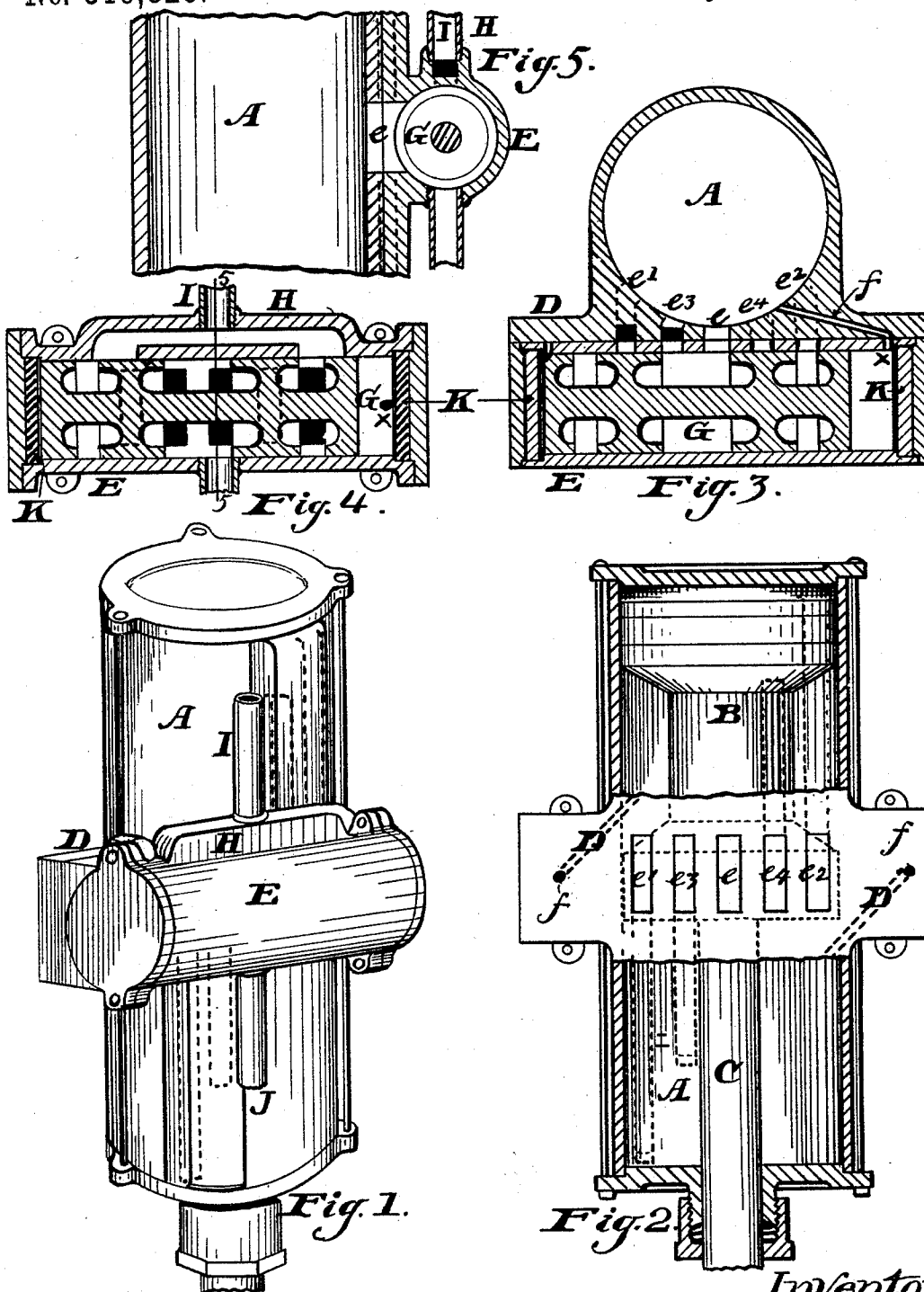


(No Model.)

G. L. WELLER.
STEAM ACTUATED VALVE.

No. 519,826.

