

No. 828,118.

PATENTED AUG. 7, 1906.

A. E. JOHNSON.

ASH PIT DOOR.

APPLICATION FILED NOV. 13, 1905.

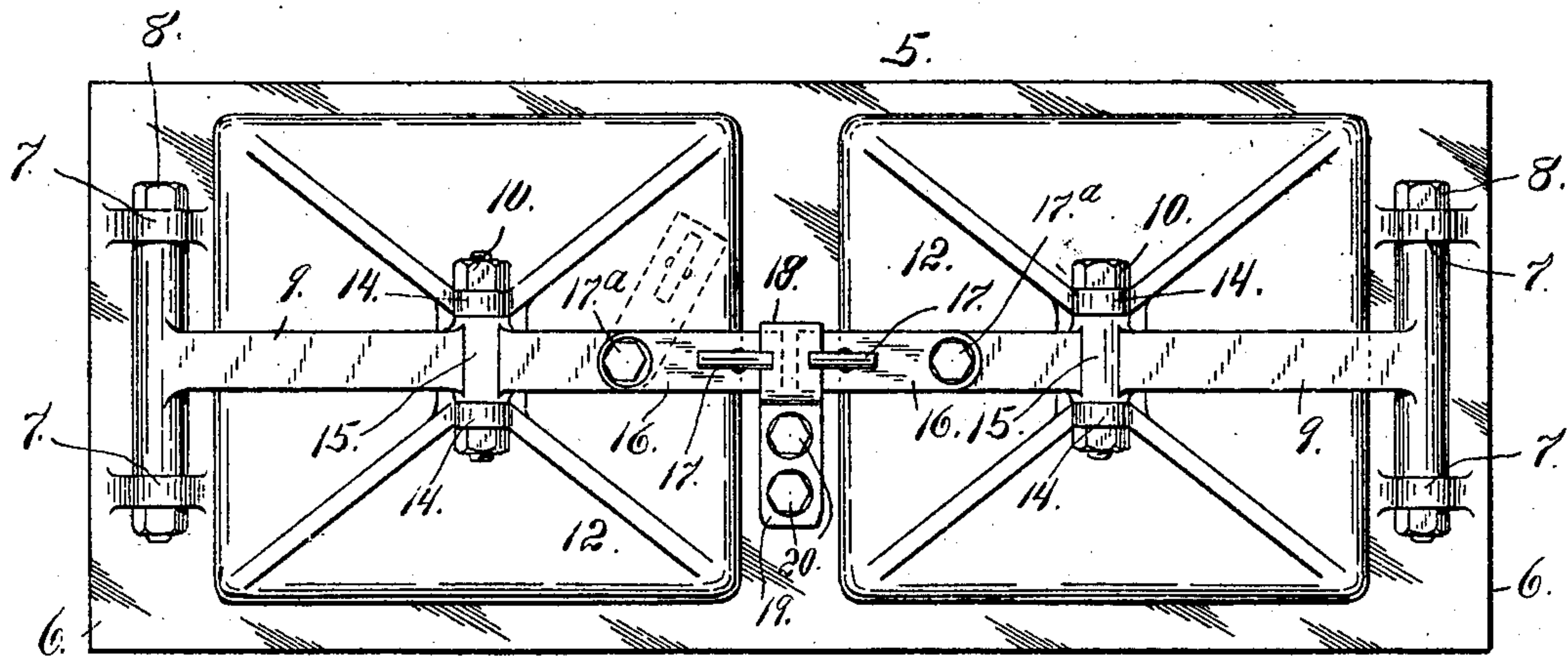


Fig. 1

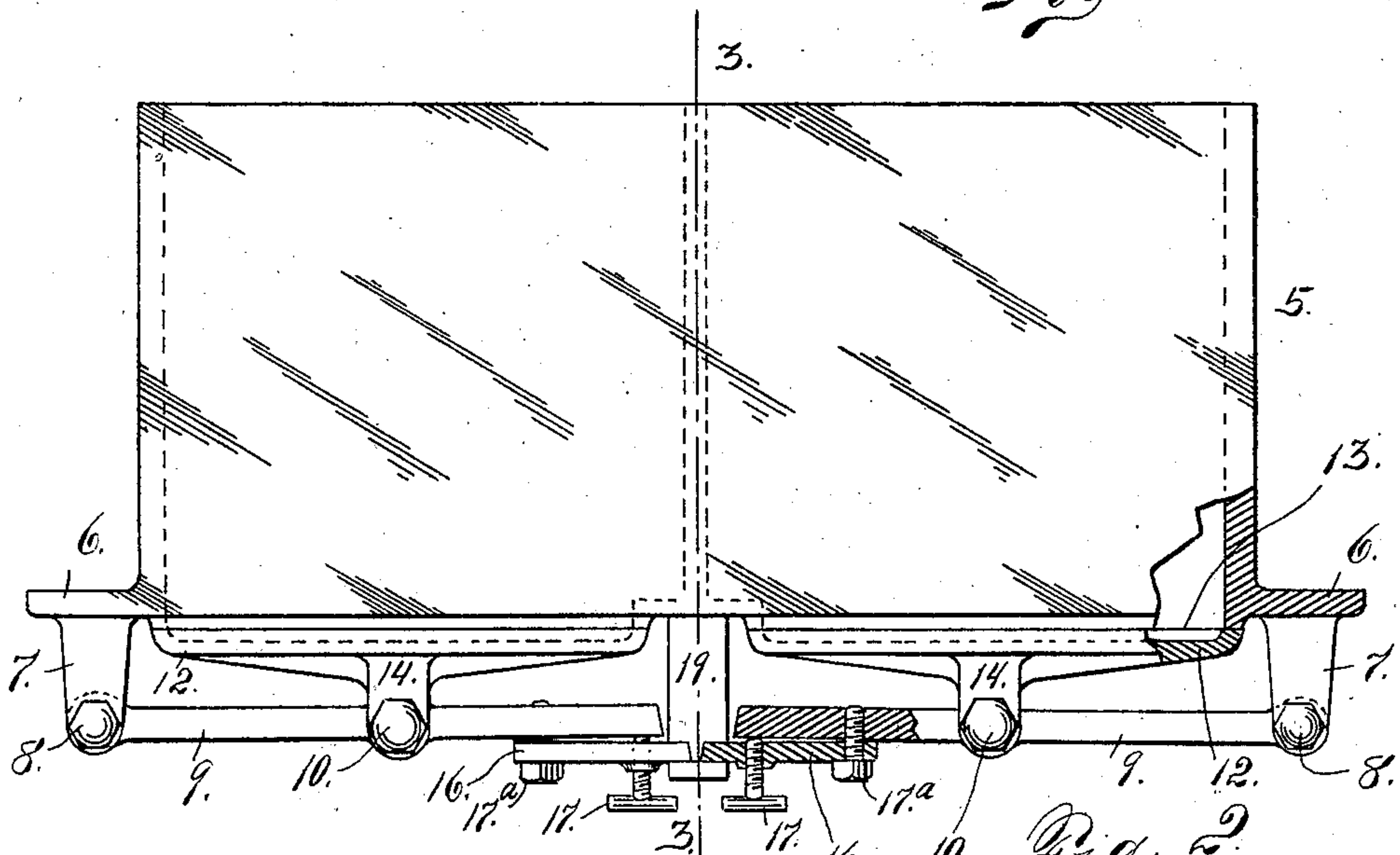
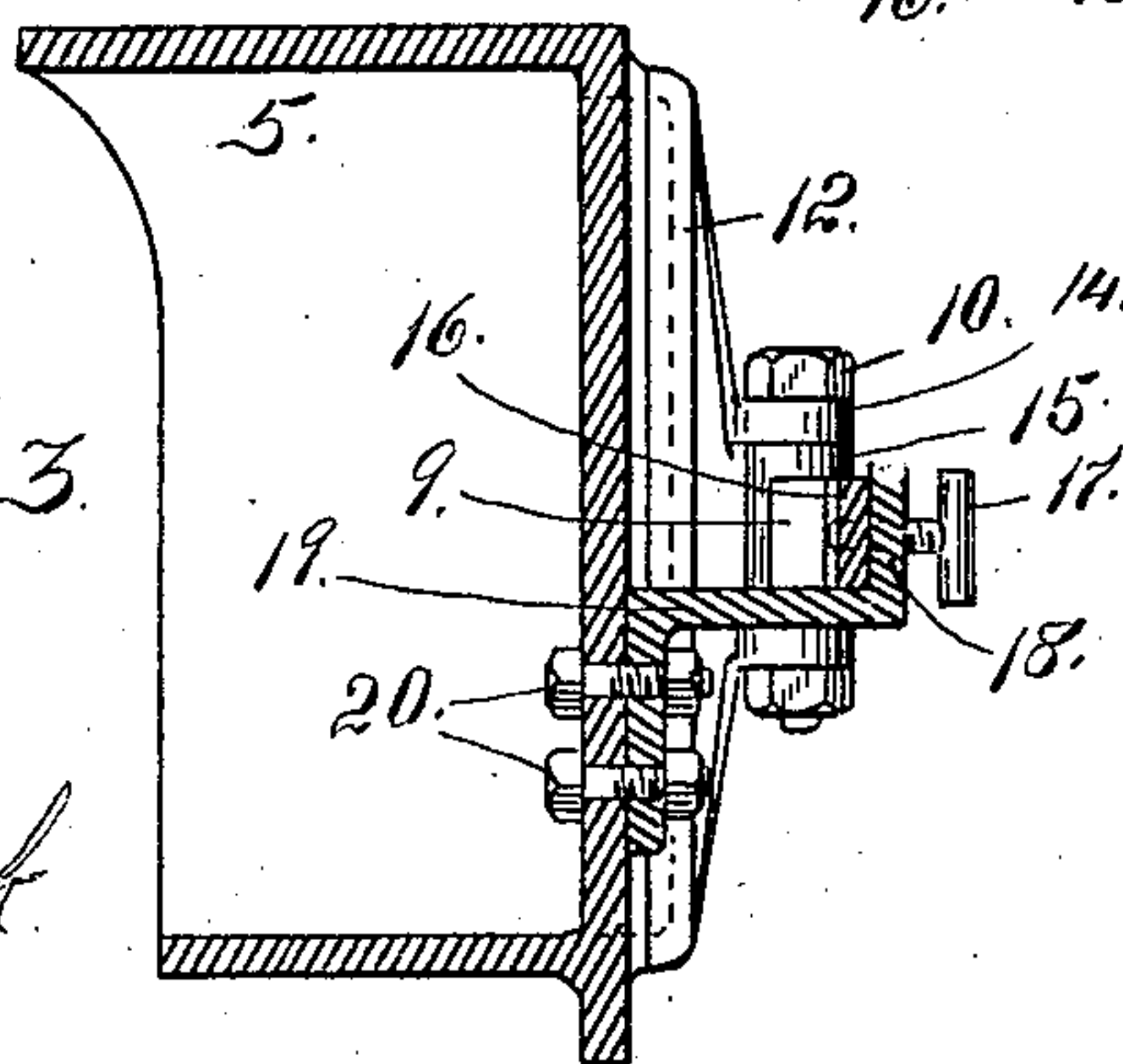


