

March 23 , 1926.

1,577,709

C. E. GLESSNER

VACUUM DEHYDRATOR

Filed July 21, 1923

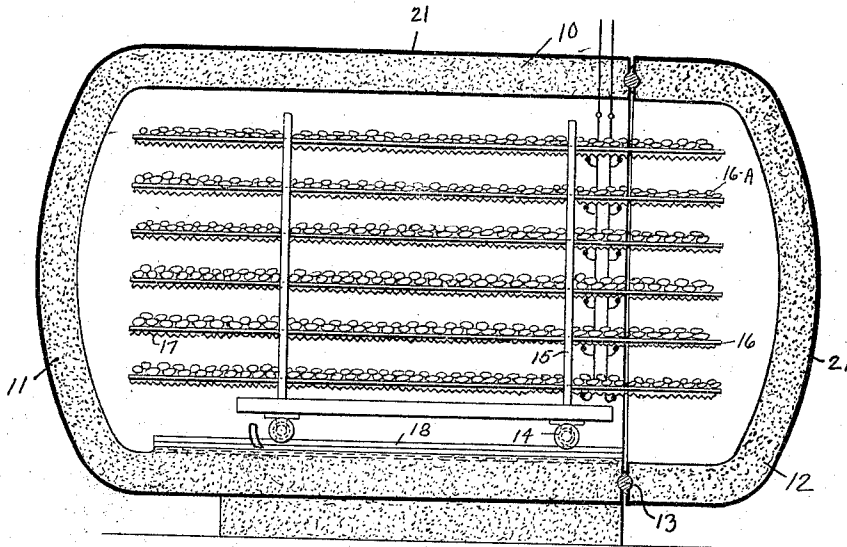


FIG. 1

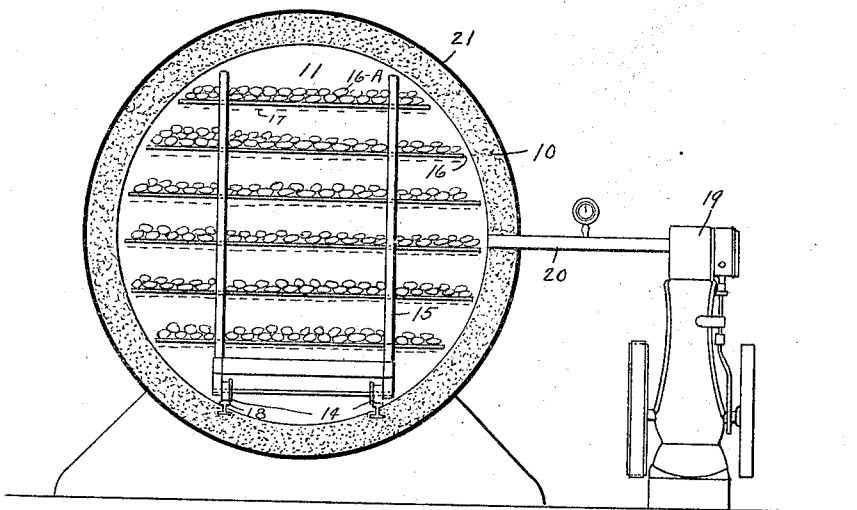


FIG. 2.

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Patented Mar. 23, 1926.

1,577,709

UNITED STATES PATENT OFFICE.

CHARLES E. GLESSNER, OF PORTLAND, OREGON.

VACUUM DEHYDRATOR.

Application filed July 21, 1923. Serial No. 652,919.

To all whom it may concern:

Be it hereby known that I, CHARLES E. GLESSNER, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Vacuum Dehydrator, of which the following is a specification.

This invention relates more particularly to the art of dehydrating food stuffs and other materials.

The object of my invention is the production of an apparatus which will make it possible to dehydrate food in reduced pressures on a commercial scale and on an economical basis.

