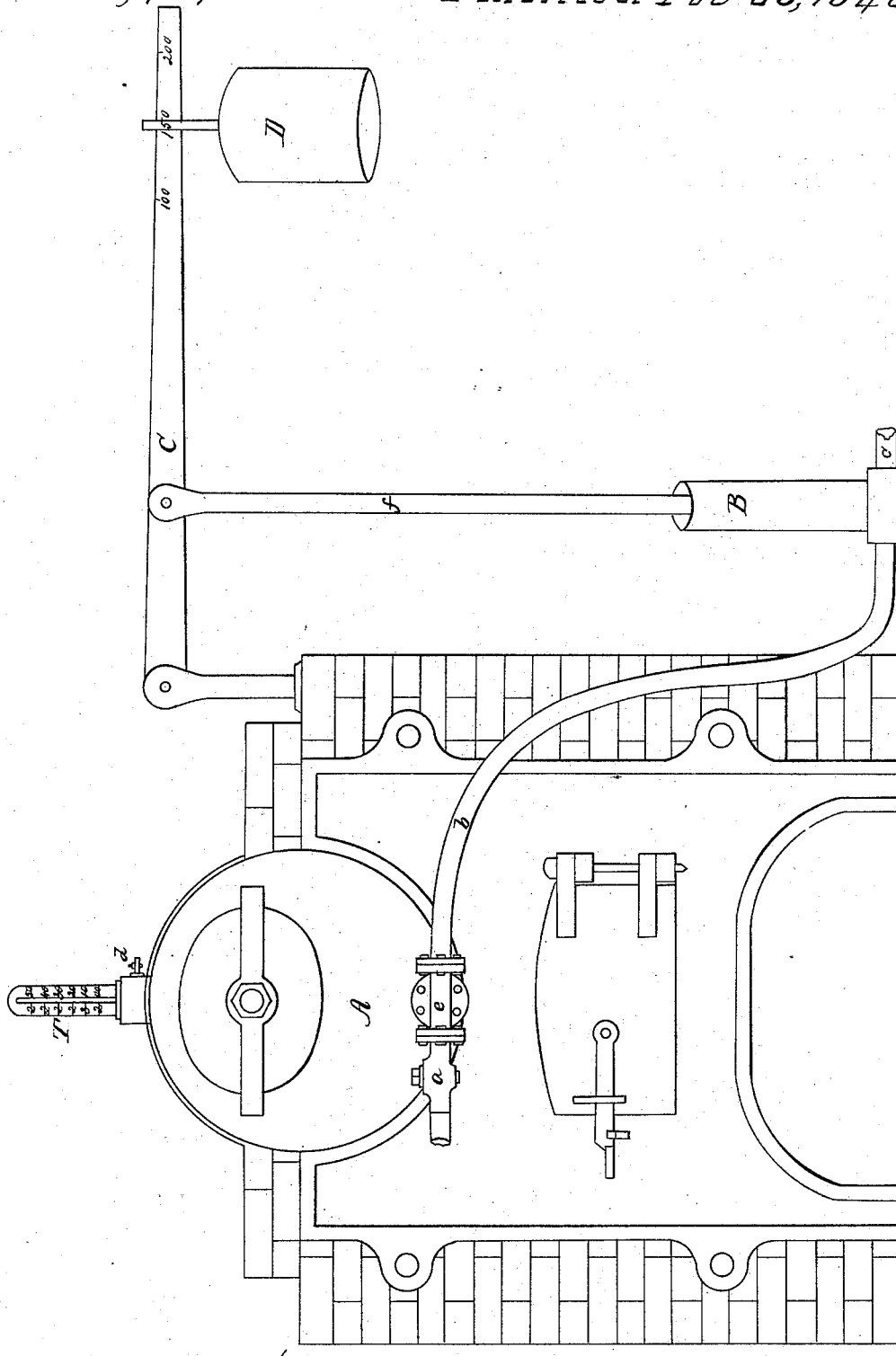


H. G. C. Paulsen,

Making Glue.

N^o 2,474.

Patented Feb 28, 1842.



Witnesses
Charles J. Haines
A. C. William Paulsen

Inventor
Herman G. C. Paulsen.

UNITED STATES PATENT OFFICE.

HERMAN G. C. PAULSEN, OF NEW YORK, N. Y.

IMPROVEMENT IN THE METHOD OF MANUFACTURING GLUE.

Specification forming part of Letters Patent No. 2,474, dated February 28, 1842.

To all whom it may concern:

Be it known that I, HERMAN G. C. PAULSEN, of the city and county of New York, and State of New York, have invented a new and Improved Mode of Making Glue, so as to produce an article of superior quality from all and any materials suitable for glue-making; and I do hereby declare that the following is a full and exact description.

My invention and improvement consist in applying upon the materials, when heated in water to or above the boiling-point, a pressure to such a degree as will prevent the generating of steam or gas, which otherwise destroy or carry off some part of the gluten or glutinous matter.

The effect of this improvement is to make glue cheaper and of better quality from the materials commonly used, and to apply bones and fish-bones to the manufacture of glue with the same advantage as any other materials. To make glue from bones by boiling requires an application of a higher degree of heat than the boiling-point, which destroys and carries off a great part of the gluten or glutinous matter; but by applying at the same time a pressure to such a degree as will prevent the generating of steam or gas the gluten or glutinous matter is not affected by the heat.

