

No. 798,422.

PATENTED AUG. 29, 1905.

W. R. KINNAR.  
RADIATOR.

APPLICATION FILED MAY 10, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

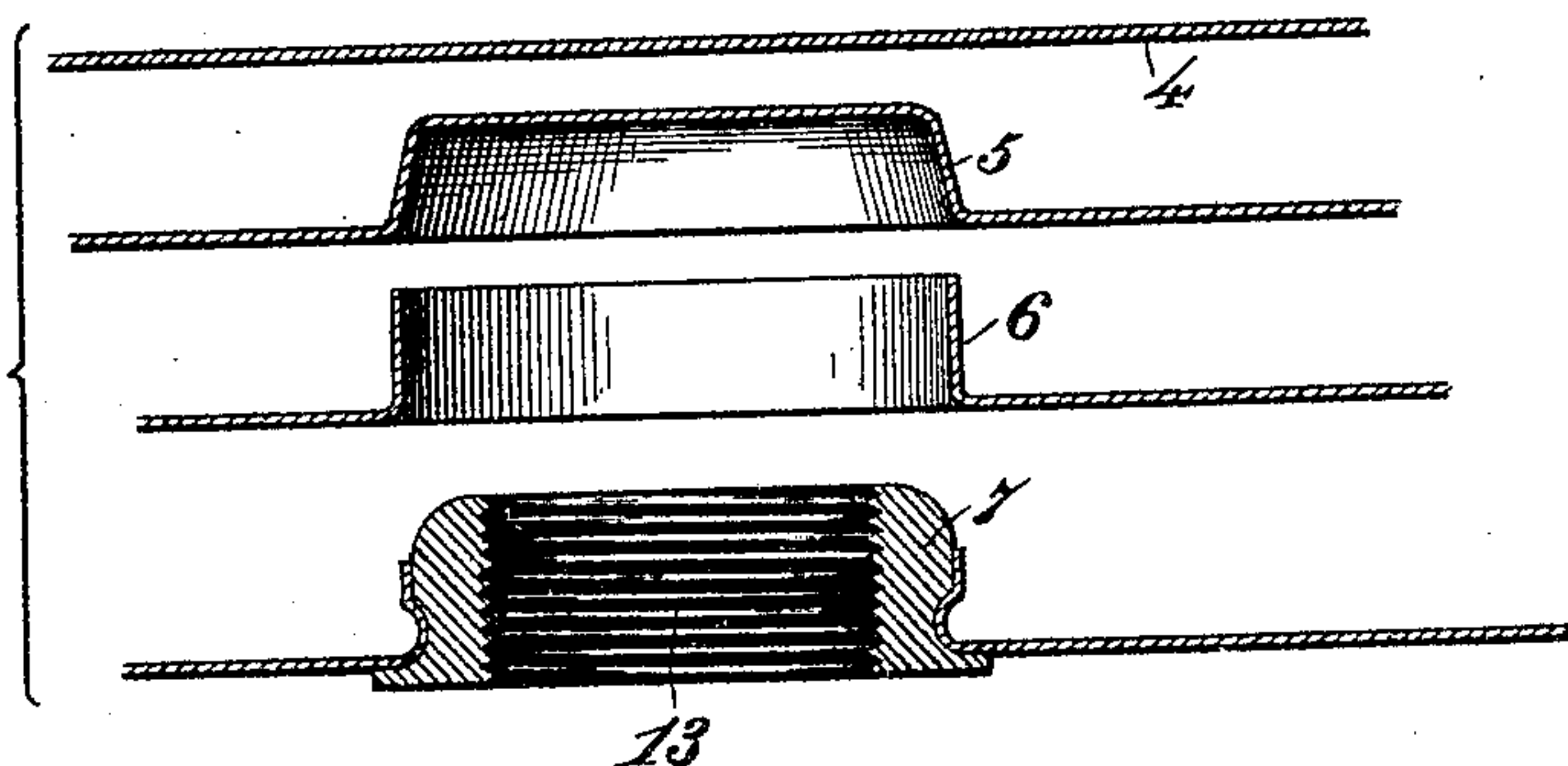


Fig. 2.

