(No Model.)

P. C. HEWITT.

DRYING MACHINE.

No. 526,228. Patented Sept. 18, 1894.

Fig. 1

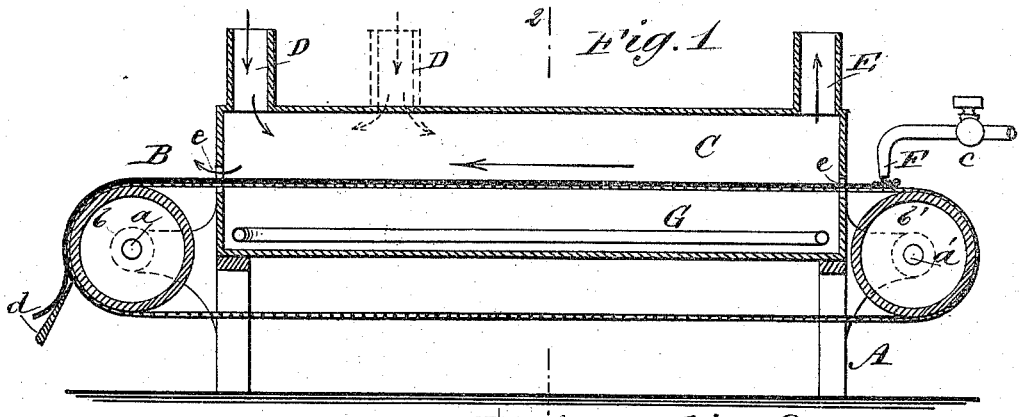


Fig. 2

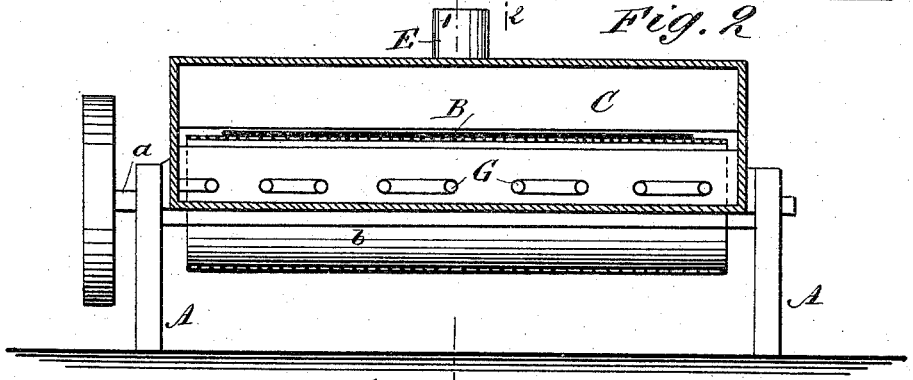
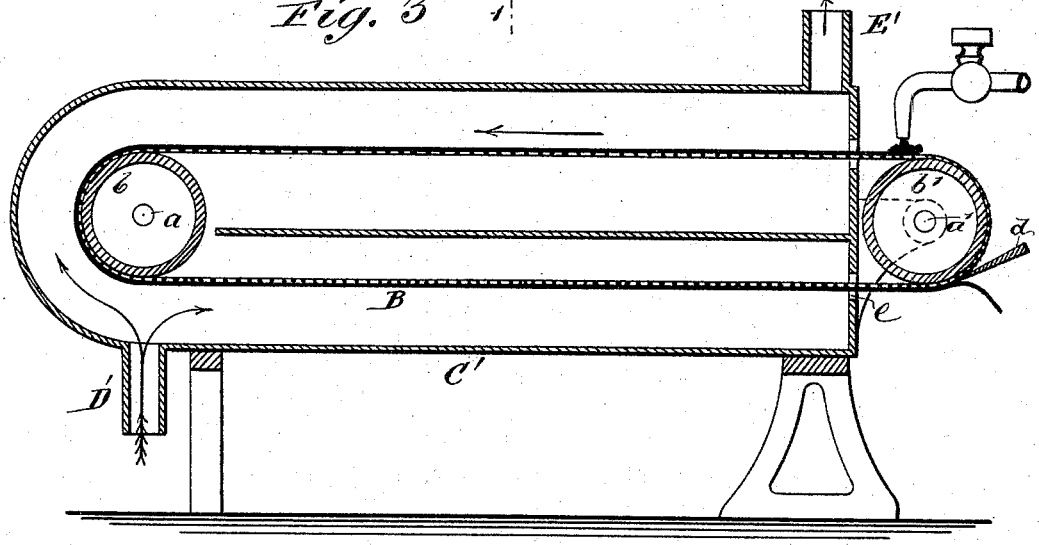


Fig. 3



WITNESSES:

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PETER COOPER HEWITT, OF NEW YORK, N. Y.

DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,228, dated September 18, 1894.

Application filed July 27, 1893. Serial No. 481,622. (No model.)

