

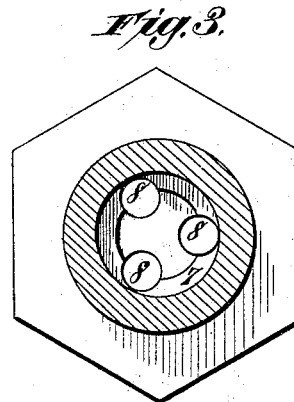
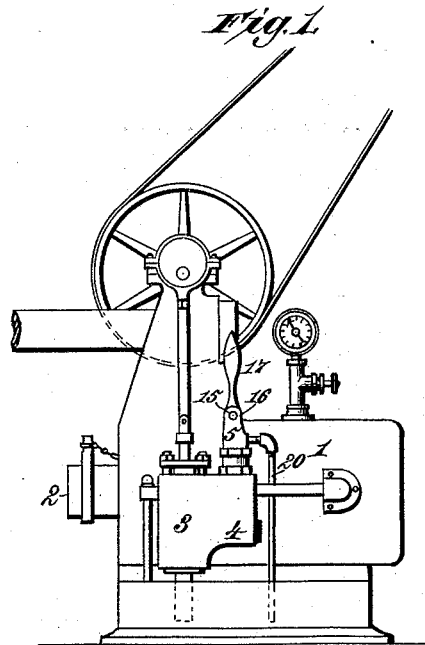
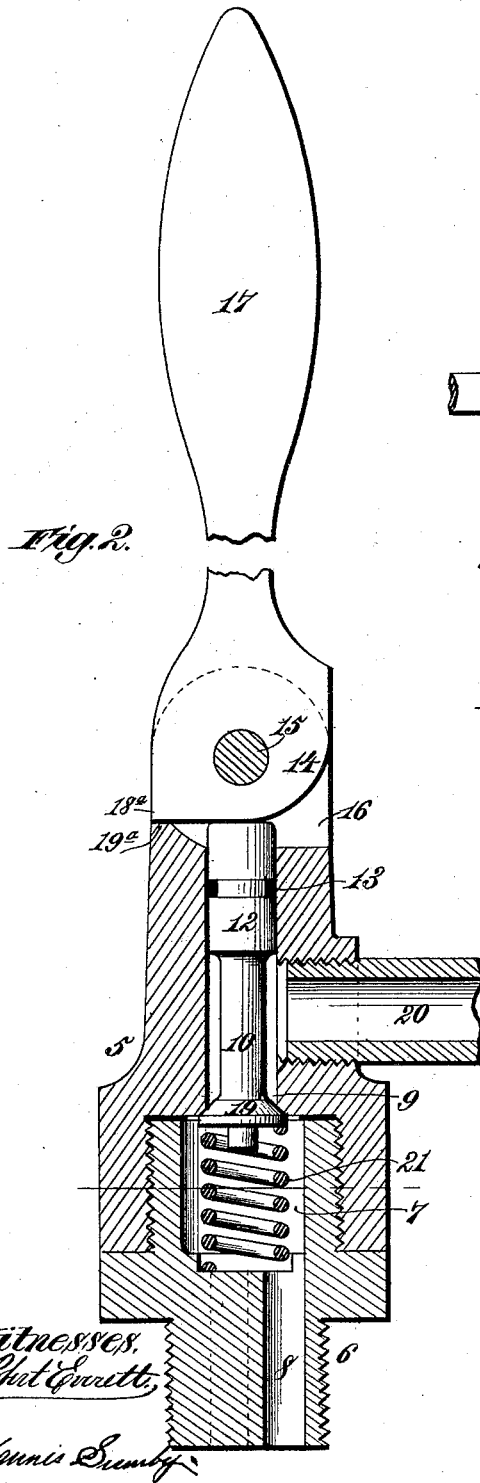
(No Model.)

J. M. MELONEY.

RELIEF VALVE FOR HYDRAULIC PRESSES.

No. 421,182.

Patented Feb. 11, 1890.



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UNITED STATES PATENT OFFICE.

JOSEPH M. MELONEY, OF WILMINGTON, DELAWARE.

RELIEF-VALVE FOR HYDRAULIC PRESSES.

SPECIFICATION forming part of Letters Patent No. 421,182, dated February 11, 1890.

Application filed June 20, 1889. Serial No. 314,896. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. MELONEY, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented new and useful Improvements in Relief-Valves for Hydraulic Presses, of which the following is a specification.

My invention relates to relief-valves adapted for use in combination with wheel-presses, or with hydraulic presses of any kind in which a sudden and complete cessation of the movement of the ram is required in order to accurately accomplish the work performed by the press.

