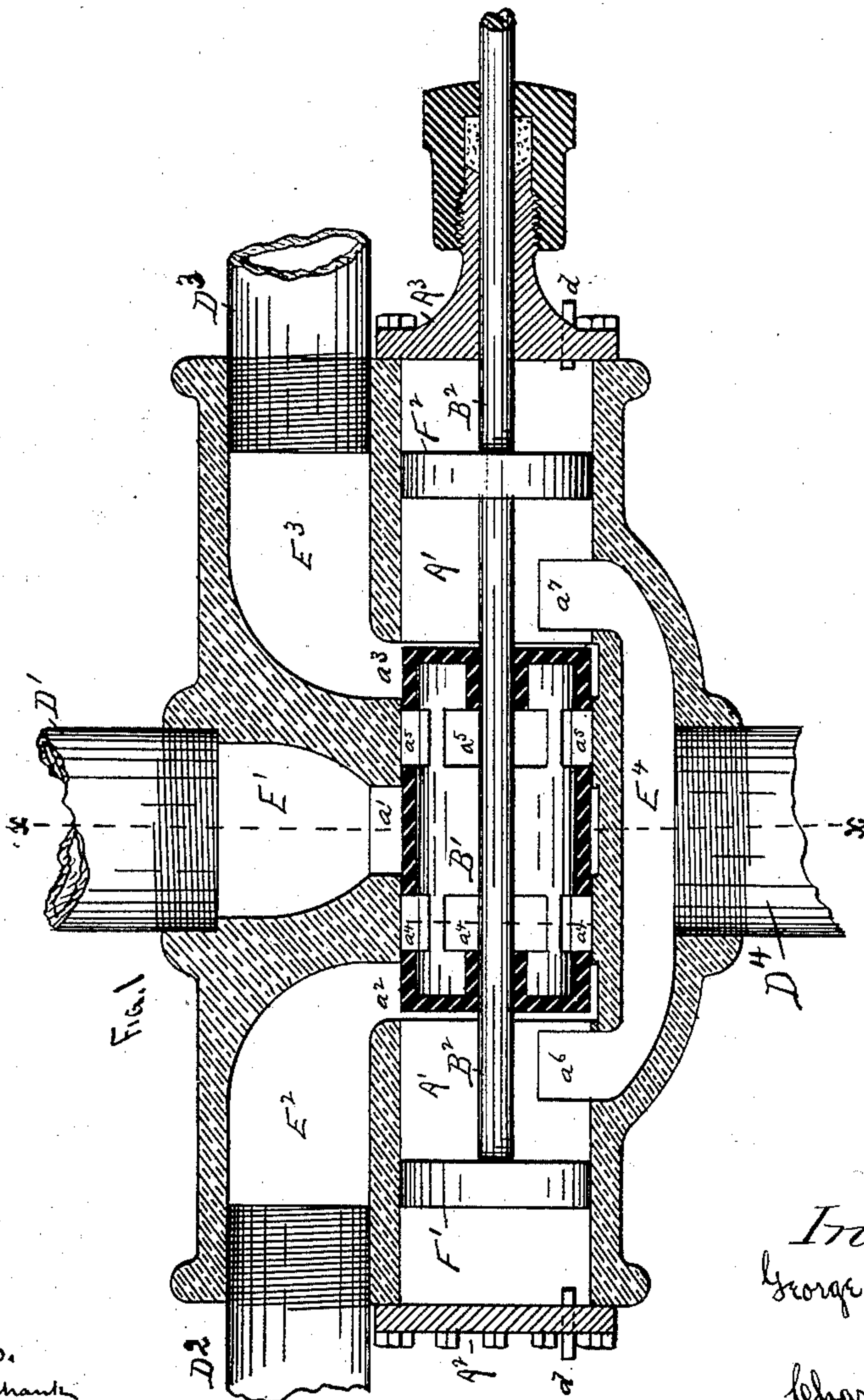
