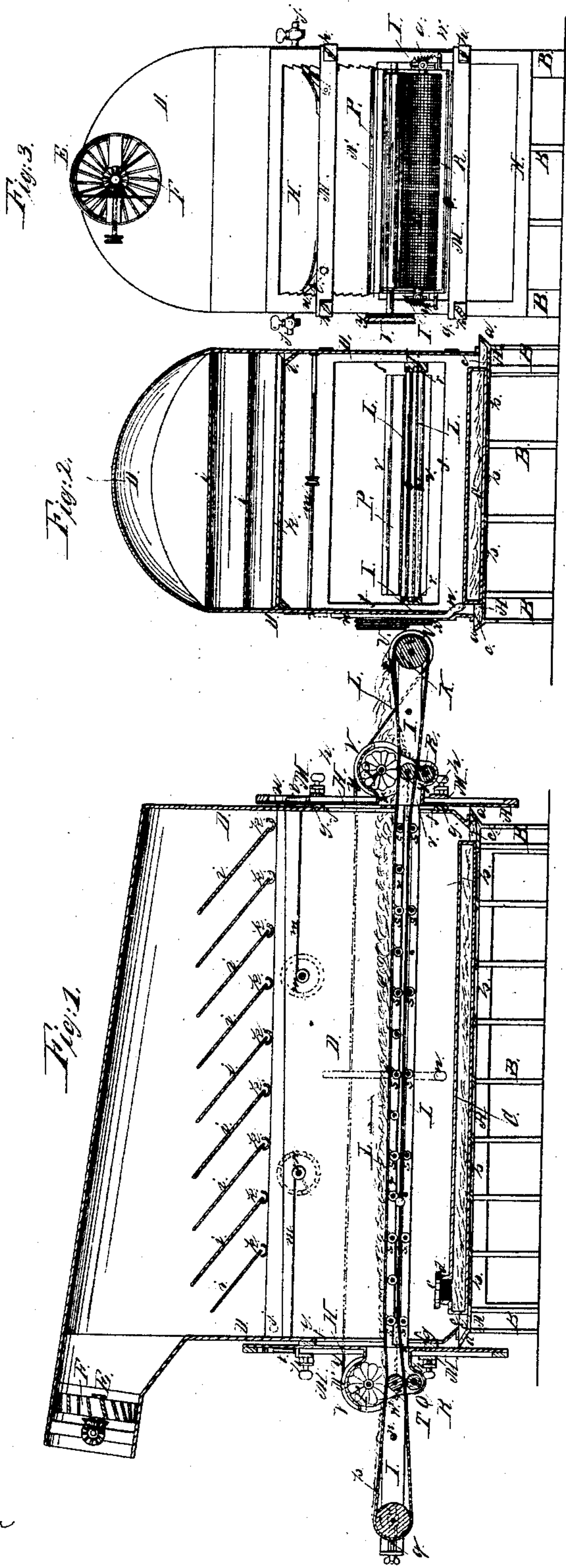


J. E. Tourne,

Desiccating Apparatus.

N^o 30,436.

Patented Oct. 16, 1860.



Witnesses:
J. W. Gentry
A. S. Spencer

Inventor
J. E. Tourne
by
Munn & Co
attys

UNITED STATES PATENT OFFICE.

J. EUGÈNE TOURNÉ, OF NEW ORLEANS, LOUISIANA.

DRYING-CHAMBER.

Specification of Letters Patent No. 30,436, dated October 16, 1860.

To all whom it may concern:

Be it known that I, J. EUGÈNE TOURNÉ, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful apparatus for the desiccation of wet damaged cotton and other wet or moist substances, as well as those containing their water of vegetation and animal substances usually desiccated by other processes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a longitudinal vertical section of the apparatus. Fig. 2, is a transverse vertical section of the same. Fig. 3, is a front end elevation of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to the use of a fused metal or alloy in connection with a suitable chamber for the reception of the substance or substances to be desiccated, in such manner that such substance or substances may have their moisture evaporated by the heat distributed throughout the chamber from the fused metal or alloy by which means the temperature at which the desiccation is carried may be regulated and kept uniform. It also relates to certain means applied in combination with the desiccating chamber to facilitate the process of desiccation.

