

March 24, 1936.

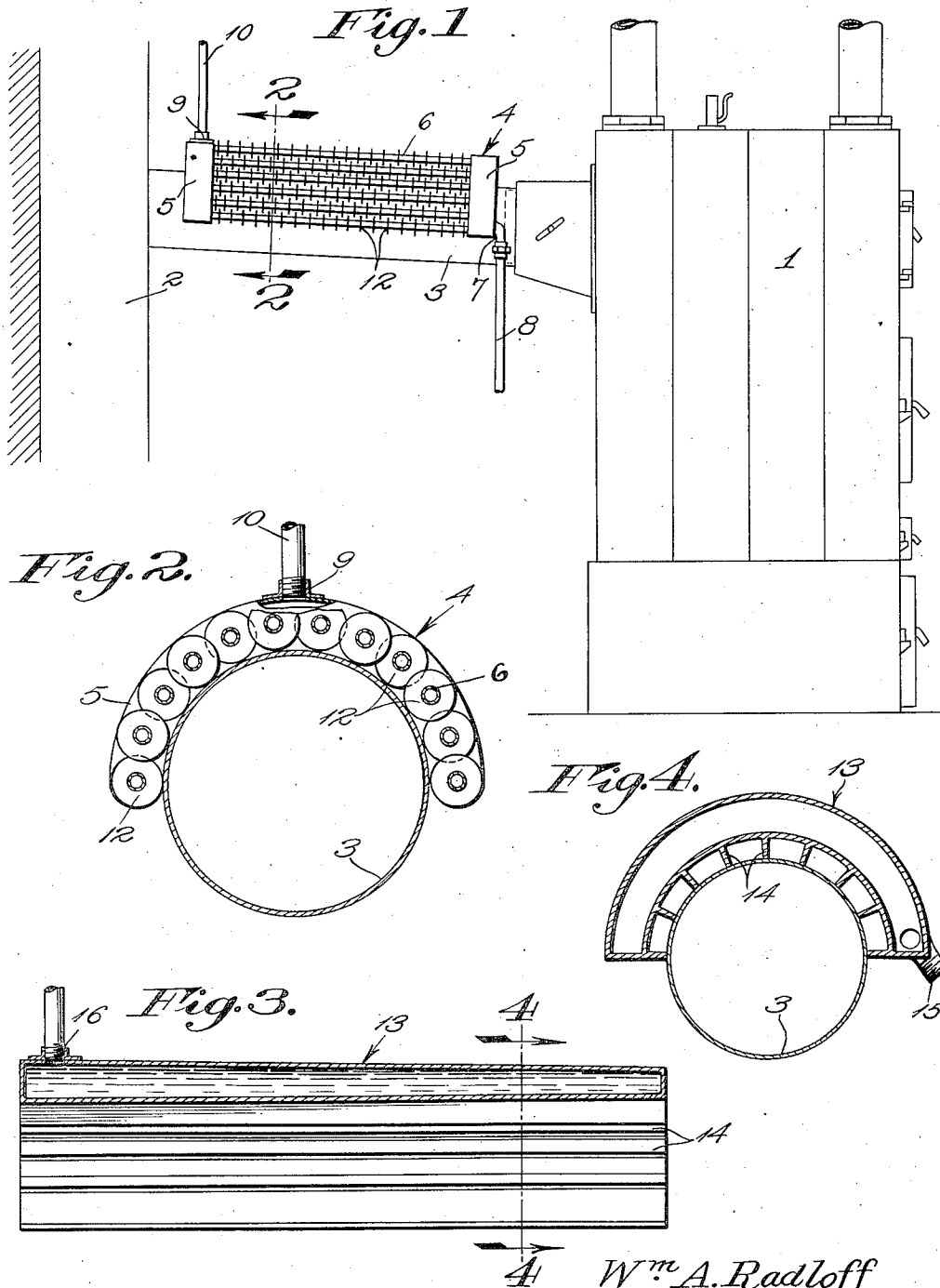
W. A. RADLOFF

2,035,341

WATER HEATER

Filed Feb. 2, 1935

2 Sheets-Sheet 1



WITNESS

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2 Sheets-Sheet 2

Fig. 5.

