No. 714,009.

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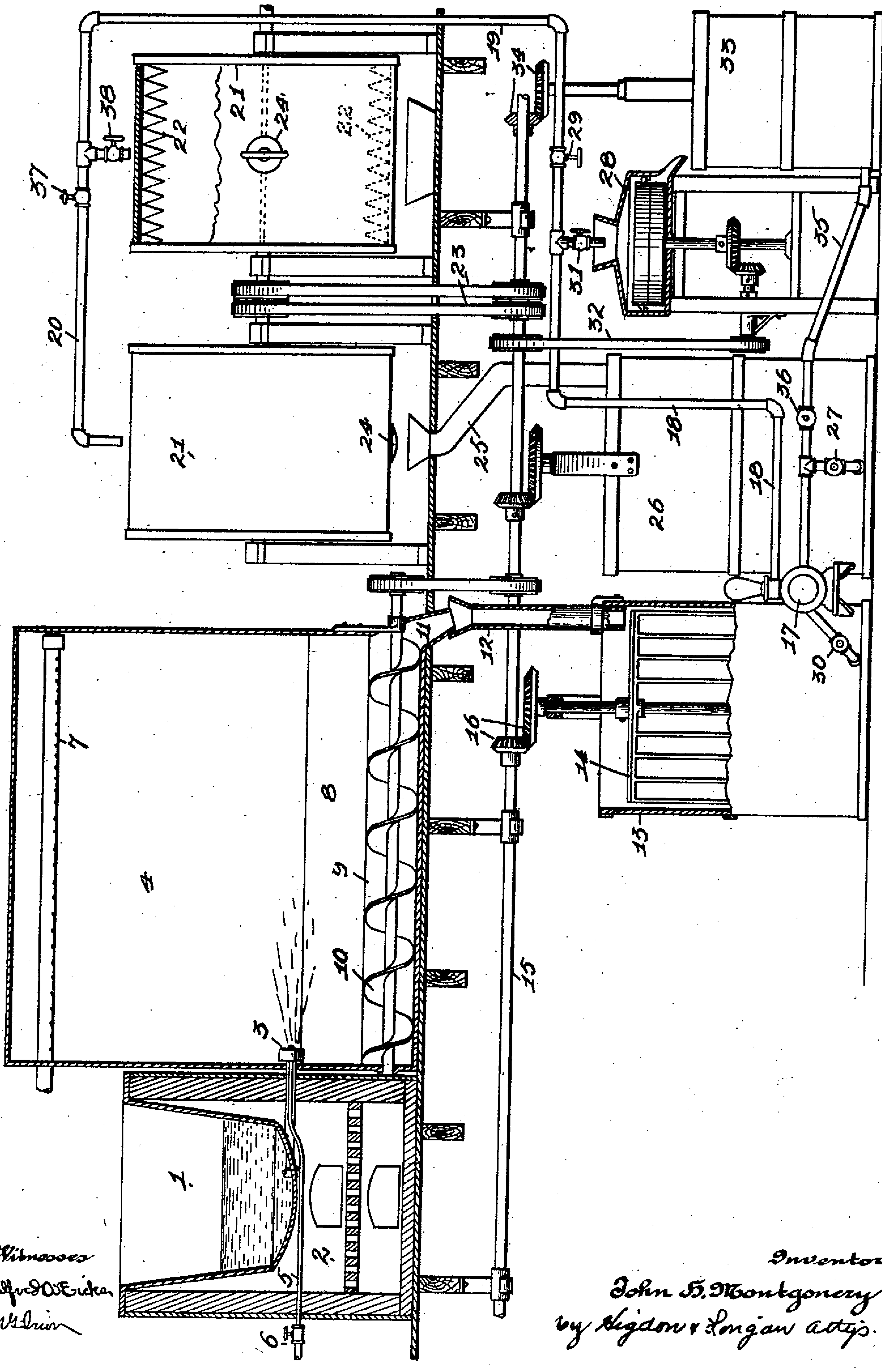
J. H. MONTGOMERY.

APPARATUS FOR MAKING WHITE LEAD.

(Application filed July 19, 1902.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN H. MONTGOMERY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO ROBERT T. BROWN, OF ST. LOUIS, MISSOURI, AND CHARLES E. NEELEY, OF LITTLE ROCK, ARKANSAS.

APPARATUS FOR MAKING WHITE LEAD.

SPECIFICATION forming part of Letters Patent No. 714,009, dated November 18, 1902.

Application filed July 19, 1902. Serial No. 116,198. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MONTGOMERY, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Apparatus for Making White Lead, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

The object of my invention is to simplify the production of white lead and reduce the cost of same.

The figure is a sectional elevation, with parts broken away, of my improved apparatus by which the white lead is manufactured.

The lead is first melted in a kettle 1, which is mounted over a furnace 2. A tube 3 leads from the lower end of the kettle and extends into a closed precipitating-chamber 4. The tube 3, in connection with the air-pipe 5, forms an ordinary steam-atomizer, by means of which the molten lead is atomized and discharged into the precipitating-chamber 4 in a finely-divided state.

