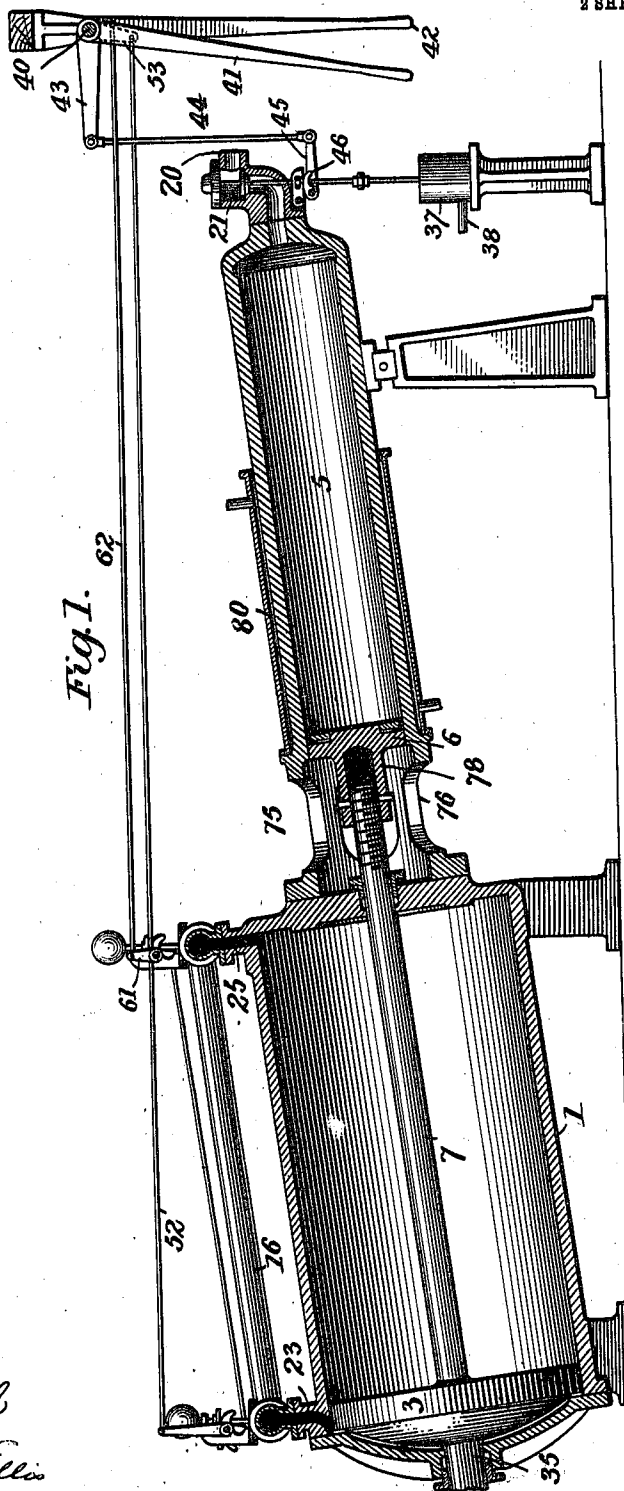


952,853.

2 SHEETS--SHEET 1.



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R. D. & S. J. WEBB.
HYDRAULIC COMPRESS.
APPLICATION FILED JAN. 13, 1897.

952,853.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 2.

Fig. 2.

