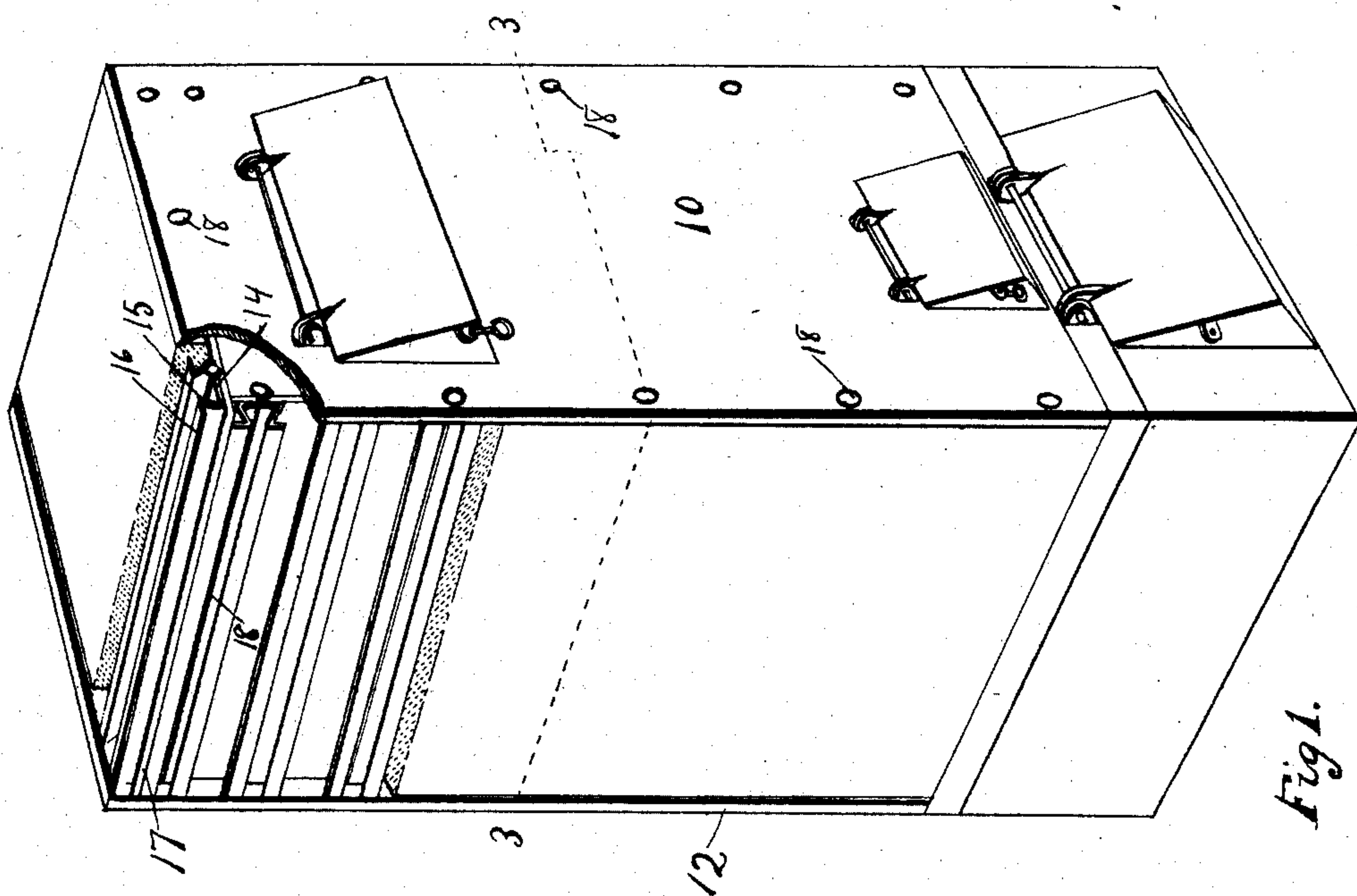
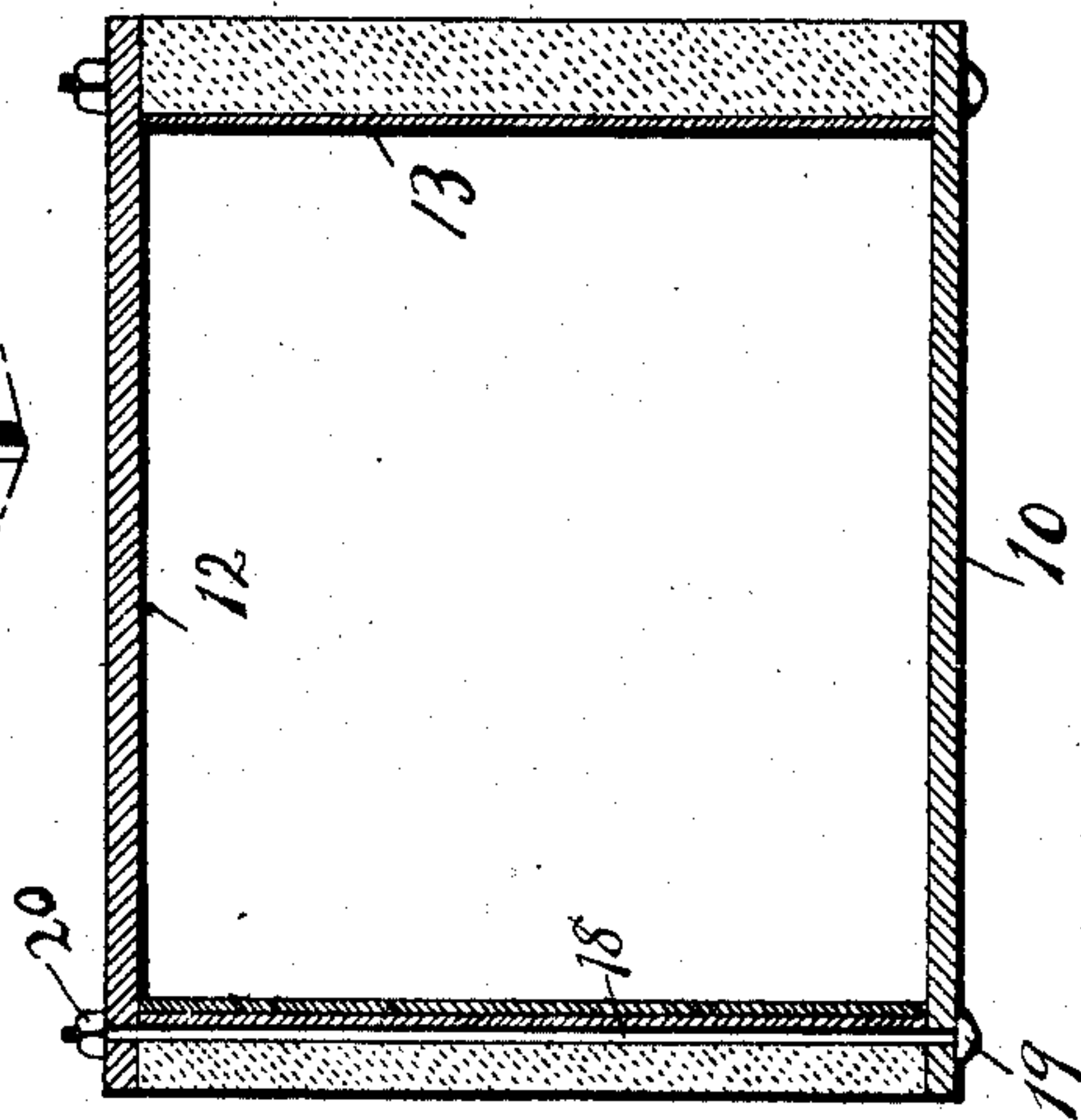
