

(No Model.)

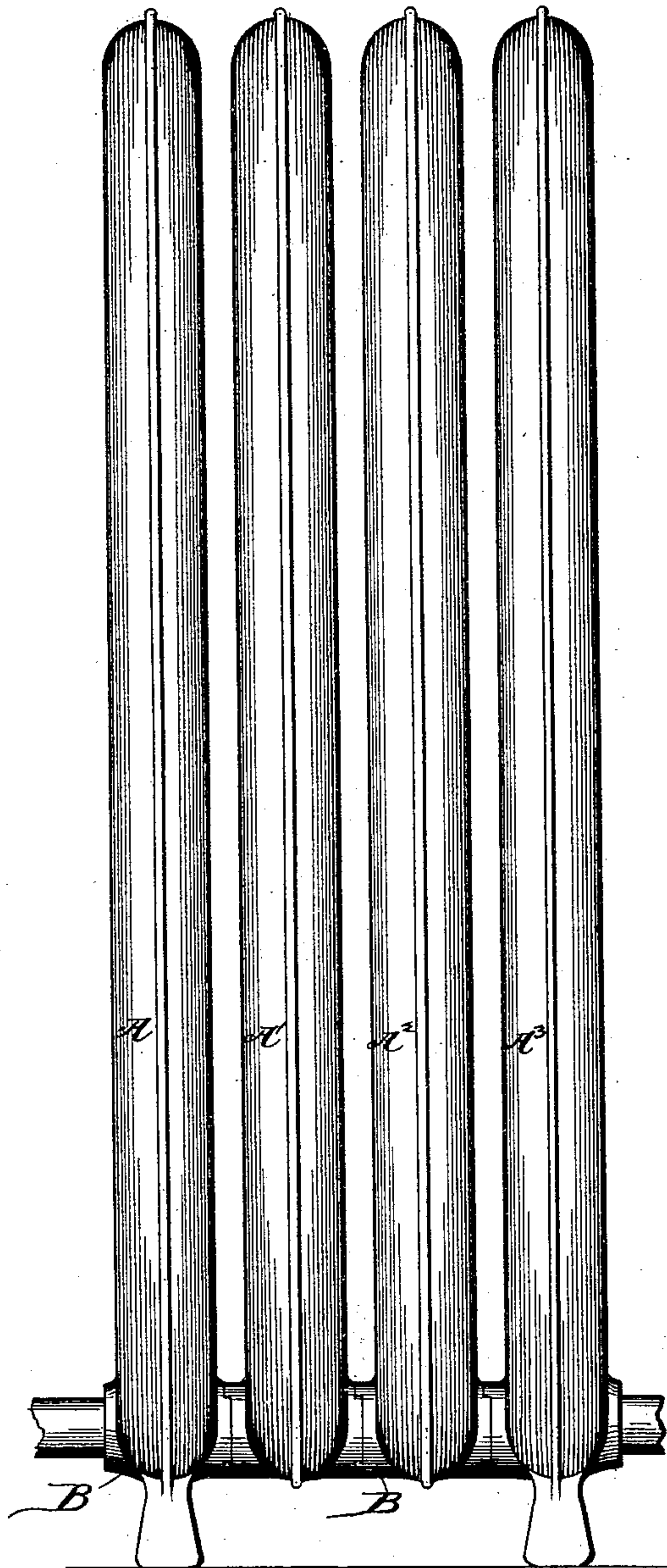
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C. C. MULFORD.  
RADIATOR.

