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VACUUM MOISTENING SYSTEM

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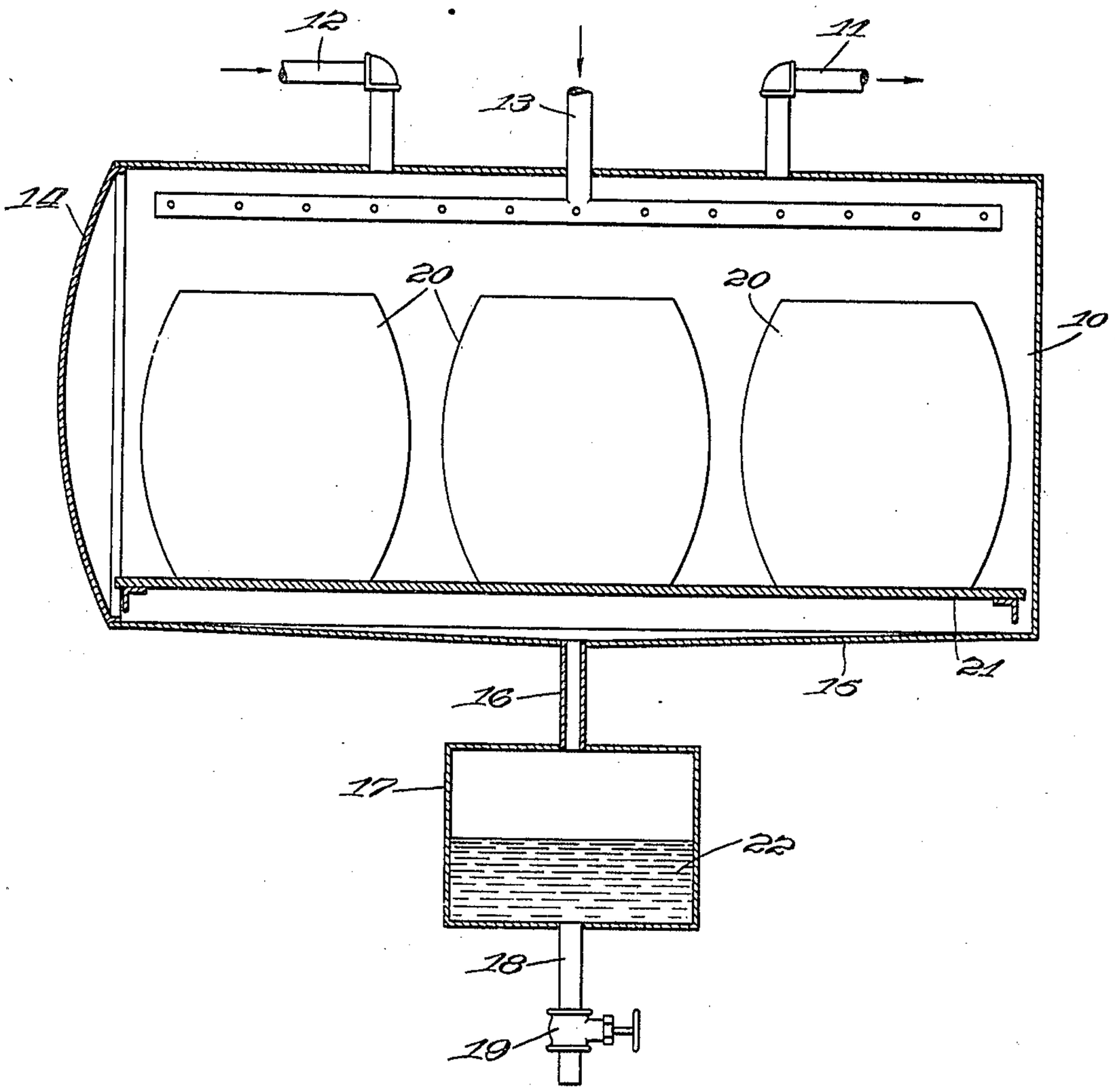

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VACUUM MOISTENING SYSTEM

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3 Claims. (Cl. 131—133)

This application relates to a vacuum moistening system and more particularly to a system for ordering or treating tobacco in which large amounts of liquid water are produced or supplied within the vacuum chamber.