Patented May 15, 1894.



Witnesses,
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UNITED STATES PATENT OFFICE.

GEORGE L. WELLER, OF ELYRIA, OHIO.

STEAM-ACTUATED VALVE.

SPECIFICATION forming part of Letters Patent No. 519,826, dated May 15, 1894.

Application filed February 3, 1894. Serial No. 499,036. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. WELLER, a citizen of the United States, residing at Elyria, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Steam-Actuated Valves for Rock-Drilling Engines, of which the following is a specification.

This invention relates to engines of the rock drilling class and consists in the new construction and combinations substantially as hereinafter described and pointed out in the claim.

In the accompanying drawings—Figure 1 is a perspective view of my new engine. Fig. 2 is a longitudinal section of the same. Fig. 3 is a cross section through the center line of the valve. Fig. 4 is a section through the center line of the valve transverse to that of Fig. 3. Fig. 5 is a cross-section through the valve on line 5, 5, on Fig. 4.

A represents a cylinder.

B is a piston which I make with two heads and a little more than half the length of the cylinder, the piston rod C attached to one head of said piston and playing through the lower head of the cylinder. The middle portion of the piston is reduced in size to form two heads and for a special purpose herein-
after shown.

The valve which forms the principal part of my invention is described as follows:

D is a bed plate to which the cylindrical valve chamber E is secured, and is cast with the cylinder on one side at its mid-length, and cross-wise to it. In the face of said plate are made the steam ports, e , e' , e^2 , e^3 , and e^4 . The side ports e' and e^2 connect with passages in side of cylinder A which lead to the extreme ends and constitute the inlets. The ports e^3 and e^4 connect with shorter passages in the side of cylinder A.

f f' are small ducts leading from the cylinder into the ends of the valve chamber, the valve chamber also has like ports which register with those in the said plate D. G is a round valve playing in said chamber E. It is also chambered as seen in Figs. 3 and 4, leaving a central stem around which steam

has access and renders it a balanced valve, the chambers also providing means for the steam to reach the ports.

H is a steam chest in the upper side of the valve chamber in communication with the end ports e' , e^2 , and I is a pipe for conveying steam into said chest.

J is the exhaust pipe.

K are cushions of rubber or other suitable material, covered by a thin plate of metal, against which the ends of the valve G strike to lessen the concussion.

The working of this mechanism is as follows:—The steam having been admitted under the piston, forces it upward until it passes small port f , allowing steam to enter this port and pass through the channel into the valve chamber, and throw the valve to opposite end of the chest allowing steam to enter through valve at e^2 and up through steam passage to upper end of cylinder, driving the piston down and allowing exhaust steam from lower end of piston to pass out through exhaust port e to open air. When piston has passed small port f' , the steam enters through that channel into the other end of valve chamber, throwing the valve back, allowing steam to enter at e' and exhaust through port e^3 and over out of exhaust port e , thus repeating the operation, giving to the piston a reciprocal movement, and the piston rod may be attached a drill bit.

It will be observed, the cylinder has two steam ports, e' , e^2 , running to each end of cylinder, and also has an independent exhaust port for each end of cylinder, e^3 , e^4 , which are made shorter than the ports e' , e^2 , the object of which is to cause the exit of exhaust steam to be shut off when the piston passes the ends of these ports causing the remainder of the steam to be compressed and acting as a cushion to prevent the piston from striking the ends of the cylinder.

The object of constructing the valve round, as shown, is to make it a balanced piston valve, having no pressure upon it to hold it to its seat, thus allowing an easy and quick movement.

Having described my invention, I claim—

In a rock-drilling steam engine, the combination of cylinder A having steam ports e , e' e^2 e^3 e^4 , the two side ports e' and e^2 connected with long passages, and the exhaust
5 ports e^3 e^4 connected with the shorter passages in the side of cylinder A; the ducts f' , double headed piston B, and the cham-

bered valve G playing in the transverse chamber E all constructed to operate substantially as described.

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Witnesses:

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