

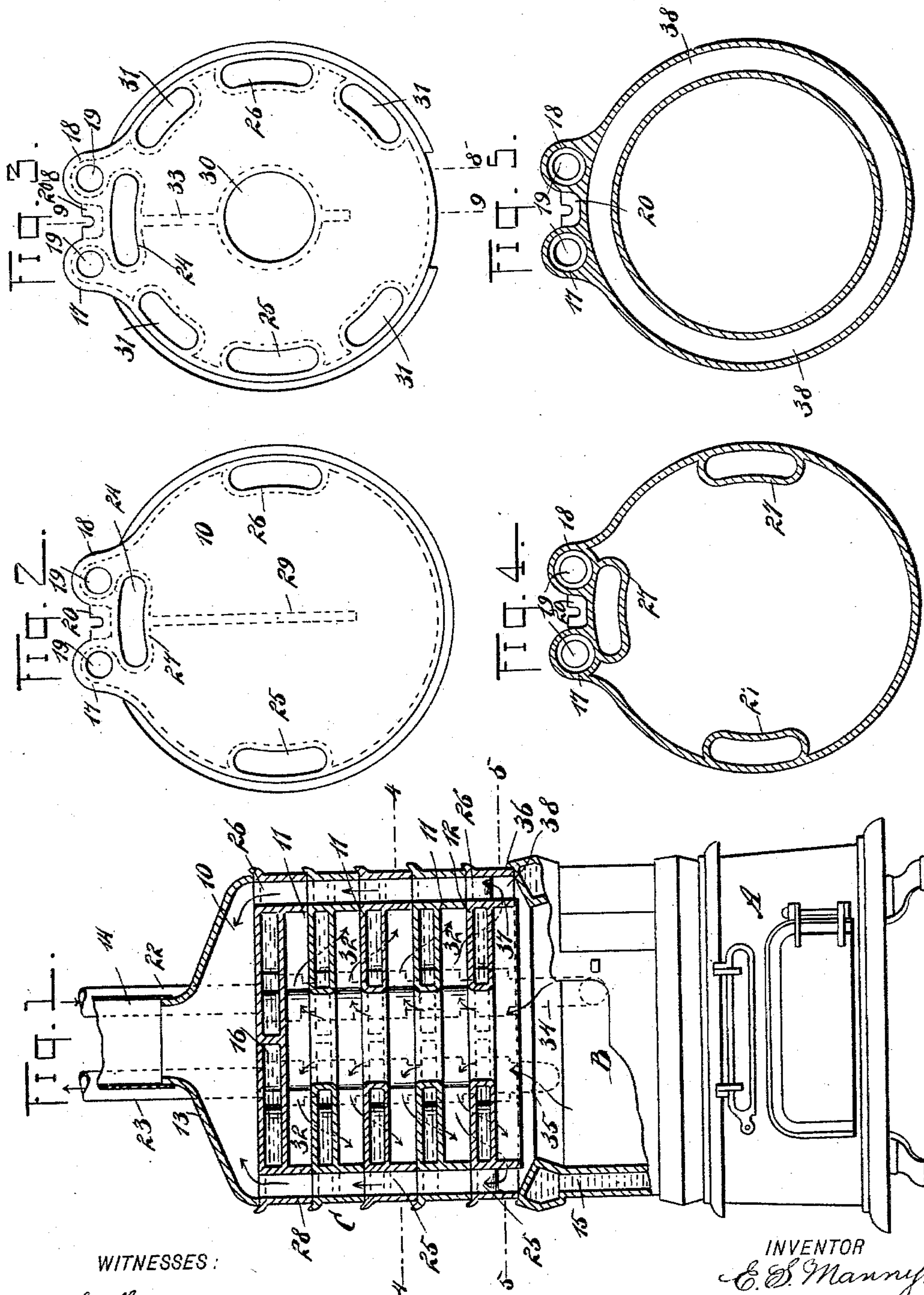
(No Model.)

2 Sheets—Sheet 1.

E. S. MANNY.  
HOT WATER AND STEAM BOILER.

No. 597,683.

Patented Jan. 18, 1898.



WITNESSES:

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(No Model.)

