No. 804,609. PATENTED NOV. 14, 1905.

J. J. M. LANGE.

SECTIONAL BOILER.

APPLICATION FILED SEPT. 10, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

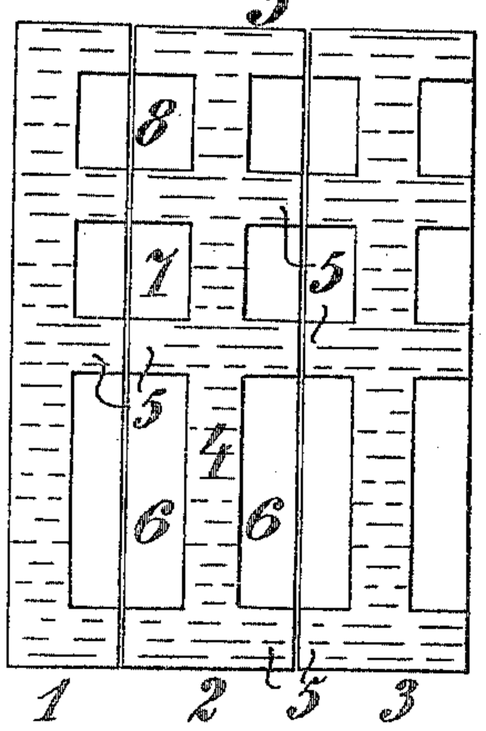
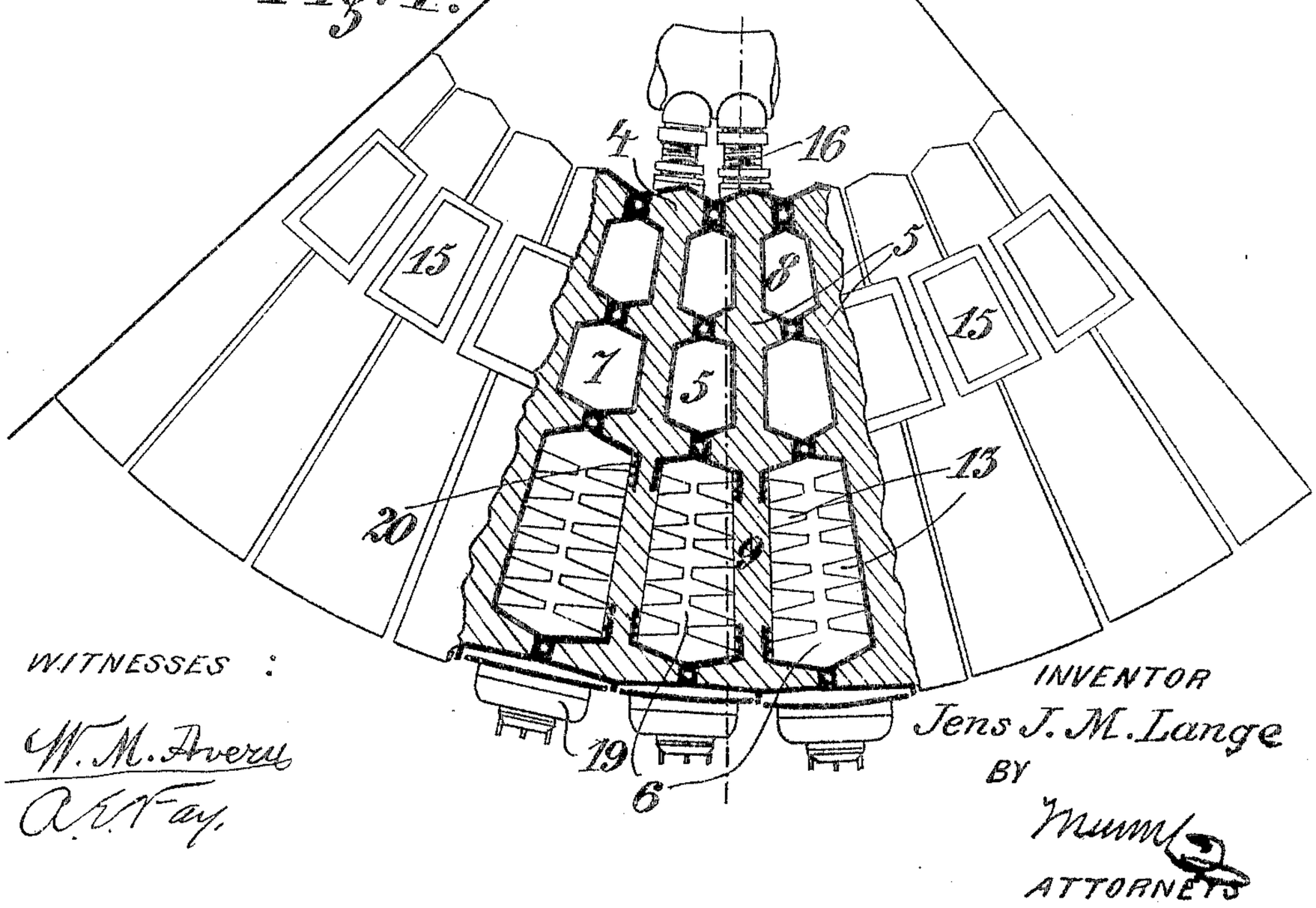


