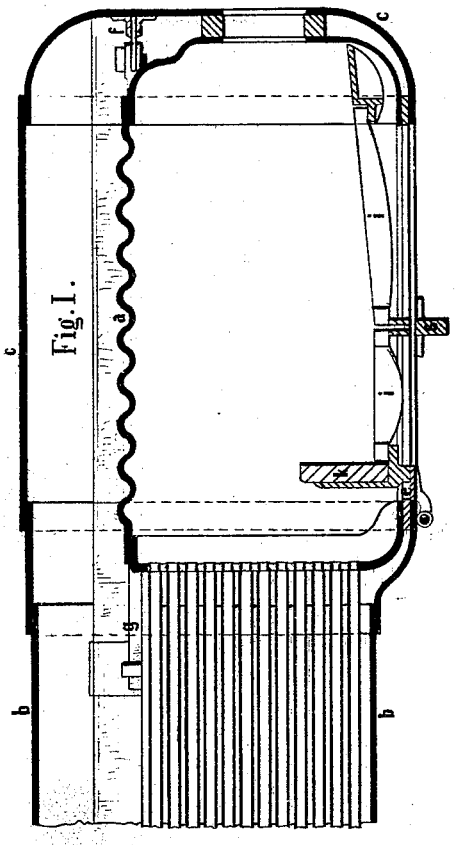
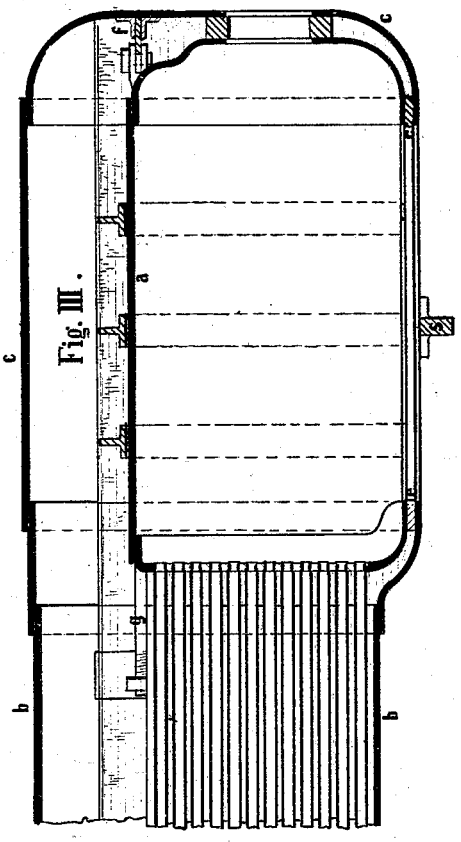
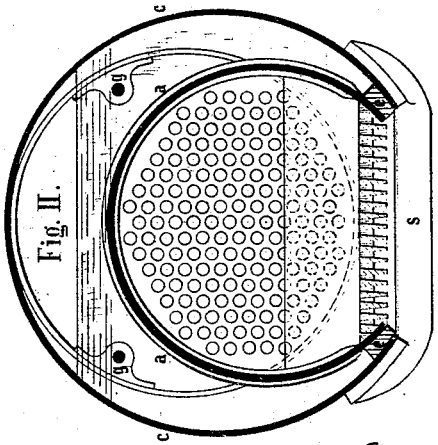
E. KASELOWSKY.

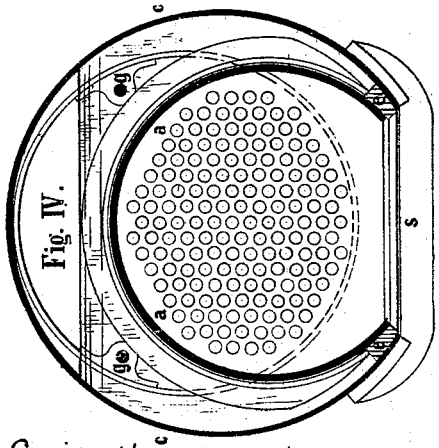
Steam-Boiler Furnace.

