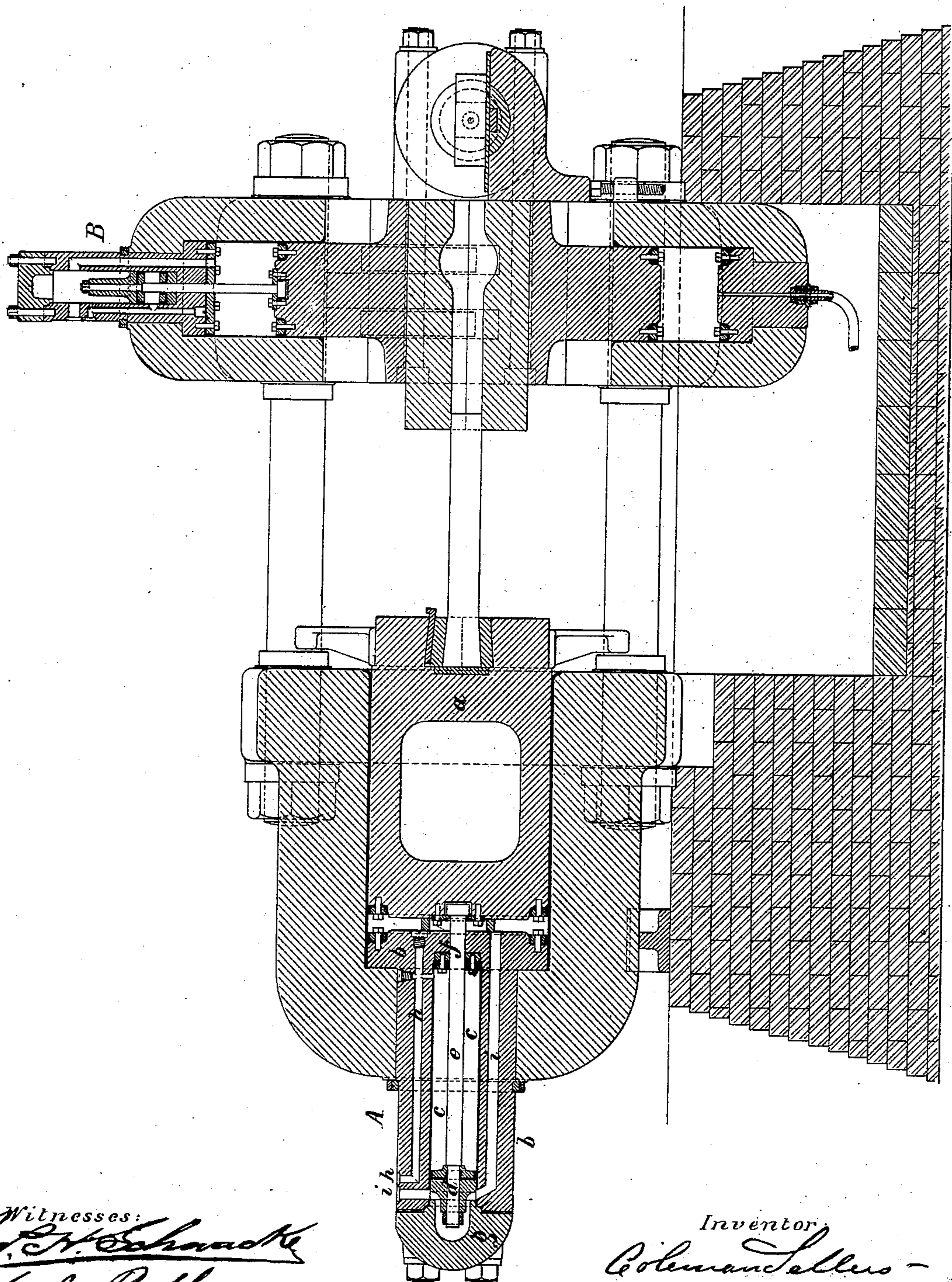


C. SELLERS.
HYDRAULIC DRAWBACK.

No. 178,965.

Patented June 20, 1876.



Witnesses:
John H. Schaefer
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Inventor
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UNITED STATES PATENT OFFICE

COLEMAN SELLERS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
WILLIAM SELLERS, OF SAME PLACE.

IMPROVEMENT IN HYDRAULIC DRAWBACKS.

Specification forming part of Letters Patent No. 178,965, dated June 20, 1876; application filed
December 7, 1874.

