

C. A. WETTENGEL.
RETORT PRESS.
APPLICATION FILED APR. 8, 1912.

1,054,064.

Patented Feb. 25, 1913.

3 SHEETS-SHEET 1.

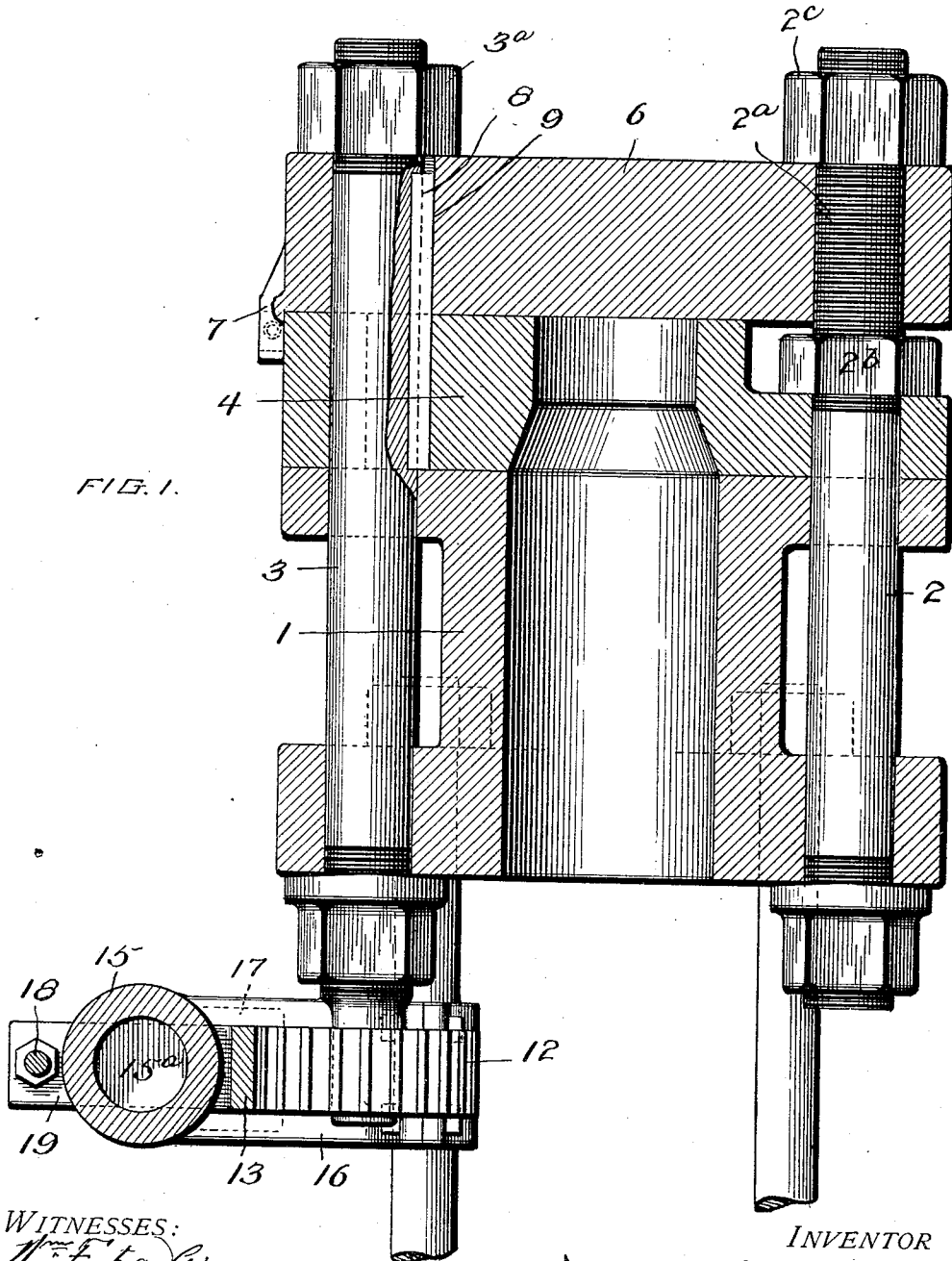


FIG. 1.

WITNESSES:
W. F. Kayle.
Robt. E. Barry.

