

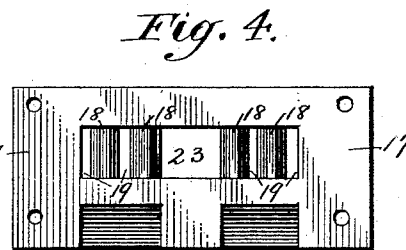
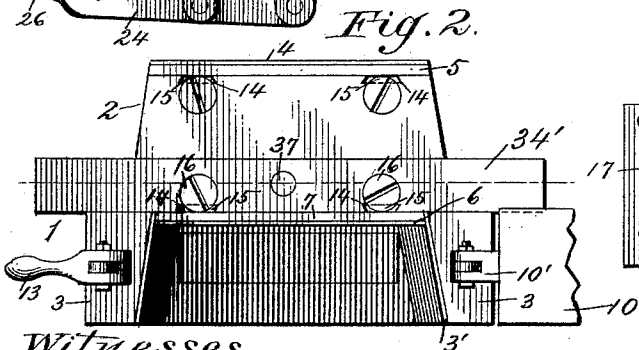
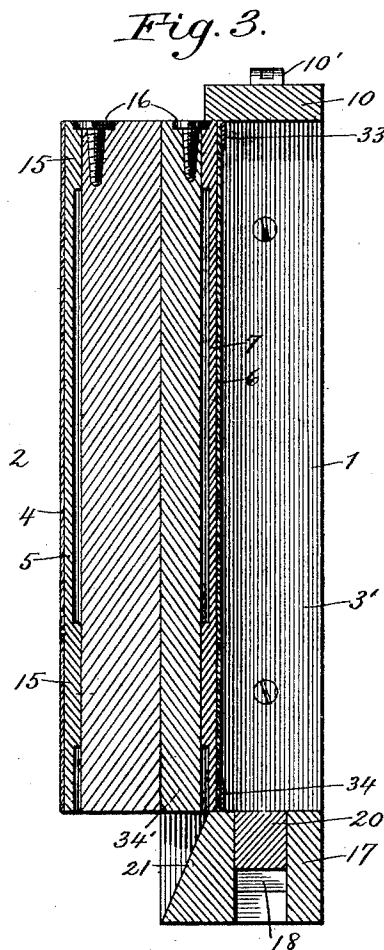
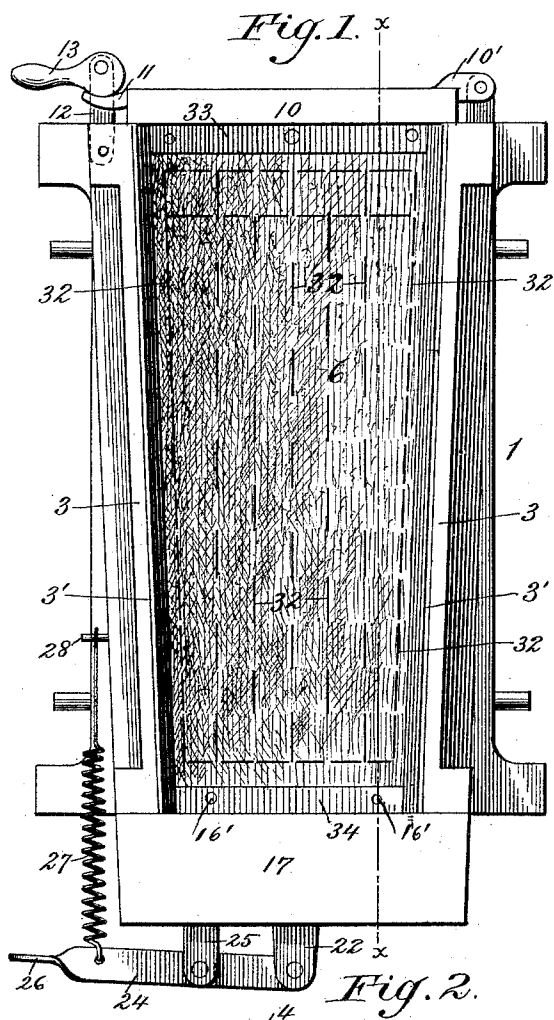
(No Model.)

2 Sheets—Sheet 1.

A. A. DIFFEY.  
HORIZONTAL TELESCOPIC PRESS.

No. 468,302.

Patented Feb. 2, 1892.



Witnesses:  
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Inventor.  
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Attorneys.

(No Model.)

