

(No Model.)

J. A. DYBLIE.
ORE CONVERTER.

No. 593,992.

Patented Nov. 23, 1897.

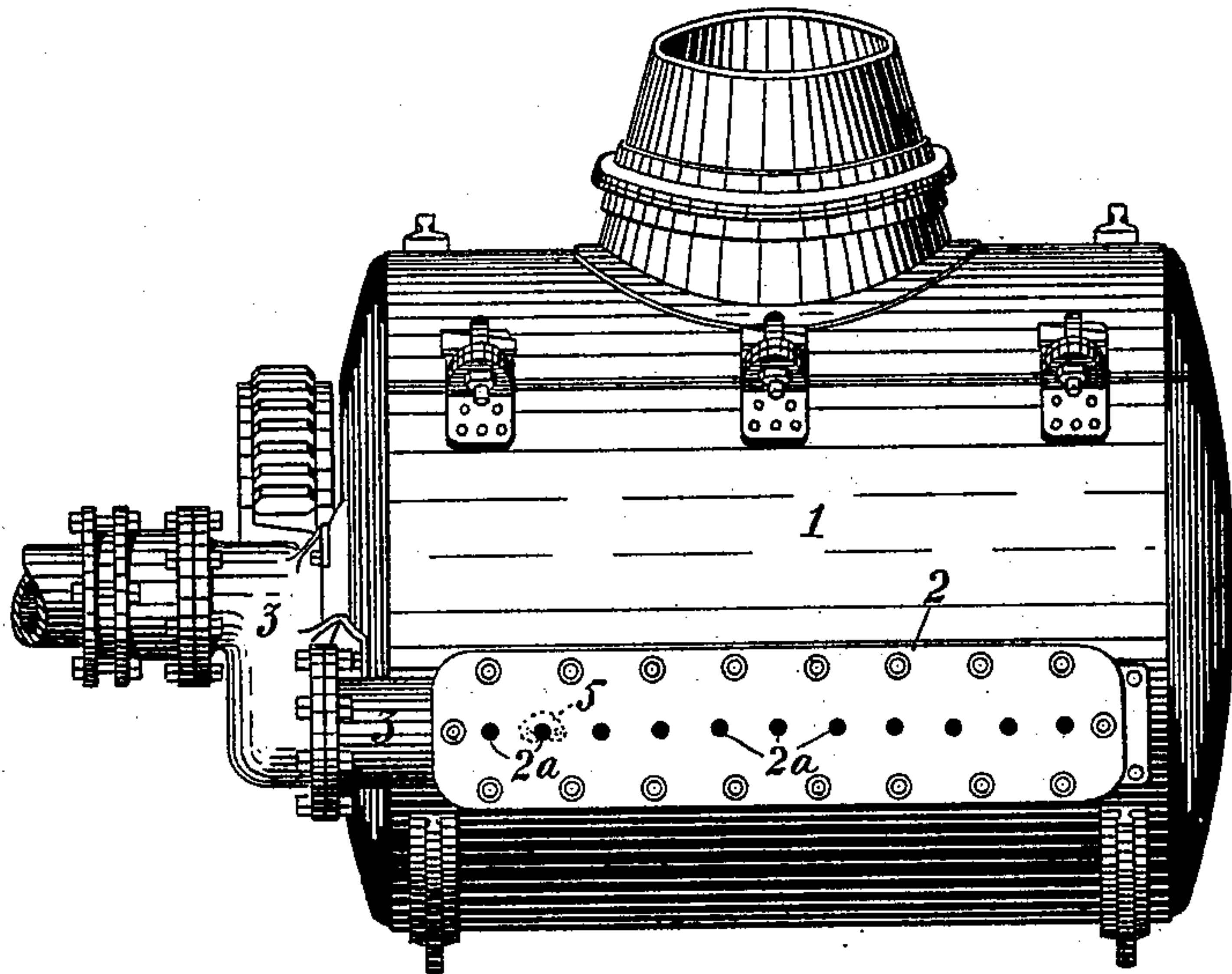


Fig. 1

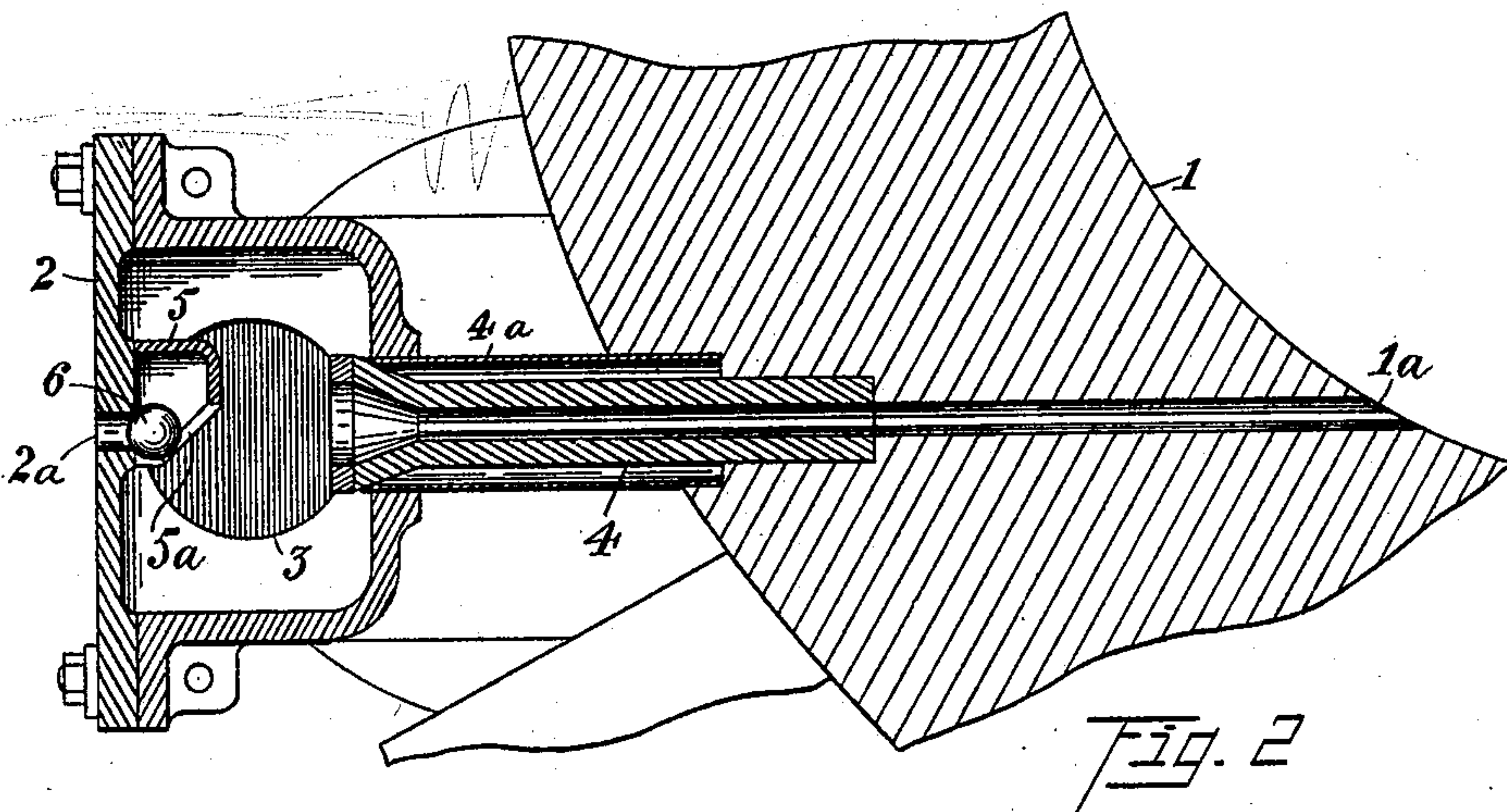


