

Oct. 20, 1942.

C. O. SMITH

2,299,658

PRUNE PROCESSER

Filed April 27, 1940

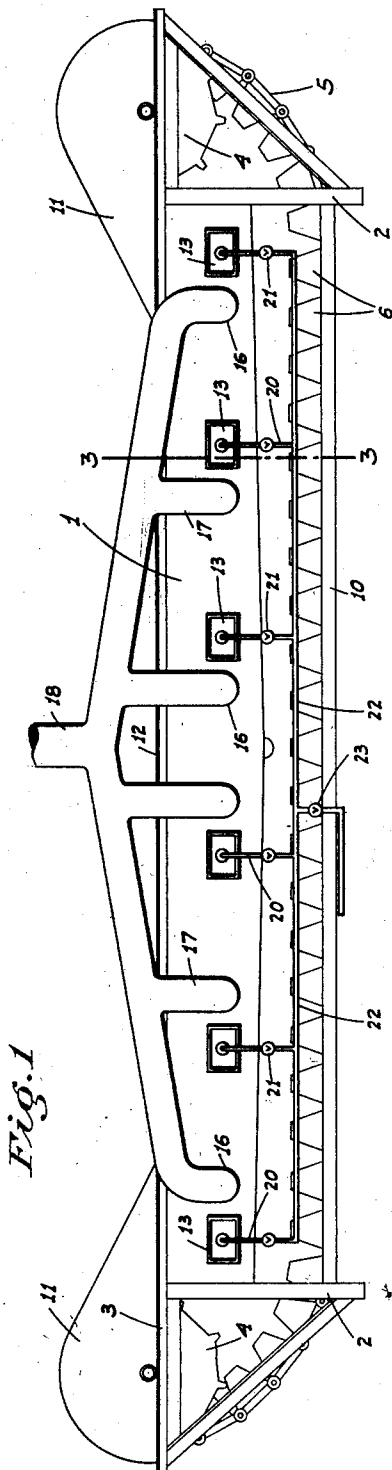


Fig. 1

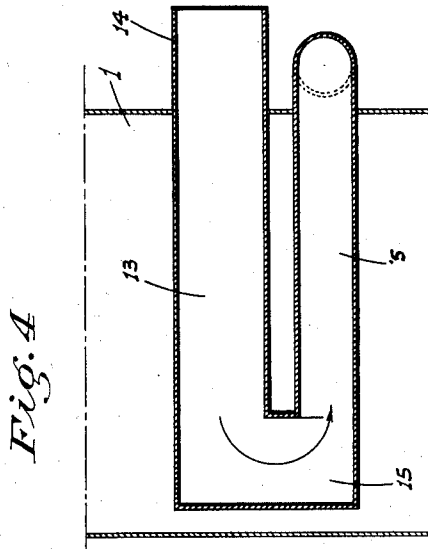


Fig. 4

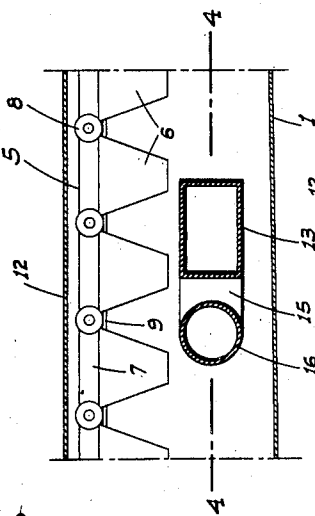


Fig. 2

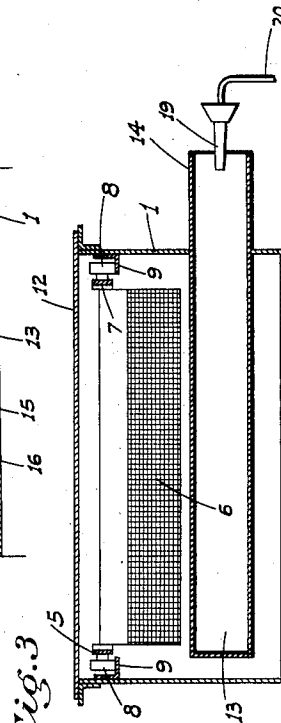


Fig. 3

INVENTOR
Chas. O. Smith
BY *Walter W. W. W.*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,299,658

PRUNE PROCESSOR

Charles O. Smith, San Jose, Calif.

Application April 27, 1940, Serial No. 332,023

3 Claims. (Cl. 99-239)

This invention relates in general to an improvement in apparatus for processing dried prunes or the like, and in particular the invention is directed to an improvement in that type of apparatus employed to subject the dried prunes to the usual hot water treatment or bath prior to packaging for shipment.

At the present time the prune processing apparatus, as above, includes a vat or tank having a quantity of water therein and through which the dried prunes pass on a conveyor; the water in the tank being maintained at boiling point by steam coils disposed in the bottom of the tank, such coils being supplied with steam from a separate boiler. The use of the separate boiler is objectionable due to its relatively high cost of initial installation, as well as inefficiency of operation caused by heat loss between the boiler and processing apparatus, difficulty of maintaining a constant temperature of the water in the tank of the processing apparatus, and labor cost to operate the system.