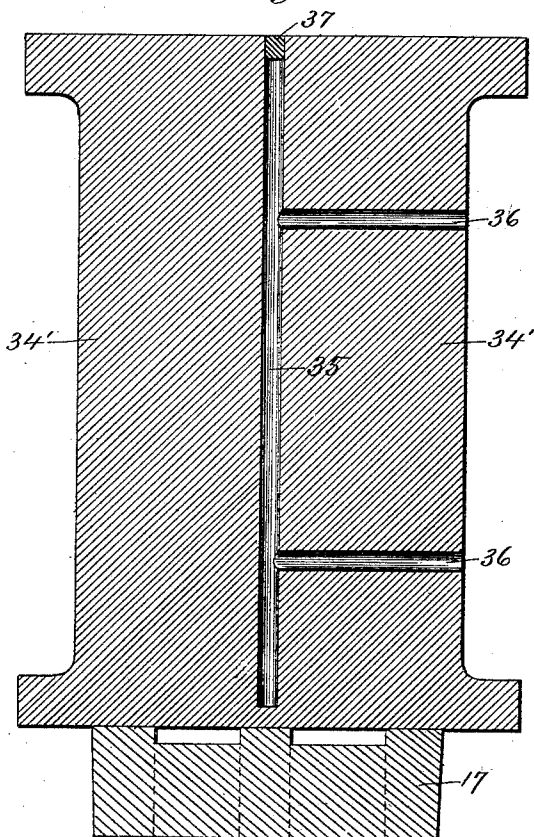
2 Sheets—Sheet 2.

A. A. DIFFEY.  
HORIZONTAL TELESCOPIC PRESS.

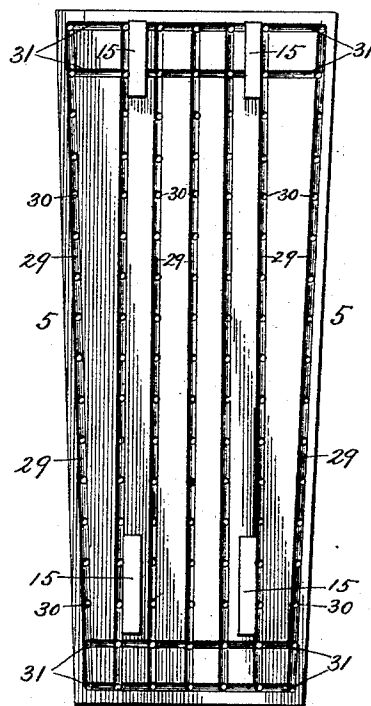
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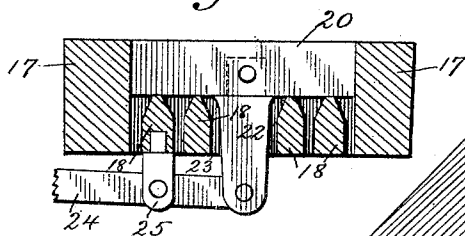
*Fig. 5.*



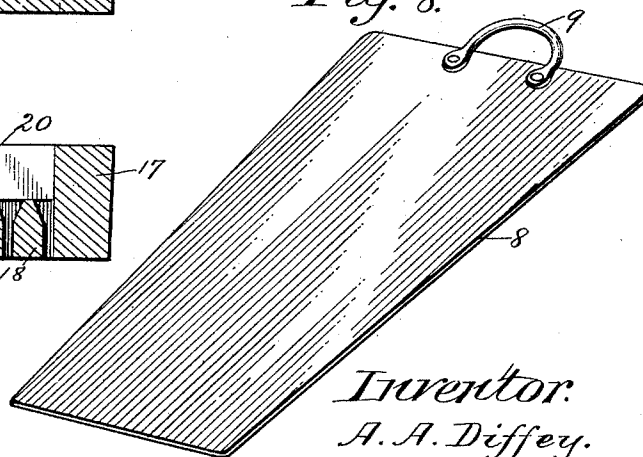
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

ALEXANDER A. DIFFEY, OF BRINKLEY, ARKANSAS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE AMERICAN COTTON OIL COMPANY, OF NEW JERSEY.

## HORIZONTAL TELESCOPIC PRESS.

SPECIFICATION forming part of Letters Patent No. 468,302, dated February 2, 1892.

Application filed March 25, 1891. Serial No. 386,367. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER A. DIFFEY, a citizen of the United States, residing at Brinkley, in the county of Monroe and State of Arkansas, have invented certain new and useful Improvements in Horizontal Telescopic Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates, generally, to presses for extracting liquids from solids, and particularly to that class of presses in which the parts of the press-boxes are constructed and arranged to telescope horizontally and in which the plungers on the backs of said boxes fit closely into the boxes in front thereof, as in presses of the type patented to me April 1, 1890, No. 424,543; and it consists in the improved construction and arrangement or combination of parts hereinafter fully disclosed in the description, drawings, and claims.

