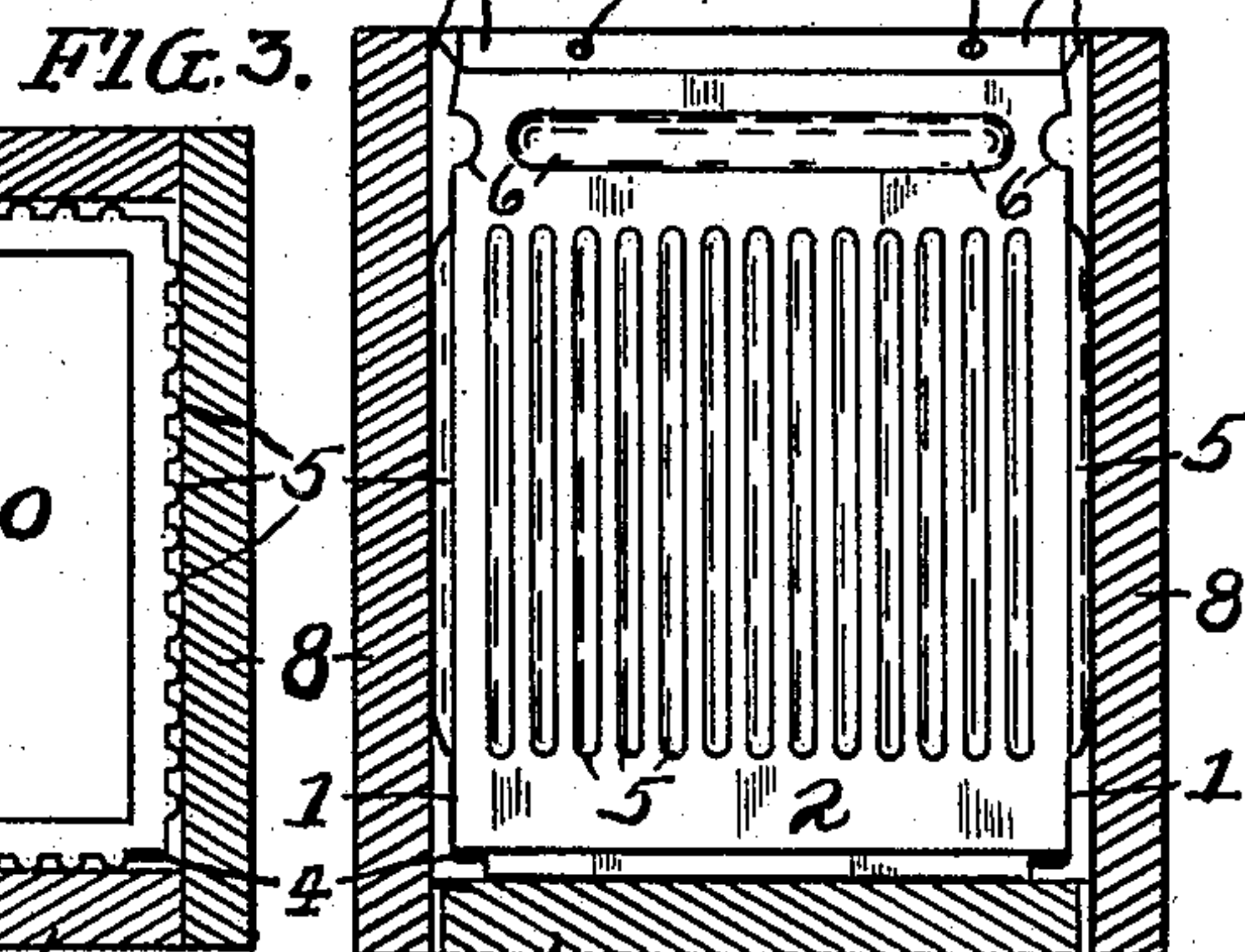