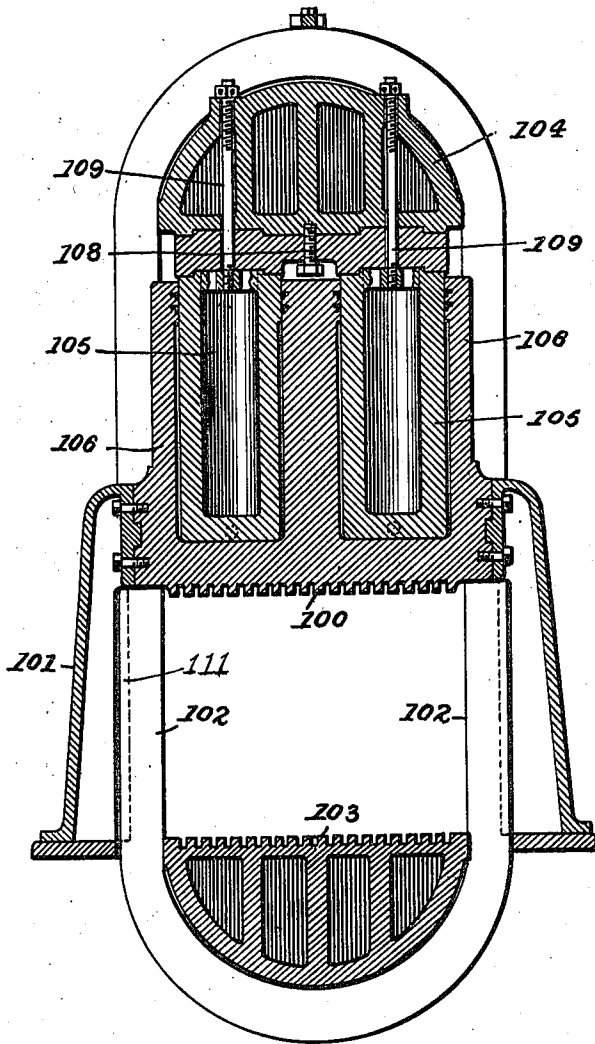


Fig. 3.

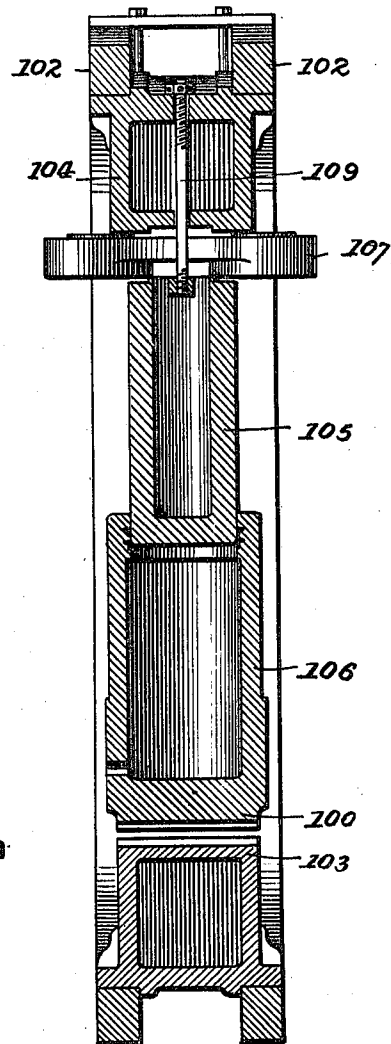
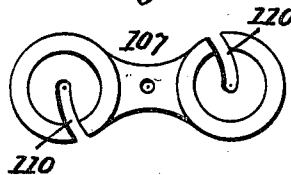


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT DICKENS WEBB AND SAMUEL J. WEBB, OF MINDEN, LOUISIANA.

HYDRAULIC COMPRESS.

952,853.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed January 13, 1897. Serial No. 619,105.

To all whom it may concern:

Be it known that we, ROBERT D. WEBB and SAMUEL J. WEBB, residing at Minden, in the parish of Webster and State of Louisiana, have invented certain new and useful Improvements in Hydraulic Compresses, of which the following is a specification.

This invention relates to certain new and useful improvements in hydraulic compresses, and it consists substantially in such features of construction, arrangement, and combinations of parts as will hereinafter be more particularly described.

The objects of this invention are to provide a hydraulic press so constructed that the hydraulic piston may be easily repacked and inserted, and to provide means whereby the heavy press plungers may be easily withdrawn from their cylinders for inspection and repair.