Fig. 4.



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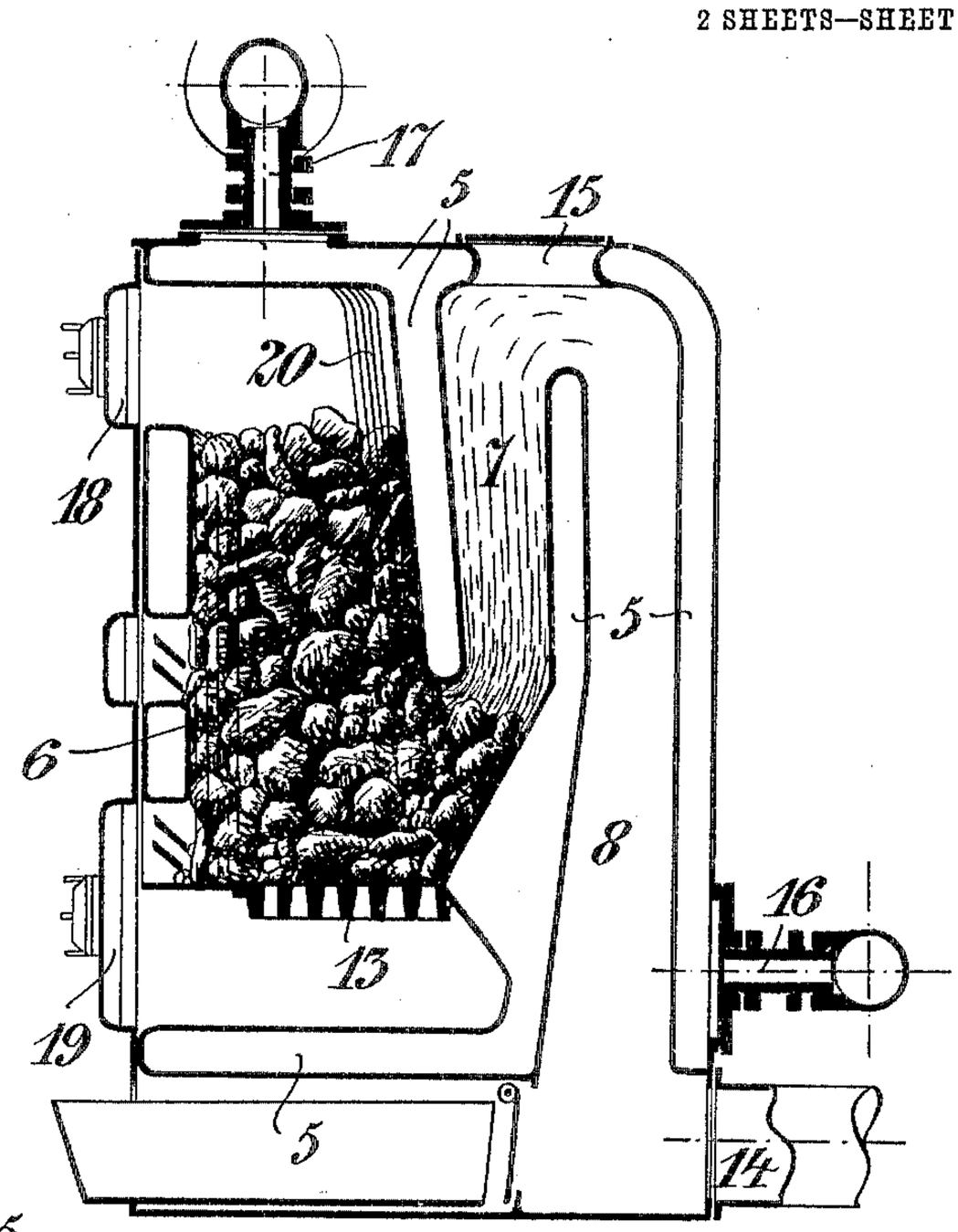
2 SHEETS—SHEET 2.

