

J. O. BARDILL.  
 TWYER RECEIVER FOR SMELTING FURNACES.  
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962,112.

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Fig. III

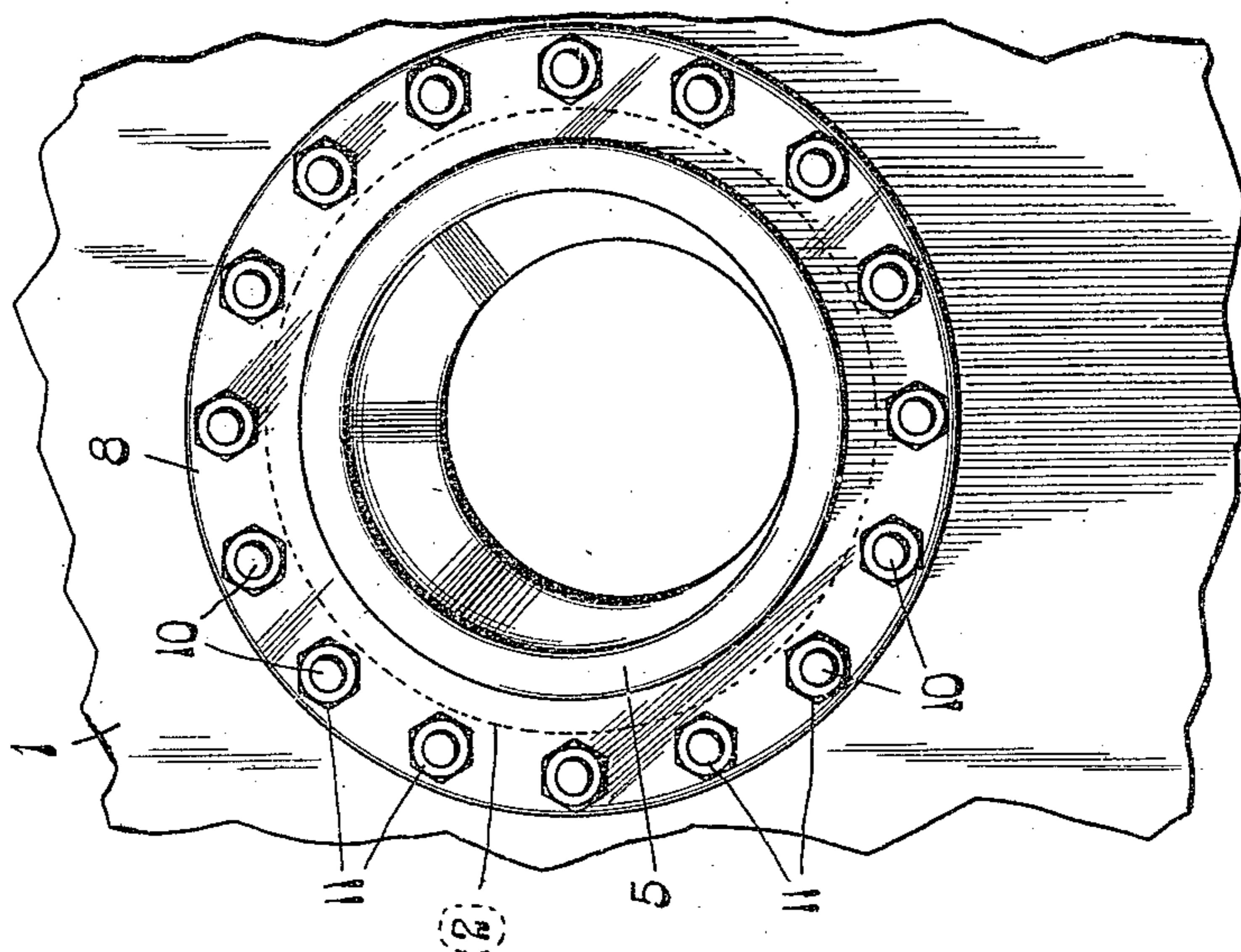


Fig. I.

