

R. V. De Witt,
Steam-Boiler Water-Tube.

N^o 1,339

Patented Sep. 25, 1839.

Fig. 1.

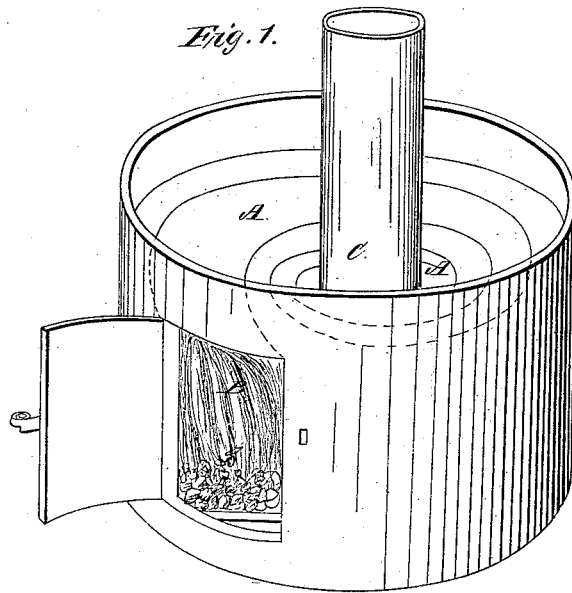
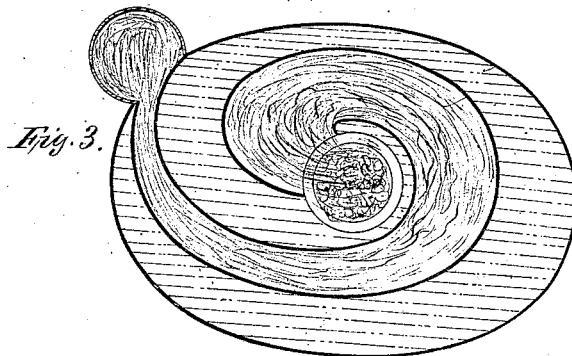
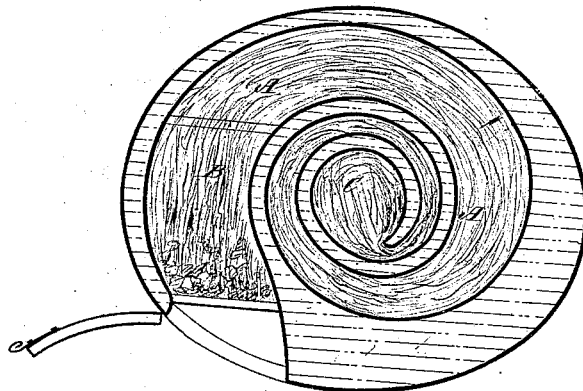


Fig. 2.



UNITED STATES PATENT OFFICE.

RICHARD VARICK DE WITT, OF ALBANY, NEW YORK.

IMPROVEMENT IN THE STEAM-BOILER INVENTED BY VAN ORDER, CALLED THE LABYRINTH STEAM-BOILER.

Specification forming part of Letters Patent No. 1,339, dated September 25, 1839.

To all whom it may concern:

Be it known that I, RICHARD VARICK DE WITT, of the city of Albany, in the State of New York, have invented an Improvement in the Manner of Constructing the Steam Boiler or Generator for which Letters Patent of the United States were obtained by Abram Van Order, of Ithaca, in the State of New York, under date of July 17, 1838, and which was by him denominated the "Labyrinth Steam-Boiler;" and I do hereby declare that the following is a full and exact description of my said improvement.

My improvement consists in the manner of forming the flue or passage leading from the furnace of the said boiler into the chimney. This flue as constructed by said Van Order consists of a flattened tube coiled around so as to constitute a scroll or spiral within the boiler and leading from the furnace to the chimney in the center. The exterior walls of this flue are in said boiler kept parallel to each other, so that the areas of all its cross-sections are equal.

I construct my improved flue in the manner above described, so far as respects its scroll-like form; but, instead of keeping the sides thereof parallel longitudinally, I cause them to approach each other from the point at which the flue leaves the furnace until it terminates in the chimney, so that the space for the passage of the gaseous products of combustion undergoes a regular diminution. The object of this gradual contraction of the flue is to compress these products as the gases contract by their loss of heat, by which contraction said gases are more effectually brought into contact with the walls of the flue than in the labyrinth-boiler. The proportion of the diminution of the flue will vary in different boilers according to the length of the flue and other circumstances; but it may be approximated in all cases by a knowledge

of the rate of contraction in gases by a diminution of temperature and of the difference of temperature of said gases when they leave the fire and when they escape into the chimney, which latter temperature should but little exceed that to be given to the water and steam in the boiler.

Figure 1 is a perspective view of the furnace, the top being removed for the purpose of showing the spiral flue A A, which contracts from the place of leaving the furnace B until it enters the chimney at C. Fig. 2 is a bird's-eye view of the same.

In Fig. 3 I have given a bird's-eye view of another modification of my improved boiler, in which the same principle of the diminution of the size of the flue as it recedes from the fire is to obtain. In this the furnace is situated in the center of the boiler and the chimney at its exterior. This furnace may be fed in the same way as furnaces so situated are fed in other boilers, the only novelty being in the manner of constructing the flue.

In Figs. 2 and 3 the top plate of the fire-flue, as well as of the boiler, is supposed to be removed.

I do not claim as of my invention the placing of a furnace or of flues within the boiler; nor do I claim the giving to the flues a scroll-like or spiral form, this having been done in the labyrinth-boiler; but

I limit my claim to—

The continuous diminution of the capacity of such a flue for the purpose and in the manner set forth, however the furnace may be situated and whether the combustion be kept up by the ordinary draft or urged by a fan-wheel or other blowing apparatus.

RICHD. VARICK DE WITT.

Witnesses:

J. LANSING,

JAS. STEVENSON.