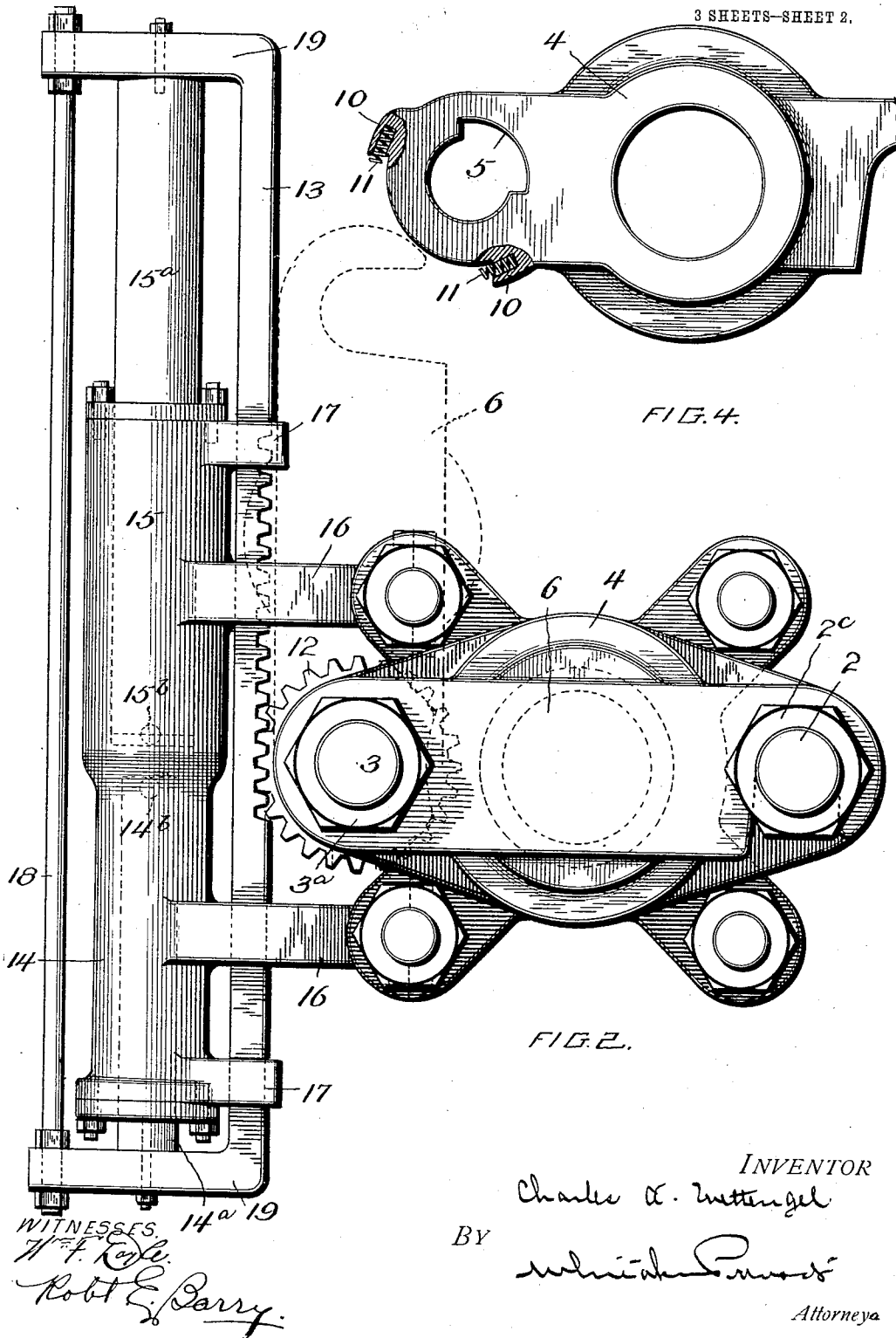
INVENTOR
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BY
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Attorney

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3 SHEETS—SHEET 2.

