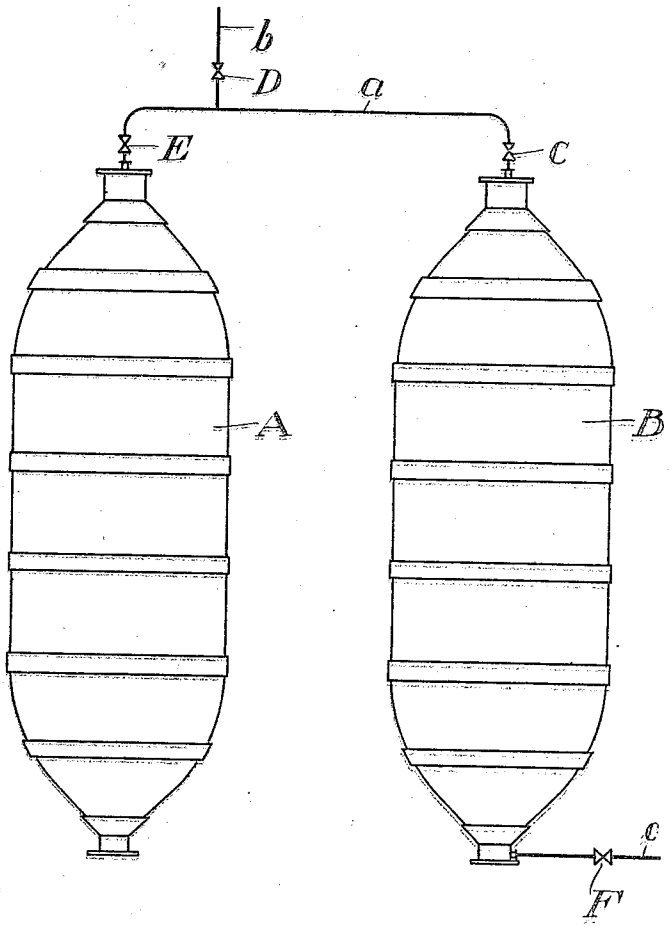
Feb. 6, 1923. 1,444,467

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METHOD OF HARDENING FRESH LININGS OF SULPHITE PULP DIGESTERS

Filed Dec. 16, 1921



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Patented Feb. 6, 1923. 1,444,467

UNITED STATES PATENT OFFICE.

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METHOD OF HARDENING FRESH LININGS OF SULPHITE-PULP DIGESTERS.

Application filed December 16, 1921. Serial No. 522,863.

To all whom it may concern:

Be it known that I, CARL HERMAN JONSSON, a citizen of the Kingdom of Sweden, residing at Borlänge, Sweden, have invented new and useful Improved Method of Hardening Fresh Linings of Sulphite-Pulp Digesters, of which the following is a specification.

This invention relates to an improved method of hardening fresh linings of sulphite pulp digesters.

For protecting the walls of sulphite pulp digesters against the corrosive action of the sulphite lye the metal walls of the digester are generally coated with an internal acid-proof lining, which is manufactured of acid-proof bricks and a mortar which is hardened when subjected to the action of the free sulphurous acid in the lye. Said mortar, which is applied directly on the metal sheets as well as in the joints between the bricks may be of different compositions and may for instance contain calcium-iron-silicates, calcium silicates, calcium monosulphite, lead oxides, lead salts, chamotte meal, potash or soda water-glass, and so on. When a digester had been lined with such mortar and dried, it was hitherto filled with sulphite lye whereupon the free sulphurous acid of the lye reacted with the mortar and caused a successive increase of its hardness and strength. This hardening process proceeds, however, rather slowly and goes on even after that the digester has been taken in use for the manufacture of the sulphite pulp. In the first period of the use of a digester having obtained a fresh lining the latter may easily be damaged if the boiling is performed at normal pressures and with normal speed ere the lining has reached its full strength. The slowly hardening of the lining makes it, therefore, necessary to reduce the intensity of working for some time after the application of a fresh lining in a digester.

The object of the present invention is to remove said drawback by an improved hardening method by which the mortar of the lining obtains its full strength in a very short time.

The invention consists chiefly in effecting the hardening of the lining by means of sulphurous acid in gaseous state instead of as hitherto by means of a liquid in which the sulphurous acid is dissolved.

I have discovered that the fresh lining of a sulphite pulp digester is hardened essentially more rapid when using sulphurous acid in gaseous state instead of a solution and that the strength of the lining against wear is also improved.

The sulphurous acid used for the hardening process may be obtained in any suitable manner but I prefer to take it from another digester in use, in which case gaseous sulphurous acid and steam of more or less high pressure is drawn off from the latter and introduced in the digester the lining of which is to be hardened. In such case the gas and steam may be taken from the digester in use either during the boiling operation or when the boiling has been finished and the hardening process be combined with the recovery of the sulphurous acid.

In the accompanying drawing I have diagrammatically illustrated one embodiment of my invention.

Referring to the drawing, A and B represent two sulphite pulp digesters, of which A is supposed to be in operation for digesting pulp while the digester B is supposed to have obtained a fresh acid-proof lining. The digesters A and B are at the top connected by a pipe *a*, containing valves E and C. D is a valve in a branch pipe *b* which may be connected to an acid tank (not shown) and F is a valve in a pipe *c* from the bottom of the digester B. The pipe *c* may also be connected to the acid tank not shown.

When the valves E and C are opened while the valve D is maintained closed gaseous sulphurous acid flows from the digester A through the pipe *a* to the digester B and then through the valve F to the acid tank not shown where it is stored. As the lining of the digester B is hardened the valve F is successively closed so that the pressure slowly increases in the digester B until the pressure in the latter will be equal to that of the digester A. When the lining of the digester B has been hardened sufficiently which may be proved by taking up small holes in the metal wall of the digester, the valve C is closed and the valve F is opened, the gas contained in the digester then escaping to the acid tank through the pipe *c*.

What I claim is:—

1. Method of hardening fresh linings of acid-proof bricks and mortar in sulphite pulp digesters, consisting in subjecting the lining to the action of sulphurous acid in gaseous state.

2. Method of hardening fresh linings of acid-proof bricks and mortar in sulphite pulp digesters, consisting in supplying sulphurous acid in gaseous state to the digester, and successively increasing the pressure of the gas until the lining is hardened.

3. Method of hardening a fresh lining of acid-proof bricks and mortar of a sulphite pulp digester, consisting in supplying steam and sulphurous acid in gaseous state from another sulphite pulp digester in use until the lining is hardened, and then recovering the acid contained in the digester.

In testimony whereof I have signed my name.

CARL HERMAN JONSSON.