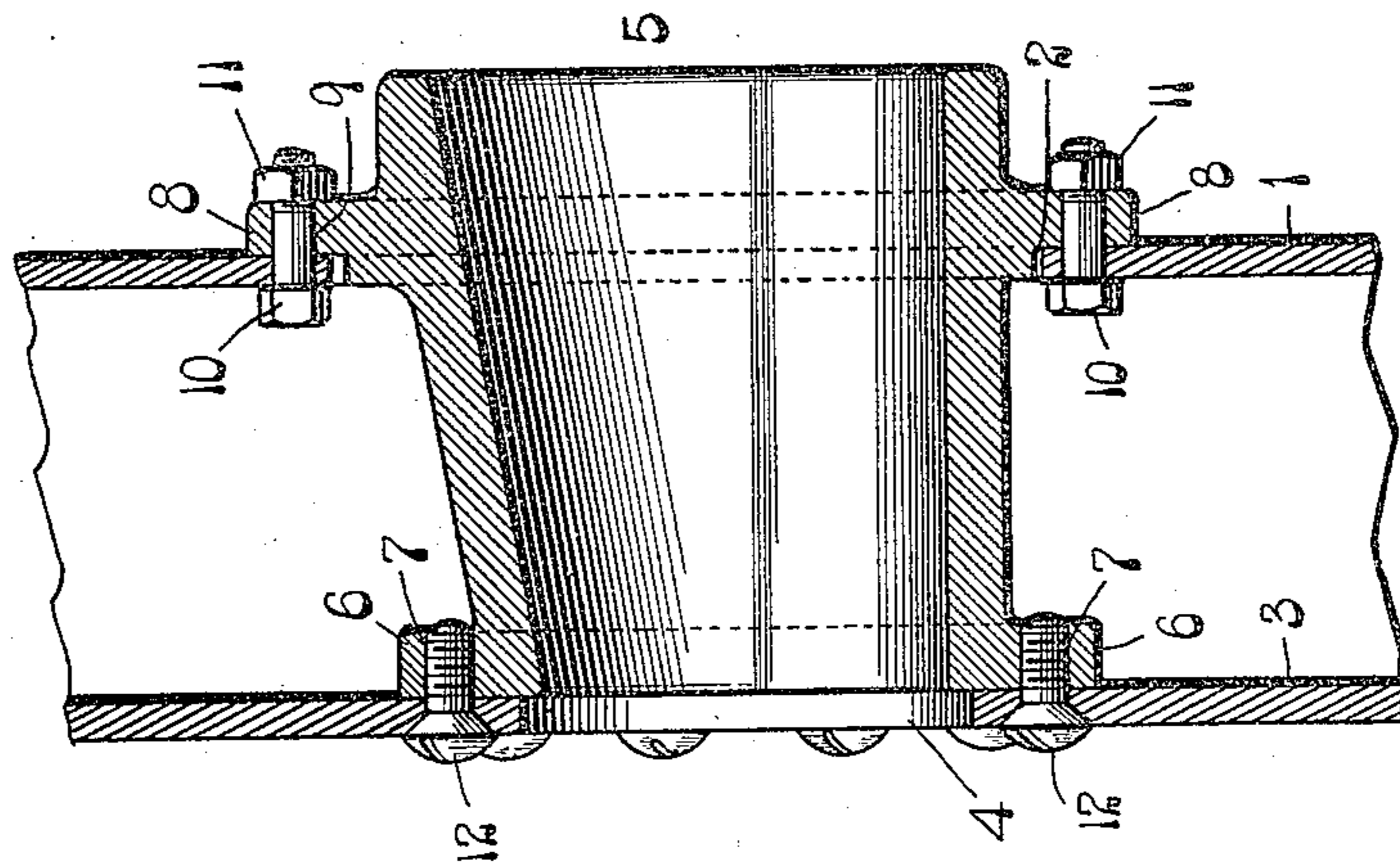
