

DE WITT T. LYON.
RADIATOR.
APPLICATION FILED MAY 20, 1909.

965,827.

Patented July 26, 1910.

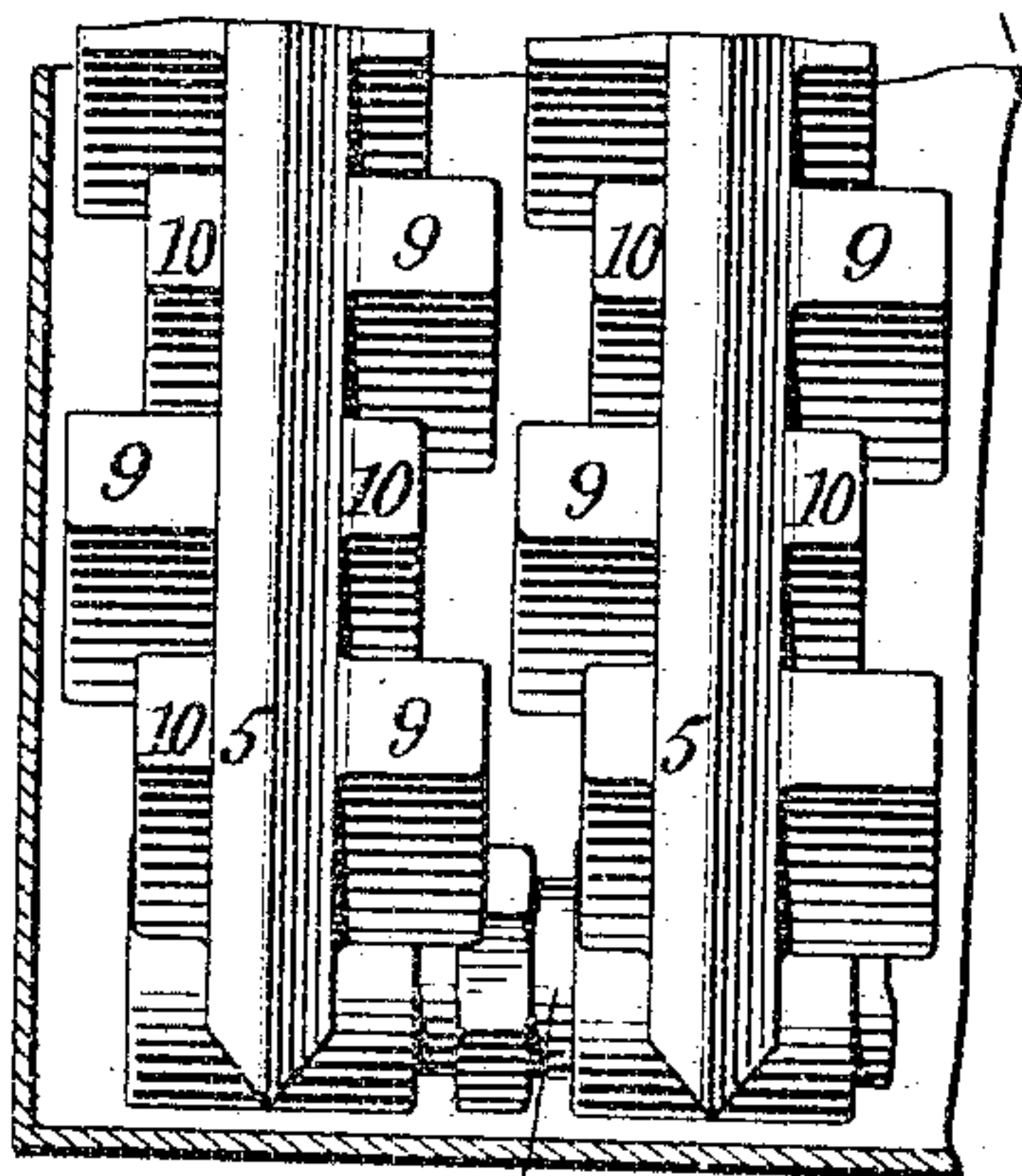
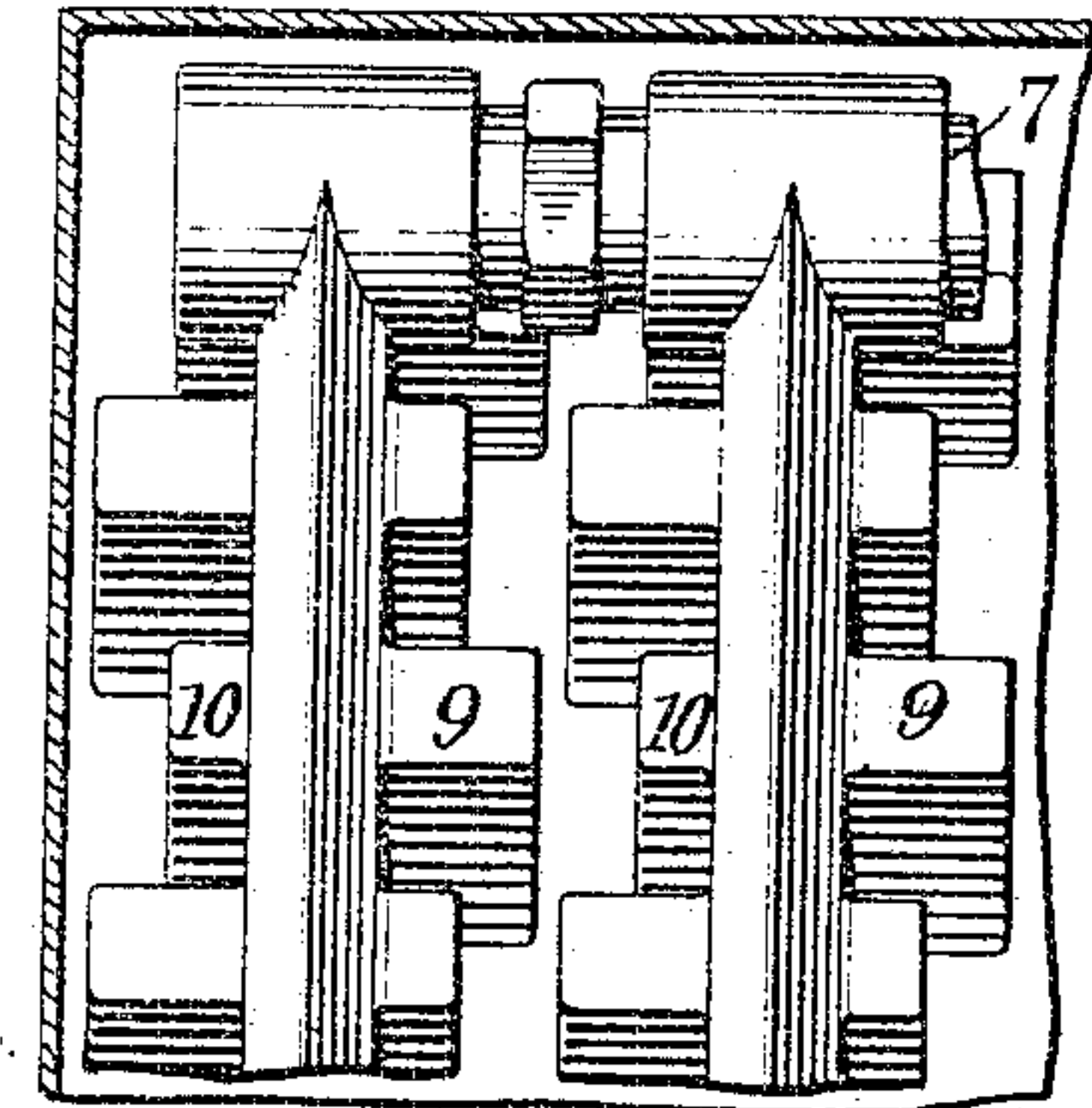