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FIG. 6.

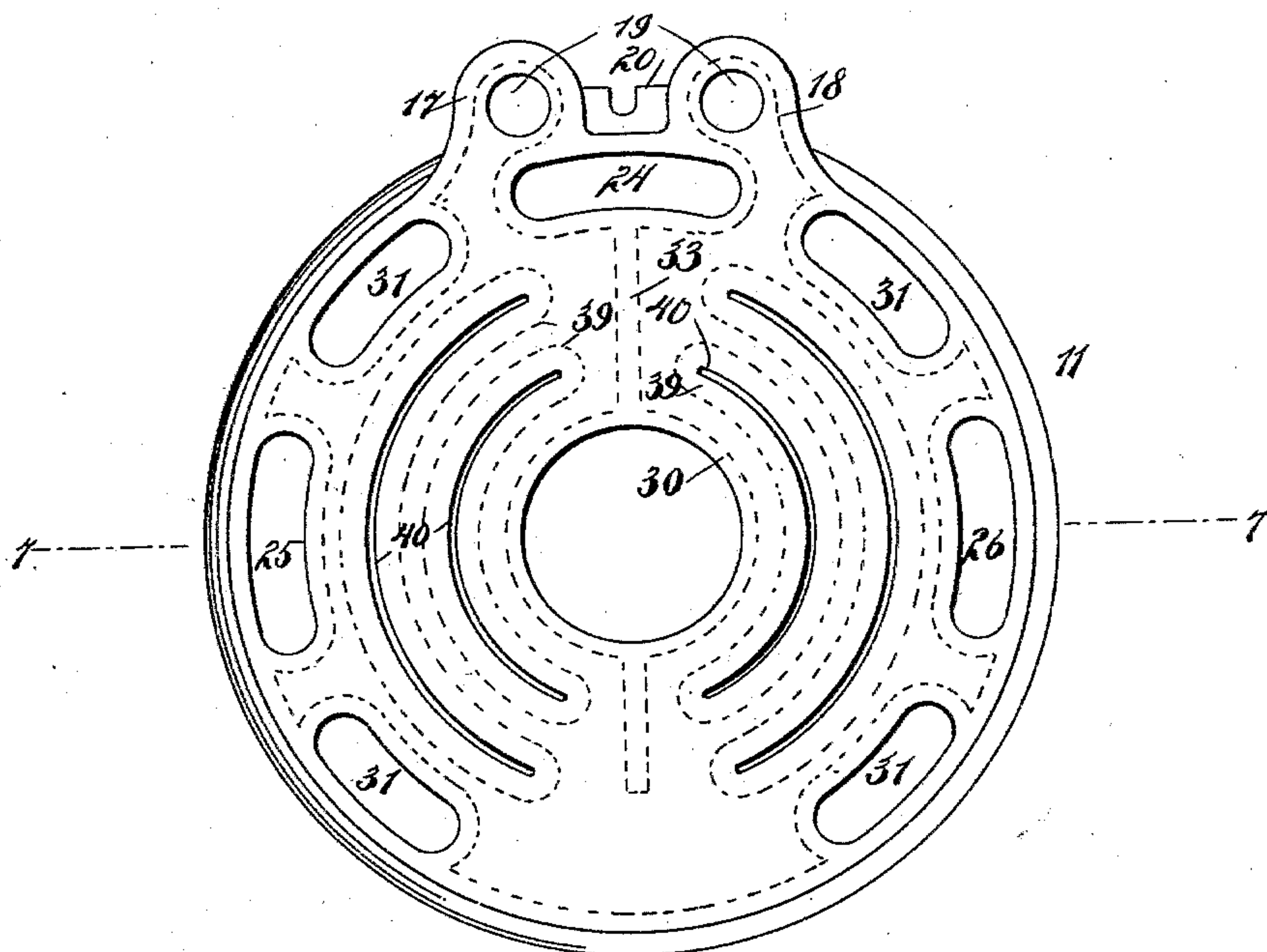


FIG. 7.

