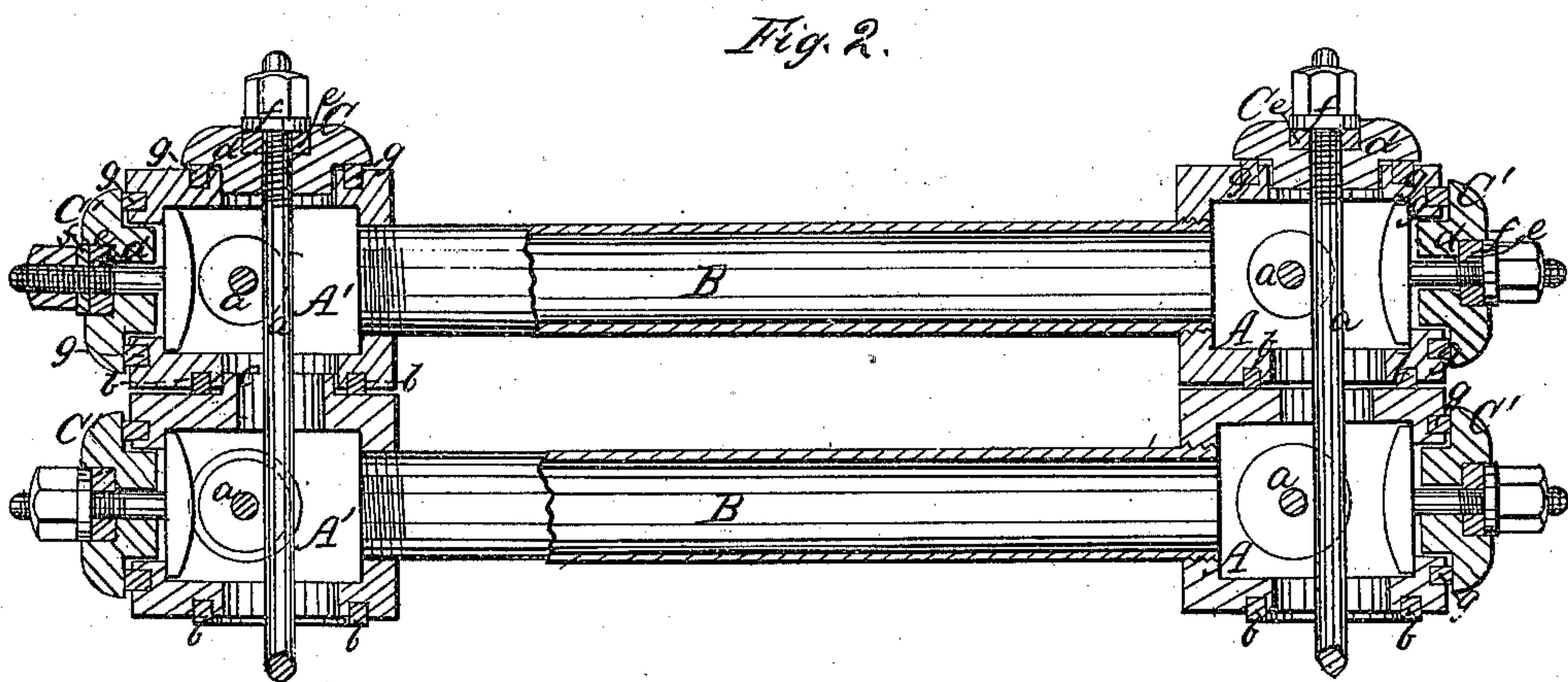
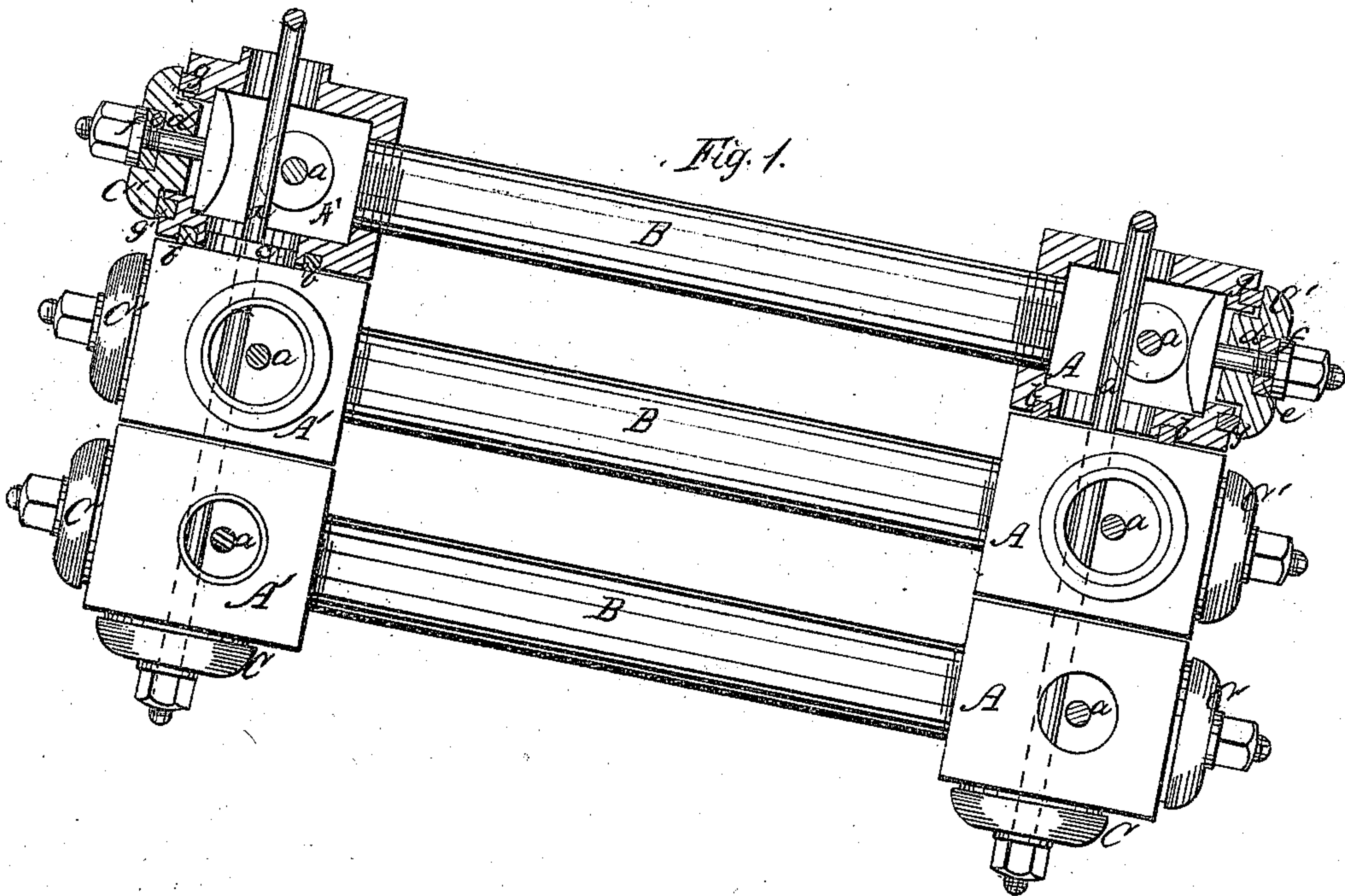