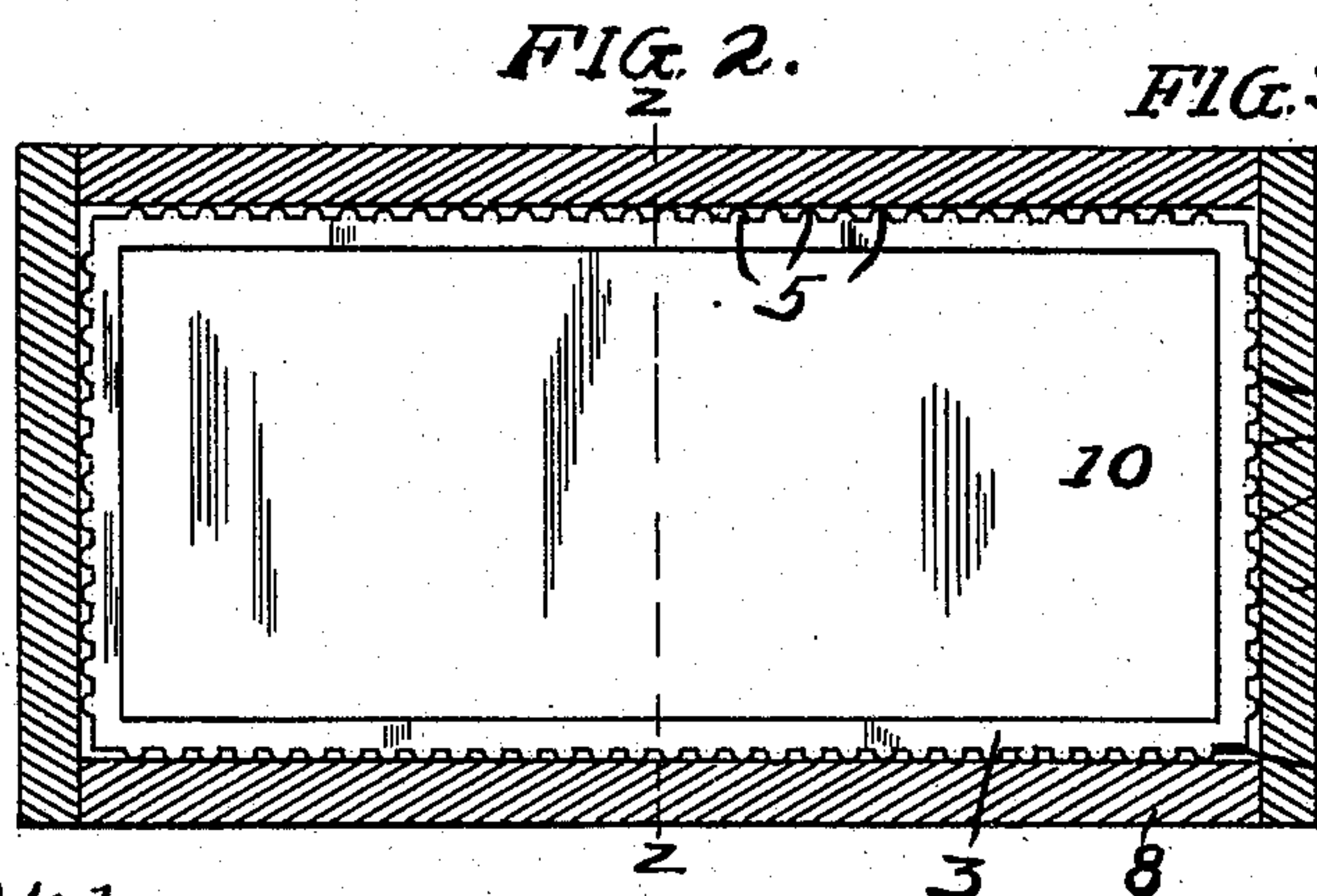
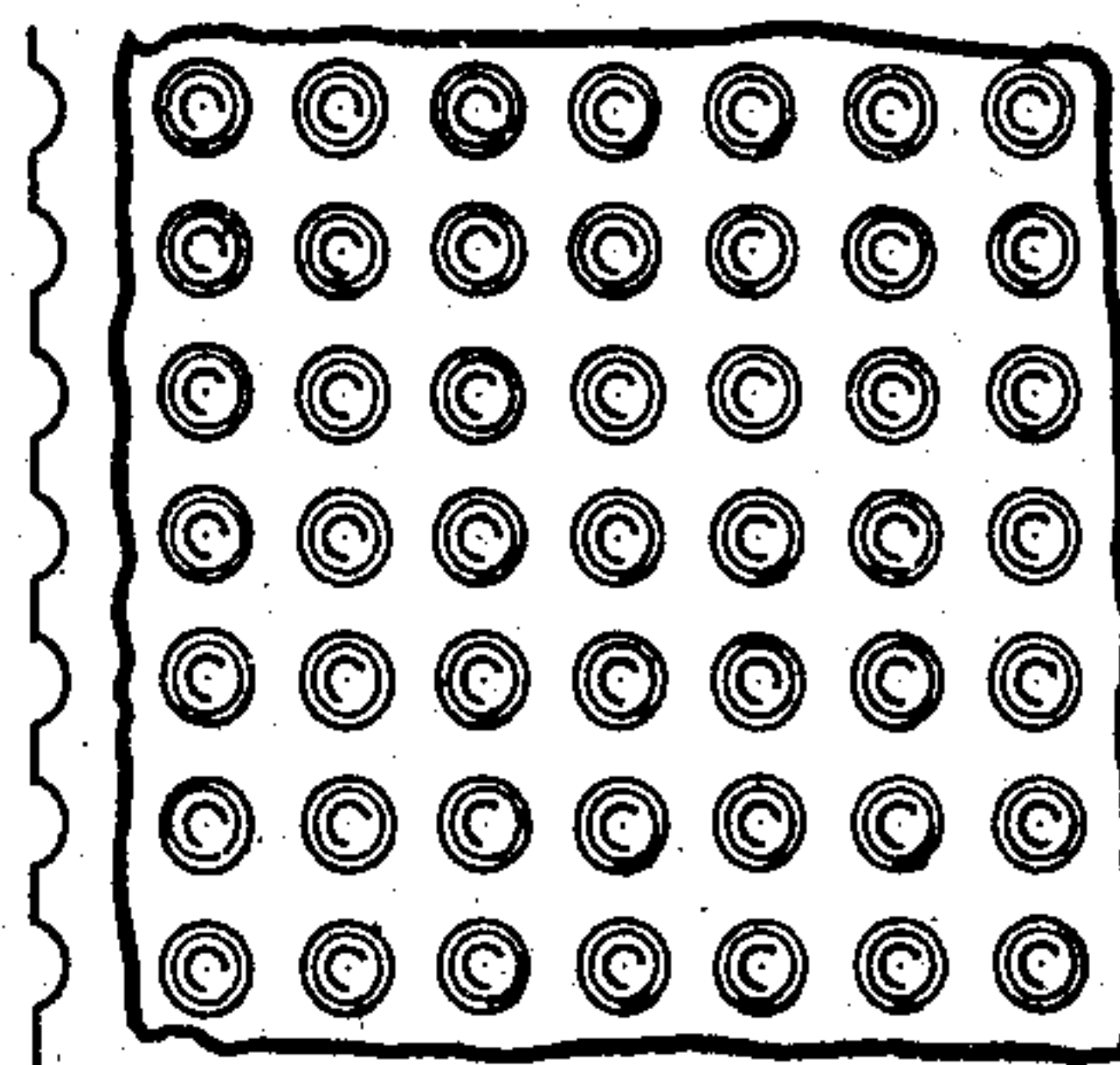
