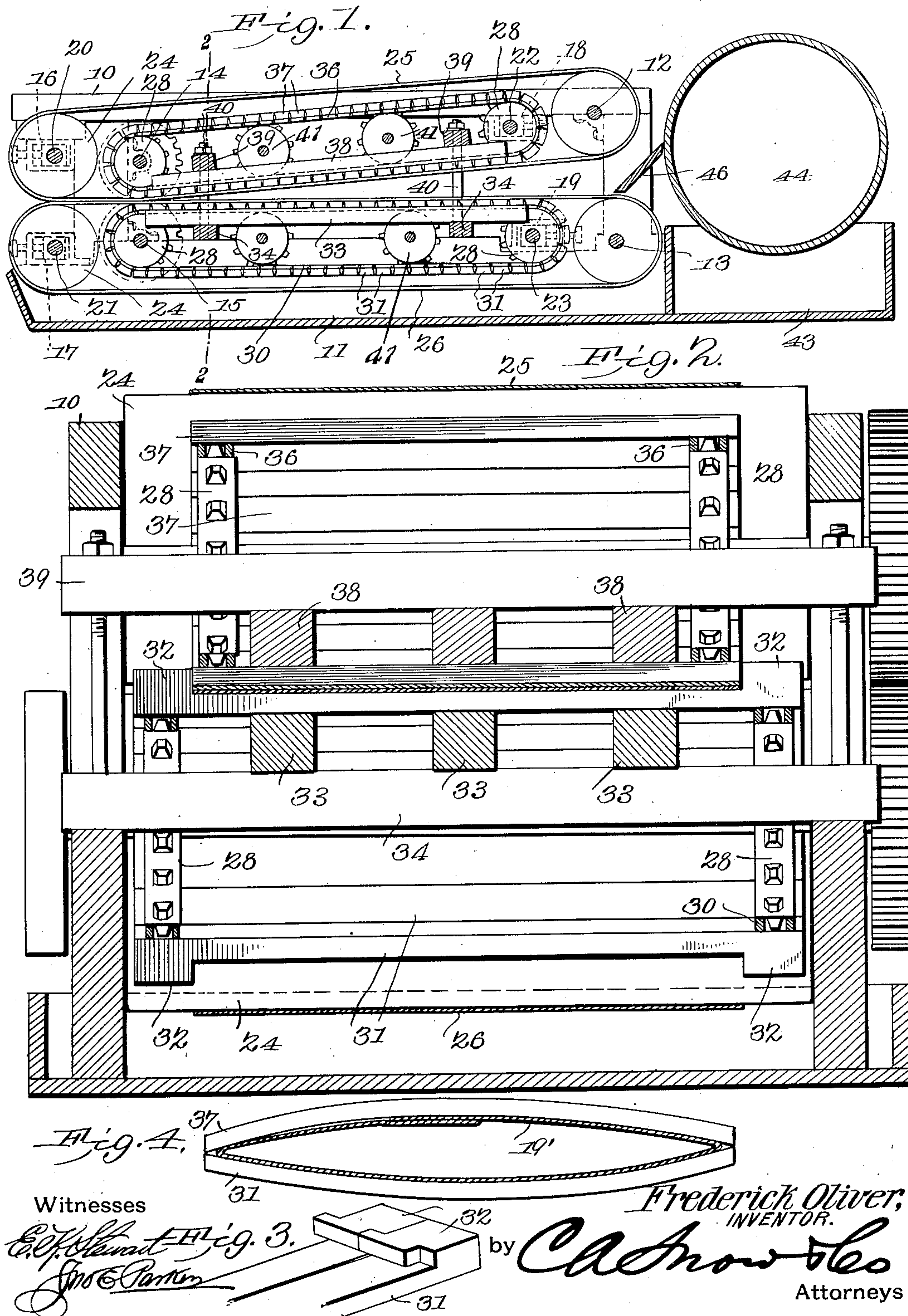


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PATENTED NOV. 27, 1906.

F. OLIVER.
PRESS.

APPLICATION FILED SEPT. 6, 1905.



UNITED STATES PATENT OFFICE.

FREDERICK OLIVER, OF PORTSMOUTH, VIRGINIA.

PRESS.

No. 836,776.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK OLIVER, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented a new and useful Press, of which the following is a specification.

This invention relates to presses for extracting oil from various materials, and has for its principal object to provide a novel form of press of the continuous-belt type wherein the straining elements are backed throughout the whole of the pressure area and the backing elements are adjustable in order to increase or decrease the pressure on the material.

A further object of the invention is to provide a press of this type in which the strainer-bars are so arranged as to form continuous rims or flanges at opposite sides of the filter-belts for the purpose of preventing the escape of the oil from the sides of said belts.

A still further object is to provide a press-feeding device of such construction as to insure a practically uniform feed of material to the press elements.

A still further object of the invention is to provide a press-feeding device in which the material to be pressed is congealed and delivered in the form of a film of relatively solid material to the press.

A still further object of the invention is to provide a press-feeding mechanism in which the oleaginous material in fluid form is congealed and delivered in the form of a film of relatively solid material to the press.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of a press constructed in accordance with the invention. Fig. 2 is a vertical section of the same, on an enlarged scale, on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of a portion of the press, showing the side guards of the

compression-belts. Fig. 4 is a transverse sectional view of a portion of a press, illustrating a slight modification of the invention.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the press are mounted in a suitable frame 10, at the bottom of which is arranged a tank 11 for the reception of the expressed oil. This frame has bearings for the reception of shafts 12, 13, 14, and 15 and is further provided with adjustable bearings 16, 17, 18, and 19, arranged, respectively, for the reception of shafts 20, 21, 22, and 23, all of said shafts being disposed in parallel relation.

