

G. UPTON.
 PROCESS OF OBTAINING GLUE OR GELATIN.
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1,063,229.

Patented June 3, 1913.

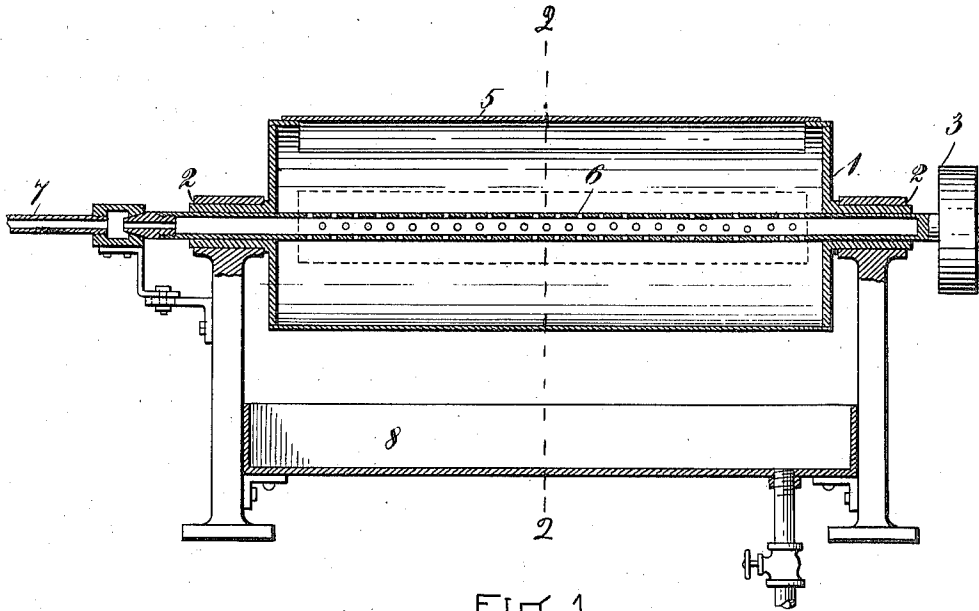


FIG. 1.

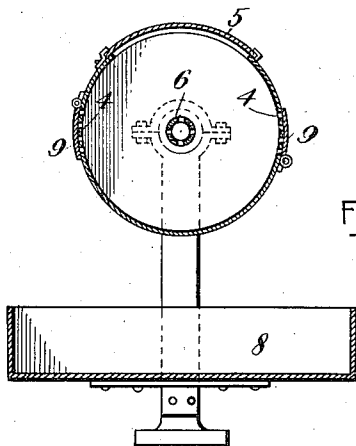


FIG. 2.

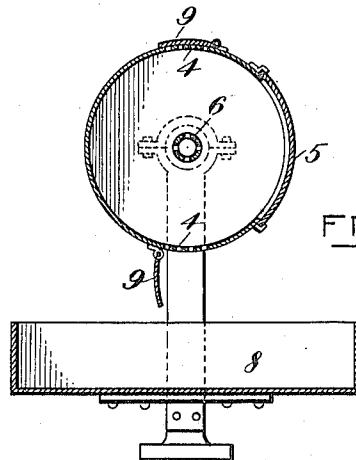
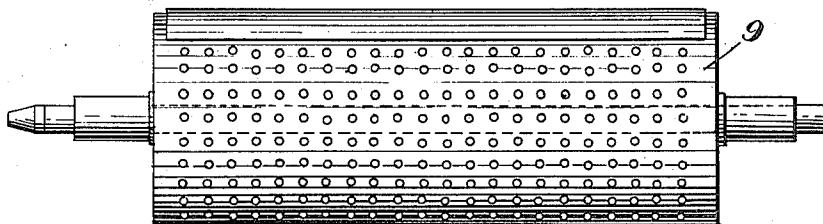


FIG. 3.

FIG. 4.



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PROCESS OF OBTAINING GLUE OR GELATIN.

1,063,229.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE UPTON, of Salem, in the county of Essex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in the Process of Obtaining Glue or Gelatin, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The essential object of my invention is to provide for a dissolution of the stock for obtaining glue or gelatin by subjecting the stock and formed glue or gelatin to as little aqueous and heat influence as possible.

To this end my process resides in subjecting the stock to the influence of steam for dissolving out the glue and then removing or separating the forming glue and formed glue from the surfaces of the dissolving bits or pieces of stock by mechanical or other attritive action, when the glue separated from the stock will readily enter into solution with the water from the condensing steam, forming a glue water which is removed or allowed to escape as rapidly as possible from the heat influence tending to decompose and weaken the glue if long subjected to such influence.

The process can best be understood in the light of an apparatus for practising it which I have found to be exceedingly good and which is shown diagrammatically in the accompanying drawings, in which—

Figure 1 shows the apparatus partly in elevation and partly in vertical section. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a section showing a turned position of the receptacle forming one of the essential elements of the apparatus and to which special reference will hereinafter be made. Fig. 4 shows in elevation a slightly modified type of the apparatus.

Referring to the drawings, 1 is a receptacle or digester for containing stock during its dissolution and which stock of course consists of the material ordinarily employed. The receptacle 1 is preferably tubular in

form and mounted upon trunnions 2, 2, suitably supported and through which means of support the receptacle may be rotated or turned by a pulley 3 operated upon by any suitable mechanism (not shown). The peripheral wall of the receptacle is perforated but preferably only in part as shown by the perforated longitudinal sections 4, 4, arranged on opposite sides of the receptacle. In order that the stock may be placed within the receptacle it is provided with a hinged lid 5 which forms as shown a part of the peripheral wall of the receptacle. Located within the receptacle and preferably passing through the longitudinal center thereof is a perforated pipe 6. Steam is introduced into this pipe at the points of or through one of the trunnions 2 by a steam inlet pipe 7. Beneath the receptacle is a tank 8 for receiving the dissolved glue.