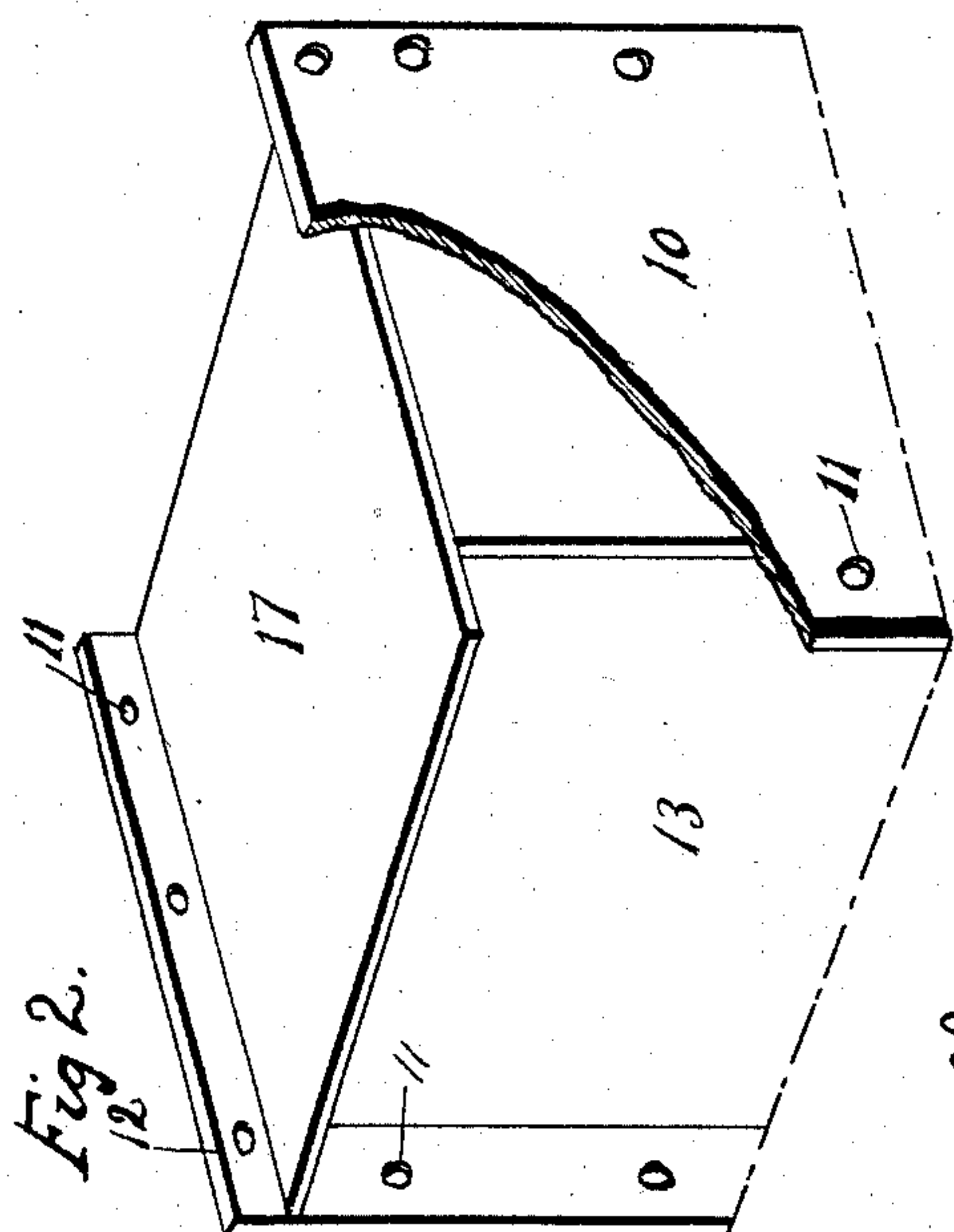


