

(No Model.)

M. A. GREEN.
BALANCED SLIDE VALVE.

No. 483,054.

Patented Sept. 20, 1892.

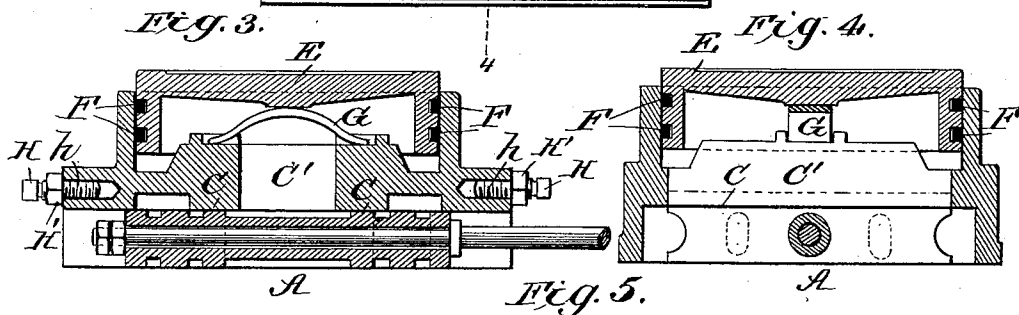
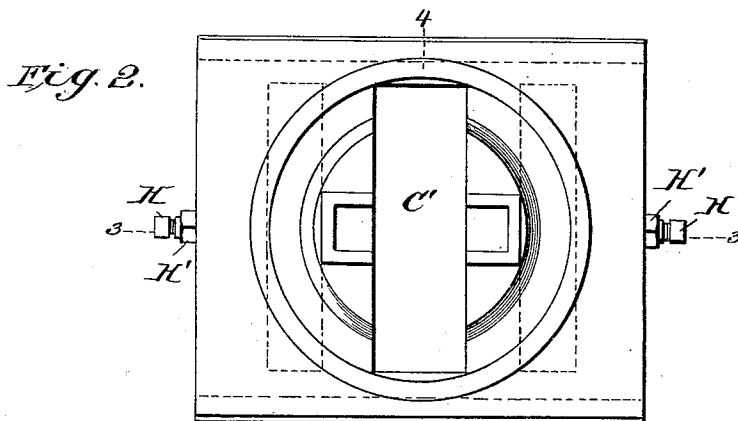
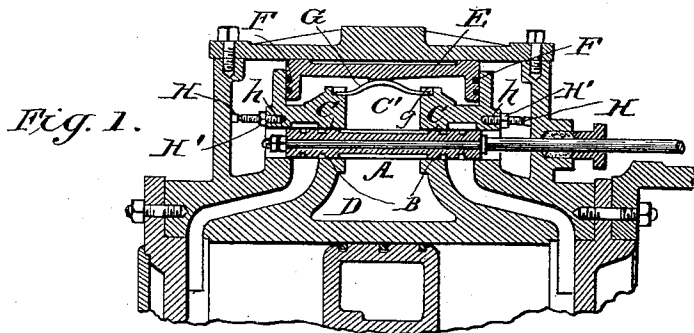
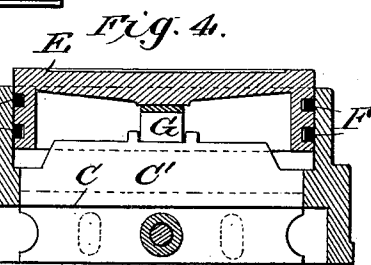
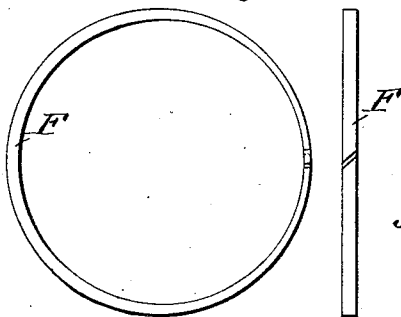


Fig. 5.



WITNESSES:
Fred J. Dietrich
P. B. Swipine.



INVENTOR:
Martin A. Green
BY *Mann*
ATTORNEYS

UNITED STATES PATENT OFFICE.

MARTIN A. GREEN, OF ALTOONA, PENNSYLVANIA.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 483,054, dated September 20, 1892.

Application filed March 1, 1892. Serial No. 423,361. (No model.)

To all whom it may concern:

Be it known that I, MARTIN A. GREEN, of Altoona, in the county of Blair and State of Pennsylvania, have invented a new and useful Improvement in Balanced Slide-Valves, of which the following is a specification.