A, B, is a stand on which all other parts of the apparatus are supported, consisting of a horizontal plate of cast iron A, with numerous openings *b, b*, supported on upright standards B, and having its edges turned up as shown at *a, a*, in Figs. 1, and 2, to form a trough like cavity in its upper side. The standards B, are of sufficient height to leave room for a fire under the plate A, such height being made suitable to the kind of fuel that is used.

C, is a vessel for containing the fusible metal or alloy made in the form of a shallow flat horizontal quadrangular box of copper or other metal, somewhat smaller in its horizontal dimensions than the plate A, that when it is placed upon the said plate there may be room all around it inside of the turned up portion *a*, of the plate to make a bed of cement or mortar *c, c*. The said box has an opening *d*, in the top fitted with a cap *e*, by which to close it for the exclusion of the air and prevention of the oxidation

of the metal or alloy which is kept in a state of fusion by the fire below the plate A,—the greater portion of the bottom of the box being exposed to the fire by the openings *b, b*, in the plate A.

D, is the chamber made of copper or other metal or material of a horizontal form corresponding with the plate A, and box C, having upright sides and ends and an arched top, but having no bottom but what is constituted by the plate A, and box B, its lower edges resting in the bed of cement or mortar *c, c*, which makes an air tight joint all around the chamber. The arched roof of the chamber is higher at one end than the other and at the higher end there is formed a circular throat E, which is fitted with an exhausting fan or ventilator F. In each end of the said chamber D, there is a square opening *f, f*, which has secured to its edges a stiff wrought iron frame *g*, having a screw clamp *h*, at each corner, said openings being closed by the heads H, H, of metal which support the adjustable feeding and carrying apparatus hereinafter described, by which the substance or substances to be desiccated are fed into and carried through the chamber over the box C, of fused metal. Across the upper part of the interior of the said chamber D, there are arranged at short distances apart a number of fixed inclined plates *i, i*, secured to the sides of the chamber, and under the lower edge of each of these plates is arranged a small transverse gutter *k*, communicating with two side gutters *l, l*, which run all along the sides of the chamber and from which there are outlets through the sides fitted with cocks *j, j*. These inclined plates and gutters are to prevent the aqueous vapors which after being eliminated from the substance or substances to be desiccated, may be condensed in the upper part of the chamber from falling back again on the said substance or substances such condensed vapors being collected on the plates *i, i*, and running down into the gutters *k, k*, and from thence into the side gutters whence the water is drawn off from time to time or allowed to run off continuously by the cocks *j, j*. *m, m*, are hygrometers arranged within the chamber with their indices on the exterior thereof to show the degree of moisture therein; and *n*, is a thermometer having its bulb within the chamber but its index outside to show the temperature of the chamber.

The feeding and carrying apparatus by which the substance or substances to be dried is supplied to and conveyed through the desiccating chamber consists as follows.

5 I, I, are two horizontal bars of cast or wrought iron of a length considerably greater than the chamber A, arranged parallel with each other and secured to the adjustable heads H, H, and braced by transverse braces *p, p*, at such distances apart
10 that they will occupy positions nearly close to the interior of the sides of the chamber A. These bars extend right through the chamber and extend about the same distance through each end thereof and near
15 each end they contain the bearings for the journals of one of two drums J, K, around which are stretched the endless apron L, of wire cloth, which passes through openings
20 *v, v*, in the heads H, H, the bearings of the journals of the drum J, being made adjustable by screws *q, q*, for regulating the tension of the apron. Those portions of the bars I, I, within the chamber have a longitudinal groove *r*, in the inner face of each
25 and in the upper edge of each bar and the lower edge of each groove *r*, there are provided bearings for rollers *s, s*, and *s', s'*, for supporting the upper and lower portions of
30 the belt and preventing them from sagging.

The heads H, H, having the bars I, I, attached are supported by means of two pawls *t, t*, see Fig. 3, attached to the upper one of two bars M, M, which extend across its exterior each of which bars is supported upon
35 the fixed jaws of two of the screw clamps *h, h*, attached to the frame *g*, at its respective end of the chamber, the said pawls entering upright ratchets *u, u*, secured one to each
40 side of each head. These ratchets enable the heads H, H, with the bars I, I, and apron L, and their appendages not yet described to be adjusted higher or lower to bring the apron to any suitable distance
45 from the metal box C.

