

J. M. SHEPPARD.  
VALVE OPERATING MECHANISM FOR PRESSES.  
APPLICATION FILED JAN. 11, 1908.

908,616.

Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

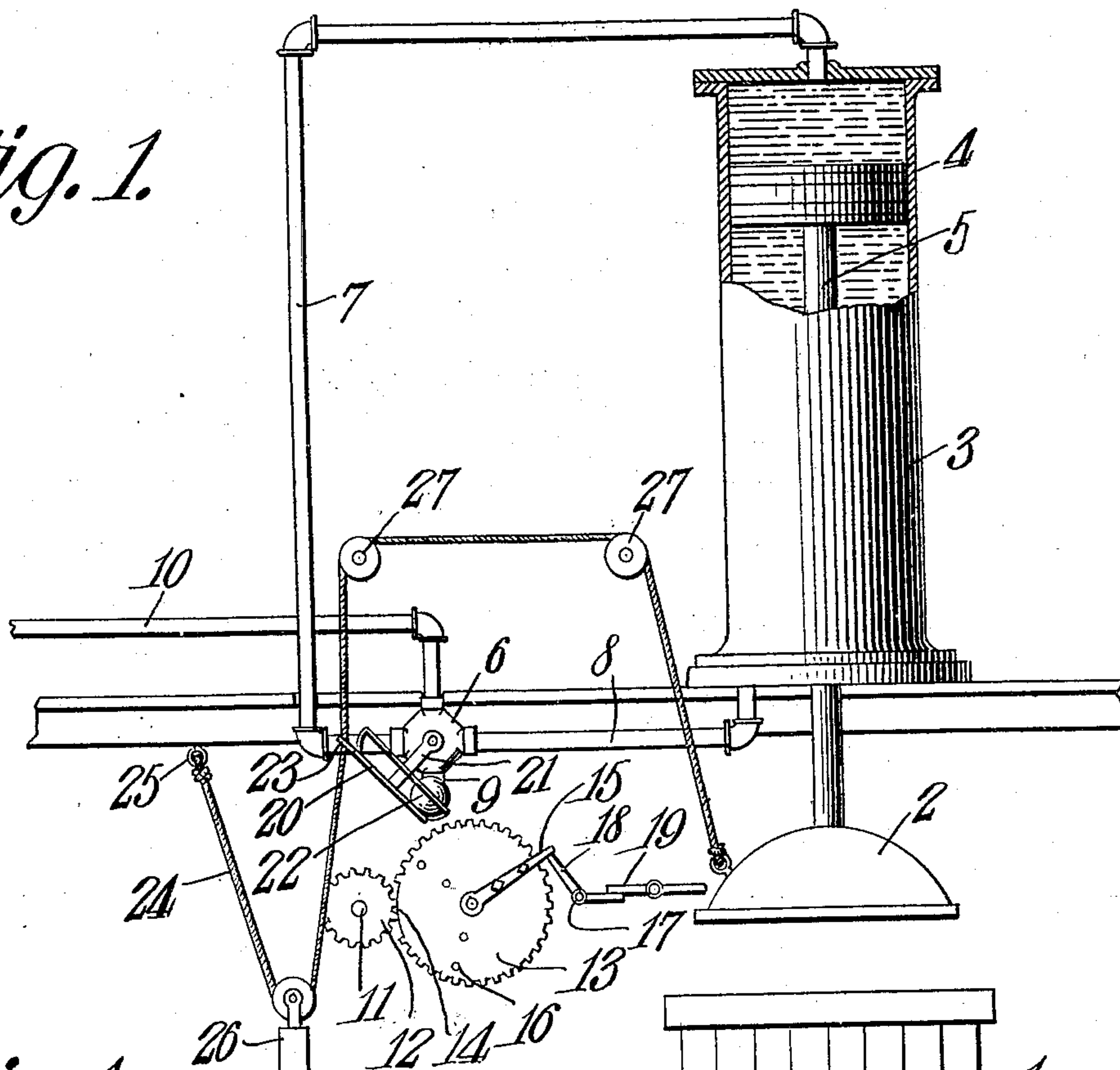


Fig. 4.

