H. S. MARTIN.

BOILER.

APPLICATION FILED OCT. 26, 1909.

963,915.

Patented July 12, 1910.

Fig. 1.

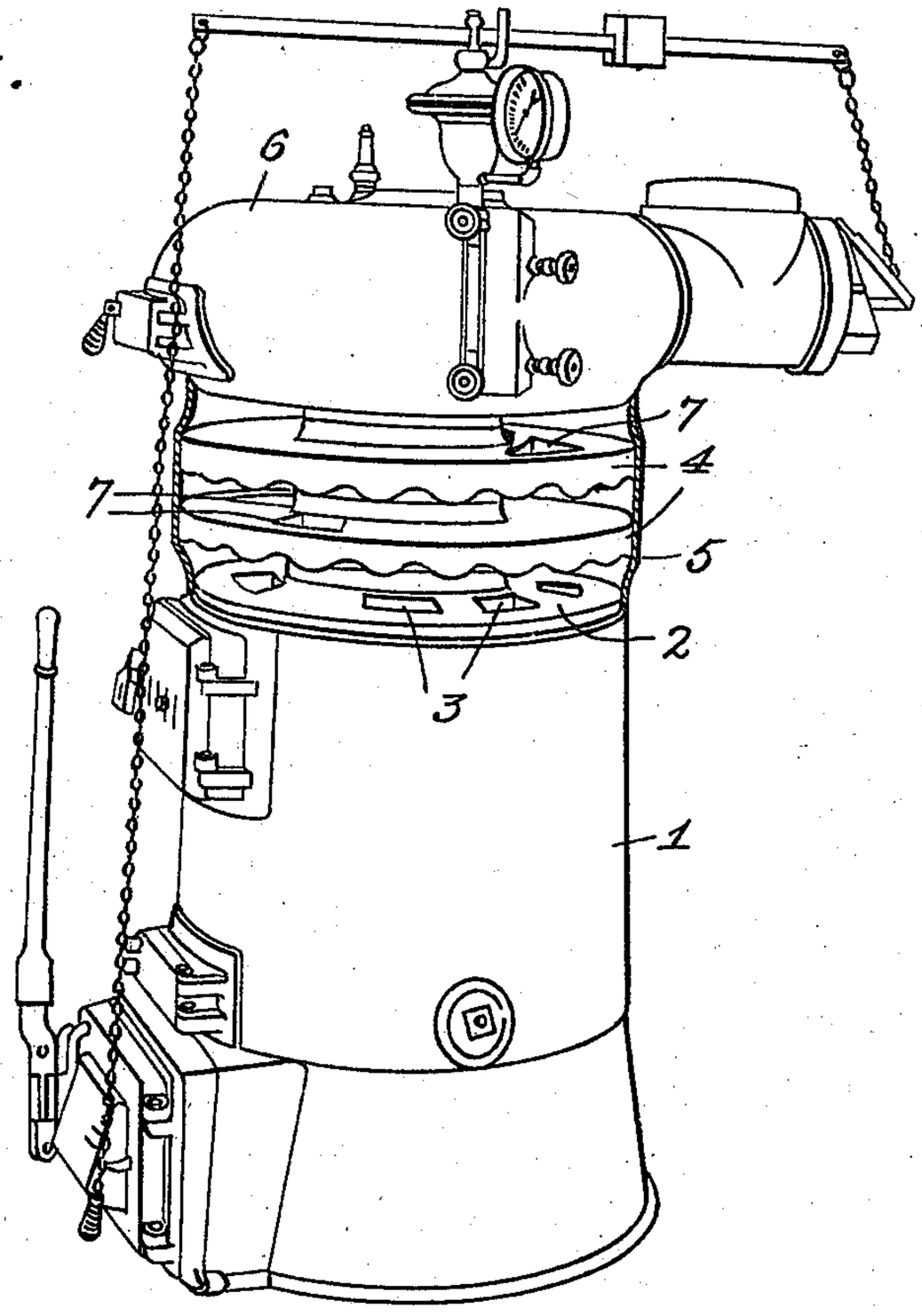


Fig. 2.

