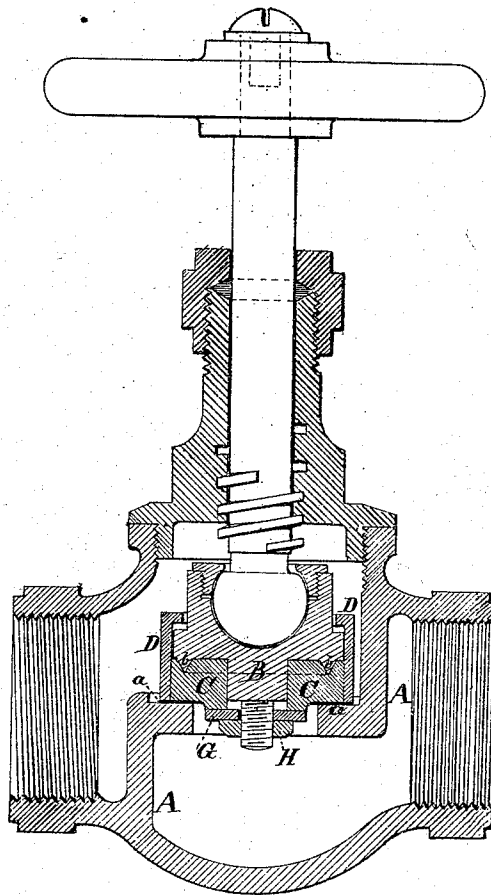


Edmund Russell.
Stop Valve.

117689

PATENTED AUG 1 1871



Witnesses:

A. Hoernemann.

C. C. Livings

Inventor:

Edmund Russell
by his attorney
J. S. [Signature]

UNITED STATES PATENT OFFICE.

EDMUND RUSSELL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STOP-VALVES.

Specification forming part of Letters Patent No. 117,689, dated August 1, 1871.

To all whom it may concern:

Be it known that I, EDMUND RUSSELL, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Stop-Valves, of which the following is a specification:

It has long been common to provide a soft or yielding face to the valve with the view to better adapt it to variations in the seat and insure a tight fit. Vulcanized rubber alone, or in combination with other materials, has been used, and the compound of plumbago, rubber, and pin-dust, which I prefer to employ, has been before employed for this purpose; but I have provided novel means of overcoming a difficulty which has hitherto been serious.

I employ a guard-ring around the exterior of the packing, and leave it free to slip upward or backward from the seat, as required, the motion being resisted only by friction. I make a pretty tight fit of the parts, so that there is considerable friction to resist this backward motion of the ring, and provide adequate means for preventing the ring from ever slipping downward toward the seat too far in the first instance. The ring, being exactly flush with the surface of the soft material when the valve is new, slips backward a very little under the pressure with which the valve is screwed down to its seat, but not sufficiently to expose any surface of the soft material to the abrasive action of the current of steam or other fluid passing the valve. The backward-slipping motion is repeated as often as required, the soft material gradually wearing away, but enduring much longer than when, as usual, the protecting-ring or guard-ring is adjusted by hand, and is necessarily made to expose a considerable surface of the soft material below its lower edge when it is first set back.

Another part of my invention relates to provisions for increasing the perfection of the fit when, as is sometimes the case, the soft material is entirely removed. I provide a narrow ridge on the valve, which flattens itself a little as it is crushed down firmly upon the seat, and aids to induce a better fit and a tighter joint than would be otherwise possible.

Following is a description of what I consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification, and represents a central ver-

tical section of the construction with the valve closed. The scale is full size.

A is the fixed casing, and *a* the smoothly-finished seat for the valve. B is the body of the valve, and *b* a sharp ridge formed thereon, presented toward the seat *a* in such position that when the soft material is by any accident or other cause entirely worn out, lost, or removed, the annular ridge *b* may be compressed fairly upon the plane surface of the seat. Under ordinary conditions, however, the ridge *b* will be of no effect. C is a ring of packing or seating material, which I have above termed soft material. It is preferably made of plumbago, rubber, and fine metallic and earthy matter produced by the grinding of pin-points on fine stones, technically known as "pin-dust." This material is well known in the arts, and is easily produced in the proper form, with a recess adapting it to allow properly for the ridge *b*. D is a thin ring or nicely-finished band, of brass or other suitable material, finished very truly on its inner surface, and forced somewhat tightly over the periphery of the valve and the soft material or packing C. The lower edge of the ring D is turned truly to make a close fit upon the plane surface *a* of the seat. The upper edge of the ring D may be less nicely finished. I prefer to leave it somewhat irregular. After it is firmly in place I burnish over the upper edge of the ring so that it forms an internal lip to hold the ring D against slipping downward too far in consequence of any blow or other cause. If the upper edge of the ring D is smooth, the burnishing of it over will form a regular internal lip. If its upper edge is irregular or reaches upward to a sufficient extent only at a few points, those points only will be burnished over, but that will be sufficient. G is a washer which covers a small portion of the packing material C, and H is a nut which firmly compresses it thereon, as will be obvious.

In the use of the valve the rapid flow of the steam or other fluid wears away the soft material C very slowly, and in proportion as it is removed the main body B, with its attachments, is screwed down further to close the valve. As this movement progresses the ring D, being pressed forcibly with its lower edge upon the seat *a*, is moved slightly backward upon the main body B, and its friction holds it firmly in the position in which it is left after each movement. Its lower edge is

practically flush with the working face of the soft material C at all stages. When from any cause the material C is entirely removed, the main body B is screwed downward to a considerable extent to close the valve, and under these conditions the narrow ridge *b* flattens itself slightly upon the seat *a*, and forms a tight joint additional to the approximately tight joint made by the edge of the ring D, which still remains of some service. The inner surface of the ring D, being bored or otherwise formed truly cylindrical, offers the same resistance to slip back after it has been pressed back to this great extent as at first.

The general construction of the casing A, the screw which operates the valve, the stuffing-box, stand, hand-wheel, &c., may be all modified very greatly in form; so may be the thickness and other proportions of part C, and of the several other parts. The material may be also changed within considerable wide limits.

I claim as my invention—

1. The within-described stop-valve, having the slip-ring D arranged as represented to guard the soft material C, and stand with its lower edge flush with the working surface thereof under all conditions, so long as the soft material remains.

2. The within-described combination and arrangement of the soft packing C, protecting-ring D, and the ridge *b* on the main body B, arranged to serve relatively to each other and to the seat *a* of a stop-valve, as and for the purposes herein set forth.

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

EDMUND RUSSELL.

Witnesses:

H. M. BREWSTER,

C. C. LIVINGS.