J. D. WILSON.

Steam-Valve.

No. 226,218. Patented April 6, 1880.

Fig. 1

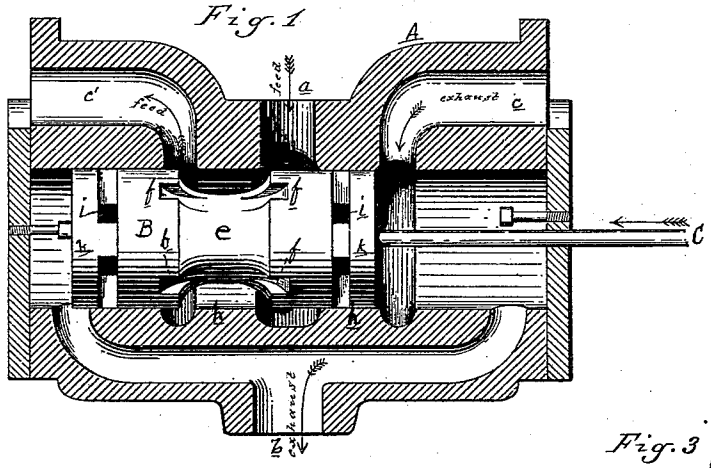


Fig. 3

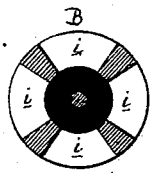
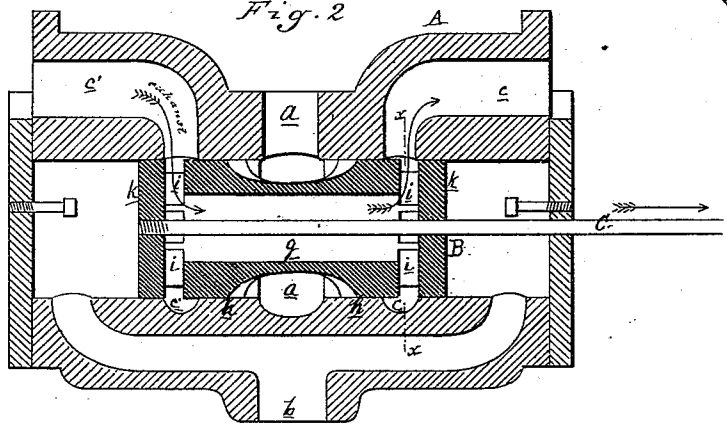


Fig. 2



Attest:

A. Barthel

Thos. S. Day

Inventor:

J. D. Wilson

By Atty

Thos. S. Sprague

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES D. WILSON, OF MONTAGUE, MICHIGAN.

STEAM-VALVE.

SPECIFICATION forming part of Letters Patent No. 226,218, dated April 6, 1880.

Application filed November 4, 1879.

To all whom it may concern:

Be it known that I, JAMES D. WILSON, of Montague, in the county of Muskegon and State of Michigan, have invented an Improvement in Steam-Chests, of which the following is a specification.

The nature of my invention relates to certain new and useful improvements in the construction of steam-valves, by means of which a great saving of steam is obtained where only a portion of the stroke of the engine to which the valve is attached is required, as is the case in circular-saw mills, where the carriage, which usually has a travel of about thirty feet, is attached to and driven by a steam-engine of a like length of cylinder, and the mill is ordinarily employed in sawing twelve to sixteen feet logs. In such case the piston travels but about half the length of the stroke, and consequently there is a great waste of steam in using steam chests and valves of the known constructions.

The object of my invention is to prevent this waste and utilize the exhaust-steam to fill the cylinder behind the piston on the unutilized portion of the stroke before the live steam is let in to compel the return-stroke of the piston.

The invention consists in the peculiar construction of parts and their combination, as more fully hereinafter described.

Figure 1 is a vertical central section of the steam chest and valve in full. Fig. 2 is a vertical section central of the steam chest and valve. Fig. 3 is a cross-section of the piston-valve on the line *x x* in Fig. 2.

In the accompanying drawings, which form a part of the specification, A represents a steam-chest, provided with a steam-inlet, *a*, an outlet or exhaust, *b*, and steam-passages *c c'*, leading to each end of the cylinder of the engine to which steam-chest is attached.

B is a piston-valve, upon which there is cut an annular recess, *e*, midway between the ends of the piston, and having small ports *f* leading from said recess to the full portion of the piston.

g is a chamber through the longitudinal center of the piston, terminating at each end in the lateral openings *i* near the ends of the piston.

The steam-passages *c c'* and *a* are continued all around the inside of the chest, and form the bridges *h* between them.

C is the valve-stem, which is designed to be worked by a hand-lever.

As the valve is moved forward or back the steam will pass from one end of the cylinder over one of the bridges through successively the steam-passages *c'*, *i*, *g*, and *c* into the opposite end of the cylinder. When the valve is reversed the direction of the steam also is reversed, and will fill the other end of the cylinder and react upon the piston before live steam is admitted, thereby saving that amount of steam required to fill that space. When sufficient exhaust-steam has been admitted the valve is moved to the position shown in Fig. 1, when the remainder of the exhaust-steam passes direct to the exhaust-port and live-steam passes to the cylinder, as shown by the arrows in Fig. 1.

The small ports *f*, in the edges of the recess in the piston, serve to admit the steam easier and more gradually and enable the operator to control the speed of the carriage as desired.

It will be observed that the smaller recesses *f* in the edge of the large recess are equal on both edges of the said recess, and are all equally open to live steam, so as to perfectly balance the pressure on the valve when traveling over the bridges *h*, and that there is a single passage through the valve which is in direct communication with the ports *c c'*, so that there is not the slightest chance for a difference in the pressure on opposite sides of the valve, whereas in that form of valve wherein there are several distinct openings the pressure varies on different parts of the circumference of the valve, owing to the tortuous course the steam has to pursue to get into some of the chambers and the ease with which it enters into the others.

By my construction, therefore, a valve is produced that is perfectly balanced, and is thus easily moved and controlled by hand.

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

The piston-valve herein described, provided with a single central chamber, *g*, communicating with the ports *c c'* by the lateral openings *i i*, and having one or more sets of recesses facing each other and adapted to communicate with the feed-port *a*, in combination with a steam-chest having the ports *a b c* and bridges *h h*, all constructed and arranged substantially as herein shown and described.

JAMES D. WILSON.

Witnesses:
MALCOLM HENDRIC,
HENRY DOUVILLE.