

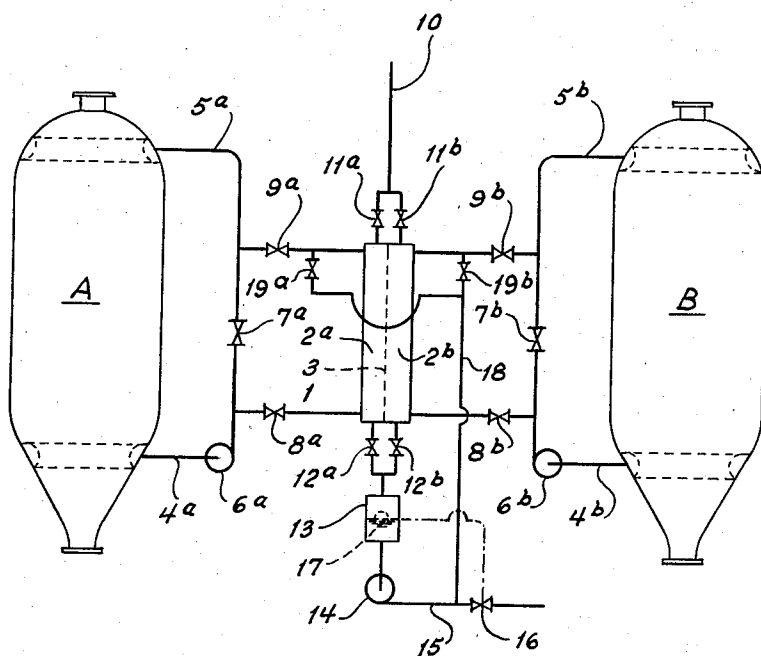
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HEATING SYSTEM FOR CELLULOSE DIGESTION PLANTS

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HEATING SYSTEM FOR CELLULOSE DIGESTION PLANTS

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2 Claims. (Cl. 162—42)

This invention relates to systems for indirect heating of the digestion or boiling liquid in the production of cellulose pulp.

In a system comprising two separate digesters each of which is heated during other periods of time than the other digester, it is an object of the invention to provide an arrangement enabling both digesters to be heated from a single heater to the effect that the heating surface of said heater which during heating of one of the digesters has been in contact with and subjected to scale formation from the digestion liquid will be subjected to cleaning action during the heating of the other digester and vice versa.

One embodiment of the invention is shown diagrammatically and by way of an example on the accompanying drawing.

In the drawing A and B indicate two digesters which are heated from a common heater 1. This heater is provided with two passage systems 2a and 2b respectively separated by means of a heat transferring wall 3. The digester A is provided with a circulation system for digestion or boiling liquid comprising pipes 4a and 5a, a pump 6a and a valve 7a. The digester B is connected to a similar circulation system, comprising pipes 4b and 5b, a pump 6b and a valve 7b. The passage system 2a may be put in communication with the pipe 5a on both sides of the valve 7a by means of conduits including valves 8a, 9a, respectively, and the passage system 2b may be put in communication with the pipe 5b on both sides of the valve 7b by means of conduits including valves 8b, 9b, respectively. A pipe 10 for heating steam may be put in communication with the top part of the passage system 2a or of the passage system 2b through a valve 11a or a valve 11b respectively and the bottom parts of said passage systems may be put in communication with a steam trap 13 through a valve 12a and a valve 12b respectively. A discharge outlet 15 from the steam trap 13 is provided with a pump 14 and a discharge valve 16 adapted to be operated by a float 17 in the steam trap 13 so as to open when the condensate level in the steam trap rises and to close on sinking condensate level. Through a pipe line 18 and valves 19a, 19b the discharge outlet 15 may be put in communication with the top part of the passage system 2a or the passage system 2b.

The system is operated in the following way. When it is desired to heat the digester A, valve 7a is shut and the digestion or boiling liquid is circulated from said digester through pipe 4a, pump 6a, valve 8a, passage system 2a, valve 9a and pipe 5a back to the digester. With the valves 7b, 9b, 11a, 12a and 19a closed, heating steam is supplied to the passage system 2b through pipe 10 and valve 11b and heating steam condensate is withdrawing from said passage system 2b through valve 12b to steam trap 13 and pump 14. A quantity of said condensate corresponding to the quantity of newly formed condensate is thus withdrawn automatically from the system through valve 16 operated by the float 17. The pump 14 is, however, dimensioned as to be capable of

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delivering considerably more condensate and the surplus quantity is passed in recirculation through pipe 18 and valve 19b back to the top part of the passage system 2b.

At the end of the heating period of digester A and when the corresponding heating period for digester B is to start, the valves now described are reset so that the valves hitherto open are closed and vice versa. The heat exchanging media will now change passageways with each other so that the digestion liquid will pass through the elements previously passed by the heating medium in the same numerical order, and vice versa. As a result, the digestion liquid in the digester A will continue to circulate but is passed through the heater via valve 7a while the digestion liquid in digester B will be circulated through passage system 2b, at the same time heated from the heating steam which is supplied to passage system 2a to which also the surplus condensate from pump 14 is passed. When the heating period for digester B ends, the valves are reset anew in the way described. Thus, both passage systems will convey digestion liquid or heating steam alternatively and, during each heating period, the heating surfaces of the heater, which during the preceding period were in contact with digestion liquid will be flooded with condensate so as to be cleaned from scale, possibly formed during the preceding period.

It is of course possible for a person skilled in the art by aid of the information now given, to make further modifications within the scope of the invention, especially in respect of the pipe and valve combinations. Most effective is a heater with uniform passage systems as suggested in the drawing. In many cases sufficient cleaning effect from the heating medium may be obtained without recirculation of the same. A hot liquid could be used as heating medium instead of steam etc.

What I claim is:

1. The process of operating an indirect heat exchanger having a two passage system for alternately heating digestion liquor for one of two separate digesters in one of said passages and simultaneously cleaning the other of said passages which comprises, circulating digestion liquor from one of said digesters through one of said passages, and passing a heating and cleaning medium through the other of said passages and then reversing the process by cutting off the flow of digestion liquor through said one of said passages, passing heating and cleaning medium through said one of said passages to provide heat for the other of said passages while simultaneously cleaning said one passage, circulating digestion liquor from the other of said digesters through said other of said passages to heat said liquor and reversing the process back and forth so that said passages are alternately cleaned and used for the passage of liquor to be heated so that the build up of scale from said liquor is prevented.

2. The process as in claim 1 wherein said heating medium is steam and including withdrawing and condensing steam from said passages and reintroducing said condensate with fresh steam at the entrance end of the passage being used for heating to flood the same with condensate during the heating to enhance the cleaning of the passage.

References Cited in the file of this patent

UNITED STATES PATENTS

1,228,950	Mortrud	June 5, 1917
1,882,391	Mortrud	Oct. 11, 1932
2,508,119	Lockman	May 16, 1950
2,576,843	Lockman	Nov. 27, 1951
2,647,570	Lockman	Aug. 4, 1953

FOREIGN PATENTS

173,132	Canada	of 1917
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