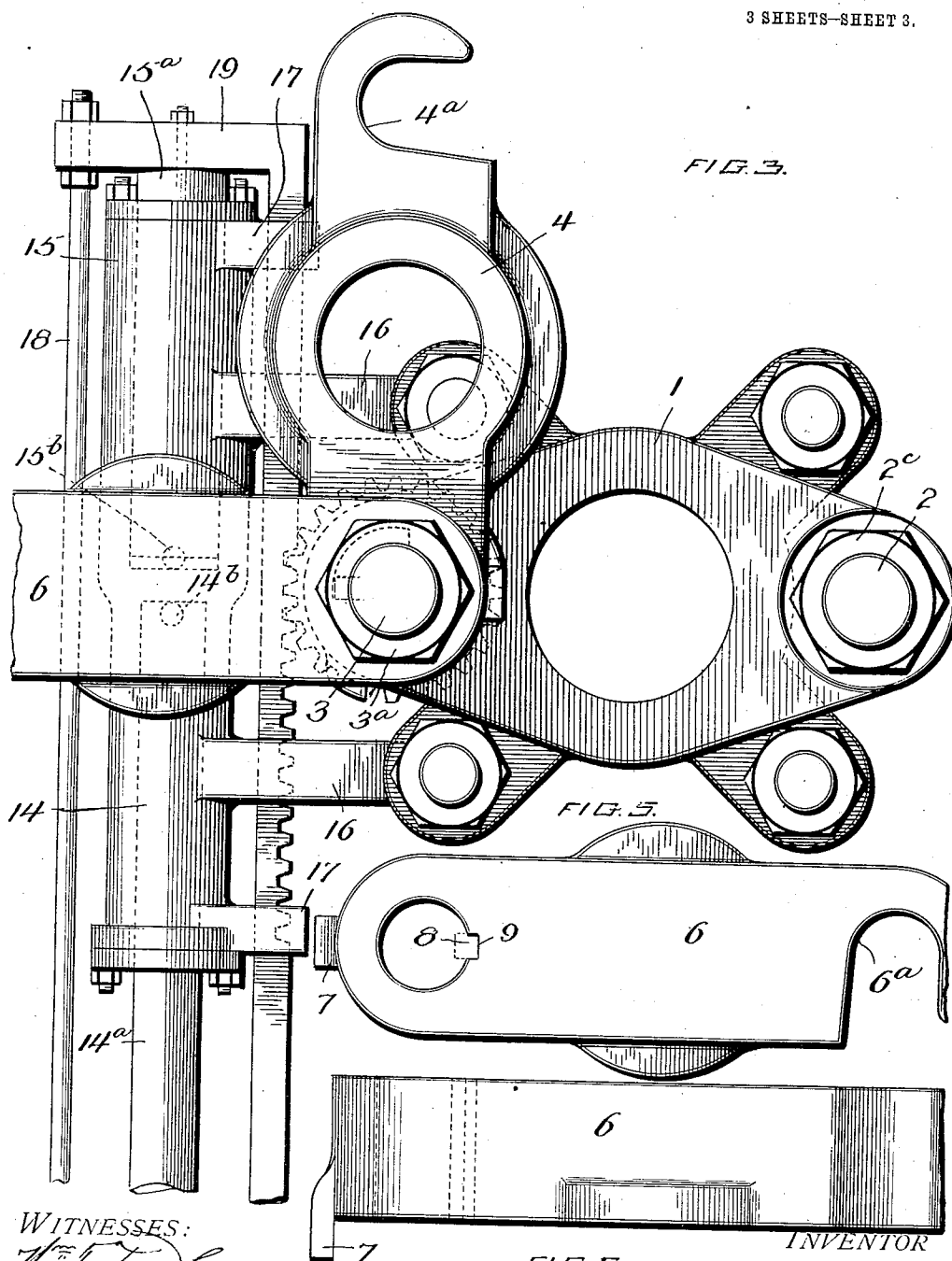


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3 SHEETS-SHEET 3.



WITNESSES:
W. F. Kyle.
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FIG. 6. Charles A. Wettengel.
BY *Whitcomb*
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UNITED STATES PATENT OFFICE.

CHARLES ALBERT WETTENGEL, OF ST. LOUIS, MISSOURI.

RETORT-PRESS.

1,054,064.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed April 8, 1912. Serial No. 689,314.

To all whom it may concern:

Be it known that I, CHARLES ALBERT WETTENGEL, citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Retort-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 to mechanism for mechanically opening and closing the heavy cover and matrix of a retort press and for moving like articles of the same character.

The object of the invention is to lessen the manual labor required in the machines now in use, and to increase the output of the retort press by largely reducing the time consumed in moving the parts specified. This I accomplish by mechanical means.

Another object of my invention is to provide a mechanism which will be quick acting in operation and of the highest possible efficiency.

A further object of my invention is to provide a mechanism which will be strong and durable and which will be simple of construction and easy of operation.

With these objects in view my invention consists in a hydraulic pressure actuated mechanism characterized as above mentioned and in certain details of construction and arrangements of parts, all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which;

Figure 1 is a vertical section of my invention with parts in relief. Fig. 2 is a top plan view of the same showing the cover and matrix closed. Fig. 3 is a top plan view of the same showing the cover and matrix open. Fig. 4 is a top plan view of the matrix. Fig. 5 is a top plan view of the cover. Fig. 6 is a side view of the same.