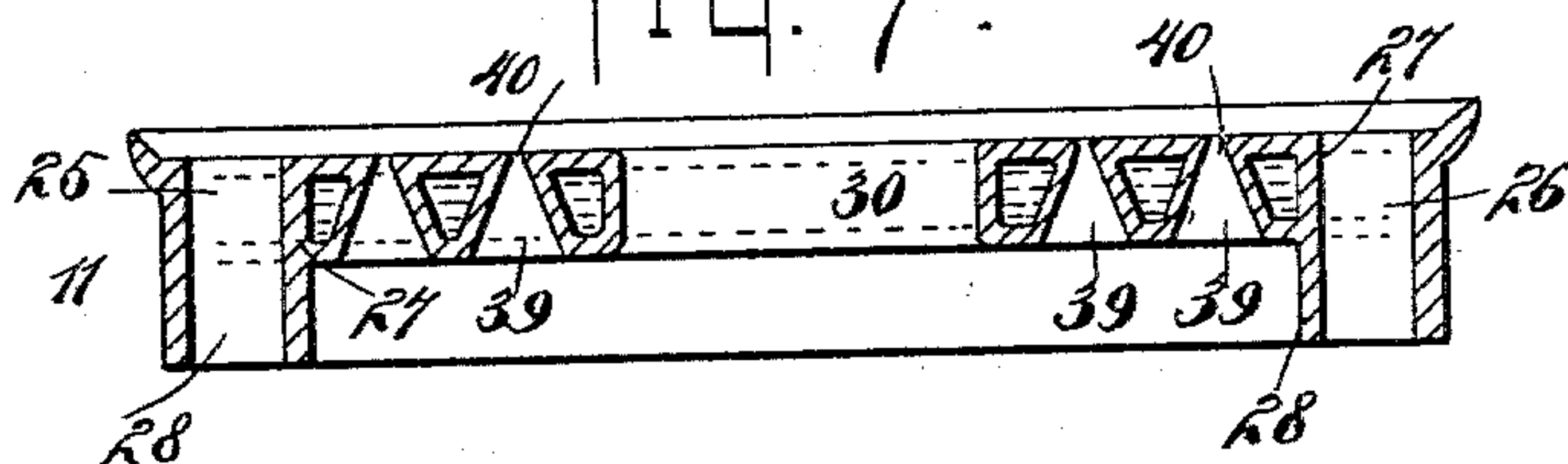


FIG. 8.