Fig. 1. 6 1

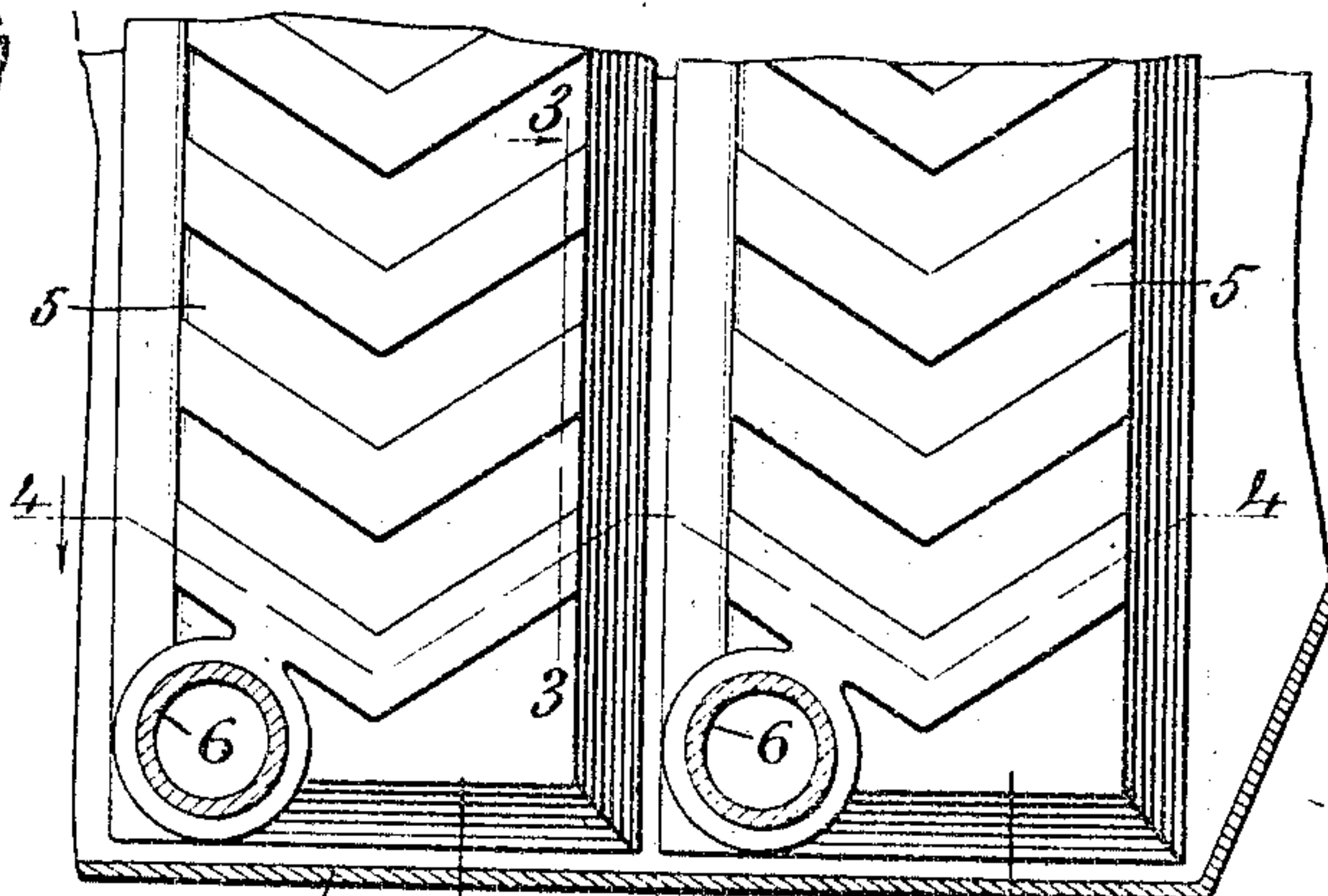