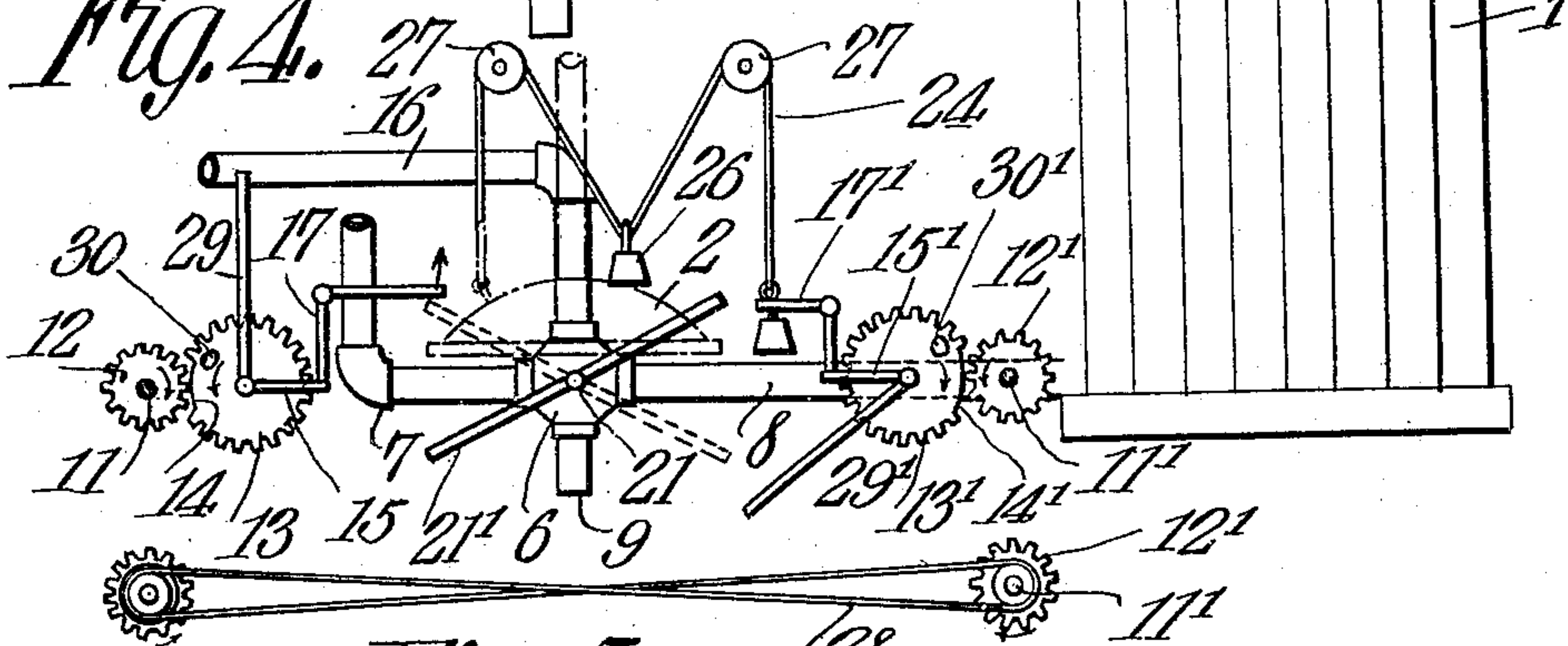


Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 2.