In the drawings: Figure 1 is a longitudinal section through the steam and hydraulic cylinders; Fig. 2 is a vertical longitudinal sectional view of the press proper; Fig. 3 is a partial transverse section of the same; and Fig. 4 is a detail plan view of the swinging crosshead.

Referring to the drawings, 1 designates the steam cylinder provided with a steam piston 3; 5 a hydraulic cylinder bolted to the steam cylinder and provided with a hydraulic piston 6; and 7 a piston rod connecting the pistons.

A steam pipe 16 is located above the steam cylinder and connected with the ports 23, 25. A balancing rod 35 extends through the head of the steam cylinder.

The hydraulic cylinder has connected thereto a pipe 20 leading to the presses, a check valve 21 being located in the connection.

Suitably supported is a rock-shaft 40, having a handle 41, rigidly connected to the shaft to operate the same. Also loosely mounted on the shaft is a hand-lever 42, they being arranged in convenient position for the operator. Mounted on the rock-shaft 40, is an arm 43, having a connection

44, with an arm 45, fixed on a cam-shaft connected to the frame of the check-valve and having a cam 46, mounted to lift the check-valve 21. In the present instance this check-valve is shown as provided with a dash-pot 37, having a connection 38, with a source of fluid supply, it being understood that the check-valve 21 can be operated either through the medium of the dash-pot or the cam 46.

The steam valves are operated by the mechanism shown in Fig. 1, which consists of links 52 and 62, connected to an arm 53 on the rock-shaft 40, and to the lever 42, respectively. The steam and hydraulic cylinders are controlled by means of the levers 41 and 42.

In compresses of this character it has been found difficult to provide means for adjusting or replacing the packing, especially of the hydraulic cylinder, and heretofore more or less of the parts had to be removed, and as the parts are exceedingly heavy, requiring tackle to move them, it is the cause of serious delay and expense. We have arranged the parts so that the packing of the piston of the hydraulic cylinder can be attended to without serious inconvenience. Referring more particularly to Fig. 1, the hydraulic cylinder 5, is shown as having an extension 75, preferably formed integral with the cylinder and by means of which it is attached to the head of the steam cylinder 1. Formed in this connecting portion are openings 76. The piston 6, fitting the cylinder 5, is provided with a rearward hollow extension 78, which is screw-threaded on its interior. We have shown this extension on one side of the piston, but of course, it will be understood that it may be on the other side or partly on both, or the piston itself may be thick enough to be provided with a recess, without any actual extension. The piston-rod 7, of the hydraulic cylinder is screw-threaded at its extremity beyond the steam cylinder 1, and engages the hollow extension 78, and when in its normal position, as shown in Fig. 1, the piston-rod is

keyed or otherwise locked against rotation in the extension. Now if, for any reason, it is desired to remove the piston 6 from the hydraulic cylinder 5, the key or other lock is released, and the piston 6, is rotated so as to cause it to move rearwardly on the end of the piston-rod 7, until it is withdrawn from the cylinder 5, sufficiently to allow the operator to adjust or arrange the packing, when upon screwing the piston head 6, in the opposite direction, it is forced into its normal position and again secured or locked upon the piston-rod 7. It will thus be seen that we are enabled to provide for the adjustment or replacement of the packing for the piston 6, without the necessity of bodily removing it from the compress, it being supported at all times upon the piston-rod 7.

We have shown the hydraulic cylinder 5, provided with a water jacket 80, which we have found advantageous to use under some circumstances. We would say also that we prefer to form this cylinder with its forward end integral with the body portion, as well as the rear portion, by means of which it is connected to the steam cylinder. In Figs. 2-4 we have illustrated the press proper, which is adapted to be used in connection with the hydraulic compress, and we will briefly describe the parts of this press and point out our improved features of construction.