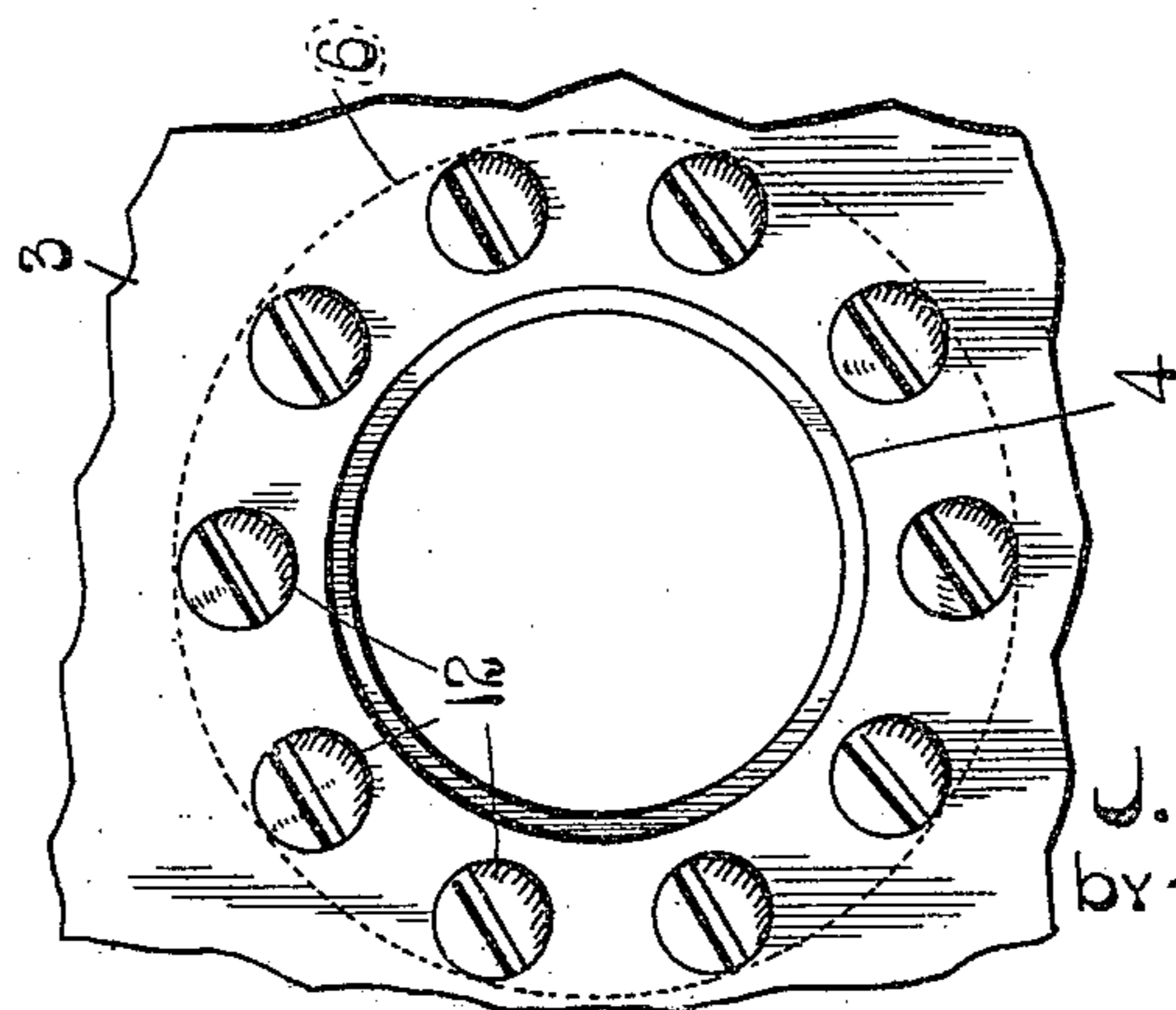


