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R. E. WICKHAM.

ORE ROASTER.

APPLICATION FILED JUNE 22, 1905.

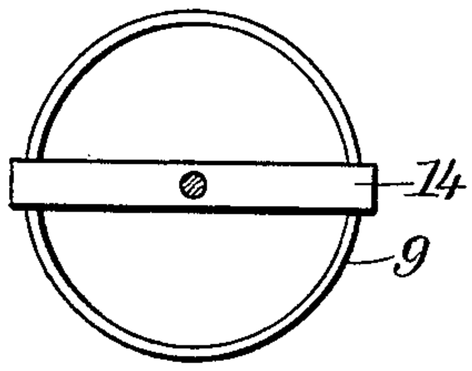

Fig. 5.

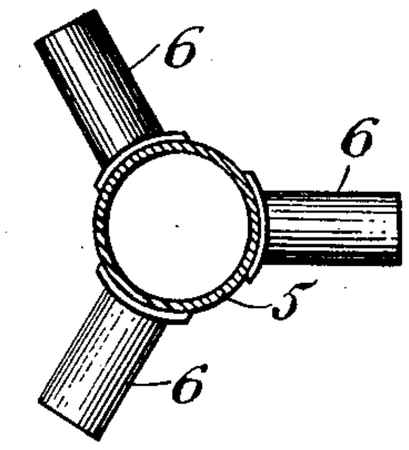

Fig. 6.

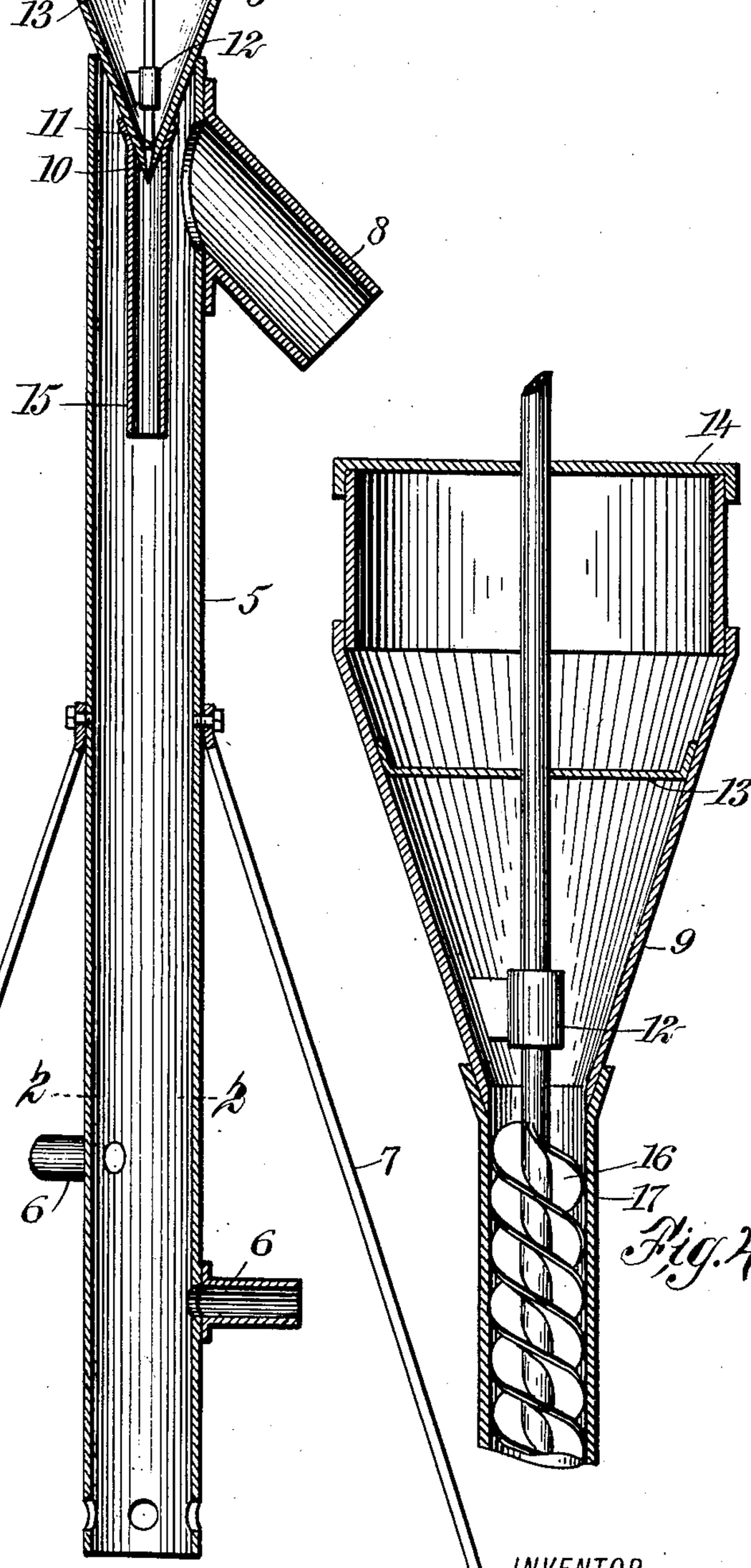

Fig. 1.