The objects of my invention are, first, to provide press-boxes of an improved shape and construction, whereby they will offer the least possible resistance to the removal of the compressed material or cakes therefrom and necessitate the use of only one door to each box for filling and discharging the same; second, to provide improved means for starting the cakes from said press-boxes, so that they may be readily and quickly removed from the tops thereof and thus avoid coming in contact with dripping oil, which occurs in boxes in which the cakes are removed from their bottoms; third, to provide improved devices for opening and closing the doors at the upper open ends of said boxes; fourth, to provide improved devices for removably securing the drain-plates to the press-boxes and plungers; fifth, to improve the construction of the chambers for the movable blocks in such manner as to prevent accumulation beneath said blocks of any of the material being compressed; sixth, to provide improved devices for operating said movable blocks; seventh, to so construct the outer sides of the rear walls of the chambers as to facilitate the escape of oil from the drain-plates; eighth, to

provide improved drain-plates and means for holding the filter-cloths upon their faces, and, ninth, to provide novel means for introducing steam into the boxes for facilitating the removal of the compressed material therefrom. These objects are accomplished by the improved construction of press-box and plunger illustrated in the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same parts, and in which—

Figure 1 represents a face or front view of a press-box constructed in accordance with my invention, the same also representing its sides as being both converged downwardly and diverged or flared forwardly, the foot or treadle lever mechanism for operating the movable block, and the link and cam-lever fastening for the door, which closes and opens the upper end of said box; Fig. 2, a top plan view of the plunger and also of the press-box with its door open and partly broken away; Fig. 3, a vertical section of the press-box and plunger on the dotted line *xx* of Fig. 1; Fig. 4, a top plan view of the rectangular chamber for the movable block, detached; Fig. 5, a vertical section through the back of the box, illustrating the passages for steam as a heating agent; Fig. 6, a rear face view of the drain-plate, detached; Fig. 7, a vertical longitudinal section of the rectangular chamber, showing also the movable block and some of its actuating devices in front elevation; and Fig. 8, a perspective view of the hand-plate or separator for removing the compressed cake or material from the filter-cloth on the front face of the drain-plate of the press-box.

In the drawings I have only illustrated one press-box and plunger; but my improvements are to be applied to a series thereof in a press of the type disclosed in my above-mentioned patent.

The numeral 1 indicates the press-box, which is provided on its back or rear side with the plunger 2, which fits closely within the next rear or succeeding box of the series, and with the downwardly-converging sides 3, which are arranged at greater distances apart at their upper than at their lower ends, whereby very little frictional resistance is offered to

starting and moving the compressed material or cake upwardly and outwardly from the open top of said box; also, the sides of said box are forwardly diverged or flared, so that should said cake at any time adhere to the filter-cloth 4 on the rear face of the drain-plate 5 of the plunger 2 as the latter recedes from the box in front thereof there can be no pressure against the sides of said box by the edges of said cake, as it will be then separated from or loosened upon the filter-cloth 6 on the front face of the drain-plate 7 of the press-box and ready to be upwardly removed. However it is generally the fact in the operation of the press that the cake does not adhere to the filter-cloth of the plunger, but remains within the box, and therefore it has been found necessary to provide the hand-plate or separator 8 for effecting its removal from the filter-cloth on the front face of the drain-plate of the press-box. For this purpose the separator is forced down between the latter filter-cloth and the compressed cake; also, it may be either made of wood or metal, preferably the latter, and is of a shape corresponding to the interior of the box, and, also, for convenience of operation or handling it is provided with the hand-loop 9. As the sides of the press-box sometimes become rough from friction and wear, resulting in the necessity for its removal for repair or renewal, which is a source of considerable expense and delay, it has been found necessary to overcome this objection. This has been accomplished by securing to the inner surfaces of the downwardly-converging and forwardly-flared sides 3 of said press-box the metallic plates or linings 3', which are removably secured to said sides by screws or the like, so that they can be taken out and polished when they become worn or roughened.