1 is a clay cylinder which may be of any usual or preferred form, and is connected to the frame or other stationary supporting portion of the press in any preferred manner, insuring the requisite stability. The clay cylinder 1 is provided with a locking bolt 2 and vertical shaft 3.

The matrix 4 is of the usual form, with the exception, that the aperture forming its bearing upon the shaft 3 is enlarged to form a recess 5, for a purpose hereinafter specified. The cover 6 is also of usual construction. It is provided with the lug 7 which extends downwardly over the matrix 4, as clearly shown in Figs. 1 and 6. The shaft 3 is provided with a spline 8, and the cover is mounted on said shaft with the notch or recess 9 engaging said spline, whereby the shaft and cover are united for joint movement. The matrix 4 is also mounted upon the shaft 3 with the said spline 8 engaging the recess 5. The matrix is also provided with projections 10, 10 which are preferably recessed and provided with buffer springs 11, 11. From this description it will be seen that the shaft 3 will move a certain distance without moving the matrix 4 and the amount of such movement is limited by the extent of the recess 5 and by the distance between lugs 10, 10 which will engage first one side and then the other of the lug 7 of the cover 6.

The locking bolt 2 is provided with a screw threaded portion 2^a adapted to be engaged by the locking nuts 2^b and 2^c to secure the matrix and cover respectively on that side of the clay cylinder 1. A locking nut 3^a engaging a screw threaded portion of the shaft 3 secures the matrix and cover on the opposite side of the cylinder. The matrix is provided with the usual recess 4^a which engages the locking bolt 2 and is secured in the manner before mentioned. The cover 6 is also provided with a similar recess 6^a for the same purpose as the recess 4^a in the matrix.

A pinion 12 is keyed to the lower end of the shaft 3 and meshes with a rack bar 13. A plurality of single acting cylinders 14 and 15 of different diameters are secured to the clay cylinder supporting means, by the arms 16, 16, which also serve as guides for the rack bar 13. Additional guides 17, 17 are made integral with said cylinders 14 and 15. Rams or pistons 14^a and 15^a are mounted in said cylinders and are moved in the same by means of hydraulic pressure. The rack bar 13 is provided with angular arms 19, 19 and the rear ends of these arms are connected by the bar 18. It is to be noted that the bar 18 and the rack bar 13 in effect form a frame and the rams or

pistons of the hydraulic cylinders are connected to the angular arms 19, 19 or the ends of the frame.

Hydraulic pressure from an accumulator or other source of supply is continuously admitted to cylinder 14 at 14^b as indicated by dotted lines in Figs. 2 and 3. The same hydraulic pressure under control of a three way or equivalent valve (not shown) is admitted to cylinder 15 at 15^b as indicated by dotted lines in Figs. 2 and 3.

When it is desired to remove the cover, cylinder 15 is connected to exhaust and the constant pressure in cylinder 14 causes the ram 14^a to move the rack frame with ram 15^a thereby moving pinion 12 and shaft 3 and cover 6 away from its closed position to a position approximately at a right angle from the closed position as indicated in dotted lines in Fig. 2. By this time the spline 8 of the shaft 3 will engage the shoulder formed by one end of the recess 5 of the matrix, and the lug 7 of the cover will have been brought into contact with one of the projections 10, 10 of the matrix. The further movement thereafter of the piston, rack and shaft will cause the spline 8 and said lug 7 to turn the matrix from its closed position in the same direction, and to move the cover still farther, until the cover and matrix are brought to assume the position shown in Fig. 3. When it is desired to move the cover and matrix into closed position, water is admitted to the inner end of the cylinder 15, and the cylinder 14 exhausts back into the pressure line. This gives a reverse movement to the pistons, rack frame and shaft. The first movement of these parts causes the cover to move in the opposite direction, the matrix meanwhile remaining stationary until the cover has been brought into position above the same, in the position in which the matrix is shown in Fig. 3. The spline 8 will then have engaged the opposite end of the recess 5 in the matrix and the lug 7 will have been brought into contact with the oppositely located projection 10. The further movement of the piston, rack frame and shaft will move the cover and matrix together to the closed position shown in full lines in Fig. 2. In these operations it will be seen that the springs 11, 11 serve to prevent jar and shock, by reason of the engagement of the projections 10, 10 by the lug 7. Closing the exhaust of cylinder 15 will stop the motion of the cover 6 at any point. In regular operation it is stopped after fully uncovering the matrix, but before reaching the position at right angles to the starting point.

