tion can be combined with other mechanical release means or with gravity removal All jets should be anchored securely to direct the air stream effectively and to prevent jet tubes from shifting into the die working area

Both the consumption of air and the production of noise can be reduced considerably by incorporation of one or more of the following principles

1 Locate the jet discharge as close as possible to the piece to be removed Optimum positioning is essential for maximum effectiveness and frequently can be accomplished through die design

2 Limit the duration of air discharge to the minimum period required to remove the piece

3 By means of flow valves or pressure regulators, reduce the discharge pressure to the minimum required

Reducing the discharge pressure will also result in greater operator safety from flying particles However, this statement should not be taken to mean that the operator need not wear eye protection There are always hazards from flying particles in press operations, and the addition of air ejection increases the hazards Be sure all operators wear eye protection at all times

4 Use an air-ejector nozzle with several orifices (Fig 25-32)

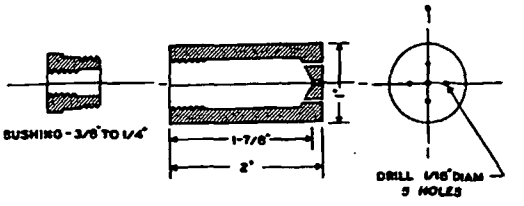

FIG 25-32 – A multi-orifice air ejector nozzle designed for noise reduction

Pneumatically powered cylinders operating sweeps or kickout pins and timed with the upstroke of the press are more effective than air jets for removal of large and heavy pieces For safety, when jams must be cleared or tryout operations performed, the pneumatic equipment should have a valve to shut off the flow of air and bleed any residual air pressure between valve and cylinders

Clamp and pan shuttle extractors are used on presses of all sizes Pivoting or straight line clamps grip the part and remove it from the die area to a pallet, bin, or conveyor for further processing A pan shuttle (Fig 25-33) catches the piece as it is stripped from the upper die by knockout pins or other means and removes it from the die area

While some extractors are actuated mechanically by connection with the press slide or shafting, independently powered extractors (Fig 25-31) are used more frequently because they are more versatile and can be used with several presses

Every independently powered extractor should be interlocked with the press control circuit so that the press cannot operate unless the extractor is in the "home" or "out" position

Simple sheet steel chutes generally are provided in conjunction with air ejection to guide the parts into a container Chutes or slides also can be used for controlled movement of

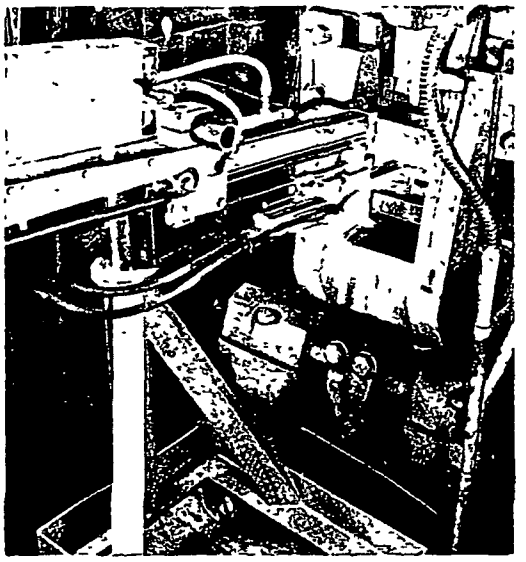

FIG 25-31 – Jaws on pneumatic unloader grip finished part and remove it from die area on upstroke of press slide