The door 10 at the upper end of the press-box is hinged at one end to the lug 10', is provided at its other end with the curved and slotted tongue 11, and is adapted to be opened and closed by the link 12 and the cam-lever 13, which are so arranged that when said link is turned upwardly and said lever downwardly the door will be securely fastened and prevented from being forced open by the pressure of the material within the box. This link is pivoted at one end to the side of the box which is opposite to that on which the door is hinged, while the cam-lever is loosely held by the other end of said link. In effecting the fastening of the door the link is moved upwardly in the arc of a circle and passed into the slotted tongue 11, which extends beyond the end of said door. With these devices the door can be rapidly opened and closed.

The inside or front face of the press-box and the rear face of the plunger are formed with the dovetailed grooves 14 for receiving the correspondingly-shaped short lugs or slats 15 on the rear and front faces of the drain-plates 7 and 5 of said box and plunger, where-

by said plates are removably fitted in place. In order to prevent upward movement of these plates when the press is in operation and permit of their removal, when desired, the screws 16 are inserted in the upper ends of the box and plunger and so arranged that their large heads project over the upper ends of said short lugs or slats. These plates are prevented from downward movement by the horizontal screws or pins 16' passing through the lower ends thereof, as shown in Fig. 1.

The lower end of the press-box is provided with the rectangular chamber 17, having in its bottom the series of ribs 18, which are preferably A-shaped at their upper edges, and so constructed and arranged as to leave the outlets 19 between them, through which any material escaping from the box will pass and be prevented from lodging beneath and holding up the vertically-movable block 20 in line with the lower end of the plunger. With these ribs and outlets at the bottom of said chamber a smooth and even seat is provided for said block, which is thus never in danger of being struck and injured by the plunger working thereover. The rear wall of this chamber is inclined or beveled downwardly and rearwardly, as at 21, so as to form a free passage for the escape of the oil from the lower end of the rear face of the drain-plate 7 of the press-box 1.

The vertically-movable block 20 fits loosely within the rectangular chamber 17 and is provided on its under side with the lug or stud 22, which projects downwardly through the opening 23 in the bottom of said chamber. A lever 24 is pivoted to a stud 25, projecting downwardly from the bottom of said chamber, and is provided with a treadle 26 at the end of its outer arm, its inner arm being pivotally connected to the lower end of the stud 22. A spiral spring 27 is fastened at its lower end to the outer arm of said lever, and its upper end is secured to the pin 28 on the side of the box. The tendency of this spring is to hold the movable block normally down upon the bottom of said chamber; but by depressing the treadle-lever 24 the movable block will be raised and thus start the cake of material upward or toward the open top of the box, whence it can be readily and quickly removed.

The drain-plates 5 and 7 on the rear face of the plunger 2 and the front face of the press-box 1 are shaped to conform to the contour of said plunger and box. Each of these plates is formed with the vertical channels or grooves 29 in its rear face and with the small perforations 30 passing through said plate and terminating in said grooves. The oil or other liquid is forced through these perforations, passing down in said channels or grooves, and is delivered upon the downwardly and rearwardly inclined rear wall 21 of the chamber 17, whence it passes into any suitable receptacle; also, on the rear faces of said plates, near their upper and lower ends,

are formed the horizontal or cross grooves 31, which assist in carrying the oil from said vertical grooves to the dovetailed grooves 14, thereby allowing the oil to escape freely for effecting perfect drainage.

On the rear and front faces of the drain-plates 5 and 7 are secured the filter-cloths 4 and 6, which are sewed thereto by the wire stitches 32, which are passed in and out through the small perforations 30 and laid along the bottoms of the vertical grooves 29 and over the outer surfaces of said filter-cloths in such manner that they will offer no resistance to the insertion and removal of said plates to and from their operative positions; also, these wire stitches prevent said cloths from being pulled off said plates and also from wear by the separator 8, which is frequently passed down over the cloths for separating the cakes of compressed material adhering thereto; also, the cloth on the drain-plate in the press-box may be further protected from wear by the use of one or more metal strips secured lengthwise thereof; but at times their use is not desirable as they may obstruct the perfect drainage of the cloth. The narrow metallic strip or plate 33, extended across the filter-cloth at the upper end of the drain-plate 7, is used for the purpose of protecting the upper edge of said cloth from injury during the use or insertion of the separator 8; also, the similar narrow strip 34 across the lower edge of said cloth and drain-plate is employed for preventing the movable block 20 from coming into contact with and injuring the lower edge of said cloth.

It has been found in practice that the use of heat in press-boxes not only renders the cakes of compressed material easy of discharge or removal therefrom, but that it results in a better and more copious yield of oil, especially when pressing cotton-seed and linseed. Therefore, as shown in Fig. 5, the rear wall or body 34 of the press-box is formed with the vertical passages 35 and the horizontal passages 36, which lead from one side of said box and communicate at their inner ends with said vertical passage, into which at its upper end is fitted the removable plug 37. These side or horizontal passages are to be provided with suitable nipples for the connection of hose or pipes leading to the source of steam. The supply of heat or steam may be continuous or intermittent, as desired or necessary.

