

F. PHELPS.
COMPRESS.

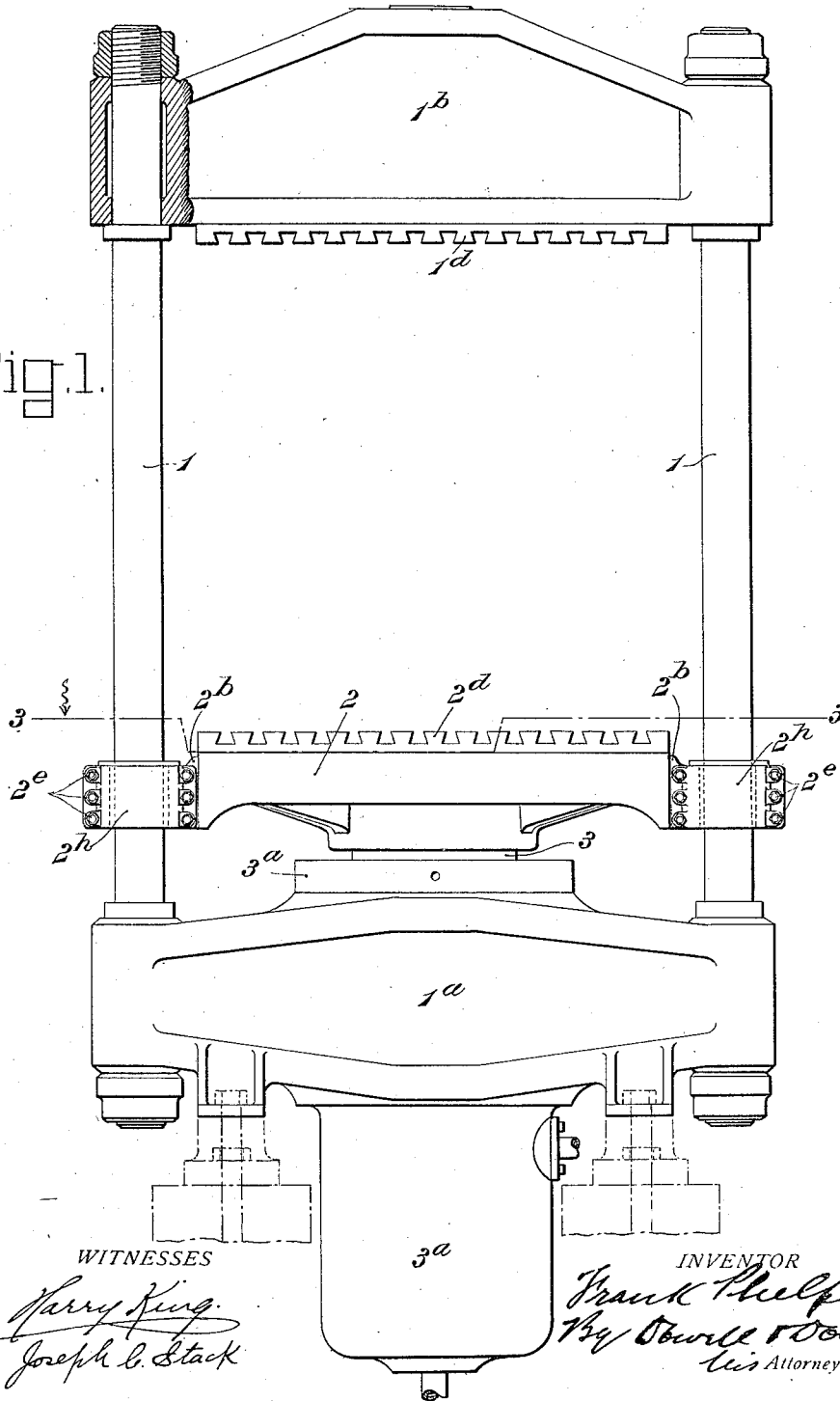
APPLICATION FILED JAN. 10, 1910.

1,009,258.

Patented Nov. 21, 1911.

3 SHEETS-SHEET 1.

Fig. 1.