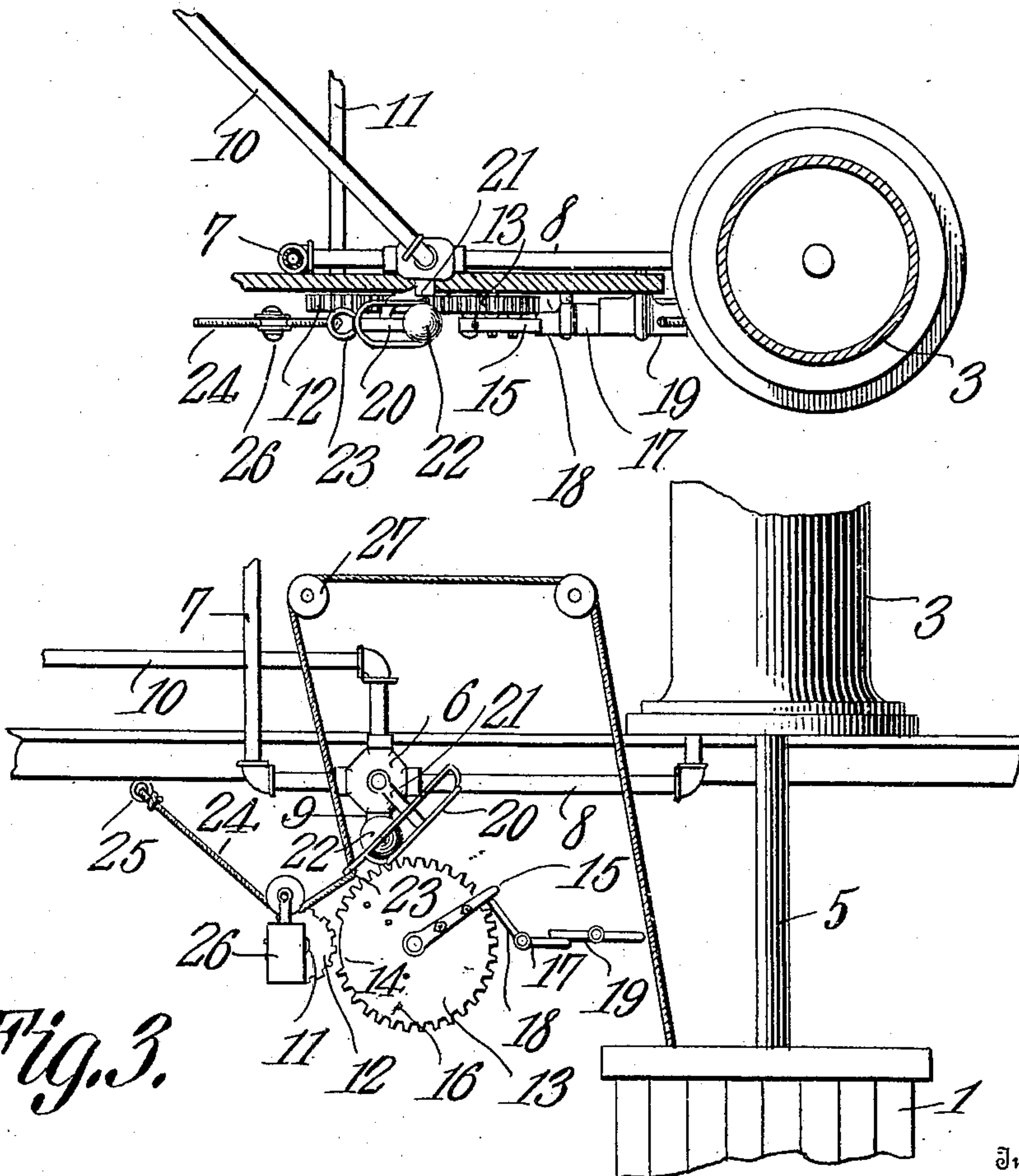


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JAMES M. SHEPPARD, OF KELLY, OKLAHOMA.

## VALVE-OPERATING MECHANISM FOR PRESSES.

No. 908,616.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed January 11, 1908. Serial No. 410,457.

*To all whom it may concern:*

Be it known that I, JAMES M. SHEPPARD, a citizen of the United States, residing at Kelly, in the county of Greer and State of Oklahoma, have invented a new and useful Valve-Operating Mechanism for Presses, of which the following is a specification.