Having thus fully described the construction and arrangement or combination of the parts of my several improvements in horizontal telescopic presses, their operation and advantages, what I claim as new is—

1. In a horizontal telescopic press, a press-box provided with downwardly-converging and forwardly diverging or flaring sides, substantially as described.

2. In a horizontal telescopic press, a press-box provided with downwardly-converging

and forwardly diverging or flaring sides and with a plunger secured to the back thereof and formed with similarly-shaped sides, substantially as described.

3. In a horizontal telescopic press, a press-box provided with downwardly-converging and forwardly diverging or flaring sides and metallic plates or linings therefor, substantially as described.

4. In a horizontal telescopic press, a press-box provided with downwardly-converging and forwardly diverging or flaring sides, an open top, a hinged door, and devices for opening and closing said door, substantially as described.

5. In a horizontal telescopic press, the combination, with a press-box having an open upper end having downwardly-converging and forwardly-diverging sides, of a door hinged at one end to the top of said box and provided at its other end with a slotted tongue, a link pivoted at one end to the side of said box and adapted to enter into and be released from said slotted tongue, and a cam-lever pivoted to said link and adapted to be depressed upon and released from said slotted tongue of the door, substantially as described.

6. In a horizontal telescopic press, the combination, with a press-box or plunger formed with dovetailed grooves, of a drain-plate provided with short correspondingly-shaped seats fitted in said grooves for removably holding said plate in place, substantially as described.

7. In a horizontal telescopic press, the combination, with a press-box or plunger formed with dovetailed grooves, of a drain-plate provided with short correspondingly-shaped seats fitted in said grooves for removably holding said plate in place, and the screws having large heads projecting over the upper ends of said short seats, substantially as and for the purpose described.

8. In a horizontal telescopic press, the combination, with a press-box provided with a rectangular chamber at its lower end, of the movable block arranged within said chamber, the treadle-lever pivoted to the bottom of said chamber and having its inner arm connected to said block, and a spiral spring connecting the outer arm of said lever to the side of said box, substantially as described.

9. In a horizontal telescopic press, the combination, with a press-box provided with a rectangular chamber at its lower end, having in its bottom a series of downwardly-inclined ribs with outlets between the same, of a movable block arranged within said chamber, and means for raising and lowering said block, substantially as described:

10. In a horizontal telescopic press, the combination, with the press-box provided with the rectangular chamber at its lower end, having a downwardly-inclined rear wall for facilitating the escape of oil, of a drain-plate secured within said box and formed with small perforations and with vertical grooves

in its rear face for delivering the oil upon said inclined rear wall, substantially as described.

11. In a horizontal telescopic press, the combination, with the press-box provided with the rectangular chamber at its lower end, having a downwardly-inclined rear wall for facilitating the escape of oil, of a drain-plate secured within said box and formed with small perforations and with vertical and transverse grooves in its rear face for delivering the oil upon said inclined rear wall, substantially as described.

12. In a horizontal telescopic press, a drain-plate formed with a series of vertical and horizontal grooves in its rear face and a series of perforations intersecting said grooves, the horizontal grooves being only arranged near the upper and lower ends of said plate, substantially as described.

13. In a horizontal telescopic press, the combination, with a perforated drain-plate formed with both vertical and horizontal grooves in one face and provided on its opposite face with a filter-cloth, of wire stitches for securing said cloth in place, said stitches being arranged to pass over said cloth and lie in the bottoms of said grooves, substantially as and for the purpose described.

14. In a horizontal telescopic press, the combination, with a perforated drain-plate formed with grooves in one face and provided on its opposite face with a filter-cloth, of narrow metallic strips or plates secured across said cloth near the upper and lower ends of the front face of said plate, substantially as described.

15. In a horizontal telescopic press, the combination, with a perforated drain-plate provided on one face with a filter-cloth, of wire stitches for securing said cloth in place, and a separator shaped to conform to the interior of the box, substantially as and for the purpose described.

16. In a horizontal telescopic press, a press-box having its rear wall or body formed with a vertical passage having a removable plug fitted in its upper end and with horizontal passages communicating at their inner ends with said vertical passage for the admission of steam for heating said box, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER A. DIFFEY.

Witnesses:

J. J. McNALLY,  
VAN CALDWELL.