Compressed air is to be supplied to the pipe 5 from any suitable source and is controlled by means of a valve 6. The air passing through the pipe 5 beneath the kettle 1 is thoroughly heated by the fire of the furnace. In some cases I may make use of superheated steam instead of heated air for the purpose of atomizing the lead. The action of the heated fluid issuing from the pipe 5 and atomizer-tube 3 is to simultaneously atomize and partially oxidize the lead as it issues from the tube 3. Water-spraying pipes, such as 7, extend across the upper side of the chamber 4 and direct the spray of water downwardly upon the atomized lead as it is discharged within said chamber, and the lead is thereby forced downwardly and is directed to the center of said chamber by the inclined sides 8, and it is then washed into a central trough 9, in which is located a revolving conveyer 10, which discharges the partially-oxidized particles through a spout 11 at the remote end of said chamber into a spout 12, which leads the said material, together with the water from the pipes 7, into a common mixing-machine 13, which is provided with the usual revolving mixing device 14, which is driven from a main shaft 15 by means of gear-wheels 16.

The purpose of the mixing-machine 13 is to keep the atomized material moving and prevent its settling in the bottom of the said mixing-machine and all the time subject the same to the oxidizing action of the water and air in said machine.

I next by means of a common pump 17 withdraw the solution from the mixing-machine 13 and force the same through the discharge-pipes 18, 19, and 20 into a rotary carbonating-drum 21, which is provided upon its interior with a series of, say, four strips of material having serrations or teeth 22. This construction is more clearly shown in a duplicate rotary carbonating-drum at the right hand of the drum 21. Said drums are mounted in the usual way, and power is supplied to them by means of the belts 23. Within said drum 21 the material is subjected in the well-known manner to the action of carbonic-acid gas, and the same is then discharged from the said drum by way of the door 24 into a spout 25, by means of which the material is gravitated into another mixing-machine 26, the construction of which is identical with the mixing-machine 13, previously described, and after the material has been further agitated in said mixing-machine 26 said material is removed from the same by means of the pump 17. This is accomplished by opening the valve 27 near the bottom of said mixing-machine 26, and the material will thereby be pumped from the said mixing-machine 26 into the common grinding-mill 28.

The valves 29 and 30 should of course be closed during the last-mentioned operation, and the valve 31, which leads to the said grinding-mill, should of course be open. The grinding-mill 28 is of the usual construction used by paint manufacturers and is driven by means of a belt 32. By passing the material through the said grinding-mill the particles will be still further comminuted by removing a portion of the surface oxid from the oxid-laden particles. From the mill 28 the material is discharged into another com-

mon mixing-machine 33, the construction of which is identical with the mixing-machine 13 previously described, and the same is driven by means of gear-wheels 34. From the mixer 33 the material is removed by way of a pipe 35 and by means of the pump 17, the valve 36 being of course opened, the valves 27 and 30 closed, and in this manner the material may be again run through the grinding-mill 28 and the operation continued as long as is necessary to remove the surface oxid from the oxid-laden particles. After the particles have been sufficiently comminuted by removing their surface oxid, the valve 31 is closed and the valve 29 opened, and then the valve 37 should be closed and the valve 38 opened, which will permit the material to be discharged into the last one of the series of rotary carbonating-drums 21, where the product is again and finally subjected to the action of carbonic-acid gas.

I claim—

1. The combination in an apparatus for making white lead, of an atomizer for molten lead, a closed chamber in which said atomizer is located, means within said chamber for producing water-jets, and a conveyer at the bottom of said chamber, substantially as specified.

2. The combination in an apparatus for making white lead, of an atomizer for molten lead, a closed chamber in which said atomizer is located, means within said chamber for producing water-jets, a conveyer at the bottom of said chamber, and a mixing-machine into which said conveyer discharges the material, substantially as specified.

3. The combination in an apparatus for making white lead, of an atomizer for molten lead, a closed chamber in which said atomizer is located, means within said chamber for producing water-jets, a conveyer at the bottom of said chamber, a mixing-machine into which said conveyer discharges the material, a rotary carbonating-drum, and a pump for pumping the solution from the said mixing-machine to the said drum, substantially as specified.

4. The combination in an apparatus for making white lead, of an atomizer for molten lead, a closed chamber in which said atomizer is located, means within said chamber for producing water-jets, a conveyer at the bottom of said chamber, a mixing-machine into which said conveyer discharges the material, a rotary carbonating-drum, a pump for pumping the solution from the said mixing-machine to the said drum, and an additional mixing-machine into which the material is discharged from the said drum, substantially as specified.

5. The combination in an apparatus for making white lead, of an atomizer for molten lead, a closed chamber in which said atomizer is located, means within said chamber for producing water-jets, a conveyer at the bottom of said chamber, a mixing-machine into which said conveyer discharges the material, a rotary carbonating-drum, a pump for pumping the solution from the said mixing-machine to the said drum, an additional mixing-machine into which the material is discharged from the said drum, and a grinding-mill into which the material is discharged from the said last-mentioned mixing-machine, substantially as specified.

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

JOHN H. MONTGOMERY.

Witnesses:

ALFRED A. EICKS,

M. G. IRION.