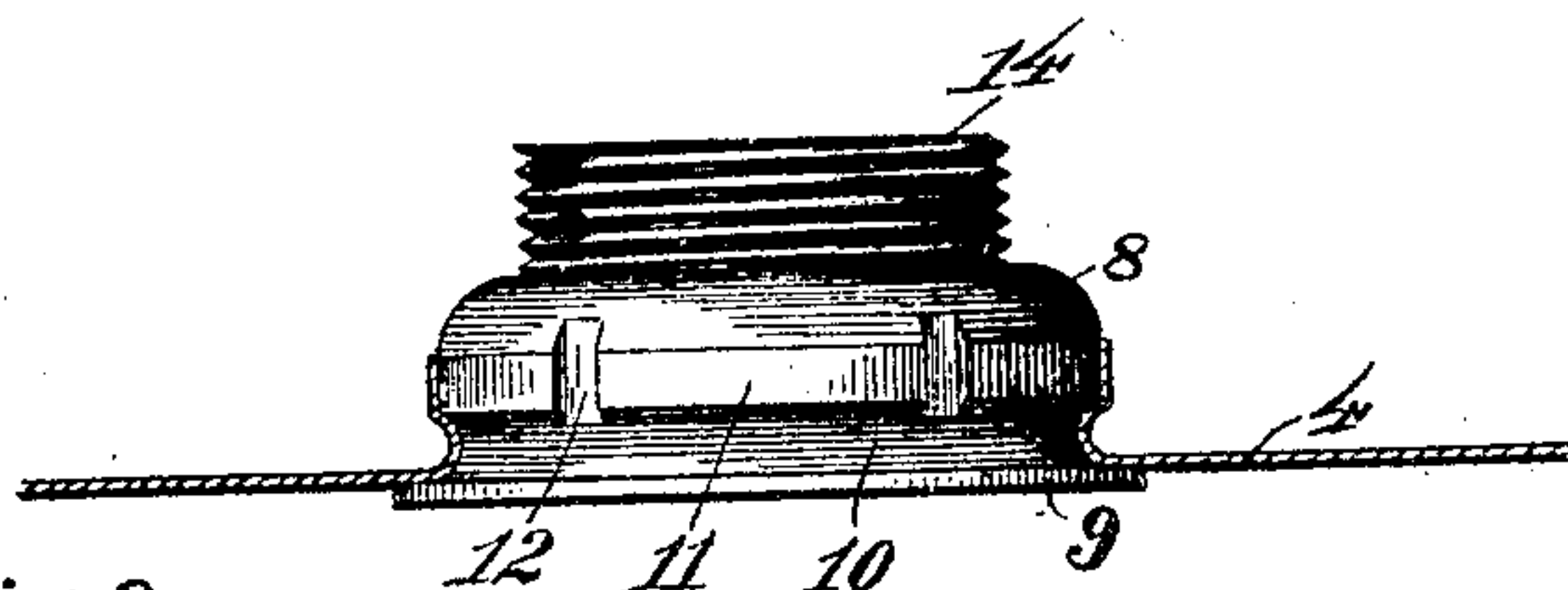
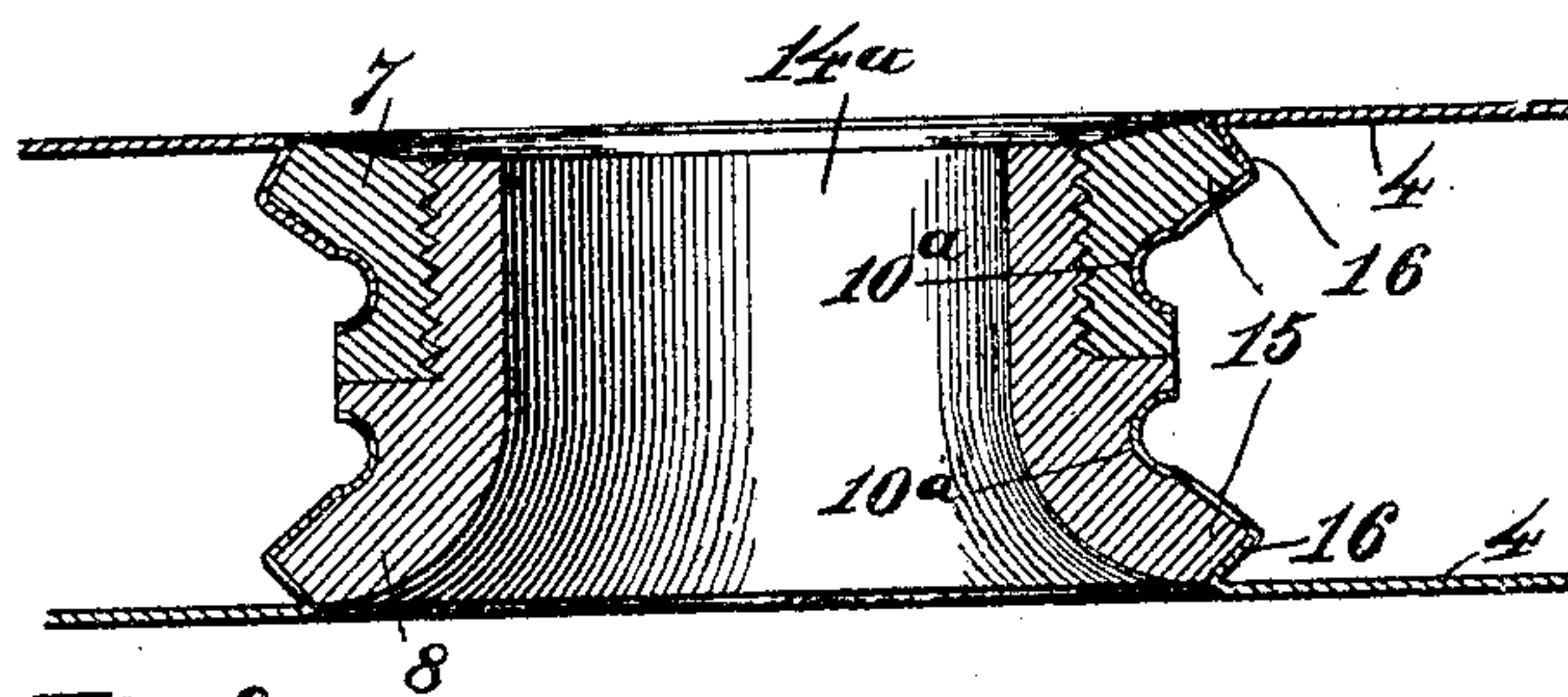


