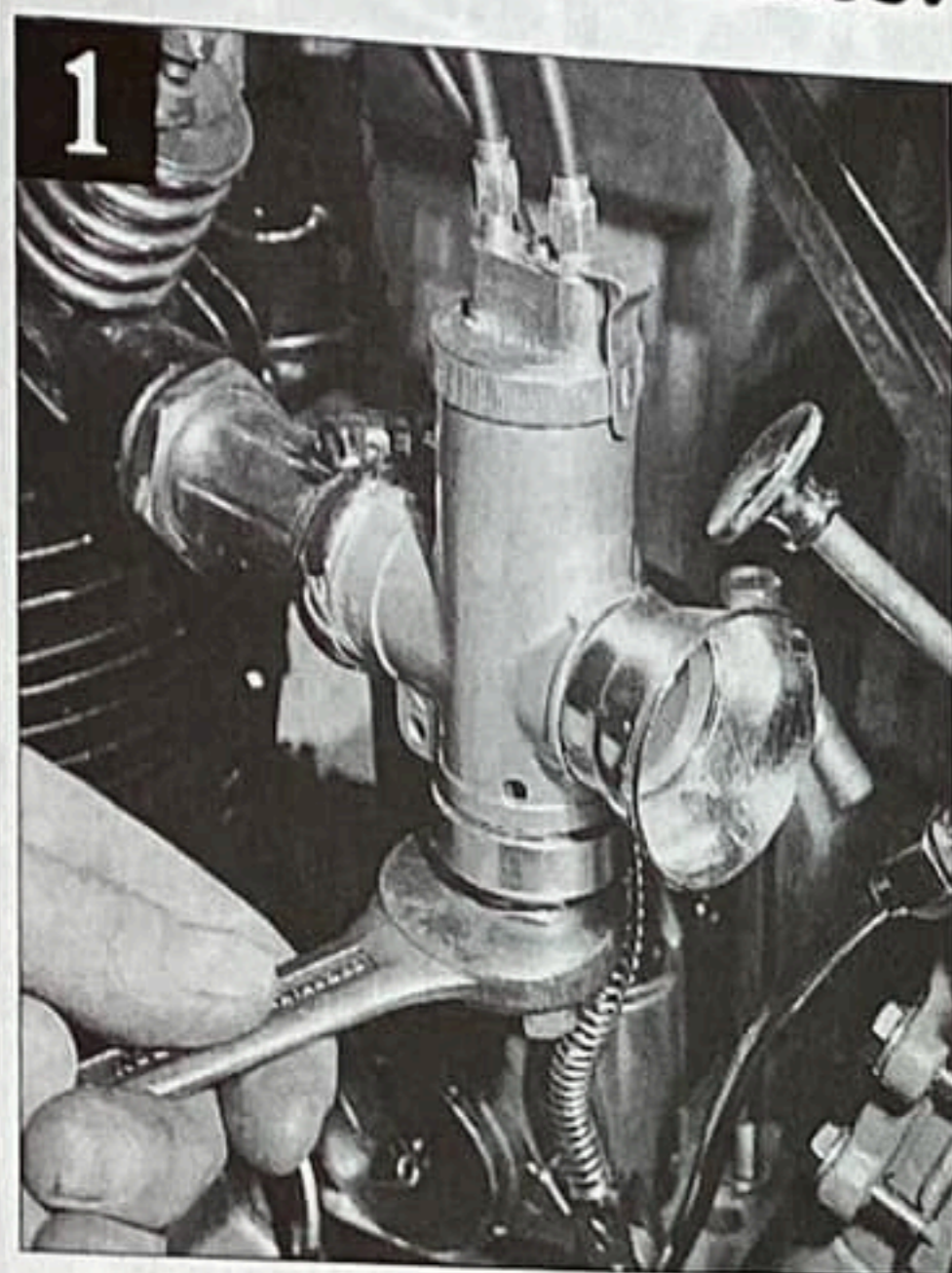
