

(No Model.)

R. F. PRATT & C. D. WAINWRIGHT.

COIL FEED WATER HEATER.

No. 389,900.

Patented Sept. 25, 1888.

Fig. 1.

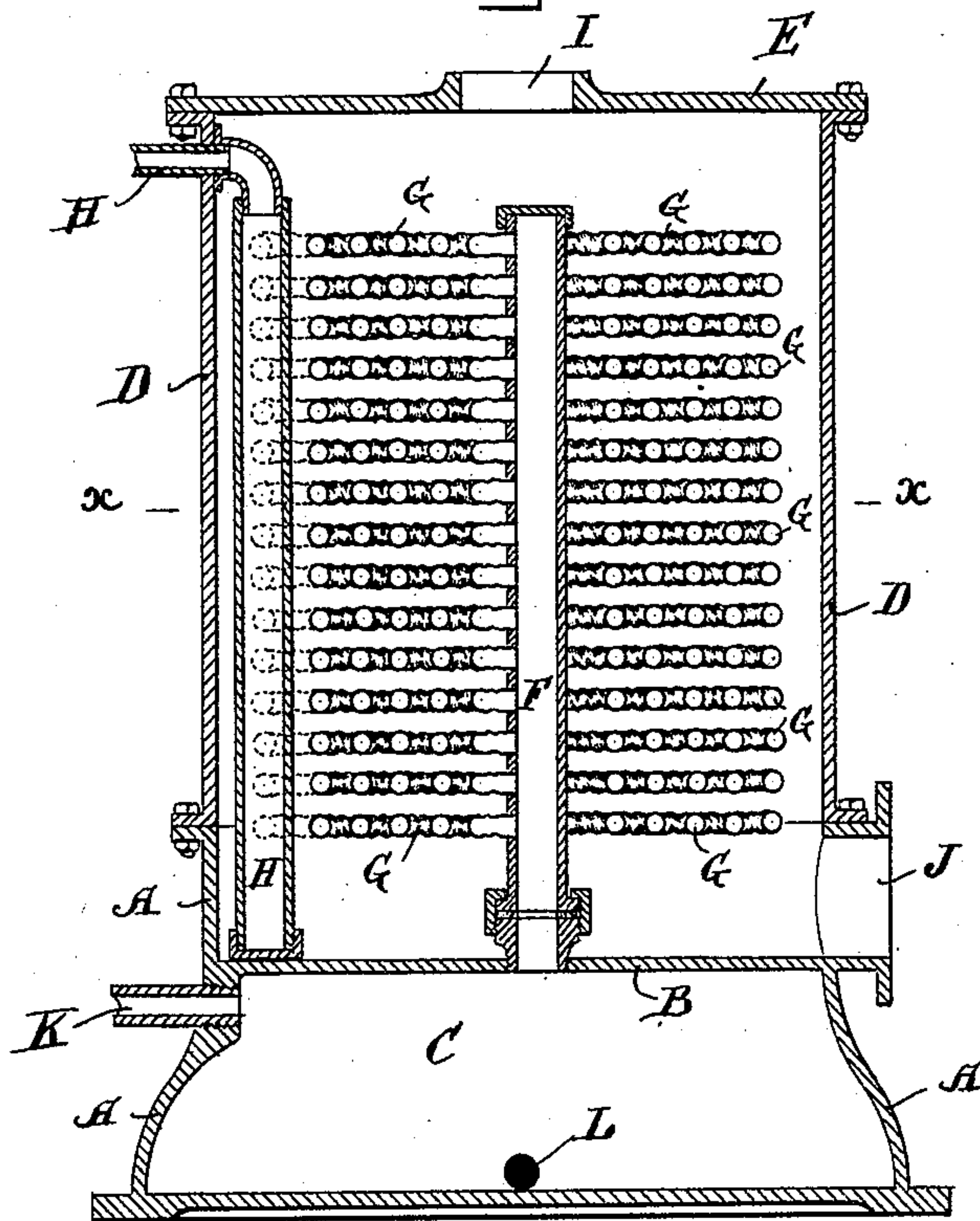
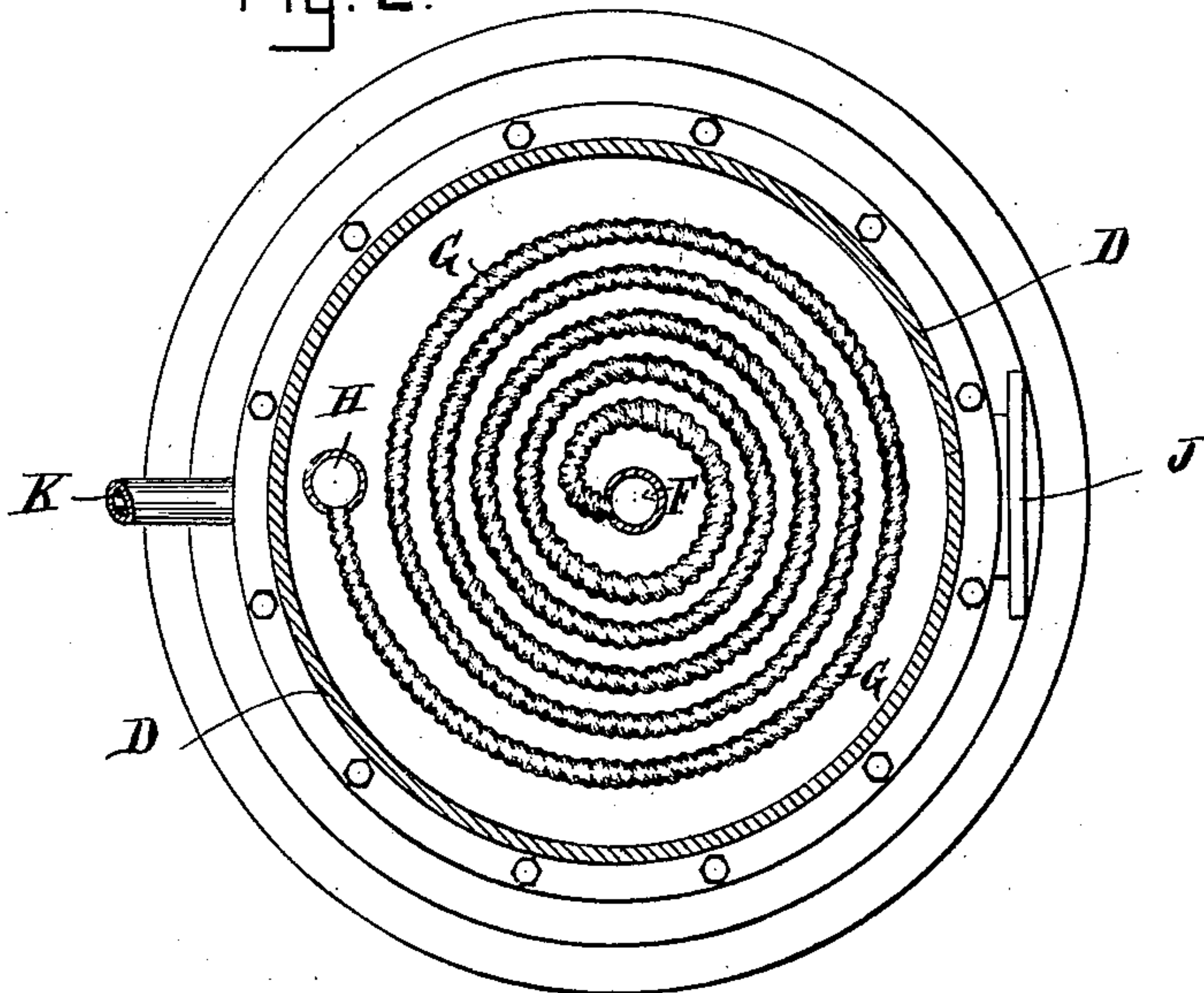


