J. L. HIEGEL.

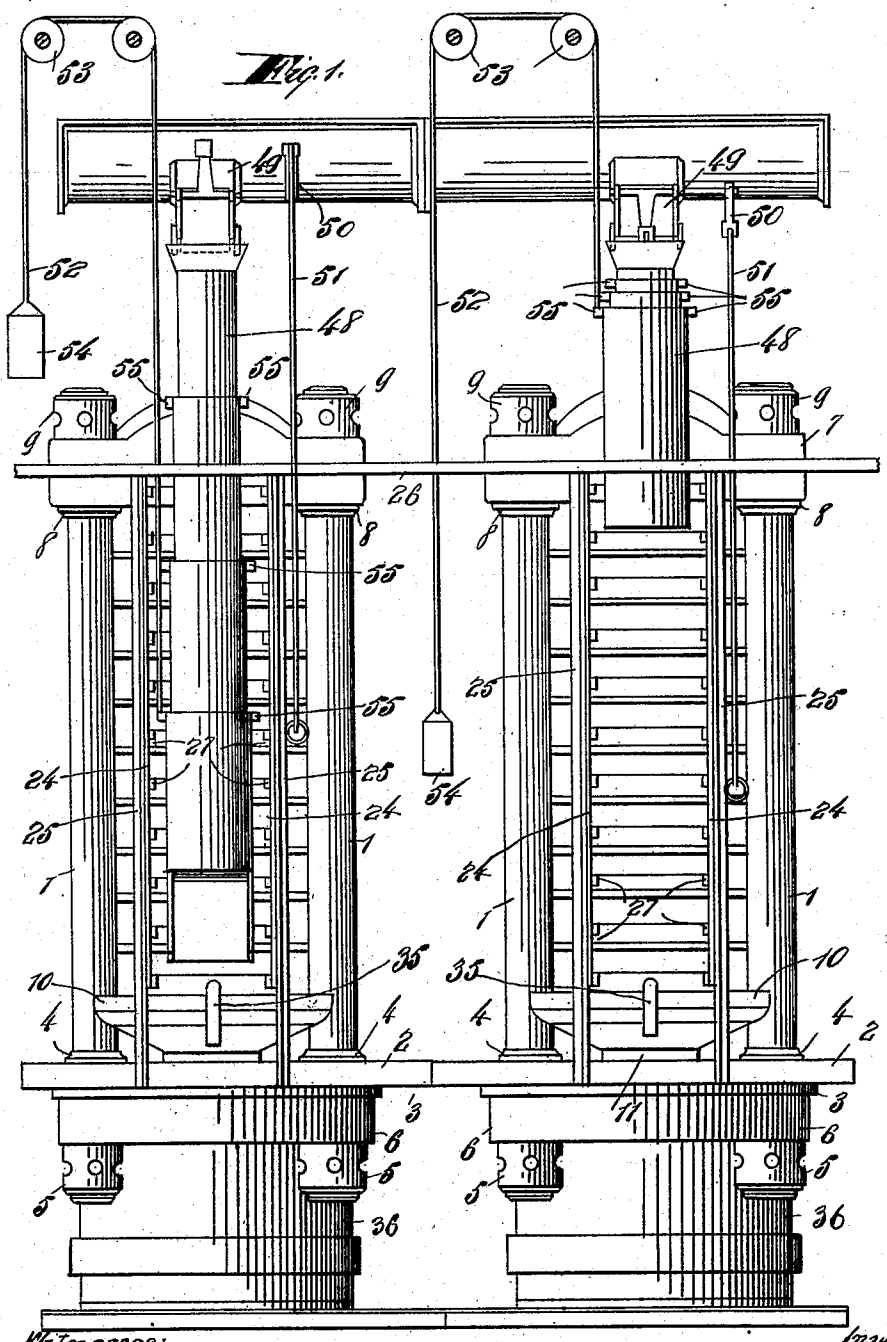
OIL PRESS.

APPLICATION FILED FEB. 18, 1908.

900,927. Patented Oct. 13, 1908.

6 SHEETS—SHEET 1.

Fig. 1.



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OIL PRESS.

