March 31, 1925. 1,531,876

J. REESOR ET AL

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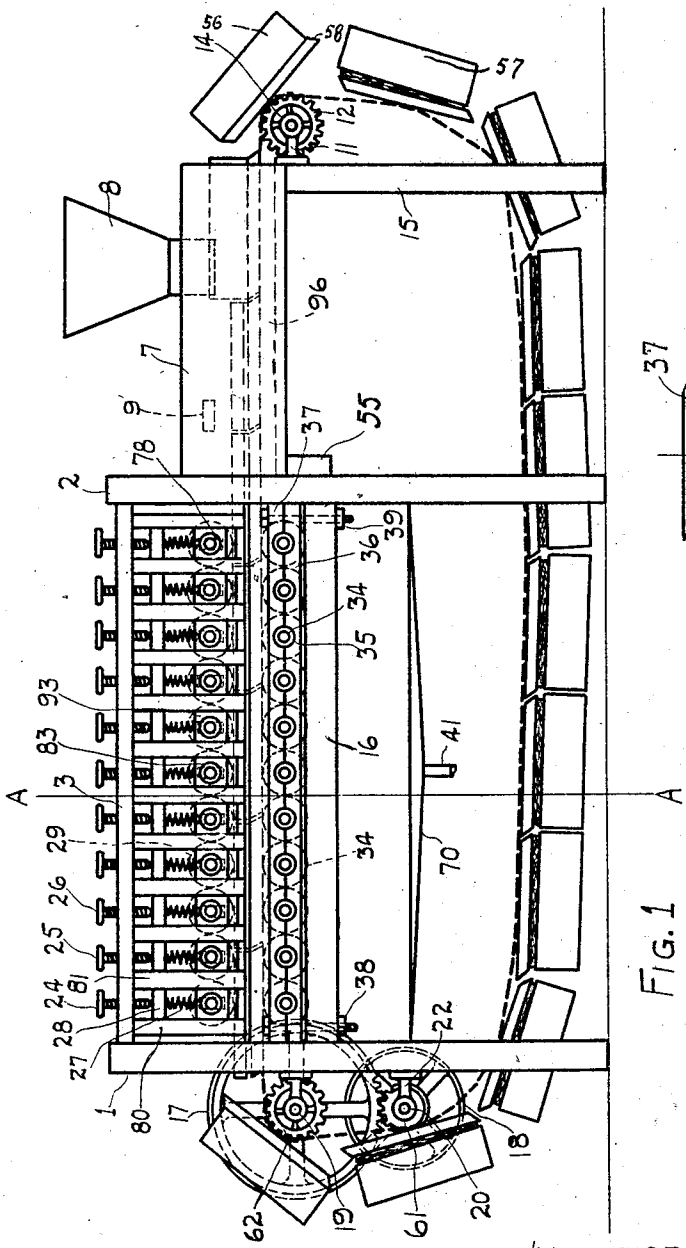


FIG. 1

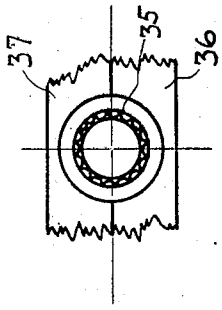


FIG. 2

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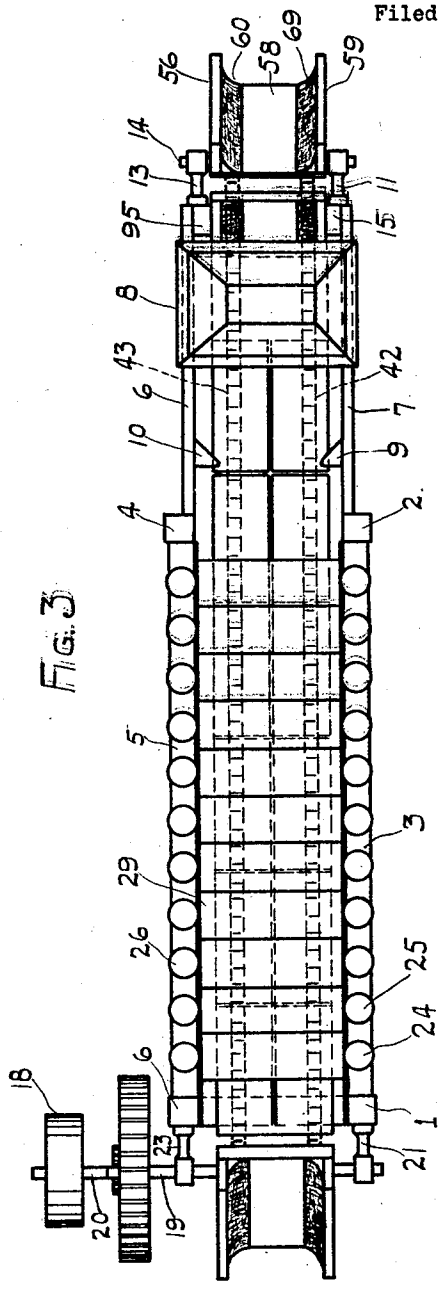


