H. WOOD.
EVAPORATING-PANS.

No. 194,283. Patented Aug. 14, 1877.

FIG. 1

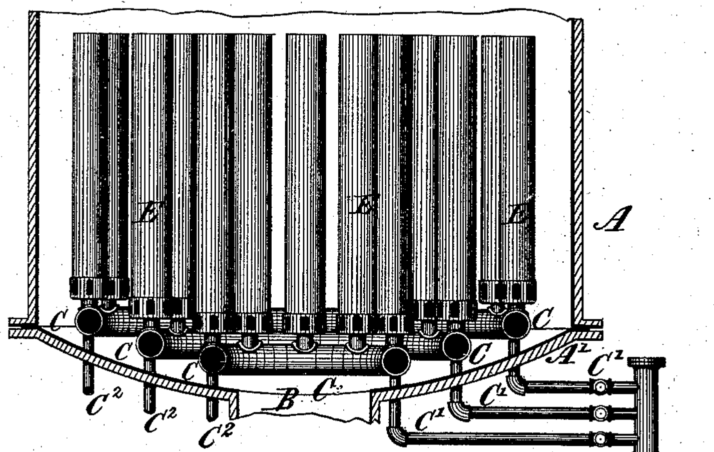


FIG. 2

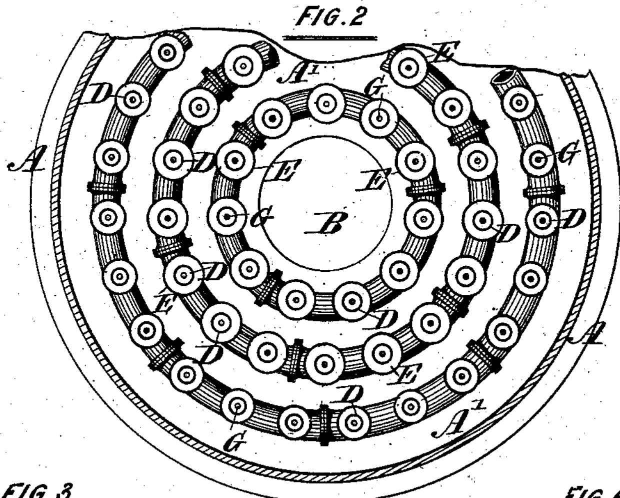


FIG. 3

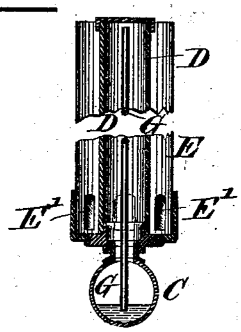
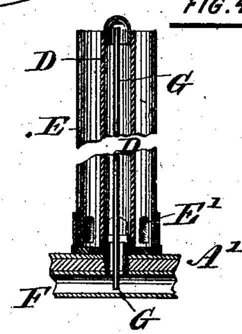


FIG. 4



Witnesses:

Henry Wood
Inventor.

Per Atty.

UNITED STATES PATENT OFFICE.

HENRY WOOD, OF MONTREAL, QUEBEC, CANADA.

IMPROVEMENT IN EVAPORATING-PANS.

Specification forming part of Letters Patent No. **194,283**, dated August 14, 1877; application filed June 5, 1877.

To all whom it may concern:

Be it known that I, HENRY WOOD, of the city of Montreal, in the district of Montreal, and Province of Quebec, Canada, have invented certain new and useful Improvements in Evaporating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to provide means whereby the processes of evaporation, concentration, inspissation, or crystallization may be, in the several manufactures in which they are required, performed more efficiently and expeditiously than by the apparatus at present in use for that purpose; a more perfect circulation, and, in consequence, more even condensation and thickening of the mass being obtained.

The apparatus which I have invented may be thus briefly described. Within and near the bottom of any suitable vessel are arranged one or more coils of steam-pipes, from which project upward stand-pipes with closed ends. Around each one of these stand-pipes is placed a jacket or shield, open at the top, and having apertures formed at its lower end. Within the stand-pipe is set a small air-pipe, open at both ends, to assist in the circulation.

For fuller comprehension of the invention, reference must be had to the annexed drawings, in which—

Figure 1 is a sectional elevation of an evaporating apparatus embodying my invention. Fig. 2 is a plan of the same; and Figs. 3 and 4 show in detail modifications of the construction of the stand-pipes.

Similar letters of reference indicate like parts.

A is the evaporating pan or vessel, of any desired size and shape, either closed or open, and constructed of any usual material, the bottom A′ being, however, preferably inclined toward the center or outlet B, which may be closed in any suitable manner. Within the vessel, and near the bottom, are placed coils C of steam-pipes, these being either separate, as shown in the drawings, in which case each coil will be connected separately with the steam-generator, as shown at C^1 C^1 C^1, and have separate outlets C^2 C^2 for condensed water, or be made in one or more scrolls. Upon this coil are set any number of stand-pipes, D, projecting upward to any height desired, and having stopped ends. Around each of these pipes is arranged a shield, E, open at the top, and having formed at its lower end one or more openings, E′, of any suitable size, the construction thus described being clearly shown in detail in Fig. 3.

Although this construction will be found a very suitable one in most cases, it may be adapted to varying circumstances, the lower end of the shield being left completely open, and the shield itself being carried by bridges or any other device, or the stand-pipes may be made of any section.

In some cases, as in Fig. 4, the coils C may be omitted, and the steam be furnished to the pipes D from a jacket, F, either under or around the vessel.

Within each of the pipes D, placed centrally and carried in any usual way, is a small tube, G, taken up within a short distance of the stopped ends of the pipe, and carried down into the coil C or jacket F, so as to be nearly in contact therewith. Down this tube G will pass the air contained in the tube before the ingress of steam, the pressure of the water of condensation not in any way affecting the action of this air-pipe.

The operation of the invention will be so easily understood that it is only needful to mention that the material to be treated can enter freely by the openings E′ into the space between the stand-pipes D and the shields E, thus affording circulation to the whole mass, keeping it all at one even temperature, and insuring simultaneous crystallization.

The action of the air-tube is to relieve the stand-pipe from the air originally contained in it, in such a way as to be absolutely certain in its operation.

Although my invention is primarily intended to be used in sugar-refining, its utility is by no means confined to this manufacture, as it may be employed with very great advantage in the processes of brewing and distilling, the manufacture of soap, salt, borax, copperas,

and tan-bark extract, and the refining of coal-oil, and in all like cases.

Having thus described my invention, what I claim is as follows:

1. In an evaporating pan or vessel, the combination of the steam-pipes with shields or jackets open at both ends, substantially as and for the purpose set forth.

2. In an evaporating-vessel, the combination, with the steam-pipes, of internal tubes G, open at top and bottom, substantially as herein set forth.

HENRY WOOD.

Witnesses:
B. L. HILLES,
H. H. GARGUS.