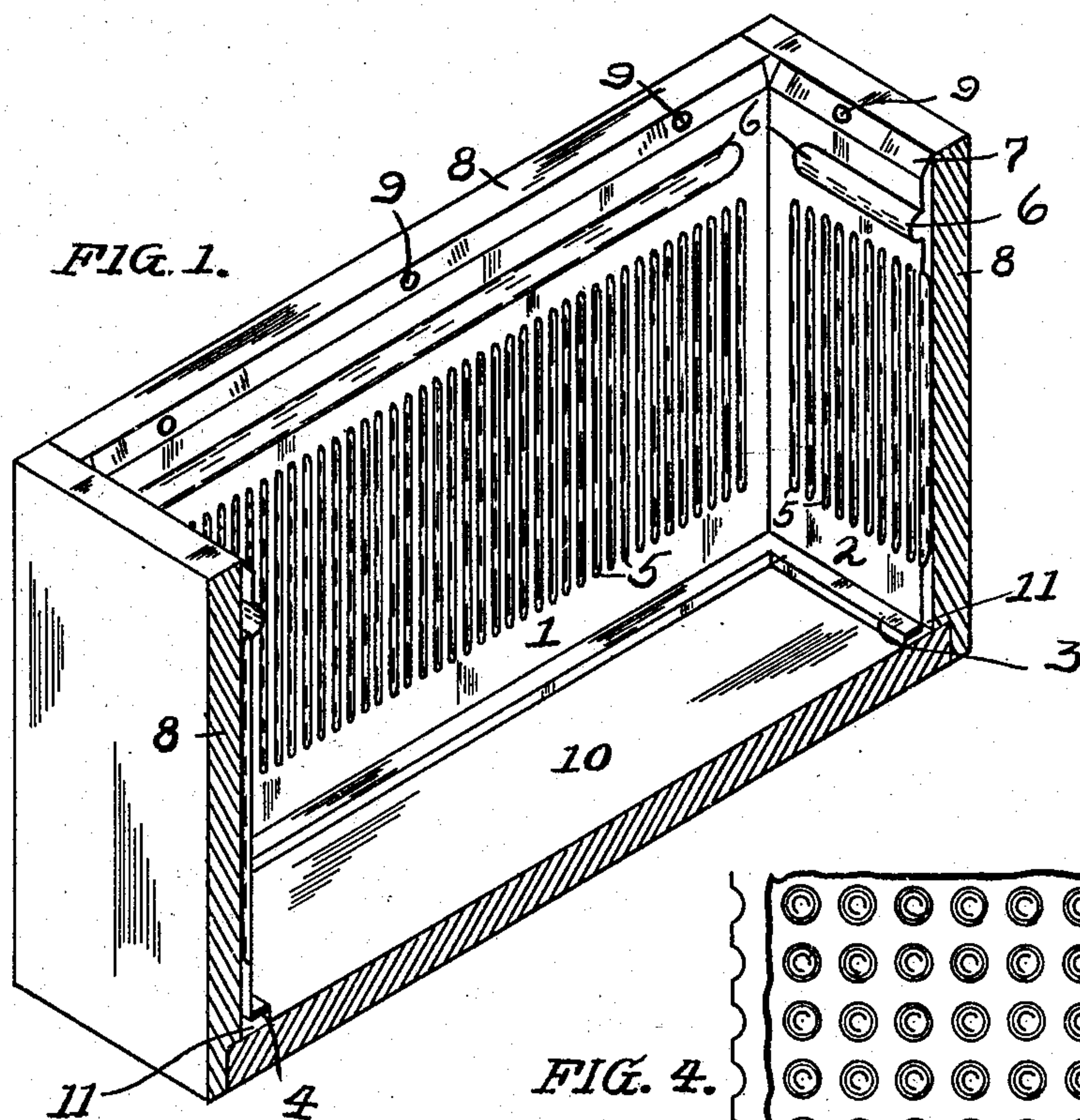