FIG. 3

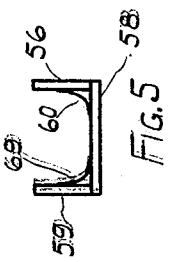


FIG. 5

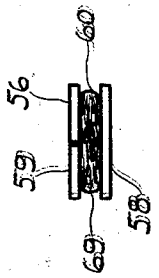


FIG. 6

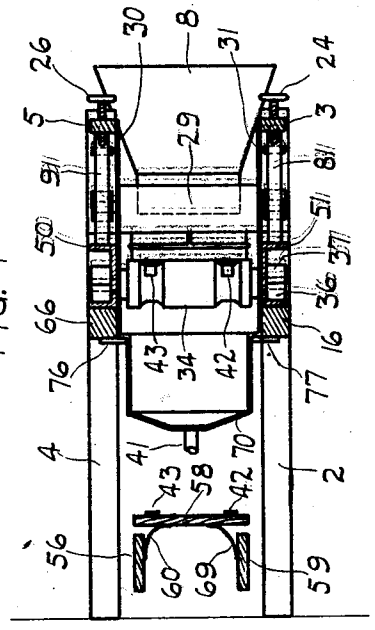


FIG. 4

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1,531,876

UNITED STATES PATENT OFFICE.

JESSE REESOR AND ANTHONY REESOR, OF LOCUST HILL, ONTARIO, CANADA.

CONTINUOUS PRESS.

Application filed September 17, 1923. Serial No. 663,127.

To all whom it may concern:

Be it known that we, JESSE REESOR and ANTHONY REESOR, citizens of the Dominion of Canada, and residents of Locust Hill, county of York, and Province of Ontario, Canada, have jointly invented a new and useful Improvement in Continuous Presses, of which the following is a specification.

Our invention relates to presses, and pertains specifically to presses which are utilized to extract fruit juices.

The principal objects of our invention comprise producing a press in which the operation of extraction is carried forward continuously and substantially automatically, and yet in such a manner that the pulp is maintained under pressure for a sufficient duration of time to insure thorough and effective drainage of the pulp mass. A further object contemplated by our invention consists in forming the pulp mass into relatively small volume of large area in order that the pressure applied will be thoroughly effective throughout the entire pulp mass. We accomplish the above and many other desirable features which will hereinafter be pointed out and described by a novel form of sectionalized and collapsible pulp container adapted to constrain the pulp mass to the form of an endless strip and convey the mass between a series of pairs of rollers, the tension between succeeding pairs of rollers gradually increasing to effect a thorough extraction of liquid from the pulp mass.

In the drawings which accompany and form a part of this specification, and in which like reference numerals designate corresponding parts throughout:

Fig. 1 illustrates a side elevation of a simplified embodiment of our device.

Fig. 2 is an enlarged end view of one of the rollers.

Fig. 3 is a plan view of the device shown in Fig. 1.

Fig. 4 is a sectionalized end view taken on the line A—A of Fig. 1.

Fig. 5 is an end elevation of one of the pulp containers.

Fig. 6 is an end elevation of the pulp container when closed.

