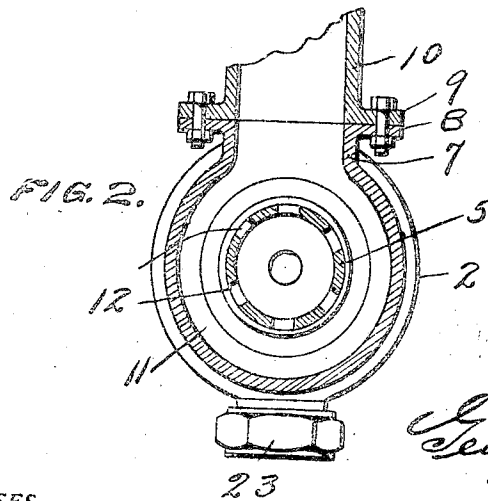
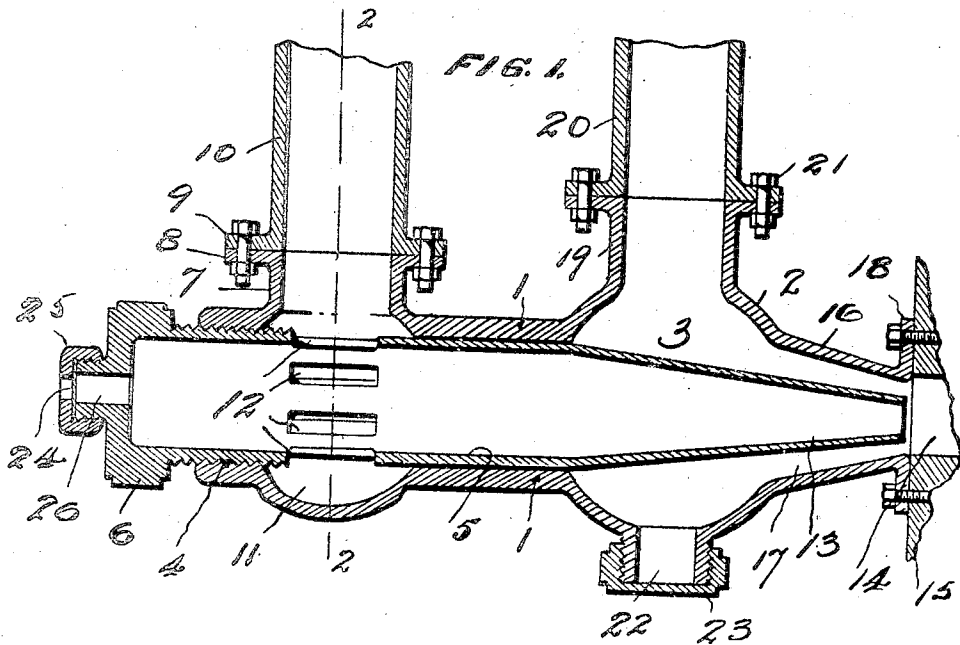


G. A. WILLIAMS.
 INJECTOR TWYER.
 APPLICATION FILED NOV. 12, 1908.

941,833.

Patented Nov. 30, 1909.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE ARTHUR WILLIAMS, OF SALT LAKE CITY, UTAH.

INJECTOR-TWYER.

941,833.

Specification of Letters Patent. **Patented Nov. 30, 1909.**

Application filed November 12, 1908. Serial No. 462,327.

To all whom it may concern:

Be it known that I, GEORGE A. WILLIAMS, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Injector-Twyers, of which the following is a specification.

The present invention relates to improvements in injector twyers and has for its primary object the provision of a device to be used in connection with a blast or smelting furnace for feeding flue dust, smoke, gases and other products of combustion, a second time to the furnace for thorough consumption.

With this end in view the device consists of an injector through which a blast, preferably of air, is fed, and a suction pipe in communication with the furnace through which the products of combustion are drawn by the blast, and the invention further consists in certain novel features of construction and combinations and arrangements of parts of this device as will be hereinafter described and more particularly pointed out in the claims.

