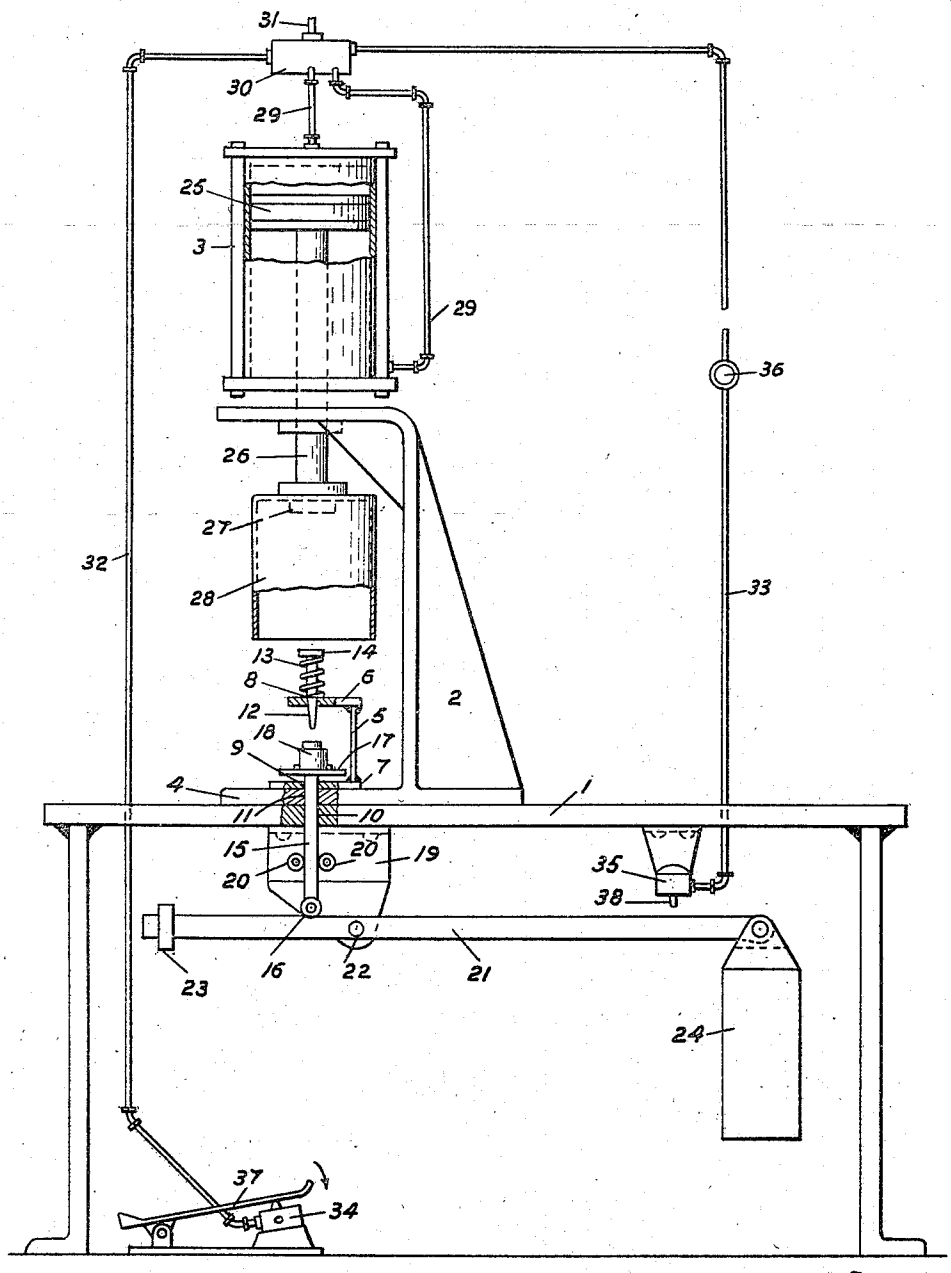
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DETONATOR LOADING PRESS

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DETONATOR LOADING PRESS

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1 Claim. (Cl. 100—71)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a loading press for ordnance devices and more particularly to a press for consolidating charges in detonators.

The purpose of the invention is to provide a safe, reliable press which will positively indicate an insufficient charge in a detonator and automatically stop the cycle of operation in event of the presence of a low or deficient volumetric charge.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which there is represented an elevational view, with parts in section, of a detonator loading press.