The stationary bed or platen 100, is suitably supported in the frame 101 of the machine, and in this frame move the links 102, carrying the movable platen 103. Mounted in the upper portion of the links is the cross-head 104, to which the plungers or rams 105, are attached, working into the hydraulic cylinders 106, formed in or mounted on the upper portion of the bed or platen 100, and it is understood that these cylinders are connected to the compress as by means of the pipe 20, Fig. 1, and the general operation of these presses is understood by those skilled in the art.

It is necessary at times to remove the plungers 105, in order to attend to the packings between the plungers and the hydraulic cylinders, and as these plungers are quite heavy, weighing often times several tons apiece, it becomes a serious matter to attend to this adjustment. We provide, however, means by which the plungers may be removed from the hydraulic cylinders without removing them from the press. Interposed between the cross-head 104 and the plungers proper 105, is a swinging cross-head 107, pivotally mounted on a bolt 108, and preferably tenoned to fit in proper re-

cesses in the cross-head. The plungers 105, are connected by means of rods 109, extending from their upper ends through the swinging cross-head 107, and as shown, through the cross-head 104, being secured in position by suitable nuts, or otherwise, and the parts are shown in Fig. 2 in their normal condition. If now it is desired to remove the plungers from the hydraulic cylinders, the platen 103, is brought to substantially the position shown in Fig. 3, so that the plungers 105, are at the extreme upper ends of the cylinders 106. The rods 109, are now loosened slightly, allowing the plungers and the swinging cross-head 107, to fall slightly away from the cross-head 104, when the swinging cross-head 107, is turned on the bolt 108, as a pivot, assuming the position shown in Fig. 3. In order to permit this turning, the cross-head is provided with segmental recesses 110, on opposite sides, as shown in Fig. 4, so that it can be swung around without interfering with the rods 109. In this position the plungers may be raised up to substantially bear upon the cross-head 104, so that their lower ends are detached from the hydraulic cylinders, leaving sufficient room for the operator to manipulate the packing, and then they can be returned to their normal position. Of course, these plungers may be raised by any suitable means, but we have shown the rods 109, secured to the upper ends of the plungers and having their upper ends screw-threaded and provided with nuts by means of which the rods can be raised sufficiently to withdraw the plungers entirely from the cylinders. It will thus be seen that we are enabled to withdraw the plungers from the cylinders without actually removing them from the press, and the swinging cross-head being tenoned on its upper side to fit the cross-head 104, and recessed on its lower side to receive the plungers 105, the parts can be restored to their original position in accurate adjustment with rapidity and ease.

In the construction shown, the frame 101, supporting the fixed bed or platen 100, is shown as provided with guides 111, through which guides the links 102, slide in the operation of the press. This tends to not only strengthen the parts, but insures ease and smoothness of operation.

It is evident that some of the features of our invention can be used separately and independently of the others, and in combination with other and equivalent constructions, and we do not, therefore, limit ourselves to the precise construction and ar-

5 rangement of parts herein set forth, they
being shown as typical and as forming a
preferred embodiment of our invention.

We claim as our invention:

- 5 1. In a hydraulic press, the combination
with a steam cylinder, its piston and piston-rod, of a hydraulic cylinder connected
10 to the steam cylinder, a piston in the hydraulic cylinder, and means for telescoping
the piston and piston-rod of the steam cylinder, whereby the said piston can be extracted from the cylinder and packed without disconnecting the piston-rod, substantially as described.
- 15 2. In a hydraulic press, the combination
with the hydraulic cylinders and plungers,
of a supporting cross-head, a swinging cross-head mounted on a bolt connected to the

supporting cross-head and having segmental grooves, and adjusting rods connected to 20 the plungers extending through the swinging cross-head, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ROBT. DICKENS WEBB.
SAM'L J. WEBB.

Witnesses as to the signature of Robert Dickens Webb:

M. H. SANDLIN,
J. W. MORGAN.

Witnesses as to the signature of Sam'l J. Webb:

F. L. FREEMAN,
I. A. FAIRGRIEVE.