Referring now to the figures, our device comprises a framework which may be constructed of wood, or preferably of iron or steel coated with an acid resisting paint, or a porcelain finish. The supports or standards 1, 2, 4 and 6 are secured to side members 16 and 66, as shown in Fig. 4. The members 16 and 66 serve to support channel irons 51 and 50 respectively, that in turn serve as supports for split bearings composed of lower members 36 and upper members 37. The split bearings are maintained in position and also in position on the channel members by means of bolts, two of which are indicated at 38 and 39. Upper side members 3 and 5, Figs. 3 and 4, are secured between standards 1 and 2, and 4 and 6 respectively and serve to strengthen the framework. The two sides of the framework are held in position by suitable cross members, one of which is indicated at 55 in Fig. 1.

A series of upright guide members 80, 81 and 91, Fig. 4 are secured between the channel irons 50 and 51, and the upper side members 5 and 3 respectively, and serve to form vertical guides for the bearings 83 of a series of rollers 29. These rollers, a pair, as 29 and 34, being clearly shown in Fig. 4, while preferably being constructed of metal coated with a porcelain finish, may be made of hard wood. As indicated in the drawings, the rollers are preferably of a comparatively large diameter. The lower rollers 34, are maintained in roller or ball bearings 35, which are supported between the split bearing members 36 and 37, and supported in the channels 50 and 51. The upper rollers 29 are also maintained in roller or ball bearings 93, in bearing blocks 83 carried in the upright guides formed by the members as 80 and 81. A suitable tension is supplied between the pairs of rollers by means of coil springs 27 engaging the bearing blocks 83, and provided with follow blocks 28, which are engaged by adjusting screws 24, 25, 26 carried in the upper side members 3 and 5. In this way the tension between successive pairs of rollers may be separately adjusted to any desired degree.

Splash aprons 30 and 31, are provided as shown in Fig. 4, and extend throughout the length of the press, as represented by the length of the rollers, and further extend from the upper side members 3 and 5, to the drip pan supports 76 and 77, which, as shown in Fig. 4, are attached to the under sides of the side members 66 and 16 respectively. The drip pan supports serve to receive and maintain a drip pan 70 pro-

vided with a drain outlet 41. As indicated at 78 in Fig. 1, elongated apertures are provided in the splash aprons 30 and 31 to permit of adjustment to the tension on the rollers 29. A shaft 20 is mounted in bearings, one of which 22 is shown secured to the standard 1, and carries thereon a pulley 18 by means of which power may be imparted to the press. A spur gear pinion 61 is carried on shaft 20, and meshes with a large spur gear 17 carried on shaft 19, which is mounted on bearings 21 and 23, attached to standards 1 and 6 respectively. A pair of sprocket wheels, one of which is shown at 62, Fig. 1, are carried on shaft 19 and serve as a driving means for a pair of endless chains as 42 and 43, shown in Fig. 4. A further pair of sprocket wheels one of which is shown at 12, are carried on a shaft 14, mounted in bearings 11 and 13 carried upon standards 15 and 95 respectively, which are adapted to support a feed or hopper extension provided on the press and composed of a pair side members 7 and 8, and bottom 96 attached to the standards 2 and 4 respectively, and in turn supporting a hopper 8. This feed extension serves to support the pulp containers as they are being filled with a charge of pulp mass.

A series of collapsible pulp containers 56, 57 are attached in endless arrangement to the endless chains 42 and 43. These pulp containers comprise, as shown in Figs. 5 and 6, a rigid bottom member 58, and two rigid side members 56 and 59. The side members are attached to the bottom by means of canvas strips, as 60 and 69, and the strips are connected to the side members at substantially the midpoint of the side members, and to the bottom member at or near the mid point thereof. As shown in Fig. 5, there is sufficient slack provided in the canvas members to allow the sides of the pulp container to assume an upright position, and as shown in Fig. 6, this slack permits, when the container is closed on a charge of pulp mass, of the pulp mass being compressed to extract the fluids therefrom. As hitherto mentioned, the rollers are made of large diameter, and the length of each pulp container is such with respect to the diameter and spacing of the rollers that while the container is passing through the series of rollers, the pressure is maintained constant on the pulp. In other words, the pulp container is held always between at least two pairs of rollers, and as the bottom of the container is rigid and the two side members each rigid, and when closed form a pulp container with a rigid bottom and rigid top, the pressure of the rollers is distributed thoroughly over all the pulp mass, and is not relieved as the container passes from one pair of rollers to the next pair of rollers. Thus, a uniform continuous and increasing evenly distributed pressure is maintained on the pulp mass from the moment the container starts through the series of rollers until after it leaves the last pair of rollers. A sufficient number of pairs of rollers are provided to maintain this continuous pressure for a sufficient duration of time to thoroughly expel all of the fluids from the pulp mass. It will be noted that the bottom members of these pulp containers are provided with corresponding chamfer in order that as the containers pass over the sprocket wheels, there may be no binding.

