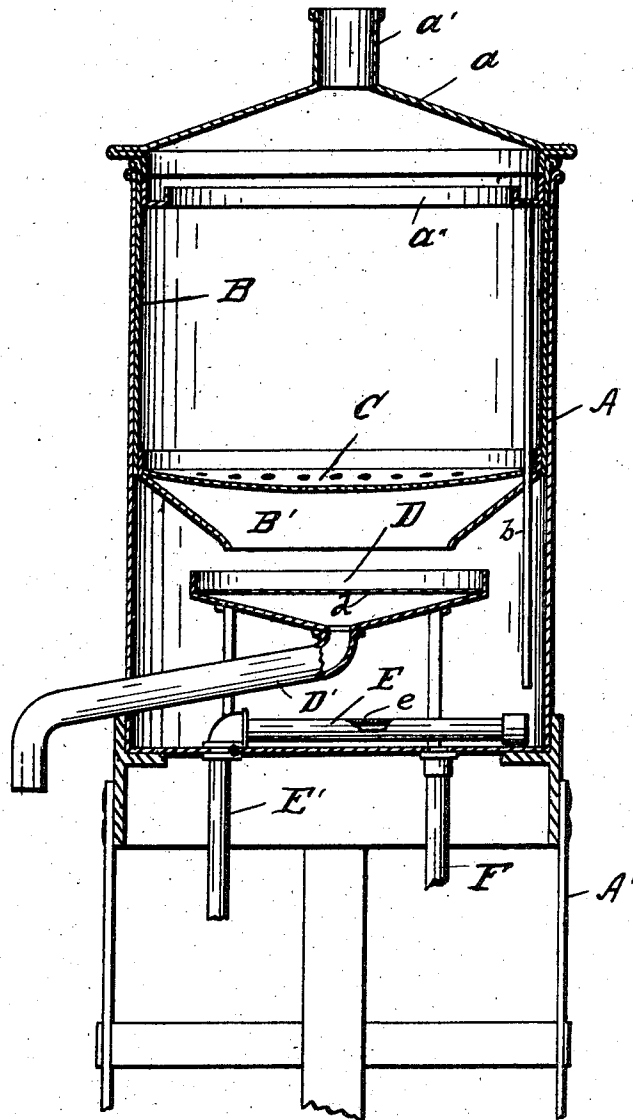


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PROCESS FOR CONVERTING GLUE.
APPLICATION FILED NOV. 24, 1908.

961,058.

Patented June 7, 1910.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES M. ZIMMERMAN, OF CINCINNATI, OHIO.

PROCESS FOR CONVERTING GLUE.

961,058.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES M. ZIMMERMAN, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Process for Converting Glue, of which the following is a full, clear, and exact description.

My invention relates to a process for converting or melting glue, and its object is to melt the glue in a very short period of time, thus avoiding the long continued application of dry heat at high temperature, which destroys the fibrous matter of the glue and diminishes its strength.

Prior to my invention, glue was melted by first soaking it in a predetermined proportion of water, then placing this jelly (and it is in this sense that I use this term glue jelly throughout) in a kettle surrounded by water wherein it was slowly dissolved by the continuous application of very high, dry heat. Many disadvantages are attendant upon this method. Not only is a great deal of time required to melt the glue in this way, but the fiber of the glue deteriorates from excessive temperature and from the continued maintenance of the glue at such temperature. With this old method of melting glue, it is necessary to have a supply kettle with a quantity of glue under constant heat. This produces a rapid and continuous deterioration of the glue in both strength and body, and in addition produces evaporation of the water in the glue, thus reducing it in quantity and greatly increasing its cost. By my process, these objectionable features are overcome, and the liquid glue is produced with an enormous saving in time. No supply kettle is necessary and no large quantity need be made in advance, as liquid glue may be produced instantly, at any time, in large or small quantities as may be required. The glue is always uniform and fresh.

In carrying out my invention, I take dry glue and soak it in a predetermined quantity of cold water until all the water has been absorbed by the glue, and the glue has been reduced to the form of lumps of jelly. The proportion of water with which the glue is mixed depends upon circumstances, such as the nature of the glue, its strength etc. The proper proportion will be understood by those familiar with the art. I then place this glue jelly on a support within a closed

chamber, the support being provided with perforations or otherwise constructed that it will support the glue jelly but permit the liquid glue to run through it, after the jelly has been melted. I then pass steam over the cold glue jelly and preferably pass the steam up through the support so as to cause the steam to permeate the jelly and attack it throughout. The steam immediately melts the jelly and causes the liquid glue to run down through the perforations in the support. I provide a receptacle in a position to catch the glue from a funnel leading from the perforated support, this funnel being somewhat smaller than the receptacle used for catching the glue, to guide the glue into it. The liquid glue may be drawn from the receptacle into any bucket. It is important in carrying out my process that the water of condensation from the steam be prevented from mixing with the liquid glue, and I, therefore, provide some means for catching the condensed steam as it forms on the walls of the chamber, so that it may be drawn off and be prevented from mixing with the liquid glue.