This invention has relation to valve operating mechanisms for presses and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide a mechanism of simple construction and arrangement which is adapted to automatically operate a valve to cause the plunger of a baling or other press to move in opposite directions the operating means being so connected or associated with the said plunger as to be actuated at the extremities of the stroke of the plunger whereby the same is caused to change the direction of its movement.

In the accompanying drawings: Figure 1 is a side elevation of the valve operating mechanism. Fig. 2 is a plan view of the same with parts in section. Fig. 3 is a side elevation of the valve operating mechanism showing the parts in a different position from that illustrated in Fig. 1. Fig. 4 is an elevation of a modified form of valve operating mechanism, and Fig. 5 is an elevation of a means for transmitting movement from one driving shaft to another as used in Fig. 4.

The press consists of the usual bale box 1, plunger 2, cylinder 3, piston 4 which is connected with the plunger 2 by means of the rod 5. The piston 4 is operated within the cylinder 3 by means of a fluid under pressure which is introduced into the said cylinder through suitable pipe connections and alternately upon opposite sides of the piston 4. The valve 6 controls the introduction of the said fluid into the cylinder 3 and the exhaust of the said fluid from the said cylinder. The pipe 7 connects the casing of the valve 6 with the cylinder 3 at one side of the piston 4 and the pipe 8 connects the casing of the valve 6 with the cylinder 3 at the opposite side of the piston 4. The valve casing 6 is provided with an exhaust outlet 9. The pressure pipe 10 connects with the casing of the valve 6 at a point between the connections of the pipes 7 and 8 therewith. The shaft 11 is journaled for continuous

rotation in the vicinity of the valve 6, and the pinion 12 is mounted upon the said shaft and rotates with the same. The gear wheel 13 is journaled for rotation adjacent the shaft 11 and is provided at its periphery with a space 14 devoid of gear teeth. An arm 15 is attached to the wheel 13 and is of greater length than the radius of the said wheel and projects at its outer end beyond the periphery of the wheel 13. The wheel 13 is provided with several series of perforations 16 by means of which several arms 15 may be mounted upon the wheel 13. The rocker 17 is pivoted adjacent the wheel 13 and its end 18 is adapted to enter the path of the arm 15. The lever 19 is fulcrumed adjacent the rocker 17 and one of its ends lies over the end portion of the rocker while its other end lies in the path of the plunger 2. The runway 20 is attached to the stem 21 of the valve 6 and one end of the said runway lies in the path of the arm 15. The ball 22 is located in the runway 20 and is adapted to traverse the length of the same when impelled by the force of gravity and lie at the lowest point of the runway. The runway is provided at one end with an eye 23. The cable 24 is attached at one end to a fixed object as at 25 and the weight 26 is mounted upon the said cable. The cable then passes through the eye 23 and over the pulleys 27 and is attached at its other end to the plunger 2.

The operation of the device is as follows: Presuming that the parts are in the positions as shown in Fig. 1 of the drawing in which the plunger 2 is illustrated as being in the act of arriving at the upper end of its stroke by reason of fluid under pressure entering the cylinder 3 through the pipe 8. When the plunger 2 engages the end of the lever 19 the opposite end of the said lever is depressed which swings the rocker 17 and carries the end 18 thereof from under the arm 15. As the said arm 15 is disposed at an acute angle to a vertical line the wheel 13 is out of balance upon its support and will turn by gravity so that its gear teeth will engage the pinion 12 which is in a state of continuous rotation as above described. The said pinion will carry the wheel 13 around and when the arm 15 engages the runway 20 the said runway and valve stem 21 are shifted so that they assume the positions shown in Fig. 3 of the drawing. This operates the valve 6 so that the ingress of



fluid into the cylinder 3 is cut off through the pipe 8 and is exhausted through the said pipe while the ingress of fluid into the cylinder 3 is established through the pipe 7 thus, the direction of the movement of the piston 4 and the plunger 2 is reversed and the said plunger moves away from the lever 19 and enters the baling box 1 into which material has been introduced while the plunger is at the upper end of its stroke. As soon as the runway 20 is elevated sufficiently by the arm 15 as to bring the end thereof which is shown in an elevated position in Fig. 1 into a lower position than the opposite end thereof the ball 22 rolls by gravity toward the opposite end of the runway and completes the movement of the same and the operation of the valve 6.