Fig. 2

Fig. 3



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# UNITED STATES PATENT OFFICE.

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## ASH-PIT DOOR.

No. 828,118.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed November 13, 1905. Serial No. 287,196.

*To all whom it may concern:*

Be it known that I, ALFRED E. JOHNSON, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Ash-Pit Doors; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in ash-pit doors for furnaces where it is desirable or necessary that the ash-pit shall be made air-tight when the doors are closed, as in the case of gas-producing or semigas-producing furnaces.

My object is to provide a construction of this class which shall be simple in construction, exceedingly efficient, as well as reliable and durable in use.

My further object is to avoid the necessity of any packing material surrounding the ash-pit opening. Any packing material, even asbestos, is undesirable, inasmuch as it becomes gradually worn away, therefore making it of doubtful efficiency and unreliable.

Having briefly outlined the objects to be attained by my improved construction and some of the difficulties which it is intended to overcome, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 illustrates my improved ash-pit doors hinged to a suitable frame. In use this framework would be built into the furnace-wall. Fig. 2 is a top plan view of the same, partly in section. Fig. 3 is a section taken on the line 3-3, Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable frame or supporting structure provided with a flange 6 on each side and a lug 7, projecting forwardly from the flange. To this lug 7 is fulcrumed, as shown at 8, a lever 9, pivotally connected by a bolt 10 with an ash-pit door 12, adapted to close an opening 13, leading to the ash-pit or space inclosed by the frame 5.

The connection with the door by the use of the bolt 10 is formed by providing the central part of the door with separated apertured lugs 14, between which lugs passes the lever 9, which is reinforced, as shown at 15, and provided with an opening registering with the openings in the lugs 14. The bolt 10 is passed through the registering openings in the lugs 14 and the reinforced part 15 of the lever. Nuts are applied to the opposite extremities of the bolt. In this manner the door is loosely connected with the lever, whereby when closed it is adapted to adjust itself to form a tight joint around the opening. The lever 9 extends inwardly beyond the bolt 10, and its inner portion is provided with a part 16, pivoted to the lever, as shown at 17<sup>a</sup>. In this pivoted part 16 is threaded a hand-screw 17, whose inner extremity is adapted to bear against the lever. This pivoted part when the door is closed occupies a position behind the upwardly-projecting member 18 of an angle-plate 19, secured to the central part of the frame 5 between the two door-openings by bolts 20.

As shown in the drawings, the frame is provided with an opening 13 on each side of the angle-plate 19, and a set of mechanism of the character just described is employed in connection with each opening. As the one set of mechanism is a duplicate of the other the description of one is a description of both. It is evident that the scope of the invention is sufficient to cover one or more sets of mechanism, the same being therefore adapted for use in connection with an ash-pit or other cavity containing one or more openings.

