

C. D. MOSHER.
CLOSURE FOR BOILER CASINGS, &c.
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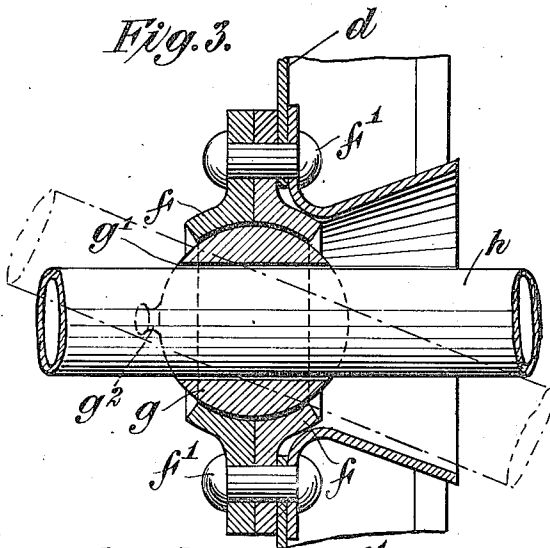
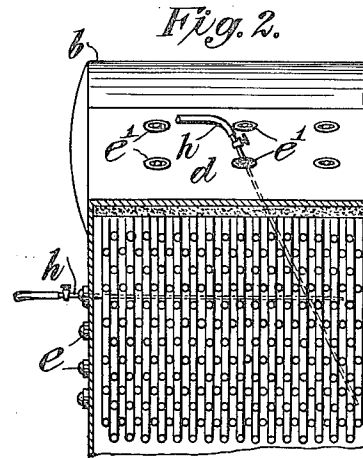
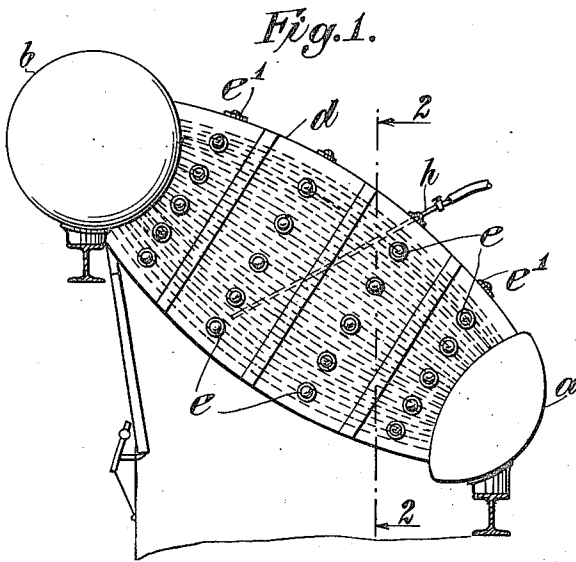
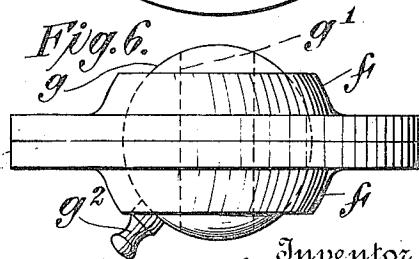
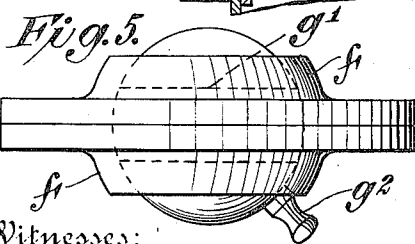
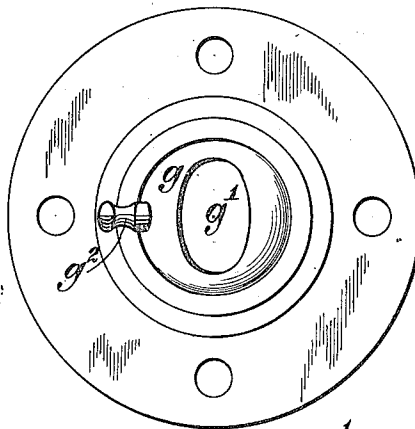


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CLOSURE FOR BOILER-CASINGS, &c.

1,043,451.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES D. MOSHER, a citizen of the United States, residing in the borough of Manhattan of the city of New York, county of New York, State of New York, have invented certain new and useful Improvements in Closures for Boiler-Casings, &c., of which the following is a specification, reference being had to the accompanying drawings, which form a part hereof.