The shafts 12, 13, 20, and 21 are provided with drums 24, which are arranged in pairs, one pair carrying a filter-cloth 25 and the other a filter-cloth 26, these cloths being in the form of continuous belts and the lower run of one and the upper run of the other being so arranged as to form a compression-space of gradually-decreasing height from the entrance to the discharge end, the material fed between these cloths being subjected to constantly-increasing pressure for the purpose of extracting the oil.

The shafts 14, 15, 22, and 23 are provided each with a pair of sprocket-wheels 28, and the sprocket-wheels of the lowermost set of shafts are connected by link belts 30, that are arranged beyond the edges of the filtering or straining belts, and to these link belts are secured slats 31, extending transversely of the machine and forming supports for the lower filter-belt 26, the support being practically continuous throughout the whole length of the active surface of the press. These slats are preferably spaced from each other to a very slight extent in order to permit the free passage of the oil, the spaces between the slats being angular in form, narrowest at the top and widest at the bottom, so as not to interfere with the flow of the oil after its passage through the cloth. The opposite ends of the slats 31 are provided with blocks 32; that preferably are provided with interfitting lugs and recesses in order to form practically continuous rims at each side of the lower compression-belt, and thus prevent the flow of any oil from the side of the belt. The upper run of this compression-belt is supported by a series of bars 33, which rest on transversely-disposed bars 34, the opposite ends

of which extend through the belt to points beyond the opposite edges thereof and are rigidly secured to the frame, so that the whole length of the upper run of the belt is employed as a compression member.

The upper sets of sprocket-wheels are arranged within the lines of the first or lower set and are connected by link belts 36, and said link belts serve as supports for transversely-disposed slats 37, which form the second compression member. These slats are supported in operative position by bars 38, that are held by transversely-extending bars 39, the opposite ends of which project beyond the opposite edges of the belts, and said bars 39 are connected to the frame by bolts 40, which may be adjusted in order to alter the degree of compression exerted on the material and at the same time to alter the angular relation of the compression-surfaces.

The upper slats 37 may be arranged to fit very closely together in order to prevent the escape of oil at the top, or they may be slightly spaced, so that the oil may flow freely through the upper filtering or straining belt and pass off from the sides of said belt and fall to the tank, or, if necessary, the belts may be slightly inclined in order to facilitate the discharge of this oil.

It will be seen that any material placed between the belts will be fed forward between the compression-surfaces, and as the latter gradually approach each other toward the discharge end of the machine the material will be subjected to gradually-increased pressure, so that the oil will be fully expressed and the magma or residuum may be discharged in a practically dry condition. Th adjustable shaft-bearings permit the taking up of any slack in either the compression or the filtering belts, and by adjusting the bolts 40 the angular relation of the belts may be altered and the degree of compression made to suit the material being treated. In order to further support the link belts, additional sprocket-wheels 41 may be placed between the end wheels, as shown in Fig. 1.

The apparatus is of considerable value in separating stearin from cotton-seed and other oils, lard, and tallow. In carrying out this portion of the invention the raw oil as expressed from the seeds or delivered from the rendering-tank is fed to a tank 43 in fluid form. Arranged above this tank is a revolvable cylinder 44, in which cold brine or other material is continuously circulated, the cylinder being chilled and its surface dipping into the fluid oil of the tank 43 becoming coated with a film of congealed oil and stearin, which is carried up and fed through the press, a suitable scraper 46 being employed to remove the material from the cylinder. It is found in practice that when used in this way

the stearin in congealing will hold the oil mechanically and in passing through the press the oil will be forced out and the stearin will pass from the end of the press free from the oil and in condition for use.

The structure of the machine may be slightly modified, one of such modifications being illustrated in Fig. 4, wherein a single filtering-belt 19' is employed. This belt is much wider than those shown in Figs. 1 and 2 and is so arranged that its edge may be folded and overlapped in order to form a continuous cover around the material being pressed, provision being made for opening the belt for the insertion of the material and afterward folding the same prior to its passage between the compression members. Where a belt of this type is employed, the transversely-disposed slats which form the compression-surfaces are preferably so arranged as to yield or bow slightly, so that the main body of material will be retained at the center of the belt, as shown in Fig. 4. This structure may also be employed in connection with the two belts shown in Figs. 1 and 2, and in this case the edges of said belts will be held in close contact and prevent the escape of oil from the sides of the press. The belts and compression members may be further arranged at an angle to the horizontal in order to permit greater freedom of discharge of the oil.

Having thus described the invention, what is claimed is—

1. In a press of the class described, a pair of slatted compression-belts disposed at an angle to each other, link belts carrying said compression-belts, a plurality of sprocket-wheels arranged at the ends and at intervals in the length of the link belts, transversely-disposed backing-bars extending completely across said belts at points between their upper and lower runs, auxiliary bars carried by the transverse bars and disposed in a direction of the length of the belt to form a rigid backing for the slats of which said compression-belts are composed, adjusting-screws connecting the transverse bars, and continuous filter-belts surrounding the compression-belts, substantially as specified.

2. In a continuous press, a pair of slatted belts forming compression members, the slats of one belt being provided with overlapping blocks to form continuous rims at the side of the belt.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FREDERICK OLIVER.

Witnesses:

C. E. DOYLE,
FRANK C. HALL.