No. 168,502. Patented Oct. 5, 1875.









Witnesses, Harry Smith
Thomas McElwain

Emil Kaselowsky
by his Attorneys.
Howson and Sons

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL KASELOWSKY, OF BERLIN, PRUSSIA.

IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **168,502**, dated October 5, 1875; application filed July 15, 1875.

To all whom it may concern:

Be it known that I, EMIL KASELOWSKY, of Berlin, Kingdom of Prussia, Germany, have invented an Improvement in Steam-Boilers with internal Fire-Box, of which the following is a specification:

This invention relates to the construction of steam-boilers with internal fire-box; and the object of the same is to avoid all stay-bolts, so as to facilitate the cleaning of the boiler from scale and sediment, to make the same safer against accidents, and to afford other advantages, which will be enumerated hereafter.

This boiler is represented on the annexed sheet of drawings, Figure 1 being a longitudinal vertical section, and Fig. 2 a cross-section through the fire-box, of one modification, while Figs. 3 and 4 show the corresponding views of a second modification.

The interior fire-box is made cylindrical, as also the shell of the same, but both are arranged eccentrically to each other. They are cut out at the bottom, and the edges of the plate around the openings of both parts are united by riveting, having a ring or distance piece, *e*, placed between them, as will be seen from the drawings. The internal fire-box, however, is not fixed to the shell of the same by any stay-bolts whatever. These are not required on account of the cylindrical shape of both.

For the purpose, however, of completely stiffening the interior fire-box, the same may be made of corrugated plates, as in Figs. 1 and 2; or, in case common plates be preferred, they may be strengthened by rings of T-iron, as in Figs. 3 and 4, or in any similar manner.

The shell *b* of the tube part of the boiler is made cylindrical, as usual, and it is, by preference, placed eccentrically to the shell of the fire-box, the tops of both being nearly in a line. The differences of the pressures of steam on the inner and the outer fire-box having a tendency to bend outward, or to stretch the combination of the two, a stay, *c*, has been introduced at the bottom to counterbalance this strain.

The opening at the bottom of the fire-box serves for the free admission of the air from below to the grate, and the latter can be arranged as low in the fire-box as may be desired without hindering the draft, as is ever the case with cylindrical fire-boxes closed at the bottom.

A fire-bridge, K, of any convenient design or material, may be introduced without obstacle. For example, the same can be constructed of tubes, through which the water of the boiler circulates.

In this boiler no flat surfaces of plate are exposed to the steam pressure, with the sole exception of the tube-plate and a part of the front plate. The former is, however, sufficiently stayed by the tubes, and the latter being well rounded at the corners, as also the front of the interior fire-box, only a small part of the outer front plate remains flat, and this may be secured in the usual manner by two angle-irons, *f*, and the stays *g*, the outer ends of which may be attached to brackets riveted to the tube part of the shell; but this front plate may even be made spherical, so as to avoid flat parts of the same altogether.

The advantages of this boiler are the following: First, the cleaning and the examination of the same are much facilitated, especially as cleaning-orifices may easily be arranged at any desired point. There are no inaccessible spaces where an accumulation of scale can take place, so as to cause a burning through of the fire-box. Second, the fire-box nowhere presents a resistance against expansion from heat, as is caused by stay-bolts. The cracks otherwise appearing in the corners of the fire-boxes, therefore, cannot occur. Third, the execution is considerably cheaper. Fourth, the admission of air to the grate is not restricted, as in other cylindrical fire-boxes. Fifth, in case a fire-box is to be replaced by a new one, this presents less difficulty, and can be done at a smaller expense in a shorter time.

I claim as my invention—

The combination of the cylindrical boiler-shell having an opening at the bottom, the cylindrical fire-box open at the bottom, ar-

ranged eccentrically within the boiler-shell, and connected at its lower edges to the edges of the shell, and the grate situated within the coinciding openings of the shell and fire-box, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL KASELOWSKY.

Witnesses:
L. SCHWARTZKOPFT,
C. JERAU.