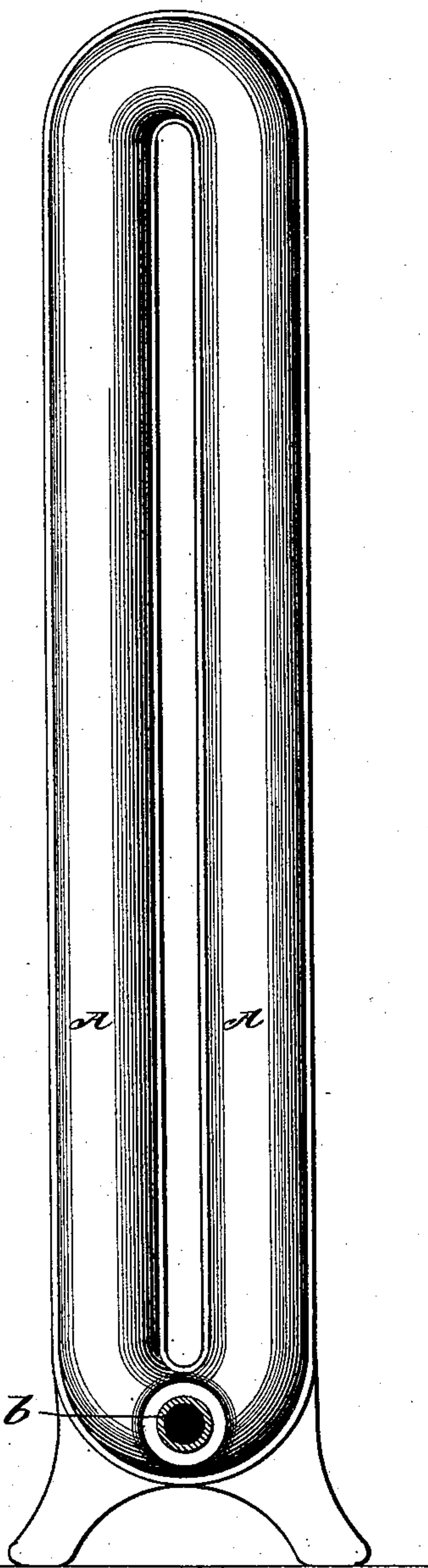
No. 487,880.

Patented Dec. 13, 1892.

