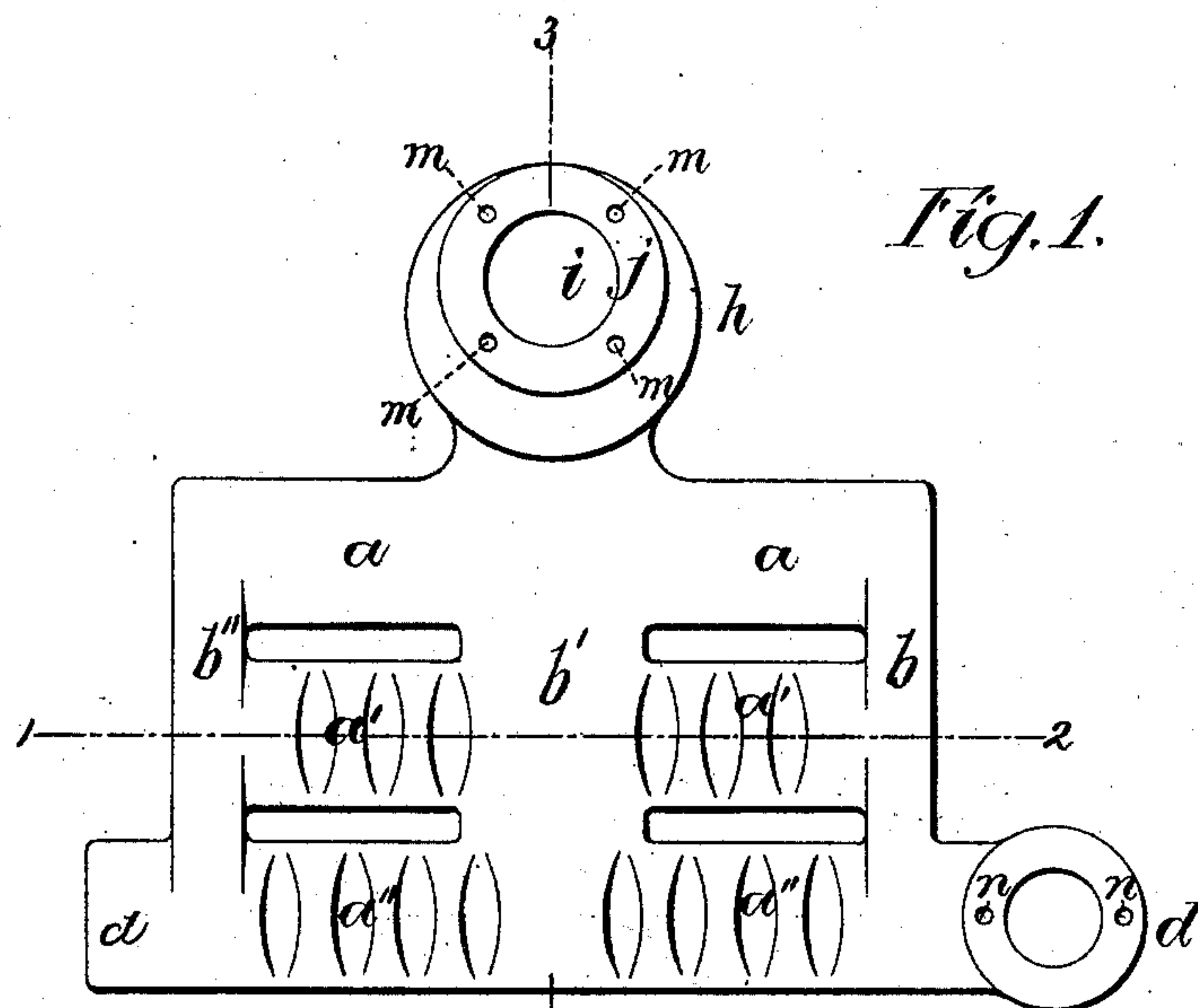


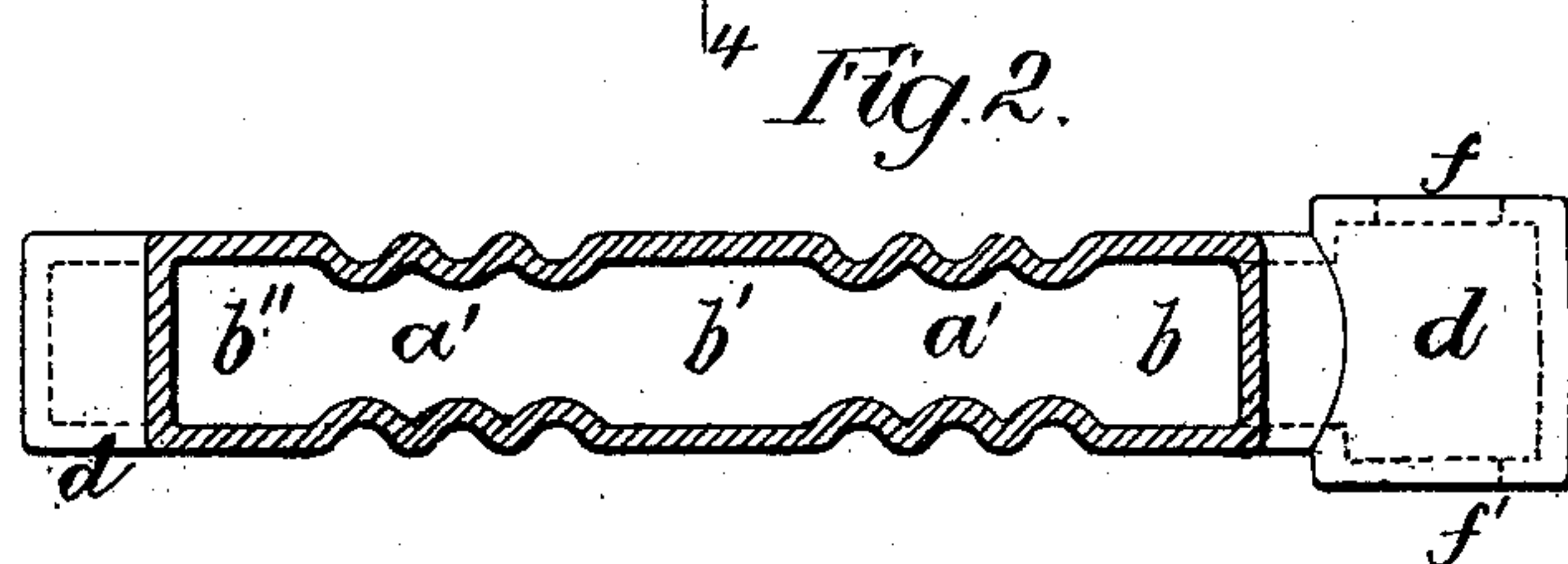
J. J. ROEPER.  
Sectional Steam-Generator.

