May 12, 1931. H. M. GRIFFOUL 1,805,173

DEHYDRATOR

Filed April 9, 1929

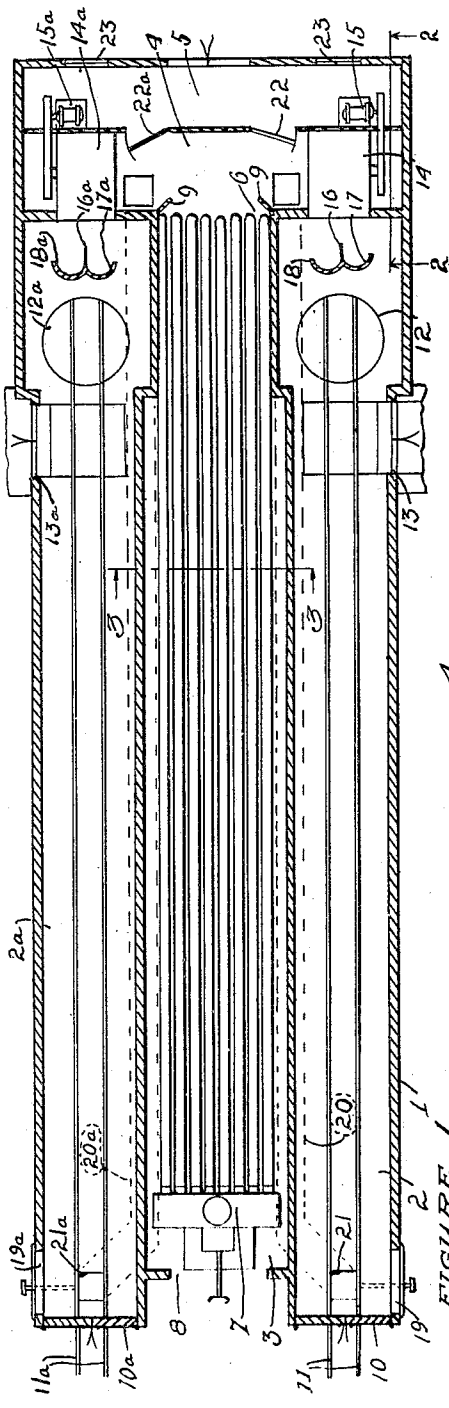


FIGURE 1

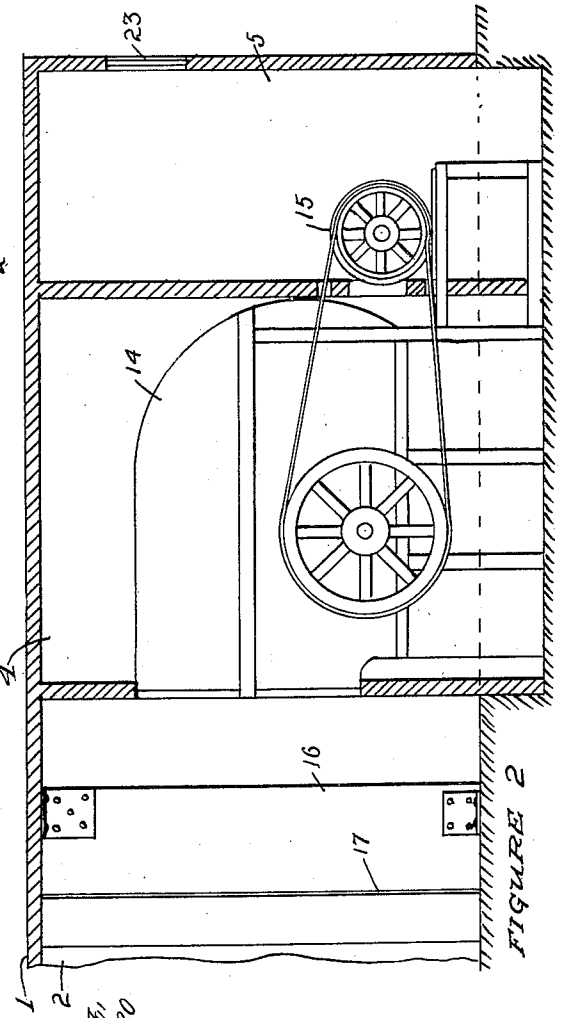


FIGURE 2



FIGURE 3

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DEHYDRATOR

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This invention relates particularly to means for dehydrating fruits, nuts, vegetables and similar products.

One object of the invention is to provide a dehydrator that will be capable of accommodating a large quantity of material at one time and that will effectually subject all of the material to the dehydrating process.

Another object is to provide a dehydrator in which different materials requiring different treatment as to air temperature, air velocity and humidity, may be subjected to the dehydrating process at the same time.

Still another object of the invention is to provide simple and efficient means for securing the desired circulation of air through the dehydrator, and means for controlling the circulation of air through the dehydrator and for introducing air into the dehydrator and discharging the same therefrom.

In the drawings:

Figure 1 is a sectional view of a dehydrator embodying my invention, taken on a horizontal plane.

