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F. STRICKLAND.

OIL EXTRACTING APPARATUS.

APPLICATION FILED SEPT. 18, 1916.

1,233,930.

Patented July 17, 1917.

2 SHEETS—SHEET 1.

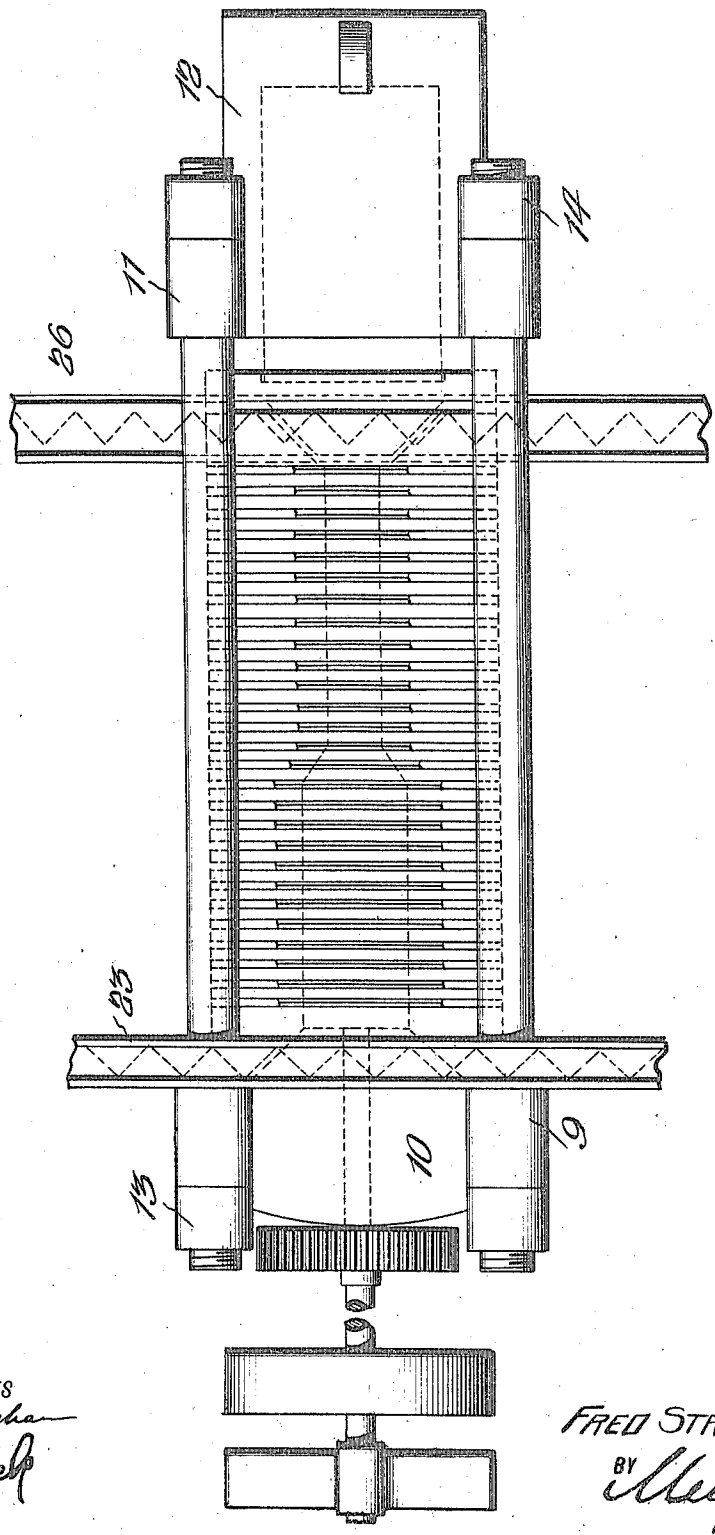


Fig. 1.

WITNESSES
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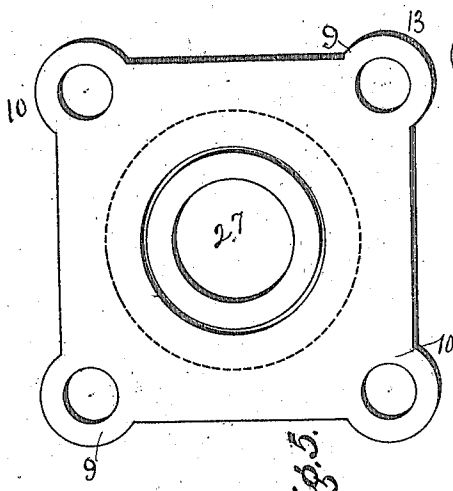


Fig. 5.



Fig. 4.