A table 1 has secured to its top a rigid bracket 2 which in turn supports a reciprocating fluid motor 3. Bracket 2 is provided with a base 4 which sustains a smaller supporting member 5 having upper and lower plates 6 and 7 respectively. Apertures 8 and 9 in the above mentioned plates are aligned with a pair of coaxial bores 10 and 11 in the table top and the base 4 of the bracket 2. A plunger 12 is slidably mounted in the aperture 8 in plate 6 and is resiliently sustained by a helical spring 13 which rests on the top of plate 6 and bears against the under side of a head 14 on the plunger. A stem 15 is arranged to reciprocate in the aligned bores 10 and 11 in the table and the bracket base. The stem 15 carries a roller 16 at its lower extremity and has a platform seat 17 on its upper end. Seat 17 is adapted to receive a detonator 18 which has a charge that is to be consolidated. A bracket 19 is attached beneath the table top adjacent bore 10 and is provided with guide rollers 20 for the depending stem 15. A lever arm 21 is pivotally mounted on the lower extremity of the bracket by a pin 22 and is counterbalanced by suitable adjustable weights 23 and 24 on opposite ends of the arm so that seat 17 and detonator 18 on the stem 15 are normally slightly elevated above the plate 7 of support 5. If desired, a resilient mounting (not shown) for the stem 15 and its associated seat may be employed in lieu of the counterweights.

Fluid motor 3 is provided with a conventional piston 25 and a piston rod 26. The lower end of the piston rod has a ram 27 which is arranged to periodically engage and depress the head 14 on the plunger 12 when the motor is actuated. Secured to the ram is a cup-like metal barricade or explosion chamber 28 which is conditioned to envelop the supporting member 5, the plunger 12, and the detonator 18 when the ram descends.

Motor 3 is equipped at its opposite ends with conduits 29 for supplying fluid for operating the piston. A master valve 30 is connected to these conduits and is coupled to a source of fluid pressure by a pipe 31. Coupled to the master valve 30 by conduits 32 and 33 are respectively a foot operated valve 34 and a lever actuated valve 35. Intermediate the master valve 30 and the lever actuated valve is a manually operated valve 36 which is preferably positioned at a point somewhat remote from the table.

Valve 34 is positioned on the floor adjacent a treadle 37. The lever actuated valve 35 is suspended from the table top and is arranged to be engaged by the lever 21 as it is swung about its pivot pin 22 under certain conditions. Valve 35 is provided with a reciprocating feeler 38 which controls the valve and is normally spaced from the lever arm 21 as shown on the drawing.

The operation of the device is as follows: A detonator to be compacted is placed in the platform seat 17 on the stem 15 and the apparatus is then in the position as shown in the drawing. The operator depresses the treadle 37 thereby operating valve 34 which causes fluid to be admitted to the top of piston 25 of the motor 3 through the master valve 30. This forces the ram 27 downward into engagement with the plunger 12 which is thereupon depressed against the resistance of spring 13. Plunger 12 is forced into the detonator 18 and proceeds to compact the charge therein. Barricade 28 descends with the ram and surrounds the work fixture and the detonator to protect the operator against a fortuitous explosion. The stem 15 is depressed during the interval the ram 27 is reaching the end of its stroke while the charge is being finally compacted in the detonator. This movement of the stem thrusts the left end of the lever arm 21 downward and the right end swings upward into engagement with feeler 38 on the lever actuated valve 35. Valve 35 is operated and reverses the former motion of the master valve 30 thereby causing the piston 25 of reciprocating motor 3 to ascend. This releases pressure on the charge, elevates the barricade as spring 13 raises the plunger 12, and completes the cycle of operation of the press.

Should a detonator having a charge of insufficient volume be acted upon by the press, the stem 15 would not be depressed sufficiently to move the

lever 21 the required distance toward the feeler 38 on valve 35. The valve therefore fails to operate and the motion of the ram 27 stops at its lowest position and the barricade 28 remains closed. This immediately and emphatically indicates to the operator the presence of a low and unsatisfactory charge in the detonator. To withdraw the defective detonator and to resume operation the operator must now leave his work position and operate the remote hand valve 36. This reverses the motion of the master valve and causes the piston to ascend whereby the barricade is elevated and the detonator can be removed. A new detonator may be inserted in the seat 17 and the cycle of the compacting operations repeated.

It is evident from the above description of the invention that a safe, reliable machine for positively indicating the presence of an improper detonator results.

I claim:

A press comprising a vertically reciprocable ram, a resiliently supported compacting plunger below said ram in a position to be depressed by said ram in its downward motion, a depressible work holder below said compacting plunger for holding work to be compacted by said compacting plunger, a lever pivoted below said work holder and comprising two arms, a weight carried by one of said arms, and a stem extending from said depressible work holder to the other of said arms for imparting downward motion of said depressible work holder to said last mentioned arm.

ATWOOD H. GROVER.