Fig. 3.



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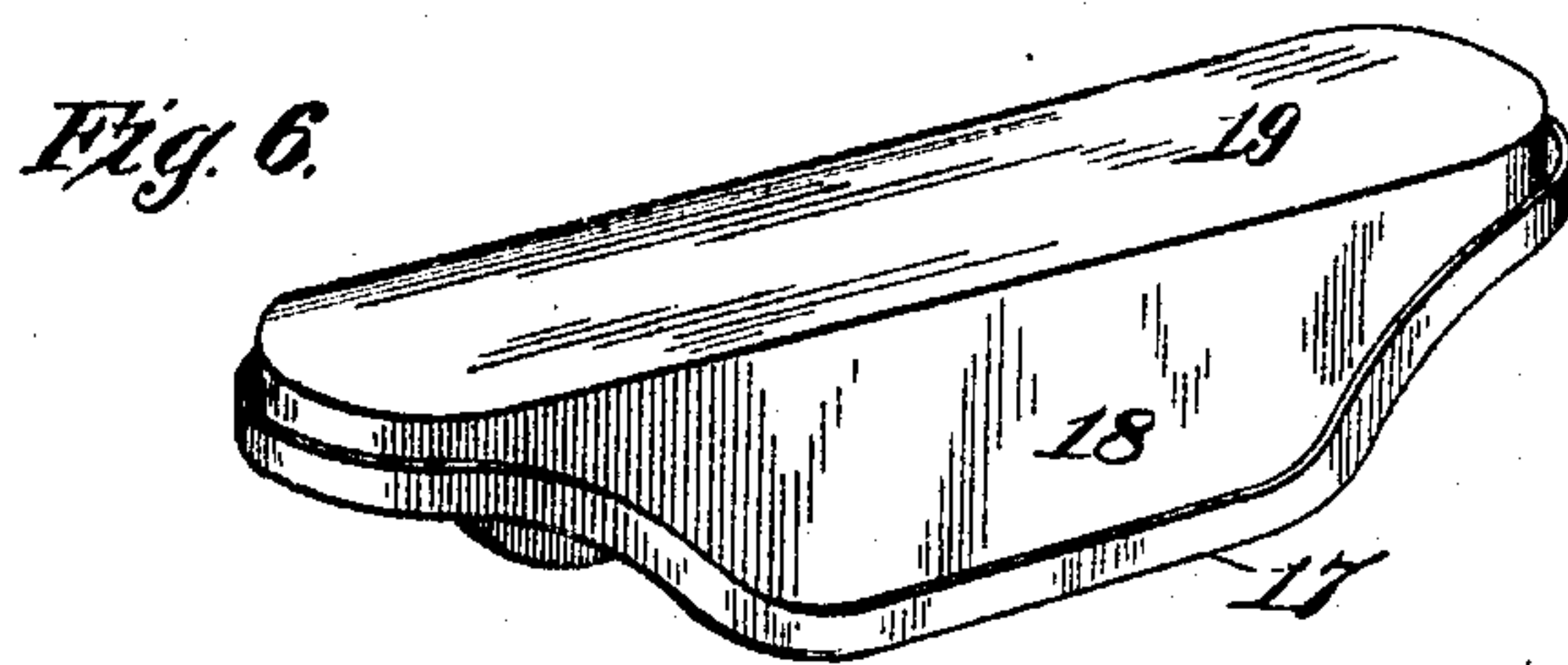