To all whom it may concern:

Be it known that I, PETER COOPER HEWITT, of New York city, in the county and State of New York, have invented a new and Improved Drying-Machine, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical longitudinal section of my improved drying machine. Fig. 2 is a transverse section taken on line 2—2 in Fig. 1; and Fig. 3 is a longitudinal section of a modified form.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct a machine for drying various materials, but more particularly for spreading melted glue or gelatine out into sheets, and drying and delivering the same in commercial form.

My invention consists in an endless apron supported on drums and arranged to travel through an evaporating chamber supplied with a current of heated air, steam, or other drying medium; also in the combination with the endless apron, of a device for cleaving the dried sheet of glue or gelatine from the endless apron as it emerges from the machine, all as will be hereinafter more fully described.

In the frame A are journaled the shafts *a a'*, which carry drums *b b'*, over which extends the endless apron B, (preferably made of metal,) and one of the shafts *a a'* is driven by connection with some suitable motive power. Upon the frame A is mounted an evaporating chamber C, which incloses the portion of the endless apron B which extends from the top of the drum *b* to the top of the drum *b'*, and the end walls of the chamber C are provided with slots *e* through which the apron B passes. The top of the chamber is furnished with a hot air supply D at one end, and a discharge E for the escape of hot air and moisture absorbed from the glue carried by the apron B.

The receiving part of the endless apron B is the part which runs from the drum *b'* toward the chamber C, and above this part is arranged a nozzle F, which discharges the melted glue upon the endless apron B, where the glue spreads out into a thin layer, and upon the entrance of this layer of glue into the evaporating chamber C, the moisture is absorbed from the liquor by the hot air passing through the chamber, and to facilitate the evaporation of the moisture, a steam coil G is placed in the bottom of the chamber C, below the endless apron B.

The flow of liquid glue to the endless apron B is regulated according to the speed of the endless apron and according to the evaporating power of the air passing through the evaporating chamber C. The glue carried by the endless apron B is sufficiently evaporated by the time it reaches the delivery end of the chamber to permit of separating it from the endless apron.

While the sheet of glue after starting will generally separate itself by its own gravity from the endless apron, I provide a scraper *d*, which is arranged near or in contact with the endless apron and held in connection with some fixed support, for starting the sheet of glue from the endless apron B.

In the form shown in Fig. 3, the evaporating chamber C' is extended so as to inclose the drum *b* and the greater portion of the upper and lower parts of the endless apron B. In this case, the melted glue delivered on the endless apron spreads out in a thin layer and enters one end of the evaporating chamber, and is carried to the other end by the endless apron and returned in the chamber, thereby submitting the glue to the effects of the hot air throughout nearly the entire circuit of the apron. In this case, the air enters through the supply D', and a part of it emerges through a discharge E', while another portion passes out through the apron slots *e*. By this arrangement, any chips that might fall off from the dried glue carried by the lower portion of the endless apron are blown away from the partly dried glue toward the dried glue and thus prevented from sticking and impeding the process of evaporation.

In the case of the form shown in Fig. 1, where it is desired to deliver the finished product at the end of the machine farthest from the supply, the air supply D is moved forward to the position shown in dotted lines, the operation with this modification being the same as that described in connection with Fig. 3, that is to say, the blast of air through the air supply D is divided, one portion passing to-

ward the supply end of the endless apron, and the other passing in the opposite direction.

The machine may be made of different lengths to adapt it to drying films of different thickness. I have found by experiment, that while a film from .002 to .005 of an inch in thickness can be rapidly run through a machine having a length of ten or twenty feet, the drying of a thicker film requires a length of time much greater than would be proportionate to the increased thickness of the film, owing to the slow transmission of moisture from the interior of the film to the exterior. I have also found that too rapid evaporation from thick films of glue causes ebullition, which produces bubbles, giving the glue or other material an inferior appearance when dry, whereas in the case of thin films the evaporation proceeds without forming bubbles, leaving the glue perfectly uniform in appearance.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for drying thick, gelatinous substances such as glue, the combination of a horizontal endless apron supported on drums and arranged to travel through an evaporating chamber, an air supply pipe located between the ends of the evaporating chamber for directing a current of heated air down upon the substance being dried, a device for delivering the material to be dried to the endless apron, and a device for cleaving the dried sheet of material from the endless apron, the air current being divided by contact with the material being dried, the air supply pipe being arranged relative to the endless apron and the material carried thereon, so that the air current flowing in the direction of the motion of the material being dried will carry away any loose chips which might otherwise be carried into the undried material, substantially as specified.

2. In drying apparatus, an endless apron for carrying the material to be dried, and a divided air blast, one portion thereof being directed toward the supply end of the endless apron, the other portion being directed toward the delivery end of the endless apron, as specified.

PETER COOPER HEWITT.

Witnesses:
F. W. HANAFORD,
EDGAR TATE.