*Fig. 1.*



*Fig. 2.*



Witnesses

W. C. Corlies

Martin A. Olson

Inventor

Clarence C. Mulford

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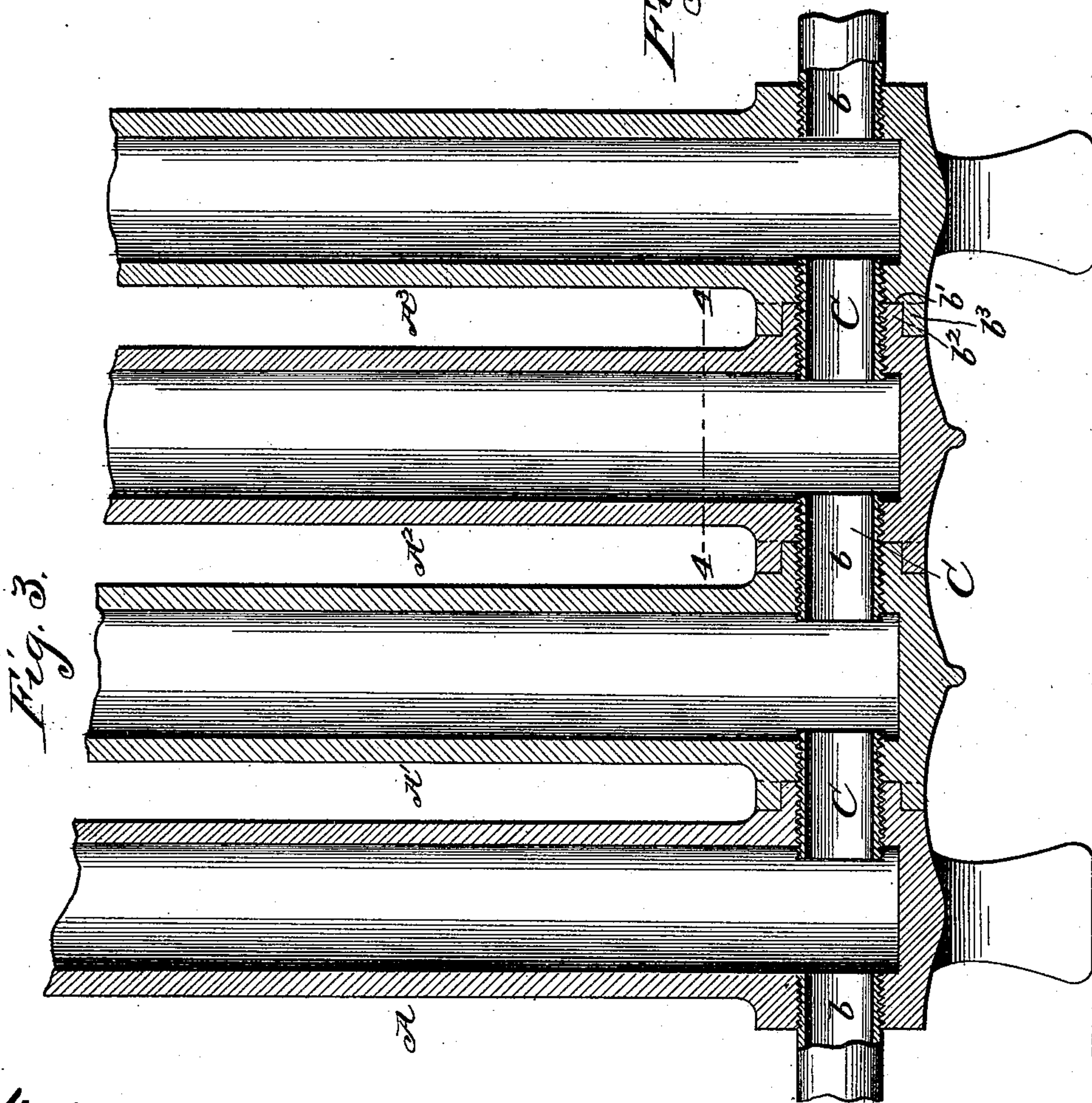
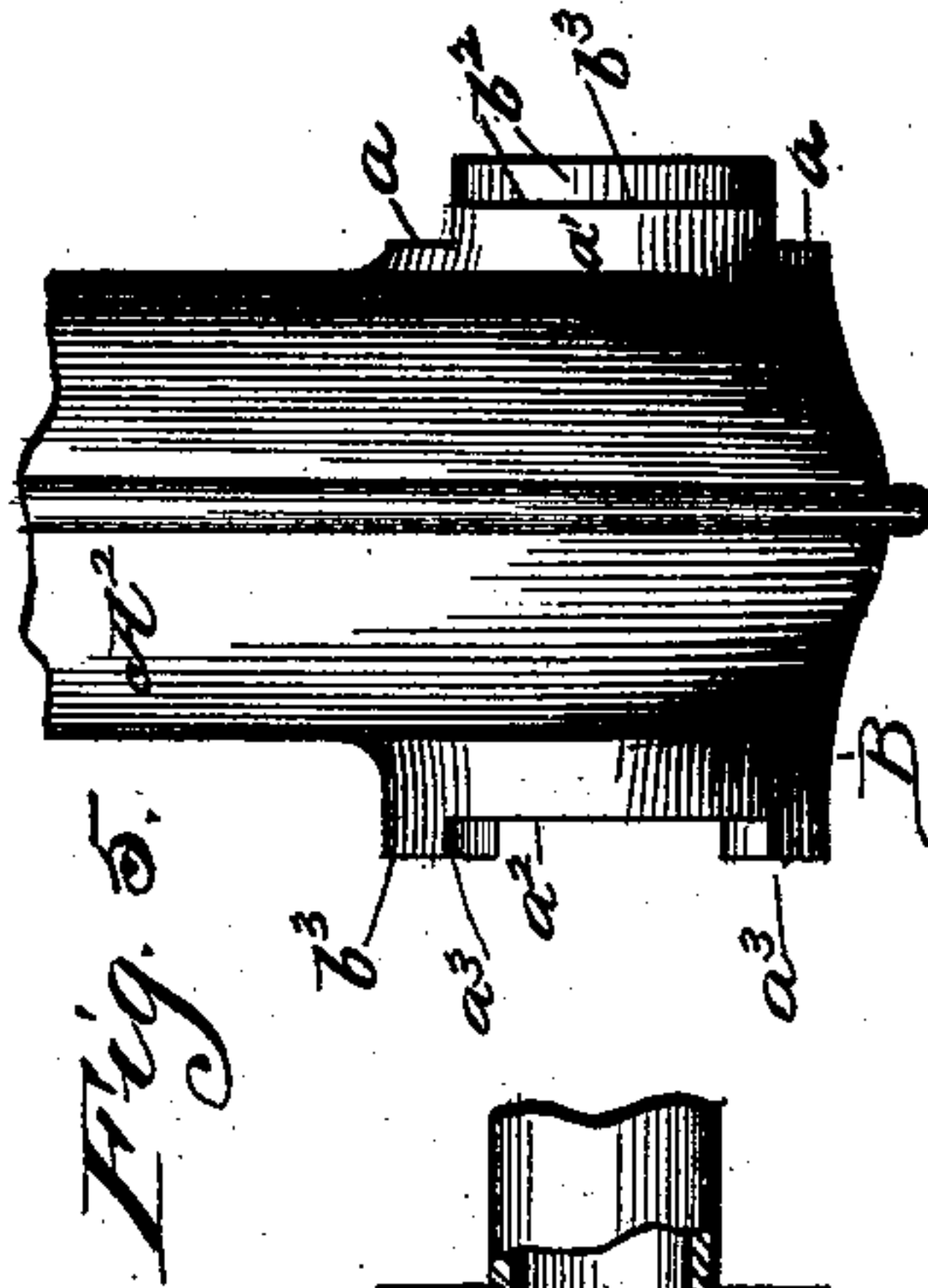
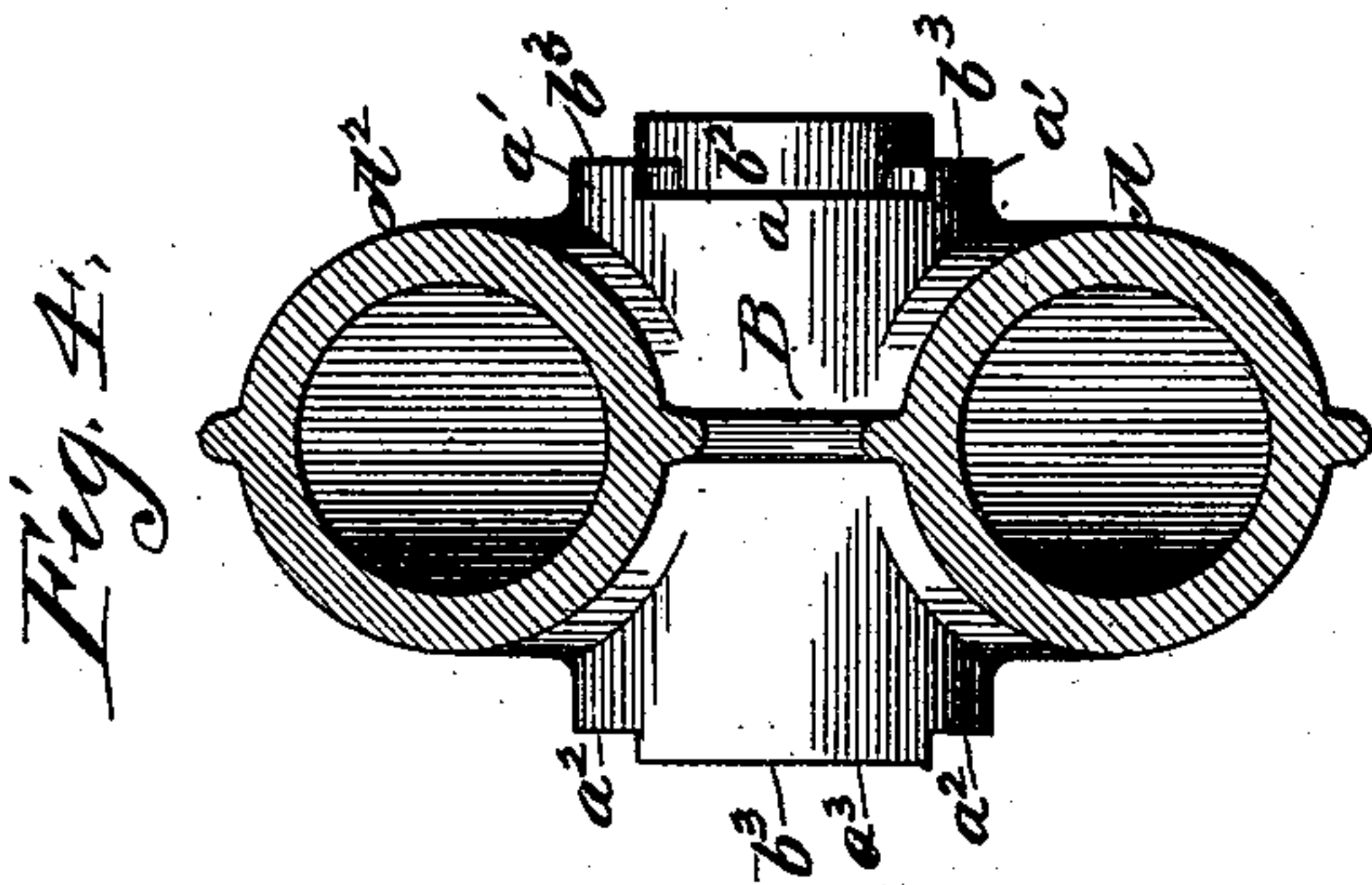
