R. GLOGNER.

SECTIONAL BOILER.

APPLICATION FILED MAY 7, 1908.

913,489. Patented Feb. 23, 1909.

Fig. 1.

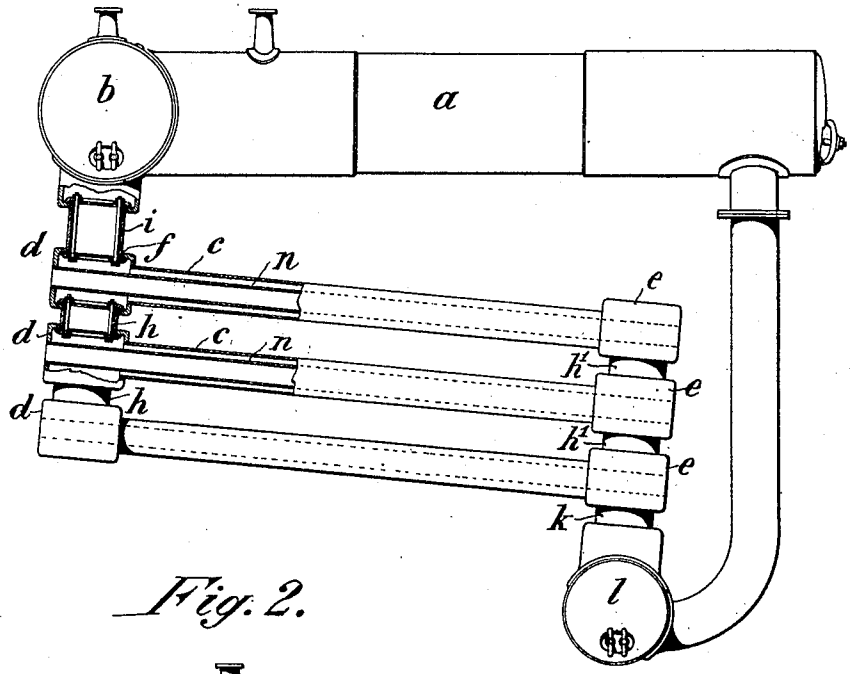


Fig. 2.

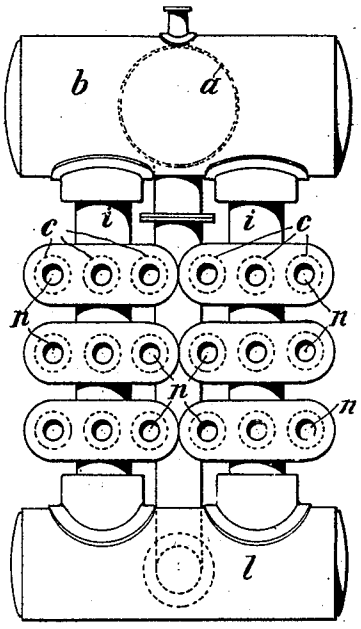


Fig. 3.

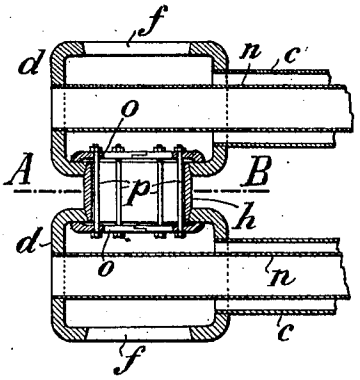


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT GLOGNER, OF CHARLOTTENBURG, GERMANY.

SECTIONAL BOILER.

No. 913,489. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed May 7, 1908. Serial No. 431,514.

To all whom it may concern:

Be it known that I, ROBERT GLOGNER, engineer, residing at Charlottenburg, in the Province of Brandenburg, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in or Relating to Sectional Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a sectional boiler with a large water chamber which is mainly constituted by single identical elements or links whereby it can be constructed in a very simple manner and easily adapted to local conditions, while at the same time its enlargement and the exchange of single parts or elements are facilitated. The said boiler combines, moreover, the advantages of water tube boilers and of tubular boilers, has an exceedingly large and favorable heating surface, is easy to clean and moreover, enables superheaters to be arranged in an advantageous manner.