As the plunger 2 descends it carries down with it the cable 24 which elevates the weight 26 and toward the lower end of the stroke of the said plunger the tension upon the cable 24 becomes so great as to cause the same to bind against the side of the eye 23 and elevate the same. Thus, the runway 20 is swung from the position, shown in Fig. 3, into the position shown in Fig. 1, and the operation above described is repeated. When it is desired to stop the movement of the plunger 2 the lever 19 is swung by hand so that its end will be out of the path of the said plunger and consequently when the plunger arrives at the upper end of its stroke the valve mechanism will not be operated and the plunger will be held in an elevated position. After the operation of the plunger has been stopped as above described and it is desired to start the same the rocker 17 is turned so that its end portion 18 will pass from under the arm 15 when the plunger will begin to descend as above described. The parts are so arranged that the plunger will remain in a state of rest at the upper end of its stroke the length of the period of which is governed by the time that it takes for the wheel 13 to turn in order to bring the arm 15 under the runway 20, consequently, if the arms 15 are multiplied in number upon the wheel 13 the period of rest of the plunger 2 will be much shorter than if but a single arm is employed.

In the form of the invention as shown in Fig. 4 the pinion 12 is mounted upon the shaft 11 and the pinion 12' is mounted upon the shaft 11'. The shafts 11 and 11' are rotated in unison in opposite directions by the cross belt 28 (see Fig. 5). The gear wheel 13 is journaled for rotation adjacent the pinion 12 and the gear wheel 13' is journaled for rotation adjacent the pinion 12'. The wheel 13 is provided upon its periphery with a space 14 which is devoid of teeth and the wheel 13' is provided upon

its periphery with a space 14' devoid of teeth. The arm 15 is mounted upon the wheel 13 and the arm 15' is mounted upon the wheel 13'. The rocker 17 has one end normally located in the path of the arm 15 and the rocker 17' has one end which normally lies in the path of the arm 15'. The opposite end of the rocker 17' lies in the path of the plunger 2. One end of the cable 24 is attached to the plunger 2 and the opposite end of the said cable is attached to the end of the rocker 17'. Said cable passes over the pulleys 27 and the weight 26 is suspended from the cable at a point between the pulleys 27, 27'. The valve stem 21 as shown in Fig. 4 is provided with a straight bar 21' and a rod 29 is fixed to the wheel 13 and a rod 29' is fixed to the wheel 13'. One end of the bar 21' is in the path of either the rod 29 or rod 29' at all times. In this form of the invention when the plunger 2 rises to the upper end of its stroke it comes in contact with the rocker 17 and swings the same out of the path of the arm 15. The wheel 13 is weighted as at 30 and the wheel 13' is weighted as at 30'. Consequently, the wheel 13 will turn toward the pinion 12 and engage the same, thus the rod 29 is carried around until it engages the bar 21'. When this occurs the said bar and valve stem 21 are turned and the course of the liquid is changed through the pipes 7 and 8. Thus the plunger 2 is caused to descend and the rocker 17 moves into the path of the rod 15. When the plunger 2 reaches the lower end of its stroke the cable 24 is drawn taut and the rocker 17' is swung out of the path of the arm 15'. Consequently, the wheel 13' engages the pinion 12' and the rod 29' engages and swings the bar 21' which operates the valve and changes the course of the liquid through the pipes 7 and 8 and the said plunger begins to ascend.

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

In combination with a reciprocating plunger, a valve mechanism for operating the same, a continuously rotating shaft located adjacent the valve, a valve operating means located adjacent said shaft and adapted to be thrown in gear with the same by the plunger and a means operatively connecting the plunger with the valve.

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

JAMES M. SHEPPARD.

Witnesses:

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M. P. BARNETT.