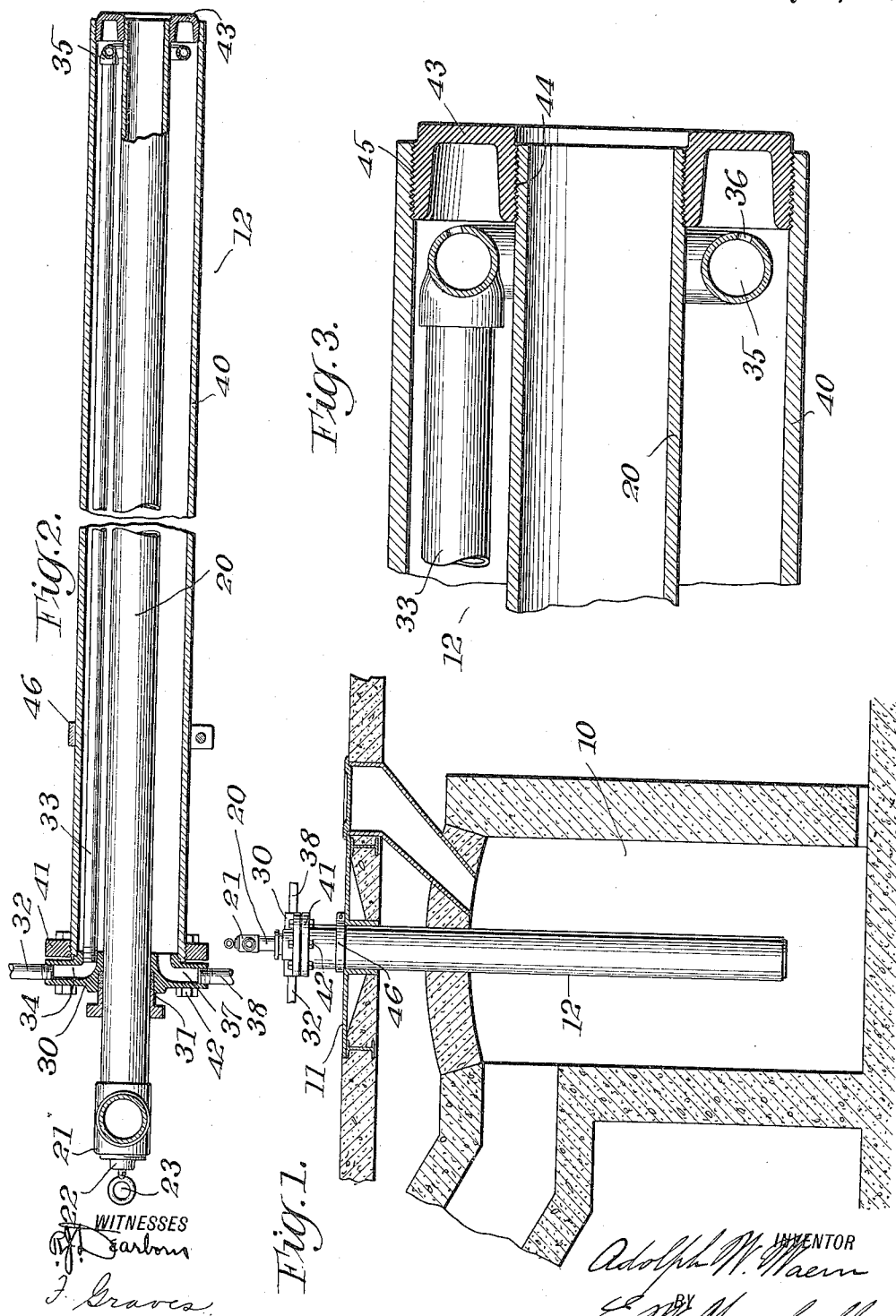


A. W. WAERN.
 WATER COOLED BLOWPIPE.
 APPLICATION FILED OCT. 29, 1914.

1,145,948.

Patented July 13, 1915.



WITNESSES
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WATER-COOLED BLOWPIPE.

1,145,948.

Specification of Letters Patent.

Patented July 13, 1915.

Application filed October 29, 1914. Serial No. 369,161.