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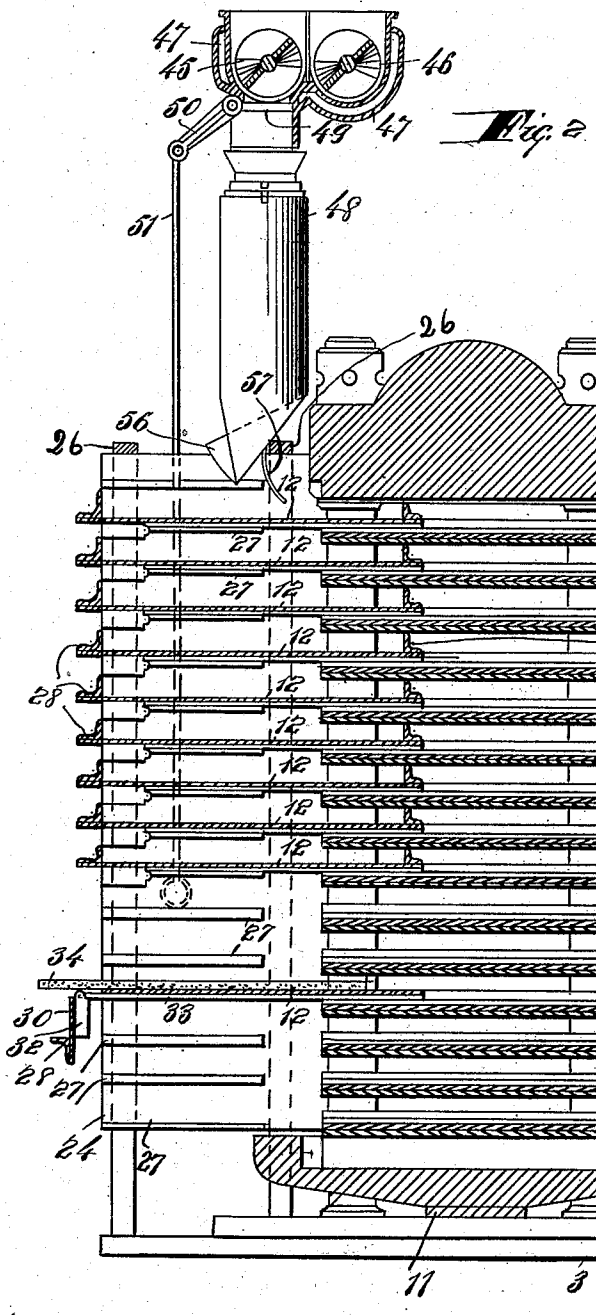


Fig. 2

Witnesses:
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6 SHEETS—SHEET 3.

Fig. 3.

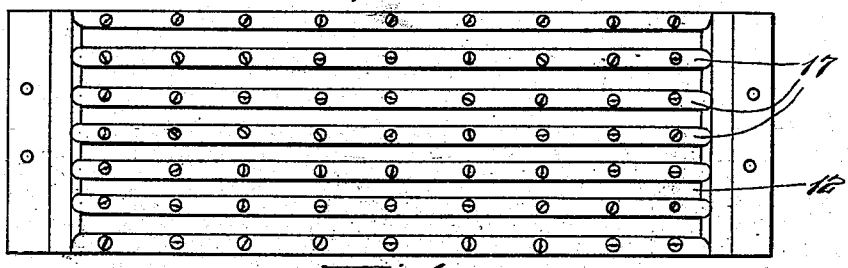


Fig. 4.

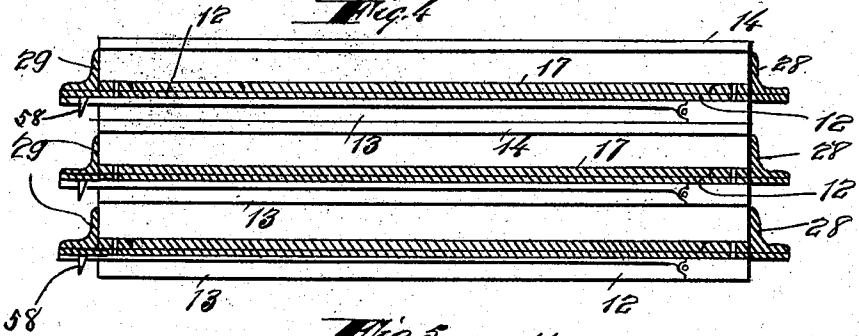
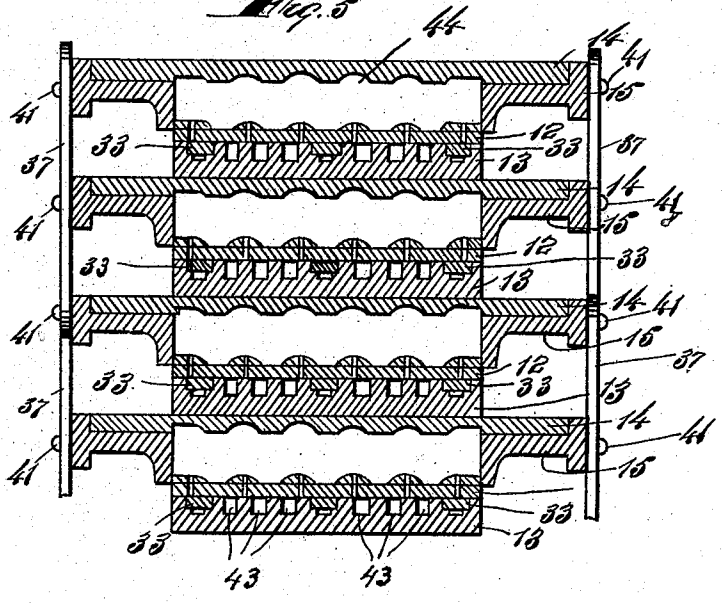


