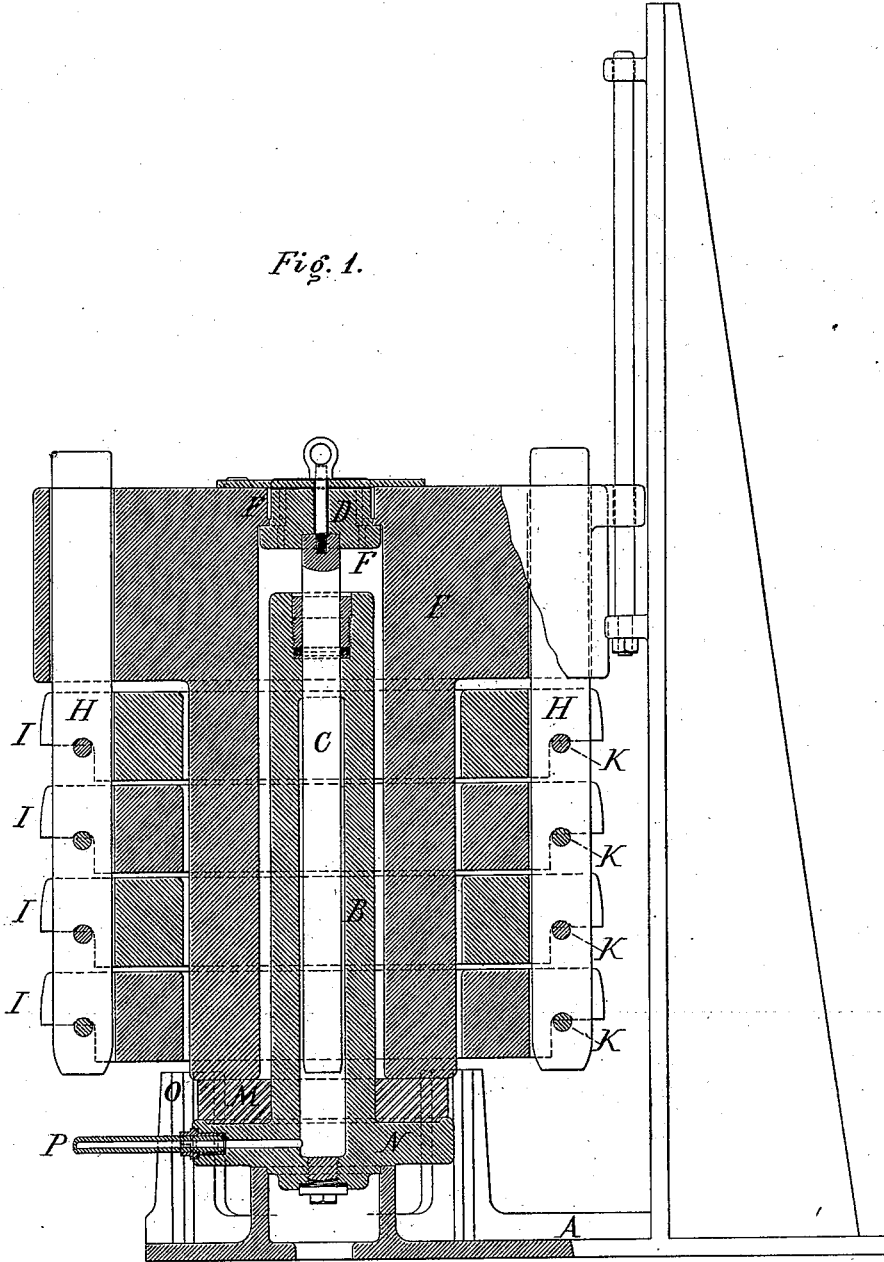


W. SELLERS.  
HYDRAULIC ACCUMULATOR.

No. 184,732.

Patented Nov. 28, 1876.

Fig. 1.



Witnesses  
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Inventor

*Wm. Sellers*

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Fig. 2.

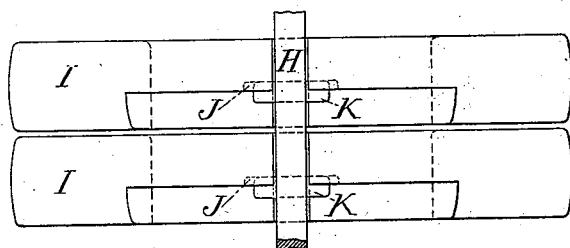
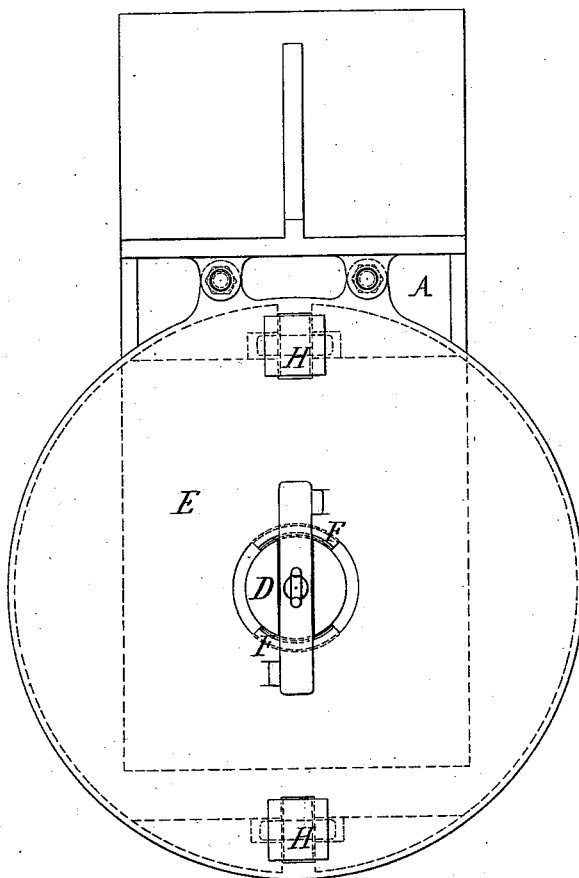


Fig. 3.