To illustrate my invention I furnish a drawing herewith, showing an apparatus by which my improved process may be carried out.

The drawing represents the apparatus in vertical section.

In the drawing, A is the chamber, consisting of a cylindrical vessel, open at its upper end, and supported in any convenient manner on a stand A'. Within the vessel A is supported as shown a removable drum B, provided with a wide, inclined flange or funnel B' at the bottom.

C is the perforated diaphragm, which is substantially of the diameter of the drum and is supported above the funnel B'. The diaphragm is preferably dished as indicated to cause the liquid glue to flow toward the center.

D is the collecting trough, preferably of conical form. It is located immediately below the funnel B', with its edges extending beyond the lower end of said funnel, so as to catch the liquid glue as it is directed thereinto by said funnel. A pipe D' is secured to the bottom of the trough to draw off the liquid glue into any suitable receptacle. A filter d of wire gauze is located in the trough to strain the glue and catch all extraneous material.

E is a steam pipe, provided with perforations *e*.

E' is the steam supply pipe, which is preferably provided with a means (not shown) to choke the supply of steam to the pipe E, so that it may be allowed to expand in said pipe rather than be forced through it. A pipe F secured to the bottom of the chamber A, permits the escape of the water of condensation.

The drum B is provided with a conical lid *a*, having an escape pipe *a'*. An annular trough *a''* is located about the upper edge of the drum B and directly below the lid *a*. As the steam rises, such of it as does not escape through the pipe *a'*, strikes the conical wall of the lid *a*, condenses and runs down into the trough *a''*. The latter is slightly inclined toward a pipe *b*, which passes down to a point near the bottom of the chamber A.

The pipe E is located; and also the perforations therein, so that no water of condensation which may be in said pipe, may be driven into the receptacle or trough D or by impinging against the walls of the chamber caused to fall therein. The steam, rising about the collector, passes up through the funnel B' and through the perforations in the perforated diaphragm or support C, then attacking and melting the glue jelly. After it rises above the diaphragm or support it either passes freely out through the escape pipe *a'* or such of it as does not so pass out is condensed against the inner wall of the lid *a* and thence runs down into the trough *a''*. It will be seen that by this arrangement all water of condensation is prevented from mixing with the liquid glue.

As a result of my improved process, by which I apply steam to the cold glue jelly, the glue jelly is instantly liquefied as it comes in contact with the moist steam, and as there is provision made for the passing away of the glue upon the instant that it liquefies, the heat as applied by me is only momentary, therefore permitting the cold glue jelly to be converted into liquid form at a temperature that is not injurious to glue and yet of proper temperature for immediate use.

By my process I take a most radical departure from old processes both in the method by which I apply heat and the nature of heat I apply. I employ a moist heat passed through and around the glue jelly which permeates it throughout, while by old methods a dry heat is allowed to gradually force itself into the glue jelly. The advantages over the old method are therefore not only that it is more convenient and

operates more quickly, but also that the fibrous matter in the glue is fully preserved, producing liquid glue at its full strength, always uniform, always fresh and without the loss of evaporation, which is ever present by the old method of preparing glue.

Having thus described my invention what I desire to cover by Letters Patent is—

1. The process as herein described of converting glue into a liquid form, which consists in soaking the dry glue in a predetermined amount of water to form a jelly and subjecting the jelly to the action of steam.

2. The process as herein described of converting glue into liquid form which consists in soaking the dry glue in water to form a jelly and subjecting the jelly to the action of steam, in a closed chamber.

3. The process as herein described of converting glue into liquid form, which consists in soaking the dry glue in a predetermined amount of water to form a jelly, placing the jelly on a perforated support within a closed chamber, passing steam throughout the mass of jelly and collecting the liquid glue as it runs through the perforations of the support.

4. The process as herein described of converting glue into liquid form which consists in soaking the glue in a predetermined amount of water to form a jelly, subjecting the jelly to the action of steam, and catching the water of condensation of the steam to prevent its mixing with the liquid glue.

5. The process as herein described of converting glue into liquid form which consists in soaking the dry glue in a predetermined amount of water to form a jelly, placing the glue on a perforated support within an inclosed chamber so as to attack and melt the glue, catching the water of condensation so as to prevent it from mixing with the liquid glue and collecting the liquid glue as it falls from the support under the action of the steam.

6. The process as herein described of converting glue into a liquid form, which consists in soaking the glue in a predetermined amount of water to form a jelly, passing steam through the body of the jelly so as to cause it to attack the jelly on all sides and thoroughly permeate the same, and permitting the liquid glue as fast as formed to flow away from the jelly, the water of condensation being prevented from mixing with the liquid glue.

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Witnesses:

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