No. 203,197.

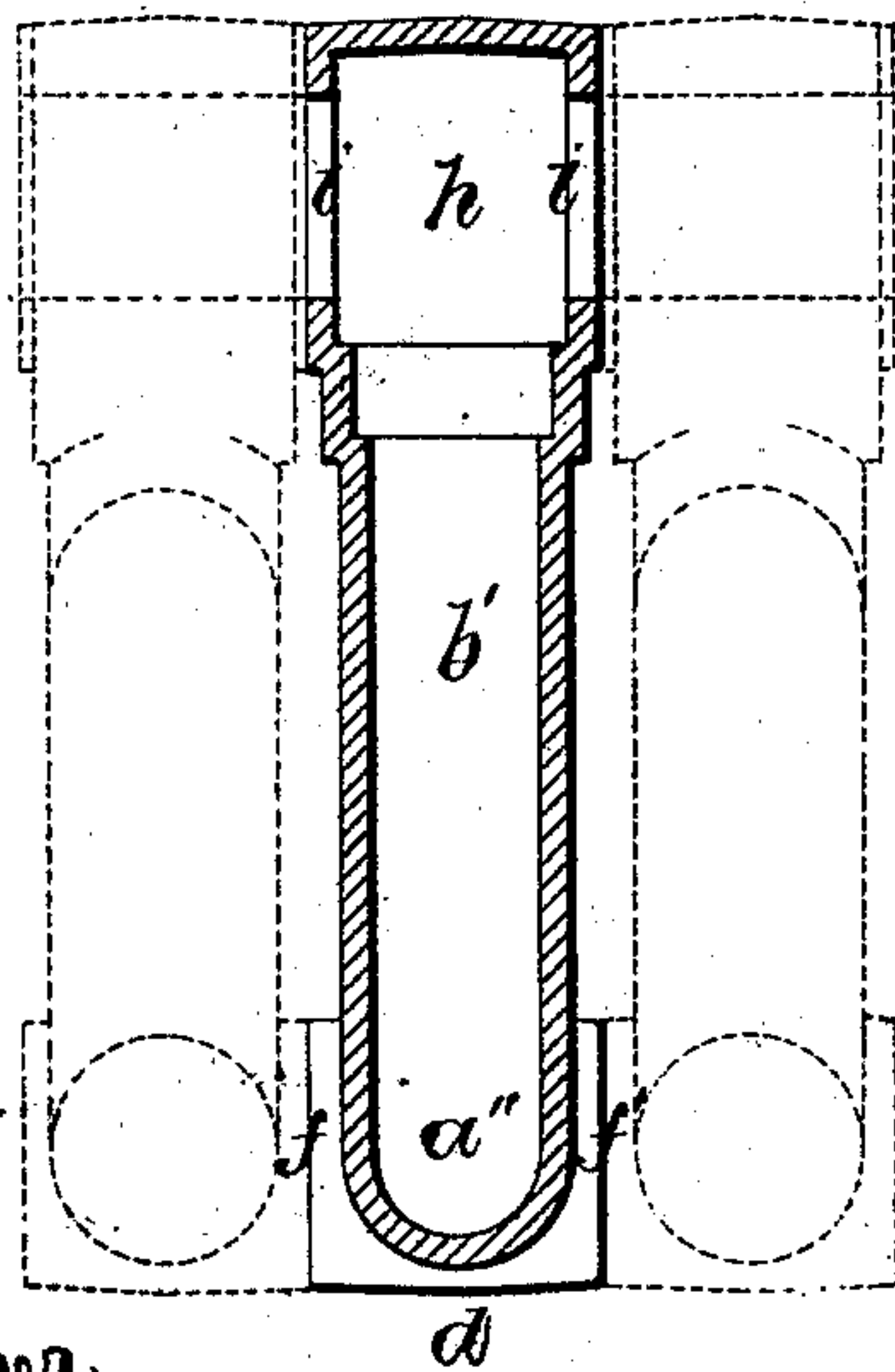
Patented April 30, 1878.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