WITNESSES

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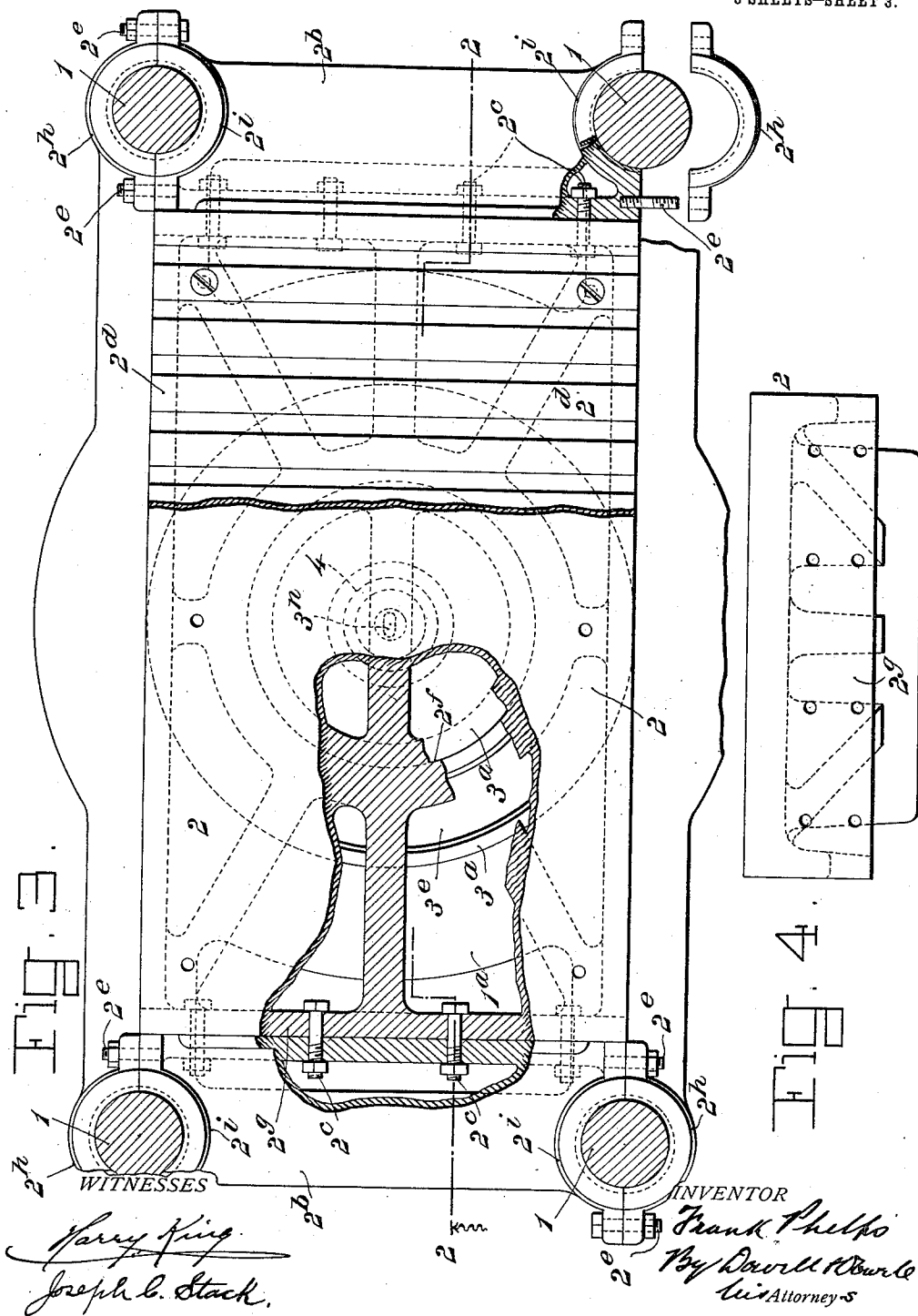
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UNITED STATES PATENT OFFICE.

FRANK PHELPS, OF LITTLE ROCK, ARKANSAS.

COMPRESS.

1,009,258.

Specification of Letters Patent. Patented Nov. 21, 1911.

Original application filed June 7, 1909, Serial No. 500,725. Divided and this application filed January 10, 1910. Serial No. 537,311.