C. PFAU.
 LINING FOR WATER CLOSET TANKS.
 APPLICATION FILED SEPT. 14, 1908.

900,775.

Patented Oct. 13, 1908.

2 SHEETS—SHEET 1.



Witnesses.
 Brayton S. Richards
 Ada Burnett

Inventor
 Charles Pfau
 By James A. Ramsey
 Attorney

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FIG. 5.

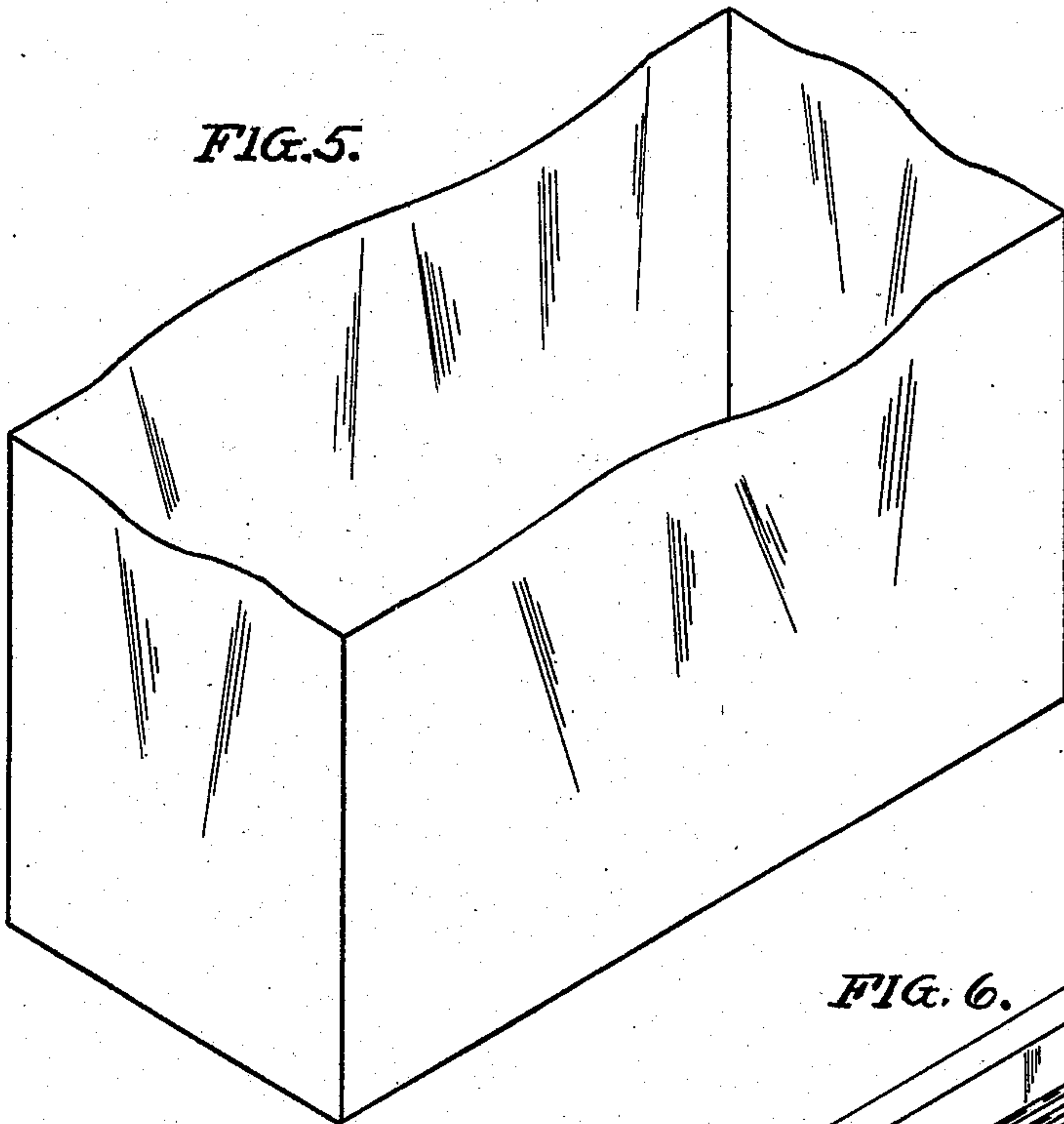


FIG. 6.

