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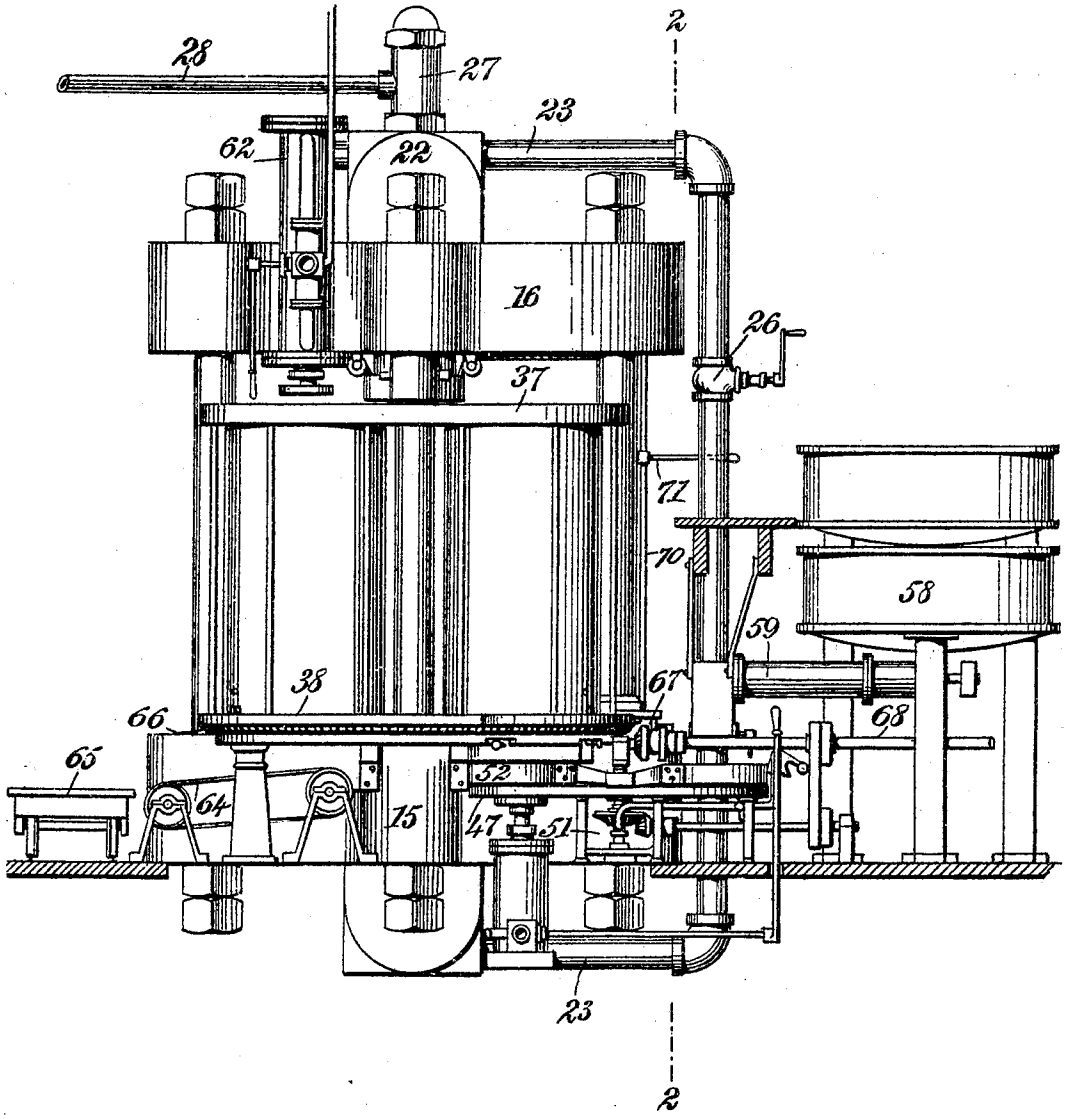
D. J. HEIDERICH.

OIL PRESS.

APPLICATION FILED DEC. 17, 1903.

7 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

I. A. Walker

Isaac B. Owens

INVENTOR

David J. Heiderich

BY Munn & Co.

ATTORNEYS.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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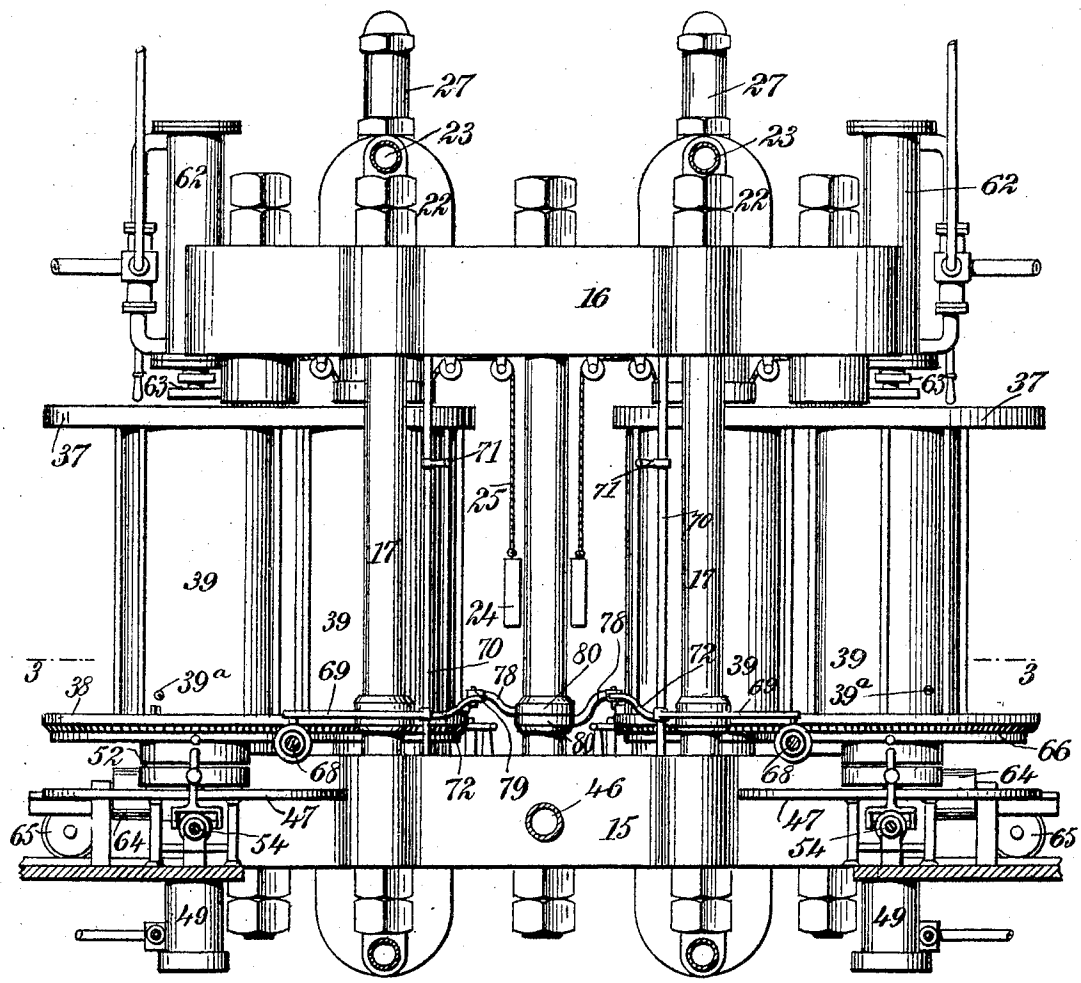
D. J. HEIDERICH.