Fig. 5.



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6 SHEETS—SHEET 4.

Fig. 6

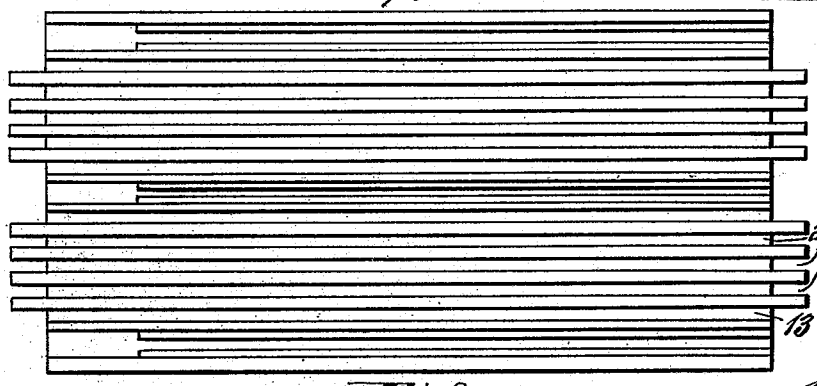


Fig. 7.

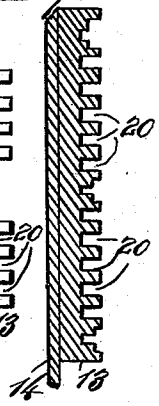


Fig. 8

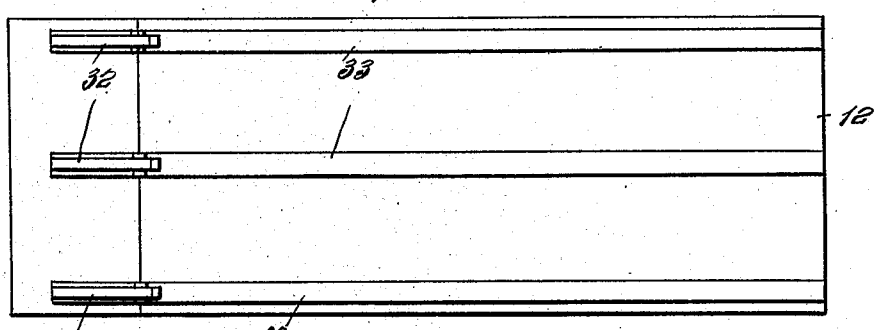
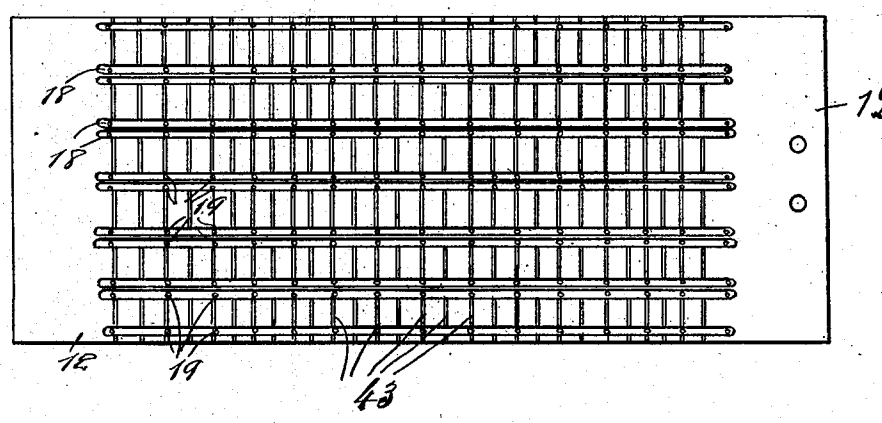


Fig. 9



Witnesses:
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OIL PRESS.

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900,927.

Patented Oct. 13, 1908.

