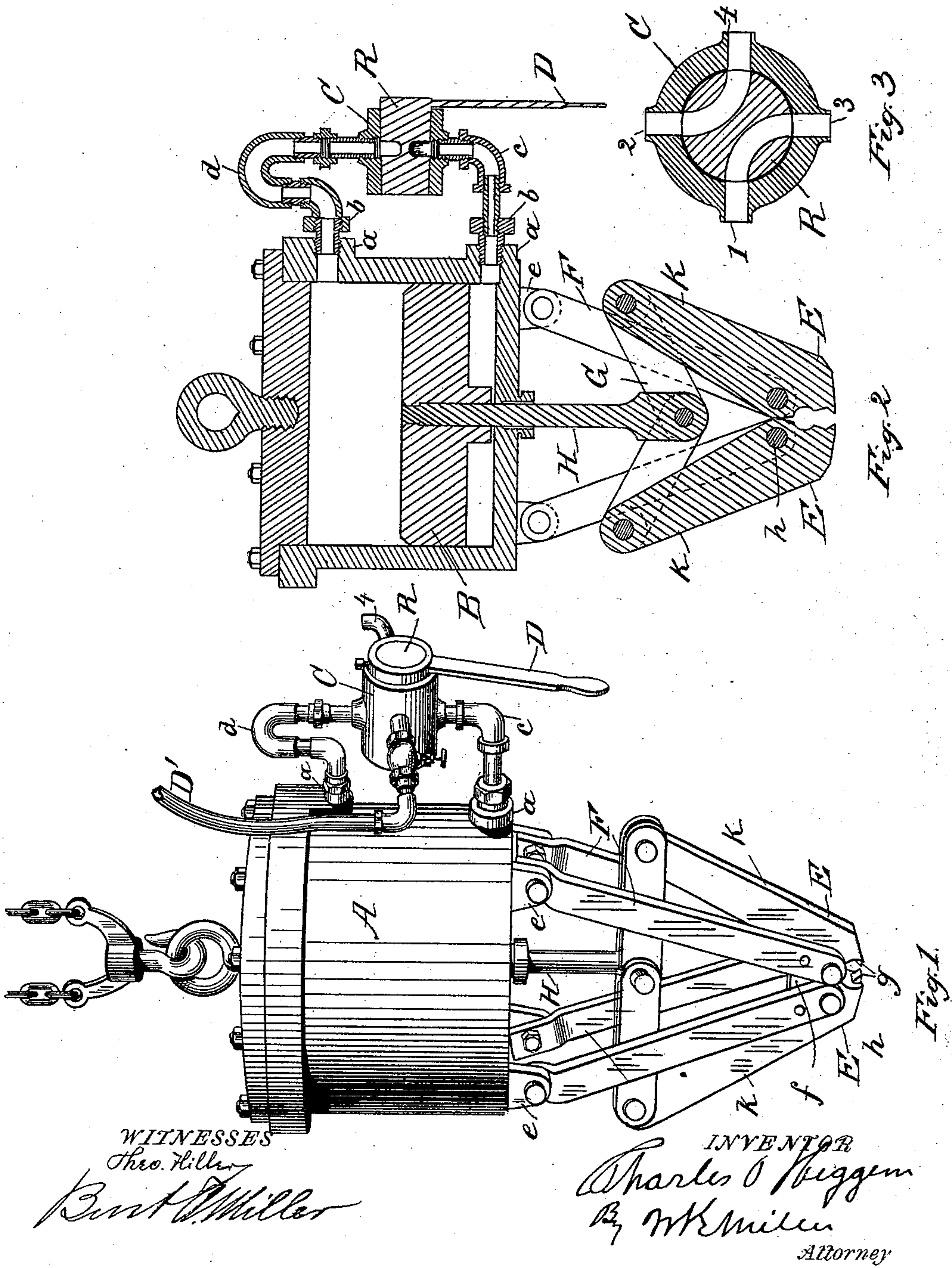


(No Model.)

C. O. HEGGEM.  
PNEUMATIC SHEARS.

No. 527,790.

Patented Oct. 23, 1894.





# UNITED STATES PATENT OFFICE.

CHARLES O. HEGGEM, OF MASSILLON, OHIO, ASSIGNOR TO THE RUSSELL & CO.,  
OF SAME PLACE.

## PNEUMATIC SHEARS.

SPECIFICATION forming part of Letters Patent No. 527,790, dated October 23, 1894.

Application filed June 18, 1894. Serial No. 514,860. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES O. HEGGEM, a citizen of the United States, and a resident of Massillon, county of Stark, State of Ohio, have invented a new and useful Improvement in Pneumatic Shears, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to an improvement in pneumatic shears, and consists of certain features of construction and combination of parts as will be hereinafter described and claimed.

Figure 1, of the accompanying drawings is a view in perspective, illustrating my invention. Fig. 2, is a vertical section, through the center of the machine, and Fig. 3, a transverse section of the air directing valve.

For the purpose of this application, I have shown the shears adapted for cutting off stay bolts as used in the manufacture of steam boilers. For such service the machine is suspended from a crane. Not shown in the drawings.

A represents the cylinder, and B the piston head, which may be made to any desired scale or dimension. At the upper and lower ends of the cylinder, are provided flanged and threaded apertures *a*, in which are turned pipe couplers *b*, by which the pipes *c* and *d* are secured to the cylinder. The valve seat C is supported as shown by and between the pipes *c* and *d*. A rotary four way valve R is placed in the seat and rocked or rotated therein by the handle lever D, for the purpose of directing the compressed air from the hose D', through the valve to the upper or lower end of the cylinder *via* the ports 1, 2, 3, and out through the exhaust 4.

To support and secure the shears E to the cylinder, bars as F are secured to lugs or ears *e*, provided at the lower end of the cylinder. The lower ends of the bar F are secured to-

gether by the cross bar *f*. The shear or cutter heads E in which are provided cutting blades *g*, are pivotally secured to the lower end of the bars F, by the pins or bolts *h*. The lever portion *k* of the shear head, is connected with the piston rod as shown by toggle arms G, by which a toggle joint is formed. Between the lever portion *k* of the shear heads is the piston rod H, by which the levers *k* are moved to and from the piston by the up and down movement of the inner ends of the arms G.

In operation the shears are moved by a crane as before stated, over the boiler and lowered to receive the bolt between the cutters. The valve R is rotated to admit compressed air to the cylinder either above or below the piston head, to move the piston up or down. The movement will close and open the cutter blades by the operation of the toggle, which it is thought will need no further explanation.

Having thus fully described the nature and the object of my invention, what I claim is—

1. The combination with the cylinder, piston head, and rod H, of the supports F, secured to the cylinder, the vibratable cutter heads, and the toggle, substantially as described and for the purpose set forth.

2. The combination with the cylinder and piston of the rotatable four way valve, the supporting bars F, shear heads E, cutters *g*, levers *k*, and toggle G, substantially as described and for the purpose set forth.

3. The combination with a cylinder and an air actuated piston, of the cutters or shears supported on the cylinder and actuated by the piston and the toggle, substantially as described and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 28th day of May, A. D. 1894.

CHARLES O. HEGGEM.

Witnesses:

W. K. MILLER,  
BURT A. MILLER.