The bars M, M, are held by the screws of the clamps *h, h*, up to the heads H, H, and secure the heads close up to the ends of the chamber. To each of the heads H, H, there
50 is secured immediately above the opening *v, v*, that is provided in each of the heads H, H, for the endless apron to pass through a hood N, in the ends of which are provided bearings for the journals of one of the two
55 horizontal elastic rollers P, P, the surfaces of which are formed of hair cloth lined with india-rubber or any other water proof material, and drawn into a longitudinally fluted form so that their transverse sections
60 resemble the transverse section of an orange as shown in Fig. 1. The object of these rollers is to press gently upon the substance to be desiccated as it is conveyed through the inlet and outlet openings *v, v*, by the
65 apron L, and their construction enables them

to adapt themselves to the varying form of the surface of the substance.

Below each opening *v*, there is attached to each plate H, an inverted hood Q, in the ends of which are provided bearings for the
70 journals of one of two wooden rollers R, R, arranged below the apron. Between each of the rollers R, R, and its respective elastic roller P, there is arranged a wooden roller T, which is interposed between the upper and
75 lower portions of the apron, the journals of such roller being fitted to bearings in the side bars I. The bearings of the rollers R, R, have applied to them springs *w, w*, which draw them up to the lower portion of
80 the apron and make them press that portion of the apron against the rollers T, T, while the upper portion of the apron is pressed against the said rollers T, T, by the elastic rollers.
85

The rollers R, R, T, T, and P, P, combine to close the inlet and outlet openings *v, v*, except for the ingress and egress of the apron and the substance to be desiccated. The endless apron has imparted to it the necessary motion to convey the substance into,
90 through and from the chamber D, by means of power applied to a pulley U, on the shaft of the drum K, and from this pulley a belt *x*, runs around a pulley V, on the shaft of one of the elastic rollers P, P, the other of which
95 has on its shaft a pulley V', receiving a belt *y*, from the pulley V. These pulleys are so proportioned as to cause the peripheries of the elastic rollers to move at the same
100 speed as the surface of the apron. The rollers R, R, T, T, derive rotary motion from the friction of the apron upon them.

The operation is as follows. The box C, having been filled or nearly filled with
105 metal or alloy which fuses at a suitable temperature and such metal or alloy having been fused by the fire below, the fire is kept up to keep the metal in a state of fusion, and the substance to be desiccated is supplied
110 continuously in suitable quantity to the apron between the roller J, and the exterior of the adjacent head H, of the chamber and is carried through the chamber D, over the heated box C, and is desiccated by the evaporation
115 produced by the heat radiated from the said box and delivered in a dry state at the end of the apparatus next the roller K. The vapor is for the most part drawn off from the chamber by the exhausting fan F,
120 but the small quantity which condenses is collected by the plates *i, i*, and escapes by the gutters *k, k*, and *l, l*.

The metal or alloy used in the box C, may be of different kinds according to the
125 nature of the substance to be desiccated and the temperature at which it is desirable to effect the desiccation; a metal fusible at a lower or less low temperature being used
130 according as a lower or higher temperature

is desired for desiccation. In the desiccation of wet-damaged cotton I have used lead with a good result. The velocity of the apron will have to be so regulated that the time occupied in conveying the substance through the chamber will be just sufficient for desiccation, and generally speaking will require to be greater or less according as a higher or lower temperature is used.

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

15 1. A desiccating apparatus composed of a chamber for the reception of the substance to be desiccated, a feeding apparatus for conveying the substance to and from and through said chamber and a vessel containing metal or alloy fusible at a low tempera-

ture to serve as a heating medium, the whole combined to operate substantially as herein described.

20 2. Furnishing the interior of the desiccating chamber with inclined plates *i, i*, applied in combination with gutters *k, k*, and *l, l*, substantially as and for the purpose herein described.

25 3. Making the feeding apparatus vertically adjustable along with the movable heads *H, H*, of the chamber and in relation to the box of fusible metal substantially as and for the purpose herein specified.

J. EUGENÈ TOURNÉ.

Witnesses:

JULES A. MATHIEU,
P. H. SIGMORE.