In mounting car-wheels upon their axles by means of a hydraulic press it is necessary that the movement of the ram be arrested at the moment when the wheel is forced to the proper point on its axle, since the action of the press, if continued an instant too long, will cause a displacement of the parts, which can only be remedied at the cost of much time and trouble. In this class of mechanism the pressure employed is so great, varying from thirty to seventy-five tons to the square inch, that much difficulty has been experienced in devising a relief-valve capable of being unseated and opened instantaneously and at any required point in the progress of the work. Heretofore it has been customary to use a valve having a threaded stem operated by a heavy hand-wheel at the end of the press. As this valve is seated against the pressure, a considerable effort is required to unseat it when it is once fairly closed, and the size of the hand-wheel, together with the low pitch of the screw, renders it almost impossible to open the valve and relieve the pressure at the exact instant necessary. The result is that the operator finds it necessary to unseat the valve before the completion of the work and then await the moment for opening it and arresting the movement of the ram. This not only delays the work of the press, but causes a rapid deterioration of the valve-seat, which is soon practically destroyed. Other devices have also been employed to effect the same result; but, owing to the peculiar construction adopted, the valve can only be unseated by the stroke

of the pump, and the accuracy of the work is thereby liable to be seriously impaired.

It is the purpose of my invention to provide a simple and easily-operated relief-valve for presses of this class which shall be capable of unseating and opening instantaneously by a single movement of the hand of the operator, and whereby the operation of the press may be instantly arrested at any moment, the construction of the parts being such as to permit their arrangement upon the pumping mechanism within easy reach of the operator as he stands where he can see his work.

The invention consists, to these ends, in the several novel features of construction and new combinations of parts hereinafter described and claimed.

To enable those skilled in the art to make and use my invention, I will now describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of a portion of a wheel-press having my invention combined therewith. Fig. 2 is a vertical section of the relief mechanism, and Fig. 3 is a transverse section of Fig. 2.

In the drawings, the reference-numeral 1 designates the cylinder of a hydraulic press having a ram 2 and pumping mechanism 3, all of well-known pattern. Upon the valve-chest 4 of the cylinder I mount a valve-casing 5, having a neck 6, which is tapped through the chest. Within the casing is a valve-chamber 7, communicating with the interior of the valve-chest by passages 8, and in the top of the said chamber is formed a valve-seat surrounding an opening 9, which is drilled through the end of the casing. Within this opening is inserted a valve-stem 10, having an upper cylindrical portion 12, which fits closely in the opening in which it lies, and is provided with one or more packing-rings 13, laid in circumferential grooves. The upper end of the stem projects slightly above the end of the casing and abuts against a cam 14, mounted upon a pivot 15, and lying between two parallel lugs 16, which support said pivot. The cam is actuated by a lever of suitable length, and a square shoulder is formed on the cam to strike the casing 5

and stop the lever when it stands perpendicular. The valve-stem carries a valve 19, above which the stem is diminished to provide passage to a pipe 20, tapped through the casing. The valve is seated by a spiral spring 21, lying in the valve-chamber 7.

In this type of presses a very high fluid-pressure is necessary, and the valve 19 must therefore be of metal and capable of withstanding such fluid-pressure. Besides, in view of this high pressure and to enable the valve to be instantly unseated, I have so constructed the cam-lever that when it stands perpendicular it is stopped by the shoulder 18^a of the cam striking the end 19^a of the casing, and in this position the valve is seated by the spring, and therefore to open the valve it becomes necessary to swing the lever downward. This movement can be effected with far greater ease than if the valve were unseated or opened by a rising movement of the lever, and in this respect my special arrangement or combination is important when the great fluid-pressure in the apparatus is considered. When the valve is unseated or opened, it is sometimes desirable to hold it in that position, and this is effected in my invention by the cam-lever when it stands horizontal, or at right angles to line of movement of the valve, thus rendering it unnecessary for the attendant to hold the lever for the purpose of retaining the valve in its open or unseated position.

The operation of the device is apparent. Inasmuch as the required relief is obtained by a comparatively limited movement of the valve, the cam 14 has a throw of about three-sixteenths of an inch only, and is fully oper-

ated by swinging the lever through an arc of ninety degrees, or thereabout. It is easily operated by one hand, and the action of the press may be checked at any point and instantaneously thereby, as it unseats the valve without difficulty, after which the weight of the lever alone is sufficient to throw the valve open.

Having thus described my invention, what I claim is—

The combination, with a hydraulic wheel-press, of a valve-casing rising from the valve-chest in communication therewith by a vertical passage and having a lateral waste-pipe, a spring-seated valve having a stem moving vertically in line with the axis of the casing, having a cylindrical head sliding along in contact with the internal surface of said casing and containing a packing also in contact with the internal surface of the casing, said cylindrical head projecting beyond the upper end of the bore in which it slides, and a swinging shouldered cam-lever pivoted on the casing and striking the casing when perpendicular and the valve is closed, and instantly unseating the valve when the lever is swung downwardly, said lever when it stands horizontal operating to hold the valve unseated without the aid of the attendant, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOS. M. MELONEY.

Witnesses:

JAMES L. NORRIS,
J. A. RUTHERFORD.