(No Model.)

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J. W. HYATT.

ACCUMULATOR FOR HYDRAULIC PRESSES.

No. 265,229. Patented Sept. 26, 1882.

Fig. 1.

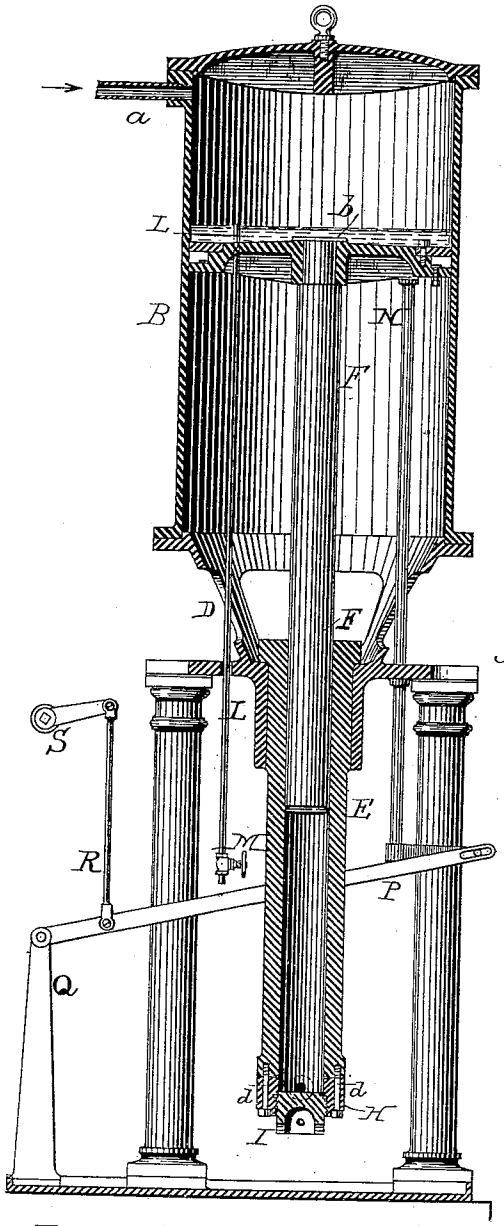
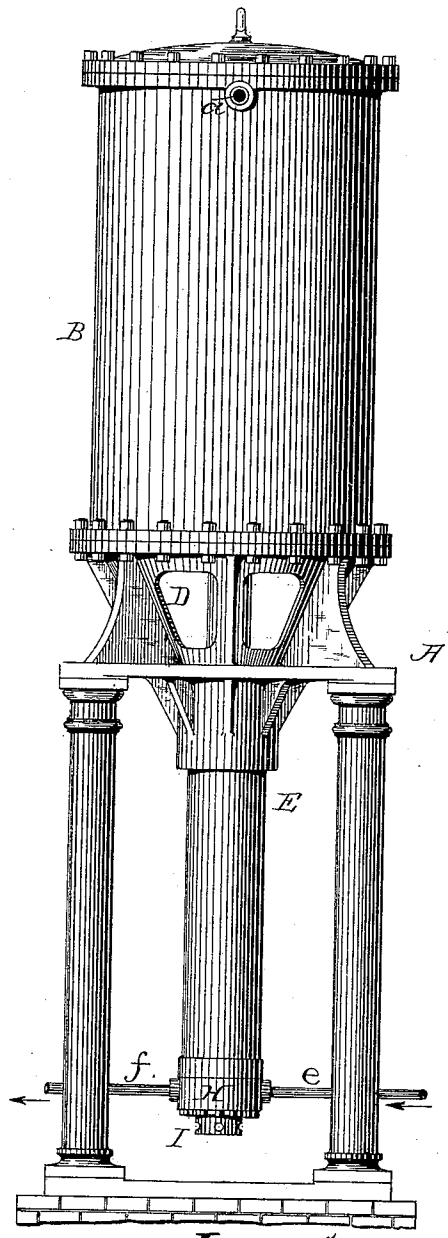


Fig. 2.



Witnesses:

John Ewing

Chas. P. Gill

Inventor:

John W. Hyatt,

By his Attorneys,

Cox and Cox

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.)