To all whom it may concern:

Be it known that I, FRANK PHELPS, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Compresses, of which the following is a specification, this application being a division of my application filed June 7, 1909, Serial No. 500,725.

This invention is an improvement in the construction of presses, and pertains more especially to fluid actuated or hydraulic presses such as are used for recompressing and expressing purposes.

The principal object of the invention is to provide a construction whereby the packer-head can be detached and removed and the ram withdrawn and its packings renewed without the necessity of dismantling the machine.

A further object is improvement of construction generally and to increase the efficiency of such presses.

In the accompanying drawings, referred to as a part of this specification, I have illustrated one form of compress embodying my invention and which is also described with reference to said drawings, it being understood that the invention is not restricted to the specific construction shown.

In said drawings: Figure 1 is a front elevation of the press selected for illustrating my invention. Fig. 2 is a vertical sectional view of the same, the section being taken on the line 2—2 of Fig. 3. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1, parts being broken away. Fig. 4 is an end elevation of the packer-head.

The compress shown in the drawings has four parallel pillars or guide-rods 1, one at each corner of the baling or compression chamber of the press. These rods are rigidly mounted upon a heavy metallic base frame 1^a which may be supported in any suitable way or upon suitable foundations. At their upper ends, these rods are rigidly connected to a top frame 1^b. The frames 1^a and 1^b are preferably heavy ribbed rectangular metal castings, and, in the illustrated embodiment, the top frame 1^b is provided with a central vertical aperture 1^c which extends throughout the depth of the casting and through which a chain, cable or rod can be lowered to remove the ram as will be here-

inafter explained. Detachably secured to the underside of the top frame 1^b is a removable grooved press-plate 1^d of the usual or any appropriate type. This plate is provided with an aperture 1^e in register with the aperture 1^c.

Mounted to move to and from the upper press-plate is a follower-plate or packer-head 2, which is guided by and between the rods 1, as hereinafter explained, and carries a removable grooved press-plate 2^d as usual. This packer-head, in the illustrated embodiment of the invention, is a rectangular ribbed structure formed at its sides and ends with downwardly extending flanges, and of a length that enables it to be slid between the oppositely disposed pillars 1 into and out of position. The end flanges 2^e of the packer-head are provided with bolt holes, for the reception of bolts 2^c by means of which an angle bar 2^b is bolted to each end of the packer-head. Each angle bar is formed at its opposite sides with half round collars in the nature of yokes or half boxes 2ⁱ that partly encircle the adjacent rods 1. Detachable complementary half-collars or caps 2^h encircle the rods 1 in opposition to the half boxes and are secured to the angle bar by bolts 2^c. The packer-head is thus removably mounted upon the pillars 1 by separable collars forming circular guides which embrace the pillars and guide the packer-head in its reciprocations. This construction affords a very rigid but removable connection between the packer-head and the rods 1; and it enables the packer-head to be removed, when desired, without taking down the machine or disconnecting the rods from the top or bottom frames 1^b, 1^a.

The packer-head illustrated is or may be adapted to be operated by fluid pressure in the manner set forth in my application for patent filed June 7, 1909, Serial No. 500,725, of which this application is a division; and as a means for engaging the ram 3 with the packer-head, the under side of the latter is formed with a socket 2^f into which the upper end of the ram 3 fits. The ram shown is in the form of a hollow piston working within a cylinder 3^a that is a separate structure from but is centered in an opening or bore of the base frame 1^a and is rigidly connected to it in any suitable manner, the cylinder being shown with a shoul-

der at its upper end. When the ram is fully retracted into the cylinder 3^a as shown in Fig. 2, it projects beyond the upper end of the cylinder supporting the packer-head above the same.