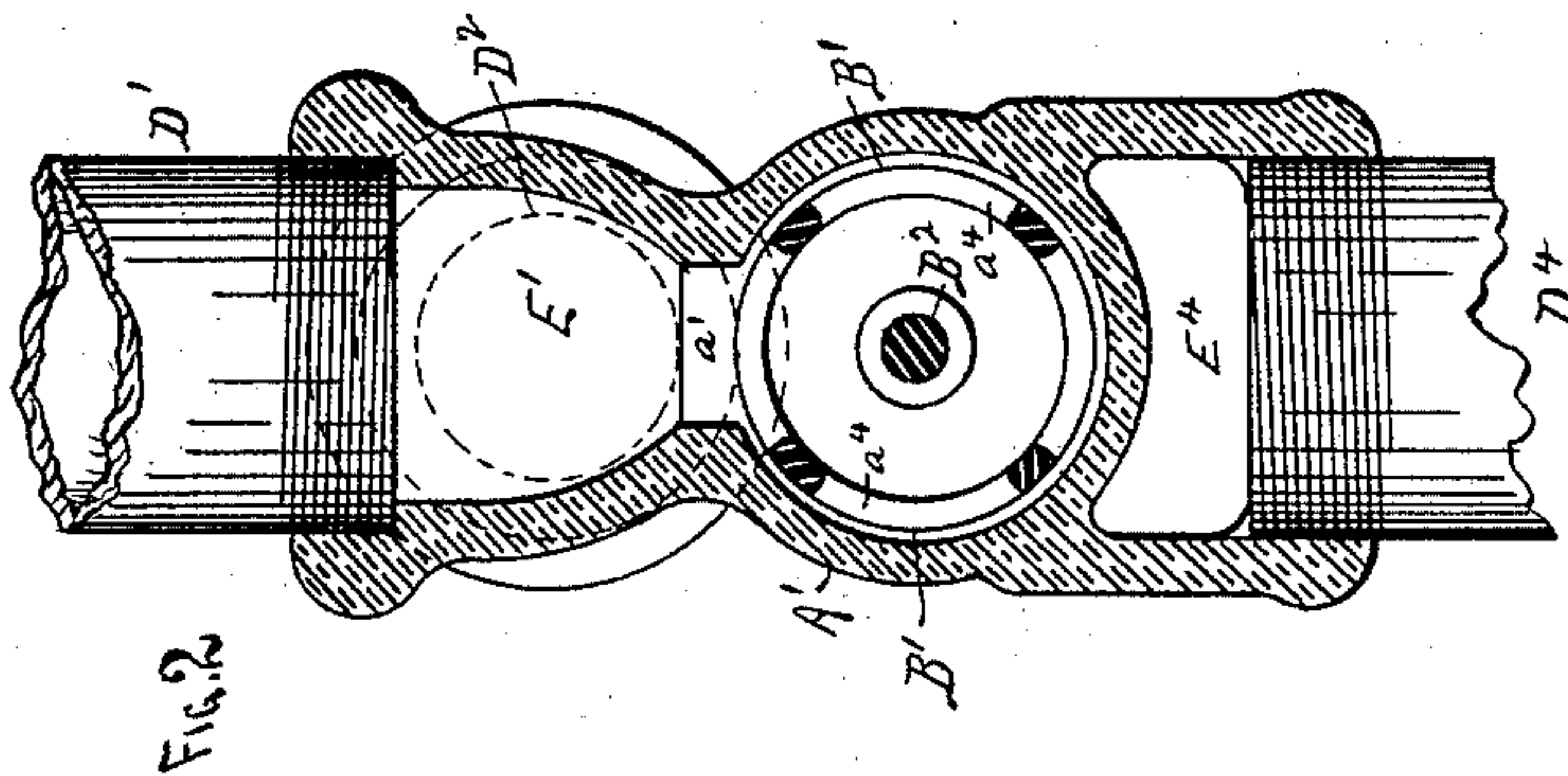