In the continued operation of water-tube boilers with inclined tubes it is necessary, from time to time, to remove the accumulations of soot on the tubes. This is generally accomplished by the use of a steam-lance, that is, a pipe having perforations at its end, which is connected with a steam-hose and introduced among the water-tubes through hand holes in the casing of the boiler. The steam is generally used at high pressure and the result is that soot, dust and steam are blown back into the fire room through the hand hole around the steam-lance, it being necessary to make the hole considerably larger than the steam-lance in order that it may be moved in different directions. The removal and replacement of the hand hole covers also requires considerable time and involves some inconvenience. Somewhat similar conditions exist with regard to the introduction of pyrometers, draft-gages, or other instruments.

It is the object of this invention to provide a door or closure which can be opened and closed readily and will permit the free introduction of the steam-lance or other instrument and its necessary movement without permitting the escape of hot gases, steam, dust or soot, which in the case of a pyrometer or draft-gage, might affect the accuracy of the reading. This object is attained by securing in each opening through the boiler casing a spherical bearing and mounting therein a spherical closure which has through it an aperture to permit the passage of the steam-lance or other instrument freely but without undue looseness, while the sphere or spherical door can be turned, when the lance is removed, so as to close the aperture completely.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated and in which—

Figure 1 is a view partly in elevation

showing so much of a water-tube boiler as is necessary to enable the application of the invention thereto to be understood. Fig. 2 is a view in section on the plane indicated by the line 2—2 of Fig. 1, looking in the direction of the arrows. Fig. 3 is a detail view on a larger scale showing a portion of the boiler casing with the improved door or closure in position, a portion of a steam-lance being also shown. Fig. 4 is a front view of the parts shown in Fig. 3, the steam-lance being removed. Figs. 5 and 6 are detail views showing different positions of the door or closure.

It will be obvious that the improved door or closure is capable of application to a water-tube boiler of any kind, or to any other structure of similar kind, such as a superheater, feed water heater, etc.

In Figs. 1 and 2 there is illustrated a boiler comprising a water-drum *a*, a steam-drum *b*, and a series of water-tubes extending from one drum to the other, with an outer casing *d*. The latter is formed, at convenient intervals, with hand holes *e* and *e'*, which are disposed so as to permit a steam-lance, pyrometer, draft-gage or other instrument, to be introduced wherever required, as, in the case of a steam lance, from the end and from the side so that every part of the entire series of tubes can be reached with the steam jets from the nozzle of the lance. In each hand hole *e* and *e'* is secured a spherical bearing *f* with open front and rear faces, which is conveniently formed in two parts, as shown in Fig. 3, and secured by rivets *f'* to the casing *d* of the boiler. In the bearing *f* is mounted a spherical door *g* which has a diametrical aperture *g'* of such size and shape as to permit the introduction therethrough of the steam-lance *h*, or other instrument but without such looseness as to permit the escape of clouds of steam and dust or any material leakage. The spherical door is also provided with a projecting pin *g²* by which it can be turned either to expose the aperture *g'* or to conceal the same within the bearing *f*.

When it is desired to clean off the tubes, a steam-lance, connected by a flexible steam hose with a steam supply, is introduced through one and another of the spherical doors between the rows of water-tubes and is moved about, as permitted by the movement of the spherical door in its bearing, so

as to cause the nozzle to sweep over the adjacent tubes. The pin g^2 is so placed with respect to the aperture g' as not to interfere with the free movement of the lance in the plane which includes the major axis of the aperture. When the operation has been carried on long enough through one hand hole, the lance is withdrawn and inserted through the door of another hand hole, the first being closed by moving the spherical door, by means of the pin g^2 , so as to cause the aperture g' to be covered by the spherical bearing.

I claim as my invention:—

- 15 1. A closure for boiler casings etc., comprising a spherical bearing adapted to be secured in an opening in the boiler casing, a spherical door mounted in said bearing and normally closing said opening and having an aperture for the introduction of an

instrument therethrough, and a pin secured in the spherical door and projecting through the opening in the spherical bearing whereby the door may be moved to cause the opening and aperture to register.

- 25 2. A closure for boiler casings, etc., comprising a bearing adapted to be secured permanently in an opening in the boiler casing, a spherical door movably secured in said bearing and normally closing said opening and having an aperture therethrough, and means for moving said door to cause the aperture and opening to register.

This specification signed and witnessed this 15th day of December A. D., 1911.

CHARLES D. MOSHER.

Signed in the presence of—

W. B. GREELEY,
WORTHINGTON CAMPBELL.