The reason for employing cylinders of different diameters is to simplify the water connections of the cylinders and the control of the same. The water is at all times connected to the smaller cylinder. By a con-

nection which will permit the water to flow from said smaller cylinder into the larger, the larger piston will force the smaller piston to its original position. The withdrawal of the water supply from the larger piston and its connection with an exhaust returns the water to the smaller cylinder and as long as the flow is permitted, the piston of this cylinder will be moved to effect exhaust of the larger cylinder and the movement of the connected parts as heretofore explained or described.

It is customary and necessary to have the locking nuts on the locking bolt 2 and on shaft 3 tightened after the matrix and cover have been closed, and such nuts must be loosened before the cover and matrix can be opened. These movements are usually effected by manually operated means and any preferred form of such means may be employed with my automatic devices for moving the cover and matrix.

What I claim and desire to secure by Letters Patent is:—

1. In a retort press, the combination with the cover and matrix, of automatic mechanism for moving such parts into and out of closed position, said mechanism having means by which when opening the press the cover is turned to wholly uncover the matrix before motion is imparted to the latter.

2. In a retort press, the combination with the cover and matrix, of automatic mechanism for moving such parts into and out of closed position, said mechanism having means by which when opening the press, the cover is turned to wholly uncover the matrix before motion is imparted to the latter, and in closing the press both of said parts are moved to closed position at the same time.

3. In a retort press, the combination with the cover and matrix, of automatic mechanism for moving said parts into and out of closed position, said mechanism having means by which when opening the press, the cover is turned to a position approximately at right angles to its closed position or to wholly uncover the matrix before motion is imparted to the latter.

4. In a retort press, the combination with the cover and matrix, of hydraulic power and suitable mechanism for moving such parts into and out of closed position, said power and means being adapted to turn said cover to wholly uncover the matrix before motion is imparted to the latter.

5. In a retort press, the combination with the cover and the matrix, of a shaft for moving said cover and matrix into and out of closed position, said shaft being connected with said parts to enable it to move the cover from over the matrix without imparting motion to the latter.

6. In a retort press, the combination with the cover and the matrix, of a shaft for mov-

ing said cover and matrix into and out of closed position, said shaft being connected with said parts to enable it to move the cover from over the matrix, without imparting motion to the latter, and thereafter to further move the cover and the matrix to the desired open position.

7. In a retort press, the combination with the cover and the matrix, of a shaft for moving said cover and matrix into and out of closed position, said shaft being connected with said parts to enable it to move the cover from over the matrix without imparting motion to the latter, and thereafter to further move the cover and the matrix to the desired open position, and in closing to move both parts simultaneously to their final closed position.

8. In a retort press, the combination with the cover and matrix, having apertures provided in the same, said apertures having recesses as described, the recess in the matrix being of greater width than that in said cover, of a shaft adapted to pass through said apertures and provided with a spline for engaging said recesses, and means by which the shaft may be rotated whereby said cover is turned to wholly uncover said matrix before any motion is imparted to the latter.

9. In a retort press, the combination with the cover and matrix, of automatic mechanism for moving such parts into and out of closed position, and means by which said parts may be locked when in their closed position.

10. In a retort press, the combination with the cover and matrix, of automatic

mechanism for moving such parts into and out of closed position, and means on opposite sides of said cover and matrix by which said parts may be locked when in their closed position.

11. In a retort press, the combination with the cover and matrix, a shaft upon which said cover and matrix are mounted, a pinion secured to said shaft, a rack for rotating said pinion and hydraulic means for moving said rack in a direction to close said cover and matrix and in the opposite direction to open the same.

12. In a retort press, the combination with the cover and matrix, a shaft upon which the same are mounted, a pinion secured to said shaft, of a rack adapted to mesh with said pinion, and suitable means adapted to move said rack to reciprocate said pinion to move said matrix and cover into open and closed positions before motion is imparted to the latter.

13. In a retort press, the combination with the cover and matrix, of apertures provided in said cover and matrix to receive an operating shaft, said apertures being provided with recesses to receive a spline on said operating shaft, the recess in the matrix being of greater extent than that of the cover whereby provision is made for a movement of the cover without actuating the matrix.

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

CHARLES ALBERT WETTENGEL.

Witnesses:

E. E. SEAMAN,

G. N. SPENCER.