6 SHEETS—SHEET 5.

Fig. 10

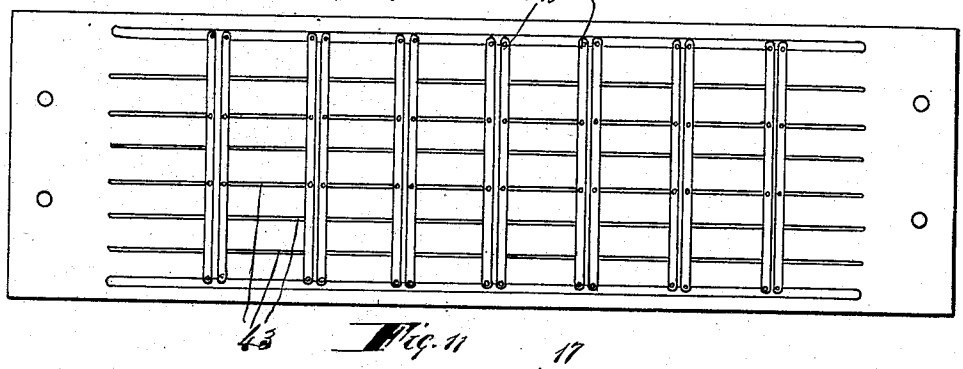


Fig. 11

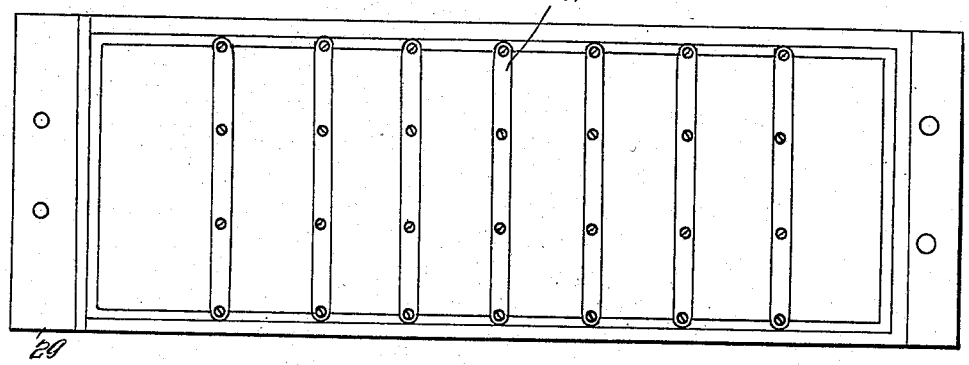


Fig. 12

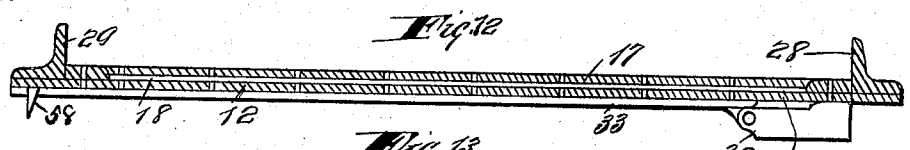


Fig. 13

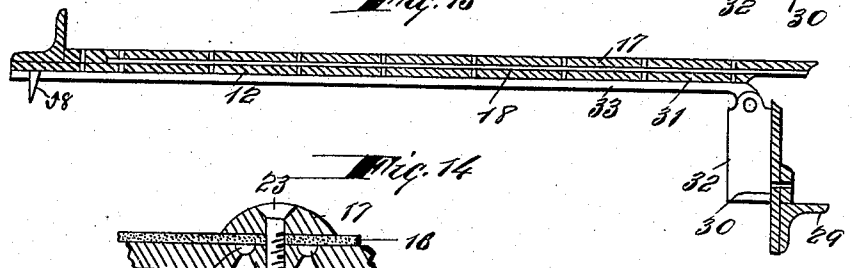


Fig. 14

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OIL PRESS.

APPLICATION FILED FEB. 18, 1908.

900,927.

Patented Oct. 13, 1908.