The cylinder 3^a is shown having a larger internal diameter than the external diameter of the ram, providing a chamber 3^b around the ram 3 for a portion of its length, while the upper portion of the cylinder is formed with a smaller bore in which the ram is slidably fitted and a water-tight fit is provided by means of packing rings 3^c, 3^d which are or may be fitted in annular recesses or grooves in the upper part of the cylinder to embrace the ram. The ram is thus enabled to telescope within the cylinder without permitting the escape of the motive fluid. The upper end of the cylinder may be annularly grooved as at 3^e to catch any water or oil which might escape from the cylinder at that point; and said groove may be drained through the opening 3^f to any suitable place. Arranged centrally within and axially of the cylinder 3^a, and ram 3, is a tube 4, which is fixedly attached to the lower end of cylinder 3^a, as indicated at 4^a, or in any other suitable manner, and has a close sliding fit within an opening in the lower end of ram 3, said opening being packed by a ring 3^f of suitable material adapted to make a water-tight sliding joint between the ram and the tube. The tube 4 is in communication at its lower end with a motive fluid supply, and it is open at its upper end and communicates freely with the interior of the ram or hollow piston 3; and it may have an opening or port 4^x in its side at a predetermined distance below its upper end through which port communication is established between the interior of tube 4 and the chamber 3^b, when the ram has raised sufficiently to uncover said port 4^x. The chamber 3^b may be in communication, by means of a port 3^s with a fluid supply or a motive fluid supply. The operation of the ram is explained in my aforesaid application Serial Number 500,725 and is briefly as follows: Fluid pressure introduced in the tube 4 will lift the ram until the port 4^x is uncovered by the lower end of the ram, whereupon such fluid pressure will also get under and exert an additional force for lifting the ram, the main purpose being to move the packer-head with low pressure at the outset and then move the same more slowly but with greater pressure during the latter part of this movement, to effectively complete the compressing operation. The port 3^s supplies the chamber 3^b to keep the same filled with fluid before the port 4^x is uncovered, and said port 3^s may also be used for an auxiliary pressure supply. If preferred, the fluid pressure may first be introduced into

the outer chamber 3^b and then admitted into the inner chamber after the ram has raised sufficiently to uncover the port. It is understood of course that the invention is not dependent upon the particular construction and operation of hydraulic motor illustrated and above described.

If it be desired to renew the packings 3^c, 3^d or 3^f or to repair the ram in any way, the packer-head can be taken out of the way by removing the bolts 2^c which disconnects the packer-head from the bars 2^b. The packer-head may be then moved sideways between the pillars 1 until it is out of the way. A chain, rod or rope can then be lowered through the opening 1^c in the top frame, through the opening 1^c in the press-plate 1^d and fastened or hooked to an eye bolt or ring 3ⁿ secured to the top of the ram 3. The ram can then be withdrawn from the cylinder 3^a so that the interior thereof can be readily inspected and the packing-rings renewed if worn. The ram can then be replaced; and the packer-head moved back into position and bolted to the angle bars 2^b and the press will be again ready for operation. This construction enables the packer-head to be removed, when desired, without taking down the machine or disconnecting the rods from the top and bottom frames 1^a, 1^b.

Having described my invention, what I claim, is—

1. The combination of upper and lower frames, guide rods connecting said frames, angle bars having pendent members arranged between the guide rods at the ends of the frames and having yoked ends slidably engaging the same, a packer head detachably secured to the pendent members of the angle bars, and a ram mounted in the lower frame and engaging said packer head.

2. The combination of upper and lower frames, guide rods connecting said frames, angle bars extending between the guide rods at the ends of the frames and having yoked ends slidably engaging the same, caps fitting around the guide rods and secured to the yoked ends of the angle bars, a packer head detachably secured to the pendent members of the angle bars, and a ram mounted in the lower frame and engaging said packer head.

3. In a compress, the combination with a top frame having an aperture extending throughout its depth, of a removable packer-head, a ram detachably engaging said packer-head and adapted to reciprocate it, said ram having an eye or hook like portion adapted to be engaged by a chain or cable let down through said aperture in the top frame when the packer-head has been removed.

4. In a compress, the combination with a top frame, having an aperture extending throughout its depth, of guide-rods rigidly

connected to said frame, a packer-head detachably and slidably engaging said guide-rods, a ram detachably engaging said packer-head and adapted to move it, the packer-head when disconnected from the guide rods and moved from over the ram leaving the latter free to be engaged by a chain or cable let down through the aperture in the top-

frame, the ram having means to be engaged by said chain or cable.

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

FRANK PHELPS.

Witnesses:

H. G. KENNEDY,
GEO. M. HARRISON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."