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Industrial Use and Importance of Bellows by James Blee

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In many industrial applications, especially metallurgy, it becomes essential for delivering pressurized air to a specific location in a controlled manner while the process of manufacturing. bellows come handy for fulfilling such purposes. It is basically a deformable contained which is fitted with an outlet nozzle. When the volume of the bellows is decreased the air inside it escapes through the fitted outlet. They may also have a separate air inlet or incorporated check valves or flaps thereby ensuring that the air enters only through the inlet and makes its way out only through the outlet. At times it may be possible that the nozzle may be very close to a fire or have high temperature air in its vicinity.

Bellows find its importance in metallurgical processes like iron smelting and welding. These processes require tremendous amount of heat energy which could only be fulfilled by the bellows. These industrial devices are used to deliver additional air to the fuel thereby increasing the rate of combustion and in turn the heat output. Various types of these industrial devices are used for metallurgical applications like the box bellows, cot bellows, piston bellows, metal bellows and many others. The metal bellows are capable of absorbing the axial movement in a dynamic condition and hence they are also referred to as the axial dynamic bellows.

The most common type of bellows which are used by blacksmiths for delivering the air to the forge is the two chambered forged bellows. They have in-built two section accordion which is separated by a central divider and are preferred for providing a constant stream of air. Mounted by a middle paddle this device draws the air through a bottom chamber and then forces it into the upper chamber at a constant rate. This causes uniformity in exhaust due to a weight or spring pushing down.

These devices are used in mechanical applications such as machinery way covers, lift covers and rail covers for protecting rods, bearing and ceilings from dirt. They are also used in articulated buses and trams. They form an essential part of anesthesia machines. Cameras also use bellows to exclude the light while allowing the lens to be moved relating to film plane for focusing.

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