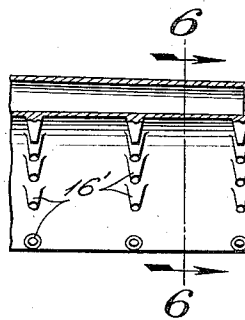
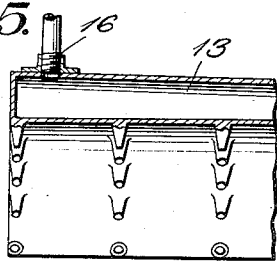


Fig. 6.

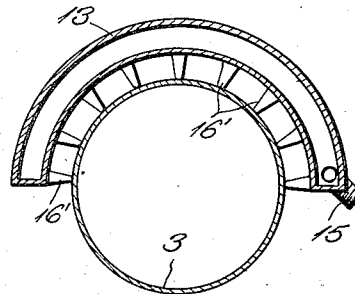


Fig. 7.

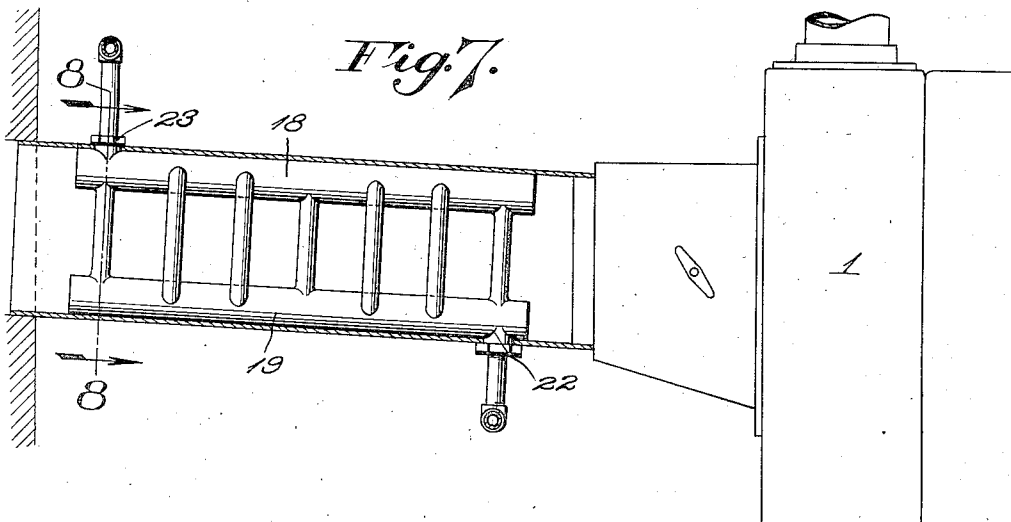
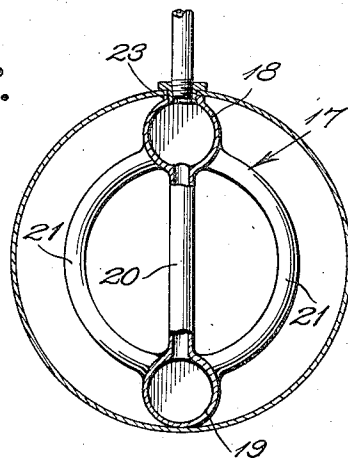


Fig. 8.



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UNITED STATES PATENT OFFICE

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WATER HEATER

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Application February 2, 1935, Serial No. 4,702

1 Claim. (Cl. 257-248)

This invention relates to water heaters and has for the primary object the provision of a device which may be readily mounted on the smoke pipe leading from a stove or like heating means whereby waste heat passing to the chimney may be utilized for heating water for the storage tank for hot water systems or for hot water radiators to heat a room remote from the furnace or like heating means.

