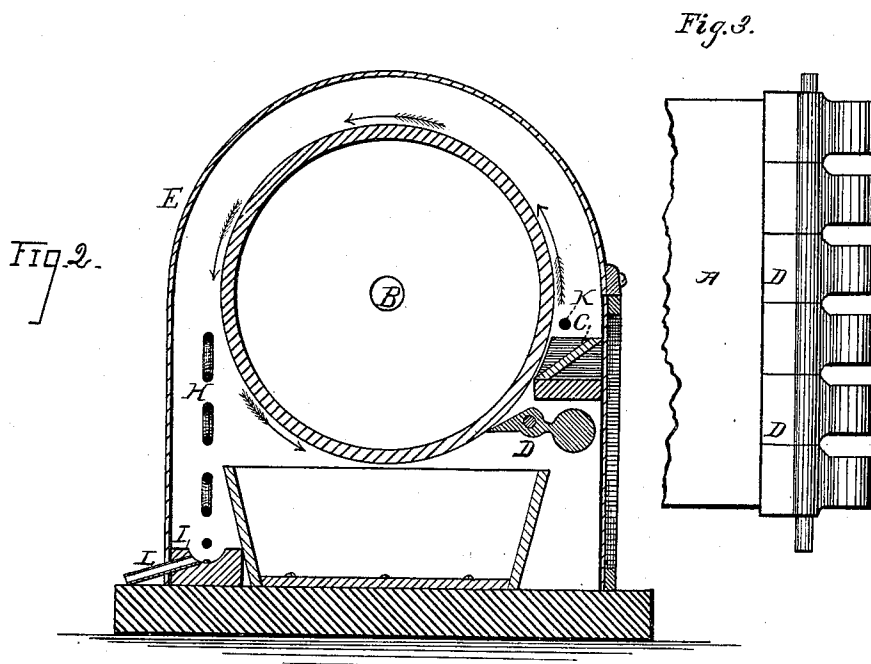
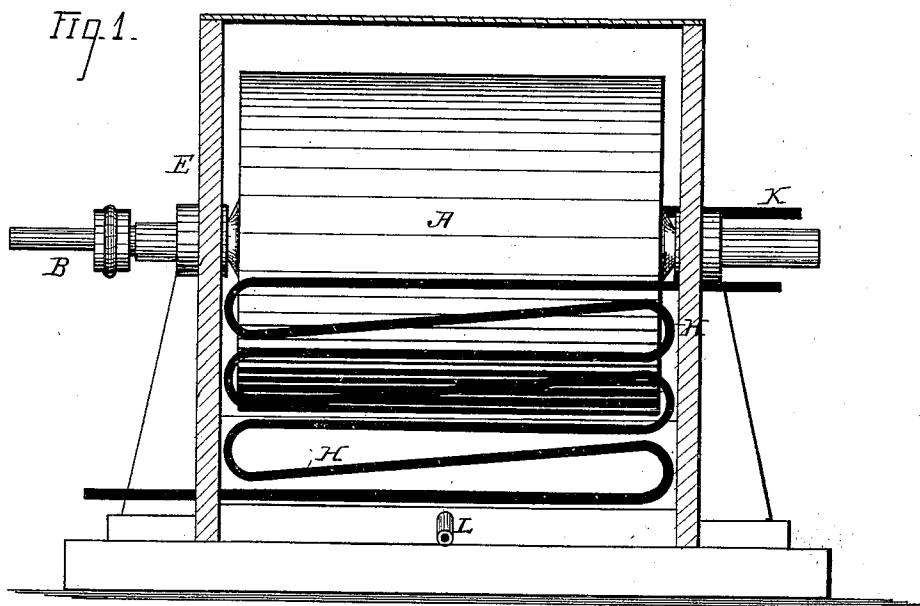


J. W. HYATT.
Apparatus for Drying Glue and other Substances.
No. 231,046. Patented Aug. 10, 1880.



WITNESSES=
Chas. B. Gill
Wm. B. Smith

INVENTOR=
John W. Hyatt
By his Attys.
Cox and Cox.

UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY.

APPARATUS FOR DRYING GLUE AND OTHER SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 231,046, dated August 10, 1880.

Application filed October 6, 1879.

To all whom it may concern:

Be it known that I, JOHN W. HYATT, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful
5 Improvement in Apparatus for Drying Glue and other Substances, of which the following is a specification, reference being had to the accompanying drawings.

The invention pertains to improvements in
10 apparatus for drying glue and other substances.

It has relation to matter in uncongealed, liquid, or semi-liquid form, and is intended to be practiced in instances where it is desired to effect a complete desiccation by removing the
15 aqueous or other volatile particles, in instances where it is desired to separate and remove such particles in part without reducing the material to a solid, and to preserve by condensation, in connection with the separation
20 thereof, the valuable elements of the particles which are removed.

I contemplate practicing the invention in a number of ways in the treatment of various kinds of material, employing it to accomplish
25 the objects to which it is adapted according to the requirements of the case, as hereinafter more fully set forth.

The distinctive novelty of the invention consists in the employment, in a case as nearly
30 air-tight as possible, of a moving surface, by preference in the form of a revolving drum or cylinder, upon which the matter to be treated is spread, and in the employment of incidental parts adapted to effectuate the objects for
35 which they are used, as hereinafter set forth.

It is intended to utilize the invention in the treatment of material in any and every form which can be successfully subjected to the action of the heated surface; but it may be used
40 with better results where the material is in what is known commonly as a liquid or semi-liquid condition. I therefore describe particularly herein a device for the treatment of matter in a liquid condition, although not intending
45 to cause it to be supposed that the invention is to be restricted to matter in a strictly liquid form. It is only essential that the matter be in such a condition that it can be applied to form a coating or film upon the moving
50 surface.

The mechanical appliances used in carrying

out the invention will be adapted to the exact nature of the material in ways which will suggest themselves to the skilled operator, and which need not, therefore, be specifically explained.

I describe first a device illustrative of the invention which I have employed with entirely satisfactory results in treating matter in liquid form, and afterward the manner in
60 which it may be utilized for the purposes herebefore set forth.

Figure 1 is a side elevation of a device embodying the elements of the invention, the casing being shown in section. Fig. 2 is a
65 central vertical transverse section of same. Fig. 3 is a detached plan view of the cleaner, hereinafter described.

A is a drum or cylinder of any desired size, and is actuated in any convenient manner in
70 the direction indicated by arrows. It is heated by means of steam admitted through the pipe B, or otherwise. The superficies or exterior surface of the drum or cylinder A is of polished metal, and disposed and secured so as
75 to be as smooth as possible.

C is a hopper or receptacle adapted to receive and hold the liquid material, which may be supplied through a pipe, K, if preferred, and is so placed that when the drum A re-
80 volves a suitable film or coating of the material will be formed upon the heated surface of the drum A and be moved with it.

The hopper C should be arranged about on a level with the horizontal center of the drum
85 or cylinder A, in order that the material will be upon the upper half of its surface during one-half of a revolution, at which time it will be sufficiently hardened to retain its position and not be affected by its specific gravity when
90 that portion of the cylinder upon which it is placed has passed the horizontal center of the said cylinder. It is essential that this feature of the construction of the apparatus be observed, as when the liquid or semi-liquid material is fed below the horizontal center of the
95 drum or cylinder it is liable to fall in drops, or when it is applied at the top of the cylinder it is also liable to fall in drops after making one-fourth of a revolution. If applied at the bot-
100 tom, a similar result occurs; but when the material is applied at about the horizontal center

of the cylinder it makes a full one-half revolution before its specific gravity operates to cause it to leave the cylinder.