6 SHEETS—SHEET 6.

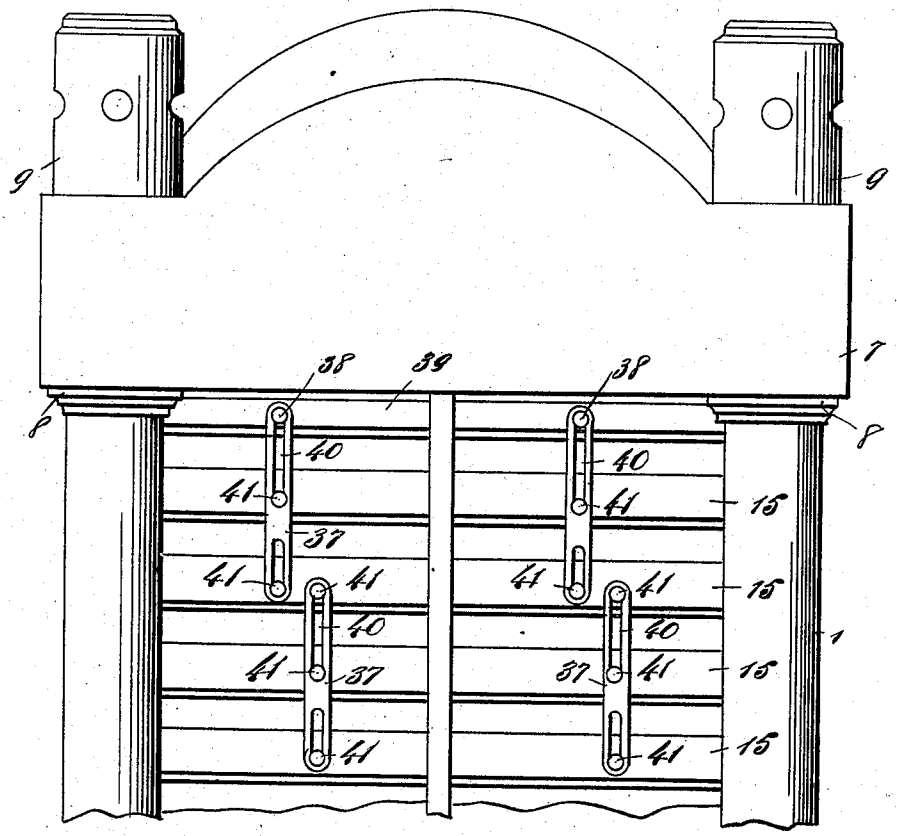


Fig. 15

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UNITED STATES PATENT OFFICE.

JOSEPH L. HIEGEL, OF DALLAS, TEXAS, ASSIGNOR OF ONE-HALF TO E. H. WENDTLAND, OF DALLAS, TEXAS.

OIL-PRESS.

No. 900,927. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed February 18, 1908. Serial No. 416,552.

To all whom it may concern:

Be it known that I, JOSEPH L. HIEGEL, a citizen of the United States, residing at Dallas, county of Dallas, and State of Texas, have invented certain new and useful Improvements in Oil-Presses, of which the following is a specification.

My invention relates to a system of pressing oil from oil producing material and particularly from cotton seed meal, and the object is to reduce the cost of producing vegetable oils. There will be very great saving in the cost of press cloth. The press cloth in use is made of camel's hair and is very expensive. In the presses now in use the cloth is folded and the pressure soon breaks and wears the cloth out. The cloth is subjected to immense strain. In operation the oil itself tends to press the cloth outwardly. This strain soon causes the cloth to break or tear. Besides reducing considerably the amount of cloth to be used, I have provided means for protecting the cloth. The strain is taken off and there is nothing but direct pressure on the cloth and the cloth is protected by shields. The cloth is not to be changed at each operation and the laborers required to do the stripping as now practiced are dispensed with. The cake forming machine is dispensed with and the loss of life and limbs caused in the use of such machine is prevented. The hard labor of carrying cakes to and from the presses is no longer required and the work is made so much less burdensome and difficult that it can be done in hot or cool weather. There will be no blistering of the hands and fingers and less skill is required in charging the presses with meal. The press is simple in construction and operation and is durable, and all parts of the press are accessible in case of needed repairs. The same amount of work may be accomplished by use of only half the number of men who labor in the press room of the press rooms now in use. The out-put of oil per ton of seed is increased and the cakes are pressed in uniform sizes. The oil flows more freely from the cakes pressed and the cakes are more easily ground or pulverized. There will be less dead meal to be reheated and the slop from the presses to be worked over is reduced to a minimum. There will be no cakes with soft ends containing large per cent. of oil. Less pressure or power is required to expel the oil from the cake and on account of less power required the cost of fuel is much reduced. An ideal system of heating or cooking the meal in transit to the presses may be utilized. Such systems cannot be used with the manner of pressing oil now in use. The improvements may be installed in the presses now in use without radical changes and the greater portion of the machinery now in use may be utilized with the improvements, and the improvements may be used or applied to any or all seed oil mills. Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application and specification.