In operating our device, we preferably adjust the speed of the conveyor so that the pulp containers will remain under pressure for a period of about four or five minutes, as experiments have indicated that with the relatively small cubic volume of the pulp mass, this length of time is sufficient to allow complete drainage of the pulp mass. In the operation of the device, the pulp is fed to the collapsible containers through the hopper 8, and as the container passes from under the hopper, the sides of the container engage a pair of closing blocks as 9 and 10, Fig. 3, which serve to close the sides of the collapsible pulp container, previous to its entry between the first pair of rollers, the tension between which is adjusted to allow fairly free entry of the closed pulp container. The next pair of rollers is tensioned to initiate the compression of the pulp mass, and each succeeding pair of rollers as viewed from right to left in Fig. 1, is provided with an increasing tension. It will be noted that as the pulp container emerges from the last pair of rollers, as viewed at the left of Fig. 1, that the jerk or shock given in the operation of disengaging the pulp container from the container immediately following in the operation of passing over the sprocket wheel, is sufficient to throw the sides of the container open to expel the pulp mass and as the containers are not provided with ends the expulsion is complete and thorough and the container may be more easily maintained in a sanitary state.

It will be noted that in our improved continuous press, a minimum loss of liquid is provided for, as the operation of extraction takes place in a substantially closed container, and it will be further noted that the operation is sanitary due to the special construction of our novel container which can be easily, quickly and thoroughly cleansed.

While we have illustrated and described one simple embodiment of our device, it is to be clearly understood that we may vary the details thereof widely, without departing from the spirit or narrowing the scope of our invention.

Having thus fully illustrated and de-

scribed our invention, what we claim as new and desire to secure by United States Letters Patent is as follows:

1. In a press, a framework adapted to support a plurality of pairs of rollers, means for applying an adjustable tension between the rollers of each pair of rollers, means comprising rigid upper and lower members flexibly articulated for constraining a pulp mass to form a substantially endless strip, means to convey said pulp mass in such form successively between said pairs of rollers to continuously compress and free said pulp mass from its liquid content and means to conserve and collect said liquid content

2. In a continuous press, a series of pairs of rollers, means for applying a predetermined pressure between the rollers of each pair of rollers, a conveyor, a plurality of abutting, collapsible pulp containers attached to said conveyor and each comprising a rigid bottom member, a pair of rigid side members each articulated to the bottom member by means of porous flexible material, means for charging each of said containers with a pulp mass, means for closing said side members individually to form a rigid top over said pulp mass, and means for drawing said containers successively between said pairs of rollers and further means for conserving and collecting liquids expelled from said pulp mass

3. In a continuous press, a series of pairs of rollers of relatively large diameter, means for applying a predetermined pressure between the rollers of each pair of rollers, a conveyor, a plurality of rigid, abutting bottom plates attached to said conveyor, each of said plates being provided with a pair of rigid side plates articulated to the middle portion of said bottom plates by means of flexible porous material, said material being articulated to the middle portion of each of said side plates to form abutting containers with open ends, means for distributing pulp mass in the series of containers, means for closing the sides of said containers individually to provide a rigid top for the pulp mass, and means for drawing said containers between successive pairs of said rollers, whereby an evenly distributed and continuous pressure may be maintained on said pulp mass to free the pulp mass from its liquid content.

Signed at Toronto, county of York, and Province of Ontario, this 11th day of September, 1923.

JESSE REESOR.
ANTHONY REESOR.