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

RONELLO F. PRATT, OF REVERE, AND CHARLES D. WAINWRIGHT, OF
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COIL FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 389,900, dated September 25, 1888.

Application filed June 23, 1887. Serial No. 242,271. (No model.)

To all whom it may concern:

Be it known that we, RONELLO F. PRATT, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, and CHARLES D. WAINWRIGHT, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Coil Feed-Water Heaters or Condensers, of which the following is a specification.

The object of our invention is to produce a coil feed-water heater, superheater, or condenser that will be more efficient and economical than those now in use; and the invention consists of a series of tubes bent into the form of a volute and secured at their inner ends to a central vertical pipe and at their outer ends to another vertical pipe and inclosed within a suitable casing.

Referring to the accompanying drawings, Figure 1 represents a coil-heater with settling-chamber embodying our invention. Fig. 2 is a horizontal section taken on line *x x* of Fig. 1.

A represents a base-piece divided horizontally by a partition, B, the lower part forming a settling-chamber, C. To the top of the base-piece A is secured a casing, D, of cast or wrought iron, which is provided with a cover, E.

F is a central vertical pipe secured in any suitable manner to the partition B, so as to communicate with the chamber C.

G G are spirally corrugated tubes bent into the form of a volute, and secured at their inner ends to the central pipe, F, and their outer ends are secured to a vertical pipe, H, which leads to the steam-boiler.

I is the inlet for the exhaust-steam, and J the outlet, (or vice versa;) K, the water-inlet, and L is a blow-off. The exhaust-steam is admitted at I, and passes down around and between the volute coils, and then escapes at the outlet J. Water is admitted at K into the settling-chamber C, where any sediment contained in the water will be deposited. The

water then passes up the pipe F and through the volute coils G G into the pipe H, and thence to the boiler.

By the employment of spirally-corrugated tubes a much greater heating-surface is obtained than with plain tubes, therefore rendering it much more effective in heating or cooling, and as the corrugations form a succession of arches both longitudinally and transversely the strength of the tube is much greater. Therefore a thinner tube can be employed, which gives greater efficiency in the transmission of heat, and consequently a greater saving of fuel.

Should any scale be deposited upon the tubes G, the expansion and contraction of the said tubes will render them self-cleaning, so that they are automatically freed from scale without injury to their connections, and, when required, can be blown off at the blow-off L.

If it is desired to use the apparatus as a condenser, the steam is passed through the volute coils and cold water caused to circulate around it.

If desired, the settling-chamber may be dispensed with, in which case the lower end of the pipe F will pass through the side of casing D.

Instead of spirally-corrugated tubes, plain tubes may be employed, but not with such beneficial results.

What we claim as our invention is—

1. In a feed-water heater, a series of pipes bent into the form of a volute and arranged in parallel planes one above another, secured at their outer ends to one vertical pipe and at their inner ends to another vertical pipe, said volutes and said vertical pipes being inclosed within a suitable casing, substantially as and for the purposes set forth.

2. In a feed-water heater, the combination of the volute pipes G G and vertical pipes F H, inclosed within the casing D and cover E, substantially as shown and described.

3. In a feed-water heater, the volute pipes G G and vertical pipes F H, said volute pipes

lying in horizontal parallel planes one above another, and said vertical pipes and said volutes being within the casing, in combination with casing D, base-piece A, and settling-
5 chamber C, substantially as shown and described.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

RONELLO F. PRATT.

CHARLES D. WAINWRIGHT.

Witnesses:

HENRY W. FOLSOM,

E. PLANTA.