In the accompanying drawings I have illustrated one example of the physical embodiment of my invention constructed and applied to a furnace according to the best mode I have so far devised for the practical application of the principles.

In the drawings: Figure 1 is a vertical longitudinal section of the invention, and Fig. 2 is a vertical transverse view taken at line 2—2 Fig. 1.

In the practical embodiment of my invention I employ a casting or casing 1 of tubular form having an enlarged globular portion 2, forming a space or chamber 3. This outer casing 1 is interiorly threaded to receive the exterior threads 4 of the inner tube 5, which tube is formed at its rear end with a hexagonal nut portion 6, by means of which the inner tube may be moved for a purpose to be described.

The outer casing 1 is open at its rear end and a second opening is provided by the tubular upstanding portion 7 flanged at 8 to which is bolted the flanged end 9 of the air blast pipe 10. The outer casing 1 is formed with an enlarged annular chamber 11 which is a practical continuation of the tubular portion 7 and in direct line with the air blast entrance. At this point the inner

tube 5 has a series of openings 12 around its perimeter through which communication is provided between the air blast pipe and the interior of the tube 5. At its forward end the tube 5 is formed with a tapering nozzle 13, which projects through the space 3 of the outer casing, and is in line with an opening 14 in the furnace wall indicated at 15. The outer casing is also provided with a tapered end 16 concentric with the nozzle 13, and between the interior of the outer casing and the exterior of the nozzle 13 a reduced space 17 is formed, which opens to the inlet 14. The tapered end of the outer casing is formed with an annular flange 18 and is attached to the furnace wall by suitable means, bolts being shown in this instance.

A flanged upstanding tubular pipe 19 forms a means of attachment for the suction pipe 20, and the flanges are secured together by means of bolts 21.

Directly beneath the center of the globular chamber 3 an opening 22, normally closed by a screw cap 23, is formed, as a clean out, or in some instances a second suction pipe may be attached here.

A peep hole is provided at the rear of the inner tube, the mica or isinglass disk 24 being clamped between the perforated nut 25 and an opening 26, whose walls are screw threaded to receive the cap or nut 25.

Assuming the pipes 10 and 20 are connected respectively to a blast and to the combustion chamber of the furnace, a current of air, if such is used, passes through the pipe 10, openings 12, nozzle 13, and through the opening 14. This passage of air causes suction through the chamber or space 17, chamber 3, and suction pipe 20. As the blast causes the passage of a suction current through pipe 20, the flue smoke, dust, gases etc. are drawn through the suction connections and are blown into the furnace, for thorough consumption, as will be understood.

By means of the nut 6 and threaded connection between the outer and inner tubes of the injector, the space 17 at its connection with the inlet 14 may be enlarged or decreased to suit different conditions of use.

From the above description taken in connection with the drawings it is evident I have produced a device which will effectually carry out the purposes set forth as the object of my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with an outer casing
5 having a short tapered end terminating in a flange, a globular chamber in the casing adjacent to the tapered end, a small globular chamber at the other end of the casing, a
10 blast pipe in communication with the small chamber, a suction pipe in communication with the large globular chamber, means on said chamber providing connections for a second suction pipe, an inner casing having threaded engagement at one end with the
15 outer casing, a long tapered nozzle formed on the other end of the inner casing, ports affording communication between the blast pipe and the inner casing, and integral adjusting means on the casing having means
20 therein permitting the operator to look into the casing when the device is in operation.

2. The combination with an interiorly threaded open ended outer casing formed with a globular chamber and tapering end, a suction pipe in communication with said
25 chamber; of an inner exteriorly threaded tube having integral adjusting means formed with means permitting a view of the inside of the tube at all times, said tube being formed with a tapering nozzle in the taper-
30 ing end of the outer casing and ports at the rear of the nozzle, and an annular chamber in the outer casing surrounding said ports and connected with a blast pipe, the adjustment of said inner tube serving to vary
35 the passage from the casing to the furnace.

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

GEORGE ARTHUR WILLIAMS.

Witnesses:

K. D. HARDY,

LULU G. GREENFIELD.