Fig. 2

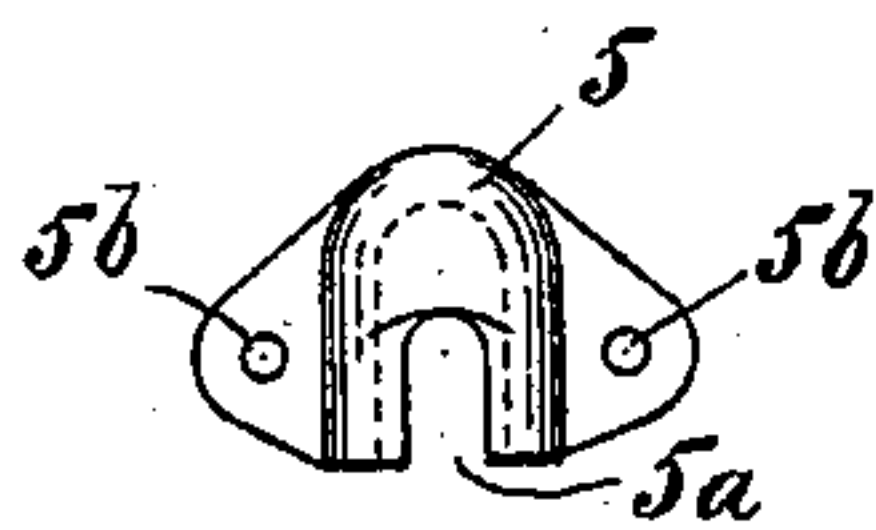


Fig. 3

Witnesses.

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UNITED STATES PATENT OFFICE.