Fig. 2.



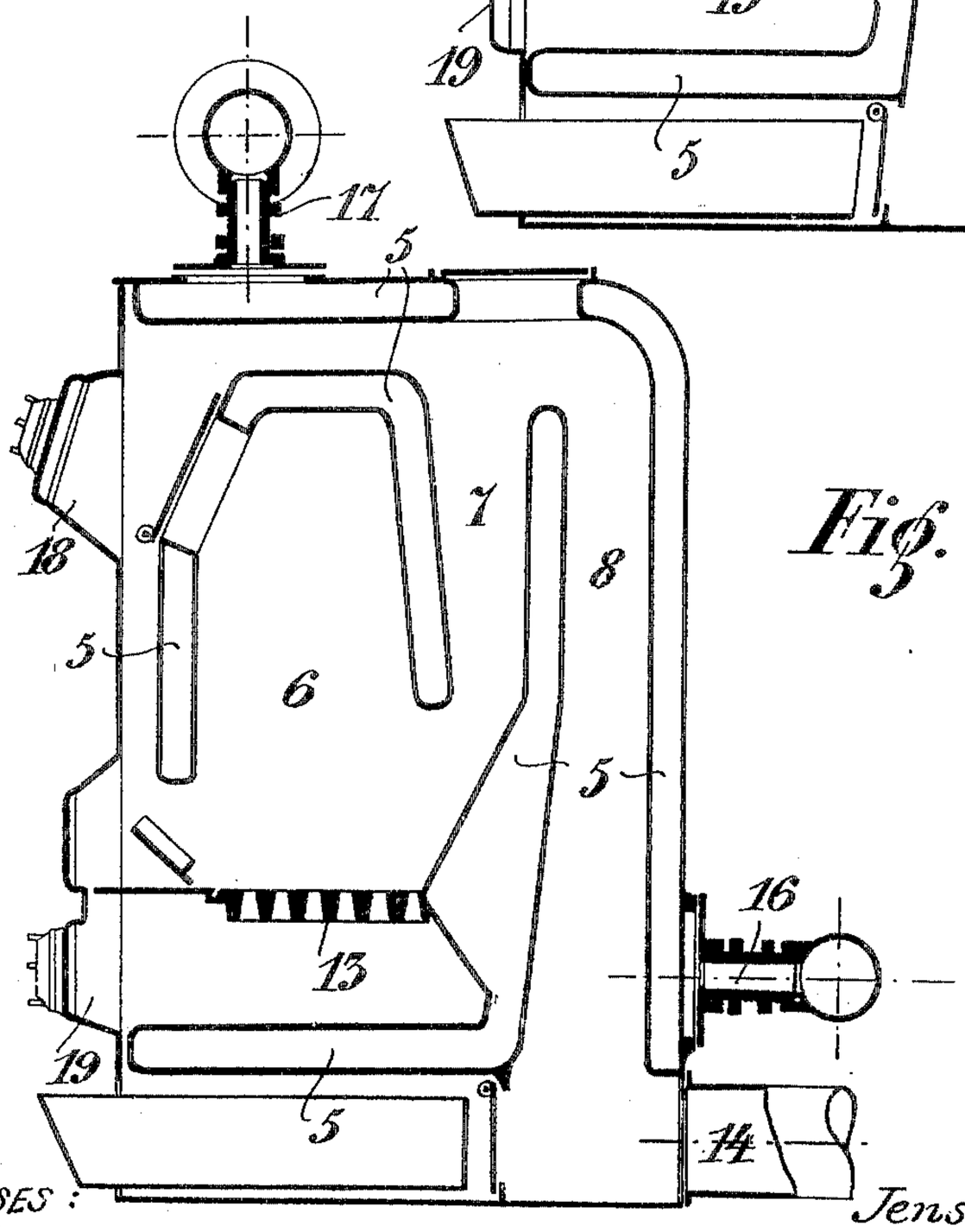


Fig. 3.

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SECTIONAL BOILER.

No. 804,609. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed September 10, 1904. Serial No. 223,989.

To all whom it may concern:

Be it known that I, JENS JOHAN MICHAEL LANGE, director, a citizen of the Kingdom of Denmark, and a resident of Svendborg, Island of Funen, in the Kingdom of Denmark, have invented certain new and useful Improvements in Sectional Boilers, of which the following is a specification.

This invention relates to an improved element, sectional, or joint boiler—that is to say, a boiler which can be set up directly from cast elements or sections all alike and which particularly serves for heating water or as a low-pressure boiler, for instance, in central heating arrangements and the like.

The elements consist in the usual manner of a hollow wall generally filled with water and provided with projections corresponding to those on the adjoining element. In the kind of boiler forming the subject of the present invention the said projections are arranged in such a manner as to form half of a furnace and half of the grate for this furnace, so that two adjoining elements will form a small furnace which is either totally or but partially independent from the other furnaces of the boiler. Outside each joint of the elements in front of the furnace and grate with appertaining flues is arranged the fire-door and other necessary openings.