A constructional form of the boiler is shown in the accompanying drawing in Figure 1 partly in vertical longitudinal section, in Fig. 2 in front elevation. Fig. 3 is a vertical section through the end chambers of the boiler, and Fig. 4 is a section on line A—B of Fig. 3.

The boiler consists of a longitudinal upper boiler *a* with a short transverse upper boiler *b* adjoining the same, so that the two together form a T. The transverse upper boiler is, however, not absolutely necessary, but only in the case when two or more vertical series of elements are used. Under the upper boiler which contains the steam space, are arranged, in groups superposed links or elements connected to the upper boiler by suitable branches or pipes. Such a link or element consists of several horizontal tubes *c* which open with their ends into two chambers *d e* which are common to the two pipes and form with them one single piece. The water chambers are generally provided with openings to which are connected intermediate branches *h h'*, the branch *i* being connected to the upper boiler *b* and the connecting branch *k* to the preliminary heater *l* which consists of a transverse pipe of the same width as that of the boiler, connected by means of a vertical pipe *m* to the upper longitudinal boiler *a*. The back chamber *e* of the uppermost element or link is provided with an opening at the bottom only and the front chamber of the lowest element at the top only. Each element is, moreover, provided with several fire tubes *n*, each of which is arranged in one of the water tubes *c*, and passes from the front wall of the front water chamber to the back wall of the back water chamber and is secured to the said walls. Any desired number of vertical groups of elements could be used, and in the same way the single groups could have any desired number of superposed elements, and each single element could consist of any desired number of tubes *c* arranged side by side with inner fire tubes *n*, but the construction illustrated with three tubes combined into one element is considered by the inventor as the most practical one as regards simplicity of construction and good working.

The branches *h* and *i* are connected to the chambers *d* and *e* in the manner shown by Figs. 3 and 4. The branches consist of short pipes the ends of which are tapered and fit in the openings *f* of the chambers. Within the chambers rings *o* are arranged consisting of two parts and having holes for screw-bolts *p* going from one ring to the other inside of the tubes *h* or *i*. By this construction the screws, washers or other parts, do not come in contact with the fire.

Combustion gases from a not shown grate come into contact with the outer walls not only of the tubes *c* but of the chambers *d* and *e*. At the same time the combustion gases pass also through the inner fire tubes *n* in the direction parallel to the outer flues, so that the elements are in contact with equally hot combustion gases both inside and outside. In that way, the boiler presents an extremely large and favorable heating surface, and owing to the small diameter of its parts, it is possible to work the same with high pressures while even then it contains a sufficiently large quantity of water to enable it to be used even for very irregular steam consumption. The intermediate space between the elements is eminently suitable for arranging superheater pipes which, if so arranged, do not require any separate space.

What I claim is:

1. In a sectional boiler, the combination, with a series of water-chambers, water-tubes secured to the said chambers, and fire-tubes arranged in the said water-tubes and also secured to the said chambers; of tubular con-

necting-branches the end portions of which engage with the said chambers, rings formed in segments and arranged in the said chambers, and bolts connecting the said rings together in pairs and thereby clamping the said branches to the said chambers.

2. In a sectional boiler, the combination, with a series of superposed water-chambers, water-tubes secured to the said chambers, and fire-tubes arranged in the said water-tubes and also secured to the said chambers; of intermediate tubular branches having tapering end portions which fit into holes in the said chambers, rings formed in segments and arranged in the said chambers, and clamping-bolts passing through the said branches and securing the said rings together in pairs.

In testimony whereof I affix my signature, in presence of two witnesses.

ROBERT GLOGNER.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.