OIL PRESS.

APPLICATION FILED DEC. 17, 1903.

7 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

H. Walker

Isaac B. Owens

INVENTOR

David J. Heiderich

BY Munn & Co

ATTORNEYS.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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APPLICATION FILED DEC. 17, 1903.

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Fig. 3.

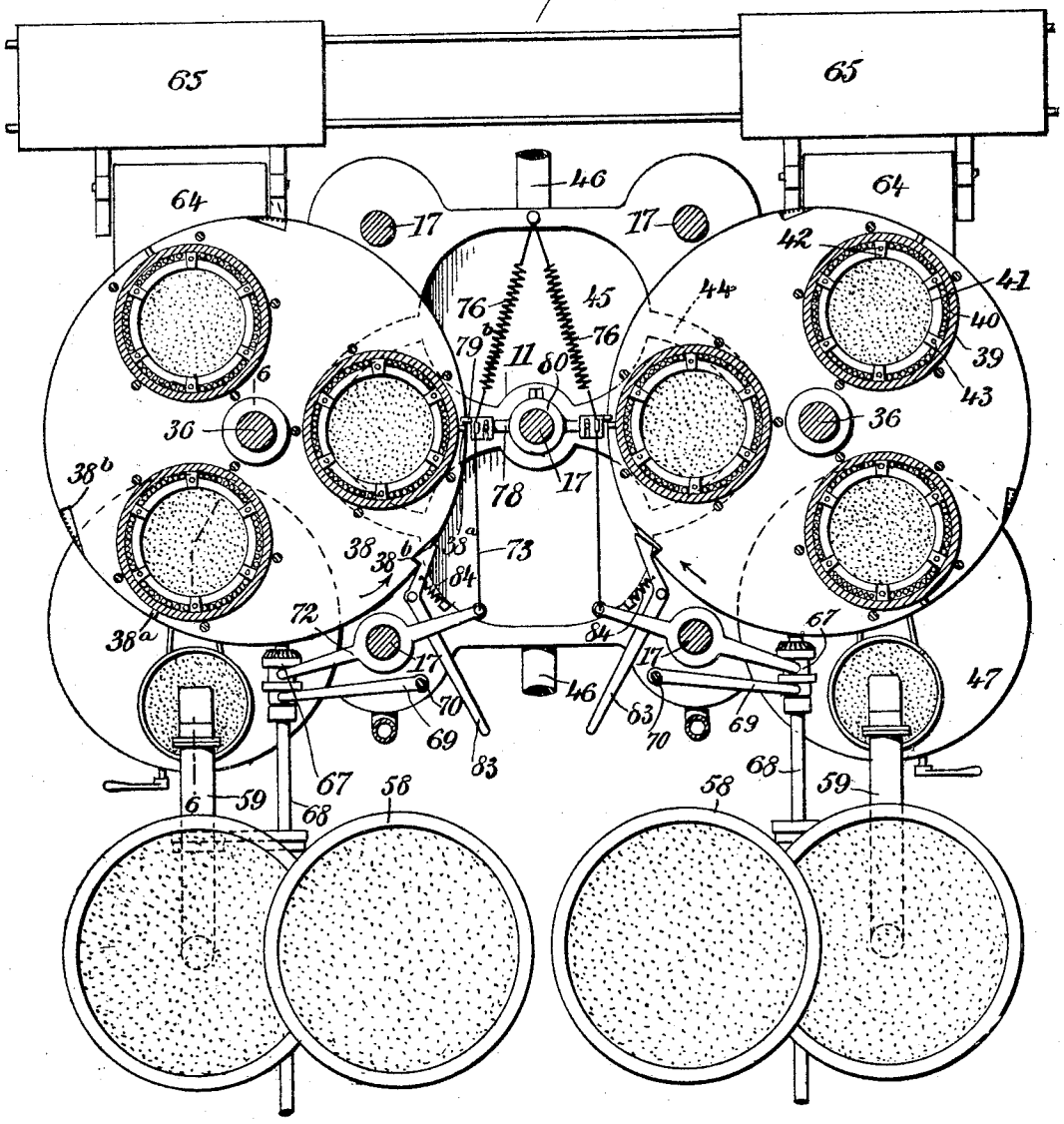
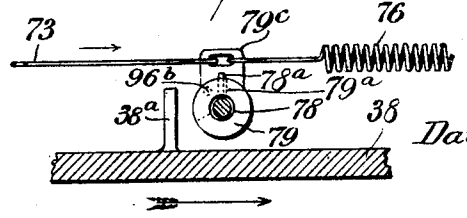


Fig. 11.



WITNESSES:

H. Walker

Isaac B. Owens.

INVENTOR

David J. Heiderich

BY Munn & Co

ATTORNEYS

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,121. PATENTED JULY 18, 1905.