Another object of this invention is the provision of a water heater of the above stated character which will be simple, durable and efficient and which may be manufactured and sold at a low cost.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a side elevation illustrating a water heater shown applied to a smoke pipe of a furnace or like heating means.

Figure 2 is a sectional view taken on the line 2-2 of Figure 1.

Figure 3 is a longitudinal sectional view showing a modified form of my invention.

Figure 4 is a sectional view taken on the line 4-4 of Figure 3.

Figure 5 is a longitudinal sectional view illustrating another modified form of my invention.

Figure 6 is a sectional view taken on the line 6-6 of Figure 5.

Figure 7 is a side elevation, partly in section, illustrating another modified form of my invention wherein the device is shown installed within the smoke pipe of a furnace or like heating means.

Figure 8 is a sectional view taken on the line 8-8 of Figure 7.

Referring in detail to the drawings, the numeral 1 indicates a furnace connected to a chimney 2 by a smoke pipe 3. The smoke pipe throws off considerable heat and to utilize this heat for the purpose of heating water for a storage tank or for a heating system my invention is employed and consists of a waterback 4 arcuately curved so as to fit about a portion of the smoke pipe. The water back consists of end manifolds 5 connected by a series of water tubes 6. One of the manifolds has an inlet nipple 7 connected to a water supply pipe 8. The other end manifold 5 has an outlet nipple 9 connected to a water pipe 10.

The pipes 8 and 10 may form a part of a hot water system employing therein a storage tank or may form part of a hot water heating system employing radiators for the heating of a room remote from the furnace. It is to be noted that the pipe 8 connects to the lower portion of one of the manifolds while the pipe 10 connects to the upper portion of the other end manifold so that water entering the waterback from the pipe 8 will be thoroughly heated passing through the tubes 6 to the pipe 10. The tubes 6 have arranged thereon fins 12. The heated air cast off from the smoke stack 3 may readily circulate about the tubes 6 and thoroughly heat the water passing therethrough. This device provides an economical means for the heating of water employing heat heretofore wasted in furnace constructions.

Referring to my modified form of invention as shown in Figures 3 and 4, a waterback 13 of elongated formation is provided and is arcuately curved transversely thereof and has secured to its inner face spaced ribs 14 which contact with the smoke pipe. Inlet and outlet nipples 15 and 16 are connected with opposite ends of the waterback. The ribs 14 extend longitudinally of the waterback and permit a circulation of air from one end of the waterback to the other when the latter is applied to a smoke pipe.

Instead of employing ribs 14 of a construction shown in Figures 3 and 4, they may be in the form of a series or a plurality of projections or pins 16 cast integrally with the inner face of the waterback and arranged in rows, as shown in Figures 5 and 6.

Referring to my modified form of invention, as shown in Figures 7 and 8, a waterback 17 is provided which may be arranged within the smoke pipe and includes upper and lower manifolds 18 and 19 connected by tubes 20 and 21. The tubes 20 are straight while the tubes 21 are arcuately curved. The lower manifold 19 has an inlet nipple 22 while the upper manifold has an outlet nipple 23. The nipples 22 and 23 extend through opposite walls of the smoke pipe and are arranged at opposite ends of the waterback. A waterback of this construction and located in the smoke pipe will be contacted by the heat and flames passing to the flue of the chimney.

While the form of my invention disclosed in Figures 7 and 8 has been described for operation within a smoke pipe, it is to be understood that this device may be located within an exhaust pipe of a motor vehicle, for instance, so that the exhaust of the engine of said vehicle may be utilized

for heating water to be employed for heating the interior of the motor vehicle body.

Having described the invention, I claim:

5 A water heater comprising a pair of parallel spaced elongated water manifolds arranged in superimposed relation, groups of arcuately curved tubes connecting said manifolds, with the tubes of one group extending from said manifolds in

an opposite direction to the tubes of the other group, straight tubes connecting said manifolds and cooperating with the curved tubes in supporting the manifolds against opposite walls of a smoke pipe, and means for connecting the manifolds to a water system. 5

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