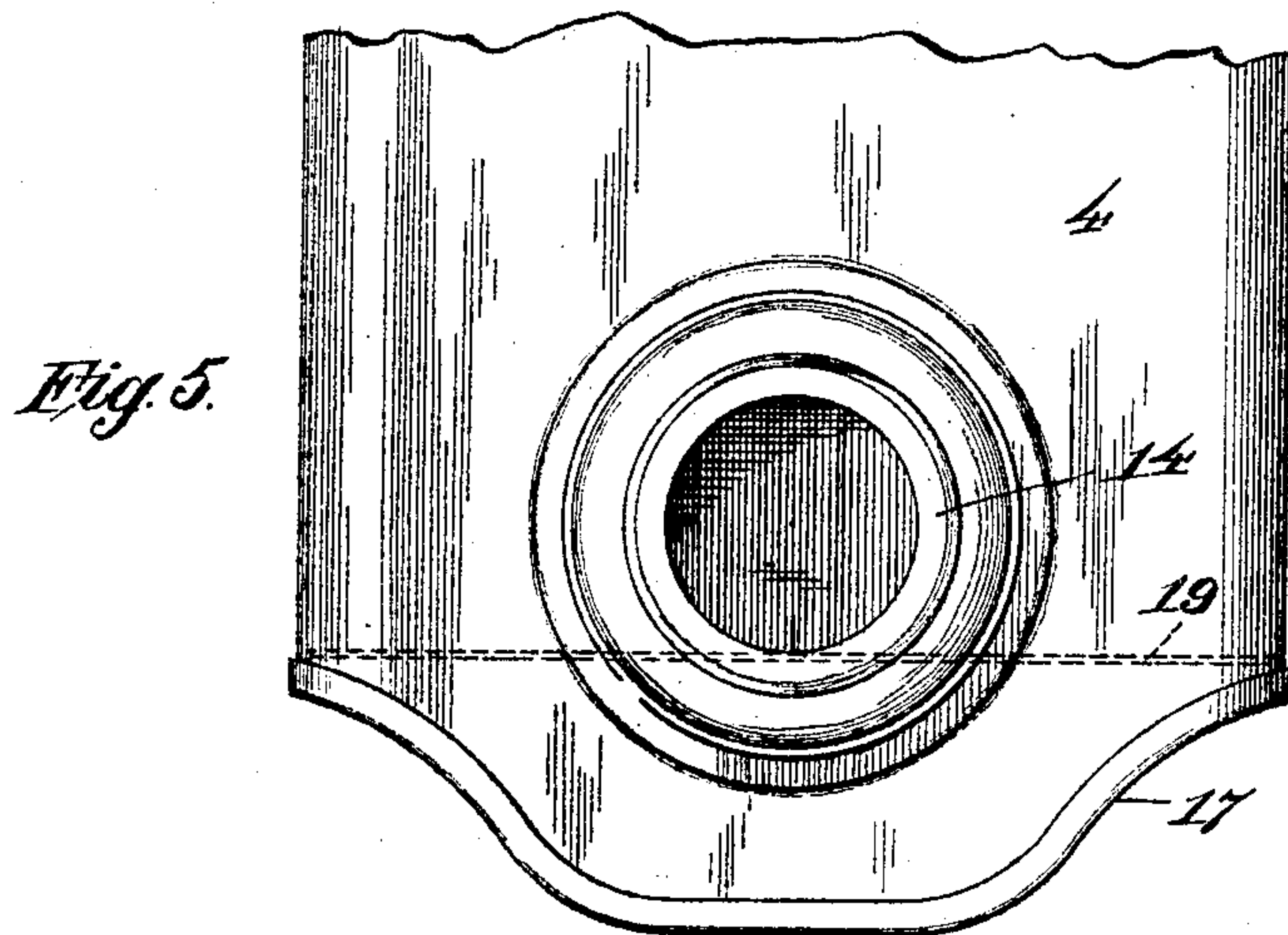
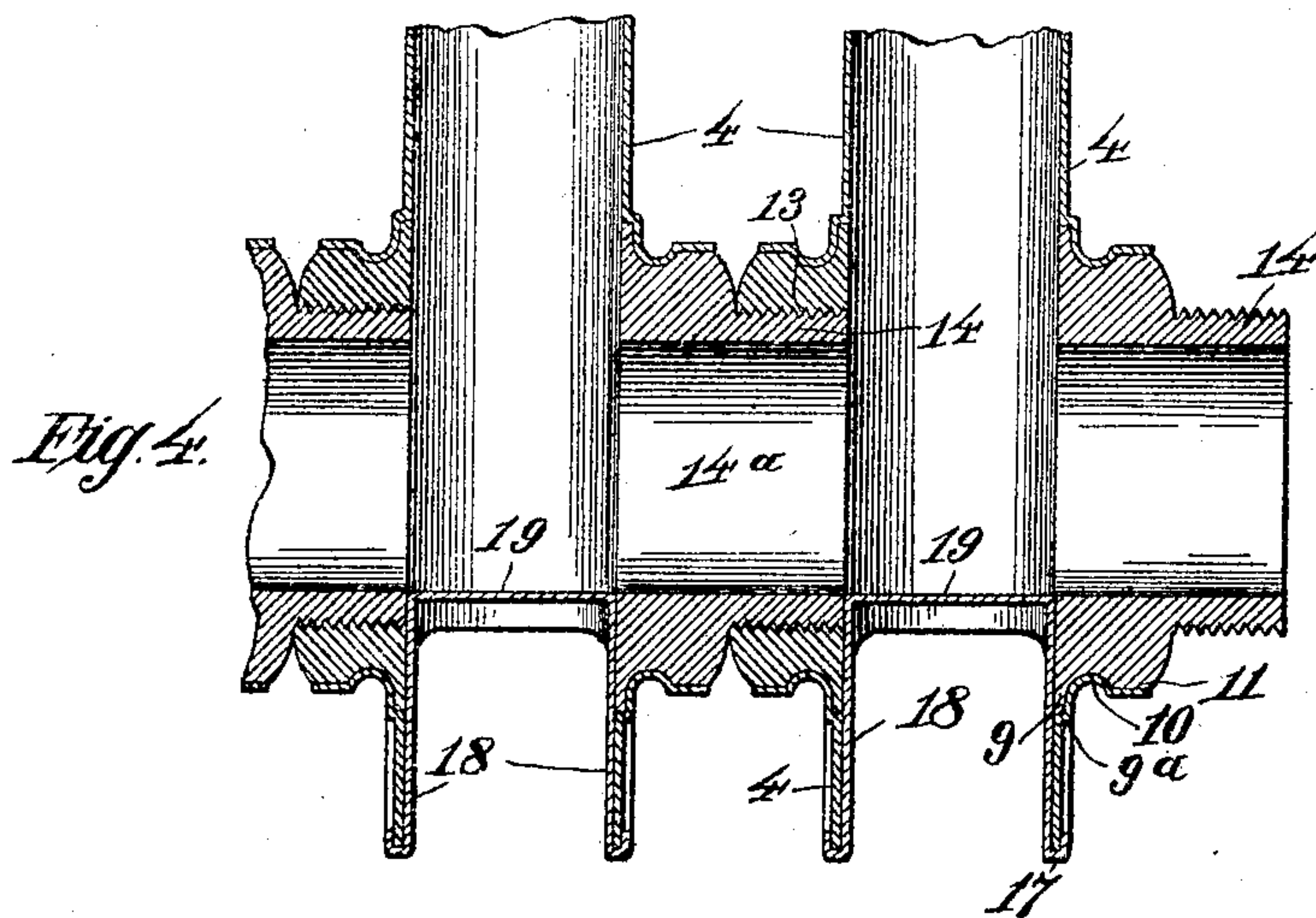
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM R. KINNEAR, OF NEW YORK, N. Y.