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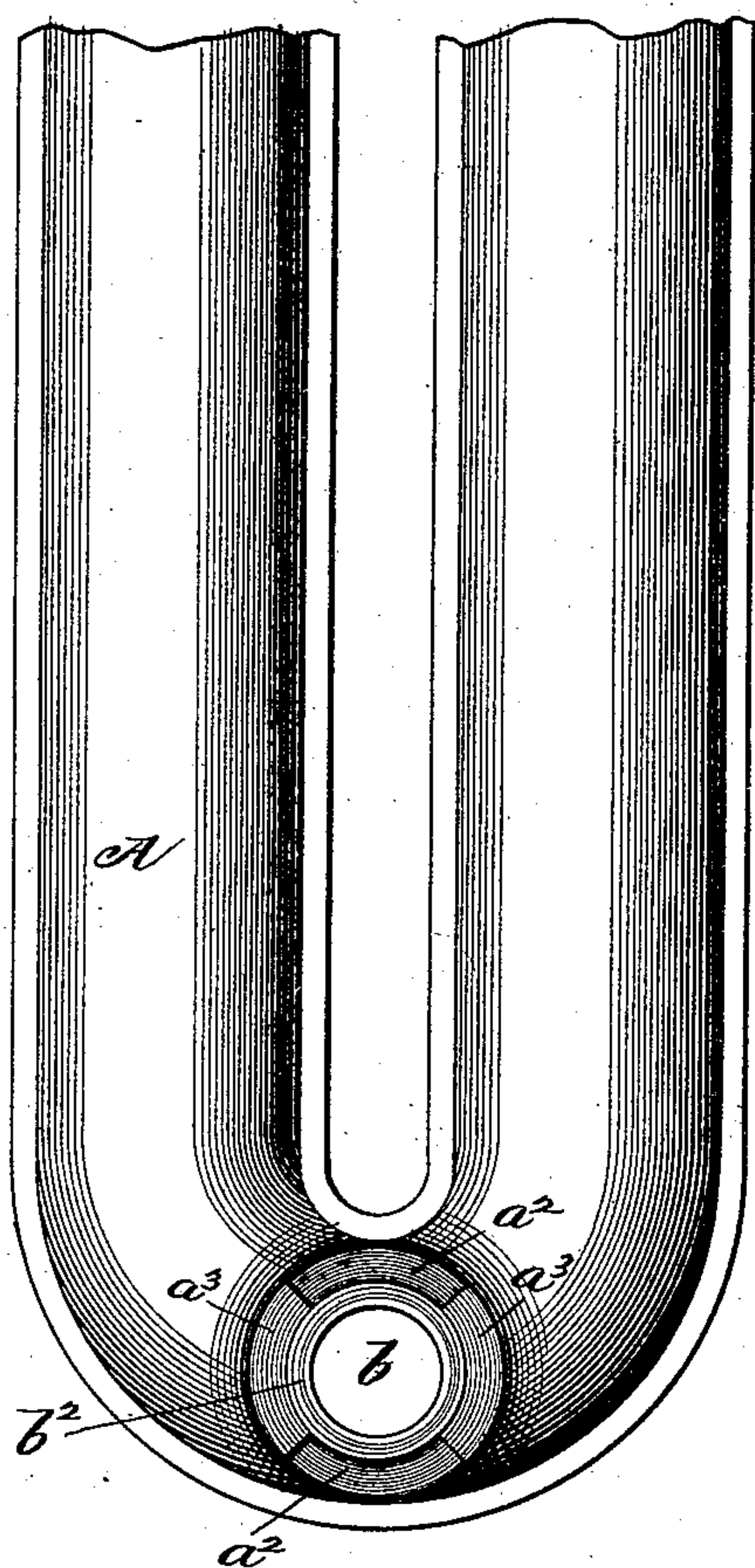
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C. C. MULFORD.  
RADIATOR.

