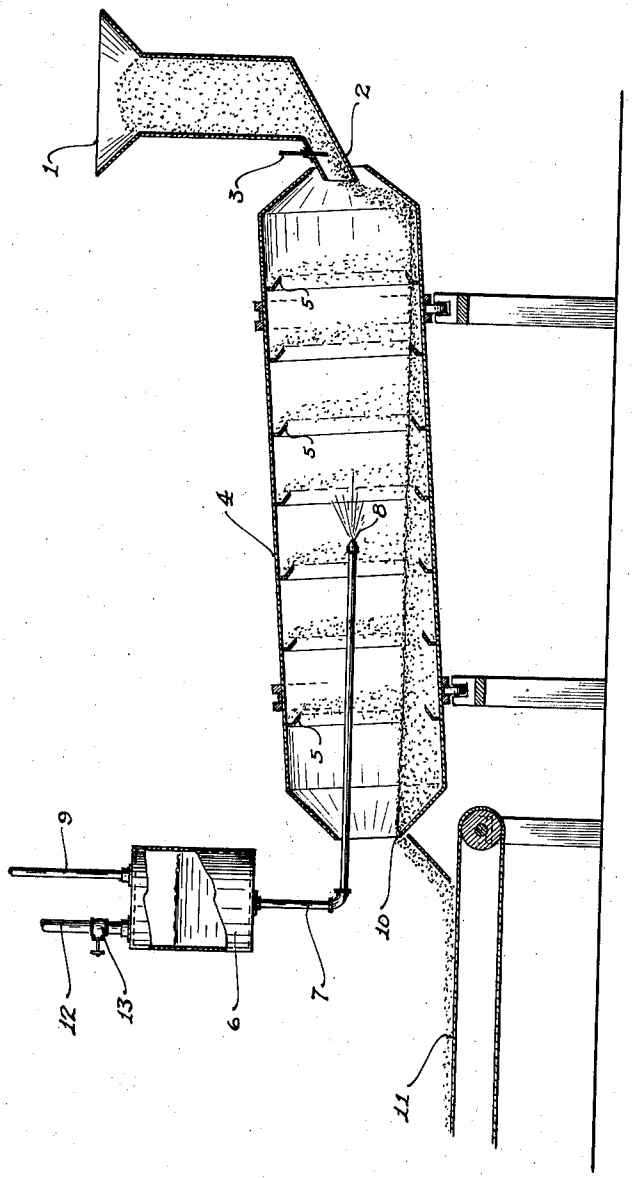
Aug. 8, 1939. R. C. NEWTON ET AL 2,168,626

GLUE TREATMENT

Filed Nov. 21, 1936



Roy C. Newton and
Frank L. De Beukelaer
INVENTOR

BY Fay W. Johns
ATTORNEY

ATTEST -
Wm C. Meiser

Patented Aug. 8, 1939 2,168,626

UNITED STATES PATENT OFFICE

2,168,626

GLUE TREATMENT

Roy C. Newton and Frank L. De Beukelaer, Chicago, Ill., assignors to Industrial Patents Corporation, Chicago, Ill., a corporation of Delaware

Application November 21, 1936, Serial No. 112,159

4 Claims. (Cl. 34—24)

This invention relates to the treatment of glue or gelatin.

One of the objects of the invention is to provide a method for drying glue or gelatin.

Another object of the invention is to provide a method for the preparation of dry glue or gelatin in small particles.

Other objects of the invention will be apparent from the description and claims which follow.

The invention will be described as applied to drying glue, but it will be understood that the invention is also applicable to drying gelatin.

The method of drying glue which has been so widely used as to have become traditional is to form the glue stock in jelled sheets which are dried on screens in tunnels through which warm, relatively dry air is circulated.

The next most important glue drying method from the standpoint of commercial use is the conventional pearling method. By the pearling method the glue stock is formed into small drops which are jelled in a chilled petroleum liquor which permits each drop to jell and to acquire a coat of petroleum to prevent coherence among the pearls and adherence in the drying equipment. The pearls so formed are dried very carefully at first until a skin is formed, after which the drying is speeded up by increasing the temperature of the air being circulated in the drying equipment.

It has been proposed in the patent to Eckerbom No. 1,759,737, to coat the pearls with powder such as chalk, boracic acid, pulverized glue, or starch.