To enable others skilled in the art to use and carry into effect my invention and improvement, I will proceed to describe the construction of the apparatus which is to be used by this method.

I procure a boiler or digester, close, and of any convenient form, (cylindrical is preferred,) of copper, of sufficient thickness and strength to bear a pressure of from two hundred and fifty to three hundred pounds upon the square inch. Copper is the best material for the boiler. Iron colors and injures the glue. The size of the boiler depends upon the quantity of glue intended to be made at one operation. One for about two hundred and fifty pounds of glue to be made from bones should contain about thirty cubic feet, and may be about two feet diameter and ten feet long. If other materials than bones are used, the boiler may contain about eight cubic feet less.

The boiler should have gage-cocks and the other appendages of common steam-boilers, and be set in masonry in any manner most

convenient to generate and apply the necessary heat; but in order to apply the pressure upon the materials and water when in the boiler, and to let off the glue when made, make an opening of about one and a quarter of an inch in diameter in the bottom of one end of the boiler, and fasten by screws or otherwise upon and before the opening a T-pipe of about one and a quarter inch bore, as shown at *e* in the accompanying drawings. On one side of this T-pipe place a cock, as shown at *a*, to let off the glue when made. On the other side of the T-pipe make a communication between the boiler A and a force-pump, B, by means of a copper pipe with a bore of one inch and a quarter diameter, and of sufficient thickness and strength to sustain the desired pressure, as shown in the drawing at *b*.

The force-pump, with which the pressure is to be produced by water, may be constructed in any of the common forms of that instrument adapted to this object, of about one and a quarter of an inch bore and of five or six inches stroke, and be made to communicate with a water-cistern in any convenient way; but to produce the pressure connect the piston of the pump with a lever, as shown at C, by the connecting-rod *f*, and load the lever with a weight, as shown at D. If the boiler, pipes, and pump are filled with water, the pressure produced by the lever on the piston of the pump will be communicated to the contents of the boiler. This pressure may be produced in any other way at the option of the operator without altering the intended effect—as, for example, by substituting for the lever and weight a screw, or by connecting the piston of the force-pump with a piston of a cylinder of a larger size, to be acted upon by steam; or the pressure may be obtained by an air-pump, forcing so much air into the boiler as is necessary to produce the desired pressure.

To ascertain the degree of heat in the boiler, insert a thermometer, as shown at T, reaching so far down as to communicate with the water in the boiler, and make it fast by screws or by any other means convenient. By this thermometer regulate the heat in the boiler during the operation.

The boiler may be heated by fire in a furnace and flues, or by steam, or by any other convenient mode.

In the top of the boiler insert a gage-cock,

as shown at *d*, to let air in or out, as the operation may require.

I will proceed now to describe the operation with the above-constructed apparatus. The materials from which the glue is to be made (if hide-cuttings and other materials of a like kind are used) must be prepared in the usual manner of preparing those articles for the purpose of manufacturing glue. If ivory, bones, or fish-bones are used, they must be broken into pieces of the size of a pea. If the materials are bones, broken as above, fill the boiler with them; but if hide-cuttings, sinews, and the like, fill the boiler about two-thirds full. Then close the boiler. Open the gage-cock *d* to let the air escape while the boiler is filling with water, and when it gets up to the gage-cock close it and commence heating. If the materials are hide-cuttings, sinews, and the like, carry the heat up to 212° to 218° Fahrenheit; if bones, from 212° to 250° Fahrenheit. When the thermometer shows the desired degree of heat, commence the pressure by the means provided, and carry it far enough to prevent the formation of steam or gas, which will ordinarily equal a pressure of from one hundred to one hundred and twenty pounds to the square inch, when the heat ranges from 212° to 218° Fahrenheit, and when the heat ranges as high as 250° Fahrenheit the pressure must be carried to two hundred pounds to the square inch, which will answer the purpose and prevent any steam or gas from forming in the boiler to the injury of the gluten or

glutinous matter. When the heat is increased beyond the limits named the pressure must be also increased in such a proportion as to prevent the formation of steam or gas to the injury of the glue. Keep up the heat and pressure to the same degree, as near as possible, for about one hour or one hour and a half, then extinguish the fire entirely, and let the contents of the boiler cool down to 200° or 190° of heat. Then open the cocks *a* and *d*, and let the glue run out into another vessel, from which it is finished in the common way.

What I claim as my invention and improvement, and desire to secure by Letters Patent, is—

The application of artificial pressure, hydraulic or any other, brought to bear upon the contents of a close boiler filled with water and the materials for making glue, in combination with heat of or above the boiling-point, in such relative degrees as to prevent the generating of steam or gas in the boiler, as herein described, for effecting the making of glue without destroying or carrying off any of the gluten or glutinous matter, using for that purpose any constructed apparatus by which the required combination of pressure and heat can be produced to the intended effect.

Witness my hand, New York, December 14, 1841.

HERMAN G. C. PAULSEN.

Witnesses:

CHARLES JULIUS MEINECKE,
A. E. WILLIAM PAULSEN.