Owing to the above-described construction, the boiler is very easy to tend, as it is divided up into a number of small furnaces or stoves which may easily be arranged as magazine-stoves. Another considerable advantage is that the boiler may be used partially—that is, a larger or smaller number of furnaces may be lighted, according to the momentary need, whereby the remaining cold elements are left out of action.

The invention is shown in the accompanying drawings, wherein—

Figure 1 is a diagrammatic view of a boiler made up of elements according to the principle of my invention. Figs. 2 and 3 show an element of the kind here in question in two modifications in side view. Fig. 4 shows a fan-shaped boiler intended to be placed in a corner, the same being shown partly in plan and partly in horizontal section.

In Fig. 1 is shown one end element 1 and two intermediate elements 2 3, all consisting of an unbroken hollow wall 4 with projections 5. Of the spaces formed between the elements the lowermost largest spaces 6 are the furnaces, which must be assumed to be provided with doors just where projections 5 join at the base of the figure (the front of the boiler) and also with fire-bars and ash-pit in the bottom. Spaces 7 and 8 are ascending and descending smoke-channels, the former being connected with the fire-spaces 6 and the latter being suitably put into communication with the chimney. In the channel 7 the draft travels upward and in the channel 8 downward. The walls 4 may also be pierced just in front of the channels 7 and 8, so that the water-filled spaces in the elements will be limited chiefly to the parts indicated as projections, the direction of which is parallel with the front of the boiler. All the spaces 7 and all the spaces 8 in the boiler will then form a single smoke-channel of uniform length, (height,) but of such width as to extend over the whole length of the boiler.