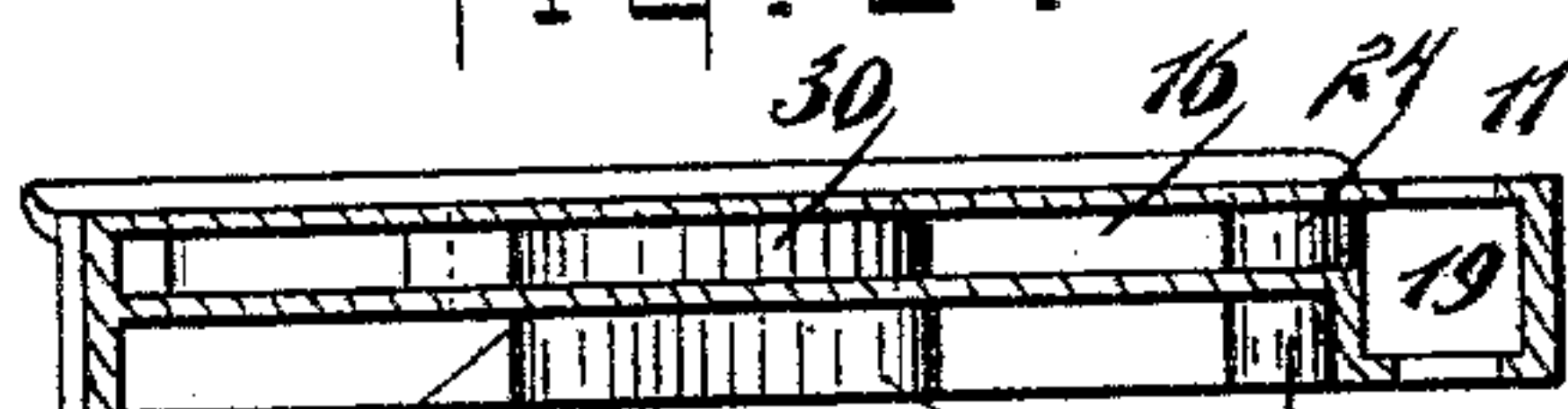
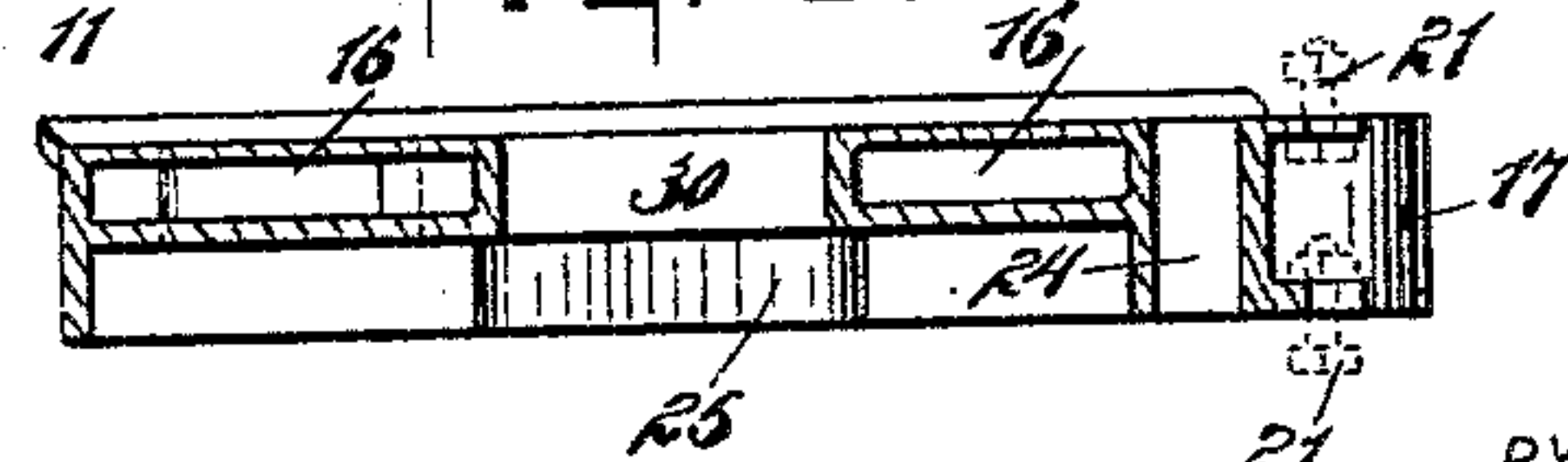


FIG. 9.



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# UNITED STATES PATENT OFFICE.

EUGÈNE SOLOMON MANNY, OF MONTREAL, CANADA, ASSIGNOR TO HIMSELF,  
WILLIAM ROBINSON, AND ALEXANDER D. LANSKAIL, OF SAME PLACE.

## HOT-WATER AND STEAM BOILER.

SPECIFICATION forming part of Letters Patent No. 597,683, dated January 18, 1898.

Application filed May 12, 1897. Serial No. 636,199. (No model.) Patented in Canada February 16, 1897, No. 55,014.

*To all whom it may concern:*

Be it known that I, EUGÈNE SOLOMON MANNY, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have  
5 invented a new and useful Improvement in Hot-Water and Steam Boilers, (for which I have obtained Letters Patent in Canada, No. 55,014, dated February 16, 1897,) of which the following is a full, clear, and exact descrip-  
10 tion.

The object of my invention is to construct a sectional boiler of the vertical type adapted for use as a hot-water or steam boiler, which boiler will be of simple and economic con-  
15 struction, and whereby the products of combustion will be consumed to the utmost and the circulation of both heat and water in the boiler will be practically perfect.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification,  
25 in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through the upper portion of the improved boiler, the lower portion being shown in side elevation.  
30 Fig. 2 is a plan view of the crown-section for the boiler. Fig. 3 is a plan view of one of the intermediate sections of the boiler. Fig. 4 is a section taken on the line 4 4 of Fig. 1. Fig. 5 is a section taken horizontally on the  
35 line 5 5 of Fig. 1. Fig. 6 is a plan view of an intermediate section of the boiler, illustrating a modified form thereof. Fig. 7 is a section on the line 7 7 of Fig. 6. Fig. 8 is a section on the line 8 8 of Fig. 3, and Fig. 9 is  
40 a section on the line 9 9 of Fig. 3.