Figure 2 is an enlarged vertical section through a part of the dehydrator on line 2—2 of Figure 1.

Figure 3 is a cross section below the floor level on line 3—3 of Figure 1.

Referring now more particularly to the drawings, I show at 1 an enclosing structure divided longitudinally into three parallel tunnels, the two outer tunnels being the drying tunnels and the central tunnel being the air heating tunnel, and indicated by the numerals 2, 2a and 3 respectively. In one end of the structure is formed a transverse chamber 4, this chamber communicating with all three tunnels, and adjoining the chamber 4 is another chamber 5 also arranged transversely of the structure and adapted to communicate with chamber 4 and with the atmosphere.

Tunnel 3 has open communication with chamber 4 as at 6 and has a suitable air heating apparatus as 7 mounted therein. The end of the tunnel remote from the chamber 4 communicates with the atmosphere as at 8. A pair of baffle plates are mounted on the opposite side edges of the opening 6 as at 9.

In each dehydrating tunnel as 2 is a door controlled end opening 10 through which the fruit may be introduced into the tunnel on suitable trucks, not shown, running on track 11. The track terminates a distance from the opposite end of the tunnel and on a turntable as 12 by means of which a load of fruit may be turned end for end without exposing it to the outer air whereby both ends of the load of fruit may be presented to the incoming drying air to effect equal drying of the fruit. A door controlled opening 13 is formed in the side of the structure adjacent the table 12 so that trays may be returned a distance along the track after being turned and then discharged laterally from the building when dried.

At 14 is shown a blower fan mounted in the chamber 4 to draw air therefrom and to discharge into the tunnel 2, operating means for the fan being shown at 15.

Since the air discharged by the fan enters the tunnel 2 in a stream at a fixed point midway between the floor and ceiling, some means is desired to set up a turbulence in the entering air and cause it to mingle with the air in the tunnel in such a manner as to discharge upon the fruit with an equalized temperature at all points where it enters the mass of fruit. To accomplish this I erect a baffle element in tunnel 2 directly in front of the fan 14, the central portion of the element consisting of a vertically arranged plate as 16 extending from floor to ceiling and presenting its edge to the fan and provided with oppositely directed laterally extending wing like parts as indicated at 17 and 18. This device effectually turns the air back upon itself and the entering air and the air in the tunnel are perfectly homogenized.

The air is discharged from tunnel 2 through any suitable opening as 19 into the atmosphere, or any portion of it may be returned to chamber 4 through a bypass 20 controlled by a gate 21.

An inwardly swinging door is inserted at 22 between the chambers 5 and 6 so that the air entering the blower fan may be modified as desired by opening the door to any desired degree. The chamber 5 may com-

municate with the atmosphere to any desired degree by means of windows 23.

When the plant is in operation the air in the tunnel 3 is heated to any suitable degree and drawn into the chamber 4 by the fans 14—14*a*. The fans then receive the air and discharge it into the tunnels 2—2*a* and against the baffles 16, 17, 18 and 16*a*, 17*a*, 18*a* as described, from which point it moves forward to pass around the fruit to be dried, and ordinarily passing out of the tunnel through passages 19—19*a*.

Not only do different materials require different air temperatures for proper drying, but different lots of material of the same kind sometimes require different treatment. By means of the structure and mode of operation described the air passing from the chamber 4 to either fan may be modified as desired by manipulation of the adjacent door 22—22*a*. For instance with door 22 closed the air will be discharged into tunnel 2 dry and at a high temperature, while with door 22*a* opened a distance the air discharged into tunnel 2*a* will be at a lower temperature and its character modified by the addition of some moisture if so desired. By this means fruit like prunes may be dried in one tunnel and nuts may be dried in the other tunnel at the same time.

If at any time during the drying process it is desired to use the same drying air again, in part, as a means of modifying the air discharged into the chamber or tunnel 2 or 2*a*, then either bypass 20 or 20*a*, or both, may be opened.

It is to be understood, of course, that while I have herein shown and described but one specific embodiment of the invention, changes in form, construction, and method of assembly and operation may be made within the scope of the appended claims.

I claim:

1. A dehydrator comprising a housing having a plurality of parallel tunnels formed therein and closed against communication with each other throughout their length, a chamber within the housing communicating with all of the tunnels at one end, air heating means disposed in one of the tunnels, and means disposed in the chamber between the last named tunnel and each of the other tunnels to forcibly move the air from the heating tunnel to the others, and additional means within the chamber operable to regulate the flow of air from the heating means and from the atmosphere without the housing.

2. A dehydrator comprising an air heating tunnel, a plurality of dehydrating tunnels, a chamber communicating with all of the tunnels, air circulating means within the chamber, and additional means within the chamber operable to regulate the flow of air from the heating tunnel and from the outside atmosphere.

3. A dehydrator comprising an air heating tunnel, a plurality of dehydrating tunnels, a chamber communicating with all the tunnels, air circulating means within the chamber, valve means within each of the dehydrating tunnels at the entrance thereto, cooperating valve means in the chamber, a conduit beneath each of the tunnels cooperating with the valve means to recirculate the flow of heated air through the dehydrating tunnels.

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