To all whom it may concern:

Be it known that I, ADOLPH W. WAERN, a citizen of the United States of America, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Water-Cooled Blowpipes, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in water-cooled blow-pipes, and its object is to improve upon the construction and usefulness of blow-pipes for smelting furnaces, such as are used for example, in the smelting pots and furnaces of sulfate mills.

I will describe my invention in the following specification and then point out the novel features thereof in appended claims.

Referring to the drawings: Figure 1 is a sectional elevation of a sulfate furnace with a blow-pipe embodying my invention shown therewith. Fig. 2 is an elevation mostly in central longitudinal section of a blow-pipe which is made in accordance with this invention. Fig. 3 is a sectional elevation on an enlarged scale of one end of this apparatus.

Like characters of reference designate corresponding parts in all the figures.

10 designates a smelting furnace of ordinary form, above which is a floor 11 and as is usual in an installation of this kind, a water-cooled blow-pipe projects into the furnace from above.

In the drawing 12 designates a blow-pipe of novel construction.

In my improved blow-pipe which is shown in the drawings, 20 designates an air pipe on one end of which is screwed a fitting 21 to which an air pipe from a suitable source of supply may be attached. The end of this fitting is closed by a plug 22 which may be removed for the purpose of cleaning out the air pipe, and which is provided with a ring 23 by means of which the whole device may be raised or lowered.

The air pipe runs through a head 30 and a water-tight joint is formed therewith by means of a stuffing-box 31. A water supply pipe 32 is connected with this head and the water pipe 33 is in communication there-

with through a passage 34 formed in the head. The water pipe 33 runs to a point near the inner end of the apparatus where it is screwed into an annular shower member 35 which is provided with a plurality of spaced orifices 36 which are so positioned as to deliver the water in a number of divergent streams. The head 30 is also constructed to form a passage 37 which is open to the inside of the water jacket and with which the water discharge pipe 38 is connected.

40 is an outer pipe to one end of which is affixed a collar 41 which is fastened to the head 30 by bolts 42. By this means the head 30 is positioned and the outer ends of pipes 20 and 40 centered. At the other ends the pipes are connected by a cap 43 which is threaded onto pipe 20 at 44, and onto pipe 40 at 45.

46 is an adjustable band by means of which the downward movement of the blow-pipe into the furnace is limited and its position thereby predetermined.

The general operation of this device is like that of blow-pipes now in use, in that air is introduced into the furnace through it and water is used to keep it from getting too hot. In former structures however, it has been found necessary to weld together the inner ends of the air pipe and the outer pipe in order to obtain a water tight joint and screw connections have not been made possible. Another trouble experienced with former blow-pipes has been caused by the fact that the water is delivered at a single point thereby cooling one side of the head more than the other, resulting in uneven expansion, and also allowing an accumulation of dirt to form in the inner head opposite the point of water delivery which sooner or later results in overheating at one spot and consequent breakage.

According to my invention the water is delivered equally around the discharge end of the pipe and is discharged in outwardly directed streams against the part of the apparatus which is subjected to the most intense heat, and the structure is kept washed out by the equal delivery of water so that no accumulations of dirt are formed. By this simple expedient I am enabled to pro-

vide an inexpensive structure which is capable of standing up under the work required of it, and a construction which may be readily repaired if need be, or taken
5 apart to be cleaned.

I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. A water-cooled blow-pipe comprising
10 an inner air pipe, an outer pipe, a member onto which an end of each of said pipes is threaded, and an annular sprinkler between said pipes near said member; and a water
pipe connected with said sprinkler.
- 15 2. A water-cooled blow-pipe comprising an inner air pipe and an outer pipe connected at one end with an end of said air pipe, an innular sprinkler between said pipes

near the connected ends thereof, and a water pipe connected with said sprinkler.

3. A water-cooled blow pipe, comprising
an inner air pipe, an outer pipe, a hollow
cap onto which an end of each of said pipes
is threaded, an annular sprinkler between
said pipes near said cap, said sprinkler be-
ing provided with a plurality of orifices ar-
ranged to deliver jets of water outwardly
against the cap, and a water pipe connected
with said sprinkler.

In witness whereof, I have hereunto set
my hand in the presence of two subscribing
witnesses, this 27 day of October, 1914.

ADOLPH W. WAERN.

Witnesses:

R. J. DEARBORN,
F. GRAVES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."