It is therefore the principal object of this invention to embody an efficient water heating system in unitary association with the processing apparatus; such water heating system being arranged to quickly raise the temperature of the water to the desired degree and thereafter effectively maintain such temperature constant with a minimum of attention.

Another object of the invention is to provide in prune processing apparatus of the type described, a water heating system which employs gas burners in combination with a novel form of firing chambers; such chambers being designed to effect proper combustion of the fuel and a maximum of heat transfer to the water.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is an elevation of prune processing apparatus embodying the invention.

Figure 2 is a fragmentary longitudinal, sectional elevation illustrating the position of one firing chamber relative to the upper run of the conveyor and its baskets.

Figure 3 is a cross section on line 3-3 of Fig. 1.

Figure 4 is a sectional plan on line 4-4 of Fig. 2.

Referring now more particularly to the characters of reference on the drawing, the processing apparatus comprises an elongated and relatively shallow tank 1, such tank being of substantial width and suitably supported by a framework including legs 2. Frame extensions 3 at opposite ends of the tank 1 support relatively large sprockets 4 which are journaled thereon. An endless conveyor, indicated generally at 5, is carried by sprockets 4 which are suitably driven, the upper run of said conveyor passing lengthwise through the tank, while the lower run extends lengthwise beneath the tank.

This endless conveyor, as is usual, comprises elongated, open topped baskets 6 mounted at their ends on corresponding links of transversely spaced link belts 7 having laterally outwardly disposed rollers 8 which on the upper run ride on horizontal tracks 9 in the tank and on the lower run ride on horizontal tracks 10, which extend between the legs 2.

The baskets 6 are perforate on the sides and bottom only. As will be obvious, these baskets are upright on the upper run and depend into the water in the tank, while said baskets are inverted on the lower run; the prunes being fed by suitable means (not shown) into the baskets at one end of said upper run and after processing automatically are discharged from the baskets at the same invert at the other end of said run. The sprockets are housed as at 11, and a cover plate 12 is mounted on the tank.

The above described portion of the processing apparatus is now in general use and I make no claim thereto; the improved heating system for such apparatus, and which system comprises this invention, is constructed as follows:

A plurality of firing chambers 13 are disposed in longitudinally spaced relation and extend transversely and horizontally across the tank intermediate the bottom thereof and the plane of the bottom of the baskets 6 in the upper run of the conveyor; each such firing chamber being preferably rectangular in cross section and of greater width than height so as to give adequate heat exchange area in the vertical space available between the bottom of the tank and the baskets above, and also to provide ample space within the chambers for proper combustion. At their outer ends these firing chambers project through the side of the tank and are open to the atmosphere, while at their inner ends each chamber is formed with a longitudinally and horizon-

tally extending heater 15 of like cross sectional configuration. Horizontal return flues 16 of less cross sectional area than the firing chambers parallel the same and at the inner ends thereof communicate with the corresponding headers 15; the outer end of each flue extending through the adjacent side of the tank. The outer ends of these flues 16 connect with the separate legs 17 of an exhaust manifold which includes a stack 18.

Jets or nozzles 19, designed to throw a straight flame, are mounted to project horizontally into the open ends of firing chambers 13; each jet having a separate fuel supply pipe 20 valved as at 21. Pipes 20 all connect with a common supply pipe 22 which has a master valve 23 therein ahead of said pipes 20.

By virtue of the plurality of firing chamber units mounted in the tank as described, the water in the tank, and at all points in the length thereof, can be readily raised to the boiling point and thereafter effectively maintained at such temperature; all being accomplished by the ignition of gas burners 19 and thereafter the simple manipulation of valves 21. As there is a minimum of heat loss, the water heating system is exceedingly effective and inexpensive to operate, especially when compared with the steam coil type of system.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I

claim as new and useful and desire to secure by Letters Patent is:

1. In a fruit processor which includes an elongated water tank, and an endless conveyor having one run thereof in said tank above the bottom of the latter; said conveyor having longitudinally spaced, perforate baskets of substantial length depending therefrom transversely of the tank, a plurality of horizontally disposed water heating firing chamber and return flue units extending into the tank transversely from one side thereof and all disposed in a common horizontal plane, and a burner for each unit, said units including relatively wide rectangular flat topped firing chambers disposed between the bottom of said baskets and the bottom of the tank, the length of said units being sufficient to underly the path of said baskets from side to side thereof.

2. In a fruit processor which includes an elongated water tank and a row of fruit containing baskets movable lengthwise in the tank through the water therein; means to heat the water comprising a plurality of separate heating units spaced lengthwise of the tank and each including a firing chamber extending transversely in the tank below water level and open at one end exteriorally of one side of the tank, and an individually controlled burner for each chamber discharging into the open end thereof.

3. In a fruit processor which includes an elongated water tank and a row of fruit containing baskets movable lengthwise in the tank through the water therein; means to heat the water comprising a plurality of separate heating units spaced lengthwise of the tank and extending transversely therein below water level and individually controllable means to supply heat to the separate units.

CHARLES O. SMITH.