

(No Model.)

C. SALOMON.

DRYING, DESICCATING, AND ROASTING APPARATUS.

No. 461,550.

Patented Oct. 20, 1891.

FIG. 1.

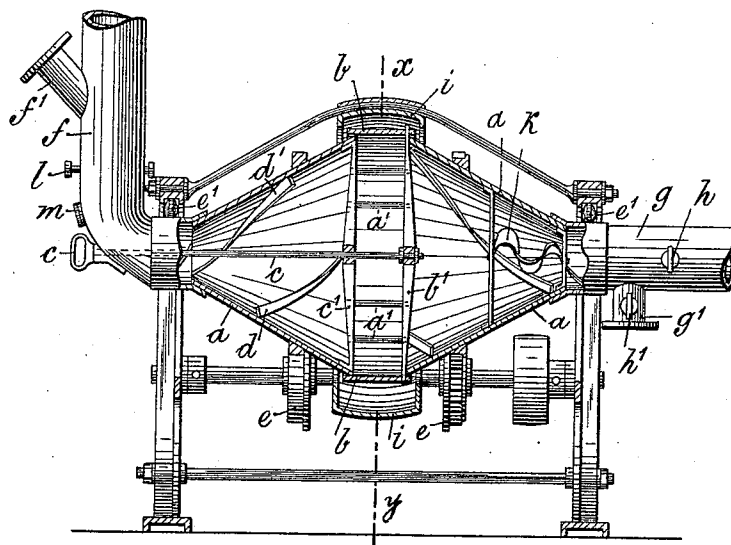


FIG. 2.

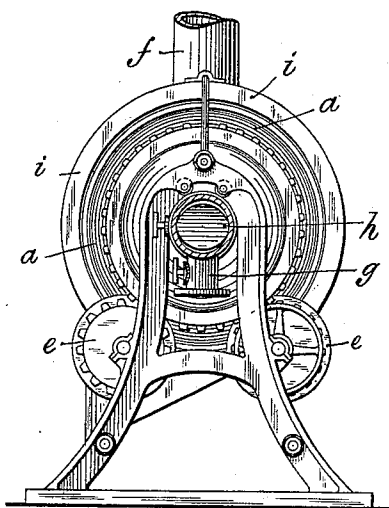
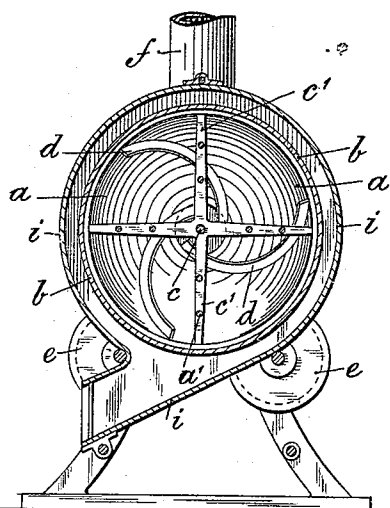


FIG. 3.



Witnesses:

H. de Vos

E. L. Richards

Inventor:

Carl Salomon

By

Richards & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

CARL SALOMON, OF BRUNSWICK, GERMANY.

DRYING, DESICCATING, AND ROASTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 461,550, dated October 20, 1891.

Application filed May 25, 1889. Serial No. 312,116. (No model.)

To all whom it may concern:

Be it known that I, CARL SALOMON, of the town of Brunswick, in the German Empire, have invented certain new and useful Improvements in Drying, Desiccating, and Roasting Apparatus, of which the following is a specification.

My invention relates to an apparatus for uniformly drying, desiccating, and roasting various products.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved apparatus. Fig. 2 is an end view, and Fig. 3 a section on the line xy in Fig. 1.

The material to be roasted, dried, or desiccated is fed into the rotary drum, which is tapered toward both ends through the one hollow shaft, while the other serves to lead in the gaseous or other matter for effecting the drying, desiccating, or roasting process. The interior of the drum is provided with helical or screw-like surfaces, the object of the same being on the one hand to intimately mix the product or material to be treated and hold the same in suspension or continuously floating in the air; on the other hand, to allow the apparatus to act as ventilator and exhauster for driving the gaseous products of combustion through the apparatus, so as to enable the same to exercise their action on the material to be treated. The centrifugal force created by the rotary movement of the drum tends to force the material to be treated against the inner periphery of the said drum, and not only securely retain the said material in this position, but in such case prevent the heat and the gas or gases led into the said drum from acting uniformly on the said material to be treated. Now, in order to prevent this injurious centrifugal action helical or screw-like surfaces are employed, which counteract this said centrifugal action and continuously throw the material to be treated toward the center of the apparatus, so that the heat and the gases introduced into the drum can act perfectly on the material under treatment, said material being held in suspension or floating in the air by the action of the helical surfaces $d d'$. The helically-formed guide wings or surfaces $d d'$ in the one half of the drum are arranged in opposite direction to those in the other half of the

drum, and besides this the pitch of the said surfaces is not the same, but symmetrical to the central axis of the drum. The two halves of the drum a , which taper toward the ends, do not at their larger ends come in contact with each other, but are connected by thin staves a' , which have little effect in reducing the free cross-section of the apparatus. The central portion of the drum is closed by a circular slide b , which is operated from the exterior of the apparatus by means of the handle c , so that when the slide is opened the treated material will suddenly fall into the annular receptacle i , which runs around the drum. The drum is held in the frame by means of guide-rollers $e e'$, Figs. 1 and 2, and is rotated from the driving-shaft by means of one or more gear-wheels, as represented in Fig. 2.

The charging-tube f , with lateral hopper f' , enters the axis of the drum at the one end, whereas the tube g , provided with the socket g' , enters axially at the other side of the said drum a and serves to lead in the products of combustion and eventually also air, said tube g and socket g' being provided with appropriate throttle-valves $h h'$ for regulating the supply.

The operation of my improved drying, desiccating, and roasting apparatus is as follows: The material or product to be treated is charged into the drum a through the hopper f' and tube f , is impelled by centrifugal force against the walls of the apparatus, is then distributed by the helical guide-surfaces d , and held in suspension in the said drum a . The products of combustion entering through the tube g at the opposite side of the drum a are distributed uniformly by the spiral or screw k , and are fed to the material to be treated by the helical guide-surfaces, said products of combustion escaping through the tube f after having operated on the material or products in the drum a . The temperature may be observed by using an appropriate pyrometer, and the progress of the operation be ascertained by taking samples from time to time through the opening m , which is usually held tight by means of a suitable lid or cover. As soon as the product or material under treatment is properly dried, desiccated, or roasted the handle c of the slide b is drawn

outward, so that the contents of the drum pass into the receptacle *i*, whereupon the slide is again closed.

5 All burning of the material under treatment can be readily avoided.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, what I claim is—

10 A drying, desiccating, and roasting apparatus consisting of the rotary divided drum *a*, the connecting-bolts *a'*, the annular slide *b*, the charging-hopper *f'*, the tube *f*, the tube

g, and the helical or screw-like surfaces or ways *d d'* in the two halves, with those in one half arranged in an opposite direction to those in the other half, and the screw *k* at the inner end of the tube *g*, all arranged to coact substantially as and for the purpose specified. 15

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses. 20

CARL SALOMON.

Witnesses:

ARTHUR BAERMANN,
WILHELM VOGT.