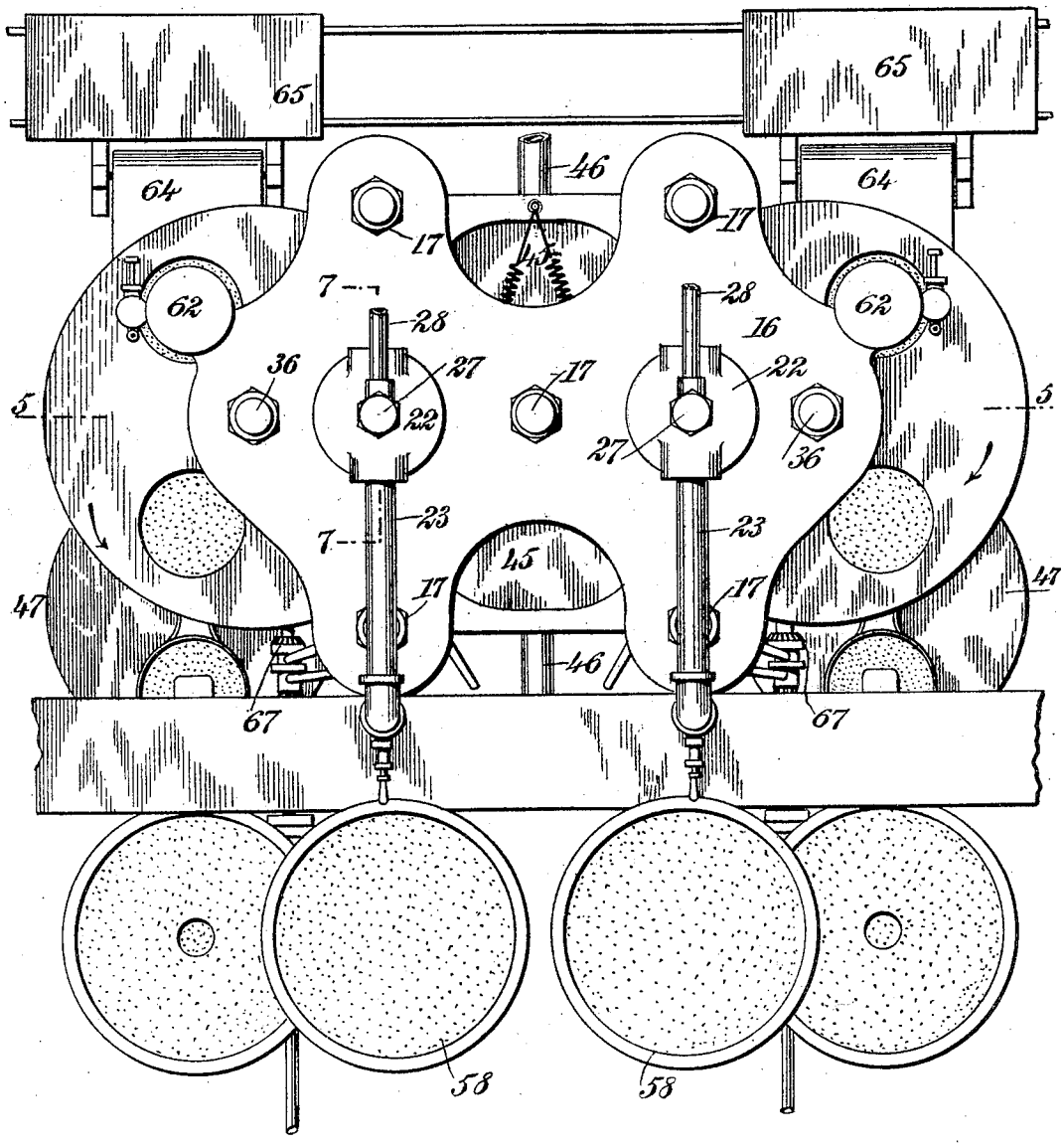
D. J. HEIDERICH.

OIL PRESS.

APPLICATION FILED DEC. 17, 1903.

7 SHEETS—SHEET 4.

Fig. 4.



WITNESSES:

H. W. Walker

Isaac S. Owens.

INVENTOR

David J. Heiderich

BY

Munn & Co

ATTORNEYS.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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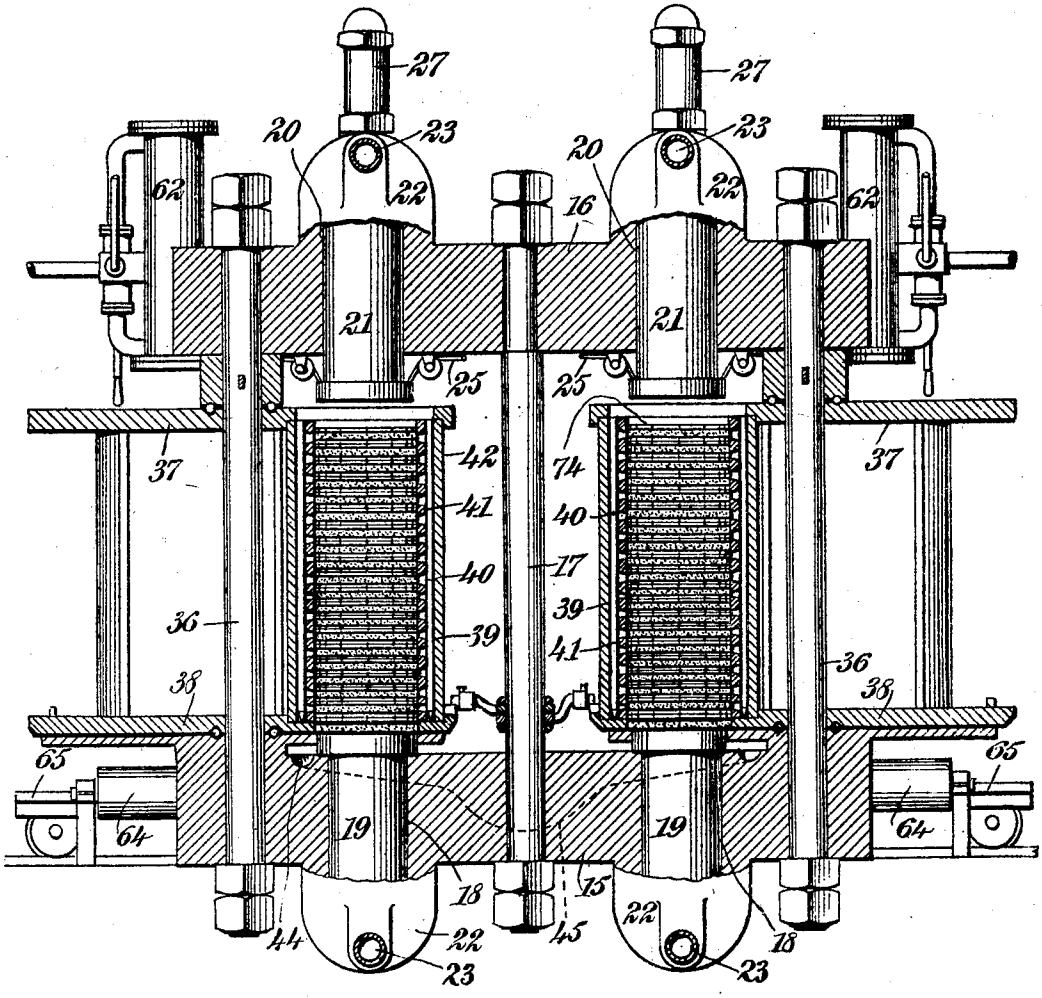
D. J. HEIDERICH.

