W. HILL.

COTTON COMPRESS.

APPLICATION FILED MAY 1, 1915.

1,164,519.

Patented Dec. 14, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

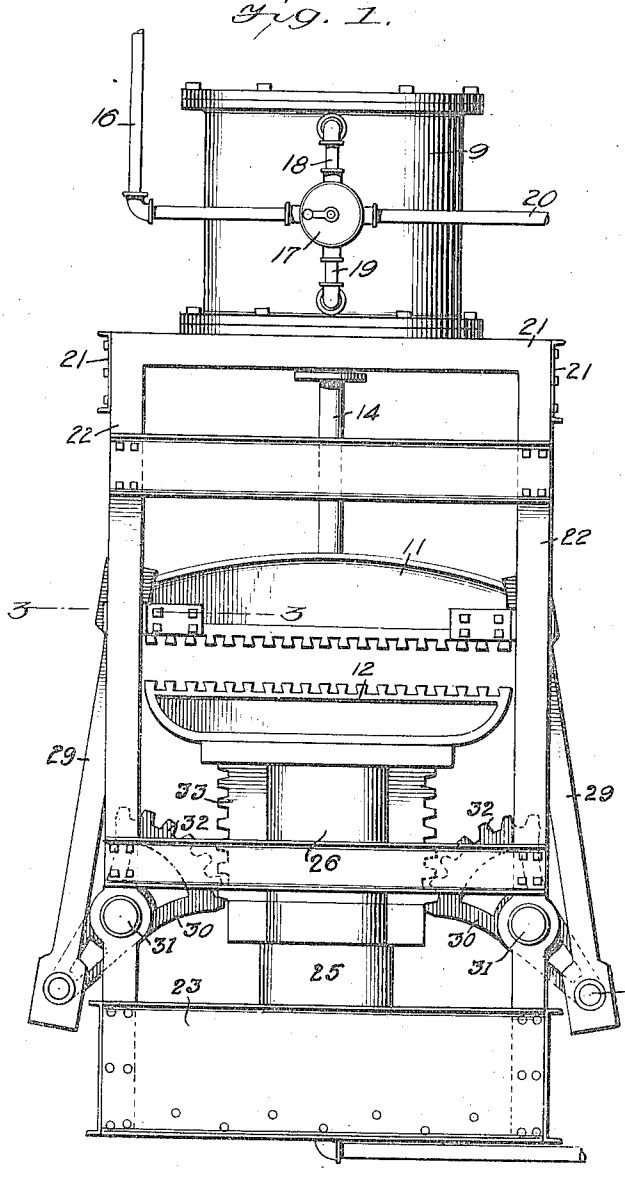
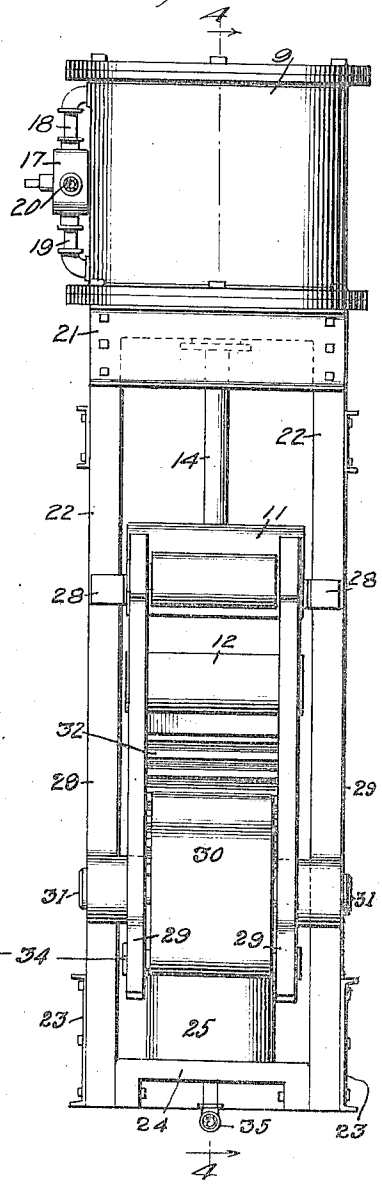


Fig. 2.



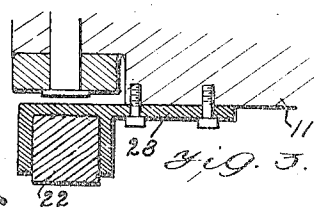


Fig. 3.