(No Model.)

G. A. KELLY,
BALANCED STEAM VALVE.

No. 463,156.

Patented Nov. 17, 1891.



WITNESSES.
J. W. Smith
Philip Mayhold

Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE A. KELLY, OF STILLWATER, MINNESOTA.

BALANCED STEAM-VALVE.

SPECIFICATION forming part of Letters Patent No. 463,156, dated November 17, 1891.

Application filed March 28, 1890. Serial No. 345,674. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. KELLY, a citizen of the United States, residing at Stillwater, in the county of Washington and State of Minnesota, have invented certain new and useful Improvements in Balanced Steam-Feed Valves, of which the following is a specification.

This invention relates to balanced steam-valves, more particularly to those used in the steam-feeding apparatus of saw-mill carriages; and it consists in the construction and attachments, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a longitudinal sectional elevation, and Fig. 2 is a cross-sectional view on the line X X of Fig. 1, showing one of the valves of the feeding apparatus of a saw-mill carriage with my balancing attachment arranged therein.

A' is the cylindrical casing, in which the valve B' is adapted to be moved back and forth by the stem B².

D' represents the live-steam pipe; D², the pipe leading to one end of the steam-cylinder; D³, the pipe leading to the opposite end of the steam-cylinder, and D⁴ the exhaust-pipe. The live-steam pipe leads into a chamber E', which is connected by a port a' to the interior of the cylindrical casing A', while the pipes D² D³ lead into chambers E² E³, which are connected by ports a² a³ with the interior of the cylindrical casing. The valve B' is hollow and is provided with ports a⁴ a⁵ through its sides. The exhaust-pipe D⁴ leads into a chamber E⁴, which extends in each direction toward the ends of the cylindrical casing A' and is connected by ports a⁶ a⁷ with its interior, as shown. The ends of the cylindrical casing A' are extended somewhat, and within these extensions, upon the stem B² of the valve, are secured piston-heads F' F², while small air pipes or ports d are inserted through the heads A² A³ of the cylindrical casing or through the casing itself near its ends. When the valve B' is moved to the left to admit steam into the pipe D², the port a⁵ will register with the port a', and the port a² will register with the port a⁴ and cover the port a⁶ and leave the ports a³ and a⁷ open for the exhaust from the pipe D³ into the interior of the casing A', and thence by the ports a³ a⁷ to the chamber E⁴ and pipe D⁴. Then when the po-

sition of the valve is reversed the port a⁴ will register with the port a', and the port a⁵ will register with the port a³, while the ports a² and a⁶ will be uncovered for the free passage of the exhaust from the pipe D³ into the pipe D⁴. When the valve is moved, the sudden entrance of the live steam within it causes it to be moved very quickly, and frequently causes it to "pound" or exert an undue and powerful strain upon the stem and other parts. To overcome this tendency and to insure uniform and easy movement of the valve is the function of the piston-heads F' F², against which the exhaust-steam exerts a pressure against the live steam within the valve and counteracts its influence, so that the motion is rendered uniform and the valve perfectly "balanced." The piston F' is inactive when the piston F² is in operation, and vice versa. The air-pipes d prevent the air in the casing between the heads A² A³ and the piston-heads from being compressed and interfering with the free action of the valve. The pipes d also permit the escape of any steam which may leak around the pistons.

Having thus described my invention, what I claim as new is—

1. The combination, with the valve-casing having the ports opening therein from the steam-inlet chamber and the two chambers on opposite sides thereof which have communication with the steam-cylinder, and also having the chamber E⁴ communicating with the exhaust-pipe and with opposite ends of the valve-casing, of the valve having the ports a⁴ a⁵ and secured to move with the valve-stem carrying the piston-heads F' F², substantially as and for the purposes set forth.

2. The combination, with the valve-casing having inlet and exit ports, of the valve therein having corresponding ports, the valve-stem carrying said valve, and also piston-heads working in extended portions of the valve-casing, and air-ports in the ends of the valve-casing between said piston-heads and valve-casing heads, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE A. KELLY.

Witnesses:

STILES W. BURR,
C. N. WOODWARD.