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APPLICATION FILED DEC. 17, 1903.

7 SHEETS—SHEET 5.

Fig. 5.



WITNESSES:

I. N. Walker

Isaac B. Owens.

INVENTOR

David J. Heiderich

BY Munn & Co.

ATTORNEYS.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,121. PATENTED JULY 18, 1905.

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APPLICATION FILED DEC. 17, 1903.

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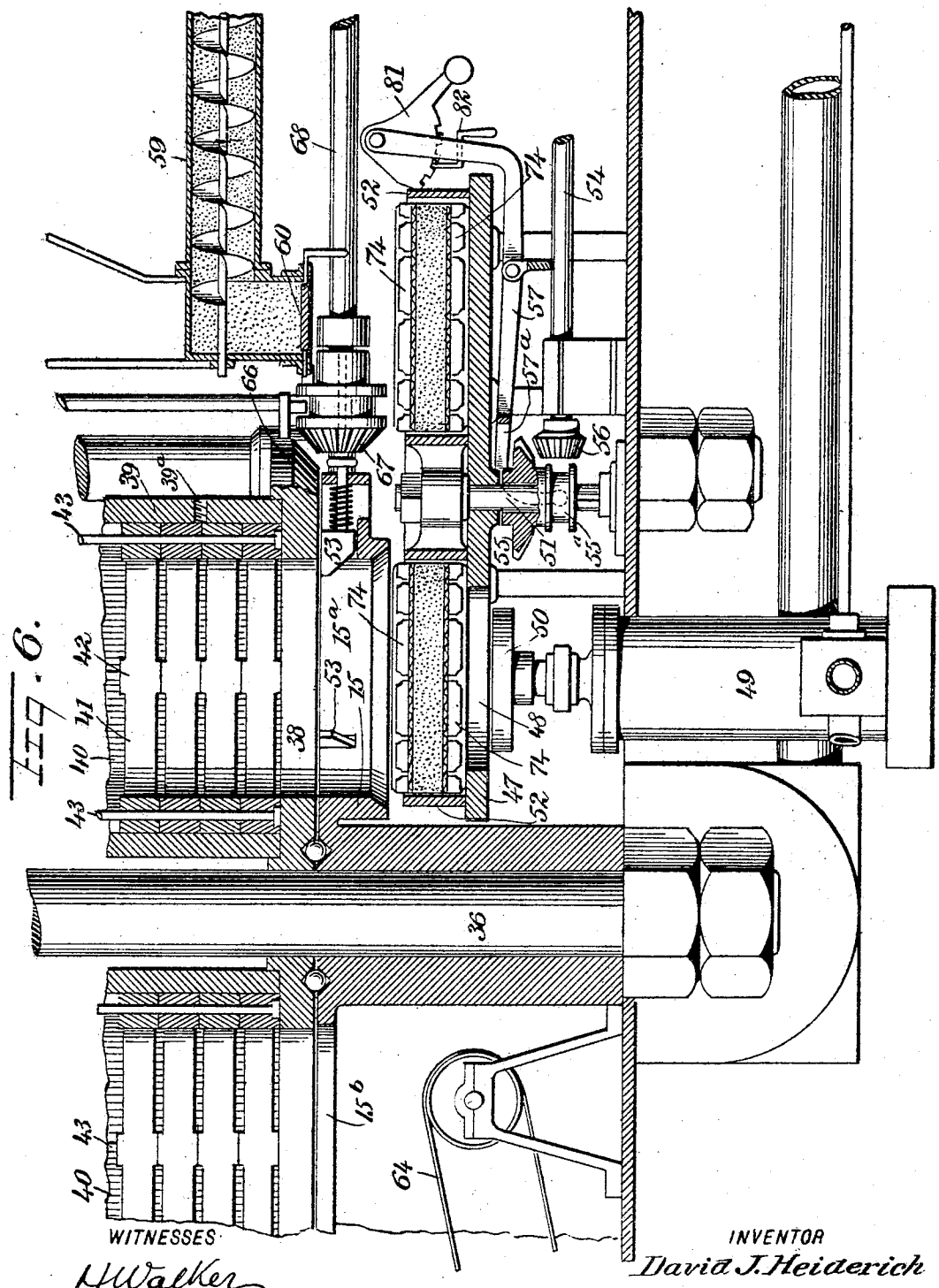


Fig. 6.

WITNESSES

H. Walker

Isaac B. Owens

INVENTOR

David J. Heiderich

BY Munn & Co

ATTORNEYS

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,121. PATENTED JULY 18, 1905.

D. J. HEIDERICH.

OIL PRESS.

APPLICATION FILED DEC. 17, 1903.

7 SHEETS—SHEET 7.

Fig. 7.