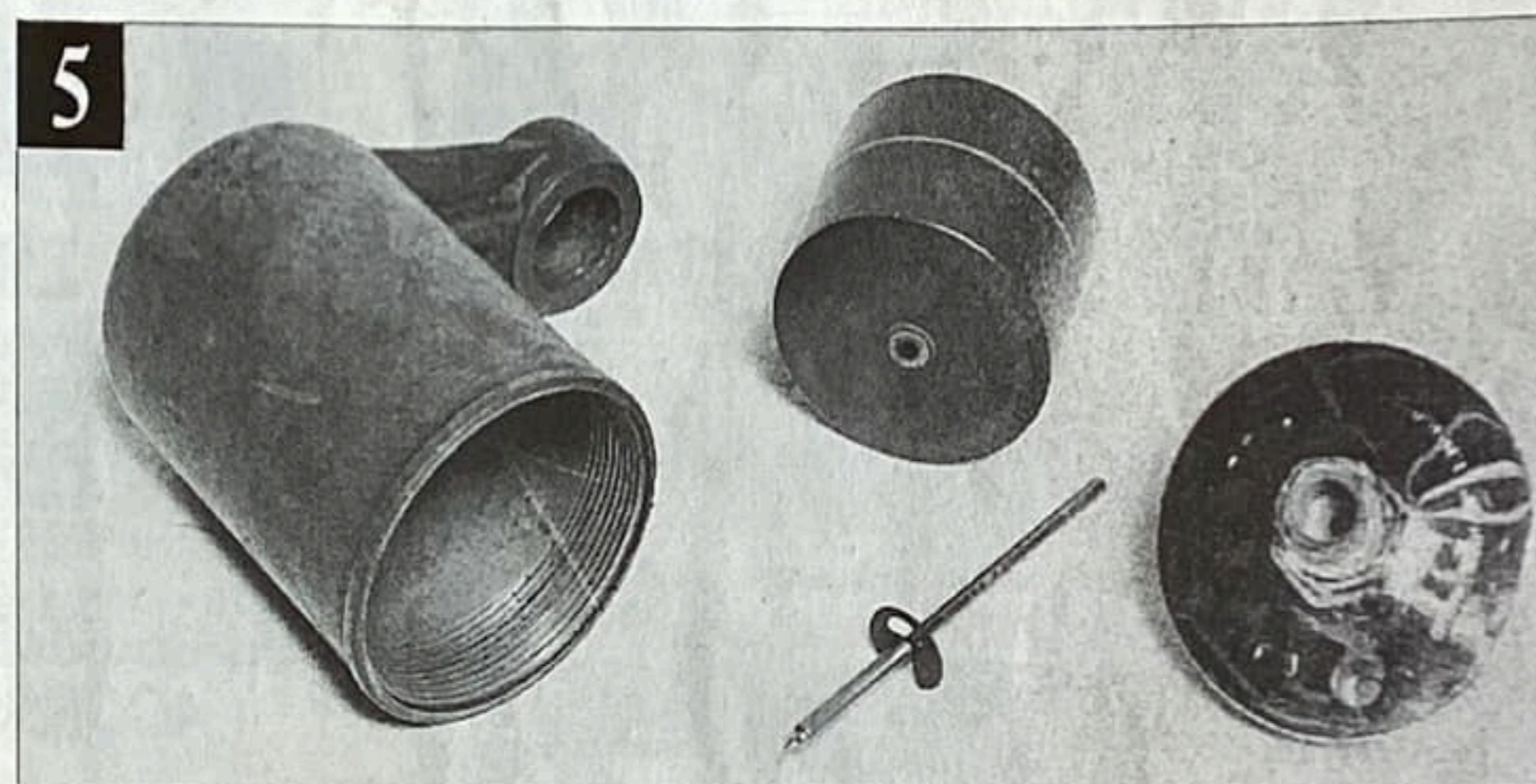