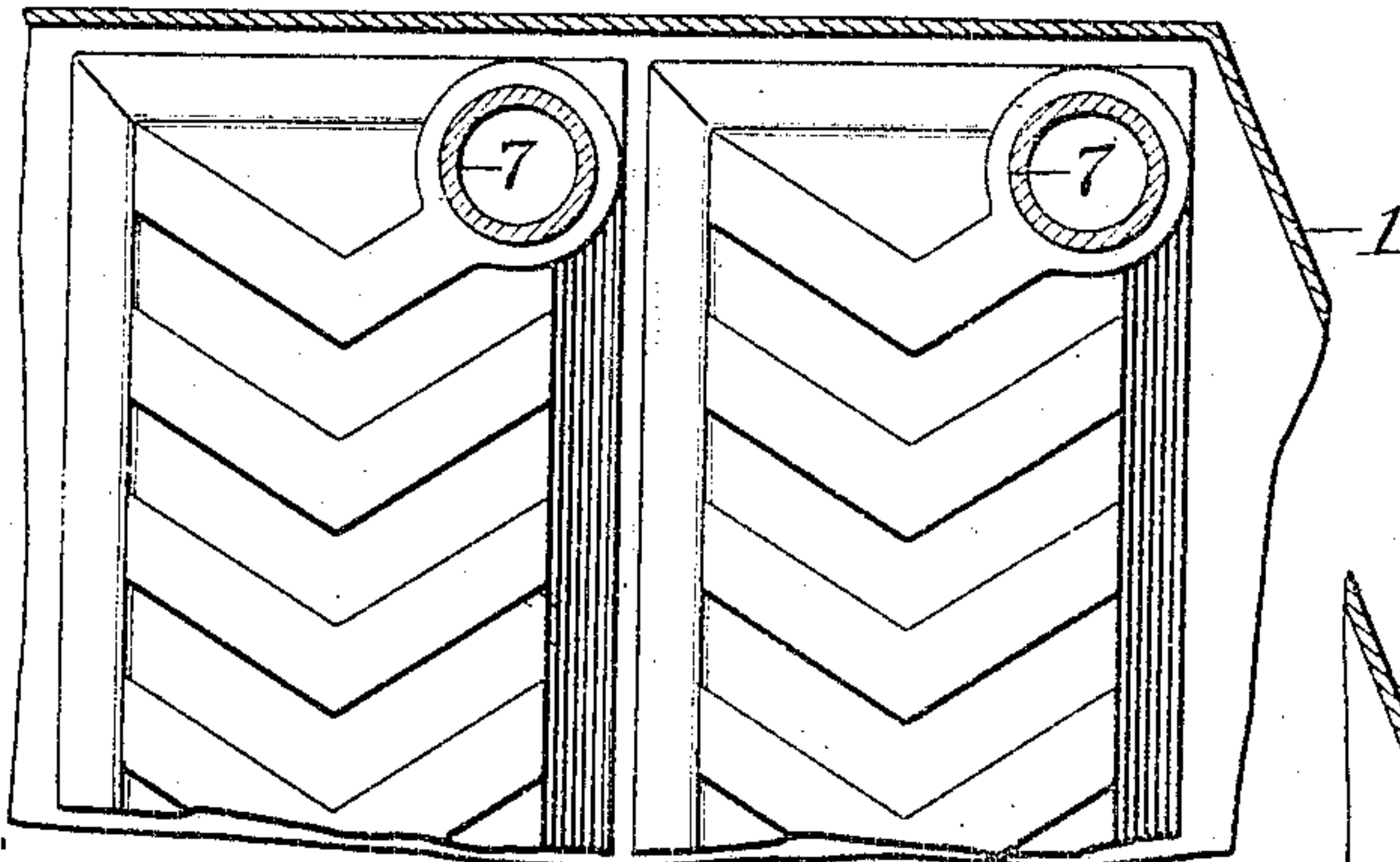