Fig. II.



Attest  
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# UNITED STATES PATENT OFFICE.

JOHN O. BARDILL, OF HERCULANEUM, MISSOURI.

TWYER-RECEIVER FOR SMELTING-FURNACES.

962,112.

Specification of Letters Patent. Patented June 21, 1910.

Application filed March 23, 1910. Serial No. 551,102.

*To all whom it may concern:*

Be it known that I, JOHN O. BARDILL, a citizen of the United States of America, residing at Herculaneum, in the county of Jefferson and State of Missouri, have invented certain new and useful Improvements in Twyer-Receiver for Smelting-Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a twyer receiver for smelting furnaces in which a twyer may be introduced, and it has for its object the production of a twyer receiver of simple design, and which may be readily attached to and detached from the wall of the smelting furnace as originally constructed, or it may be substituted for a twyer receiver of another design previously used and which has become unserviceable.

There have in the past been produced a number of twyer receivers of the kind to which my invention relates, but all of them in so far as I am aware have been objectionable by reason of the manner in which it was necessary to mount them in the furnace walls, which has made it difficult to replace the receivers by new ones of the same type when the previously used receivers became defective. Among the types of receivers heretofore in use is a receiver which is secured at one end to one shell and lining of a furnace wall by rivets, and the other end of which is expanded to close the joint around the receiver. This type of receiver is not readily removable from the furnace wall when it becomes defective, nor is it easy to replace the previously used receiver by a new one. Another type of receiver comprises a flanged tube that is wholly seated between the shells and lining of a furnace wall, and upheld at the twyer receiving openings by bolts passing through the shell, the lining, and the receiver. This type of receiver, when once placed between the shell and lining, cannot be removed without disarrangement of the furnace wall, and it is impossible to introduce a new receiver to take the place of the original one without dismantling the furnace wall. Another type of receiver contemplates the production of a receiver from the lining or shell so that it is an integral part thereof and the connection of the receiver to the other wall member. This type of receiver is objectionable

for the reason that when the receiver becomes impaired, it is necessary to remove the wall member by which the receiver is carried and substitute a new wall member therefor, which is naturally an expensive procedure.

By my improvement, I furnish a twyer receiver that is not subject to any of the objections of the receivers mentioned, and which may be readily put in place when the furnace with which it is used is originally built, may be readily separated from the furnace wall and replaced by a new receiver of similar type with a minimum expenditure of labor and time.

Figure I is a vertical section through a fragment of a smelting furnace wall and my twyer receiver. Fig. II is an elevation of a fragment of the lining of a furnace wall and my receiver. Fig. III is an elevation of a fragment of the shell of the furnace wall and my receiver.

In the accompanying drawings:—1 designates the shell of a smelting furnace and 3 the lining of the furnace separated from the shell, these two members constituting, when assembled, a water jacket. The shell 1 is provided with an aperture 2 and the lining 3 is provided with an aperture 4 in alignment with the aperture in the shell, and of less diameter than the aperture in the shell.

5 designates the body of my twyer receiving opening, preferably flat at its bottom, arched transversely from the bottom to the top and tapering from the outer end of the body to the inner end of said body. The body of the receiver is, therefore, larger at one end than at the other end. At the smaller end of the receiver is an outwardly jutting annular flange 6 that is provided with a plurality of screw holes 7, while near the opposite or larger end of the receiver body is an outwardly jutting annular flange 8 that is provided with bolt holes 9.

In putting my receiver into position for use in a smelting furnace wall after the shell 1 and lining 3 have been assembled, it is only necessary to pass the smaller end of the receiver through the larger opening 2 in the shell until the smaller end is brought into abutment against the lining 3 at the location of the aperture 4 therein, and so positioned that the screw holes 7 in the annular flange 6 will register with screw holes provided in the lining around the aperture therein. Previous, however, to the insertion

of the receiver into the furnace wall, I place in suitable bolt holes in the shell, which are arranged around the apertures therein, bolts 10 that are adapted to be passed through the bolt holes 9 at the annular flange at the larger or outer end of the receiver, and when the receiver has been partially inserted, the bolts 10 are slipped through the bolt holes in the last mentioned annular flange and nuts 11 are applied to the bolts for the purpose of drawing said flange tightly to the shell 1 around the aperture therein. The inner end of the receiver is then tightly attached to the lining 3 by screws 12 that are inserted through the screw holes in the lining and into the screw holes 7 in the annular flange 6, for the purpose of effecting a close joint between the receiver and the lining. After the receiver has been mounted in the manner explained, a closer joint may, if desired, be effected between the inner end of the receiver and the lining by calking action carried out by the use of a calking tool directed against the lining at the location of the aperture therein and by which a portion of the lining adjacent to the inner end of the receiver is upset toward the opposing end face of the receiver.

It will be readily apparent that whenever it becomes necessary to remove my receiver, due to impairment thereof, the only necessary acts to permit such removal are the

removal of the bolts 10 and screws 12; so that the receiver is freed of connection to the shell and lining of the furnace, and a new receiver may be put in place as readily as the original receiver was put in place.

I claim:—

1. The combination with the shell and lining of a furnace, of a twyer receiver comprising a hollow body having an external annular flange at or near each of its ends, one of said flanges being seated against the outer face of said lining and the other flange being seated against the outer face of said shell, and means for securing said flanges to said lining and shell.

2. The combination with the shell and lining of a furnace, each provided with an opening, the opening in the shell being larger than that in the lining, of a twyer receiver comprising a hollow body having an external annular flange at or near each of its ends, one of said flanges being smaller than the other and being seated against the outer face of said lining and the other flange being seated against the outer face of said shell, and means for securing said flanges to said lining and shell.

JOHN O. BARDILL.

In the presence of—

E. B. LINN,

M. C. HAMMON.