

*Claim.*—The process of making an improved white pigment from mixed crude lead and zinc ore, consisting in roasting the ore by blowing hot air into the mass of ore and carbonaceous matter, and then subliming the mixture of residual and roasted ore of this operation, and the condensed fumes, by heating them in a wetherill furnace, or in a low cupola furnace, with lower and upper blast, substantially as shown and described.

## No. 27,365. Anti-Freezing Apparatus for Water Pipes. (*Appareil anti-congela-teur pour tuyaux d'eau.*)

Edwin A. Newman, Washington, D. C., U. S., 8th August, 1887: 5 years.

*Claim.*—1st. The combination of a valve-casing having an inlet opening, an outlet-opening and a waste-opening, and the thermostatic apparatus controlling the operations of the valve to automatically close and automatically open communication between the waste opening, and the outlet-opening when the water is cut off, and closing their communication when the water is turned on, substantially as and for the purpose set forth. 2nd. The combination of the valve-casing having an inlet-opening, an outlet-opening, a waste and thermostatic coupling opening, the valve and the thermostatic apparatus controlling the operations of the valve to automatically cut off and automatically open communication between the source of supply of water, and the pipes to be supplied while opening communication between the waste-opening and outlet-opening when the water is cut off and closing their communication when the water is turned on, substantially as and for the purpose set forth. 3rd. The combination of the valve-casing having an inlet-opening, an outlet-opening, a waste-opening and the thermostatic-coupling opening, the valve mechanism and the thermostatic apparatus connected with the valve-casing by the coupling-opening, and controlling the operations of the valve mechanism to automatically cut off, and automatically open communication between the source of supply of the water and the pipe to be supplied, while opening communication between the waste-opening and the outlet-opening when the water is cut off and closing their communication when the water is turned on, substantially as and for the purpose set forth. 4th. The combination of the valve-casing having an inlet-opening, an outlet-opening, a waste-opening and the thermostatic-coupling opening, the valve mechanism within the casing, and the thermostatic apparatus connected with the valve-casing by the coupling-opening, and controlling the operations of the valve mechanism to automatically cut off and automatically open communication between the source of supply of the water and the pipe to be supplied, while opening communication between the waste-opening and the outlet-opening when the water is cut off, and closing their communication when the water is turned on, substantially as and for the purpose set forth. 5th. The combination of the valve-casing having the inlet-opening, the outlet-opening and the thermostatic-coupling opening, the valve mechanism within the casing, and the thermostatic apparatus having the rod projecting into the valve-casing and acting upon the valve mechanism to automatically turn the water off and on, substantially as set forth. 6th. The combination of the valve-casing having inlet, outlet and waste-openings, the valve by which the outlet-opening is opened and closed, and communication between the waste-opening and outlet-opening opened and closed, the actuating-lever thereof, the controlling-lever, the mechanism connecting these levers by way of which the actuating-lever is operated by the controlling-lever, and the thermostatic apparatus acting upon the controlling-lever, substantially as and for the purpose set forth. 7th. The combination of the valve-casing having the inlet, outlet and waste-openings, the slide-valve, the pivoted actuating-lever thereof, the pivoted controlling-lever provided with the side arm at one end, the guideway and pin connection between its opposite end, and the actuating-lever and the spring connected at its ends with the side arm of the controlling-lever and the end of the actuating-lever opposite that engaging the valve, substantially as and for the purpose set forth. 8th. The combination of the valve-casing having inlet and outlet openings, the sliding valve, the pivoted controlling-lever having connection with the valve and the valve-check with which the controlling-lever is provided, substantially as and for the purpose set forth. 9th. The combination of the valve-casing having inlet and outlet openings, the valve by which the outlet-opening is opened and closed, the valve-actuating lever, the controlling lever, its valve-check attachment mechanism connecting these levers by way of which the actuating-lever is operated by the controlling-lever, and the thermostatic apparatus acting upon the controlling-lever, substantially as and for the purpose set forth. 10th. The combination of the valve-casing having the inlet and outlet openings, the slide-valve, the pivoted actuating-lever thereof, the pivoted controlling-lever provided with the side arm at one end, the mechanism by which the controlling-lever at its opposite end is connected with and operates the actuating-lever, the spring connected at its ends with the inner end of the actuating-lever and the side arm of the controlling-lever, the valve-check and the rod of the thermostat acting upon the side arm of the controlling-lever, substantially as and for the purpose set forth. 11th. The combination of the valve-casing having inlet and outlet openings, the slide-valve, the pivoted actuating-lever engaging the valve at its outer end, the guideway pin of the actuating-lever, the controlling-lever cut away at its lower end and provided with the notched and shouldered spring forming a guideway, the side-arm of the controlling-lever and the spring acting at its opposite ends upon the side arm of the controlling-lever, and the inner end of the actuating-lever, substantially as and for the purpose set forth. 12th. The combination of the valve-casing, the thermostatic-casing secured at its lower end in the coupling-socket of the valve-casing, the thermostatic-rod, the valve, and the controlling-lever pivoted in the casing and having connection with valve, substantially as and for the purpose set forth. 13th. The combination of the thermostatic-casing, the thermostatic-rod, the valve-casing having the coupling-socket for the thermostatic-casing, the valve, the controlling-lever having connection with the valve, the spring acting on the thermostatic rod, the packing-socket and packing for the thermostatic rod