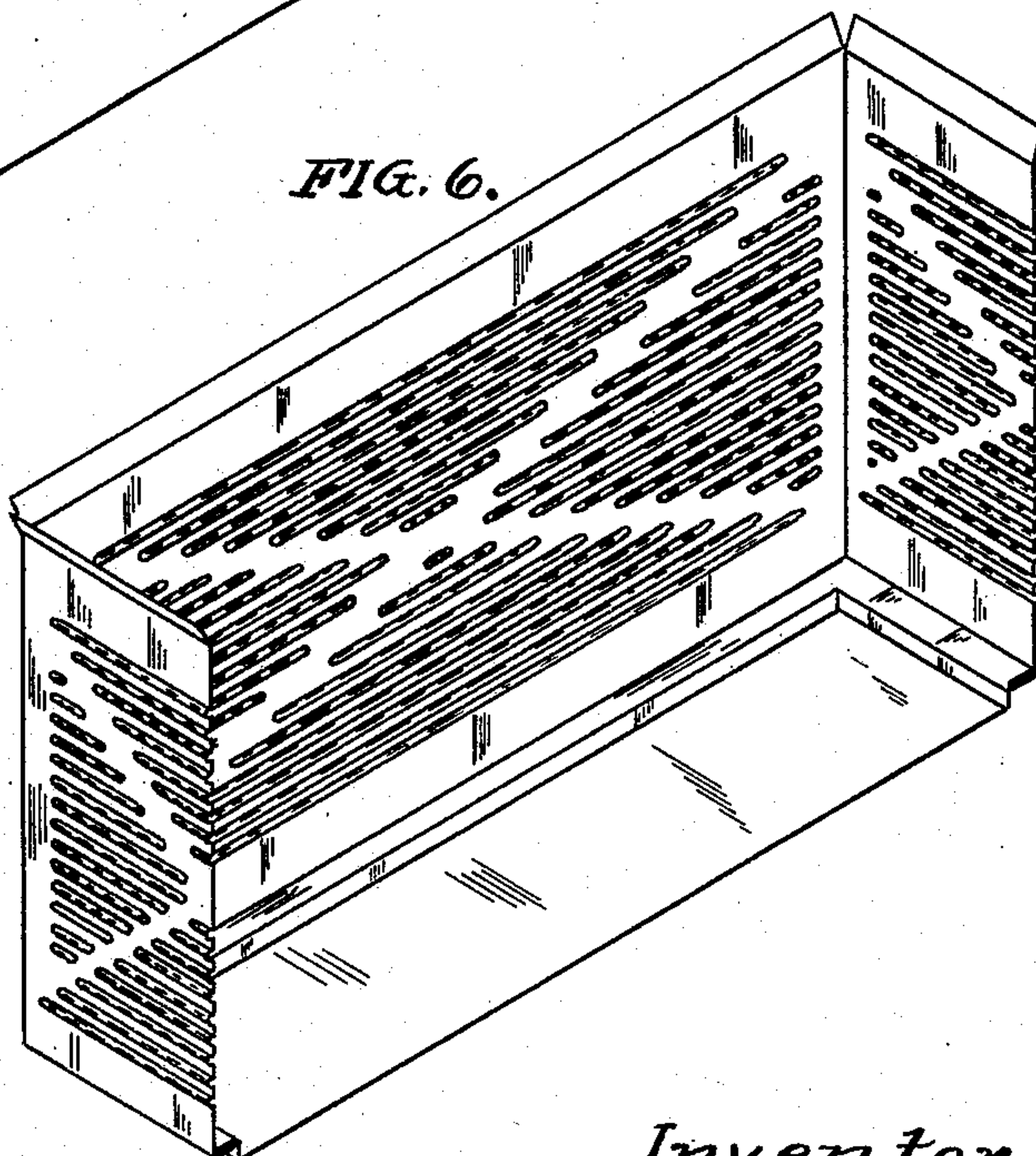