Fig. 4.

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ORE-ROASTER.

No. 829,819. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed June 22, 1905. Serial No. 266,532.

To all whom it may concern:

Be it known that I, RAY E. WICKHAM, a citizen of the United States, and a resident of University, in the county of Grand Forks and State of North Dakota, have invented a new and Improved Ore-Roaster, of which the following is a full, clear, and exact description.

This invention relates to improvements in machines for roasting ores containing compounds of sulfur or the like, the object being to provide a device of this character that will be simple in construction and by means of which the separation of sulfur or other matter susceptible to heat may be rapidly carried on.

Another object is to provide in a roaster a simple feed-regulator for the ore.

I will describe an ore-roaster embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of an ore-roaster embodying my invention. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a top plan, and Fig. 4 is a sectional elevation showing a modification in the feed-controller.

The device comprises a stand-pipe 5, having at its lower portion inlets 6 for gas, gasolene, or other heating flame or medium, and such medium may also be admitted at the open lower end of the standard. This standard may suitably be supported by legs 7. At the upper end of the standard is an outwardly-opening spout 8, and supported in the upper end of said standard is a hopper 9 for receiving the powdered ore to be treated. This hopper is funnel-shaped, and in the pointed lower end is a small opening 10 for the outlet of material, and the outlet is controlled by a needle-valve 11, the stem of which is slidable in a guide 12, attached to the wall of the hopper, and also slidable through cross-bars 13 14, secured to the hopper. The opening 10 of the hopper communicates with a feed-pipe 15, which is secured to said hopper and extends a short distance into the stand-pipe 5.

The outlet 10 by means of the needle-valve may be opened as desired or to any desired extent by vertical movements of the valve, and thus the feed of material may be controlled.

In Fig. 4 I have shown the feed-controller as a spiral 16 in a tube 17, secured to the lower end of the hopper 9. By rotating the spiralr16 the outflow of ore may be regulated, the regulation depending on the speed of rotation.

In the operation the powdered material upon the operation of the feed-controller will pass gently and evenly into the tube 15 or 17 and thence into the stand-pipe 5, where the fine ore comes in contact with the flames introduced at 6 or at the bottom of the stand-pipe. The ore on passing through the flame is roasted and delivered partly at the bottom of the stand-pipe and partly by pressure upward of the air and gas at the spout 8.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An ore-roaster comprising a stand-pipe open at the bottom, tubes communicating with the interior of the stand-pipe for introducing from without the stand-pipe gas or liquid fuel, a hopper on the upper end of the stand-pipe, and having an outlet, a tube extended from the outlet end of the hopper and into said stand-pipe, and a feed-regulator.

2. An ore-roaster comprising a stand-pipe having means for admitting a heating medium at the lower end, a funnel-shaped hopper arranged in the upper end of the stand-pipe and having an outlet-opening at its lower end, a tube extended downward from the lower end of the hopper and with which said outlet communicates, a needle-valve for controlling the flow of material through said outlet, a stem extended upward from the valve, and guides in the hopper in which said stem is movable.

3. An ore-roaster comprising a stand-pipe having means for admitting a heating medium at the lower end, a funnel-shaped hopper arranged in the upper end of the stand-pipe and having an outlet-opening at its lower end, a tube extending downward from the lower end of the hopper, and with which said outlet communicates, a valve for controlling the flow of material through said out-

let, a stem extended upward from the valve, and guides in the hopper in which said stem is movable.

4. An ore-roaster comprising a stand-pipe open at the bottom and having tubes at the lower portion for admitting a heating agent, an outwardly-opening spout at the upper portion of the stand-pipe, supporting-legs for the stand-pipe, a hopper on the upper end of the stand-pipe, the said hopper being funnel-shaped and having an outlet communicating with the stand-pipe, and a valve for controlling the flow of material through said outlet.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RAY E. WICKHAM.

Witnesses:
P. B. WICKHAM,
THEO. C. BEAN.