R. HOCHSTETTER.

PROCESS FOR MAKING INK.

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1,119,960. Patented Dec. 8, 1914.

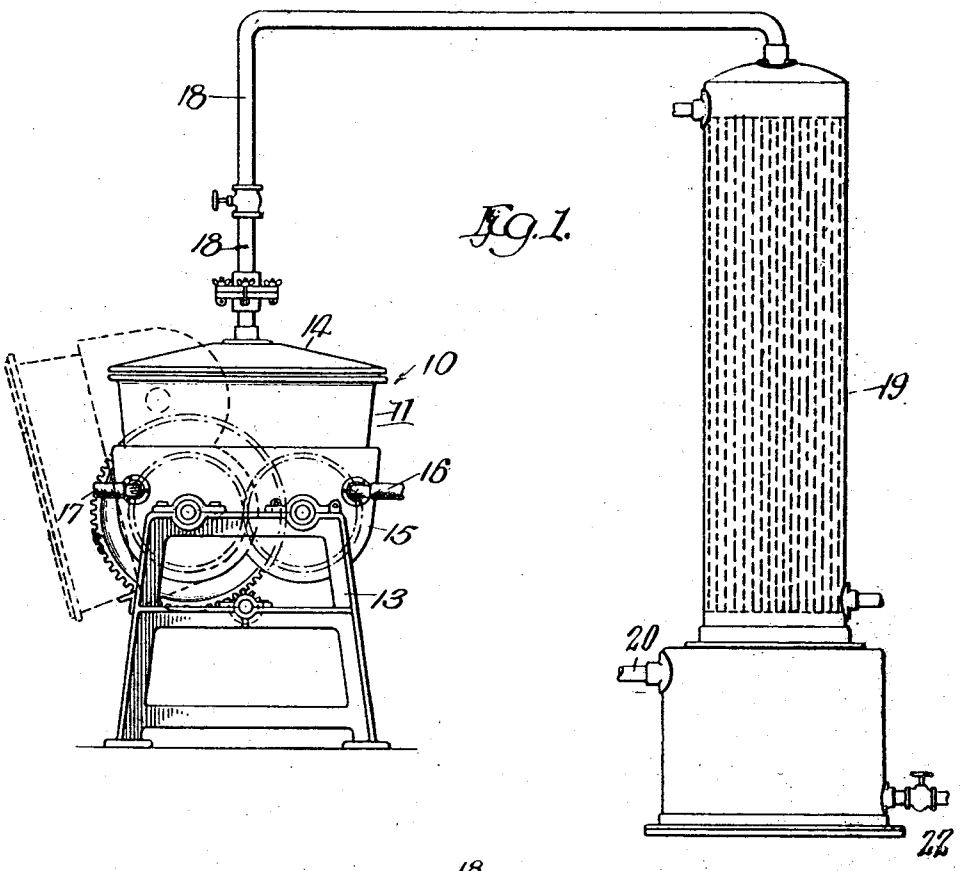


Fig. 1.

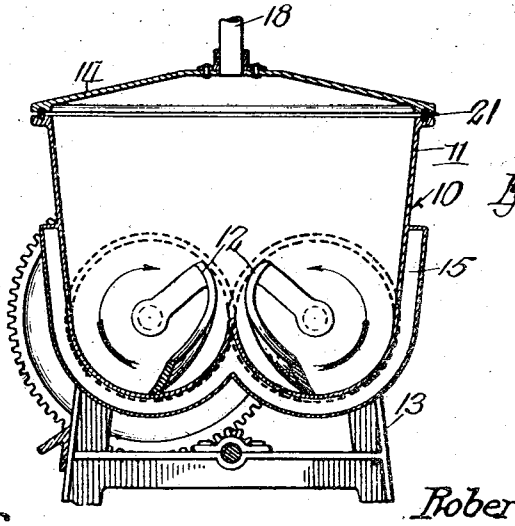


Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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PROCESS FOR MAKING INK.

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To all whom it may concern:

Be it known that I, ROBERT HOCHSTETTER, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Processes for Making Ink; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved process for making printing inks and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

Formerly it was customary in making ink to grind the dry color with a suitable varnish in a mill known generally to the trade as a "three roller ink mill." In more recent years, however, ink has been made from what is known as a pulp color, that is to say, a color made in the usual way, but without drying it out so that the color is in the moist condition in which it comes from the filter press. Pulp colors thus contain a large percentage of water ranging from 10% to 50% by weight. The pulp colors are mixed in a suitable machine with the required amount of varnish and in the operation of the machine, the varnish gradually combines with the color of the pulp and the water may be drawn off. The resulting mass is agitated for some time longer until the ink becomes limpid and so warm that most of the water remaining, after the first water has been drawn off, evaporates. In this way, a large percentage of the water which was originally in the pulp is taken from the ink, but the ink still contains when made in this way from 8% to 18% of water. In order to remove as much as possible of this residuum of water, the ink is then put through a three roller mill from three to six times and still more of the water is thus expelled. A percentage of water, however, still remains in the ink made in this way.