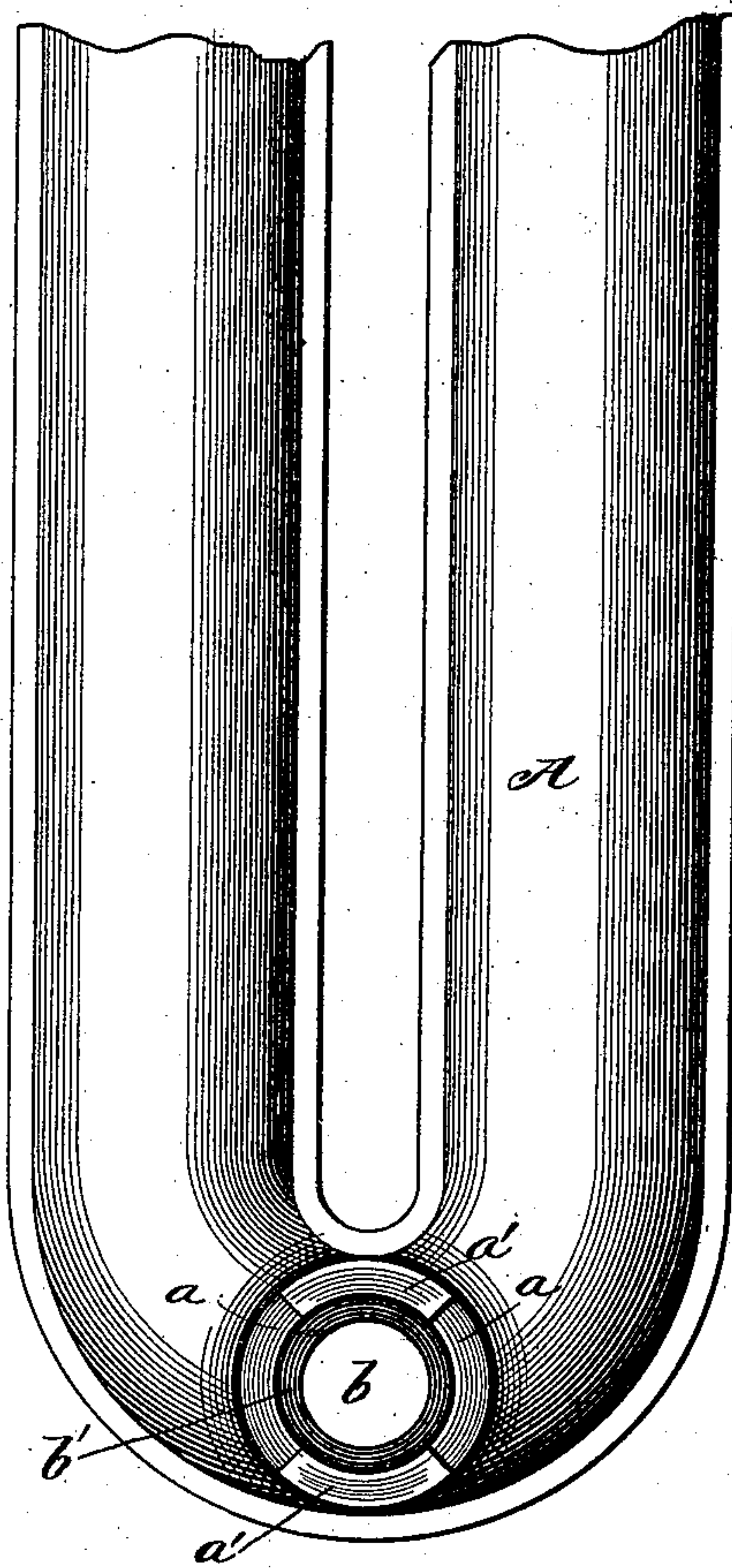
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*Fig. 6.*