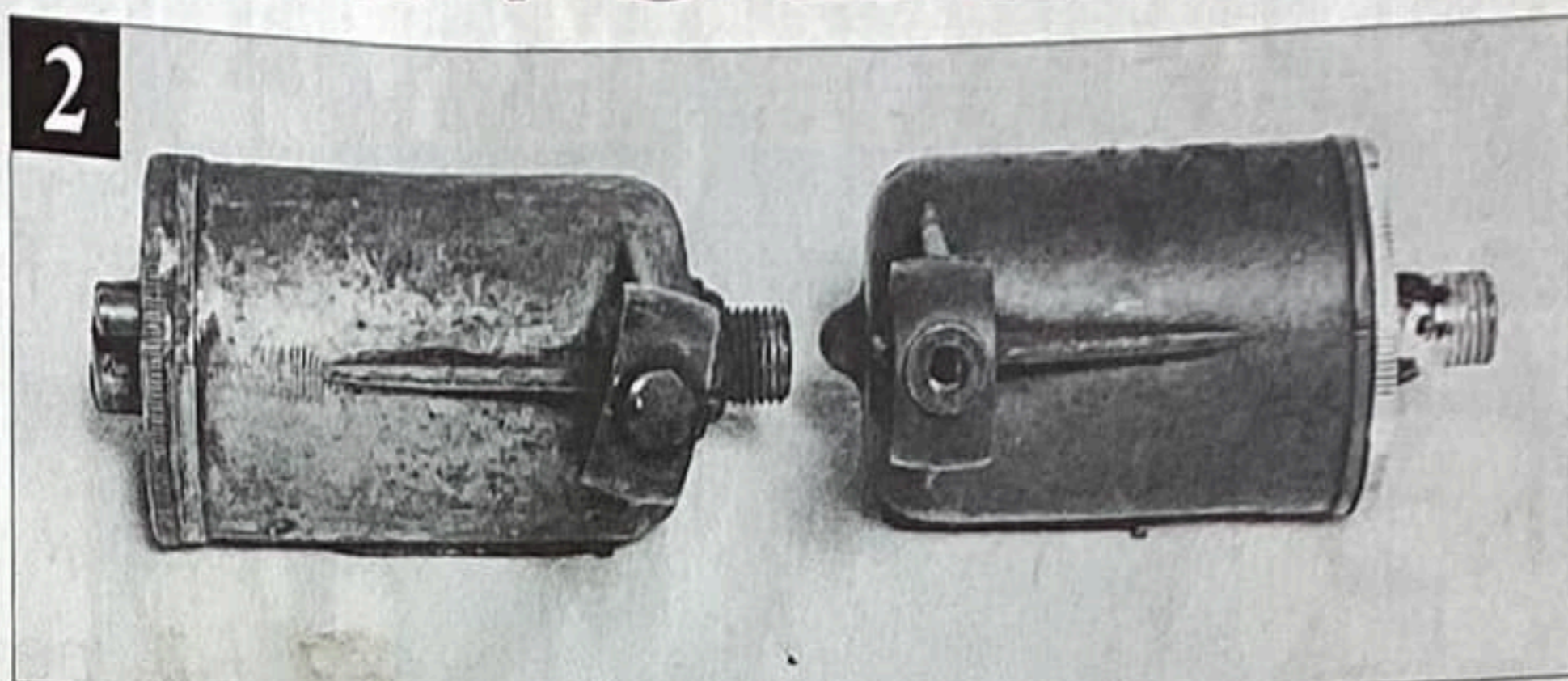