Fig. 2. 8 1 8

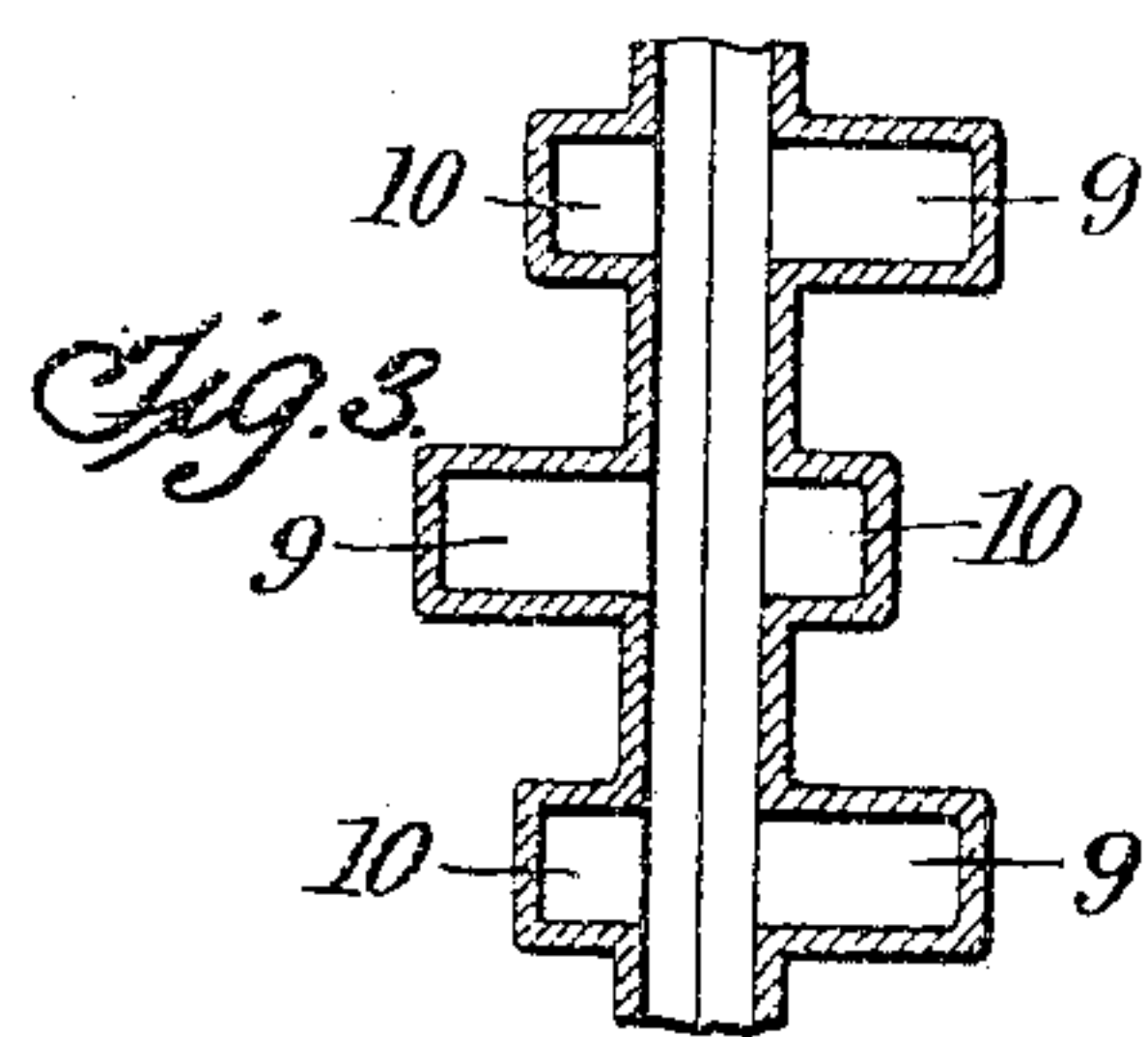
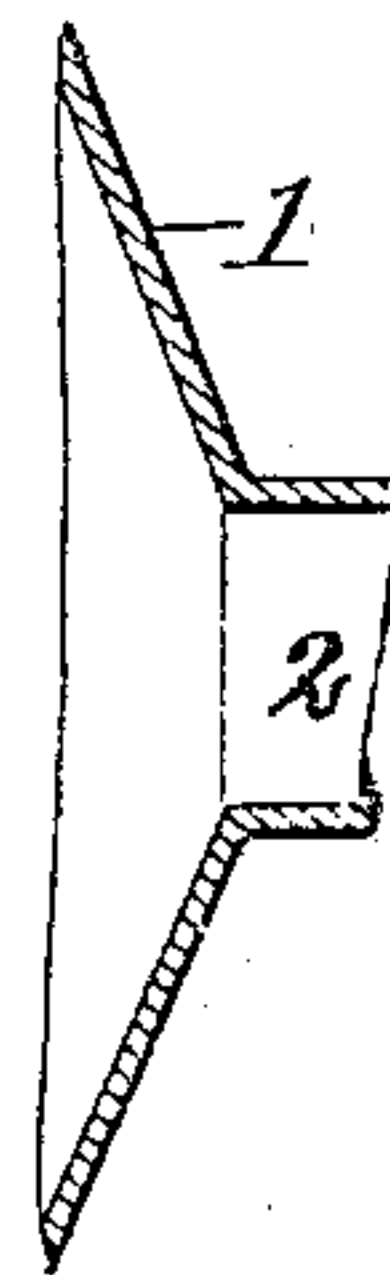


Fig. 3.

