The invention relates to valves for sand blast and similar machines in which sand or other abrasive is discharged into a valve body from a tank and is mixed with a stream of compressed air and discharged from said body through a hose or the like.

The principal object of the invention is to provide a new and improved valve for controlling the discharge of abrasive and effecting such thorough mixture with the air stream that no abrasive can accumulate to cause clogging, even if damp.

In carrying out the above, a further object is to provide a movable valve member of elastic rubber or similar elastic material, and a seat member of like material for coaction with said valve member and I have discovered that these elastic valve and seat members will possess much greater resistance to the abrasive action of the sand or the like, than has been heretofore possible with other types of valves and seats.

A still further object is to provide a simple and inexpensive construction, yet one which will be highly efficient and long-lived.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Figure 1 is a perspective view showing the application of the valve.

Figure 2 is a vertical longitudinal sectional view.

Figure 3 is a vertical transverse sectional view on line 3—3 of Fig. 2.

A construction has been disclosed which has proven advantageous from all standpoints and is therefore preferably followed. However, it is to be understood that within the scope of the invention as claimed, numerous variations may be made.

A body 5 of any preferred metal is provided, said body being preferably of cross shape. Formed vertically through this body 5, is an abrasive passage 6, the upper end of said passage being open to receive the sand or other abrasive from the usual tank 7. The lower end of the passage 6 is closed, and opposite sides of this closed end are provided with a compressed air inlet 8 and an abrasive outlet 9 which are aligned transversely of the passage. Near the inlet 8 and outlet 9, the body 5 is provided with aligned oppositely projecting tubular bosses 10 and 11 which communicate with the passage 6. A seat plug 12 is mounted in the tubular boss 10 and is held therein by a screw plug or the like 13, said seat plug being preferably formed from elastic rubber. A valve plug 14 is slidably mounted in the tubular boss 11 and is also preferably formed from elastic rubber. The two plugs 12 and 14 are provided with opposed inner end faces 15 and 16 respectively which converge downwardly to guide the abrasive into the compressed air stream which is directed across the lower closed end of the body 5, and the quantity of abrasive descending between said faces 15 and 16, may be controlled by adjusting the valve plug 14 toward or from the seat plug 12, as required.

A suitable closure 17 is provided for the outer end of the boss 11, said closure having a stuffing box 18. A stem 19 passes through this stuffing box and is threaded through the closure 17, the inner end of said stem being provided with a swivel connection 20 to which the valve plug 14 is detachably connected by means of a screw 21.

The outer end of the stem 19 is provided with a suitable hand wheel 22 and it will be seen that rotation of this wheel will effect inward or outward movement of the valve plug 14, as required.

When this plug is entirely closed, its lower portion abuts the corresponding portion of the plug 12 and these abutting portions compress to form a tight cut-off for the abrasive. Not only does this advantage exist for having the valve member 14 and the seat member 12 formed from rubber or other elastic material, but the further advantage exists for said parts will have much longer life than if formed from other materials, it having been found that the elastic nature of the parts in question will more effectively resist the abrasive action of the sand or the like descending between the valve and seat.

In use, the body 5 is suitably coupled at 23 to the lower end of the tank 7, the usual air line 24 from the compressor or compressed air tank is connected with the compressed air inlet 8, and the discharge hose 25 for the mixture of abrasive and air, is coupled to the outlet 9. The line 24 is usually provided with a branch 21 extending to the upper end of the tank 7 to create a force feed for the abrasive. This abrasive readily discharges between the seat member 12 and valve member 14 which may be relatively adjusted as required, and the descending abrasive encounters the compressed air blast, mixes thoroughly there with and discharges through the hose 25. No matter if the abrasive be somewhat damp, it cannot cause clogging of the valve for there are no spaces in which it can become packed. Excellent results have been obtained from the
construction shown and described and it is therefore preferably followed, as above stated. However, attention is again invited to the possibility of making variations within the scope of the invention as claimed.

What is claimed is:

1. A valve comprising a body having a flow passage, a seat member mounted at one side of said passage, a valve member mounted at the opposite side of said passage, the two members being provided with inner opposed faces which converge toward the discharge end of said passage, and means for adjusting said valve member toward and from said seat member.

2. A structure as specified in claim 1; said members being formed of elastic material to resist abrasive wear and to compress and tightly engage each other when said valve is entirely closed.

3. A structure as specified in claim 1; said members being formed of elastic rubber to resist abrasive wear and to compress tightly engage each other when said valve is entirely closed.

4. A valve comprising a body having a flow passage and two aligned tubular outwardly projecting bosses at and communicating with opposite sides of said passage, a seat plug mounted in one of said tubular bosses and inwardly exposed at one side of said passage, a valve plug slidably mounted in the other of said tubular bosses and also inwardly exposed, and means for adjusting said valve plug and from said seat plug, said plugs having opposite inner end faces which converge toward the discharge end of said passage.

5. A valve comprising a body having a flow passage and two aligned tubular outwardly projecting bosses at and communicating with opposite sides of said passage, a seat plug mounted in one of said tubular bosses and inwardly exposed at one side of said passage, a valve plug slidably mounted in the other of said tubular bosses and also inwardly exposed, and means for adjusting said valve plug and from said seat plug, said plugs having opposite inner end faces which converge toward the discharge end of said passage.

6. A valve comprising a body having a straight flow passage open at one end to receive a granular abrasive and closed at its other end, this closed end of said passage being provided with a compressed air inlet and an air-and-abrasive outlet aligned transversely of the passage, said body being provided near said closed end with two aligned outwardly projecting bosses at and communicating with opposite sides of said passage, a seat plug mounted in one of said tubular bosses and inwardly exposed at one side of said passage, a valve plug mounted in the other of said tubular bosses and also inwardly exposed, a closure for said one boss to retain said seat plug therein, a closure for said other boss, and an adjusting screw for said valve plug threaded through this latter closure, said plugs having opposite inner end surfaces which converge toward said closed end of said passage.

7. A valve comprising a body having a straight flow passage open at one end to receive a granular abrasive and closed at its other end, this closed end of said passage being provided with a compressed air inlet and an air-and-abrasive outlet aligned transversely of the passage, said body being provided near said closed end with two aligned outwardly projecting bosses at and communicating with opposite sides of said passage, a seat plug mounted in one of said tubular bosses and inwardly exposed at one side of said passage, a valve plug mounted in the other of said tubular bosses and also inwardly exposed, a closure for said one boss to retain said seat plug therein, a closure for said other boss, and an adjusting screw for said valve plug threaded through this latter closure, said plugs being formed from elastic material and having opposed inner end surfaces which converge toward said closed end of said passage.

JAMES E. HUFF.