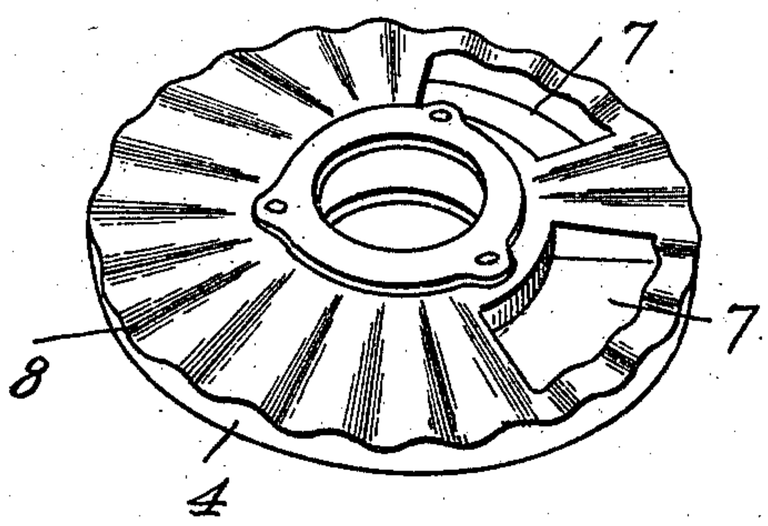
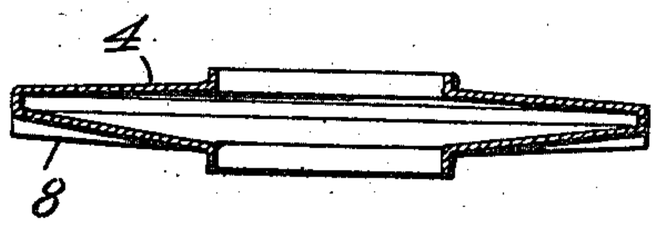


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY S. MARTIN, OF DUNKIRK, NEW YORK, ASSIGNOR TO UNITED STATES RADIATOR COMPANY, OF DUNKIRK, NEW YORK, A CORPORATION OF NEW YORK.

BOILER.

963,915. Specification of Letters Patent. **Patented July 12, 1910.**

Application filed October 26, 1909. Serial No. 524,676.

To all whom it may concern:

Be it known that I, HARRY S. MARTIN, a citizen of the United States, residing at Dunkirk, in the county of Chautauqua, State of New York, have invented new and useful Improvements in Boilers, of which the following is a specification.

My invention relates to boilers or steam generators of that type wherein there is employed one or more water sections intermediate the fire pot and the dome, and has for its object to so construct said intermediate sections with radial corrugations on their under surfaces as to obtain a maximum of heating effect from the products of combustion in the passage of the latter to the smoke pipe. This object I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawing, in which:

Figure 1 is a perspective view of a boiler embodying my improved construction, the jacket surrounding my improved intermediate sections being shown broken away. Fig. 2 is a detail perspective view of one of my improved intermediate sections, showing the under side thereof. Fig. 3 is a central vertical sectional view of the same.

Similar numerals of reference denote corresponding parts in the several views.

In the said drawing the reference numeral 1 denotes the body of a steam generator or boiler in which is located the fire pot in the usual manner. The top 2 of said body is apertured at 3 for the passage of the products of combustion, while mounted centrally upon said top 2 are one or more intermediate sections 4, in this two being shown, the same being inclosed by a jacket 5 extending from the body 1 to a dome 6, as shown. Said sections 4 are formed hollow to receive the water and steam which pass thereinto from the water space of the body 1 through the usual central connection between said sections and the body 1 and which discharges centrally from the top section into the dome 6. The through passages 7 in said sections 4 for the passage of the products of combustion are, in the case of the lower section 4, located upon one side, and in the case of the upper section upon the opposite side, so that the products of combustion, after passing through a section, will be compelled to pass horizontally around the center of said sections in order to reach the through passages 7 of the section above in a manner well understood.

Specifically, my improvement consists in corrugating the under surfaces of the sections 4 radially, as best seen at 8 in Fig. 2, and in forming said corrugations deepest at the outer edges of said sections, said corrugations gradually diminishing in depth toward the center of the sections, and vanishing just before the central connection between the sections is reached. By this construction the products of combustion in their passage upward to the smoke pipe, and in passing through the passages 7 in the sections 4, being prevented by the central connection between the sections 4 from passing directly across the same, are compelled to pass under the corrugations 8 transversely to the line of said corrugations, and are thus more or less retarded. This results in their seeking the easiest passage, which is, of course, that nearest the central connection, where the corrugations have vanished, and in thus seeking this path of travel they are given a swirling motion which results in a maximum of heating efficiency. Furthermore, because of the comparatively large area of the central connection between the sections 4, the free space between said sections is too limited to permit the flow of all the products of combustion close around the central connections, so that they are in part forced to pass under the corrugations in seeking their outlet, and, as their tendency is constantly to seek the line of least resistance nearer the center, the swirling motion is augmented.

While I have shown the under side of the dome 6 formed plane, it will be understood that it, too, may be formed with radial corrugations like those on the sections 4.

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

1. In a boiler embodying a body portion and a dome, an intermediate water section having its under side formed into a series of radial corrugations formed deepest at the outer edge of said section and gradually diminishing toward its center.

2. In a boiler embodying a body portion and a dome, an intermediate water section connected centrally with said body portion and dome, having its under side formed into

a series of radial corrugations, and provided with through fire apertures upon one side of its center only.

3. In a boiler embodying a body portion and a dome, an intermediate water section connected centrally with said body portion and dome, having its under side formed into a series of radial corrugations formed deepest at the outer edge of said section and gradually diminishing toward its center, and provided with through fire apertures upon one side of its center only.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

HARRY S. MARTIN.

Witnesses:
A. W. VARNEY,
A. F. HAKES.