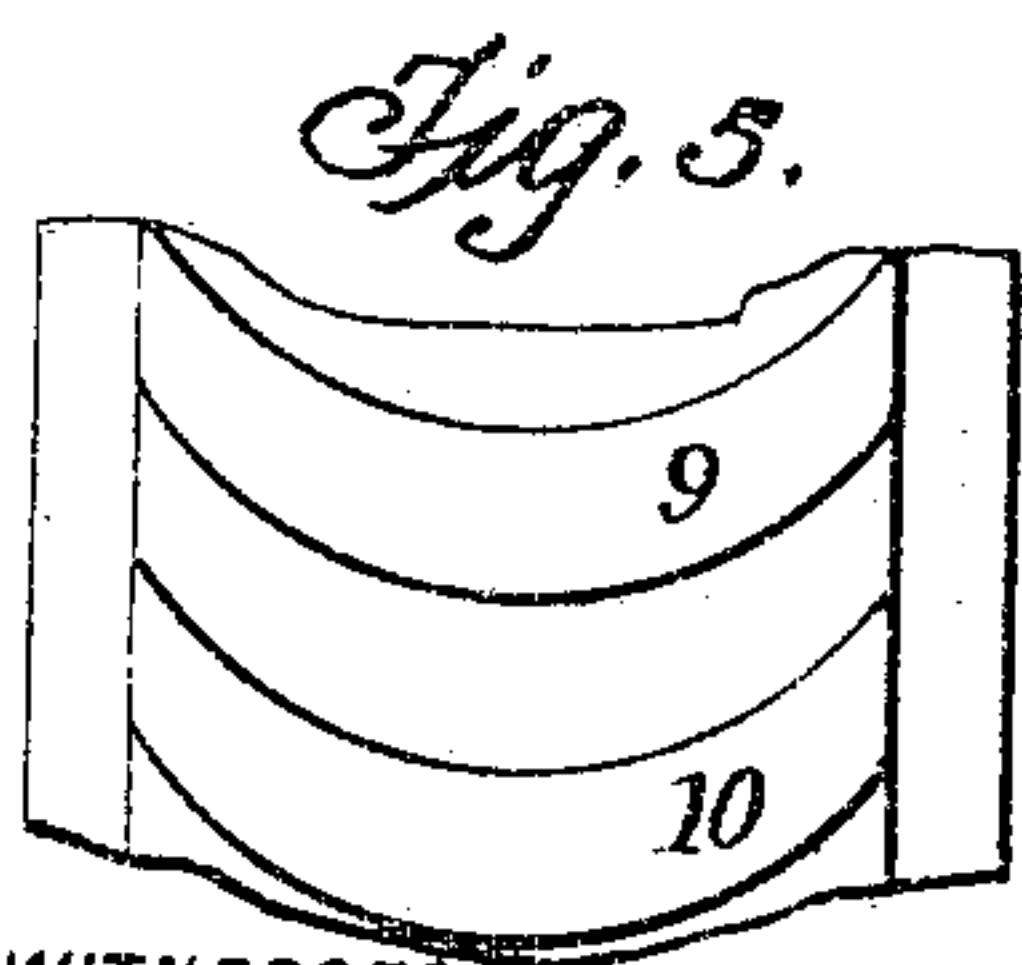


Fig. 5.

