Small and restricted holes

SMALL holes and restricted holes serve to atomise fluids and to regulate their flow in certain directions when there is more than one outlet. They perform one or other of these functions in a variety of equipment.

You find one example in the nipple (jet) of a blowlamp. There are similar jets in a carburettor. There may be restricting devices in the lubrication system of an engine to limit the flow of oil to overhead valve gear or to a by-pass filter, when free flow would result in serious loss of pressure in the lubrication system. If you experiment with humidifiers for your car, to improve running and m.p.g., you must use small jets or restricted orifices. It is the same when you make a burner for a flash-steam boiler.

By GEOMETER

In all these devices and applications the purpose is to atomise or meter a fluid. Perhaps for your purpose you can buy a jet. Possibly you prefer a device with an adjustable taper needle. You may have yet another solution to a problem, in which event my answer is like Old Bill's; "If yer knows of a better 'int, use it."

If your problem is to reduce the bore of a brass nipple or jet, the solution can be the common one of tapping the surrounding metal-carefully, of course. Use a small punch and hammer, with the nipple on another punch or resting on a hollow hold-up. A pricker will serve as a gauge for the size of the hole.

Alternatively, take a strand from suitaale Bowden cable. If the hole is made too small, grip the strand in parallel-jaw pliers with about 1/8 in. projecting, and press it carefully into the hole. It should go through.

With a strand of cable the size of the finished hole, or slightly smaller, employ the method that is shown at A. Drill two pieces of mild steel to be held by screws with the wire between them. A filed V in each piece locates it. Then finish the pieces as a punch by sawing and filing, or by turning, to leave a projecting end.

The wire goes through the jet, so that in tapping with the punch the hole cannot be made too small. However, if a hole is too small, rub the jet along a strand of hard wire (Bowden cable) to burnish the bore; or rub it to and fro on brass or copper wire, charged with metal polish as a lap.

Some jets can be reduced with a taper punch, others with a split die. Diagrams ***BI*** and 2 illustrate the two methods. For the punch,, centre mild steel or cast steel rod in the lathe. You can also use it to spin the end of the jet, running the punch in the lathe or in the drilling machine. For the split die, drill two mild steel bars at the abutting line-slightly smaller than the end of the jet. Put a wire through the jet, then squeeze the die and jet in the vice.

On occasion, the effect of wear in a jet can be corrected by reducing its discharge with a single strand of copper wire. Different calibres of electric cables have wires in a wide range of thicknesses. Make your choice.

If the jet is long, C,, push the wire through and fix with a spot of solder. If the jet is shallow, C2, make a split brass or copper ring, then wind and solder the strand of wire to it. Fit as shown and cut off the surplus wire.

Diagrams ***Dl*** and 2 show how a flow of oil can be restricted. A flat-sided pin is fitted in the casting (cylinder head), the extent of the flat controlling the flow of oil. The pin is grooved at one end, and flattened and cross-drilled at the other end. A hooked wire is used to pull it out. A screw-in union can be fitted with a bush that abuts to a shoulder, which is left by drilling a distance from the outer end.

To make a jet, you can adopt the methods at ***E*** and ***F.*** Set up to drill the orifice and turn the outside, after drilling the inside. If the drill for the orifice is too large, spin the jet with a clamp which is well oiled and gripped by hand. There can be a wire in the bore of the jet, which can also be annealed.