In all the modifications herein exemplified the front of the boiler (the lower edge of Fig. 1) is perpendicular to those faces of the elements which abut against one another. On this front part the number of fire-doors is provided, which number increases with that of the elements to be joined.

In the known boilers a symmetrical plane perpendicular to the joint surfaces of the elements is found. A corresponding plane or surface, which is parallel in the middle between the top and bottom edges of the elements in Fig. 1, is not to be found in these latter. Moreover, the front edge of the boiler exists only for one element, and it is only there that access to the fire-space can be gained, said fire-space becoming longer (deeper) by the addition of further elements. The same applies to the lateral smoke-channels. Access to the interior of the boiler between the separate elements (from right or left) is here impossible, while in the arrangement according to Fig. 1 a number of apertures is provided which is less by one than that of the intermediary elements.

In the present invention the boiler is joined up from elements in the direction from left to right, with a constant increase of apertures giving access to the interior of the boiler, its extent as to grate and draft remaining unaltered.

In the particular constructions shown in Figs. 2 to 4 the positions of the fire-bars 13, fire-space 6, and smoke-channels 7 and 8 are clearly shown, the smoke-channels being, by way of example, illustrated as connected with a channel 14, leading to the chimney.

15 is a hand-hole for cleaning and may be closed by any convenient means that will permit ready access to the channels 7 and 8. In this point also these boilers differ materially from those previously known. (See, for instance, Fig. 4, where the channels 7 and 8 are completely inclosed in the walls of the boiler.) If desirable, a separate cleaning-aperture may of course be provided for each of the channels 7 and 8 if they do not converge, as the drawings show.

Figs. 2 to 4 at the same time illustrate examples of attachments 16 and 17 of the steam or water circulating system, also the position of the fire-door 18 and ash-pit door 19, as well as dampers, fire-bars, &c., such as are requisite in a magazine-stove, whose particular construction, as well as form, position of projections 5, (or the particular elements 12,) may be varied. The heating-surface may be corrugated or provided with ribs 20 where desirable, as is indicated in Figs. 2 and 4. The last-named figure shows the special case where the boiler is fitted up in a corner. In such case the elements will be made narrower on one side (the top in Figs. 1 and 4) than on the other side, the front side, so that when joined up the front of the boiler will form an arc of such elements. Circular arrangements may also be produced where all the fire-doors are arranged round a circle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A boiler or heater built up of two sets of elements, and each of those of one set having a transverse central wall, projections extending therefrom on opposite sides, each half of the element constituting half of a complete furnace and each of those of the other set comprising a transverse wall, and projections extending therefrom at one side; said elements of the second set constituting the two ends of the heater.

2. A boiler or heater built up of two sets of elements each of those of one set having a transverse central wall, and projections extending therefrom on opposite sides at right angles to the wall, and each half of the element constituting half of a complete furnace and those of the other set constituting the ends of the heater.

3. A boiler or heater built up in part of a number of elements each having a transverse wall, projections extending therefrom on opposite sides and forming half of a complete furnace, and a fireplace constituting a portion of the furnace; each element having a passage constituting a portion of a smoke-channel communicating with the fireplace, and each having at the junctions of the elements apertures for access to the interior.

4. A boiler or heater built up in part of a number of elements each having two opposite sides at an acute angle to each other, whereby the boiler can be arranged in fan shape, and each having a transverse wall and projections therefrom forming half of a complete furnace.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JENS JOHAN MICHAEL LANGE.

Witnesses:
ALBERT G. MICHELSON,
ERNEST BOUTARD.