Witnesses  
Richard L. Gardiner  
Harry Smith

Inventor  
John J. Roeper  
by his Attorneys  
Howson and Son.

# UNITED STATES PATENT OFFICE.

JOHN J. ROEPER, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN SECTIONAL STEAM-GENERATORS.

Specification forming part of Letters Patent No. **203,197**, dated April 30, 1878; application filed November 7, 1877.

*To all whom it may concern:*

Be it known that I, JOHN J. ROEPER, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Sectional Steam-Generators, of which the following is a specification:

The main object of my invention is to so construct a sectional steam-generator that free expansion or contraction of each section is permitted without impairing the joints between the adjacent sections. This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a side view of one of the cast-iron sections of my improved steam-generator; Fig. 2, a sectional plan on the line 1 2, and Fig. 3 a vertical section on the line 3 4.

Each section is composed of a series of tubes, arranged at right angles to each other, there being, in the present instance, three horizontal tubes, *a*, *a'*, and *a''*, combined with three vertical tubes, *b*, *b'*, and *b''*, all being cast in one piece.

At one end of the lower tube *a''* of each section, and communicating therewith, is a branch, *d*, which has two faces, *f f'*, the distance between the latter being somewhat greater than the width or diameter of the tubes, as shown in Fig. 3, so that when the branches *d* of several sections are fitted together they will form a tube situated at right angles to the tubes of the sections, and the bodies of the sections will be a short distance apart from each other.

Each section has at the top, and preferably in a central position, a hollow cylindrical projection, *h*, having at each side a circular opening, *i*, surrounded by an annular facing, *j*, the distance between the facings being the same as the distance between the two faces *f f'* of the branch *d*, the facings *j* of one section being fitted to those of the adjoining sections, and the several sections being secured together by bolts passed through holes *m* in the projections *h* and through holes *n* in the branches *d*.

The hollow projections *h* of the several sections constitute the steam-chamber, to which may be attached the usual shut-off and safety valves, and the several branches *d* form a passage, through which the feed-water may be introduced into the several sections. These sections being thus secured at two points only, the main body of each section is at liberty to expand and contract without disturbing the joints.

I prefer to corrugate the horizontal tubes of each section, as shown in Fig. 2, for obtaining increased heating-surface, the end sections of the series being corrugated at the inner sides only.

It has not been deemed necessary to show a furnace in connection with the generator, as a furnace of proper construction will readily suggest itself to those skilled in the art.

Owing to the arrangement of vertical and horizontal tubes, there must necessarily be a free circulation of water through every part of each section, which must present an extended surface to the products of combustion.

The capacity of the generator may be readily increased by additional sections, and as each section is cast in one piece, the generator must necessarily be a cheap one.

I claim as my invention—

A steam-generator composed of sections, each section having horizontal corrugated pipes, plain vertical pipes, an upper projection, *h*, forming part of the steam-drum, a lower projection, *d*, having a boss on each side, and the said projections of one section being secured to those of the adjoining sections, all as set forth.

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

JOHN J. ROEPER.

Witnesses:

RICHARD L. GARDINER,  
HARRY SMITH.