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UNITED STATES PATENT OFFICE.

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VALVE.

964,468.

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To all whom it may concern:

Be it known that I, SAMUEL M. GUSS, a citizen of the United States, and a resident of the city of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to globe-valves or the like in which a separately formed seating disk or ring is employed in connection with a valve-head adapted to removably hold the same so as to provide for readily renewing it; and it consists in the improved construction of such seating disks or rings as hereinafter fully described in connection with the accompanying drawings and the novel features of which are specifically pointed out in the claims.

Figure 1 is a sectional view of a portion of a globe valve having my invention applied thereto. Fig. 2 and Fig. 3 are detail views of my improved seating disk, and Fig. 4 indicates a modified construction thereof.

In the drawing 2 indicates a fixed valve-seat, 3 a movable valve-stem, and 4 a valve-head carried by said stem, all of which are of well known construction. The valve head 4 is formed with a cylindrical recess for receiving the separately formed seating-disk or ring 6 which is removably held therein by means of a nut 7. Ordinarily this seating-disk or ring 6 is made of relatively soft metal, as Babbitt, so as to insure the making of tight contact with the fixed seat 2, the softer metal readily adapting itself to the harder seat under the closing pressure applied. In practice however certain defects appear which it is the purpose of my invention to overcome.

The softer metal in contact with the harder seat 2, has a tendency under the influence of heat and pressure, to attach itself to the latter so as to leave rough seating surfaces when the valve is forcibly opened. The contraction and expansion due to changes of temperature either increases this tendency or tends to loosen the joint, so that when the valve is left closed for a considerable time, gutters are apt to be cut across the bearing faces so as to necessitate repairs. My invention overcomes these difficulties by providing in a simple manner for

securing requisite elasticity in the structure for insuring proper seating of the valve under varying conditions of contraction and expansion and without incurring any flow of the seating metal. This is effected by providing a circumferential groove 10 in the seating-disk 6, located about midway of its height and extending approximately parallel with the fixed seat 2, as shown, so as to partially detach the outer or seating portion 11 of the disk from its inner portion 12. The portion 11 is thus enabled to yield under the seating pressure, or as required by contraction and expansion, so as to readily effect and maintain proper contact with the fixed seat 2. The natural elasticity of the material used in the seating-disk will obviously permit of such yielding to a considerable extent without permanent change of form if it be made of comparatively hard metal as my improved construction permits. As shown however I provide inlets or ports 13 communicating with said groove 10; and I place in the latter a wall ring 14, filling the groove at the periphery of the disk; said wall ring serving to prevent undue yielding of the seating portion 11 of the disk, while the fluid-pressure admitted to the groove 10 gives additional elasticity to it.

Instead of the outer circumferential groove 10 indicated in Figs. 1 and 2, an inner circumferential groove, as indicated at 10^a Fig. 4, may obviously be substituted with like effect; the wall ring 14 in either case closing the open side of the groove. The condensation of steam admitted to the groove 10 tends to reduce the temperature of the seating disk metal and thus assist in preventing adherence of the softer metal to the seat 2 and in maintaining the elasticity of the seating action. Obviously my improvement may be applied to the fixed seat if desired in substantially the same manner as in the preferred application specifically shown and described.

What I claim is—

1. In a valve the combination with a valve-head having a holding recess, of a seating-disk or ring in said recess formed with a circumferential groove whereby the seating portion thereof is made elastically yielding and with a fluid-pressure inlet to said groove.

2. In a valve, a seating-disk or ring formed with a circumferential groove whereby the seating portion thereof is made elastically yielding and having a separately
5 formed wall ring in said groove.

3. In a valve, a seating-disk or ring formed with a circumferential groove whereby the seating portion thereof is made elastically yielding, said disk having a sep-

arately formed wall ring in said groove and 1
a fluid-pressure inlet to the groove.

In testimony whereof, I affix my signature, in the presence of two witnesses.

SAMUEL M. GUSS.

Witnesses:

D. M. STEWART,
W. G. STEWART.