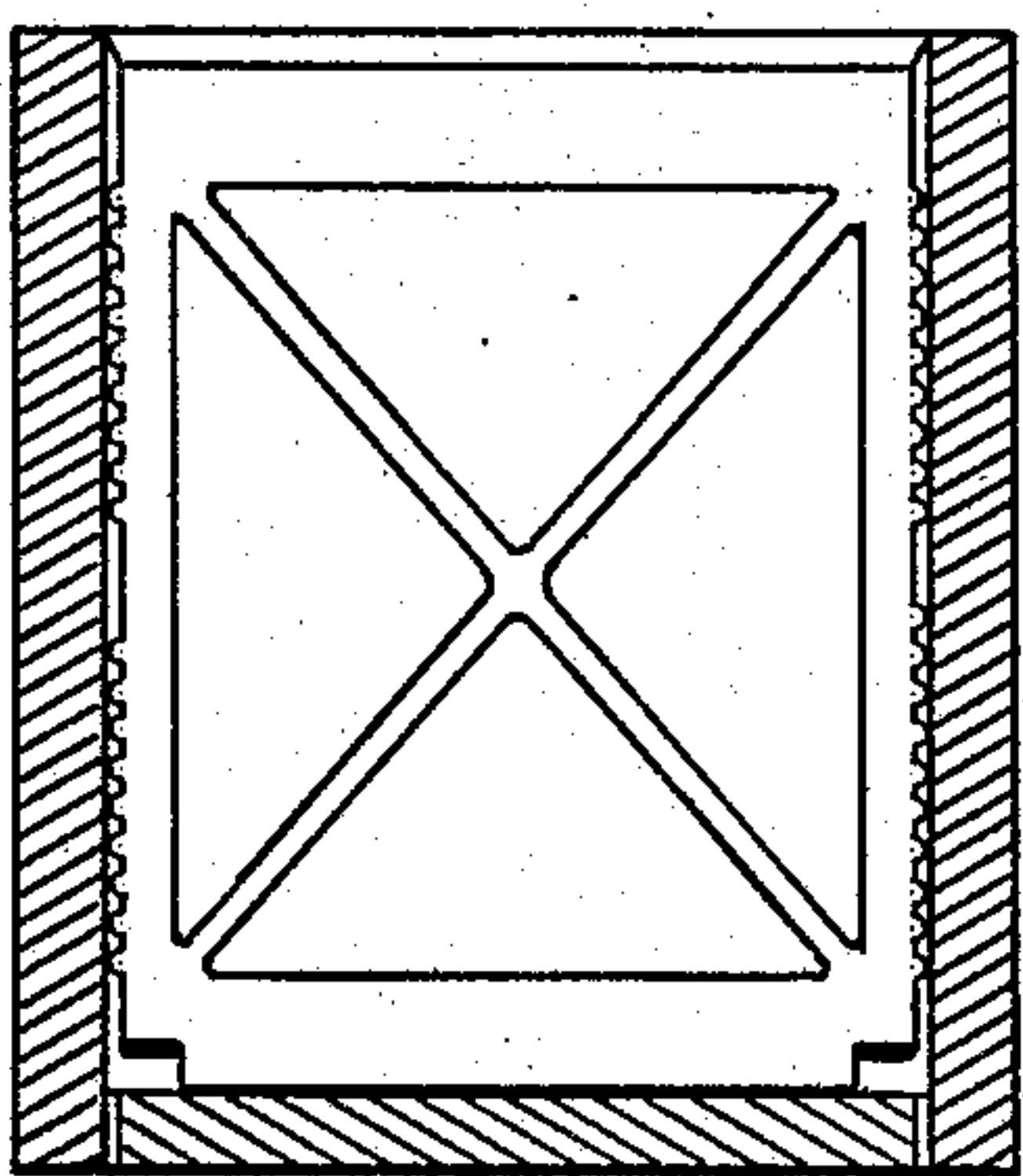