To all whom it may concern:

Be it known that I, COLEMAN SELLERS, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Hydraulic Drawbacks, of which the following is a specification:

In hydraulic drawbacks, as heretofore constructed, the fluid-pressure is exerted continuously upon one side of a small piston connected to the pressure-ram in such a manner that when the pressure is withdrawn from the ram upon the completion of its stroke the continuous pressure upon the small piston will draw the ram back to its starting-point. The effect of such a drawback is the same as that of a counter-weight, both detracting from the power of the machine in its forward motion by so much as is required to withdraw the ram and displace the water which moved it.

The object of my invention is to provide a hydraulic drawback which shall not detract from the power of the machine in its forward motion; and my invention consists in equalizing the hydraulic pressure on both sides of the drawback-piston during the forward motion of the ram, and applying the pressure to one side only of the piston during the backward motion of the ram; and it further consists in attaining these conditions without increasing the number or altering the character of the ingress and egress valves upon the machine.

The accompanying drawing, which forms a part of this specification, shows, in vertical section, two illustrations of my improved hydraulic drawback applied to a welding, upsetting, and shaping machine, the details of which I will not describe, as they form no part of the invention herein claimed, but constitute the subject-matter of separate applications, of even date herewith, made by Wm. Sellers, of Philadelphia, Pennsylvania, and Geo. H. Sellers, of Wilmington, Delaware.

In the drawings referred to, the section at A represents my improved hydraulic drawback applied to a horizontal cylinder—B, to a vertical cylinder; but as the construction and operation of both are similar, I shall confine my description to the one represented at A. The main ram of the machine *a* works in a cylinder lined with copper and closed at its

inner end in the manner described in the Patent No. 127,191, issued to me, May 28, 1871. The plug *b*, which closes this end of the hydraulic cylinder, is bored out from its outer end to form a drawback-cylinder, *c*, of the proper diameter. This cylinder is provided with a piston, *d*, attached to the rear of the main ram *a* by means of the piston-rod *e*, which passes through the suitable packing at *f* in the bottom of the cylinder *c*. The outer end of the cylinder *c* is closed by a tight-fitting cap, *g*, secured to the drawback-cylinder by suitable bolts. A duct or passage, *h*, provides a direct communication without the intervention of any valves between an accumulator or the pumps and the cylinder *c*, under the drawback-piston *d*, so as to exert a pressure upon this piston to draw the ram *a* back. A duct, *i*, conveys the fluid to the main cylinder of the ram *a*, above and over the piston *d*, and through the drawback-cylinder *c* to the main cylinder, so that when the pressure is exerted upon the main cylinder the same pressure will be exerted behind the drawback-piston *d*. The duct *i* is connected to the accumulator or pumps through a stop and exhaust valve of any ordinary construction, or it may be provided with two independent stop-valves, but whatever the character of the valves they must be capable of admitting the pressure to and permitting it to escape from the main cylinder. It is evident that, as the pressure is continuously exerted upon the inner side of the drawback-piston *d*, when the stop-valve is opened to admit the pressure behind this piston and upon the main ram *a*, the same pressure will exist upon both sides of the drawback-piston so that the tendency to draw back will be eliminated, and the pressure upon the end of the piston-rod *e*, not being counteracted, will tend to force the main ram forward, so that the whole of this ram in effect is subjected to the forward pressure without any abatement whatever from the drawback. When the exhaust-valve is opened to permit the escape of the fluid through the duct *i*, the constant pressure through the duct *h* upon the inner side of the drawback-piston *d* will draw the main ram *a* back, force out the water from its cylinder,

as well as from behind the drawback-piston *d*, and this operation will continue so long as the exhaust-valve is open, or until the limit of the return stroke of the ram is reached.

In some cases, as in portable riveting-machines, the ram is stationary and the cylinder moves forward under pressure. The drawback-cylinder is then placed in the center of the ram, and the drawback piston-rod is connected to the end of the cylinder. The fluid is admitted through the ram to the cylinder, as above described.

In some cases it would be more convenient to connect the inner end of the main cylinder with the drawback-cylinder *c* by a pipe, in which the stop and exhaust valves may be located. It is therefore evident the details of my invention may be greatly varied. I do

not, therefore, restrict myself to the particular arrangement or devices described; but

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

In a hydraulic drawback, a conduit which connects the inner end of the main cylinder with the outer end of the drawback-cylinder, in combination with a conduit which connects the inner end of the drawback-cylinder with the accumulator or pump, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

COLEMAN SELLERS.

Witnesses:

ANDW. J. BOSWELL,
JUS. H. SCHWACKE.