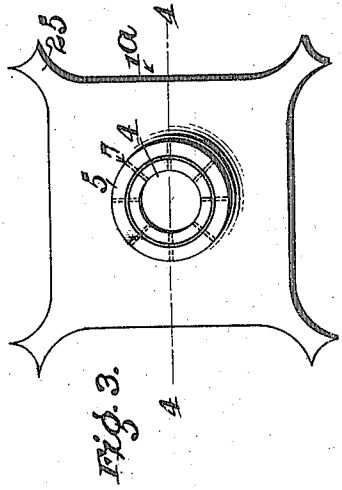


Fig. 3.

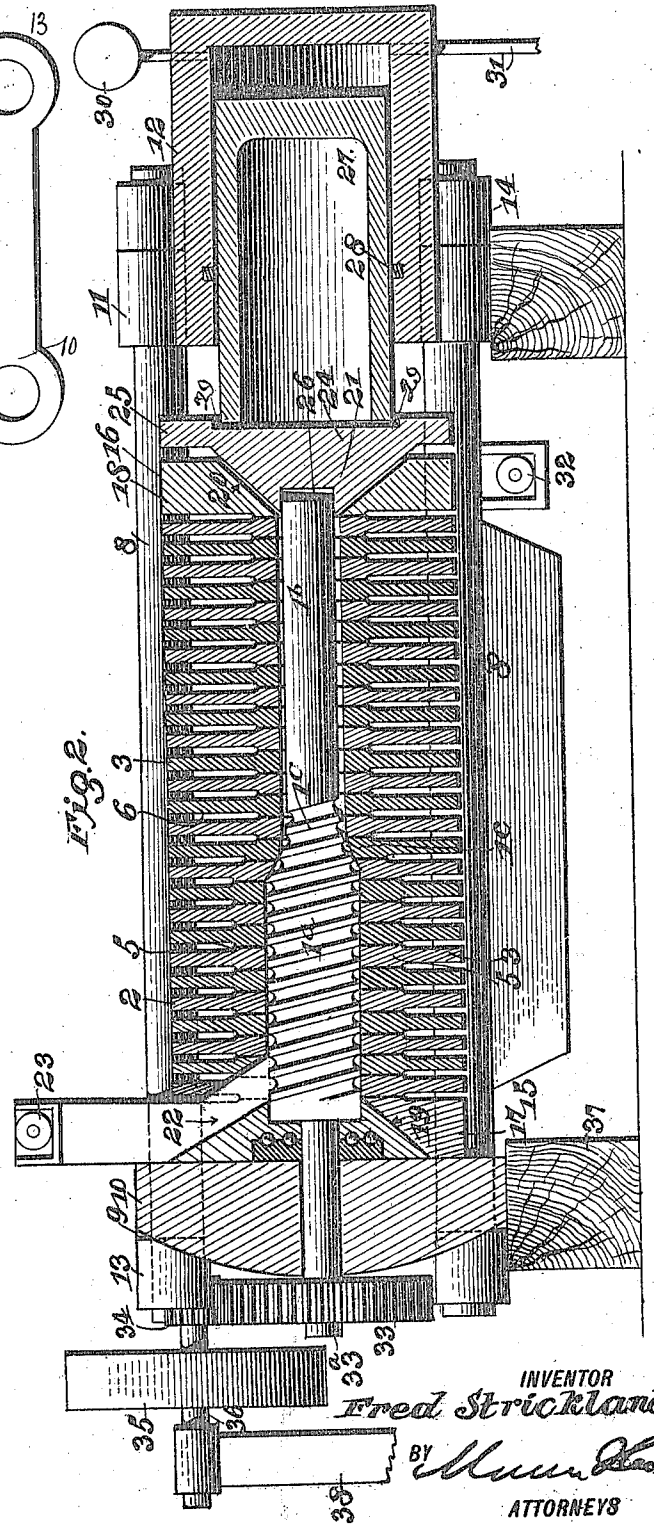


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

FRED STRICKLAND, OF ANDERSON, SOUTH CAROLINA.

OIL-EXTRACTING APPARATUS.

1,233,930. Specification of Letters Patent. Patented July 17, 1917.

Application filed September 18, 1916. Serial No. 120,861.

To all whom it may concern:

Be it known that I, FRED STRICKLAND, a citizen of the United States of America, residing at Anderson, in the county of Anderson and State of South Carolina, have invented an Improved Oil-Extracting Apparatus, of which the following is a specification.

My invention is adapted for the continuous compression of substances such as cotton-seed, linseed, peanuts, and beans for extracting oil therefrom in an effective and economical manner.

The details of construction, arrangement, and operation of the parts are as hereinafter described with reference to the accompanying drawing, in which—

Figure 1 is a plan view of the extractor.

Fig. 2 is a longitudinal section of the same.

Fig. 3 is a plan view of what may be termed a drain plate.

Fig. 4 is a central section thereof.

Fig. 5 is an inner end view of the compression cylinder and adjunctive parts.

Referring to Fig. 2, I provide a rotary compressor and conveyer 1, which is cylindrical in cross section, but differential in diameter, one-half (1^a) of its length being larger than the other half (1^b), the intervening portion (1^c) being tapered, as shown, and the larger portion (1^a) having a spiral groove 2, while the reduced or smaller portion (1^b) is smooth.