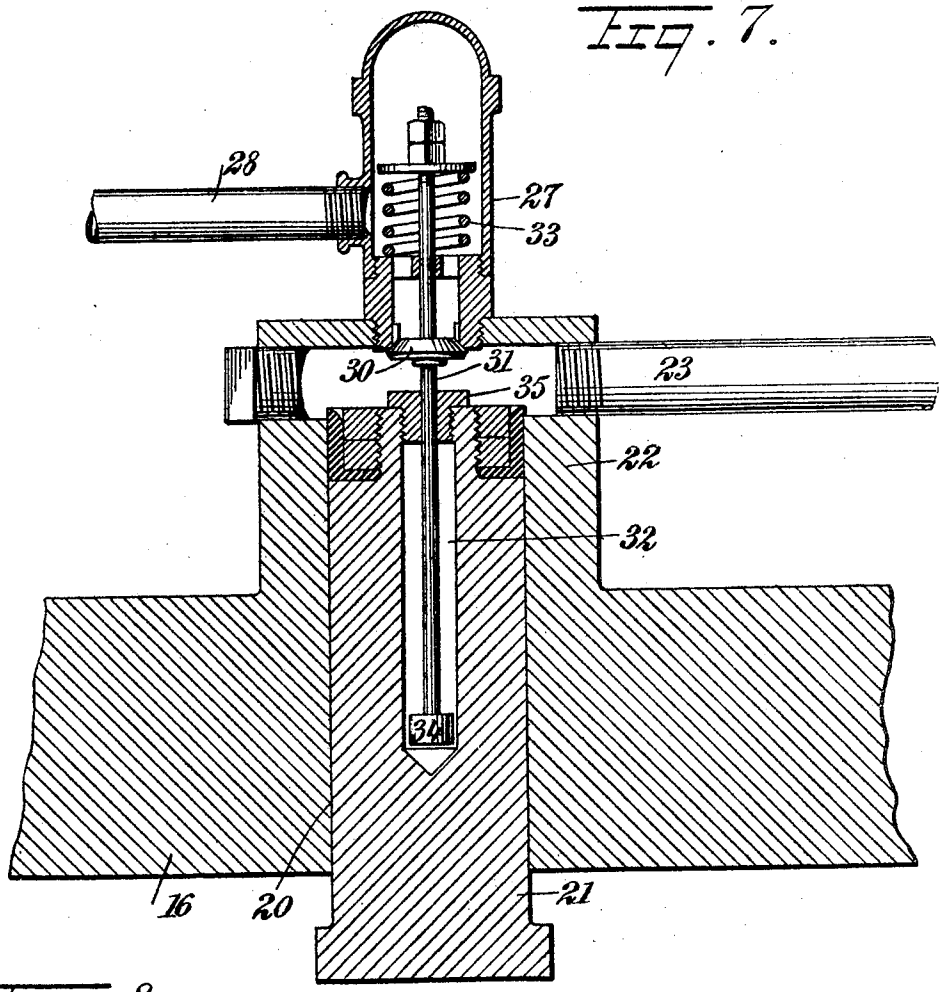


Fig. 8.

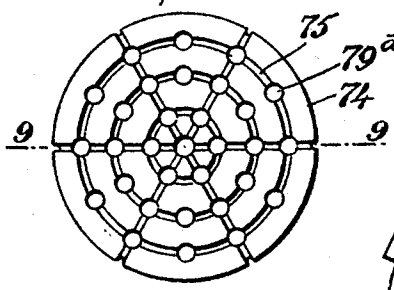


Fig. 10.

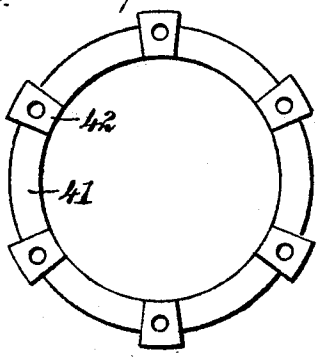
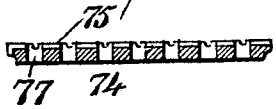


Fig. 9.



WITNESSES:

H. Walker

Isaac B. Avens.

INVENTOR

David J. Heiderich

BY Munn & Co

ATTORNEYS.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,121. Patented July 18, 1905.

UNITED STATES PATENT OFFICE.

DAVID JOSEPH HEIDERICH, OF BOYCE, LOUISIANA.

OIL-PRESS.

SPECIFICATION forming part of Letters Patent No. 795,121, dated July 18, 1905.

Application filed December 17, 1903. Serial No. 185,522.

To all whom it may concern:

Be it known that I, DAVID JOSEPH HEIDERICH, a citizen of the United States, and a resident of Boyce, in the parish of Rapides and State of Louisiana, have invented a new and Improved Oil-Press, of which the following is a full, clear, and exact description.

This invention relates to a press adapted particularly for producing oil from cotton-seed and other oil-producing material.

The leading feature of the invention resides in the arrangement of (preferably two) rotary turrets, each bearing a number of press-cylinders. I prefer to have this number correspond with the three stages in the operation of the press—viz., charging, pressing, and discharging. Coöperating with these parts are peculiarly-arranged mechanisms for charging the cylinders, pressing the charge, and discharging the cylinders, the parts being arranged so that a certain operation is being performed at all times in one of the cylinders—that is to say, when one cylinder is being charged the next cylinder is having the pressing operation performed therein and the third cylinder is being discharged of the spent material. By this means I greatly increase the capacity of the press, and by a novel manner of interarranging the elements I am able to dispense with a large percentage of the labor both skilled and unskilled heretofore employed in connection with this class of machinery.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the invention. Fig. 2 is a front sectional elevation on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the apparatus. Fig. 5 is a section on the line 5 5 of Fig. 4. Fig. 6 is a section on the line 6 6 of Fig. 3. Fig. 7 is a detail section on the line 7 7 of Fig. 4. Fig. 8 is a face view of one of the press-plates. Fig. 9 is a section on the line 9 9 of Fig. 8. Fig. 10 is a detail of one of the annular rings forming the inner lining of the cylinders, and Fig. 11 is a sectional elevation on the line 11 11 of Fig. 3.

The apparatus comprises a base 15 and a head 16, rigidly connected together by tie-bars 17. The base 15 has formed therein (in case two turrets are provided, and this is the preferred construction) two vertically-extending passages 18, (see Fig. 5,) respectively carrying the lower presser-plungers 19, and the head 16 has similar passages 20, carrying the upper presser-plungers 21, the plungers 19 and 21 being arranged in pairs, as shown in Fig. 5, so as to work toward and from each other. As illustrated in said view and in Fig. 7, casings 22 are formed on the base and head, respectively, surrounding the outer ends of the openings 18 and 20, and to the said casings hydraulic or other pressure pipes 23 lead, the casings 22 and their respective passages in the base and head forming hydraulic cylinders and the pressure acting upon the outer ends of the plungers 19 and 21. The bottom plungers 19 are arranged to return into inactive position by their own gravity, and the upper plungers 21 are raised into inactive position by means of weights 24, (see Fig. 2,) connected to the lower ends of the plungers by means of ropes 25 or the like. The precise arrangement of the pipe 23 is not essential nor is the controlling means therefor. In Fig. 1, 26 indicates a valve which may be employed to serve this purpose.

