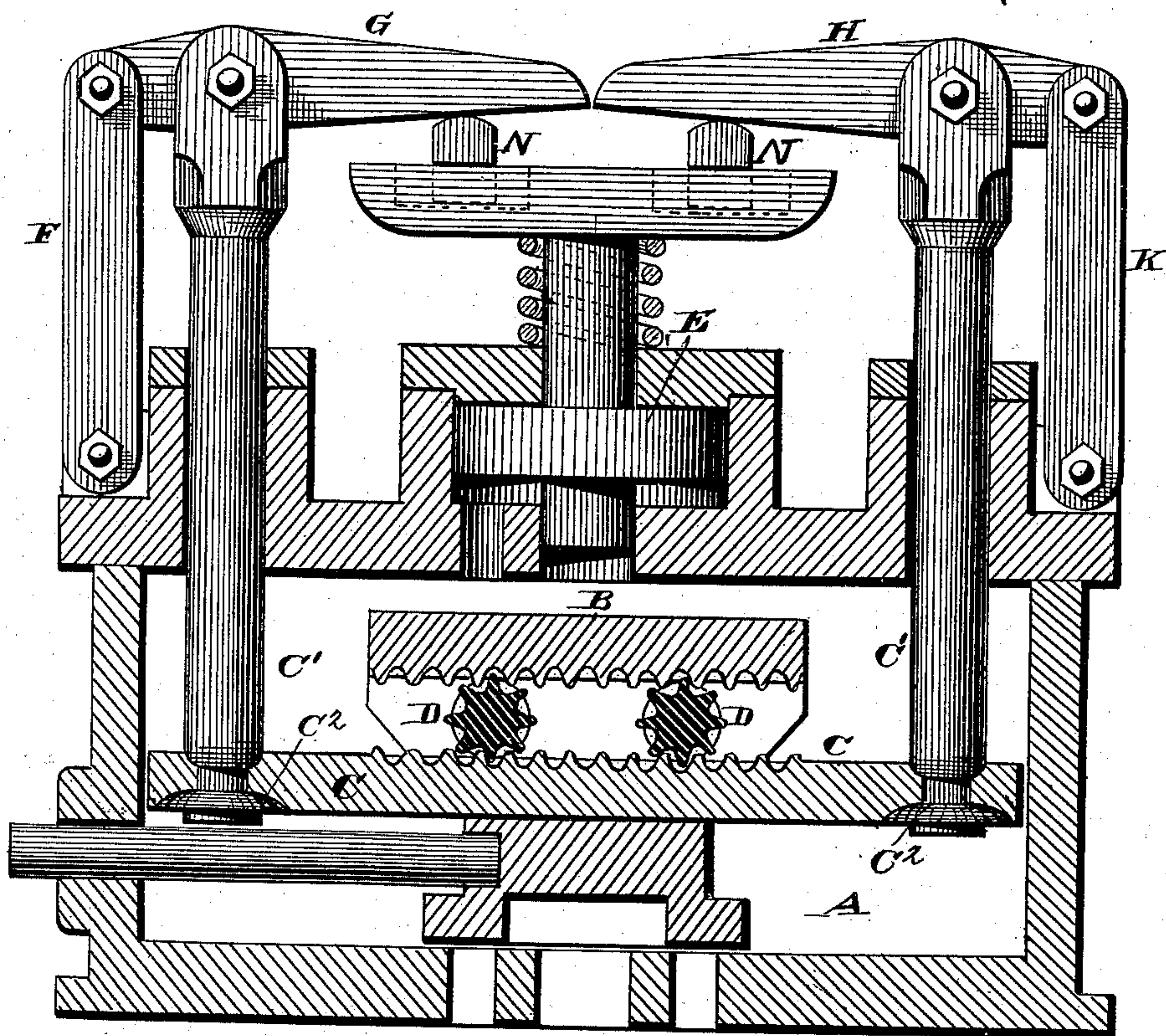


E. ROBINSON.
Balance Slide-Valve.

No. 219,310.

Patented Sept. 2, 1879.



WITNESSES
E. J. Nottingham
D. P. Cowl

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UNITED STATES PATENT OFFICE.

EDGAR ROBINSON, OF DENNISON, OHIO.

IMPROVEMENT IN BALANCE SLIDE-VALVES.

Specification forming part of Letters Patent No. **219,310**, dated September 2, 1879; application filed March 19, 1879.

To all whom it may concern:

Be it known that I, EDGAR ROBINSON, of Dennison, in the county of Tuscarawas and State of Ohio, have invented certain new and useful Improvements in Balance Slide-Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates to balance slide-valves for steam-engines; and it consists, first, in a valve supported or suspended at two of its ends or sides by an adjustable system of levers, or equivalent device, whereby connection is made between said valve and the piston of an auxiliary steam-chest, which receives its steam from the main chest or chamber within which the valve operates.

It also consists in a universal-joint connection between said valve and the levers, or other mode of connection between the valve and the auxiliary piston referred to.

These features just mentioned constitute an improved construction of the balance-valve which I have heretofore invented, and upon which I have already filed an application for Letters Patent, and I will therefore confine my description in the present case merely to the new features shown in my said improvement.

The figure in the drawing represents a longitudinal section of a device constructed according to my invention.

A is a steam-chest; B, a sliding valve, and C a bed or support from which valve B is suspended and moves. D are anti-friction rollers placed between the valve and its bed or support C. This bed or support C is given an up-and-down motion, so that the valve is more or less lifted from its seat. This valve bed or support C is lifted through the action of an auxiliary piston, E, by means of the double-adjustable lever-connections F G H K.

The bed C and the lifting-stems C¹ at either end thereof are connected with universal or ball-and-socket joints C², of any desired construction.

The auxiliary piston E, receiving its steam from the same chest or chamber as the sliding valve B, operates through the lever and connection just mentioned to lift the valve B in such a manner as to counteract and almost balance the downward pressure of the steam upon the valve within the chest. The degree of this lift upon the valve may be determined at will by the movable bearings N.

In my former device I set forth substantially the same specific construction, so far as concerns the steam-chest, valve-seat, anti-friction rollers, auxiliary steam-chest, and link-and-lever connection between the steam-chest and the valve; but in said prior invention the valve was supported or lifted from its seat only by a single stem from its central portion, and the mechanism was constructed and adapted to meet this particular principle.

In the present case, however, instead of lifting or suspending the valve from a single central point, I lift it from two ends, and for that purpose merely duplicate the lever-and-link connection shown in my former application, and adapt it, substantially as shown in the drawing.

What I claim is—

1. The combination, with a slide-valve, of a steam-piston receiving steam-pressure from the valve-chamber, and independent lifting-stems attached to the opposite ends of the valve supporting or lifting plate, and connected independently of each other with the rod of said piston, substantially as set forth.

2. In combination with a slide-valve, the independent systems of lifting levers and links operated through the agency of an auxiliary piston, E, receiving its steam from the chamber of said valve, each of which said systems of links and levers is made independently and separately adjustable, substantially as shown.

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

EDGAR ROBINSON.

Witnesses:

JNO. CROWELL, Jr.,
WILLARD FRACKER.