A represents the ash-pit, B the fire-pot, and C the water-sections of the boiler, which sections comprise a crown-section 10, intermediate sections 11, and a bottom section 12.  
45 The fire-pot is provided with a water-space 15 and is enlarged at the top, the top portion of the fire-pot being given a downward and inward inclination, as shown particularly in Fig. 1. The bottom water-section 12 rests  
50 upon the fire-pot, the intermediate sections rest upon the bottom section and upon each other, the crown-section resting upon the up-

permost intermediate section, and a crown-sheet 13 forms the top portion of the boiler, receiving the waste products of combustion, 55 and this crown-sheet is in direct communication with the smoke-stack or offtake-flue 14.

All of the water-sections of the boiler are preferably circular in general contour, and each section is further provided with an in-  
60 terior chamber 16, adapted to contain water. Each water-section of the boiler is also provided at the rear with two offsets 17 and 18, each of which is provided with an opening 19, extending through from top to bottom. Be-  
65 tween these offsets each of the water-sections is provided with a web 20, so constructed as to receive bolts 21, said bolts serving to connect one water-section firmly with the other, and when the various water-sections have  
70 been properly assembled the openings 19 in the boiler-offsets 17 and 18 will form continuous passages adapted to receive water, the water-inlet pipe 22 being connected with the passage in the offset 18 of the crown water-  
75 section and the outlet water-pipe 23 being connected with the passage in the offset 17 of the same section. All of the passages 19, as illustrated in Fig. 8, are in connection with  
80 the water-chamber 16 of the section of the boiler to which the passages belong. Thus each water-section has an independent inlet and an independent outlet.

The crown-section 10 is provided at the back with an opening 24 and at each side with  
85 a similar opening, (designated, respectively, as 25 and 26,) the openings 25 and 26 being diametrically opposite. Each opening is inclosed or surrounded by a wall 27, which walls extend downward below the bottom of the  
90 crown-section, forming collars 28. These openings 24, 25, and 26 are duplicated in each of the water-sections, and all the water-sections except the lowermost one, 12, are provided with the above-named collars 28. The  
95 crown-section 10 is otherwise closed at both top and bottom, but is provided with a deflecting-plate 29, located about centrally therein, extending from the wall of the back opening 24 to within a predetermined distance of the  
100 front, as illustrated in Fig. 2.

The intermediate and the lowermost water-sections differ from the crown-section in that in the former a central opening 30 is made,



surrounded by a suitable wall, and in addition to the openings 24, 25, and 26 series of openings 31 are made between the openings 24, 25, and 26; but the openings 31 extend only through the body of the sections and are not surrounded, as are the openings 24, 25, and 26, with the downwardly-extending collars.

The collars 28 form spaces or chambers 32 between the various sections, and each intermediate section, as well as the lowermost section, is provided with a deflecting-plate 33, corresponding in location to the deflecting-plate of the crown-section. A pipe 34 is carried from the water-inlet passage of the lowermost water-section into the water jacket or space 15 of the fire-pot, and a like pipe 35 is similarly carried from the return water-passage of the lowermost section into the water-jacket of the fire-pot, as illustrated in Fig. 1. The lowermost water-section 12 instead of being provided with the collars 28 is provided with an outwardly-extending marginal flange 36 and a corresponding inner flange 37, forming an annular space 38 at the bottom of the said section, as shown in Figs. 1 and 5, the openings 24, 25, and 26 and the openings 31 in this lowermost water-section being all in communication with the said space 38.

