Dec. 21, 1926. 1,611,548

J. MILLER

SMELTER SMOKE PRECIPITATOR AND DUST COLLECTOR

Filed June 10, 1925

Fig. 1.

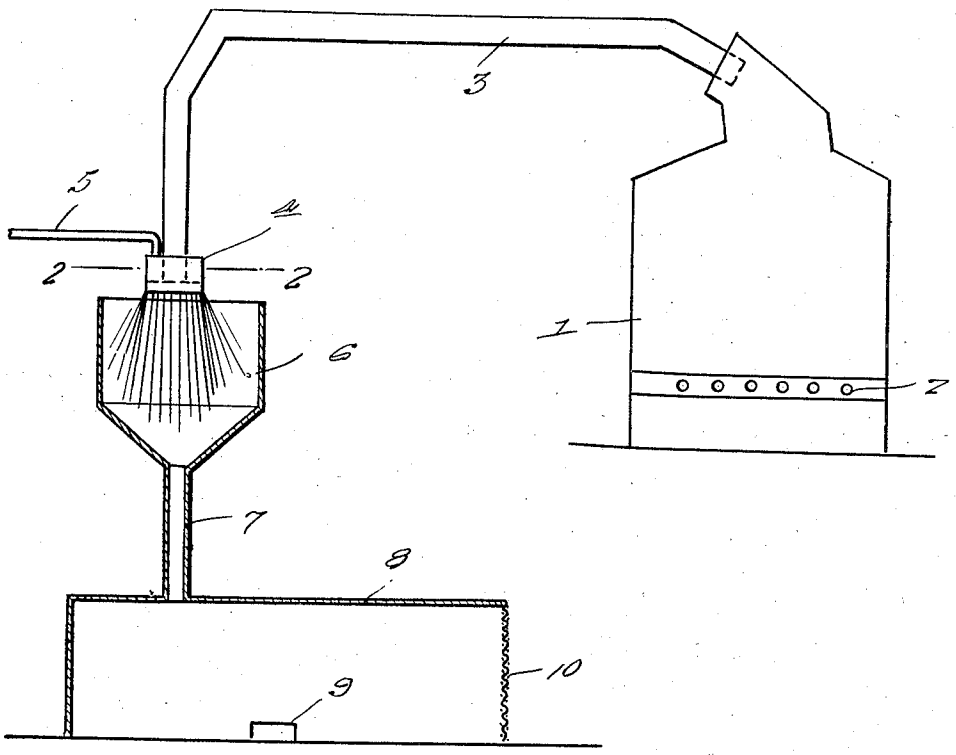
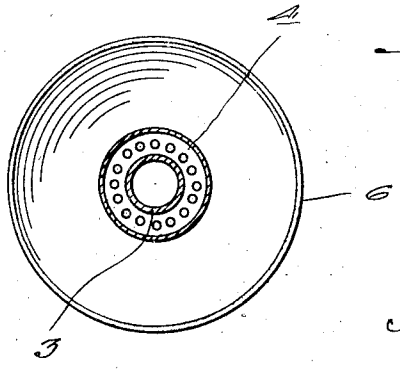


Fig. 2.



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Patented Dec. 21, 1926. 1,611,548

UNITED STATES PATENT OFFICE.

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SMELTER-SMOKE PRECIPITATOR AND DUST COLLECTOR.

Application filed June 10, 1925. Serial No. 36,146.

This invention relates to an improved contrivance adapted particularly for use in connection with smelting furnaces, and its purpose is to provide a means for automatically conducting the smoke through means which serves as a precipitator and dust collector.

It has been observed that in the vicinity of metal smelters, the escaping smoke constitutes a menace to plant-life, owing to the constituents of the smoke. The fumes and smoke contain a large percentage of sulphur, in addition to metallic particles, and this sulphur separates from the smoke and destroys vegetation even within fifty miles of a smelter plant.

What I propose is a structure for consuming the smoke to eliminate the sulphur by water jets, and to collect the metallic particles suspended in the smoke in what may be referred to as a settling receptacle.

The structural details and method of operation will be made clear by the following description and drawings.

In the accompanying drawings, forming a part of this application, and in whch like numerals designate like parts throughout the same:

Figure 1 is a side elevation of more or less diagrammatic form, showing the complete new apparatus.

Figure 2 is an enlarged detail section, taken approximately on the plane of the line 2—2 and looking downwardly.

Referring to the drawings in detail, the reference character 1 designates a convertor, blast furnace, or a reverberatory furnace, or other smoke or fume producing device provided with openings 2, to accommodate an appropriate air or other form of blast device (not shown). Leading from the outlet of this furnace is a conducting pipe 3, the depending end of which is connected a with a nozzle 4. The nozzle is a mere hollow annulus surrounding the discharge end of the pipe and provided with a multiplicity of apertures through which jets of water are ejected, the water being supplied to the nozzle by a pipe 5. These jets enter and spread in an open top collector 6, having a downwardly extending conduit 7, leading to a settling tank 8, preferably of concrete. The tank is provided in one side wall with a door 9, by means of which access may be had to the interior for removing solid particles which settle there. A draining screen 10 is disposed across the end of this tank.

The fumes and solid particles, which are under pressure, pass through the pipe 3 into the collector 6, which actually constitutes a mixing device. Here smoke and particles contained therein pass from the discharge end of the pipe into a surrounding water spray, which serves to precipitate sulphur, one of the main constituents of the smoke emanating from an ore furnace. The discharge water mixed with the vapors and solids then passes down through the conduit 7 into the collecting chamber formed in the aforesaid settling tank 8, the water discharging through the strainer 10 and the solid particles remaining in this chamber to be removed at an appropriate time. It will thus be seen that the sulphur contained in large percentage in the smoke will be precipitated while the valuable metallic particles will be collected and retained. Although the invention has been specified as being adapted for use more particularly with ore smelting furnaces, it is clear that it is highly adaptable for use in connection with a common furnace, and will serve as an effective smoke consumer.

No doubt, a consideration of the specification in connection with the drawing will enable persons skilled in the art to which the invention relates to obtain a clear understanding of the same. Therefore, a more lengthy description is thought unnecessary.

While I have shown the preferred embodiment of the invention it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to, without departing from the spirit of the invention or the scope of the appended claim.

What is claimed is:

An apparatus for the purpose described, a collector open throughout at its top, a delivery pipe having a downwardly directed open end smaller than the top of the collector and arranged immediately above the

center of said collector, a hollow annulus, also smaller than the top of the collector, with openings in its bottom wall surrounding the lower end portion of said pipe and disposed above the central portion of the collector, a water supply pipe connected with said hollow annulus, a tank having a discharge opening, a conduit between said collector and said tank, and a strainer controlling the said discharge opening of the tank.

In testimony whereof I affix my signature.

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JOHN × MILLER.
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