

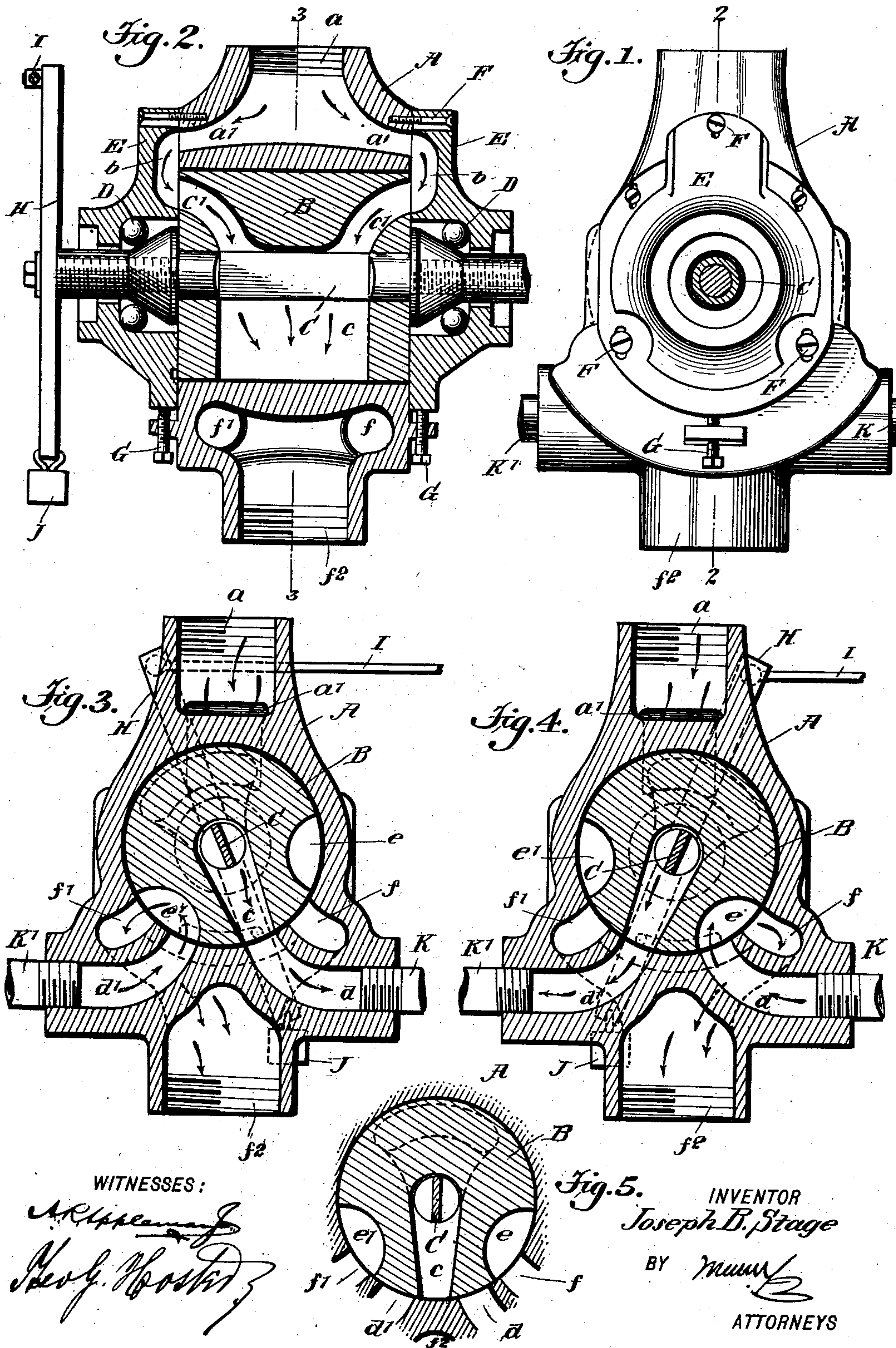
No. 701,638.

Patented June 3, 1902.

J. B. STAGE.
ROTARY VALVE.

(Application filed June 1, 1901.,)

(No Model.)



UNITED STATES PATENT OFFICE.

JOSEPH BRADLEY STAGE, OF TALBOT, MICHIGAN.

ROTARY VALVE.

SPECIFICATION forming part of Letters Patent No. 701,638, dated June 3, 1902.

Application filed June 1, 1901. Serial No. 62,699. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BRADLEY STAGE, a citizen of the United States, and a resident of Talbot, in the county of Menominee and State of Michigan, have invented a new and Improved Rotary Valve, of which the following is a full, clear, and exact description.

The invention relates to rotary valves, such as shown and described in the Letters Patent of the United States No. 630,124, granted to me on August 1, 1899.

The object of the invention is to provide a new and improved rotary valve arranged to reduce the steam-pressure on the valve-plug to a minimum and permit easy turning of the plug, the valve being more particularly designed for use in the steam-feed for sawmills and constructed to automatically shift the valve-plug and cut off the steam in case of a break in the connections from the valve to the sawyer to bring the sawmill-carriage to a stop.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Figure 1 is a side elevation of the improvement. Fig. 2 is a transverse section of the same on the line 2 2 in Fig. 1. Fig. 3 is a sectional side elevation of the same on the line 3 3 in Fig. 2. Fig. 4 is a similar view of the same with the valve-plug and connected parts in a reversed position, and Fig. 5 is a like view of the same with the valve-plug in a cut-off position.