FIG. 7.



Witnesses
Brayton G. Richards
Ada Burnett

Inventor
Charles Pfau
By James H. Ramsey
Attorney

UNITED STATES PATENT OFFICE.

CHARLES PFAU, OF CINCINNATI, OHIO, ASSIGNOR TO THE PFAU MANUFACTURING COMPANY,
OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

LINING FOR WATER-CLOSET TANKS.

No. 900,775.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed September 14, 1906. Serial No. 334,601.

To all whom it may concern:

Be it known that I, CHARLES PFAU, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Linings for Water-Closet Tanks, of which the following is a specification.

My invention relates to improvements in metal linings for use in flushing tanks for water closets.

In the construction of ductile linings from copper, or similar material for this purpose the joint or joints between the sides, ends and bottom are formed by seams and afterward soldered. The solder acts upon the metal along the seams to expand it thereby causing the sides, ends and bottom of the lining to become distorted or to buckle or bulge out of shape so as to form an irregular shaped lining. The copper sheets from which the linings are thus formed or from which they are formed out of a single piece by stamping or spinning or otherwise, are often distorted in shape while in the sheet before being formed into the lining either by soldering the several parts together or stamping it out of a single piece, so that when the lining is constructed it is distorted in shape.

The object of my invention is to form the lining thus distorted into regular shape whereby it is adapted to snugly fit the tank casings in which it is to be used; to stiffen the lining and give it sufficient resilience to permit it to adapt itself to tank casings of slightly varying sizes; to provide suitable and sufficient means for ventilation between the lining and tank casing; and to hold the sides, ends and bottom firmly against the tank casing and prevent rattling when the water enters and discharges.

My invention consists in a ductile metal lining of the character described as an article of manufacture.

In the drawings which serve to illustrate my invention: Figure 1 is a sectional perspective view of a flushing tank casing having therein a lining constructed in accordance with my invention. Fig. 2 is a longitudinal horizontal section of the tank casing with the lining placed therein. Fig. 3 is a transverse section on the line $z-z$ of Fig. 2, showing one end of the lining in elevation. Fig. 4 is a detail view showing in side elevation and section a modified construction of my invention

in which the metal lining is embossed or raised in the form of spherical segments. Fig. 5 is a perspective view showing the lining distorted. Fig. 6 is a sectional perspective view showing a modified construction of lining. Fig. 7 is a transverse section through the tank casing containing a modified construction of my improved lining showing corrugations on the sides and triangular panels on the ends.