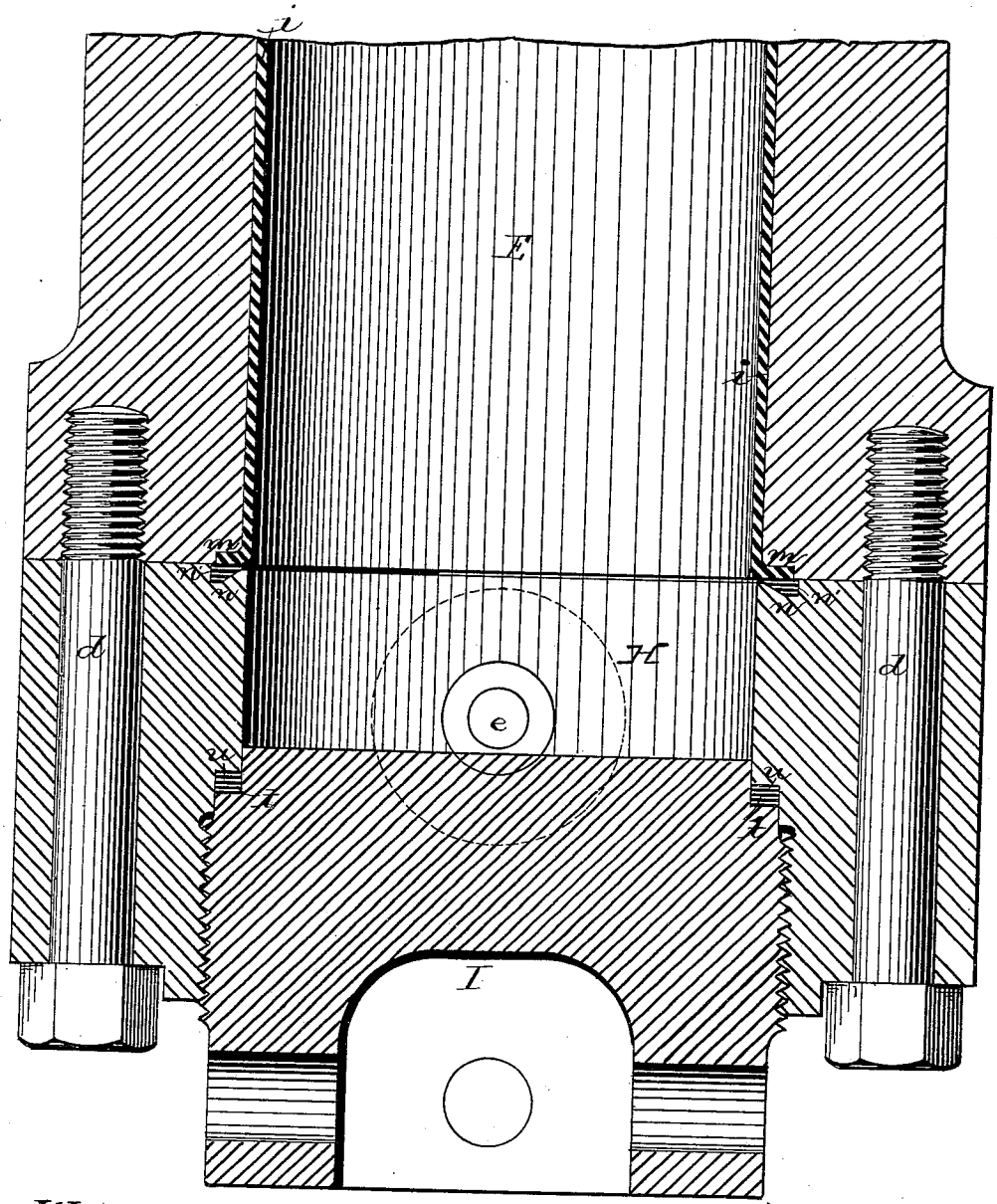
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CELLULOID MANUFACTURING COMPANY, OF NEW YORK, N. Y.

ACCUMULATOR FOR HYDRAULIC PRESSES.

SPECIFICATION forming part of Letters Patent No. 265,229, dated September 26, 1882.

Application filed November 22, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HYATT, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Accumulators for Hydraulic Presses, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in accumulators for hydraulic presses; and it consists in an apparatus in which power is accumulated and controlled, and which transmits the same to a hydraulic press or other apparatus in which hydraulic pressure is employed, and keeps up a regular supply therein.

The particular nature of the invention and its method of operation will be understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of an apparatus containing an embodiment of the elements of the invention. Fig. 2 is a side elevation of same; and Fig. 3 is an enlarged detached vertical section of the lower portion of the water-cylinder of the apparatus.