By inclining the upper wall of the fire-pot the annular chamber 38 at the bottom of the lowermost water-section may be readily cleaned by any suitable instrument introduced through the door of the fire-pot. When all of the water-sections are built one upon the other, the openings 24, 25, and 26 will form continuous flues for the passage of the products of combustion from beneath the lower water-section 12 to the dome or space above the crown-section, and the central openings 30 of the intermediate and the lowermost water-sections will be in registry, as shown in Fig. 1. Thus it will be observed that the products of combustion upon leaving the fire-pot will ascend through the central flue formed by the openings 30, but cannot pass the crown-section, so that the hottest point in the boiler, except immediately over the fire-pot, will be immediately beneath the crown water-section. As the products of combustion become cool they will descend through the openings 31, which constitute return-flues for the products of combustion, and after entering the annular chamber 38 at the bottom of the lowermost water-section these return products of combustion will ascend through the smoke-conducting flues to the chimney, which latter flues are formed by the openings 24, 25, and 26, as previously stated.

In Fig. 6 I have illustrated a slight modification in the construction of the intermediate water-sections. Under this construction the bottom plate of the section at each side of the center is struck up, forming inverted-V-shaped spaces 39, and in the top of the section, at the contracted portion of these

recesses, slots 40 are made. These slots permit of the upward passage of the smoke, and the slots and spaces are preferably of segmental form. These slots or openings also serve to protect the water-sections against the effects of sudden expansion and contraction.

Each water-section is provided with a marginal flange similar to the flange 36 of the lower section, and these flanges constitute one wall for the openings 24, 25, 26, and 31. When the sections have been connected, the seams may be filled in or covered with clay or a cementing material of any description.

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

1. In a boiler, the combination, with a fire-pot, and a dome having an outlet for the products of combustion, of water-sections located between the fire-pot and dome, the intermediate and lower sections having central fire-openings over the fire-pot, and return and offtake openings for products of combustion at their sides, the crown-section being provided only with offtake-openings for the products of combustion, communicating with those of the lower water-sections and with the dome, and means for circulating water in said sections.

2. In a boiler, the combination, with a fire-pot, and a dome having an outlet for the products of combustion, of a crown water-section having openings in communication with the dome, adapted to carry off waste products of combustion, additional water-sections located beneath the crown-section, each provided with a central fire-opening, return-openings for the products of combustion, the offtake-openings adapted to carry off the waste products of combustion communicating with the corresponding openings in the crown-section, spacing devices for the water-sections, and means, substantially as described, for circulating water in said sections.

3. In a boiler, the combination, with a fire-pot, and a dome having an outlet for the products of combustion, of a crown water-section having openings in communication with the dome, adapted to carry off waste products of combustion, additional water-sections located beneath the crown-section, each provided with a central fire-opening, return-openings for the products of combustion, the offtake-openings adapted to carry off the waste products of combustion communicating with the corresponding openings in the crown-section, flanges projected downward from the under face of the lowermost water-section, forming an annular chamber, which chamber is in communication with both the offtake and return openings in the section, a water-supply pipe communicating with each of the water-sections, a return water-pipe likewise connected with each of the water-sections, and means, substantially as described, for spacing the sections.



4. In a boiler, the combination, with the  
fire-pot and a dome having an outlet for the  
products of combustion, the fire-pot being  
provided with a water-jacket having its up-  
5 per surface downwardly and inwardly in-  
clined, of a crown water-section having open-  
ings in communication with the dome, adapt-  
ed to carry off waste products of combustion,  
additional water-sections located beneath the  
10 crown-section, each additional water-section  
being provided with a central fire-opening,  
marginal return-openings for the products  
of combustion, a marginal offtake-opening  
adapted to carry off the waste products of  
15 combustion, communicating with the corre-  
sponding openings in the crown-section, each

section being provided with a downwardly-ex-  
tending marginal flange, and all of the sections  
being provided with collars located at the bot-  
tom, surrounding the offtake-openings, the 20  
lowermost section being provided with a sec-  
ond inner flange at its bottom, forming an  
annular chamber which is in communication  
with the marginal openings in said lower sec-  
tion, and water supply and discharge pipes 25  
connected with all of the water-sections and  
with the water-space in the fire-box, for the  
purpose specified.

EUGÈNE SOLOMON MANNY.

Witnesses:

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