REBUILDING THE PRE-MONOBLOC AMAL

John Gleed describes how to rebuild the early Amal as fitted to most British bikes.



Pictures by Doug Millhouse



AROUND 1930 three companies involved in the manufacture of motorcycle carburettors, Binks, Amac and Brown, joined forces and became Amalgamated Carburettors — the famous 'Amal' carburettor was born.

It became almost universally fitted to most British machines and plenty of foreign ones as well.

Over the years there were three basic models.

1) From early thirties to 1953 the model with a detachable float chamber was used, often referred to as the 'pre-monobloc'.

2) The next type, used up to 1967, was the 'monobloc' which, as its name suggests, had the float chamber cast in with the body.

3) The final type as far as classic machines are concerned was the 'concentric' Mk I.

For racing machines 'TT', 'RN' (Remote Needle) and the 'GP' types were available to suit anything from a racing Bantam to the 1½" bore used on the 500cc Gold Star.

As is logical, in this first part of our carburettor series, we shall start with the first Amal, the pre-monobloc.

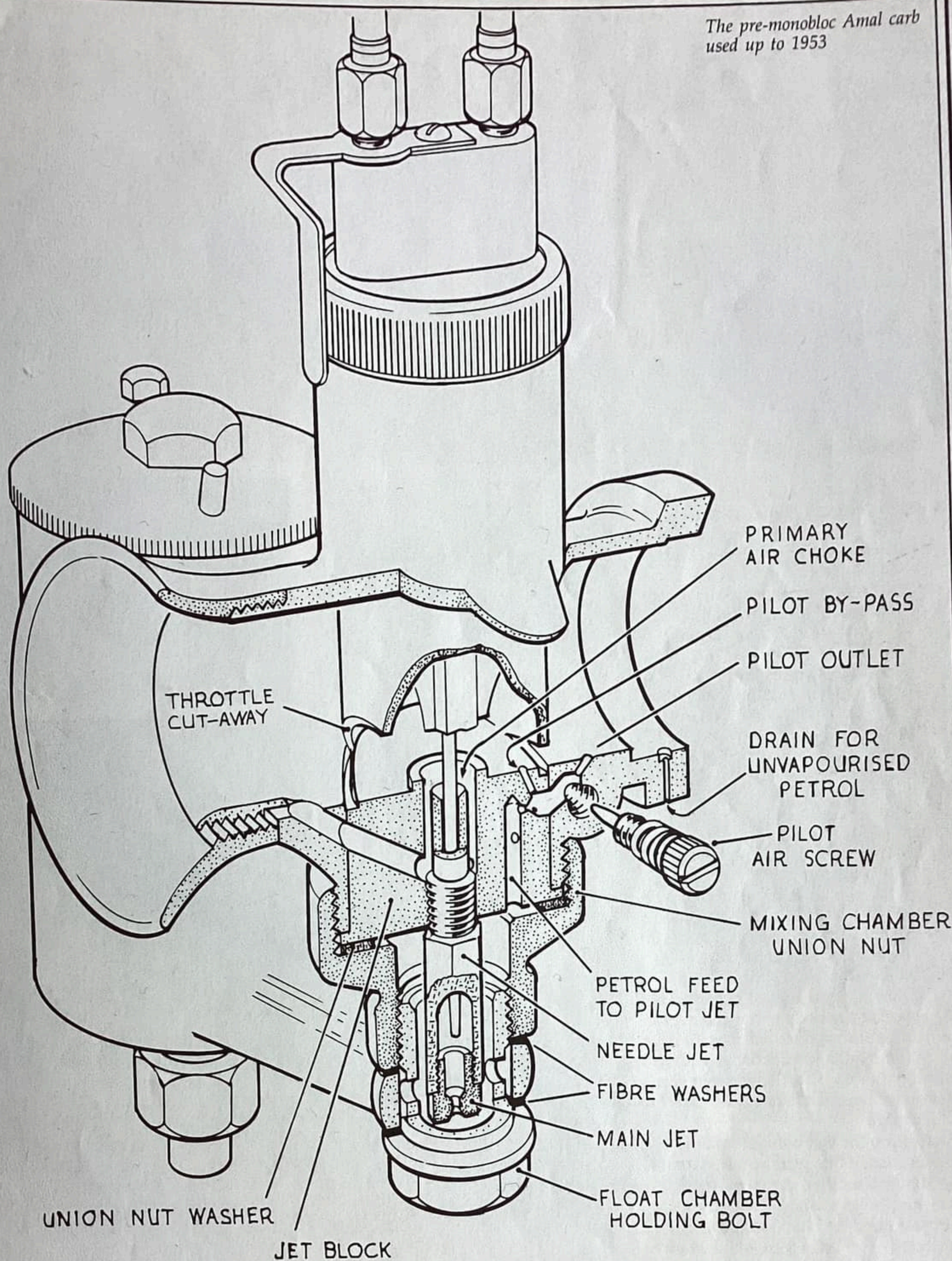
1 Note that the float chamber is secured to the main body or mixing chamber by a large banjo type of bolt. If you are dismantling the carburettor away from workshop facilities it is best to slacken this bolt whilst the carburettor is still on the machine.