## RADIATOR.

No. 798,422.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed May 10, 1904. Serial No. 207,308.

*To all whom it may concern:*

Be it known that I, WILLIAM R. KINNEAR, a citizen of the United States, residing at New York, borough of Manhattan, in the county and State of New York, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

This invention relates to radiators; and it has for one of its objects to provide improved connections between sheet-metal radiators' units.

Another object is to provide an improved means to prevent the accumulation of water in the bottom of the unit.

Still further objects will appear in the following description and will be particularly pointed out in the claims.

In the drawings, Figure 1 is a diagrammatical view showing the different steps in the method of securing the radiator unit to one of the connecting members, the female member of one embodiment of my invention being employed for illustration and being shown in section. Fig. 2 is a side view of the male member of the embodiment of the connection shown in Fig. 1. Fig. 3 is a sectional view of another embodiment of my invention. Fig. 4 is a vertical sectional view through the lower end of a radiator constructed according to my invention, another embodiment of the connection and the means for preventing the accumulation of water in the bottom of the units being shown. Fig. 5 is a plan view of the lower end of one of the radiator units shown in Fig. 4, the position of the bottom being shown in dotted lines. Fig. 6 is a perspective view of one of the bottom caps.

In all embodiments of my invention the units are preferably formed from tubular bodies of approximately elliptical cross-section, the sides 4 being flattened and first stamped near their lower ends to form truncated cone-shaped bosses 5, which are then formed into perforated bosses 6, having straight or perpendicular walls. The connection consists of two members, a male member 8, provided with a reduced externally-threaded extension 14, and a female member 7, provided with an enlarged internally-threaded opening 13, into which the threaded extension 14 is fitted and through which it projects to the opposite wall, the passage-way 14<sup>a</sup> of the male member thereby forming the complete passage between two units.

In the embodiments shown in Figs. 1, 2, 4, and 5 each of the members is provided at

its inner end with an annular extension 9, an annular groove 10, one wall of which merges into one wall of the annular extension 9, and an annular flatted rim 11 adjacent the other wall of the groove 10, the rim 11 being provided with transverse notches 12 to prevent turning of the connection.

In Figs. 1 and 2 the metal of the boss is bent intermediate its ends into contact with one side only of the annular extension 9, the walls of the groove 10, the annular rim 11, and the walls of transverse notches 12.

In Figs. 4 and 5 the metal of the units is bent around the connecting members in the same manner as in Figs. 1 and 2, except that in addition it is passed around the peripheries 9<sup>a</sup> of the annular extensions 9, so that the inner walls of the connections and the inner walls of their units are in alinement.

In Fig. 3 the annular extension 15 is of V shape in cross-section and merges into a groove 10<sup>a</sup>. The metal of the perforated boss 6 is in this instance bent at its lower edge inwardly, as at 16, behind the annular extension and also into the groove 10<sup>a</sup>. Notches in this instance may be provided in the annular extension 15.

In all embodiments of my invention the formation of the boss and the surface of the connecting members enables me to rapidly and cheaply provide a connection which will be very durable and in which a turning or axial movement of the connecting member in the boss is prevented.