No. 865,123.

PATENTED SEPT. 3, 1907.

C. PHELPS.  
FURNACE CASING.  
APPLICATION FILED JAN. 19, 1906.



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES PHELPS, OF OSKALOOSA, IOWA.

## FURNACE-CASING.

No. 865,123.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed January 19, 1906. Serial No. 296,837.

*To all whom it may concern:*

Be it known that I, CHARLES PHELPS, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented a certain new and useful Furnace-Casing, of which the following is a specification.

The object of my invention is to provide a furnace casing of simple, durable and inexpensive construction, designed to retain heat within a furnace, as a substitute for the usual brick casing, and designed to be composed wholly of sheet metal and a plastic material which may be applied after the sheet metal is placed in position on the furnace.

My invention consists in the construction of the casing, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of a furnace with my improved casing applied thereto, with parts broken away to show details of construction. Fig. 2 shows a perspective view of the top portion of a furnace with the sheet metal casing pieces in position relative to each other and to the furnace front and rear pieces, the bracing strips being omitted, and Fig. 3 shows a sectional view on the line 3—3 of Fig. 1.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate a cast metal furnace front provided with openings 11 near its side and top margins.

12 indicates the rear plate of a furnace having substantially the same dimensions as the furnace front 10. The furnace casing comprises two side pieces 13, each made of sheet metal and of a size to fit between the front 10 and the back 12 and to extend to a point near the top of said parts. Secured to the outer surface of each of the sides 13 is a series of reinforcing retaining strips, each of which is riveted or otherwise secured to the sides 13 and extends from front to rear of said side. Each of said retaining strips comprises a flat base portion 14, sides 15 extending outwardly from the base portion and inclined toward each other, thus forming between them a dove-tailed groove and the margins of each strip are inclined outwardly at 16 away from each other and substantially parallel with the base 14. The top of the casing comprises a plate of sheet metal 17 with its front and rear edges engaging the front and rear plates of the furnace and with its side edges overlapping the tops of the sides 13 and projecting outwardly beyond said sides. This top is also provided with reinforcing retaining strips substantially the same as the ones secured to the sides. I have also provided means for connecting the front and rear plates 10 and 12 and at the same time bracing the sides and top to prevent them from buckling outwardly as follows: The numeral 18 is used to indicate rods, which are passed through the openings 11 in the front and rear and provided at their