This invention is an improvement in balanced slide-valves, and seeks to provide certain improvements; and it consists in the novel features of construction and combinations of parts hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of a steam-chest and part of a cylinder with my improvements. Fig. 2 is a plan view of the pressure-plate with the balance-ring and valve removed. Fig. 3 is a sectional elevation on about line 3 3 of Fig. 2, with balance-ring, valve, and valve-rod in position. Fig. 4 is a section on about line 4 4 of Fig. 2, and Fig. 5 shows the ring-packing for the balance-ring.

The valve proper A rests at one or its inner side against the seat B, and may be properly reciprocated by any suitable means. At its other or opposite side it fits against the pressure-plate C, which is made with a hollow or steam space C', communicating with the intermediate steam-opening D in the cylinder or casing, and is formed at its outer side with a cylindrical opening to receive the balance-ring E, which is packed in said cylindrical opening by means of the packing-rings F (shown in Fig. 5) and made in the eccentric shape shown, so that the expansion will be equal and maintain a true circle, the said packing-rings being placed upon the balance-ring, as shown. A spring G bears between the pressure-plate and its balance-ring and serves to force the same apart, such spring, which is in the form of a bent plate, being set at its ends in pockets or recesses g in the pressure-plate. This spring G operates to hold the balance-ring out against the chest and prevents the valve from making any noise when the engine is shut off or started. At its ends the pressure-plate is provided with threaded sockets h, into which are turned the screws H, held by jam-nuts H'. These screws are useful in adjusting and retaining the pressure-plate in its proper position in the steam-chest.

It will be understood that the balance ring or head should be of such area as to overcome the resistance of the steam-pressure underneath the valve, and so allow the valve to slide easily between its seat and the pressure-plate. At the same time it will be seen that in case of a gush of water in the cylinder the pressure-plate will be raised by the excessive pressure against the lower edge of the valve, preventing the cylinder from being broken.

By extending the pressure-plate to the lower edge of the valve and setting it upon the valve-seat I avoid any undue pressure upon the valve in case the balance ring or head has an extreme area, which would cause more pressure upon the top of the valve than required and so make the valve run hard.

In practice it will be seen that the steam is taken in the inside of the pressure-plate and valve, the exhaust-steam only surrounding the outside. The balance head or ring is hollowed out at its center on its outer side and only bears at its rim against the chest-cover, thus preventing the latter from being sprung.

If at any time the valve shows signs of leaking, the pressure-plate can be scraped off a little on the edges, and should too much be scraped off the valve can be run in this way with a little undue pressure until it has come to its true seat, and the pressure-plate again settles down on its edges, which will allow the valve to work perfectly free between the two surfaces.

The pressure-plate is not connected to the casing-plate, so that the latter may be removed to permit access to the pressure-plate without removing or displacing the pressure-plate. It will also be seen that the pressure-plate is movable laterally over the valve and seat independent of any movement toward or from the same, so it may be properly set without varying the tension of the spring interposed between the balance-ring and pressure-plate.

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

1. The combination of the cylinder or casing, the pressure-plate having an internal steam-space and provided with portions resting on the valve-seat, whereby to prevent undue pressure upon the valve, the balance-ring fitted in said pressure-plate, and the casing-plate against which said ring rests, said plate

being disconnected from the pressure-plate, whereby the casing-plate may be removed to permit access to the balance-ring without removing the pressure-plate.

5 2. The improvement in balanced valves, substantially as herein described, consisting of the valve and its seat, the pressure-plate, the balance-ring fitted to said pressure-plate, a spring-bearing between said plate and ring,
10 and the pressure-plate being movable laterally over the valve and seat independent of any movement toward or from the same, whereby it may be properly set without varying the tension of the spring between the balance-ring and pressure-plate.

15 3. The combination, in a balanced valve, of the pressure-plate provided with a steam-space and with opposite spring pockets or recesses, the balance-ring fitted to the pressure-

plate, and the bow-spring plate bearing between said balance-ring and pressure-plate and fitted at its ends in the pockets or recesses, whereby it is self-retaining, substantially as set forth.

4. The combination, substantially as described, of the cylinder or casing, the valve
25 proper, the pressure-plate arranged to bear upon the cylinder or casing, whereby to prevent undue pressure on the valve, the screws whereby to set the said pressure-plate to and
30 secure it in any desired position over the valve, the balance-ring fitted to said pressure-plate, and the actuating-spring, all substantially as and for the purposes set forth.

MARTIN A. GREEN.

Witnesses:

W. D. COUCH,

JOHN L. RIPPARD.