I accomplish these results in the manner set forth in the following specification and illustrated in the accompanying drawing, in which:

Figure 1 is a vertical section through the apparatus of which Figure 2 is a transverse section, including the vacuum pump.

It is commonly understood that the dehydration of food in a partial vacuum has long been practiced in the laboratory, and in some cases with the aid of extra heavy containers, usually of cast iron, whose great bulk for a relatively small capacity made their use commercially out of the question.

It is to provide a large container especially adapted for use in connection with the dehydration of food stuffs, lumber, etc. that I have directed my effort.

Similar numbers of reference refer to the same parts throughout the views.

Referring in detail to the drawing, I have constructed my device in the form of a cylindrical container 10 constructed of concrete and having a curved end 11 and a curved closure 12. A suitable gasket 13 of sufficient flexibility to insure a perfect seal around the entire closure 12 is also required. Inside of the container 10 I have provided a truck for carrying the articles to be dried. The truck consists of the wheels 14, uprights 15 and horizontal shelves 16, for food stuffs 16^A.

Electric heating elements 17 are provided to insure better control of the heat and to facilitate the making and breaking of heating connections as the truck is moved to and from the container. Steam, or preferably hot water, may be employed, although perhaps these will be found less convenient than the electric heating method.

Tracks 18 support the wheels 14 and may

be connected with outside trackage in any convenient manner. I have employed the usual vacuum pump 19 whose suction pipe 20 opens into the container 10 in the most convenient location.

Turning now to the concrete wall of the container 10, the end 11 and the closure 12. I have covered the entire exteriors of these parts with a plastic or viscous air-proof material 21 such as asphalt, which will prevent air from passing through the container wall and render it difficult to maintain a reduced pressure. The asphalt will also close any cracks which may form later on in the concrete. In some cases the concrete itself may be made air-tight by special treatment of its exterior, or by the tamping operation itself. In such cases the additional outside coating may be dispensed with.

As previously stated, my object is the provision of a cheap container of large capacity which will be capable of excluding the air. Attention is directed to my United States Patents Numbers 1,421,685, 1,458,403 and 1,421,454, in which sheet metal is used as an air-excluding means. However, in its present form the apparatus is cheapened greatly without detracting from its efficiency.

Since the question of whether a vacuum dehydrator can be successfully used for the commercial drying of food stuffs must be preceded by the question of whether it can be used at all, it is evident that the first cost of a plant is an important factor in determining whether it will be used at all, as well as whether it can be used at a profit. Since one of the values of vacuum drying lies in the elimination of water from transportation costs, it is evident that the dehydrating apparatus should be built in the locality in which they are used and as cheaply as possible.

As previously stated, dehydrator containers of metal are well known in the art, in fact all of the containers discovered thus far, with the exception of those described in the above-mentioned patents, are made of metal. A metal container for vacuum drying which is now being manufactured by a well known American firm is five feet square and twelve feet long and weighs fifty thousand pounds. This is about the largest metal container for vacuum drying now being made and it is far too small for drying materials whose bulk is relatively great compared with its market value. To

increase the size of a metal container one must increase the thickness of its walls out of proportion with the additional capacity gained, which brings into the question the
5 difficulties of casting thick walls and the dangers of cracking due to internal stresses in the casting itself. It will therefore be apparent why, in the past, it has been unprofitable to attempt vacuum drying of food
10 stuffs in metal containers.

Owing to the fact that it is difficult to conduct heat across a partial vacuum, it is evident that little heat will be lost through the walls of the container by conductivity

or radiation, and therefore a minimum 15 amount of heat from the heating elements will be required to produce the necessary evaporation from the food.

What I claim as new is:—

The combination of a vacuum pump with 20 a concrete container of sufficient strength and density to withstand atmospheric pressure, and an electrically heated truck provided with shelves adapted to transport food to and from said container and to hold 25 said food during the drying operation.

CHARLES E. GLESSNER.