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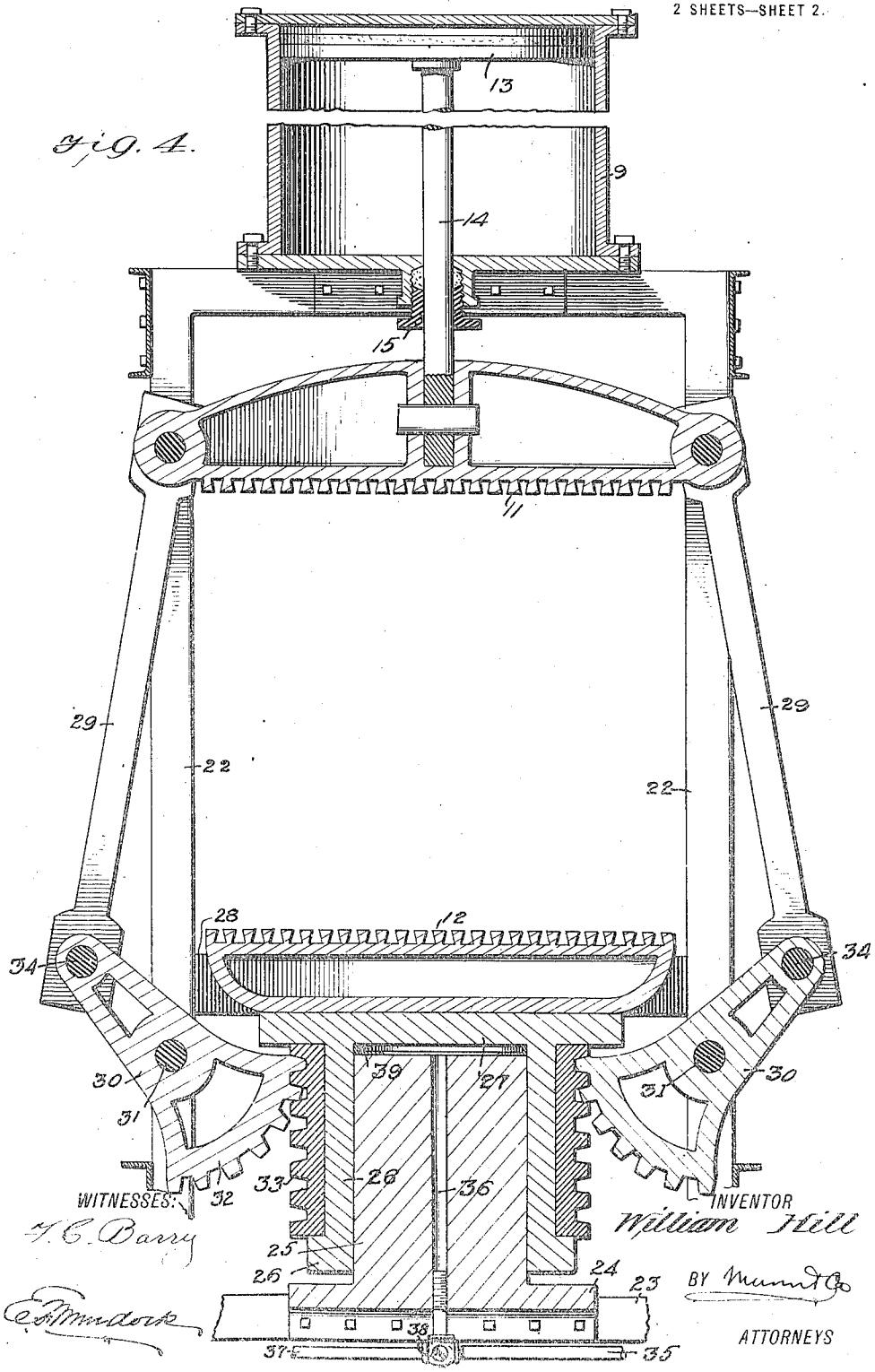
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2 SHEETS—SHEET 2.

Fig. 4.



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WILLIAM HILL, OF ALEXANDRIA, LOUISIANA.

COTTON-COMPRESS.

1,164,519. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed May 1, 1915. Serial No. 25,190.

To all whom it may concern:

Be it known that I, WILLIAM HILL, a citizen of the United States, and a resident of Alexandria, in the parish of Rapides and State of Louisiana, have invented a new and Improved Cotton-Compress, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a machine of the character mentioned, with means for employing relatively quick-acting and slow-acting power, and with means for taking up the lost motion of the said slow-acting power; to provide means for shortening the time required for the complete operation of the compress; and to simplify the mechanical construction of the compress.

