Apparatus and process for rapid finishing of photographic emulsions

Research Disclosure Database Number 8614

Published in June 1971

Research Disclosure Journal, ISSN 0374-4353. © Kenneth Mason Publications Ltd
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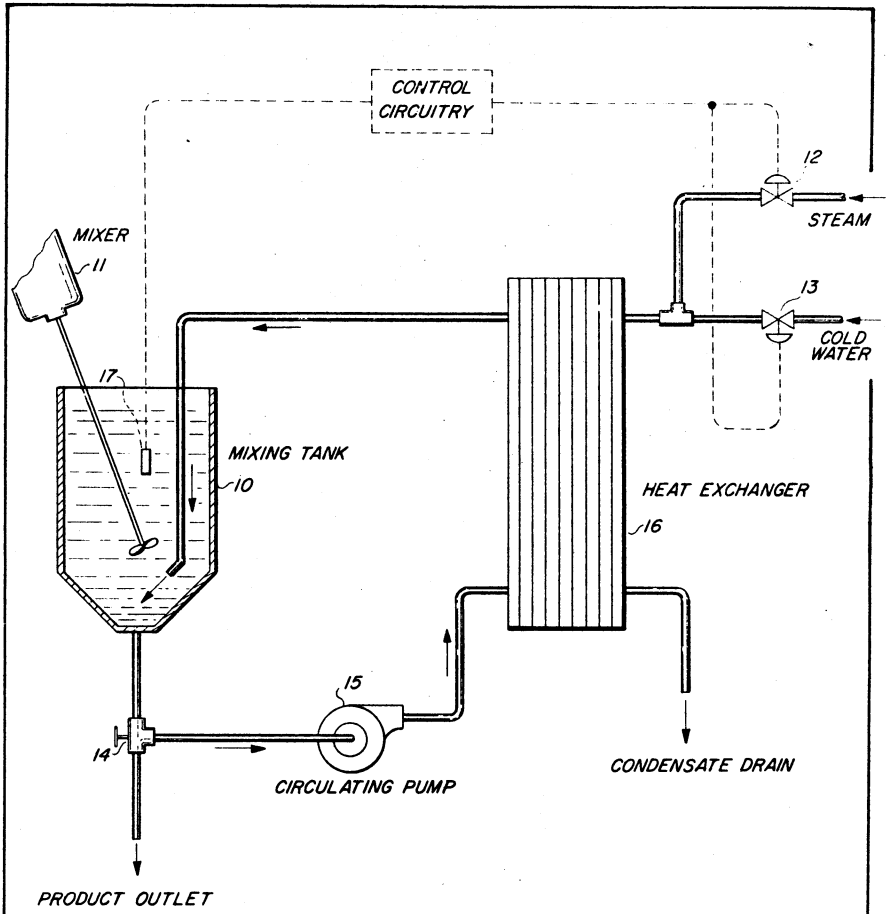
8614

The drawing discloses the component parts of an apparatus and system for the rapid finishing of photographic emulsions. The elements comprising a photographic emulsion, such as gelatin solution, emulsion coagulum, water and chemical sensitizers, are combined and mixed in a tank 10 by a suitable mixer 11. After thorough mixing and proper adjustment of the valves 12, 13 and 14, the mixture is circulated by a variable-speed centrifugal pump 15 through a plate-type heat exchanger 16. After passing through the heat exchanger, the mixture is returned to the tank 10. A sensor 17, which is positioned in the emulsion in the tank 10, monitors the temperature of the emulsion and by means of suitable control circuitry the valves 12 and 13 are adjusted to control the flow of steam or cold water, respectively.

By continuously circulating the mixture



through the heat exchanger 16, more intimate contact between the mixture and the heating (cooling) plates is attained. Because of this intimate and rapid contact of the mixture over a large surface area of the heat exchanger 16, the resultant high heat (cold) transfer rate shortens the time required to raise the temperature of the mixture to the desired finishing temperature. A considerable saving of emulsion finishing time is, therefore, possible, particularly when compared with that required for a finishing cycle as previously accomplished. It has also been found that with such a reduction in emulsion finishing time, there is no adverse effect with respect to the sensitometric characteristics of the emulsion.

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8614