

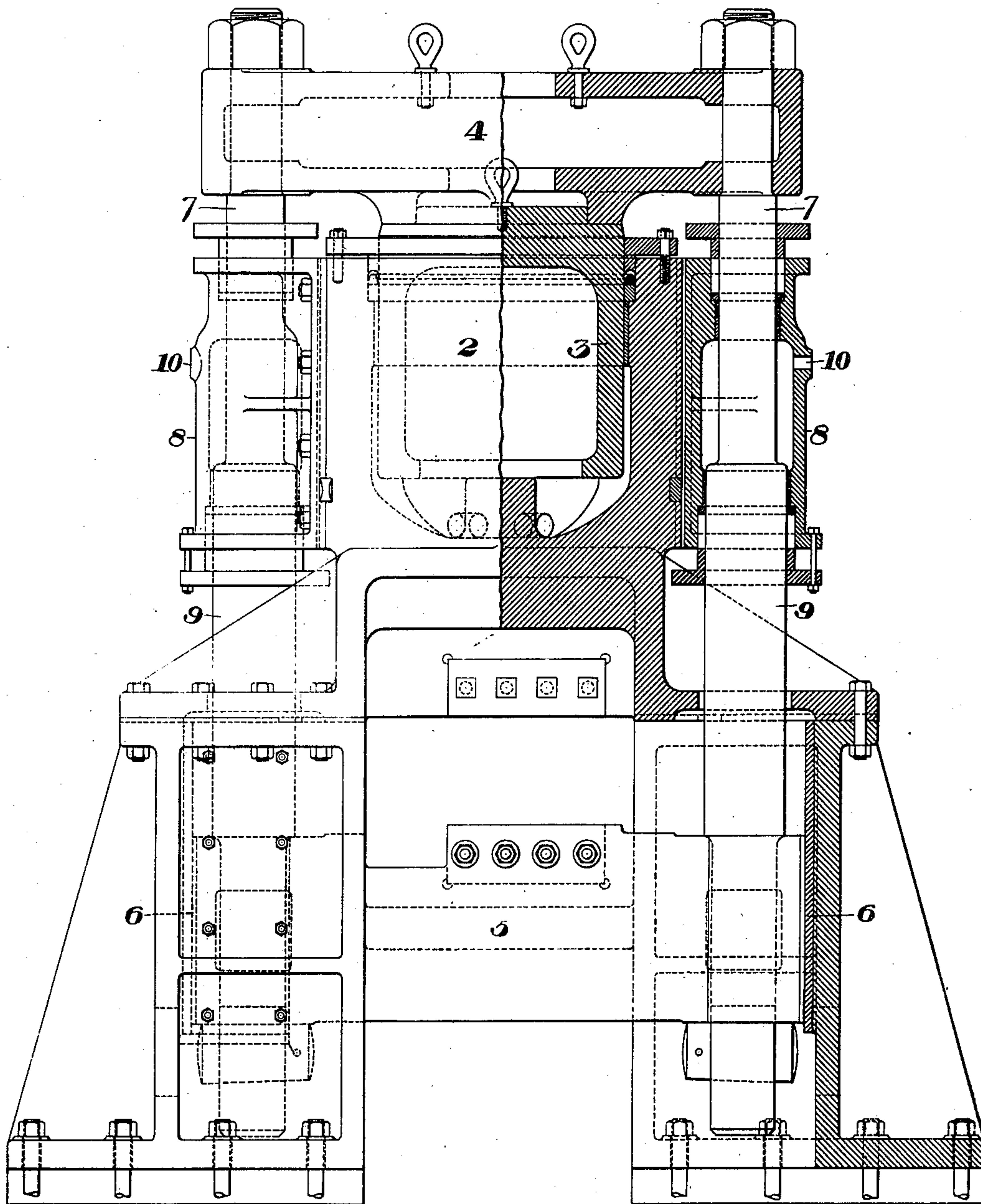
No. 617,913.

Patented Jan. 17, 1899.

**R. H. STEVENS.**  
**HYDRAULIC MACHINERY.**

(Application filed Oct. 18, 1898.)

(No Model.)



**WITNESSES**

*Warren W. Schwartz*  
*George B. Blumming*

**INVENTOR**

*R. H. Stevens*  
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*his atty.*

# UNITED STATES PATENT OFFICE.

RICHARD HARRY STEVENS, OF BRADDOCK, PENNSYLVANIA.

## HYDRAULIC MACHINERY.

SPECIFICATION forming part of Letters Patent No. 617,913, dated January 17, 1899.

Application filed October 18, 1898. Serial No. 693,862. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD HARRY STEVENS, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Hydraulic Machinery, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, which shows in elevation, partly in vertical section, hydraulic shears embodying my invention.

In the drawing, 2 represents the main cylinder of hydraulic shears, having the usual plunger 3 and cross-head 4.

5 is the moving knife-head of the machine, set in guides 6 and connected with the cross-head 4 by bolts or rods 7, which transmit to the moving head the motion of the plunger.

The cylinder 2 operates the moving head in the direction in which it does the work of shearing; but I employ other single-acting cylinders which serve as pull-back cylinders to retract the plungers and to displace the water from the main cylinder. These pull-back cylinders are on the machine-frame at 8 8, and the bolts or rods 7 extend through them and serve as their plungers, having shoulders or enlarged portions 9 for that purpose. 10 10 are the water-inlets of these cylinders.

The novel feature of my invention is in the use of the connecting rods or bolts as the plungers of the pull-back cylinders, and I de-

sire to cover the same whether the main cylinder be at the top of the machine with the moving knife-head below, as in the drawing, or whether these parts be reversed.

My improvement is applicable not only to shears, but also to hydraulic (or pneumatic) presses, &c.

The advantages of my invention will be appreciated by those skilled in the art, for the construction is compact and in many ways convenient, leaving open and unimpeded essential parts of the machine.

I claim—

1. The combination with a main cylinder and moving head, of connecting bolts or rods, and pull-back cylinders to which the bolts or rods serve as plungers.

2. The combination with a main cylinder and moving head, of connecting bolts or rods, and pull-back cylinders through which the bolts or rods pass and to which they serve as plungers.

3. The combination with a main cylinder and moving head, of a connecting rod or bolt and a pull-back cylinder to which the rod or bolt serves as a plunger.

In testimony whereof I have hereunto set my hand October 7, 1898.

RICHARD HARRY STEVENS.

Witnesses:

THOMAS W. BAKEWELL,  
LENDELL A. CONNER, Jr.