*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

CLARENCE C. MULFORD, OF GALVA, ASSIGNOR TO WALLACE H. RYON, OF  
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## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 487,880, dated December 13, 1892.

Application filed March 8, 1892. Serial No. 424,234. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE C. MULFORD, a citizen of the United States of America, residing at Galva, in the county of Henry and State of Illinois, have invented a certain new and useful Improvement in Radiators, of which the following is a specification.

Referring to the accompanying drawings, wherein like reference-letters indicate like parts, Figure 1 is a side elevation of the radiator; Fig. 2, an end elevation of the same; Fig. 3, a longitudinal vertical section of the same; Fig. 4, a horizontal section in line 4-4 of Fig. 3; Fig. 5, a detached view of the lower end of one of the radiator-sections, and Figs. 6 and 7 side elevations showing the interlocking device at both sides of a radiator-section.

In the construction of sectional steam and hot-water radiators for the warming of buildings the problem of establishing and maintaining a true vertical alignment of the sections has presented much practical difficulty, rendering it necessary to fasten them together at the top as well as at the bottom in order to preserve their proper relation to each other.

The object of my invention is to enable the top connection to be dispensed with by locking the lower ends of the sections together in such manner that when they have been secured together at the base their upper ends are incapable of any independent lateral deflection.

In the drawings, A A' A<sup>2</sup> represent the several sections of a radiator, the lower end of each section at B being sufficiently enlarged to properly space the radiating-surfaces above when the sections are connected together. Through each base-section B there is an opening *b* to admit the passage of the steam or hot water from one section to another. Each section B is provided on one side with a recess *b'* around the opening *b*, and on the other side with a projection or flange *b<sup>2</sup>*, adapted to fit into the recess *b'* of the next section, so that the engagement of the several projections *b<sup>2</sup>* in the corresponding recesses *b'* will secure the lower ends of the radiator-sections from lateral or vertical displacement. For reasons familiar to the practical mechanic it is preferable to make the recesses *b'* and projections *b<sup>2</sup>* in annular form, and here arises the diffi-

culty above referred to, because when so made and connected together a comparatively-slight force applied laterally against the upper part of any radiator-section is liable to turn it on the connection *b' b<sup>2</sup>*, as on a pivot, and thus get the sections out of alignment at their upper end unless secured together at the top as well as at the base. I therefore construct the bases B to interlock with each other in such a way as to prevent the radiator-sections from turning or pivoting on the connections *b' b<sup>2</sup>*. There are many different and in a general sense equivalent ways in which this can be done, all depending upon the principle of causing a projection from each base to enter a corresponding recess in the next adjacent base, and thus prevent them from turning independently of each other.

The preferable construction of the interlocking device is as follows: In each base B on the side having the recess *b'* there is an annular flange *b<sup>3</sup>* outside of the recess *b'*. I cut away or suppress two opposite quarter-sections of this flange, as shown at *a a*, to a depth of about one-fourth of an inch, which leaves two opposite quarter-sections *a' a'* projecting between the cut-away portions. At the opposite side of the base B, in the annular surface immediately surrounding the flange *b<sup>2</sup>*, I cut away or suppress quarter-sections *a<sup>2</sup> a<sup>2</sup>* in line with the projections *a' a'*, leaving quarter-sections *a<sup>3</sup> a<sup>3</sup>* projecting in line with the recesses *a a*. Thus formed whenever two bases are brought together the projections *a' a'* of the one fit into the recesses *a<sup>2</sup> a<sup>2</sup>* of the other and the projections *a<sup>3</sup> a<sup>3</sup>* of the latter fit into the recesses *a a* of the former, closely interlocking the two bases together and preventing the possibility of their turning independently. The result is that each radiator-section always retains its proper vertical position without the necessity of any connection at the upper end. The joints are of course to be properly packed to render them steam and water tight.

The several radiator-sections must be properly secured together. This has heretofore been accomplished by tie-rods running through them all and provided with a head at one end and a screw-nut at the other end, a construction that may still be used, if pre-

ferred; but as a further improvement I prefer the construction shown in Fig. 3, in which the opening *b* is screw-threaded and a thimble *C* screwed into it to connect the proximate radiator - sections. By making the screw-threads "right and left" the thimble when turned will draw the two sections firmly together, and at the same time it will serve as an effective packing or shield to prevent access of steam or water to the vertical joints. It saves, also, the necessity of providing a stock of tie-rods at different lengths for the different sizes of radiators, as the thimbles may all be made of uniform size.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A sectional radiator having its meeting surfaces at the base of the sections provided with interlocking projections and recesses to prevent the lateral rocking of the sections independently of each other, substantially as described.

2. A radiator-section having its lower end enlarged and provided with the annular recess *b'* and tubular projection *b<sup>2</sup>* and with the interlocking projections and recesses to prevent lateral rocking, substantially as described.

CLARENCE C. MULFORD.

Witnesses:

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