Drawings.—Figure 1 is a side elevation of a compress constructed and arranged in accordance with the present invention; Fig. 2 is an end elevation of the same; Fig. 3 is a detailed view on enlarged scale, of the guiding and pivot construction of the quick-acting platens of the compress, the section being taken as on the line 3—3 of Fig. 1; and Fig. 4 is a vertical section taken as on the line 4—4 of Fig. 2, the scale employed in this figure being enlarged.

Description.—As seen in the drawings, the compress employs a steam cylinder 9, and a hydraulic cylinder 26. The platens 11 and 12 are operatively connected with said cylinders, to be moved thereby. The platen 11, which, as shown in the drawings, is preferably suspended above the platen 12, is operatively connected to a piston 13, by a piston rod 14. The rod 14 is packed by means of a gland 15, where the rod passes from the cylinder 9, as best seen in Fig. 4 of the drawings.

Steam or other expansive fluid is delivered by a pipe 16 to the cylinder 9 and to a three-way valve 17 connected therewith. The valve 17 is manually operable to deliver the fluid from the pipe 16 to either the upper branch 18 or the lower branch 19, at the will of the attendant. During the delivery referred to, to either of the pipes 18 or 19, the connection between the pipe 16 is suspended, with the other of the said branch pipes. Furthermore, the valve 17 is so constructed that at the moment of full delivery of the fluid from the pipe 16 to either of the branches 18 or 19, a communication between the remaining branch and an exhaust pipe 20 is opened. In this manner it is provided that steam or other expansive fluid may be introduced to the upper or lower side of the piston 13 in the cylinder 9, at the will of the operator, to induce pressure in the said cylinder, for the movement of the said piston, while simultaneously releasing or avoiding pressure in the said cylinder, on the opposite side of the said cylinder. In this manner, it is obvious, the speed of movement of the piston 13 and platen 11 is regulated only by the resistance offered by the material in the compress, to the movement of the said platen 11.

The cylinder 9 is mounted on a skeleton structure having cross heads 21 and standards 22. The standards 22 are supported on the sills 23. The sills 23 support the platform on which is directly mounted the stationary plunger. The plunger 25 fits a cylinder 26 movable on said plunger and fitting in same with a water sealed joint. The cylinder 26 is open at the bottom end but closed at the upper end by a wall 27, as shown best in Fig. 4 of the drawings. Directly secured to the wall 27 is the platen 12.

Platens 11 and 12 are provided with guide brackets 28 which as shown best in Fig. 3 of the drawings, operatively engage the standards 22. The platens 11 and 12 are operatively connected at each end of the compress by means of links 29 and short levers 30. The levers 30 are mounted by pins 31 in the standards 22. One end of each of the levers 30 is curved and provided with gear teeth thereby forming the gear segments 32, the teeth whereof mesh with the teeth of racks 33. The racks 33, as best seen in Fig. 4 of the drawings, are set in and fixedly incorporated with the cylinder 26. The levers 30 are operatively connected with the links 29 by wrist pins 34. Thus it will be seen that movement imparted to either of the platens 11 or 12 is correspondingly transmitted to the other platen through the connecting links 29 and levers 30. The power medium employed in the cylinder 9 has been defined as "expansive" fluid, the preferred form of which is steam. The power medium for directly moving the platen 12, employed herein, is water. The water power supply is delivered to the cylinder 26 and the wall 27 thereof by the power supply pipe 35 and a central bore 36 formed in the plunger 25. Connected with the same bore for the pur-

pose of supplying water to the cylinder 26, is an auxiliary supply pipe 37. The flow of water from the pipes 35 and 37 to the bore 36 is controlled by a valve 38 of conventional form and construction. To seal the joint between the cylinder 26 and the plunger 25 I provide a flexible washer 39 of conventional form. The face plates of the platens 11 and 12, as shown in the drawings, are ribbed, the grooves formed therebetween being provided to receive the bale straps which are tied on the bale after being compressed.