Figure 1 is a front elevation of two presses, showing the feed chute let down in one press and elevated in the other press. Fig. 2 is a vertical section of one of the presses. Fig. 3 is a plan view of one of the pans used in the presses. Fig. 4 is a vertical longitudinal section of three pans. Fig. 5 is a vertical transverse section of four pans. Fig. 6 is a plan view of a drainage grate which is placed under each pan. Fig. 7 is a transverse section of a drainage grate. Fig. 8 is a bottom plan view of the pan shown in Fig. 3. Fig. 9 is a plan view of the pan shown in Fig. 3 with the shields removed. Fig. 10 is a plan view of a pan with shields removed, showing a variation from the pan shown in the previous views, the drainage grooves in this form being transverse the pan. Fig. 11 is a plan view of the pan shown in Fig. 10. Fig. 12 is a longitudinal section of a pan, showing the pan with the strap hinges and without the drainage grate. Fig. 13 is a similar view, the front hinged portion being dropped down, as is done when the pressed meal cake is to be removed. Fig. 14 is a broken section, illustrating the manner of attaching the press cloth and the shields to the pan and showing the manner of draining the oil from the press cloth. Fig. 15 is a side view of a portion of a press, illustrating the manner of hanging the frames on each other for supporting the pans.

Similar characters of reference are used to indicate the same parts throughout the several views.

The improvements herein set forth may be used with the styles of press frames already in use.

Figs. 1 and 2 illustrate a frame such as are in common use. Each press has four uprights 1 secured to the bases 2 and the floor 3 and the annular flange 6 of the hydraulic cylinder 36 by means of collars 4 and nuts 5. A cap 7 is mounted on the upper part of the press by collars 8 and nuts 9 which are screwed on the posts 1. The caps 7 thus have a fixed relation to the cylinders 36 by the posts 1 which are rigid with the flanges 6. A series of pans 12 are arranged one above the other between the cap 7 and the shoe 10 which serves as a catch basin to receive the oil which runs out through a nozzle or pipe 35. The pressing is done between the shoe 10 and the cap 7 and is accomplished, as usual by hydraulic pressure. The shoe 10 is mounted on the upper end of a hydraulic ram 11 which operates in the cylinder 36.

The meal is placed in pans 12 which are placed on drainage grates 13. The drainage grates are placed on steel plates 14 which are attached to steel frame pieces 15. The steel frame pieces 15 are telescopically connected with each other by means of links 37. The upper link 37 may be hung on a pin or lug 38 which is secured in a bar 39 which may be riveted to the cap 7. The upper ends of each link 37 has a long slot 40 in which the pins or lugs 41 of two frame pieces 15 operate. The frame pieces 15 are thus suspended on each other by means of the links 37 and the headed pins or lugs 41, and these frame pieces 15 can be moved upwards towards each other in the operation of pressing. When the pressure is relieved by lowering the hydraulic ram 11 the frame pieces 15 will move downwards and assume the positions shown in the drawings, particularly in Fig. 15. The meal is placed in the pans 12 which are placed on drainage grates 13 and the grates 13 are mounted on the steel plates or rests 14. The camel's hair press cloth 16 is placed on the pans 12 and secured thereon by shields 17. Two grooves 18 are formed in the pan under each shield 17. A series of perforations 19 are made through the pans in each groove 18, so that oil will run from all parts of the pans to the grooves 20 in the drainage grates 13. The pans 12 have very narrow transverse grooves 43 which aid in directing the flow of oil into the grooves 18 of the pans. The oil runs through the bottom of the pans 12 into the grooves 20 of the drainage grates 13 and from the drainage grates 13 the oil runs down or pours down into the shoe 10 and then out of pipes 35 into troughs 22 to be collected in suitable vessels. The shields 17 prevent the closing of the grooves 18 and perforations 19 by the press cloth. The oil can thus percolate through the press cloth into the grooves 18 and through the perforations 19. The shields 17 are secured to the pans 12 by screws 23. The underside 44 of the steel supports 14 is corrugated to receive shields 17. The press cloth may be made of camel's hair or other suitable material.

Figs. 10 and 11 show the shields and the grooves of the pans arranged transversely the pan instead of longitudinally. The small grooves 43 are changed to run longitudinally so that they will drain into the main grooves of the pan. The construction is otherwise the same as previously set forth in this application.

Means are provided for convenience in removing the pressed cakes of meal from the pans. Racks or temporary supports are erected in front of the presses in which the pans may be drawn and supported while the cakes are being removed and also while the pans are being charged as hereinafter explained. Slabs 24, preferably of sheet metal, are erected and held in place by frame pieces composed of T-beams 25 which may be riveted to the slabs 24 and by cross beams 26 which are attached to the upper ends of the beams 25. The lower ends of the beams 25 may be attached to the floor or base. On the inside of slabs 24 are attached a series of ribs or brackets 27 from bottom to top of the slabs 24, thus forming a rack for supporting the pans. A pan is drawn from the drainage grates 13 between the slabs 24 and supported on the ribs 27, while the cake is being removed or while the pan is being recharged.

