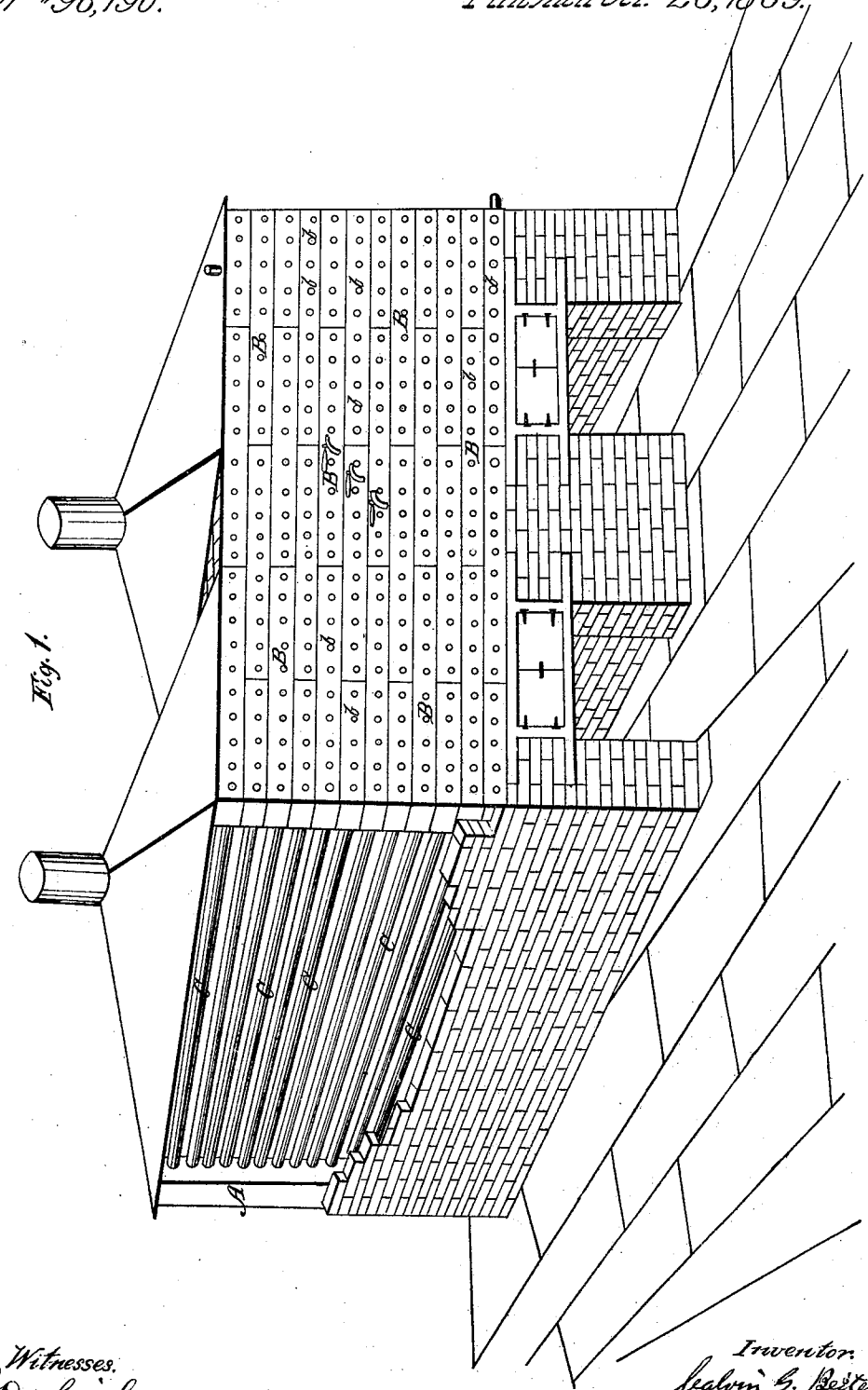
C. G. Beitel. Sheet 1-2. Sheets.

Steam Boiler.

No. 96,190. Patented Oct. 26, 1869.



Witnesses.
R. D. Smith
C. A. Harkness

Inventor.
Calvin G. Beitel
By his atty.
J. S. Brown

Sheet 2-2 Sheets.

C. G. Beitel.

Steam Boiler.

No. 96,190. Patented Oct. 26, 1869.

Fig. 4.

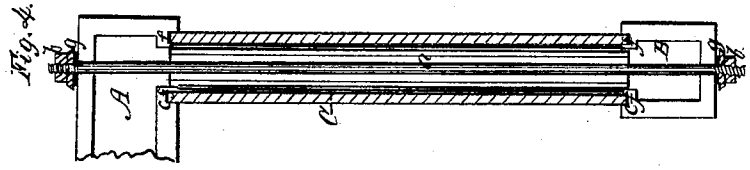


Fig. 2.