Operation.—When operating a compress constructed and arranged as above described, and as shown in the accompanying drawings, the operation is as follows: It will be understood that the compress is employed to further compress or pack a bale of cotton or other material which has been packed by means of another compress, into a bale. These bales are disposed on the platen 12 when the platen 11 is lifted to the position shown best in Fig. 4 of the drawings. It will be understood that the cylinder 9 is of sufficient length to afford the necessary movement for the piston 13 to open the compress to its maximum degree. The strips or tying members having been disposed in the grooves between the ribs on the face plates of the platens, the valve 17 is operated to admit steam or other fluid from the pipe 16 through the branch 18 to the cylinder 9 at the upper side of the piston 13. As above mentioned, the exhaust pipe 20 is simultaneously placed in communication with the branch pipe 19 thereby affording means of escape for the air in the cylinder 9 below the piston 13. The medium thus introduced to the cylinder 9 being quick-acting, the piston 13 and platen 11 are rapidly depressed upon the bale, which is raised on the platen 12. The depression of the platen 11 is accompanied by a corresponding elevation of the platen 12. The two platens press upon the interposed bale, to the maximum power and expansive fluid movement. The attendant now having ascertained that he has obtained the full compression inherent in the fluid medium delivered by the pipe 16, manipulates the valve 38 to admit the hydraulic pressure delivered by the pipe 35. During the period when the motive power was supplied by the fluid in the cylinder 9, the said valve 38 has been turned to close the pipe 35, while opening the pipe 37. The pipe 37 is connected with any convenient supply of water, from a source elevated above the cylinder 26 sufficiently to respond rapidly to the movement of the said cylinder and to fill in the space between it and the plunger 25 during the rise of the said cylinder in response to the pressure applied on the piston 13. In this manner the lost movement of the platen 12 is avoided. When, now, the valve 38 is turned to admit the high pressure water from the pipe 35, the low pressure water in the pipe 37 is cut out. The high pressure water is thus provided with a full head or ram from the instant of its being called into play. After the high pressure water is introduced to the cylinder 26 the compression of course is initially directed upon the platen 12, which is gradually elevated to the full compression of the machine. During this portion of the action, the levers 30 are rocked upon the pins 31 to draw the platen 11 to its lowered position, as shown best in Fig. 1 of the drawings. In said figure it will be observed that as the final and greatest pressure is applied to the bale by the hydraulic ram, the levers 30 are rocked to a position where they exert a pressure as of a toggle lever, on the links 29 and platen 11 connected therewith, thereby mechanically augmenting or multiplying the pressure imparted to the bale.

Claims:

1. A cotton compress comprising a plurality of movable, alined platens; a steam-actuated prime mover operatively connected with one of said platens; a hydraulically actuated prime mover operatively connected with the other of said platens; and operating connections between said platens for moving the same in unison, said connections embodying short rocking levers operatively engaging the platen connected with the hydraulically-actuated prime mover.

2. A cotton compress comprising a plurality of movable, alined platens; a steam-actuated prime mover operatively connected with one of said platens; a hydraulically-actuated prime mover operatively connected with the other of said platens; and operating connections between said platens for moving the same in unison, said connections embodying short rocking levers operatively engaging the platen connected with the hydraulically-actuated prime mover, and a plurality of connecting links operatively engaging the platen connected with the steam-actuated prime mover.

3. A cotton compress comprising a plurality of movable, alined platens; a steam-actuated prime mover operatively connected with one of said platens; a hydraulically-actuated prime mover operatively connected with the other of said platens; a plurality of gear-toothed racks fixedly mounted on the platen connected with the hydraulically-actuated prime mover; a plurality of short rocking levers, each provided with a gear toothed segment engaging said racks; and means operatively connecting the opposite ends of said rocking levers for moving the platen connected with the steam-actuated prime mover toward the pivots of said levers.

4. A cotton compress comprising a plurality of operatively-connected platens ar-

ranged to move toward each other; and connecting mechanism embodying a plurality of rocking levers directly connected with one of said platens to be moved thereby, and links connecting the free ends of said levers, said links being arranged to swing below the pivots of said levers and toward planes intersecting the centers of the pivots of said levers and the connection of said links with said opposite platen.

5. A cotton compress comprising a plurality of platens alined and movable toward each other; a connecting mechanism between said platens for moving the same in unison; a steam-actuated prime mover directly connected with one of said platens for operating the same; a hydraulically-actuated prime mover operatively connected with the other of said platens to move the same; a free water supply for said hydraulically-actuated prime mover for following up said platen to replace the same in said hydraulically-actuated prime mover; a hydraulic power supply operatively connected with said hydraulically-actuated prime mover; and means for discontinuing said free water supply when inaugurating said power water supply.

6. A cotton compress comprising a plurality of platens alined and movable toward each other; a connecting mechanism between said platens for moving the same in unison; a steam-actuated prime mover operatively connected with one of said platens for operating the same; a hydraulically-actuated prime mover operatively connected with the other of said platens to move the same; a free water supply for said hydraulically-actuated prime mover for following up said platen to replace the same in said hydraulically-actuated prime mover; a hydraulic power supply operatively connected with said hydraulically-actuated prime mover; and means for discontinuing said free water supply when inaugurating said power water supply, said means embodying a valve adapted for inaugurating the one water supply while discontinuing the other water supply.

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

WILLIAM HILL.

Witnesses:
R. M. HETHERWICK,
A. V. HUNDLEY.