In our United States Patent No. 2,024,131, we describe and claim a dried glue product consisting of glue pearls, each pearl presenting a surface of jagged glue. In that patent we also describe and claim the method of drying glue which comprises forming drops of glue liquor and coating each individual drop with granulated dried glue, such that substantially all the granules of dried glue adhering to the individual drops of glue liquor are each in contact with the glue liquor and the outer atmosphere whereby drying by capillary attraction is facilitated.

The present invention involves a novel method of drying glue in which dry particles of glue are coated with glue liquor, and a number of particles caused to cling together in clusters which vary in size according to the characteristics of the glue and the amount of glue liquor applied to the individual dry glue particles. In the art of drying any material to a solid residue, there is involved the process of evaporating liquid, usually water. The factors controlling the rate and efficiency of evaporating water are the amount of surface exposed from which evaporation can take place, the rate at which the air in direct contact with the evaporating surface is removed, and the speed with which the molecules are moving in the body of the liquid. The last factor is controlled by the size of the molecule or aggregate of molecules, the amount of non-volatile material dissolved in the water which lowers its vapor pressure, and the temperature involved in any given operation, as for example, drying glue.

The size of the molecule or aggregate of molecules and the amount of non-volatile material dissolved in the water are fairly uniform from day to day in the drying of glue, and the temperature can be controlled at will.

In the method of the present invention the temperature of the glue to be dried may be definitely controlled, the surface from which evaporation takes place is greatly increased, and the air in direct contact with the evaporating surface may be continuously and rapidly renewed.

The present invention contemplates preparing dry glue in small particles such as by granulating or pulverizing the glue to provide granules or powder grains as the case may be. The dry particles of glue are then coated with the glue liquor to be dried, causing groups of particles to cling together in clusters which, as has been pointed out, vary in size according to the characteristics of the glue and the amount of glue liquor applied to the individual dry glue particles.

Suitable apparatus for carrying out the process of the present invention is illustrated in the drawing.

Dry glue is placed in hopper 1 from which it is fed by gravity through pipe 2, provided with gate 3. Dry glue passes into drum 4, provided with baffles 5. Glue liquor in reservoir 6 is forced through pipe 7 and atomized at 8 by reason of air pressure applied through pipe 9. Glue may be supplied to reservoir 6 through pipe 12 provided with valve 13. Drum 4 revolves and baffle plates 5 which are arranged about the inside circumference of the drum, pick up dry glue, allowing it to fall in the path of the atomized glue liquor which moistens the dry glue particles.

The dry particles are moistened with glue liquor and agglomerate, due to the agitation and rolling movement imparted by the rolling drum.

The agglomerates are discharged at the lower end 10, falling upon conveyor belt 11 which may discharge the glue into a glue drier, not shown.

It will be appreciated that the drawing is dia-

grammatic and suggestive and that any suitable means may be employed for carrying out the process of the present invention.

If desired, the conveyor 11 may be of extended length and of foraminous material, whereby air may be drawn through to facilitate the drying of the granular material on the belt. The glue clusters may be then recovered from the mass of granular glue of the drying bed by screening, and drying completed in any desired manner.

It will be noted that when the glue particles carried by baffle plates 5 leave the hopper portion of the drum, they will drip back to the bottom, at which stage of the process the dry particles are coated with a film of glue liquor.

The speed of feed of dry glue particles, atomized glue liquor, and the speed of rotation of the drum may be varied at will to secure the desired extent of moistening of the dry particles with glue liquor.

We claim:

1. The method of drying glue which comprises coating dry glue particles with glue liquor, forming coated particles in clusters and subsequently drying the clusters.

2. The method of drying glue which comprises passing dried glue particles through a confined zone, coating the particles during passage through the confined zone with glue liquor, cooling the individual coated particles in clusters and partially drying the clusters on a moving bed of dried glue granules, recovering the partially dried glue clusters from the dried glue granules and thereafter drying the clusters.

3. The method of drying glue which comprises passing dried glue particles through a confined zone, coating the dried glue particles during passage through the confined zone with the glue liquor, cooling the individual coated particles in clusters and thereafter drying the clusters.

4. The method of drying glue which comprises passing dried glue particles through a confined zone, coating the dried glue particles during passage through the confined zone with glue liquor, forming the coated particles in clusters and thereafter drying the clusters.

ROY C. NEWTON.
FRANK L. DE BEUKELAER.