*A. S. Cameron.*

*Sectional Steam Boiler.*

*N<sup>o</sup> 97,353.*

*Patented Nov. 30, 1869.*



*Witnesses*  
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# United States Patent Office.

A. S. CAMERON, OF NEW YORK, N. Y.

Letters Patent No. 97,353, dated November 30, 1869.

## IMPROVEMENT IN SECTIONAL 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, A. S. CAMERON, of the city, county, and State of New York, have invented a new and useful Improvement in Sectional Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a horizontal section of this invention.

Figure 2 is a longitudinal vertical section of the same.

Similar letters indicate corresponding parts.

This invention relates to the arrangement of a soft-metal packing-ring, in a groove turned, for that purpose, into the face of one of the two adjoining heads of a sectional steam-boiler, in such a manner that when the heads are pressed together, a tight joint is formed between the flat face of one head and the soft-metal ring in the face of the other head, and, at the same time, said heads are allowed to accommodate themselves to the expansion and contraction of the tubes connected to them without producing leaky joints.

The heads at one end of the boiler, however, are provided with annular rims projecting into the holes of the adjoining heads, so that these heads remain firmly in position, while the heads at the opposite end of the boiler, being provided with flat bearing-surfaces, are enabled to accommodate themselves to the expansion and contraction of the tubes.

The joints on the bolts which hold the heads together are also rendered tight by soft-metal rings, placed into stuffing-boxes, through which said bolts extend, and compressed by the action of the nuts and followers or washers interposed between said nuts and the soft-metal rings.

In the drawing—

The letter A designates the heads at one end, and the letter A', the heads at the opposite end of a sectional steam-boiler.

The heads A A' are connected by the tubes B, which are exposed to the action of a fire built in a furnace, which, however, has no relation to my present improvement, and is not shown in the drawing.

The heads A A' are placed side by side, being retained in position and forced up against each other by means of bolts a, which pass through them in a vertical and in a horizontal direction, as shown.

The joints between the adjoining surfaces of the

heads A are rendered tight by means of soft packing-rings b, which are placed into grooves turned into one of the adjoining surfaces, the other surface being left perfectly flat, so that when the heads are drawn together by the action of the screw-bolts a, a tight joint is produced, and at the same time the heads are free to accommodate themselves to the expansion and contraction of the tubes B without rendering the joints leaky.

The joints between the adjoining heads A' are formed in the same manner as those between the heads A, with the exception that one of the two adjoining surfaces on said heads is provided with a rim, c, which projects into the hole in the other surface, so that when the screw-bolts are drawn up tight, the heads A' are firmly retained in position, and not allowed to follow the expansion and contraction of the tubes B, since the motion allowed to the heads A, on the opposite end of the boiler, is quite sufficient to compensate for the expansion and contraction.

On the outer surfaces of the outside heads in each row are placed the covering-plates or caps C, which are provided with stuffing-boxes, d, through which pass the screw-bolts a, and into these stuffing-boxes are placed soft-metal rings, e, and washers, f, so that by screwing up the bolts, the soft-metal rings will be pressed firmly against the circumference of the bolts, and tight joints are produced.

The caps C bear against soft-metal rings, g, placed between them and the outer surfaces of the heads.

By these means the joints on all parts of my boiler are easily made tight, and the heads A are free to accommodate themselves to the expansion and contraction of the water-pipes, without breaking the joints between them.

The caps C' of the hand-holes in the heads are constructed like the caps C, and they also bear against soft-metal rings, g.

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

1. The arrangement of flat surfaces on the heads A, bearing against soft-metal rings placed into grooves in the adjoining surfaces, so as to allow said heads to accommodate themselves to the expansion and contraction of the tubes, without rendering the joints leaky, substantially as described.

2. Also, the rims c, on the heads A', in combination with the soft-metal rings interposed between two adjoining heads, substantially as set forth.

A. S. CAMERON.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.