In order to prevent the movement of the plungers 21, resulting in the destruction of some part of the apparatus, I provide the stop device illustrated in Figs. 5 and 7. These devices are located in casings 27, which communicate with the upper casings 22, and each casing 27 has a pipe 28 passing therefrom to the reservoir of the hydraulic pumps supplying the pipes 23. Communication between the upper casings 22 and the casings 27 is controlled by valves 30, the stems 31 of which pass into the casings 27 and into longitudinally-alined cavities in the plungers 21. The valves 30 are seated by the pressure within the casings 22 and are also held yieldingly closed by springs 33, located in the casings 27. On the lower end of each valve-stem 31 is

carried an enlargement 34, which is arranged to strike against a closure 35 in the outer end of the plunger with which said rod coacts. Normally the valves 30 are seated; but should the inward movement of either of the upper plungers exceed the predetermined limit the enlargement 34 will be struck by the closure 35, the valve 30 will be opened, and the pressure within the casing 22 will be exhausted through the casing 27 and pipe 28.

Extending between the head and base of the machine, respectively, at the end portions thereof, are two vertical shafts 36, on which are mounted by suitable antifriction-bearings the connected upper and lower turret-heads 37 and 38, respectively, these heads being two for each turret and being arranged to turn around the respective centers 36. Each turret carries three press-cylinders, each comprising outer walls 39. Around the walls and within the same are arranged longitudinally-extending rods 40, (see Figs. 3 and 5,) and inside of which rods are arranged a number of superimposed rings 41, forming the inner wall of the cylinder. Said rings are provided with enlargements 42, (see Figs. 6 and 10,) which hold them spaced apart, and the rings are firmly clamped together by longitudinally-extending tie-rods 43. (See Figs. 3 and 6.) The rings 41 being thus spaced apart, a free passage for the oil is provided, and the rods 40 being circular in cross-section provide longitudinal passages for the oil, extending between the inner and outer walls of the cylinder. Said rods (see Fig. 5) are tapered at their lower ends, so as to enlarge at the discharge-point the passages for the oil. The outer walls 39 of the press-cylinders are provided with orifices 39^a, (see Figs. 3 and 6,) which permit steam connections with the interior of the cylinders, and in this manner the cylinders may be warmed up before starting and also cleaned out by the action of the steam. As the oil runs from the lower ends of the cylinders during the pressing operation, (which will be hereinafter fully described,) it passes into circular drains 44 in the base 15, (see Figs. 3 and 5,) which lead to basins 45, formed in the base 15 to receive the oil, and from which basins discharge-pipes 46 (see Figs. 2 and 3) pass to any suitable receptacle. (Not shown.) The cylinders are so arranged in the turrets that as the turrets are turned the cylinders will be successively passed between the members of the pairs of plungers 19 and 21, and by operating these plungers the pressing will be effected, the upper and lower heads of the turrets having openings therein corresponding to the cylinders, through which the plungers may freely pass.

The material from which the oil is to be extracted is charged into the cylinders by the charging mechanism, which is best illustrated in Figs. 1 and 6. This mechanism comprises a table 47, suitably supported beneath the charging side of each turret, (see Fig. 4,) and the charging-openings 15^a of the base, (see Fig. 6,) said tables having openings 48 therein in position to coincide vertically with the cylinder which is being charged. Directly beneath these openings 48 are steam-cylinders 49, which operate the elevators 50, such elevators being movable through the openings 48 upward into the lower ends of the cylinders being charged. A shaft 51 extends centrally through the table 47 and carries two oppositely-disposed holders 52, so that by this shaft said holders may be turned over the table and thereby successively presented to position over the openings 48. Said charging-holders carry the successive sections of the complete charge, and as said sections are moved over the openings 48, as shown in Fig. 6, and the elevator 50 raised the sections of the cylinder charge are moved upward into the cylinder. In order to hold the successive sections of the charge in the cylinder as they are raised thereinto, spring-dogs 53 are mounted in the walls of the openings 15^a of the base 15, past which dogs the sections of the charge are raised, said dogs preventing the dropping of the sections, as will be apparent from Fig. 6. The shafts 51 and the attached holders 52 are driven from shafts 54, connected by gears 55 and 56 with the shafts 51. The gear 55 is splined on the shaft 51 and has attached a collar 55^a, with which is engaged the fork 57^a of a lever 57, suitably fulcrumed beneath the table 47. The outer end of this lever is turned up above the outer edge of the table and carries pivotally a toothed quadrant 81. With this quadrant coacts a dog 82, pivotally mounted in the lever, as shown in Fig. 6. By manually releasing the dog 82 and manually throwing the quadrant 81 inward to the position shown in Fig. 6 and reëngaging the dog 82 with the quadrant the quadrant will then be held in the path of the holders 52, and as one of said holders engages the quadrant the lever 57 will be raised at its inner end and the gear 55 lifted from engagement with the gear 56. This will stop the movement of the holders, and the elevator 50 may then operate as described. After the operation of the elevator the dog 82 should be released from the quadrant and the gear 55 may then drop into active position, whereupon the holders will again move. Meanwhile the operator should return the quadrant to its inner position in time to be engaged by the next holder, and thus again arrest the shaft 51. By these devices manually actuated as described the holders are given the necessary intermittent movement. 58 indicates the heaters for the material from which the oil is extracted, and these may be of any sort desired. From such heaters conveyer-pipes 59 pass, the conveyers being turned downward at their discharge

ends and provided with manually-operated valves 60 for controlling the outlet. The discharge ends of the conveyers are located, respectively, over the tables 47, so that when one holder of each charging device is under the appropriate press-cylinders the other holders extend outward directly under the discharge ends of the conveyers 50 to receive the next section of the cylinder charge therefrom. (See Figs. 3 and 6.)