forward ends with heads 19 and at their rear ends with nuts 20. Their body portions project through between the sides 15 of the reinforcing and retaining strips and the said body portions lie close to the outer faces of the body portions of said strips, thus assisting in bracing said strips against buckling by internal pressure. After the parts are assembled, I complete the furnace casing by placing a layer of plastic substance composed of asbestos or other material not affected by heat over the entire surface of the sheet metal sides and top and the strips thereon. Obviously by having the side edges of the front and rear of the furnace project outwardly beyond the sides 13, the plastic material will form a tight joint at the connection of the sides and the front and back. Furthermore by providing a top with its side edges projecting over the top edge of the sides 13, the plastic material will form a tight joint between the sheet metal sides and top and I secure a tight connection between the top 17 and the front and back of the furnace by placing the plastic material above the top 17 and against the inner faces of the upper end portions of the front and back of the furnace. By filling the dove-tailed grooves in each of the reinforcing and retaining strips with plastic material, the said material will be retained therein when it hardens, and furthermore the outwardly projecting margins 16 of the reinforcing and retaining strips will tend to retain the plastic material that enters the spaces between the strips so that if at any time the plastic material should crack on account of contraction and expansion due to variations in temperature, the plastic material would still remain in position and the cracks could be repaired quickly and easily. Furthermore if the sides and top of the furnace were removed the plastic material would still retain its position and after the sides and top were returned to the furnace, it would be only necessary to seal the edges thereof with fresh plastic material in order to obtain a tight furnace casing.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, therefor is—

1. In a furnace casing, the combination of front and rear furnace walls, furnace side walls offset from the edges of the front and rear walls, projections on said side walls for retaining plastic material and means for connecting the side walls with the front and rear walls.

2. In a furnace casing, the combination of front and rear furnace walls, furnace side walls offset from the edges of the front and rear furnace walls, projections on said side walls for retaining plastic material and rods connected with the front and rear walls and extended adjacent to the outer faces of the side walls.

3. The combination with a furnace front and rear walls, of sheet metal sides offset from the edges of the front and rear walls, reinforcing and retaining strips on the sides, rods connected with the front and rear and passed through the reinforcing and retaining strips.

4. The combination of a furnace front and rear walls, of sheet metal sides offset from the adjacent edges of the



furnace front and rear walls, a series of reinforcing and retaining strips on the furnace sides and rods connecting the furnace front and rear with their body portions engaging the furnace sides to prevent them from buckling outwardly.

5 5. The combination with a furnace front and rear walls, sheet metal side portions offset from the adjacent edges of the furnace front and rear walls, the edge portions of the said front and rear formed with openings, a series of sheet  
10 metal reinforcing and retaining strips secured to each side and each comprising a body portion, edge portions projected outwardly from the body portion and toward each other, the margins of which are extended away from each other, rods passed through the openings in the front  
15 and rear walls with their body portions extended through the said strips and lying against said strips to prevent said sides from buckling outwardly, and plaster on the sides filling the spaces between the strips and sealing the joints between the sides and the furnace front and rear  
20 walls.

6. The combination with a furnace front and rear walls, sheet metal side portions offset from the adjacent edges of the furnace front and rear walls, the edge portions of the said front and rear formed with openings, a series of sheet  
25 metal reinforcing and retaining strips secured to each side and each comprising a body portion, edge portions projected outwardly from the body portion and toward each

other, the margins of which are extended away from each other, rods passed through the openings in the front and rear walls with their body portions extended through the said  
30 strips and lying against said strips to prevent said sides from buckling outwardly, plaster on the sides filling the spaces between the strips and sealing the joints between the sides and the furnace front and rear walls, a furnace  
35 top formed of a sheet metal body portion with its front and rear edges engaging the front and rear walls of the furnace and spaced apart from the top thereof and with its side edges projecting over the furnace sides, reinforcing and retaining strips thereon, and plaster covering the top  
40 and sealing the joints between the top and the furnace front and rear walls.

7. In a furnace casing, the combination of a flat furnace wall and a series of reinforcing and retaining strips secured thereto, each strip comprising a flat base, sides extending outwardly from the sides of the base and converging  
45 toward each other and edge margins on the sides projected away from each other, the edge margins of the adjacent reinforcing strips being spaced apart to admit plastic material between them.

Des Moines, Iowa, January 9, 1906.

CHARLES PHELPS.

Witnesses:

HOMER PHELPS,  
ANNA PHELPS.