at its end entering the valve-casing, and the bearing-socket for the opposite end of the thermostatic-rod formed by the plug of the thermostatic-casing, substantially as and for the purpose set forth. 14th. The combination of the valve-casing having the inlet and outlet openings, the valve mechanism, the thermostatic casing, the coupling-socket by which it is connected to the valve casing, the thermostatic rod acting on the controlling-lever of the valve mechanism, the spring acting on the thermostatic rod, and the adjustable plug in the end of the thermostatic casing, substantially as and for the purpose set forth. 15th. The combination of the valve-casing, the valve mechanism, the thermostatic apparatus controlling the operation of the valve mechanism, and the indicator by which to show the degree of temperature at which the thermostatic apparatus is set to work, substantially as and for the purpose set forth. 16th. The combination of the thermostatic casing, the thermostatic rod, the adjustable screw-plug in the upper end of the thermostatic casing, and against which the thermostatic rod bears, and the screw-cap, substantially as and for the purpose set forth. 17th. The combination of the valve-casing having the inlet, outlet and waste openings, and the thermostat-coupling opening, the pipe or pipes to be supplied with water, the valve mechanism within the casing, the thermostatic apparatus connected with the valve-casing by its coupling-opening, and acting on the valve mechanism, and the venting apparatus by which air is admitted to the upper end or ends of the pipe or pipes to be emptied, substantially as and for the purpose set forth. 18th. The combination of the valve-casing having the inlet and outlet openings, and the thermostat-coupling opening, the pipe or pipes to be supplied with water, the valve mechanism, the thermostatic apparatus connected with the valve casing by its coupling-opening, and acting upon the valve mechanism to automatically cut off and automatically turn on the supply of water, the lever operating upon the thermostatic apparatus and its connecting hand-actuated mechanism by which to temporarily turn on the water at times during which the water has been cut off by the automatic action of the thermostatic apparatus, substantially as set forth. 19th. The combination of the valve-casing having the inlet, outlet and waste openings, and a thermostat-coupling opening, the pipe or pipes to be supplied with water, the valve mechanism, the thermostatic apparatus connected with the valve-casing by its coupling-opening, and acting upon the valve mechanism to automatically cut off and automatically turn on the supply of water, hand-actuated mechanism having connection with and operating upon the thermostatic apparatus to temporarily turn on the water at times during which the water has been cut off by the automatic action of the thermostatic apparatus, and the venting apparatus by which air is admitted to the upper end or ends of the pipe or pipes to be emptied, substantially as and for the purpose set forth. 20th. The combination of the valve-casing having the inlet and outlet openings, the pipe or pipes to be supplied with water, the valve mechanism, the thermostatic apparatus automatically controlling the operations of the valve mechanism, and the hand-actuated mechanism operating upon the thermostatic apparatus, and provided with pull handles in close proximity to the cocks of the pipe or pipes, supplied with water, substantially as and for the purpose set forth. 21st. The combination of the thermostatic-casing, the thermostatic-rod, the valve-casing having inlet and outlet openings, the valve mechanism automatically actuated to cut off and turn on the supply of water, and the hand-actuated lever for operating upon the thermostatic-rod, substantially as and for the purpose set forth. 22nd. The combination of the thermostatic casing, the thermostatic-rod, the spring acting upon the thermostatic-rod, the bearing against which the spring presses, the thermostatic-rod, the lever for operating upon the thermostatic-rod and the devices for actuating this lever substantially as and for the purpose set forth. 23rd. The combination of the valve-casing having inlet and outlet openings, the valve by which the outlet opening is opened and closed, the valve actuating lever, the controlling-lever, its valve-check attachment, mechanism connecting these levers by way of which the actuating-lever is operated by the controlling-lever, the thermostatic apparatus acting upon the controlling-lever to automatically control the operations of the valve mechanism, to cut off and turn on the water and the hand-actuated mechanism for operating the thermostatic apparatus, substantially as and for the purpose set forth. 24th. The combination of the valve-casing having the inlet and outlet openings, the slide-valve, the pivoted actuating-lever connecting at its outer end with the valve, the pivoted controlling-lever provided with the side arm at its pivoted end, the mechanism by which the controlling-lever at its opposite end is connected with and operates the actuating-lever, the spring connected at its ends with the inner end of the actuating-lever and the side arm of the controlling-lever, the resistance attachment of the controlling-lever, the thermostatic apparatus, the rod of which acts upon the side arm of the controlling-lever, and the lever by way of which to operate the thermostatic rod by hand to cause it to act upon the controlling-lever, substantially as and for the purpose set forth. 25th. The combination of the thermostatic-casing, the thermostatic-rod, the spring acting upon the thermostatic-rod, the adjustable plug of the thermostatic-casing forming a bearing against which the thermostatic rod is pressed by its spring, the lever having its fulcrum against said plug and the pipe attached at the side of the thermostatic-casing, substantially as and for the purpose set forth. 26th. The combination of the valve-casing having the inlet opening for connection with the supply-pipe, and provided with the outlet, waste and thermostatic-coupling openings, the valve mechanism with the casing, the thermostatic-casing coupled to the valve casing, the thermostatic-rod projecting into the valve-casing and acting upon the valve mechanism, the water-way communicating at its opposite ends with the thermostatic casing, and the outlet opening of the valve-casing with the main service-pipe to which the water passes from the supply-pipe through the valve-casing, the water-way and the thermostatic-casing, substantially as and for the purpose set forth. 27th. The combination of the valve-casing having an inlet opening, an outlet opening, the waste-opening and a thermostat-coupling opening, the valve mechanism within the casing, the thermostatic casing coupled to the valve-casing and acting upon the valve mechanism, the water-way communicating at its opposite ends with the thermostatic-casing and the valve-casing, the main service-pipe connected with the thermostatic casing, the draining-pipe communicating at its opposite ends with the water-way, and