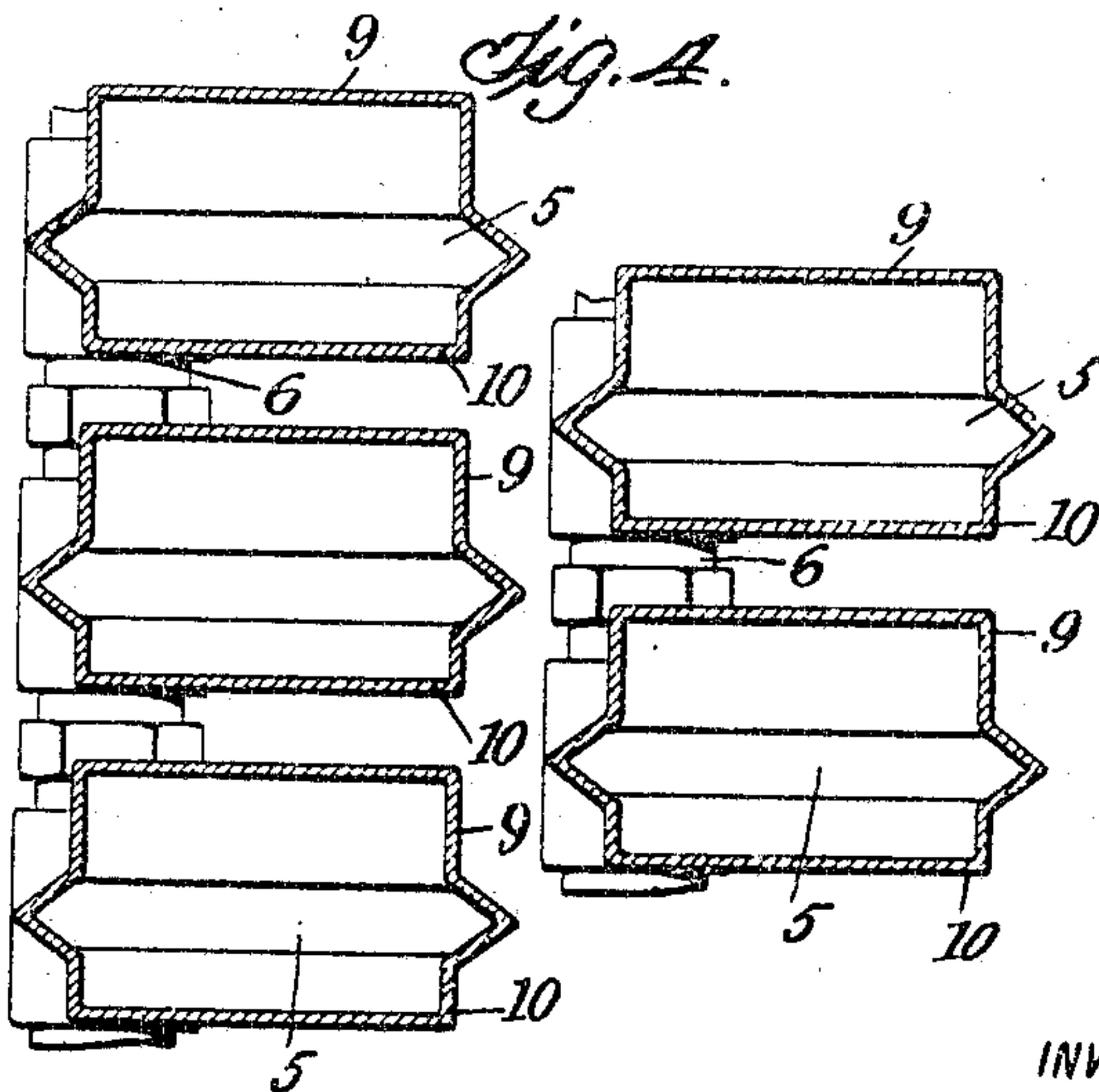


Fig. 4.

WITNESSES

L. E. ...
A. G. ...

INVENTOR
DeWitt T. Lyon
BY *Mumford*
ATTORNEYS

UNITED STATES PATENT OFFICE.

DE WITT TAYLOR LYON, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN RADIATOR COMPANY, A CORPORATION OF NEW JERSEY.

RADIATOR.

965,827.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed May 20, 1909. Serial No. 497,143.

To all whom it may concern:

Be it known that I, DE WITT TAYLOR LYON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Radiator, of which the following is a full, clear, and exact description.

This invention relates to radiators, to be used in steam or hot-water heating systems; either to be used as direct heating apparatus or to be connected to a fan and casing and used to heat air which is to be circulated through a building, factory or drying chamber.

An object of this invention is to provide a radiator which will be simple in construction, and will sub-divide air currents passing therethrough, and also offer the greatest amount of heating surface to the air currents, with the least possible resistance.

Generally speaking, the invention consists in a series of banks of radiator sections, so arranged that the air currents will have tortuous paths in passing therethrough. These radiator sections are provided with hollow crooked ribs, projecting from the sides thereof, these ribs being alternately deep and shallow. The shallow ribs on one section face the deep ribs on the adjoining section.

The invention further consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is an end view, showing two sections of the radiator within a casing; Fig. 2 is a side elevation, looking from left to right in Fig. 1; Fig. 3 is a section on the line 3—3 in Fig. 2; Fig. 4 is a section on the line 4—4 in Fig. 2; and Fig. 5 shows a modified form of radiator section with curved hollow ribs.

Referring more particularly to the separate parts of the device, 1 indicates a casing which is adapted to inclose the radiator sections when the same are used in connection with forced or draft air. At one end of the casing 1 as at 2, is an opening which is adapted to lead to a fan or blower, through

which air may be drawn or forced so as to circulate the air through the radiator sections.

The radiator proper consists in a series of banks of radiator sections. These radiator sections are designated by the numeral 5, and are joined together at the top and bottom thereof by suitable connecting pipes 6 and 7. These connecting pipes 6 and 7 are used to permit the circulation of the heating medium from one section of the radiator to another. This heating medium may be steam, hot water or the like. The radiator sections 5 are thus joined together by the connecting pipes 6 and 7, to form banks 8. These banks 8 are placed edge to edge, forming a complete series, two only being shown in Fig. 2. These banks 8 may have their radiator sections arranged in staggered relation one to the other, as shown in Fig. 4. Thus, the air currents in passing from one bank to the other are forced to follow a zig-zag path, and so are split up into innumerable currents, which are deflected and reflected by the heating surface of the radiator sections. The radiator sections themselves have on the faces thereof ribs 9 and 10. These ribs 9 and 10 are alternately high and low; that is to say, the outer surfaces of these ribs extend varying distances from the surface of the radiator section proper. The ribs 9, which alternate with the ribs 10, are deeper than said ribs 10. Where a deep rib 9 is formed on one side of the radiator, on the opposite side extending in substantially the same line therewith is a shallow rib 10. The radiator sections are so constructed that the shallow ribs on one section face the deep ribs on the adjacent section. This is clearly shown in Fig. 1. These ribs are hollow, and have access to the interior of the radiator sections, so that the heating fluid may circulate within the ribs. These ribs 9 and 10 may be of any suitable form, one form being shown in Fig. 2, in which the ribs are substantially V-shaped. Another form is shown in Fig. 5, in which the ribs are curved somewhat in the shape of a crescent. The distance between the ribs is preferably greater than the width of the ribs. This forms a greater air passage for the air to circulate through. It will thus be seen from the above description that the air, in passing through the radiator sections, will be split up and

