

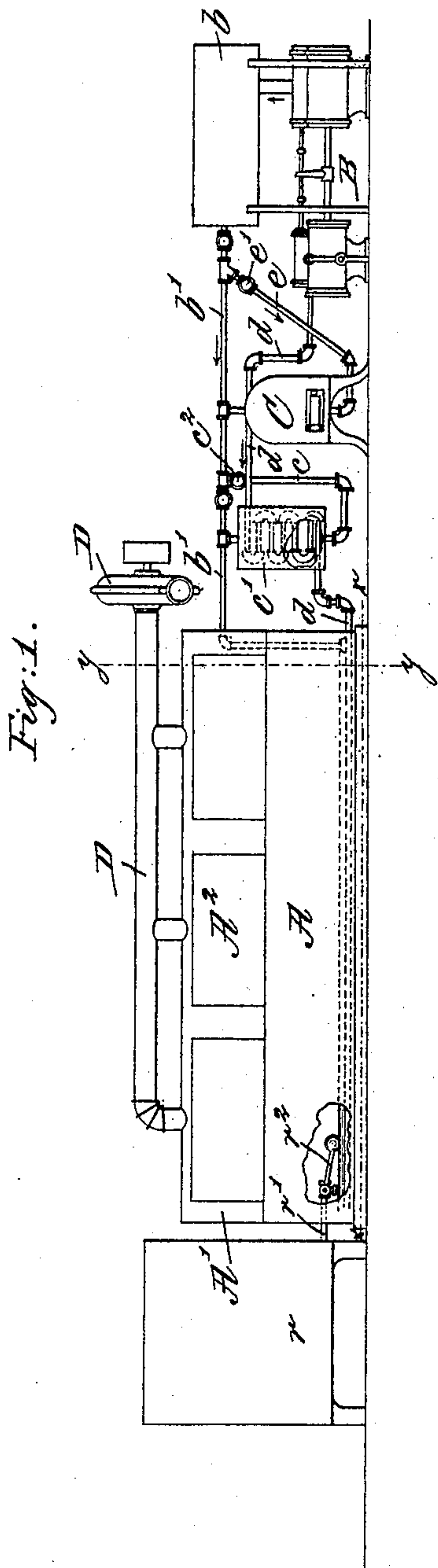
(No Model.)

A. J. WARD.

APPARATUS FOR EVAPORATING AND BLEACHING GLUE.

No. 363,026.

Patented May 17, 1887.



Witnesses.
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR EVAPORATING AND BLEACHING GLUE.

SPECIFICATION forming part of Letters Patent No. 363,026, dated May 17, 1887.

Application filed March 1, 1886. Serial No. 193,555. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. WARD, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Apparatus for Evaporating and Bleaching Glue, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to provide suitable means for evaporating and bleaching liquid material—such, for instance, as glue-liquor—in the manufacture of glue.

15 In accordance with this invention a large shallow vat or tank to receive the glue-liquor is employed, and suitable means are provided for forcing either hot or cold dry air or sulphurous oxide up through the liquid material, and steam-circulation pipes are provided 20 within the tank or vat for heating the material when desired. An exhaust fan or blower, connected by suitable pipes with the closed vat or chamber containing the material, is employed to exhaust the moist air from the said 25 chamber as the dry air is forced therein.

30 Figure 1 shows in elevation an apparatus constructed and arranged in accordance with this invention for evaporating and bleaching glue-liquor; Fig. 2, a section of the vat shown in Fig. 1, and taken on the dotted line *x x*, seen from below; and Fig. 3, a vertical section of the vat, taken on the dotted line *y y*, Fig. 1.

35 The box-like tank or vat A, of considerable dimensions, to contain glue-liquor or other material to be evaporated and bleached, is provided with the frame or roof A', having suitable doors or lids, A², through which the material is passed.

40 Upon or near the floor of the tank A is laid a spider, *a*, having arms *a'*, perforated upon the underside only, through which air is forced passing upward through the material.

45 A suitable pump, B, is employed to pump air into a closed chamber or reservoir, *b*, from which a pipe, *b'*, leads, said pipe *b'* being connected with the spider *a*, as shown in Fig. 1. Thus cold dry air is forced through the perforated arms *a'* of the spider to agitate the liquid, also tending to keep the same below boiling- 50 point and to drive off the steam.