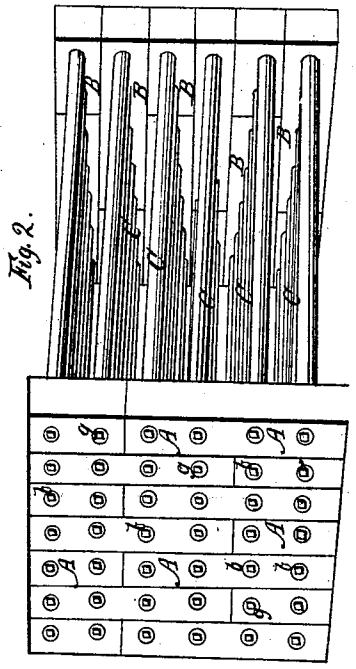
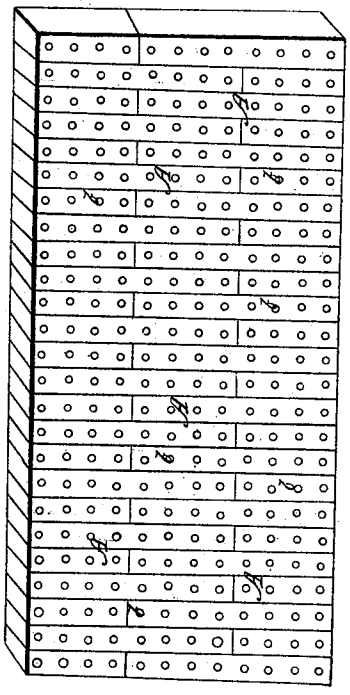


Fig. 3.



Witnesses.
R. D. Smith
C. A. Harkness

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United States Patent Office.

CALVIN G. BEITEL, OF EASTON, PENNSYLVANIA.

Letters Patent No. 96,190, *dated October* 26, 1869.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CALVIN G. BEITEL, of Easton, in the county of Northampton, and State of Pennsylvania, have invented an Improvement in Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a view, in perspective, of a sectional steam-boiler, constructed with my improvement, and represented as set in brick-work.

Figure 2, a view, in perspective, of a portion of the boiler alone.

Figure 3, a view, in perspective, of a number of the vertical steam-boxes in position.

Figure 4, a section through one of the connecting-tubes and the contiguous steam-boxes.

Like letters designate corresponding parts in all of the figures.

This improvement is upon the class of "sectional" boilers, being composed wholly of series of independent water or steam-boxes A A and B B, connected by series of tubes C C; and

It relates particularly to the improved sectional boiler, patented by Henry J. Brunner, on the 6th day of April, 1869, wherein the boxes A A, at one end of the series of tubes C C, are all vertical, and the boxes B B, at the other end of the tubes, are all horizontal, so that no two tubes are connected with the same boxes at both ends, whereby the tubes may all expand unequally, without straining the boiler, one or other of the boxes connected with any such tube, allowing the unequal expansion or contraction, without being constrained by the other tubes, and whereby any single tube may be removed for repairs, or be replaced, by taking off only one box.

My improvement consists in making the steam and water-boxes A A B B, in several shorter sections, so as to require two or more for one length or width of the boiler, and in arranging the alternate longitudinal rows thereof, so as to lap by each other, and so that no section or box will connect by the tubes with all of the opposite boxes that the contiguous sections above and below do, but only with one-half, one-third, or some other convenient aliquot part thereof.

The drawings represent each section connected with one-half of the boxes on the opposite side of the boiler that the contiguous boxes above and below, or at each side do, so that the arrangement of the sections is similar in appearance to bricks laid in courses, "breaking joints" at the middle of the bricks in the adjacent courses.

This arrangement may be applied to both the horizontal and the vertical boxes, and is especially applicable and useful in large boilers.

By this arrangement, a boiler may be constructed of any required dimensions, without impairing the circulation of the water and steam therein; and a perfect uniformity of pressure may be secured in all parts with any number of furnaces under it.

Also, it obviates the necessity of making long boxes, and the boiler, thus being made of smaller parts, has greater comparative strength and safety, less damage being done, if any parts give way.

Another peculiarity and capability of the improvement is, that a boiler may be made of various sizes, from the same size or sizes of boxes A A B B, within any desired limits, and a boiler may, at any time, be enlarged or diminished, at pleasure.

The particulars of construction, except in what has special relation to my improvement, may be similar to the said Brunner's improved boiler, or to other sectional boilers, and need not here be specified.

What I claim as my invention, and desire to secure by Letters Patent, is—

The construction of the boiler, of sections or boxes A A and B B, of less length than the dimension of the boiler, where they are applied, so that two or more lengths thereof are required to reach the extent of the boiler, and in arranging the said short sections, so that the contiguous courses or layers lap by each other alternately, and connect with different opposite sections in part, substantially as and for the purposes herein specified.

CALVIN G. BEITEL.

Witnesses:
SAMUEL KUTZ,
JNO. J. CAREY.