D is a stationary cleaner, knife, or scraper, the office of which is to remove the material from the surface of the drum or cylinder, and which is placed, in the present instance, just below the hopper or receptacle C, and suitably adapted to effectually remove the dried material. A special construction of the cleaner D is shown, which consists of a series of weighted knives hung on a rod, the nature and construction of which are shown with sufficient clearness in Fig. 3. The object of making the cleaner in sections, as shown, is to obviate the difficulties incidental to the fabrication and adjustment of a single blade. Where a series of knives is employed it is obvious that the same accuracy of construction is not essential. The parts and elements aforesaid—namely, the heated revolving drum or cylinder and hopper and cleaner—are alone employed when the object is to effect a complete or partial desiccation without regard to other considerations. Devices similar to those above described have been used heretofore in drying apparatus, but have never before, as far as I am aware, been employed in an air-tight case. The parts hereinafter particularly described are added when it is desired to separate and preserve the valuable solvents of the material to be treated.

Referring to the drawings, E denotes a case as nearly air-tight as practicable; H, a condenser of any convenient construction, which, in the present instance, consists of a horizontal cold-water coil; and I, a trough or receptacle to receive the liquid produced by condensation.

K is a supply-pipe through which the material is fed into the hopper or receptacle C, and L a delivery-pipe connected with the trough I.

I proceed to describe the steps to be pursued in each of the instances hereinbefore referred to, in which the invention may be utilized. I first describe the method which will be practiced when it is desired to solidify or dry the material to be treated. Where a complete desiccation is desired the material is delivered by means of the hopper to form a thin coating or film upon the surface of the drum or cylinder. The drum or cylinder, which is moved in the direction indicated, as aforesaid, by the arrows, is heated to such a temperature that the coating of material will be dried between the time it is applied and the time it reaches the knife or scraper. Care will be taken to so place the hopper or receptacle that the coating or film of material will not be so thick as to be but imperfectly dried when it reaches the cleaner or scraper, and the cleaner or scraper will be so adjusted that it will rapidly and effectually clean the heated surface of the drum or cylinder, directing the material into a receptacle or delivering it for further manipulation.

One of the uses for which the invention will be employed will be the drying of glue, which will be effected as follows, and the description

of which illustrates the steps which will be taken in the treatment of material of an analogous or relatively similar character: The material out of which the glue, gelatine, or other product is to be produced is boiled or otherwise treated in the customary manner, after which it is fed into the hopper or receptacle C, and passing therefrom forms a coating or film upon the heated surface of the drum or cylinder, and being dried by the time it has reached the cleaner, it is stripped from the drum in a perfectly desiccated condition.

Where it is desired to effect a partial solidification or to increase the density of matter in a liquid or semi-liquid form, the steps above set forth will be followed with such modifications as may be necessary, the mechanical elements and the temperature and motion of the drum or cylinder being adjusted to effectuate the particular object which it is desired to accomplish.

Where it is desired to effect a separation of the particles of matter in a liquid or semi-liquid form and to preserve the particles which are volatilized, the drum or cylinder and other parts are inclosed in the case E, which is of such a character as to prevent the escape of the volatile particles. The material being fed into the hopper is treated to all intents and purposes as hereinbefore set forth where the object is to effect a desiccation. The volatile particles, being separated and unable to escape, are reduced by the condenser into liquid, and falling into the trough are delivered outside of the case through the delivery-pipe I.

All the parts may be arranged and adjusted to operate automatically, it being only necessary to supply the material to be treated.

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

1. The combination of a hopper, a hollow heated revolving drum or cylinder, and a cleaner, inclosed in an air-tight case, substantially as set forth.

2. The combination of a hopper, a hollow heated revolving drum or cylinder, and a condenser, inclosed in an air-tight case, substantially as set forth.

3. The combination of a hopper, a hollow heated revolving drum or cylinder, a condenser, and trough having a delivery-pipe, inclosed in an air-tight case, substantially as specified.

4. The combination of a supply-pipe, a hopper, a hollow heated revolving drum or cylinder, a condenser, trough, and delivery-pipe, inclosed in an air-tight case, substantially as set forth.

In testimony that I claim the foregoing improvement in the art of drying, evaporating, and condensing, as above described, I have hereunto set my hand this 27th day of September, 1879.

JOHN W. HYATT.

Witnesses:

WM. BRO. SMITH,
CHAS. C. GILL.