The head 16 of the apparatus carries two steam-cylinders 62, provided with suitable means for controlling the steam and having plungers 63 therein, these plungers operating from the lower ends of the cylinders 62 and being arranged to be entered into the upper ends of the press-cylinders, so as to drive downward the spent oil-producing substance, thus starting the discharge movement of the cylinders. Reference to Figs. 3 and 4 will show that the three press-cylinders of each turret are arranged equidistant thereon and that the press-plungers 19 and 21, the charging or elevator cylinders 49, and the discharging-cylinders 62 are also arranged at equidistant points around the circumference of the turret, so that when one cylinder is having the pressing operation performed therein the other cylinder is being charged and the third cylinder is being discharged. Immediately below the discharge-cylinders 62 two conveyers 64 are located, these conveyers passing the spent oil-producing material laterally, where it may be loaded onto tram-cars 65 or any other suitable means for transferring the spent material from the machine. The spent charges pass down through the openings 15^a in the base 15 (see Fig. 6) into the conveyers, as described.

The turrets are adapted to be driven with a step-by-step movement, advancing their cylinders successively from one operation to the other and pausing during the performance of such operations. In attaining this end the lower heads of the turrets are formed with beveled toothed peripheries 66. With the respective lower turret-heads beveled friction-gears 67 operate. (See Figs. 2 and 6.) Said gears are splined on shafts 68, to which are imparted, by any suitable means, a rotary movement. By throwing the gears 67 inward they are meshed with the beveled surface 66 of the lower turret-heads and the turrets are driven, and by throwing the gears 67 outward the movement of the turrets is arrested. This shifting of the gears 67 is accomplished by means of arms 69, engaged with collars on the gears and carried by vertical rock-shafts 70, mounted in the base 15 and head 16. Said rock-shafts have arms 71, (see Fig. 2,) attached to permit their manual operation. Mounted to rock horizontally on the front tie-rods 17 are levers 72, also engaged with collars on the gears 67. Said levers 72 have their inner ends connected to rods 73, which extend rearward (see Figs. 3 and 11) and are joined to the respective lugs 79^c of collars 79, which are mounted to rock on arms 78. These arms 78 are carried by collars 80, mounted loosely on the central tie-rod 17. Each lug 79^c also has a spring 76 engaged therewith, and these springs tend to throw the levers 72 so as to disengage the gears 67 from the turrets. The collars 79 have sector-shaped slots 79^a formed therein, and pins 78^a on the arms 78 lie loosely in the slots to limit the movement of the collars. Lugs 79^b on the collars 79 project toward the respective turrets into the paths of studs 38^a, carried by the turrets. The turrets are notched, as shown at 38^b, and coacting with these notches are dogs 83, held yieldingly in active position by springs 84. The gears 67 being normally out of engagement with the turrets owing to the springs 76. To start the turrets, the dogs 83 should be disengaged, and the arms 71 should be operated to throw the gears into mesh through the action of the parts 69 and 70, and the gears should be held manually in this position. The movement of the turrets will continue until one of the studs 38^a strikes the corresponding stud 79^b, whereupon the collar 79 will be rocked, and by the action of the parts 79^c, 73, and 72 the gear 67 will be forced out of mesh. Instantly thereafter the dog 83 catches in the notch 38^b which corresponds to the stud 38^a, which just operated, as described, and thus the turret will be stopped. To restart the turret, the dog 83 and arm 71 should be operated again, as before described. It will be observed that there are for each turret three notches 38^b and studs 38^a corresponding to the three cylinders.

Figs. 8 and 9 illustrate in detail the press-plates 74, which are circular in form to fit the press-cylinders and are provided on one face with radial and concentric grooves 75. Said plates are also formed with openings 79^d, as shown. These plates are of such shape that they will fit snugly within the press-cylinders, as illustrated in Figs. 5 and 6.

In using the apparatus the heaters 58 are filled with the cotton-seed or other material from which the oil is to be derived, and a press-plate and oil-mat is laid in each of the outer holders 52, as indicated in Fig. 6, after which a certain supply of the cotton-seed is allowed to fall from the conveyer 59, thus forming one section of the cylinder charge. This section of the charge is then covered by a second press-plate and oil-mat, as shown. After this has been done the shafts 54 should be given movement sufficient to turn the loaded holders 52 into their inward positions directly under the press-cylinder to be charged. The charging-elevators 50 should then be operated, and the above-referred-to section of the charge will be raised into the cylinder and held by the dogs 53. After this has been done

the above-described operations should be repeated until one cylinder of each turret has been fully charged. The turrets should then be given a partial revolution to bring the charged cylinders under the press-plungers respectively related thereto. Then the movements of the turrets may be arrested by the action of the turret-controlling means. At this step in the operation the press-plungers should be brought into action and the charging mechanism again operated to charge the cylinders. Upon the completion of the first pressing and the second charging operations the turrets should be again moved so as to bring the pressed charges directly under the discharging-cylinders 62 and to bring the third cylinder over the charging devices and the second cylinders between the pressing-plungers. At this stage the discharging-cylinders should be operated and the spent cotton-seed ejected upon the conveyers 64. Simultaneously with this operation the second press-cylinders will have the plungers operating therein and the third press-cylinders will be undergoing the operation of charging. This completes the cycle of the operations of the machine.

It will be observed that the apparatus provides for rapidly and effectively charging, pressing, and discharging the oiled material. By means of the controlling devices all of the movements of the machine may be controlled with certainty and ease.

Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the intent of my claims.

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

1. The combination of a plurality of cylinders open at each end, means for movably mounting the cylinder, means for intermittently moving the cylinders, two oppositely-arranged plungers capable of working through the ends of the cylinders, stationary means for mounting the plungers and means for operating the plungers.

2. A charging apparatus for presses, comprising the combination with the press-cylinder of a table, a shaft passing centrally therethrough, two holders attached to the shaft and turned thereby successively into line with the press-cylinder, and a member reciprocating past the holder toward and from the cylinder and lying in line therewith.

3. A charging apparatus for presses comprising the combination with the press-cylinder, of a table, a rotary shaft passing therethrough, means for driving said shaft, holders located over and running on the table and attached to said shaft, said holders being orificed and the table having an orifice in line with the press-cylinder over which orifice the holders are successively moved, and an elevator movable through the orifice in the table and through the holders as they pass over said orifice to carry the charge from the holder into the cylinder.