The method of constructing metal tank linings in accordance with my invention is preferably substantially as follows: A sheet of copper or other ductile material is bent into the desired shape to form the sides 1 and ends 2 and the meeting edges are seamed together, preferably by double seaming. A sheet of similar material is seamed to one edge of the sides 1 and ends 2 to form the bottom 3. These seams are then soldered to form water tight joints 4. The soldering of the joints causes the metal to expand and bulges and distorts the rectangular lining out of true and regular shape as shown by Fig. 5, or the lining may be formed by stamping it into shape from a single piece of metal which is usually irregular before stamping and the lining is accordingly when formed distorted as shown in said Fig. 5. When distorted it presents an unfinished appearance, is not adapted to fit the tank casing in which it is placed, being difficult to adjust therein and is otherwise objectionable as a lining. In order to give it proper and regular form, stiffen and strengthen the sides and ends, provide for ventilation between the casing and lining and otherwise improve the lining, I emboss it preferably by stamping vertical corrugations 5 upon its surface outwardly therefrom but any other form of embossing desired may be employed. I also strengthen the top edges by forming a longitudinal corrugation 6 therein, the same extending inwardly from the surface, and above said longitudinal corrugation I form an outwardly flaring flange 7 to bear against the upper edge of the tank casing 8 to insure a snug fit at the top edge. It is also preferably supplied with vents 9 to provide for ventilation upwardly from the bottom along the sides and ends between the vertical corrugations 5 and the tank casing 8. The distorted metal in the bottom 3 is formed into even and regular shape such as stamping a panel 10 outwardly therein to form a substantially

flat bottom and provide for ventilating ducts 11 around the outer edge of the bottom of the lining and casing.

Embossing the distorted lining by forming panels and corrugations as shown or in any other form desired stiffens the lining, makes it regular, and prevents rattling or noise when the water is entering or discharging from the tank, and insures thorough ventilation between the metal lining and wood casing thereby preventing the casing from becoming water soaked or from decaying.

I claim:

1. As an article of manufacture, a ductile metal lining for water closet tanks having vertical corrugations extending outwardly in its sides to stiffen said lining and provide for ventilation between the lining and an adjacent tank casing, said adjacent tank casing in which said lining is placed, and an outwardly flaring upper edge adapted to bear against the upper edge of the tank casing and having vents therein adapted to connect with the ventilating ducts between the tank casing and lining whereby the same is ventilated.

2. As an article of manufacture, a ductile metal lining for water closet tanks having vertical corrugations extending outwardly in its sides to stiffen said lining and to provide for ventilation between the lining and an adjacent tank casing, said adjacent tank casing in which said lining is placed, and an outwardly flaring upper edge adapted to bear and fit against the upper edge of said tank casing.

3. A metal lining for water closet tanks comprising sides 1, ends 2 and bottom 3 seamed and soldered together to form water tight joints 4, corrugations 5 on said sides and ends respectively, corrugations 6 on each side and end, outwardly flaring flange 7, ventilating ducts 11, and vents 9 therein adapted to communicate with said ventilating ducts 11, all arranged and adapted to be used, substantially as and for the purposes set forth.

4. As an article of manufacture, a ductile metal lining for water closet tanks formed in suitable shape and having its joints secured together and soldered, embossing on said lining and a resilient flange flaring outwardly

and having a rib extending inwardly, substantially as and for the purposes set forth.

5. As an article of manufacture, a ductile metal lining for water closet tanks having its sides, ends and bottom formed into substantially rectangular shape, and having its joints secured together by seams and solder and embossing in the sides, ends and bottom whereby the distortions are removed and said lining has an even shape, substantially as and for the purposes set forth.

6. As an article of manufacture, a ductile metal lining for water closet tanks having its sides, ends and bottom formed in substantially rectangular shape, said sides, ends and bottom being embossed whereby the distortions are removed and said lining has an even shape.

7. As an article of manufacture, a ductile metal lining for water closet tanks having its sides, ends and bottom formed in substantially rectangular shape, said sides and ends being embossed whereby the distortions are removed and said lining has an even shape.

8. As an article of manufacture, a ductile metal lining for water closet tanks formed in suitable shape and having its joints secured together and soldered, embossing on said lining, and a resilient flange flaring outwardly, substantially as and for the purposes set forth.

9. As an article of manufacture, a ductile metal lining for water closet tanks having its sides, ends and bottom formed in substantially rectangular shape, said sides being embossed whereby the distortions are removed and said lining has an even shape.

10. As an article of manufacture, a metallic lining for water closet tanks comprising a lining of ductile material having a resilient flange upon the upper part of the lining adapted to yieldingly bear against the upper part of an adjacent tank casing which is spaced apart from the body of said lining, substantially as and for the purposes specified.

CHARLES PFAU.

Witnesses:

JAMES N. RAMSEY,
W. H. BISSELL.