In the modification shown at Fig. 7 the depending parts d^3 in which the bearings for the journals J^2 are located have a J form and a straight part h^2 instead of the curved part l^2 shown in the other figures.

The bearings O' consist of recesses formed in the rear wall of the base, into which the journal ends J' of the grate-sections are first inserted when they are being applied to the base or ash-pit, with the rear end of each of the journals abutting against the interiorly-located end face of that one of the bearings O' in which it is entered, which, being done, the front end of the sections are each swung upwardly, so as to have its journal end J^2 en-

ter one of the bearings O^2 , depending from the under side edge of the base front wall W^3 , where the latter is omitted to make an opening for the ash-chamber door-frame. To keep these grate-sections so journaled in position within the bearings, the following means are employed.

The letter P designates a plate, which is recessed at R in its inner face when in position in the base, and this plate is provided with a centrally-arranged opening N for the passage through it of that one of the bars D to which a shaker is applied for oscillating the grate-sections, and for which purpose it is made longer than the other bars D of the series of the fire-bed, and at its outer end E, projecting beyond its journal, it is fitted for the attachment of the shaker. When this plate P is applied to the base, the ends of the journals J^2 of the grate-sections other than the central one are each entered within one of the recesses R in the inner face of the plate P, with the interiorly-placed vertical wall of each of the recesses R bearing against the front end of one of the journals J^2 , with the central bar to which the shaker is attachable passed through the opening N, and the plate P is connected to the base front, as shown at Fig. 2.

The letters L designate links connecting the side grate-sections with the centrally-located section, so that when the latter is oscillated the link connections which it makes with the other grate-sections will oscillate the latter also.

The wall part W^3 is arranged back of the projecting ash-pit door-jambs $D^2 D^2$, so that there will be a space between said end wall part and the plate P (when the latter is in place) for the levers L. This plate P is attached to the base by means of screws passing through the ears $m m$ of Fig. 4.

By my improved method of mounting the grate-sections as herein set forth they are securely retained in place within the journal-bearings and they are easily put in place and as easily removed. While I prefer to form the journal-bearings as shown at Figs. 1 and 3, if desired they can be produced as shown at Fig. 7 and perform the same function, and by making the bearings at the rear of the sections they can be cast integrally with the base, and by forming the bearings for the front end of the grate-section journals in that part of the base-front over the ash-chamber door-openings these bearings can be cast integrally with the base thereat, and thus all the parts can be adapted to connect without fitting or shaping, thus reducing the cost of construction as well as simplifying it.

I am aware the hook-form bearings have been applied to a grate-frame, into which bearings thus constructed rockers were journaled and operated to actuate grate-sections. I am also aware that grate-journals have

been formed in the top of a horizontal grate-bed.

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

1. A mounting for furnace-grates in combination consisting of a bearing for the rear end of the grate-section journals formed in the rear wall of the ash-pit against the rear vertical face of which bearing the ends of the entered journals will abut; a bearing for the front end journal of each of the grate-sections formed in the upper surface of a hook-form bar depending from the lower edge of the front wall of the ash-pit above the front-door opening of the latter; and a plate having a passage-way for the journal of centrally-located grate-section, and a recess to receive and bear upon the outer end of each of the grate-section journals located at the opposite sides of the central one, with said plate constructed to be detachably connected to said base, substantially as and for the purposes set forth.

2. The combination with three grate-sections arranged side by side within a furnace-base, and each provided with a journal at its rear end having a bearing formed in the rear wall of the furnace-base, and a journal at the front end of each of said grate-sections having a bearing pendent from the bottom edge of the front wall of the base over the ash-chamber door-frame opening, with the center grate-section having a shaker end projected beyond its front end journal; and a front plate recessed on its inner face to receive the ends of the journals of each of the grate-sections at each side of the central section and having a passage-way for the shaker end of the middle grate-section; with said plate constructed to attach to the base-front substantially as and for the purposes set forth.

3. The combination with the grate-sections S, S, S, arranged side by side in the base B, and connected by links; said sections each having a journal J' , at its rear end, and a journal J^2 , at its front end, of the bearings O' , formed in the rear walls for the journals J' , and the bearings O^2 , for the journals J^2 , formed integrally with and depending from the bottom edge of the front wall of the base above the ash-door opening; the shaker end E, arranged on the front journal of the middle grate-section; and the plate P, having the recesses R, and passage-way N, all constructed and arranged to operate substantially in the manner as and for the purposes set forth.

Signed at the city of Troy, New York, this 30th day of September, 1897, in the presence of the two witnesses whose names are hereto written.

ROBERT GALBRAITH.

Witnesses:

CHARLES S. BRINTNALL,
W. E. HAGAN.