4. A press having a press-cylinder comprising an outer shell, an orificed inner shell, and spacing means between said shells, the spacing means comprising rods extending longitudinally of the cylinder.

5. A press having a press-cylinder, comprising an outer shell, an orificed inner shell, and spacing means between said shells, the orificed inner shell comprising a series of rings having spaces between them and means for rigidly holding the rings in position.

6. A press-cylinder, comprising an outer shell, a series of rods extending longitudinally of the cylinder and lying against the wall of the outer shell, a series of rings lying inward of the rods and having enlargements thereon forming spaces between the rings, and clamping-rods passed longitudinally of the cylinder through the rings to hold the cylinders securely in position.

7. In a press the combination of walls forming a cylinder, a fluid-driven member engaging said walls, means controlling an outlet-orifice from the cylinder, and a connection between said means and the said fluid-driven member.

8. In a press the combination of walls forming a cylinder, a fluid-driven member mounted therein, a valve controlling an outlet-orifice in said cylinder, and a valve-stem having sliding connection with the fluid-driven member.

9. A press having a press-cylinder comprising an outer shell, an inner shell formed of a plurality of rings with enlargements forming spaces between the rings, fastening devices passing through the enlargements in the rings, and spacing-rods located between the rings and outer shell of the cylinder.

10. In an oil-press the combination with a support or frame, of a turret mounted to turn therein, means for imparting an intermittent or step-by-step movement to the turret, a plurality of press-cylinders mounted in the turret and open at each end, a charging means located below the turret and adapted to move the charge upward into the cylinders as they are successively advanced to the charging means, a pressing means comprising two plungers arranged respectively above and below the cylinders and adapted to enter the same, a discharging means located above the turret and adapted to move downward into the cylinders, and means below the turret and adjacent to the discharging means to receive the material discharged from the cylinders.

11. In a press the combination of a turret, cylinders thereon, means for pressing the ma-

terial within the cylinders, a gear on the turret, a gear movable in and out to mesh with the turret-gear, means in connection with said gear manually to move the same, a lever in connection with the gear, a part having connection with the lever, a detent on the turret adapted to engage the last-named part, whereby to move the second-named gear out of mesh with the turret-gear, and a dog arranged to engage the turret and arrest the movement thereof.

12. In an oil-press the combination of a support or frame, of a turret mounted to turn therein, means for turning the turret, a press-cylinder mounted on the turret and open at each end, a charging means located below the turret and adapted to move the charge upward into the cylinder as it is advanced to the charging means, a pressing means comprising two plungers arranged respectively above and below the cylinder and adapted to enter the same, a discharging means located above the turret and adapted to move downward into the cylinder, and means below the turret and adjacent to the discharging means to receive the material discharged from the cylinders.

13. In an oil-press, the combination of a support or frame, a turret mounted to turn therein, means for turning the turret with an intermittent movement, a press-cylinder mounted on the turret and open at each end, a charging means located below the turret and adapted to move the charge upward into the cylinder as it is advanced to the charging means, a pressing means adapted to enter the cylinder to compress the charge, a discharging means located above the turret and adapted to move downward into the cylinder, the cylinder being moved by the intermittent motion of the turret successively to the charging, pressing and discharging means, and means adapted to receive the material discharged from the cylinder.

14. In a charging apparatus for presses, the combination with the press-cylinder of a table, a shaft revoluble therein, holders attached to the shaft and turned thereby successively into line with the press-cylinder, a driving-gear, a gear splined on said shaft and adapted to be moved in and out of mesh with the driving-gear, means for operating the second-named gear, said means being actuated by the holders, and an elevator movable longitudinally of the cylinders toward and from the same for the purpose specified.

15. In a press, the combination with the press-cylinder of walls forming a second cylinder, a plunger movable therein, means for supplying fluid-pressure to the second cylinder to operate the plunger, a relief-outlet from said second cylinder, a valve normally closing the same, and a sliding connection between the valve and the plunger for the purpose specified.

16. In an oil-press, the combination with a support or frame, of a turret mounted to turn therein, means for turning the turret, a press-cylinder mounted on the turret and open at each end, a charging means located below the turret and adapted to move the charge upward into the cylinder as it is advanced to the charging means, a pressing means comprising two fluid-operated plungers arranged respectively above and below the cylinder and adapted to enter the same, means actuated by one of the plungers for automatically relieving the fluid-pressure from the plunger when the same reaches a predetermined position, a discharging means located above the turret and adapted to move downward into the cylinder, and means below the turret and adjacent to the discharging means to receive the material discharged from the cylinders.

17. In an oil-press, the combination with a support or frame, of a turret mounted to turn therein, a means for turning the turret, a press-cylinder mounted on the turret and open at each end, a charging means located below the turret and adapted to move the charge upward into the cylinder as it is advanced to the charging means, a pressing means comprising two fluid-operated plungers arranged respectively above and below the cylinder and adapted to enter the same, and plunger-cylinders in which the plungers operate, a valve controlling a fluid-outlet from one plunger-cylinder, a connection between the valve and the corresponding plunger to open the valve when the plunger reaches a predetermined position, a discharging means located above the turret and adapted to move downward into the cylinder, and means located below the turret and adjacent to the discharging means to receive the material discharged from the cylinder.

18. In an oil-press, the combination with a frame or support, of a press-cylinder open at each end, a charging means located below the cylinder and adapted to move the charge upward into the same, a pressing means comprising two plungers arranged above and below the cylinder and adapted to enter the same, a discharging means located above the cylinder and adapted to move downward into the same, and means for mounting the cylinder on the frame or support, and moving it successively to the charging, pressing and discharging means.

19. In an oil-press, the combination with a frame or support, of a press-cylinder open at each end, a charging means located below the cylinder and adapted to move the charge upward into the same, a pressing means comprising two fluid-operated plungers arranged above and below the cylinder and adapted to enter the same, means actuated by one of the plungers for automatically relieving the fluid-pressure from the plunger when the same

reaches a predetermined position, a discharging means located above the cylinder and adapted to move downward into the same, and means for mounting the cylinder on the frame or support and moving it successively to the charging, pressing and discharging means.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID JOSEPH HEIDERICH.

Witnesses:
H. GARLAND,
C. A. PROPST.