In carrying out my new process of making ink, pulp colors are used, but not only is practically all the water removed from the ink and a superior product thus produced, but the time required heretofore in making the ink from pulp colors is greatly reduced so that but one-fourth to one-third of the time is required in making ink by my process as compared to the time required in the usual way.

In order to illustrate my invention, I attach hereto a drawing representing an apparatus by means of which my process may be carried out.

In the drawings:—Figure 1 is a view representing the apparatus in side elevation. Fig. 2 is a view representing on a slightly enlarged scale a vertical central section through the mixer included in the apparatus.

Referring to the drawings, 10 indicates a mixing machine, like the ordinary dough or mass mixer, consisting of a barrel or kettle 11 containing oppositely rotating kneading blades 12, 12, there being provided suitable gearing, as shown, to rotate said blades toward one another as indicated by the arrows in Fig. 2. The mixer is supported on a base 13, and is so arranged that it may be swung upon the operating shaft of one of the blades into a position such as that shown in dotted lines in Fig. 1, in order to discharge the material from the mixing kettle. The kettle is inclosed by a lid 14 and is provided with a steam or water jacket 15 which is connected to an inlet pipe 16 and to an outlet pipe 17 for the entrance and egress of steam or hot water.

A pipe 18, connected to the lid 14 of the kettle, leads to a condenser 19, which in turn is connected to a pipe 20 leading to a suction pump (not shown). The construction is such that a partial vacuum may be produced in the kettle 11 for which purpose a suitable gasket 21 is placed between the lid 14 and the kettle body 11, in order to make an air tight connection between the two.

In carrying out my process, I take a suitable pulp color to make the ink and place it in the kettle 11 with the required amount of varnish. The kettle is then closed by the lid 14, and the kneading blades are started into operation so as to thoroughly mix the pulp color and the oil. The suction pump is put into operation to produce a partial vacuum in the kettle, and at the same time steam or hot water is pumped into the water jacket 15 in order to raise the temperature of the contents of the kettle. Manifestly, the degree of temperature at which the water in the pulp color will vaporize, will depend upon the pressure in the kettle, so that by producing a partial vacuum in the kettle,

the water in the ink will be vaporized at a temperature much below the usual boiling point. I have found that good working conditions result where the temperature is 140° F., and the vacuum pressure is 28″. Under such circumstances, the water in the pulp color will be vaporized and drawn off in a copious stream from the kettle into the condenser 19, wherein it will be condensed and when a sufficient amount has been collected therein, the water may be drawn from the condenser by means of a valve and pipe 22. The friction produced by the agitation of the mixture of pulp color and oil in the operation of the kneading blades will of course produce heat in the mixture, and, if a sufficient vacuum to vaporize the moisture at that temperature be produced in the kettle, the external heating of the kettle may be dispensed with. The mixture need not be subjected to a vacuum during the entire process of mixing and agitating the pulp color with the oil, as the water which separates out more readily in the initial stages of the mixing operation may be drawn off and the vacuum only used during the final stages of the mixing process in order to extract the residuum of the water in the mixture. The vacuous condition in the kettle has the effect of hastening the vaporization of the water very materially so that the time required for making ink according to my new process is greatly diminished.

In making ink according to my new process, the ink is not subjected to the deteriorating effect of a high temperature in order to extract the moisture, and at the same time, the amount of moisture left in the ink is reduced to a minimum (less than ½% by weight), so that a greatly superior product is produced. In addition, it has been found that the ink made according to the new process has better working qualities than the ink made either by the old pulp process or in the old way of making ink from dry pigments.

I claim as my invention:

1. The process of manufacturing ink, which consists in mixing a pulp color with a varnish in a partial vacuum, at the same time subjecting the ink to a temperature adapted to vaporize the moisture therein under the vacuum to which it is subjected, and drawing off the vapor as it is formed.

2. The process of manufacturing ink, which consists in mixing a pulp color with a varnish in a suitable closed vessel, at the same time subjecting the mixture to the action of an air exhausting device adapted to reduce the pressure in said vessel, and applying heat to said vessel adapted to vaporize the water in the mixture at the reduced pressure.

3. The process of manufacturing ink, which consists in mixing a pulp color with a varnish, subjecting the mixture to a partial vacuum adapted at the temperature produced in the mixer to vaporize the residuum of moisture therein, and drawing off the vapor as it is formed.

4. The process of manufacturing ink, which consists in mixing a pulp color with a varnish, agitating the mixture to incorporate the varnish with the color, drawing off the water as it separates from the mixture, then subjecting the mixture in the final agitating process to a vacuum sufficient to vaporize the residuum of moisture left therein at the temperature of the mixture and drawing off the vapor as it is formed.

In testimony, that I, claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 26th day of January A. D. 1914.

ROBERT HOCHSTETTER.

Witnesses:

W. S. HOLTSINGER,

C. WILSON FOSHAY.