In ordering tobacco it is customary to employ a vacuum of high degree, followed by the use of steam in large quantity, with or without liquid water; or to use hot liquid water alone as a source of both steam and water. In all of these cases water collects in large quantities within the chamber and, under normal conditions, will accumulate in the bottom of the tank. Moreover, there are frequently many cycles, in which steam or liquid water, or both, may be introduced during all of which the pressure in the tank is kept well below atmospheric. This means that removing the water in the bottom of the tank between cycles is somewhat of a problem. It may of course be pumped out but, if so, must be pumped against the head of the vacuum and this is somewhat of a problem. An ordinary drain will not suffice since water will not drain out against the air pressure on the outside.

Moreover, it does not help to make a trap at the bottom of the tank because that leaves available a large supply of water which will have to be evaporated on the next evacuation cycle; and, therefore, places an unreasonably great strain upon the pumps.

In accordance with the present invention, the difficulty is overcome in a very inexpensive way by providing beneath the tank a small drain tank, under tank pressure, connected to the tank, however, by a restricted orifice.

The invention is illustrated diagrammatically in the drawing in which 10 represents an airtight vacuum chamber; 11 represents an evacuating line leading to suitable evacuating equipment which is capable of lowering the pressure in the tank well below the vapor pressure of water at atmospheric temperatures; 12 represents a line for supplying steam to the tank; and 13 represents a line for supplying a spray of hot water to the tank. The tank is provided with a door 14 and the bottom 15 is sloped toward a drain opening 16 which leads through a pipe not substantially greater than two inches inside diameter to a closed drain tank or trap 17. This tank is provided with an outlet line 18 in which is placed the valve 19. Three hogsheads of tobacco 20 are shown resting on a platform 21 within the tank.

When the tank is operated and any water collects in the bottom thereof, the water will run through the restricted pipe 16 to the drain tank 17, and a body 22 of water which has so entered the tank is indicated in the drawing. Inasmuch as the drain tank is connected directly to the vacuum chamber, the pressure in the two is substantially the same and there is no impediment to the flow of water. On the other hand, when the vacuum is increased within the treating chamber, no substantial amount of vaporization occurs from the water in the drain tank, although theoretically there would appear no reason why unrestricted evaporation should not occur.

The drain tank is of sufficient capacity to collect all of the water which will collect during any series of cycles in a moistening operation. The tank may then be opened to the atmosphere after atmospheric pressure has been restored in the treating chamber.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom.

What I claim as new, and desire to secure by Letters Patent, is:

1. A vacuum moistening device comprising an airtight chamber adapted to contain material to be treated, a door on said chamber, means for evacuating the chamber to a low absolute pressure, means for supplying liquid water within the chamber, a closed drain tank outside the chamber, and a permanently open pipe of small cross-section connecting the drain tank and the chamber, said drain pipe being not substantially greater than two inches inside diameter when said chamber is adapted to hold material equivalent in volume to three hogsheads of tobacco.

2. A vacuum moistening device comprising an airtight chamber adapted to contain material to be treated, a door on said chamber, means for evacuating the chamber to a low absolute pressure, means for supplying liquid water within the chamber, a closed drain tank outside the chamber, a permanently open pipe of small cross-section connecting the drain tank and the chamber, and means for supplying heat to the chamber, said drain pipe being not substantially greater than two inches inside diameter when said chamber is adapted to hold material equivalent in volume to three hogsheads of tobacco.

3. A vacuum moistening device comprising an airtight chamber adapted to contain material to be treated, a door on said chamber, means for evacuating the chamber to a low absolute pressure, means for supplying liquid water within the chamber, a closed drain tank outside the chamber, a permanently open pipe of small cross-section connecting the drain tank and the chamber, and means for supplying heat to the chamber, said drain pipe being not substantially greater than two inches inside diameter and said chamber being adapted to hold material equivalent in volume to approximately three hogsheads of tobacco.

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