

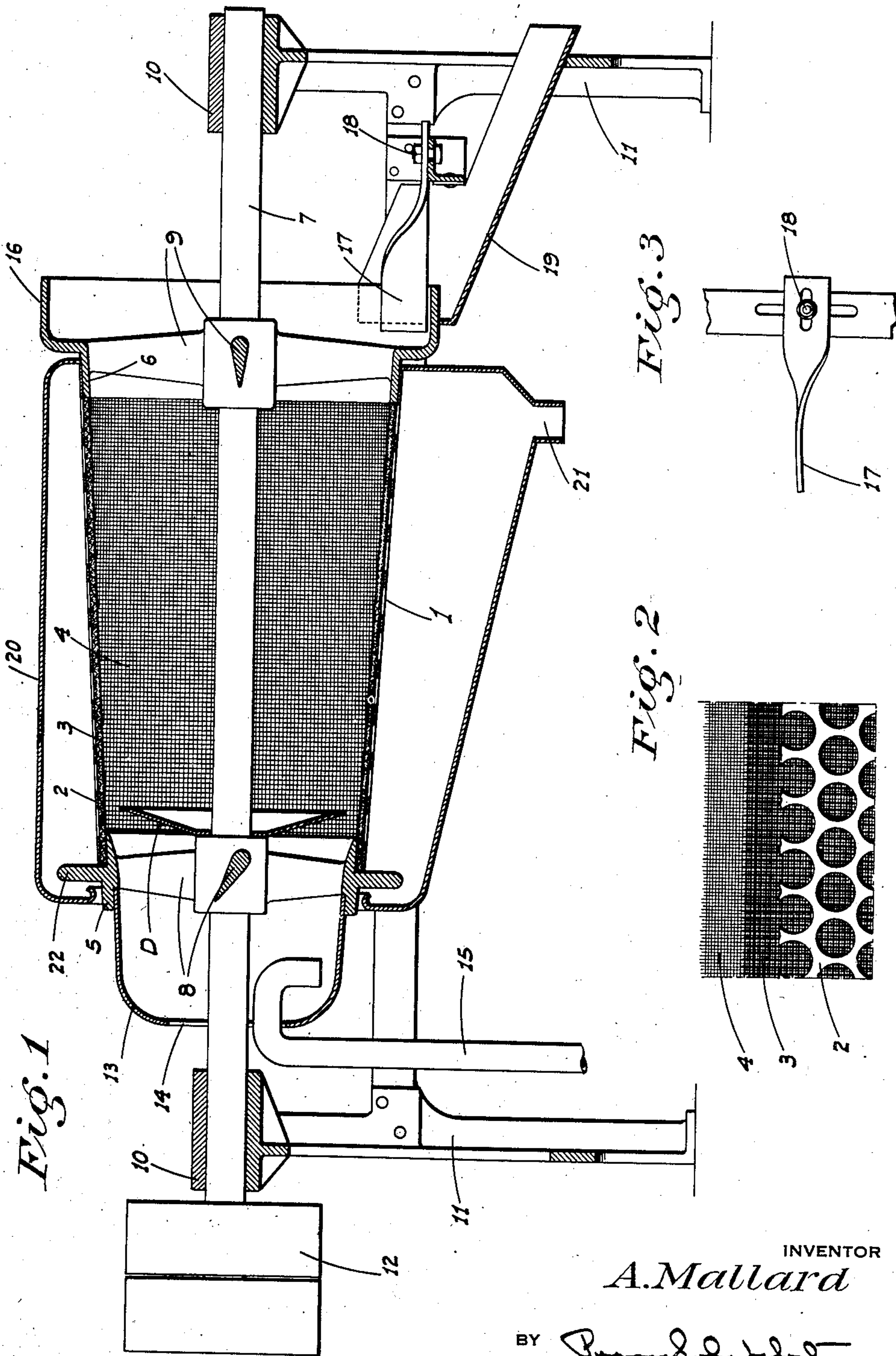
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APPARATUS FOR PREPARING CONCENTRATED TOMATO PRODUCTS

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## APPARATUS FOR PREPARING CONCENTRATED TOMATO PRODUCTS

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2 Claims. (Cl. 210—70)

This invention relates generally to a concentrator and in particular relates to a concentrator for preparing concentrated tomato products; the present application being divisional in part from my co-pending application for United States Letters Patent on Method of preparing concentrated tomato products, Serial No. 79,029, filed May 11, 1936.

The principle object of the present invention is to provide an apparatus for effectively carrying out the method disclosed in the above entitled co-pending application.

An additional object of this invention is to provide a concentrating apparatus which is so constructed that the product may pass continuously through the device without interruption.

It is also my object to provide a novel form of concentrating screen which is so arranged as to effect a separation of the solids from the liquids without material loss of solids.

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 a sectional elevation of the device.

Figure 2 is a fragmentary plan view of the concentrating screen assembly.

Figure 3 is a fragmentary plan view of the scraper blade and mounting therefor.

Referring now more particularly to the characters of reference on the drawing, the device comprises a foraminous drum 1, increasing in diameter from end to end and constructed of an outer supporting shell 2 provided with a plurality of closely spaced but relatively large perforations. The inner surface of shell 2 is faced with screen 3, the mesh of which is relatively small. Another screen 4 is disposed inwardly of the screen 3 but in face to face contact therewith, the screen 4 having exceedingly fine mesh, as shown.