divided, and the currents deflected and reflected from the surfaces, so that every molecule of the air will be exposed to the heating action of the radiator.

5 While I have shown the banks of sections staggered, as in Fig. 4, they may be placed in line and the radiator sections reversed, with the deep ribs on one section in line with the shallow ribs on the sections
10 adjoining. I may also change the ribs of the alternating banks of sections from V-shape to inverted V-shape, so that the air, in passing through, will be first deflected up and then down in a snake-like path.

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

1. A radiator, comprising sections spaced apart, each of said sections having ribs on
20 the surfaces thereof, said ribs being alternately deep and shallow, the deep ribs on each section being opposite the shallow ribs on the adjoining section.

2. A radiator, comprising sections spaced
25 apart, each of said sections having crooked ribs on the surfaces thereof, said ribs being alternately deep and shallow, the deep ribs on each section being situated opposite the shallow ribs on the adjoining section.

30 3. A radiator, comprising sections spaced apart, each of said sections having hollow ribs on the surfaces thereof, said ribs being alternately deep and shallow, the deep ribs on each of said sections being situated oppo-
35 site the shallow ribs on the adjoining section.

4. A radiator, comprising sections spaced apart, each of said sections having crooked hollow ribs on the surfaces thereof, said ribs being alternately deep and shallow, the deep
40 ribs on each of said sections being situated opposite the shallow ribs on the adjoining section.

5. A radiator section, comprising a hollow member, and hollow crooked ribs projecting
45 from said hollow member, said ribs being alternately deep and shallow, the deep ribs on one side of the section coinciding with the shallow ribs on the opposite side of the section.

50 6. A radiator section, comprising a hollow member, and ribs projecting from the side of said hollow member, said ribs being alternately deep and shallow, the deep ribs on one side of the section coinciding with
55 the shallow ribs on the opposite side of the section.

7. A radiator section, comprising a hollow member, and a series of consecutive hollow ribs projecting from the sides of said

member and having flat side faces extending 60 parallel to the sides of said member, the alternate ribs having their flat side faces inset with relation to the flat side faces of the adjacent ribs.

8. A hollow radiator section having two 65 of its faces parallel and transversely ribbed, alternate ribs being of unequal height, the higher ribs of each of such faces being opposite the lower ribs of the other face.

9. A hollow radiator section having two 70 of its faces parallel and transversely ribbed, such ribs being hollow and alternate ribs being of unequal height, the higher ribs of each of such faces being opposite the lower ribs of the other face. 75

10. A hollow radiator section having two of its faces parallel and transversely ribbed, alternate ribs being of unequal height, the higher ribs of each of such faces being opposite the lower ribs of the other face, such 80 higher ribs being hollow.

11. A hollow radiator section having two of its faces parallel and transversely ribbed, such ribs being oblique to the longitudinal axis of the section, alternate ribs being of 85 unequal height, the higher ribs of each of such faces being opposite the lower ribs of the other face.

12. A hollow radiator section having two of its faces parallel and transversely ribbed, 90 such ribs being through at least a portion of their length oblique to the longitudinal axis of the section, alternate ribs being of unequal height, the higher ribs of each of such faces being opposite the lower ribs of the 95 other face.

13. In a radiator, in combination, a group of hollow sections, the several sections having their adjacent faces transversely ribbed, alternate ribs being of unequal height, the 100 higher ribs of each section being in line with the lower ribs of the next adjacent section.

14. In a radiator, in combination, a group of hollow sections, the several sections having their adjacent faces transversely ribbed, 105 alternate ribs being of unequal height, the higher ribs of each section being in line with the lower ribs of the next adjacent section, the several ribs being oblique to the longitudinal axis of the sections. 110

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

DE WITT TAYLOR LYON.

Witnesses:

HORATIO WHITING,
GRISSELL B. HENRY.