The spiral groove serves to receive and feed forward the oil-bearing material as the compressor or conveyer is rotated.

Assembled or arranged closely one in contact with the other, and forming a closure or chamber for the compressor 1, is a plurality of what may be termed drip plates or elements 3 of washer-like outline, each having a central orifice or eye therethrough, the alining walls of which orifices or eyes of said drip plates or washers forming the walls of the chamber for the piston and conforming to the outline thereof, said walls being slightly spaced off from the reduced or smaller portion of said piston, as shown in Fig. 2, for the passage of the material under treatment. The series or plurality of washers or drain plates 3 have each upon opposite sides thereof around its central orifice or eye 4 an annular boss or thickened hub 5, the outer portions of the parts 3 being narrower or thinner, and thus separated from each other by annular radial spaces 6. Ducts or passages 7—see Fig. 4—extend out through the hubs 5, and serve for escape of the oil or other liquid expressed from the substances being treated.

The series or plurality of washers or drain plates 3 are held solidly together in their positions by means of four stout rods or members 8 passing through sleeves or bosses 9 upon a member 10 at one of their ends, and through similar sleeves or bosses 11 upon a tubular cap 12 at their opposite ends, said rod ends having applied thereto and being held firmly in place by means of screw threaded sleeves or nuts 13 and 14, respectively. The thus assembled plurality of washers or drain plates are themselves sandwiched between end members or plates 15 and 16, having recessed salient portions or extensions 17 and 18 respectively, conforming to the surface of and held between the rods 8.

Fitted within tapered recesses 19 and 20 of the members 15 and 16 is a tapered member 21 in continuation of a chute 22 of a conveyer 23, and a conical or tapered head or closure 24, respectively, the former for delivering or feeding the required material, as aforesaid, to the spiral grooved conveyer 1.

The part 24 has corner projections 25 serving as guides on the rods. The closure 24 has also a seat 26 to receive the compressor 1^b.

Within the cylinder 12 is a cylinder 27 which is opened at its front end. This device is operated by water pressure from pipe 30, and has an outlet pipe 31. It will be understood that the cylinder 27 is always under pressure. The forward end of cylinder 27 enters a recess 29 in the back of part 21.

A conveyer 32 similar to conveyer 23, applied to the outlet end of the device as seen in Fig. 2, disposes of the by-products as the expressing or extracting action proceeds, as will be readily appreciated.

The spirally grooved feeding conveyer is suitably rotated or driven by intergeared pinions 33 and 34 upon the pinion shaft 33^a, and a belt driven pulley 35 on the shaft 36 of the pinion 34, or it may be otherwise rotated or driven.

The device, as an entirety, together with the shafts of the described gearing, is supported upon a suitable framework 37 and leg member 38, respectively.

It is observed that the material to be treated, the character of which is above indicated, enters, from the conveyer 23, the chute 22 and is delivered to the compressor 1, whence the material is carried or thrust forwardly by the latter, it being fed therefrom or forced by the tapered portion 1^c of the compressor with the surrounding space of the reduced portion 1^b. The material is here confined until the hydraulic pressure becomes sufficient to express or extract the oil or essence from the material through the ducts or passages 7 in the plate and out through the spaces 6 between the washers or drain plates 3. This pressure will also be sufficiently great to overcome the pressure exerted upon the cone or closure valve 24 by the cylinder 27 to allow of the escape of the by-products from the compressor surrounding chamber through the passageway as the result of the removal of said closure valve or cone away from its seat, and the discharge of said by-products into the conveyer 32 effecting their removal or other purpose. It is noted in this connection that, when the material has ceased feeding, or, rather, there being none for feeding, the valve or closure 24 will be automatically closed under pressure from the cylinder 27.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A press for the purpose specified comprising a spirally grooved compresor which is cylindrical in cross section, a body surrounding said compressor which is formed of a series of plates having thickened hub portions and reduced or thinner outer portions, the hubs having ducts leading outward from the compressor into the space between the outer portions of the plates, as described.

2. In a press of the character described, the combination of a compressor formed of two lengthwise cylindrical portions differing in diameter, and an intermediate tapering portion by which they are connected, the larger and tapered portions having a spiral feed groove, a body surrounding said compressor and formed of a series of plates arranged parallel, central or hub portions being provided with ducts leading outward and their outer portions being thinner than the hub portions and thus separated by narrow spaces, the smooth surfaces of the reduced portion of the compressor being separated from the surrounding body by a narrow annular space, and means for rotating the conveyer, as described.

3. The combination with a spirally grooved compressor, and a surrounding body formed of a series of plates, lateral passages for escape of liquid, the end plate 18 having a conical recess, and a conical closure 24 adapted to fit in said recess, and a hydraulically operated piston whose inner end is seated in said conical closure, as described.

FRED STRICKLAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."