The shell 2 is supported at each end by means of spiders 5 and 6 secured to a horizontal shaft 7. The spiders are formed with stream-lined spokes 8 and 9 respectively; the spokes 8 of spider 5 being set at an acute angle to the axis of shaft 7, for the purpose hereinafter described, while spokes 9 of spider 6 are parallel to the axis of the shaft.

The shaft 7 is journaled at each end in bearings 10 which are supported by means of a frame 11 of suitable construction. The shaft is provided at one end with a drive pulley 12 adapted to be driven in any preferred manner.

A cylindrical hood 13 is secured to spider 5 and extends outwardly thereof about shaft 7; the outer end of this hood being formed with a circular opening 14 about the shaft through which a supply pipe 15 extends into the hood and which pipe is arranged to discharge into the lower portion of such hood.

A baffle disc D is fixed on shaft 7 adjacent the hub of spider 5; said disc being convex in a direction toward the hood and is adapted to deflect material, as it leaves the hood, onto the inner screen surface drum 1.

The spider 6, at the other or open end of the drum 1, is formed with and supports a non-foraminous material receiving band 16 of somewhat greater diameter than the adjacent end of said drum. This band 16 is so arranged that the solids passing along inner screen 4 will pass onto the band without interruption. A scraper blade 17, disposed substantially radial of the drum, is mounted on one of the frame cross members and cooperates with the band 16; the blade mounting being adjustable, as shown at 18 in Fig. 3, whereby the blade may be set to any desired position. A chute 19 is mounted so as to be disposed to the sides of and below the scraper blade for the purpose hereinafter described.

The entire foraminous drum is surrounded by a case 20 having a liquid discharge opening 21 depending from its lower side. To prevent escape of any liquid from the case, other than through opening 21, the spider 5 is provided with a circumferential, radially extending flange 22 which extends into the case close to the adjacent end thereof. If desired, the spider 6 may be provided with a similar flange.

*Operation*

In use, the device functions as follows to produce concentrated tomato products and especially that product known as concentrated tomato paste.

Tomato juice, from which the seeds, stems, cores, and skins have been removed by means of a machine known as a "cyclone", is fed from a reservoir (not shown) into supply pipe 15 and discharged into the lower portion of hood 13. The drum and connected hood are revolved rapidly and as the juice passes from the hood, such



juice is rapidly forced in the direction of baffle disc D by means of spokes 8 which are set at such acute angle to effect a propelling action. As the juice strikes baffle disc D, it is deflected

5 onto screen 4 and at once begins to travel toward the other end of the drum due to the fact that the drum increases materially in diameter from the intake end to the discharge end.

As the drum is rotating at a relatively high speed, the liquids in the tomato juice are carried through the fine mesh screen 4, through screen 3 and perforated shell 2 and escape into the case 20. From the case, these liquids pass through opening 21 and are carried away in any

15 suitable manner.

With the withdrawal of the liquids from the tomato juice, the remaining solids are fed along the inner screen toward the enlarged end of the drum and are finally received as a concentrated product on the band 16.

20 As the product flows onto band 16 it is scraped off, with rotation of the band, by means of blade 17 and discharged into chute 19; the product passing from the chute into the packing machinery.

25 Of course some of the liquids will remain with the solids but the proportion of remaining liquid may be regulated by using inner screens of different mesh. Too, the extent of concentration may be controlled by varying the pitch of the sides of the drum as conditions may require. The ability to vary or control the concentration is important in that some products, such as tomato paste, will require high concentration while

35 other products, such as catsup, require that more liquids remain with the solids.

The reason for the particular construction of the drum 1 is that the inner screen, which has exceedingly fine mesh and is therefore somewhat fragile must be well supported to prevent damage thereto during operation of the device. The intermediate screen 3 prevents bulging of the fine screen through the perforations of shell 2 without interfering with the escape of the liquids

45 from the drum and into case 20.

It is to be understood that while I have specifically designated tomato juice as being the product treated, the apparatus may be used in connection with such other fruit or vegetable products

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which it may be desired to concentrate and for which the apparatus is suitable.

Due to the fact that my device will effectively remove solid matter from liquids, it may be employed as a continuous filter if desired. In such event, the operation is the same as above described, except that the waste material discharges onto band 16 for removal while the clarified liquid passes into case 20 and out of outlet 21. In other words, when used as a filter, the outlets for waste and finished product are reversed.

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.

15 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. A centrifugal concentrating device comprising a substantially horizontal rotary shaft, a drum on the shaft including spiders mounted on the shaft in spaced relation, one spider including an annular band and the other spider including a relatively annular band, a circular fine mesh screen extending between the spiders, said screen overlapping the first named annular band but terminating at the second named band so as to be flush with the inner face thereof and a formainous shell about the screen and overlapping both bands; there being means to feed the material to be concentrated into the drum at the small end thereof.

2. A centrifugal concentrator comprising a substantially horizontal shaft, a rotary foraminous drum mounted on the shaft, means to feed the material to be concentrated into the drum at one end thereof the drum at the other end terminating in a smooth non-foraminous band and another band of greater diameter concentric and rigid with said first named band and onto which the concentrated matter drops after flowing over said first band; there being means to scrape the material off the larger band.

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