When it is desired to force hot air through

the spider *a*, a branch pipe, *c*, leading from the main pipe *b'*, is opened by the valve *c'*, said branch pipe entering a chamber, *c'*, and returning from said chamber to the main pipe *b'*. 55 The said chamber *c'* is heated by a steam-pipe coiled therein, which may, if desired, be the exhaust-steam pipe *d* from the steam-pump B. The steam-pipe *d* upon leaving the chamber *c'* enters the vat or tank A and is coiled between and parallel with the perforated pipes 60 *a'* of the spider *a*, said pipe *d* terminating at *d'*. Thus hot or cold air may be forced through the material and the latter heated when necessary. 65

When it is desired to bleach the material, the branch pipe *e*, leading from the main air-pipe *b'*, is opened by the valve *e'*, said branch pipe *e* entering any suitable or well-known generator, C, in which sulphurous oxide is generated, and returning again to the main pipe *b'*. 70 When the valve *e'* is opened, it will be seen that sulphurous oxide may be forced through the pipe *b'* and spider *a* up through the material to bleach the same. As the dry air is forced up through the material and it has become saturated with moisture, an exhaust fan or blower, D, connected with the exhaust-pipe 75 D' leading from the top of the vapor-tank A, is employed to exhaust the air from the tank, 80 thereby maintaining a complete circulation.

The exhaust fan or blower D may be driven by any suitable power.

A supply-reservoir, *r*, is also provided for automatically feeding the tank A with glue or 85 other liquor to be evaporated, the pipe *r'* leading therefrom being controlled by a ball-valve, *r²*. The perforated pipes *a'* may be one or several, as circumstances may require, it only being necessary that the same be located beneath the surface of the liquid material and 90 perforated only upon the under side, so as to keep the pipes practically clear from deposition of material being treated.

The apparatus herein described, besides being employed for evaporating glue-liquor, may also be advantageously employed for evaporating dye-wood extracts, alkaline liquids, bark extracts, or, in fact, any other liquid material which it may be desired to evaporate. 95 100

I have described the employment of sulphurous oxide for bleaching the liquid. This

sulphurous oxide, which, it will be understood, is in the form of a vapor or gas, or, in common parlance, fumes, also acts to disinfect the liquid, and instead of the sulphurous oxide I
5 may employ fumes from other chemicals.

By the employment of the apparatus herein described either hot or cold dry air or sulphurous fumes may be forced through the material at the will of the operator, the material
10 being heated when necessary, thus enabling very rapid evaporation to be carried on and the material be bleached, if desired.

The method herein described forms the subject-matter of my concurrent application, Serial No. 195,554.
15

I claim—

1. In an apparatus for evaporating liquids, a tank or vat for containing the liquid material to be evaporated and having the pipes *a'*,
20 perforated upon the underside only and placed at the bottom of the tank, so as to be covered by the liquid material, combined with the pipe *b'* and air-chamber *b*, substantially as described.

2. In an apparatus for evaporating liquids,
25 a tank or vat for containing the liquid material and having the pipes *a'*, perforated upon the under side only and placed at the bottom of the tank, so as to be covered by the liquid material, combined with the pipe *b'*, branch

pipe *c*, generator *C*, and valve to open and
close said branch pipe, substantially as described. 30

3. In an apparatus for evaporating liquids, a tank or vat for containing the liquid material and having pipes *a'*, perforated upon the
under side only and placed at the bottom of
the tank, so as to be covered by the liquid material, combined with the pipe *b'*, branch pipe
c, chamber *c'*, and valve *c''*, for opening and
closing said branch pipe, substantially as de-
scribed. 35 40

4. In an apparatus for evaporating liquids, a tank or vat, *A*, for containing the liquid material to be evaporated, the circulation-pipes
d, placed at the lower end or bottom of the
tank, for heating the material, and the pipes
a', perforated at the underside only, also placed
in the tank so as to be covered by the liquid
material, combined with an exhaust-pipe and
fan or blower for exhausting the air from the
tank *A*, all as set forth. 45 50

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW J. WARD.

Witnesses:

G. W. GREGORY,
B. J. NOYES.