The valve-casing A of the rotary valve is formed with a central bore in which turns a plug B, having a valve-stem C journaled in ball-bearings D, carried in heads E, adjustably secured on the casing A by bolts F, extending through elongated slots in said heads, as is plainly shown in Fig. 1. Set-screws G serve to adjust the heads vertically when the bolts F are loosened to bring the stem C and its valve-plug B in proper alinement with the central bore in the valve-casing A to insure easy turning of the plug.

On one outer end of the valve-stem C is secured an arm H, connected at its upper end with a rod I or the like, leading to the operator's place, to enable the operator to move the valve-plug B into the desired position and

turn on the steam to the cylinder to move the carriage in one direction and shift the valve-plug to move the carriage in an opposite direction, so as to completely shut off the steam when desired.

On the lower end of the arm H is hung a weight J, adapted to return the valve-plug B to a normal or shut-off position, as shown in Fig. 5, in case the connections from the arm H to the operator break, it being understood that the weight J is sufficiently heavy to swing the arm H into a vertical position, so as to bring the valve-plug into a normal or cut-off position, as shown in Fig. 5.

The valve-casing A is provided on top with an inlet *a*, connected by a pipe with a boiler or other steam-supply, and said inlet *a* is formed with branch ports *a'*, leading to cavities *b*, formed on the inside of the heads E, said cavities registering at all times with the branch port *c'* of the main port *c*, extending in the valve-plug B, as is plainly illustrated in Figs. 2, 3, 4, and 5. The lower end of the main port *c* registers with a solid portion of the valve-casing at the time the valve-plug B is in its normal position, as shown in Fig. 5; but the said port *c* is adapted to register with either of the ports *d* or *d'*, connected with opposite ends of the cylinder by pipes K K', the said cylinder having its piston connected with the sawmill-carriage in the usual manner.

In the peripheral surface of the valve-plug B on opposite sides of the port *c* are arranged exhaust-cavities *ee'*, of which the exhaust-cavity *e* is adapted to connect the cylinder-port *d* with a branch exhaust-port *f* in the casing A, and the other exhaust-cavity *e'* is adapted to connect the cylinder-port *d'* with an exhaust branch port *f'*, likewise arranged in the casing A and leading, with the other branch port *f'*, to the common exhaust-port *f*², leading to the outside.

The operation is as follows: When the operator moves the arm I in one direction, as indicated in Fig. 3, then the port *c* registers with the cylinder-port *d*, while the other cylinder-port *d'* is connected by the exhaust-cavity *e'* with the exhaust branch port *f'*, leading to the common exhaust-port *f*² and the outside. The branch ports *c'* of the main inlet-port *c* are at all times in register with

the cavities *b* in the heads *E*, and as the said cavities are at all times connected with the branch ports *a'* of the port *a* it is evident that steam passes from the boiler through the casing and heads and the plug to the cylinder to move the cylinder and move the carriage in one direction, and when it is desired by the Sawyer to return the carriage he pulls the arm *I* in the opposite direction to turn the valve-plug *B* into the position shown in Fig. 4, so that the live steam can pass through the casing, the heads, and the plug to the pipe *K'* and to the other end of the cylinder to return the carriage, the exhaust-steam passing through the pipe *K*, port *d*, cavity *e*, and ports *f f'* to the outside.

By the arrangement described the steam in its passage to the valve-plug does not unduly press the latter, and consequently it requires but little power to turn the plug in the valve-seat, especially as the plug has its stem mounted in ball-bearings carried by the adjustable heads of the valve-casing *A*.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A valve, comprising a casing having a steam-inlet, two cylinder-ports and two exhaust-ports leading to a common exhaust, casing-heads having cavities connected with the steam-inlet, a valve-plug mounted to turn in the casing and having exhaust-cavities adapted to register with the exhaust-ports and cylinder-ports, a main inlet-port having branch ports registering at all times with the casing-head cavities, said main inlet-port being adapted

to register with either of said cylinder-ports, as set forth.

2. A valve, comprising a casing having heads, a valve-plug mounted to turn in said casing and having its stem extending through said heads, ball-bearings in said heads for said valve-stem, and means for adjusting said heads on the casing, to bring the ball-bearings and the valve-plug in proper alignment with the central portion of the casing.

3. A valve, comprising a cylindrical member provided with open ends, a pair of heads provided with ball-bearings for closing said ends, a movable shaft passing through said ball-bearings and provided with a valve-plug, means for adjusting the position of said heads relative to said cylindrical member, said valve-plug being provided with integral surfaces abutting said ball-bearings.

4. A valve, comprising a cylindrical body provided with open ends, heads mounted upon the ends thereof and provided with annular outer members of ball-bearings, means for adjusting the position of said heads relative to said cylindrical body, a valve-plug fitted steam-tight in said cylindrical body and mounted upon a revoluble stem passing through said heads, said stem being provided with inner members of ball-bearings.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH BRADLEY STAGE.

Witnesses:

A. H. BUTTS,

HARRY H. BUTTS.