My improved process is carried on by the use of this apparatus in the following manner:—After placing the stock in the receptacle (it being placed therein preferably up to a point above the perforated pipe 6), steam is admitted through the steam inlet pipe 7 to enter the perforated pipe 6 from which it issues into the chamber of the receptacle. At the same time the receptacle is slowly turned whereby the stock contained therein will be kept in a condition of continual agitation, the pieces or particles of stock continually rubbing against one another and against the walls of the receptacle, the steam at the same time mingling intimately therewith and evenly attacking the same as the pieces of stock disturbed by the turning of the receptacle continually expose fresh surfaces to the dissolving influence of the steam. As the stock becomes softened by the steam, the forming and formed glue will gradually appear upon the surfaces of the pieces of stock as a gelatinous or viscous substance which is not left upon the pieces of stock where it would be exposed to the influence of the steam and heat for a protracted period of time after extraction or until it was so reduced as to gravitate or run from the pieces of stock,

but is continually worn away by the attritive action of one piece of stock against another as the receptacle is turned, which action is assisted also by the rubbing of the pieces of stock against the interior wall of the receptacle. The forming and formed glue being thus separated from the stock enters readily into solution with the water from the condensing steam and in the form of glue water will gravitate toward the bottom of the receptacle, percolating through the pieces of stock therein, and as the receptacle slowly turns will escape through the perforated sections 4 therein into the tank 8 from which it may be drawn off for further treatment.

In Fig. 4 there is shown a slight modification of the apparatus in that the peripheral wall 9 of the receptacle is perforated throughout for the escape of the glue which has been formed and separated from the stock. I prefer, however, to employ the apparatus first shown in that if the entire peripheral wall of the receptacle is perforated it allows a too free escape of the steam introduced into the chamber of the receptacle when in order to retain a proper amount of steam and heat within the receptacle more steam will have to be introduced than that preferably employed and desirable. In this connection I would explain that in the first described construction weighted flaps 9 are advantageously employed for retaining the steam. These flaps are secured to the receptacle at points adjacent to the respective perforated sections 3, 3, thereof and as the receptacle is turned will automatically close and open, opening for the escape of the glue.

In practice the steam is usually introduced into the receptacle so as to maintain therein a temperature of from 130 to 212 degrees F., the lower the temperature the better, but this depends upon the kind and condition of the stock.

While other types of apparatus might be employed for practising the process, the apparatus shown is good inasmuch as auxiliary mechanical expedients for agitating the stock are unnecessary, the turning of the receptacle causing the stock to gravitate, portions thereof continuously wearing over other portions thereby effecting the attritive action above described. Moreover, as the receptacle turns the tendency of the stock is to effect a wearing action toward the bottom of the receptacle and outlet from it.

By the term "glue" as used herein and in the claims is chemically meant gelatin, the process being equally applicable for the extraction of the purer forms of gelatin or food gelatin, or the coarser forms of gelatin or glue.

By the term "steam" as used herein and in the claims is meant either steam or warm

aqueous vapor or a mixture of the two. In some cases, and especially if the stock is very dry, it may be desirable to introduce finely atomized water with the steam. In ordinary practice, however, this is unnecessary.

Glue extracted according to this process is of excellent color and of very high adhesive strength. Moreover, it can be extracted in one quarter of the time taken by ordinary methods of extraction.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States:—

1. The process of treating glue stock for obtaining glue, consisting in subjecting the glue stock to the action of heat and moisture and at the same time effecting a mechanical separation of the glue as it forms from the surfaces of the dissolving pieces of stock and removing the formed glue immediately as it is so separated.

2. The process of treating glue stock for obtaining glue, consisting in subjecting the glue stock to the action of steam, effecting a mechanical separation of the glue as it forms from the surfaces of the dissolving pieces of stock, and immediately removing the formed glue so separated from the influence of said steam.

3. The process of treating glue stock for obtaining glue, consisting in subjecting the glue stock to the action of heat and moisture and at the same time agitating the mass and separating the glue as it forms from the surfaces of the dissolving pieces of stock by the attrition thus induced and removing the formed glue immediately as it is so separated.

4. The process of treating glue stock for obtaining glue consisting in subjecting the glue stock to the action of steam and at the same time agitating the mass by which the steam may have intimate access to said stock and the glue separated as it forms from the surfaces of the dissolving pieces of stock by the attrition thus induced, and immediately removing the formed glue so separated from the influence of said steam.

5. The process of treating glue stock for obtaining glue which consists in placing the stock in a digester, admitting steam to the chamber of the digester and at the same time agitating the mass of stock therein by which the steam may have intimate access to said stock and the glue be separated as it forms from the surfaces of the dissolving pieces of stock by the attrition so induced, and allowing the formed glue in solution with the water of the condensing steam to gravitate immediately as it is so formed and escape from said digester.

6. The process of treating glue stock for obtaining glue which consists in placing the stock in a digester, admitting steam to the

chamber of the digester and at the same time slowly turning the same by which the steam may have intimate access to said stock and the glue be separated as it forms from the
5 surfaces of the dissolving pieces of stock by the attrition so induced and allowing the formed glue in solution with the water of the

condensing steam to gravitate immediately as it is so formed and escape from the digester.

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Witnesses:

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