Assuming that the parts are in the position shown in full lines in the drawings, if it is desired to open a door 12 the set screw or bolt 17 corresponding with the door to be opened is unscrewed, thereby loosening the pivoted member 16 sufficiently to allow it to be raised to the position shown by dotted lines at the left of Fig. 1. The door may then be opened by swinging the lever 9 outwardly on its pivot 8, the door 12 moving with the lever by virtue of the construction heretofore explained. When it is desired to close the door, the movements just described are reversed—that is to say, the lever and the door connected therewith are swung inwardly until the door engages or is seated on the frame surrounding



the opening 13. It is preferred that the engaging surfaces of the door and frame shall be ground in order that an air-tight joint may be formed when the two parts are brought  
 5 into close contact. When in this position, the pivoted member 16 is thrown down to a position in the rear of the vertical member 18 of the angle-plate 19. The set-bolt 17 is then turned to cause it to move inwardly through  
 10 the member 16 and engage the adjacent extremity of the lever 9, against which it bears. As the set screw or bolt cannot enter the lever 9, but simply bears thereagainst, and as the pivoted member cannot move outwardly  
 15 or forwardly, the member 16 and the lever 12 are separated to the extent of the travel of the bolt or screw 17. This separation of the said parts causes an inward movement of the lever 9 to the extent of the separation, and  
 20 thus forces the door 12 tightly against the ground or smooth portion of the frame 5 surrounding the opening 13. The set screw or bolt is actuated sufficiently to produce an air-tight joint, as required. As the door is loosely  
 25 pivoted on the lever, the door is allowed to adjust itself to the frame or casing, as circumstances may require, in order to make a perfectly tight joint.

While my improved construction is especially designed for use in connection with ash-pits of furnaces or the ash-pit or space under-  
 30 neath the grate required to be air-tight, it is evident that it may be employed in other relations where a similar function is required.

35 While I have described herein the specific construction shown in the drawings, it must be understood that the scope of the invention is not to be limited to this specific construction except so far as may be required by the  
 40 state of the art and the language of the claims.

Having thus described my invention, what I claim is—

1. A closure for ash-pits or other cavities,  
 45 comprising a relatively stationary structure containing the opening to be closed, a lever-like device pivotally connected with the structure, a door loosely connected with the said device intermediate its extremities, a  
 50 member pivotally connected with the lever-like device and arranged to allow the said device and member to have a limited degree of separation, means applied to one of the separable parts and engaging the other part for separating the same when desired, and suitable  
 55 means acting on the pivoted member to prevent its forward movement when the lever-like device and its pivoted member are in the operative position.

60 2. In a structure of the class described, the combination with a relatively stationary frame provided with an opening to be closed,

of a lever pivotally connected with the framework at one side of the said opening, a door loosely connected with the lever intermediate  
 65 the extremities of the latter, a member pivotally connected with the lever and arranged to swing on an axis at right angles to the axis of the lever, the said member projecting beyond the extremity of the lever remote  
 70 from its fulcrum, a stop adapted to engage the protruding extremity of the said member to prevent the forward movement of the same when the lever and member are in operative position, and a set screw or bolt  
 75 threaded in the pivoted member and bearing against the lever to produce a limited degree of separation when desired, the lever and pivoted member being loosely connected to permit the said separation.  
 80

3. In a structure of the class described, the combination with a relatively stationary frame provided with an opening to be closed, a lever fulcrumed on the frame at one side of  
 85 the opening, a door loosely connected with the lever intermediate its extremities, the door being arranged to close the said opening, and a member pivotally connected with the lever remote from its fulcrum, the axis of the pivoted member extending at right angles to  
 90 the axis of the lever when swinging on its fulcrum, the pivoted member being connected with the lever to allow a limited degree of separation, a set bolt or screw threaded in the pivoted member and bearing against the adjacent  
 95 extremity of the lever, the pivoted member protruding beyond the free extremity of the lever, and an angle-plate applied to the structure and adapted to engage the protruding extremity of the pivoted member to  
 100 prevent the forward movement of the latter when the hand-screw is turned to cause the pivoted member to separate from the lever.

4. The combination with a structure having two openings, a lever fulcrumed on the  
 105 structure at the outside of each opening, a door loosely connected with each lever intermediate its extremities, an angle-plate connected with the structure intermediate the two openings, and a pivoted member connected  
 110 with each lever and protruding beyond its free extremity and adapted to engage the angle-plate, the pivoted members being connected with their respective levers to permit a limited degree of separation, and  
 115 means for separating the pivoted members and their respective levers for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED E. JOHNSON.

Witnesses:

DENA NELSON,  
 A. J. O'BRIEN.