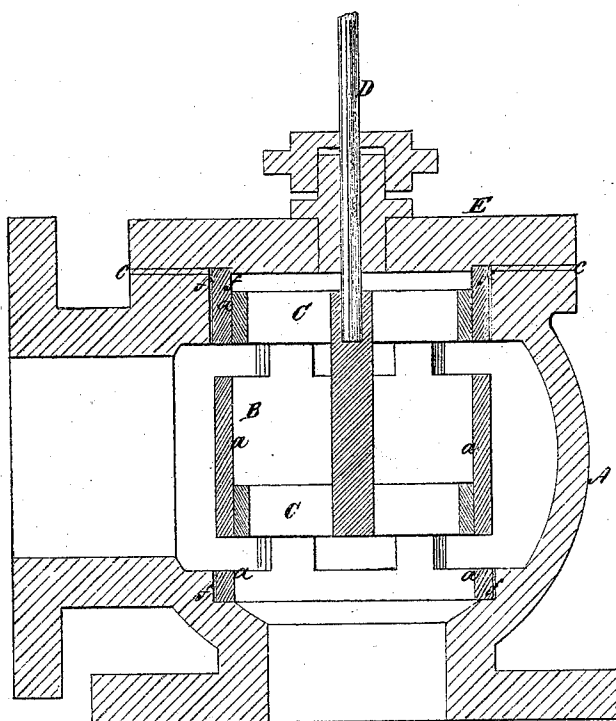


D. W. PAYNE & H. TABOR.

Bushing for Governor and other Valves.

No. 134,483.

Patented Dec. 31, 1872.



Witnesses:
Frederick H. Payne
Frederick H. Tabor

David W. Payne
Harris Tabor
per *Brown & Allen*
attorneys

UNITED STATES PATENT OFFICE.

DAVID W. PAYNE AND HARRIS TABOR, OF CORNING, NEW YORK, ASSIGNORS
TO B. W. PAYNE AND SONS, OF SAME PLACE.

IMPROVEMENT IN BUSHINGS FOR GOVERNOR AND OTHER VALVES.

Specification forming part of Letters Patent No. 134,483, dated December 31, 1872.

To all whom it may concern:

Be it known that we, DAVID W. PAYNE and HARRIS TABOR, both of Corning, in the county of Steuben and State of New York, have invented an Improvement in Bushings for Steam-Valves, of which the following is a specification:

This invention is designed to obviate the "crimping" frequently experienced with the brass bushings of steam-governor and other valves, and arising from the greater expansion, by heat, of the brass as compared with the iron of the shells in which such bushings are ordinarily arranged. The invention consists in so constructing and applying the brass bushing to its iron support as to permit its relatively greater expansion without binding or buckling against the same, or, as a result of such binding or buckling, its crimping against or upon the working-surface of the valve, as quite commonly occurs where no specific precaution against such a casualty is taken.

The drawing is a vertical longitudinal sectional view, showing the construction according to our invention of a bushing applied in place in due relation with the valve of a steam-engine governor.

A is the iron valve-shell, within which is the brass bushing B, containing the valve C. As far as concerns their action in controlling the flow of steam through the steam-passage, of which the shell A constitutes a portion, the bushing B and valve C may be of the usual construction, and operate in the usual relation with each other, the valve being attached in any appropriate manner to the spindle D of the governor arranged above. But the bushing, instead of being in snug contact with the surrounding iron at its upper and lower portions, as when made in the manner hitherto adopted, is diminished to a diameter less than that of the bore of the shell, as indicated at *f*, to fit loosely to the adjacent or contiguous annular bearing provided in the ordinary manner at the top and bottom of the shell A, and

concentric with the axis of the bushing and its inclosed valve.

It will be seen that by this means a small space, as at *f*, is afforded between the brass and the iron immediately surrounding it, not afforded when the bushing is of the ordinary construction.

When, by the admission of steam, the iron shell and brass bushing are heated, and consequently expanded, the brass more than the iron, the loose nature of the bearing afforded to the bushing by the spaces at *f* enables the bushing to expand freely without being confined by the surrounding iron, such confinement when exerted in any considerable degree causing the brass to react upon itself, and thereby crimping its inner surface and increasing its frictional resistance to the movement of the valve, and as a consequence not only increasing the wear of the latter, but materially interfering with the delicate and efficient operation upon the same of the governor. Of course, the valve and bushing, being both of brass, will expand equally, and, the free expansion of the bearing being provided for by the means just herein specifically set forth, the movement of the valve within the bushing will be equally facile, whatever the changes in temperature may be. To provide against any binding effect which might result from the vertical expansion against the iron shell, of the brass bushing, the cap E of the shell may have between it and its seat or bearing a packing, *c*, of any appropriate elastic or yielding material.

What we claim as our invention is—

The brass bushing B of the valve C applied loosely, diametrically, within the iron shell A, and supported endwise on an elastic bearing at one or both ends, substantially as and for the purpose set forth.

DAVID W. PAYNE.
HARRIS TABOR.

Witnesses:
E. D. MILLS,
D. F. FENO.