The pans 12 are constructed so that the cakes may be easily removed therefrom. The front and rear edges of the pans are provided with upwardly projecting flanges 28 which form retaining walls or ends for holding the meal in place. The sides are closed by the angle bars or frame pieces 15 when the pans are in the press and by the slabs 24 when the pans are in the charging and discharging rack. The pans are formed in sections and the sections are hinged together in the bottom. The part 30 is hinged to the part 31 by hinges composed of parts 32 and 33. The part 30 can by reason of the hinge swing downwards when the pan is drawn forward in the unloading rack and thus leave a portion of the cake 34 exposed so that the cake can then be lifted out of the pan. The racks are usful in recharging the pans with meal.

Means are provided for charging the pans with meal. The meal is brought to a position above the presses by spiral conveyers or a single spiral conveyer 45 of ordinary con-

struction. Another spiral conveyer 46 is provided. The object of the second spiral conveyer is to keep the meal in motion if it is not fed to the presses as fast as it is brought to the presses. The meal comes to the presses by means of the conveyer 45. If it is not fed to the presses, the meal returns by way of the conveyer 46 which delivers the meal again to the conveyer 45. The conveyers 45 and 46 are provided with steam jackets 47 for heating the meal in transit. Telescopic chutes 48 are connected to the casing of the conveyer 45 and a valve 49 closes the communication between the casing of the conveyer 45 and the chute 48. The valve 49 is operated by a crank 50 and a rod 51 which rod hangs down by the supporting rack 24. The operator can open or close the valve at will. The chutes 48 may be cylindrical in form and are suspended from the casing of conveyer 45. These chutes are made up of telescopic sections and when let down full length, reach near the bottom of the presses, as shown at the left side of Fig. 1. The chute sections may be raised by cables or cords 52 which are attached to the lowest section of the chutes and passed over pulleys 53 and attached to weights 54. Each chute section has lugs 55 at the upper parts whereby each section will lift the next section above when a pull is made on the weight 54. The chute 48 has a mouth 56 for pouring the meal into the pans. An evener 57 is attached to the rear part of each chute for spreading the meal and leveling the same in the pans. The pans 12 may all be drawn out in the supporting racks The top pan is filled and shoved back into the press. As the pan is shoved back into the press the evener levels the meal therein and will rake any surplus meal over the front edge of the pan which surplus will fall into the next pan below. The chute can then be drawn to the next pan and the operation repeated until all the pans have been filled. As soon as a press is filled the operator starts the hydraulic ram to pressing the meal in the pans. It will be seen from Fig. 4 how the pans will telescope on the steel plates 14 and partly on the racks 13, so that the series of pans will be considerably telescoped together, thus allowing the hydraulic pressure to expel all the oil from the meal or material placed in the pans. Cotton seed meal may some times accumulate in the grooves 20 of the grate 13 by gradual accretions. I have provided means for removing such accretions. Teeth or drags 58 are formed on or made integral with the bottoms of the pans 12 to scrape the meal out of the grooves 20 as the pans are shoved back into the press. The grates are thus kept clear of meal or other substance for the free passage of the oil.

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

1. An oil press comprising an upright frame, a series of pressing elements operating in said frame, each pressing element consisting of a supporting frame, a grate resting on said frame, and a removable pan resting on grate, means for filling said pans, and means for pressing said pressing elements towards each other.

2. An oil press having a series of pressing elements each consisting of a suspended supporting frame, a grooved grate resting on said frame, and a pan resting on said grate for containing the material to be pressed.

3. An oil press having a series of pressing elements, each consisting of a suspended supporting frame, a drainage grate resting on said frame, a perforated pan resting on said grate, and shields protecting the perforations of said pan.

4. An oil press having a series of pressing elements adapted to be pressed partly telescopically on each other and each element consisting of a supporting plate having depending side flanges, a drainage grate resting on said frame, and a pan resting on said grate and provided with upstanding front and rear flanges, and means for pressing said pressing elements towards each other.

5. An oil press having a series of drainage grates, means for supporting each grate, one above the other, a removable containing pan resting on each grate, and means for pressing said pans and grates towards each other.

6. An oil press having a series of drainage grates, means for supporting each grate connectedly with the others, a perforated removable pan resting on each grate and provided with upstanding flanges forming front and rear walls therefor, and means for pressing said grates and pans telescopically on each other.

7. An oil press having a series of perforated pans, means supporting and permitting the drainage of said pans through the perforations thereof, shields protecting the perforations in said pans, and means for pressing said pans and grates together telescopically.

8. An oil press having a series of drainage grates, a pan having grooves therein resting on each grate, a sheet of porous material protecting said grooves, and means for pressing said pans and grates together telescopically.

