

tion, comprises the usual tubular body including the stack 12, the bell 14 and the mouth pipe 16. The valves and valve seats embodying the present invention are illustrated in conjunction with the tone hole 18 in the stack adjacent the lower bow 20 of the instrument and in conjunction with the upper octave vent 22 in mouth pipe 16. It will be understood, however, that each tone hole or vent of the instrument is preferably similarly provided with the improved valve and valve seat of the present invention.

Considering now the construction of the valve and valve seat of the present invention, and referring for this purpose first to Figs. 2 to 5 of the drawing in conjunction with Fig. 1 thereof, the valve, as here shown, comprises a metal disk 24 pivotally mounted as at 26 on the body of the instrument for movement to open and closed positions under the control of the usual key actions and mechanisms, the key or finger piece for the valve disk 24 here shown being indicated at 28. The inner face 30 of valve disk 24 confronts the tone hole 18 in position to open and close the latter. The inner face of said disk 24 is not as heretofore provided with a pad but is exposed so that the sound vibrations issuing from the tone hole may impinge thereon without being muffled. Said face 30 is, therefore, constituted by the metal or other non-muffling material of which the valve is made, and valve 24 may thus properly be described as a non-muffling valve.

The valve seat 32 for valve 24 comprises an annular or ring-shaped metal member 34 carried by the tubular body of the instrument and more specifically by the rim 36 of the tone hole, member 34 being secured to rim 36 in any suitable way, preferably by brazing said member to said rim. Said annular member 34 of the valve seat is preferably L-shaped in section providing an annular recess 38 in which there is seated an annular resilient or yieldable member 40 which is engaged by valve 24 in the closed position thereof for sealing the opening of the tone hole 18. Annular member 40 may be of any suitable construction and made of any suitable material, preferably, soft and resilient, which is capable of providing the seal with the contacting surface of the valve. As here shown, said member 40 comprises a main annular portion 42, an outer annular layer 44 of thin and soft leather such as kidskin, and an inner layer 46 of paper, layers 44 and 46 being adhesively or otherwise secured to annular body portion 42. Sealing member 40 is secured in recess 38 in any suitable way as, for example, by any suitable adhesive such as shellac applied to the outer surface of paper layer 46. As clearly shown in Fig. 5, sealing member 40 of the valve seat extends above the outer edge of the tone hole rim 18 in position to be engaged by the valve. As illustrated in Fig. 6, the valve may be provided with an annular rib 48 for engaging the sealing member 40 of the valve seat, although ordinarily said rib may be omitted. The purpose of the layer 44 of kidskin or similar material is to provide the sealing member 40 with an outer surface which is capable of accommodating itself to any irregularities in the seating of the valve on the sealing member and conforming more or less permanently to such irregularities, if there happen to be any, on the valve.

Referring now to Figs. 7 and 8 in conjunction with Fig. 1, the valve seat for the upper octave vent is indicated at 50 and as here shown comprises a tubular portion 52 extending into and fitted in the circular opening 54 in the mouth

pipe 16. Said valve seat comprises also an outer annular cup-like portion 56 integral with tubular portion 52 in which the valve sealing member 58 is mounted. Sealing member 58 is preferably of the same construction and has the same properties as sealing member 40. The valve 60 for the octave vent is, like the valve 24, non-muffling, and for the purpose has a non-muffling surface 62 which confronts the octave vent opening. Accordingly, the valve 60 is preferably made of metal or other non-muffling material. Said valve 60 is as usual operated by a lever 64 pivoted on the tubular body of the instrument as indicated at 66, said valve being normally held in closed position by a leaf spring 68. Lever 64 is operated by a member 70 of conventional construction for opening the valve against the action of spring 68.

Thus it is seen that the valve and valve seat as described above constitutes a device well adapted to accomplish the objects of the present invention and which possesses the above mentioned advantages thereof as well as other advantages which will be apparent to those skilled in the art. It will be understood that while I have shown and described the invention in reference to a saxophone, the invention may also be applied to clarinets and other musical instruments having a tubular body provided with openings controlled by valves of the type heretofore provided with sealing pads. The present invention is also useful in connection with the openings for expelling moisture from brass wind instruments such as trumpets or cornets, trombones, basses, and other instruments of this type. Further it will be understood that while I have shown and described the preferred construction of the valve and valve seat embodying the present invention, certain changes in the details and in the arrangement of parts may be made and will occur to skilled artisans in view of the present disclosure. Therefore, I do not wish to be limited to the form of the invention as herein shown or described except as may be required by the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a musical instrument of the woodwind type comprising a tubular body having a tone opening, a rim on said body defining said opening, an annular member secured to said body around said rim and providing an annular space around said rim, a yieldable annular member secured in said space and providing a valve seat, and a valve engageable with said valve seat for closing said opening.

2. In a musical instrument of the woodwind type comprising a tubular body having a tone opening, a rim on said body defining said opening, an annular member secured to said body around said rim and providing an annular space around said rim, a yieldable annular member secured in said space and providing a valve seat, and a valve engageable with said valve seat for closing said opening, said valve having a non-muffling face confronting said opening in the open position of the valve.

3. In a musical instrument of the woodwind type comprising a tubular body having a tone opening, a rim on said body defining said opening, means secured to said body and providing a space around said rim, a yieldable member secured in said space and providing a valve seat, and a valve engageable with said valve seat for closing said opening, said valve comprising a