JULIUS A. DYBLIE, OF ANACONDA, MONTANA, ASSIGNOR TO THE FRASER & CHALMERS, OF CHICAGO, ILLINOIS.

ORE-CONVERTER.

SPECIFICATION forming part of Letters Patent No. 593,992, dated November 23, 1897.

Application filed March 30, 1897. Serial No. 629,948. (No model.)

To all whom it may concern.

Be it known that I, JULIUS A. DYBLIE, a citizen of the United States, residing at Anaconda, Deer Lodge county, Montana, have invented a certain new and useful Improvement in Ore-Converters, of which the following, with the accompanying drawings, is a full, clear, and exact specification.

My invention relates to ore-converters employed in the Bessemer process of treating ores, and it pertains more particularly to converters for copper matte. In the preferred forms of these converters compressed air is admitted to the converter through horizontal or nearly horizontal twyers at the side of the converter, the twyers opening from a blast-pipe or twyer-box that is connected with an air-supply. During the time a charge of matte is blown into the converter it becomes necessary to punch or to open the twyer-holes. This is done by driving a steel or iron rod through holes, commonly known as "peep-holes," arranged in the twyer-box in front of the twyer-holes. Various means have been adopted for holding the peep-holes through the twyer-box closed and for admitting access therethrough to the twyer-holes, all of which have developed serious difficulties in the way of easy and quick access to the twyers, and they do not close the peep-holes securely against leakage.

The object of my invention is a valve that automatically closes the peep-holes in a twyer-box of a converter securely against leakage when a blast is being made in the converter, that allows easy and quick access therethrough to the twyers, that is simple in construction, durable in use, and that is comparatively inexpensive.

With these objects in view my invention consists in the combination of the parts described herein and defined in the claims.

In the drawings, Figure 1 is a front elevation of a copper-converter embodying my invention. Fig. 2 is an enlarged section taken transversely of the twyer-box through one of the peep-holes and through one of the twyers and shows a cross-section of my valve, and Fig. 3 is an enlarged back view of the slotted cap.

Fig. 1 illustrates a well-known construction of copper-converter 1, with a twyer-box 2 along the front side thereof, and a pipe connection 3 for carrying compressed air into the twyer-box. The twyer-box is that part of the air-pipe 3 so enlarged or shaped as to provide for attaching the twyers thereto.

2^a 2^a represent a series of peep-holes through the cover of the twyer-box, and the dotted lines around one of the peep-holes indicate the location of the valve-cap on the inside of the twyer-box. One of these valves is provided for each peep-hole, though the location of the valve is indicated at but one of them, that the appearance of the drawings may not be marred. Back of each peep-hole and in line therewith is a tubular twyer 4, that opens from the interior of the twyer-box and registers with an opening 1^a, that communicates with the interior of the converter. Sleeves 4^a, extending from the twyer-box to and into the converter-shell, surround the twyers 4, leaving an annular air-space around the twyer. Upon the inside of the twyer-box cover over each peep-hole is attached a valve-cap 5, having a vertical slot 5^a through its wall that is in line with the peep-hole and the hole through the twyer. A ball-valve 6 is placed inside the cap 5, and the cap is secured to the twyer-box cover by means of bolts that pass through the bolt-holes 5^b 5^b or otherwise. The lower slotted wall of the cap inclines toward the cover to which the cap is attached, so that the ball will carry by gravity to the peep-hole. The function of the valve-caps is to hold the ball-valves and to guide them to their seats when not being held therefrom. The ball-valves are kept to their seats during the oscillation of the converter by air-pressure while a blast is being made.

To gain access to the twyer, an iron rod or poker is pushed against the ball-valve to dislodge it, and the rod will pass underneath the ball-valve, through the slot in the cap, and into the twyer, the ball being supported by the rod. Upon withdrawing the rod the ball rolls down against the peep-hole and closes it securely against the escape of air.

My improved valve for converters possesses

other advantages than those enumerated, all of which will appear readily to persons skilled in the art.

It is apparent that other forms of caps or
5 guides than that described may be employed to hold the ball-valves and to conduct them to their seats, and I do not therefore limit myself to the form described in detail, though that is the preferred construction.

10 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a converter provided with a twyer-box and twyers connecting the
15 twyer-box and the converter, the twyer-box having peep-holes opposite the twyers, with

ball-valves to close the peep-holes, and holders to support the ball-valves and adapted to allow the ball-valves to be moved from their seats, substantially as described.

2. The combination, with a twyer-box hav- 20
ing a peep-hole therein, of a ball-valve to close the peep-hole, and a slotted inclined support for the ball-valve, substantially as described.

In testimony whereof I affix my signature,
in the presence of two witnesses, this 24th day 25
of February, 1897.

JULIUS A. DYBLIE.

Witnesses:

LAURITZ B. EVENSEN,
A. G. GULLBERG.