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# UNITED STATES PATENT OFFICE

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN HYDRAULIC ACCUMULATORS.

Specification forming part of Letters Patent No. 184,732, dated November 28, 1876; application filed June 5, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM SELLERS, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Accumulators; and I do hereby declare the following to be a full and accurate description thereof, reference being had to the accompanying drawings, forming part of specification.

My invention relates to accumulators for hydraulic machinery.

The object of my present invention is to so arrange a hydraulic accumulator that all the moving parts and packings shall at all times be readily accessible for repairs, and that the removable weights by which the load upon the accumulator is varied, can be taken off or replaced quickly, conveniently, and safely. In hydraulic accumulators, as generally constructed, the cylinder has been movable and the ram stationary, and the packing placed at the bottom of the cylinder, so that if the packing should give out suddenly in use there would be great difficulty and delay in replacing it. The removable weights also have been arranged around or on top of the cylinder; and any change in pressure that may be required can only be obtained by lifting the weights off, or by hanging them on a frame overhead, thus involving considerable delay in handling, or expensive additions to the accumulator to sustain the weights not actually in use.

The following description will exemplify the means whereby these objections have been obviated.

In the accompanying drawings, Figure 1 is an elevation, in section, of a hydraulic accumulator embodying my improvements. Fig. 2 is a plan of the same. Fig. 3 is an elevation, showing the manner of suspending the removable weights.

Similar letters refer to similar parts.

A represents the base-plate. Upon this stands the cylinder B, having in its upper end a bearing with a stuffing-box and packing, through which slides the ram or plunger C. From the top of the ram C the main weight E which surrounds the cylinder B is hung (so as to be in stable equilibrium) by means of the locking-block D, which is provided with

lugs F, which lock under similar lugs F on the main weight E, and thus sustain its weight. By turning the block D one-quarter way around the lugs F are disengaged, and the block D, and with it the ram C, can be withdrawn, thus giving easy access to the stuffing-box in the cylinder B. The main weight E is formed with openings for the reception of the two T-headed suspension-bolts, H H, carrying the supplementary weights I I by means of the pins K K, which pass through holes in the suspension-bolts H and are retained in place by suitably-formed recesses J in the under side of the supplementary weights I. These recesses J, being sunk below the face of the casting, prevent the pins K from being withdrawn as long as the weight I rests upon them. Blocks of wood or other slightly elastic material, forming a removable stop, M, are laid on the flange N of the cylinder B, so that the lower side of the main weight E may come to rest upon them, and so diminish the shock if the accumulator is allowed to run down suddenly. This removable stop M also serves to keep the supplementary weights I from striking on the permanent post or stop O, so that the weights I are, when in use, always carried by the pins K. If the removable stop M be taken out and the accumulator allowed to descend, the lower weight I and the others in succession will come to rest on the permanent stop O; and, finally, the main weight E will be supported by the weights I with its lower side clear of the flange N. The clearance between the supplementary weights I and the distance between the holes in the bars H are so proportioned that as the bars H descend with the main weight E the pins K will drop out of the recesses in the weights I, and can be drawn out of the holes in the suspension-bolts H. While the accumulator is in this position any number of the supplementary weights I can be attached to or detached from the main weight E by merely inserting or taking out the pins K, so that to alter the load on the accumulator, the removable stop M and the pins K are all that need be handled. Having adjusted the weight to the work to be done, the pressure is applied through the pipe P, the accumulator raised,

and the removable stop returned to place, so as to prevent the suspended weights from striking those lying on the permanent stop O.

It is evident the arrangement of the various parts, as shown and described, may be varied without interfering with the spirit of my invention—as, for instance, the prolongation of the main weight passing through the supplementary weights may be omitted, and the adjustable stop placed outside the supplementary weights, the main weight being made larger in diameter than the supplementary weights, or having suitable projections for this purpose; or, again, the main weights may be merely a cross-head to carry supplementary weights, which may be in separate series, hung from each end of the cross-head, with an adjustable stop placed under each series; but all such modifications are within the skill of the constructor.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydraulic accumulator, the combination of a stationary cylinder, a movable ram, a locking-block, and a main weight, as and for the purposes set forth.

2. In a hydraulic accumulator, the combination of a stationary cylinder, a movable ram, a main weight, and a removable stop, substantially as and for the purposes set forth.

3. In a hydraulic accumulator, the combination of a main weight, a removable stop, supplementary weights, and a permanent stop.

4. In a hydraulic accumulator, the combination of a main weight, a removable stop, supplementary weights, a permanent stop, suspension-bolts, and pins.

5. In a hydraulic accumulator, the supplementary weights having recesses for pins, substantially as and for the purposes set forth.

WM. SELLERS.

Witnesses:

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JOS. H. SCHWACKE.