A indicates a suitable frame, upon which the apparatus is mounted, and B the upper or steam cylinder, which has an inlet, *a*, for steam, and is supported by the frame D at its lower end. In the frame D is suspended centrally below the cylinder B the smaller cylinder E. Within the cylinder B is supplied the piston *b*, which is properly packed and provided with the piston-rod F, the lower portion of which is inclosed within the cylinder E, closely fitting the same and serving as a plunger or ram. To the lower end of the cylinder E is secured, by means of the screws *d*, the extension H, which is internally threaded and adapted to receive the plug I. The extension H is provided on opposite sides with the inlet *e* and outlet *f*, the inlet being from the pump which supplies the water under pressure, and the outlet leading to hydraulic presses or other mechanical appliances wherein hydraulic pressure is used. The cylinder E, from its upper end down to the extension H, has a lining of sheet-copper, *i*, the lower edge of which is bent inward into the angular recess *m*, as shown in Fig. 3. In the upper edge of the extension H is formed a recess, *n*, into which is placed some suitable packing, *n'*, for the purpose of rendering the joint between the extension and the cylinder water-tight. It will be observed that by means of this method of packing the joint and securing the lower edge of the lining *m* there will be no danger of the water escaping at that point or of finding its way beneath the lining. At the upper end of the plug I, and at a point in the extension H at about which said end of the plug will reach when in position, are provided the angular recesses *t* and *u*, which, when brought in near relation to each other, form a rectangular recess in which the packing is placed. Thus when the plug is screwed home the packing operates to form a water-tight joint at two opposite corners of the recess, no squashing or escape of the packing being possible. It will be observed that in order to tighten the packing just described it is only necessary to screw the plug a little farther into the extension H.

For the purpose of permitting the escape of condensed steam, which will form above the piston *b*, I provide the escape-pipe L, which penetrates through the piston and is carried by it. The pipe L is supplied with a cock or valve, M, so that its operation may be regulated at will; or, if preferred, its operation may be rendered automatic by the employment of a steam-trap. The upper part of the pipe L extends slightly above the surface of piston *b*, in order that a sufficient quantity of water will remain about the said piston to protect its flexible packing. Upon the under surface of the piston *b* is secured the rod N, which passes downward and is connected with one end of the lever or rod P, the other end of which is pivoted in a standard, Q. Between the rod N and standard Q is pivoted on the lever P the link R, which connects with a valve, S, and serves to either open or close it as the lever P is raised or lowered.

In the operation of the apparatus water is first admitted to the lower cylinder, E, which has the effect of filling the pipe leading from the outlet *f* to the hydraulic presses, and, also, the said cylinder E, the piston-rod F being gradually raised by the action of the water. In the meantime steam is admitted to the cylin-

der B through the inlet *a*, whereby a direct pressure is exerted upon the whole surface of the water in the lower cylinder. The water being forced into the cylinder E under pressure creates a power in the same which accumulates during the operation of the pump until the connection with the presses is made. After a sufficient quantity of water has entered the lower cylinder to elevate the ram or piston the valve S is gradually closed by the upward movement of the piston, and the supply of water to the apparatus is thereby limited or entirely cut off. As soon as the connection with the hydraulic presses is made a part of the accumulated force in the cylinder E will of course pass to them, and as this is taking place the pressure of the steam above the piston will depress the ram F and cause it to follow the surface of the column of water. This downward pressure of the ram F, always following the column of water stored in the lower cylinder E, operates to preserve the pressure exerted on the presses in a uniform state. Any decrease in the quantity of water in the cylinder E is immediately made up by the movement of the ram actuated by the steam. The said downward movement of the pistons caused by the passage of the water from the cylinder E to the presses actuates the rods to open the valve S and admit an increased supply of water to the steam-pumps. It should be observed that the valve S is not opened until the demand by the presses has decreased the supply of water in the cylinder E, and that this very outflow from the cylinder E operates to control the influx of water thereto, the efflux and supply being proportionate to each other.

I do not limit myself to the connecting-rods between the piston *b* and the valve S, since the movement of the piston, which is really the operating-power, could be transmitted to open or close the valve S by a variety of other contrivances.

I hereby give notice that I do not claim herein the hydrostatic accumulator shown in Letters Patent to J. T. Burr, July 18, 1871.

What I claim as my invention, and desire to secure by Letters Patent, is—

The accumulator herein described, consisting of a steam cylinder and a water-cylinder, the former having an inlet and a piston, and the latter an inlet and an outlet for water, and a piston or ram, the two pistons being adapted to operate in concert, and through a suitable connection to open or close a supply by their movement, whereby when the quantity of water in the water-cylinder is sufficient to overcome the pressure in the steam-cylinder the pistons will ascend and cut off the supply, and when the said quantity has decreased the pistons will descend, permitting an additional supply of water to enter the water-cylinder, whereby the pressure on the surface of the water is continuous and uniform and the operation of the machine rendered automatic, substantially as set forth.

In testimony that I claim the foregoing improvement in accumulators for hydraulic presses, as above described, I have hereunto set my hand this 19th day of November, 1881.

JOHN W. HYATT.

Witnesses:
CHAS. C. GILL,
HERMAN GUSTOW.