In radiators a great deal of trouble has been experienced by the accumulation in the bottom of the units of water of condensation in steam-radiators or cold water in hot-water systems, and, as before stated, it is one of the objects of my invention to overcome this objection. The embodiment of my connection shown in Figs. 4 and 5 is particularly adapted for use with a bottom cap for units, as shown in perspective in Fig. 6, which I employ for overcoming the aforesaid objection.

As before stated, the passage-way 14<sup>a</sup> in the male member 8 extends from the inner wall of one unit to the inner wall of an adjacent unit, so there is no chance for the accumulation of water within this passage-way, and it is my purpose to raise the upper inner wall of the radiator unit bottom so that it is in alinement with the bottom of the passage-way 14<sup>a</sup> between the units, thereby providing a radiator in which the bottom has the same level throughout its length. The unit-bot-



tom cap which I employ for this purpose consists, preferably, of a single piece of metal provided with an attaching-flange 17 around its edge conforming to the shape of the bottom of the unit, with which it is connected by a seam of any construction. From the flange 17 the cap is bent or struck up so as to provide side walls 18, conforming to the inner walls of the unit and of a height to throw the inner upper wall 19 of the cap above the lower part of the perforated boss and in alinement with the lower wall of the passage-way 14<sup>a</sup>. The connecting member acts as a filling between the side wall of the bottom and the radiator.

While I have shown several embodiments of my invention, I desire it to be understood that I do not wish to be limited to this showing, but that I may make various changes within the scope of the appended claims in the form, the proportion, and the details of construction without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. The combination with the units formed with bosses on their adjacent walls, of a pair of connecting members embodying a male member provided with a passage-way extending approximately the length of both members, and a female member fitted upon male member and each member having an annular groove and transverse grooves into which the metal of the bosses is forced to prevent axial and rotary movements of the members when they are interlocked.

2. A sheet-metal radiator unit having its bottom located above the lower end of the unit, and means for connecting the lower end of the unit with an adjacent unit, said means being provided with a passage-way in horizontal alinement with the bottom, and embodying a struck-up boss the base of which is below the bottom of the unit, and means filling the space between the inner wall of the boss and the side of the bottom, to the passage-way.

3. The combination with a sheet-metal radiator unit, of a connecting member having the metal of the unit secured to the same provided with a passage-way, and a bottom cap secured to the lower end of the unit below the passage-way and having its upper inner wall in alinement with the lower wall of the passage-way.

4. The combination with a sheet-metal radiator unit provided with a perforated boss, of a connecting member fitted within the boss

and provided with a passage-way, and a cap secured to the lower end of the unit below the passage-way and having its upper inner wall in alinement with the lower wall of the passage-way.

5. The combination with a sheet-metal radiator unit provided with a perforated boss, of a connecting member having the metal of the boss secured to it, its inner end in alinement with the inner wall of the radiator unit, and provided with a passage-way, and a cap fitted to the lower end of the unit below the passage-way and having its upper inner wall in alinement with the lower wall of the passage-way.

6. The combination with a radiator unit provided with a boss, of a connecting member fitted in the boss, having its inner end in alinement with the inner wall of the radiator, and provided with a passage-way, and a cap fitted to the lower end of the unit below the passage-way and having its upper inner wall in alinement with the lower wall of the passage-way.

7. The combination with the radiator unit provided with a boss, of a connecting member fitted within the boss and provided with a passage-way; and a sheet-metal cap fitted to the lower end of the unit and formed with its inner upper wall above the lower edge of the boss.

8. In a sheet-metal radiator, a unit provided with a perforated boss struck from the metal of the unit near its lower end, a connecting member provided with a passage-way and fitted within the boss and in alinement at its inner end with the inner wall of the radiator, and a bottom struck up from below the boss and having its upper inner wall in alinement with the lower wall of the passage-way and bearing at its sides against the inner walls of the unit and the inner end of the connecting member.

9. The combination with a radiator unit having a perforation in the side wall thereof, of a connecting member fitted within said perforation, and a sheet-metal bottom formed with its upper wall above the lower edge of the connecting member, the connecting member being located between the side wall of the radiator and the side wall of the bottom, to act as a filling.

The foregoing specification signed this 25th day of April, 1904.

WILLIAM R. KINNEAR.

In presence of—

L. E. DIEZ,

CLARENCE D. W. ROGERS.