9. An oil press having a series of pans, each pan having grooves therein and perforations through said grooves and each pan being constructed in sections hinged together, and a drainage grate supporting each pan.

10. An oil press having a series of grooved pans with perforations through said grooves and shields protecting said grooves.

11. An oil press having a series of grooved

pans with perforations through the grooves, a porous material covering each pan, and shields protecting said grooves and holding said porous material on the bottoms of said pans.

12. An oil press having a series of grooved pans with perforations through the grooves, a drainage grate supporting each pan and provided with grooves registering with the grooves of said pans, and a sheet of porous material attached to each pan and covering said grooves and perforations.

13. An oil press having a series of grooved pans with perforations through the grooves, a sheet of porous material placed on the bot tom of each pan, shields protecting said grooves and holding said porous sheets in place, and a drainage grate supporting each pan.

14. An oil press having a series of supporting frames telescopically connected together, a grooved grate resting on each frame, a pan resting on each grate and having perforated grooves registering with the grooves of the grate, a sheet of porous material placed on the bottom of each pan, and shields holding said porous sheets in place and protecting the grooves of said pans.

15. An oil press having a series of pans for containing oil producing material, angle irons forming the front and back walls of said pans, and each pan having drainage grooves therein and serrations or transverse grooves leading to said drainage grooves.

16. An oil press having a series of pans for containing oil producing material, each pan having perforated drainage grooves and serrations or transverse grooves and having angle irons forming front and back walls therefor leading to said drainage grooves, and a drainage grate supporting each pan and provided with grooves registering with the drainage grooves of said pans.

17. An oil press having a series of pans for containing oil producing material, each pan having perforated drainage grooves therein and serrations or transverse grooves leading to said drainage grooves, shields protecting said drainage grooves, and a drainage grate supporting each pan and provided with grooves registering with the drainage grooves of said pans.

18. An oil press having a series of pans for containing oil producing material, each pan having perforated drainage grooves therein and serrations or transverse grooves leading to said drainage grooves, shields protecting said drainage grooves, a drainage grate supporting each pan and provided with grooves registering with the drainage grooves of said pans, and a series of supporting frames telescopically connected together and holding said grates in operative relation.

19. An oil press having a series of pans for containing oil producing material constructed in sections and hinges connecting said sections together.

20. An oil press having a series of pans constructed in sections, the sections being pivotally connected together, and means for holding the sections of each pan in operative relation.

21. An oil press having a series of grooved pans constructed in sections, hinges connecting the sections of each pan together, and a drainage grate having grooves registering with the grooves of each pan and supporting each pan.

22. An oil press having a series of pans, each constructed in sections pivotally connected together, and means for supporting one section of each pan while the other section swings downward.

23. An oil press having a series of grooved pans for containing oil producing material, a drainage grate supporting each pan and provided with grooves registering with the grooves of the pan, and drags carried by said pans for cleaning the grooves of said grates.

24. In an oil press the combination of a frame containing a series of pressing elements including a pan in each element and a rack adapted to support the pans for charging with oil producing material and for removing the pressed cakes from the pans.

25. In an oil press the combination with a frame supporting a series of pans, a rack in front of said frame adapted to support said pans when drawn forward to be charged with oil producing material, and a telescopic feed chute for charging said pans with oil producing material.

26. In an oil press, the combination with a frame containing a series of pressing elements suspended in said frame including a pan in each element for containing oil producing material, a rack in front of said frame adapted to support one or all of said pans when drawn forward to be charged with oil producing material or for the pressed cakes to be removed from the pans, a telescopic feed chute for charging said pans, and means for directing the mouth of said chute to each pan.

27. In an oil press, the combination of a frame containing a series of pressing elements suspended therein including a pan in each element, a rack in front of said frame adapted to support one or all of said pans when drawn forward to be charged with oil producing material or for the pressed cakes to be removed from the pans, means for conveying oil producing meal to be fed to the press, and a feed chute adapted to direct the material to said pans in succession.

28. In an oil press, the combination of a

frame containing a series of pressing elements suspended therein including a pan in each element, a rack in front of said frame adapted to support one or any number of said pans when drawn forward to be charged with oil producing material or for the pressed oil cakes to be removed from the pans, conveyers for bringing oil producing material to the press, a telescopic chute connected with said conveyer for directing the material to said pans in succession, and a leveler carried by said chute for leveling the material in said pans and raking the surplus material into the next pan below when the filled pan is shoved back into said frame.

In testimony whereof, I set my hand in the presence of two witnesses, this 28th day of January, 1908.

JOSEPH L. HIEGEL.

Witnesses:

A. L. JACKSON,

J. H. CUMPSTON.