2 There are two basic types of float chamber, top feed and bottom feed. In turn these are available angled to suit various amounts of downdraught on the cylinder head.

3 To strip the float chamber, first unscrew the top which is normal right hand thread. Note that the bottom feed type has a small locking screw that must be removed before attempting to unscrew the top.

4 Inside you will see the float and float needle. In the bottom feed model the float is held on to the

The pre-monobloc Amal carb used up to 1953



needle by a small bow shaped clip engaging in a groove in the needle. On some models there is also a very thin split pin as a second securing device. Squeeze the sides of the clip and pull the float out. The float needle will drop out the bottom through the petrol feed hole.

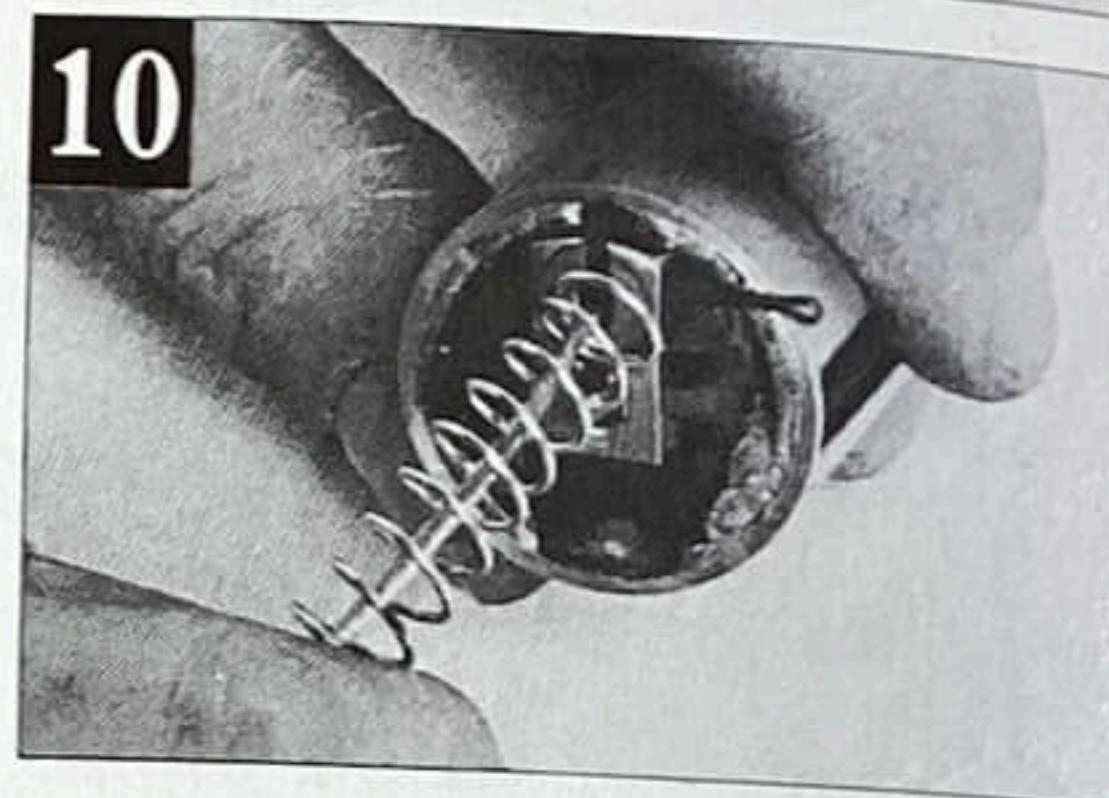
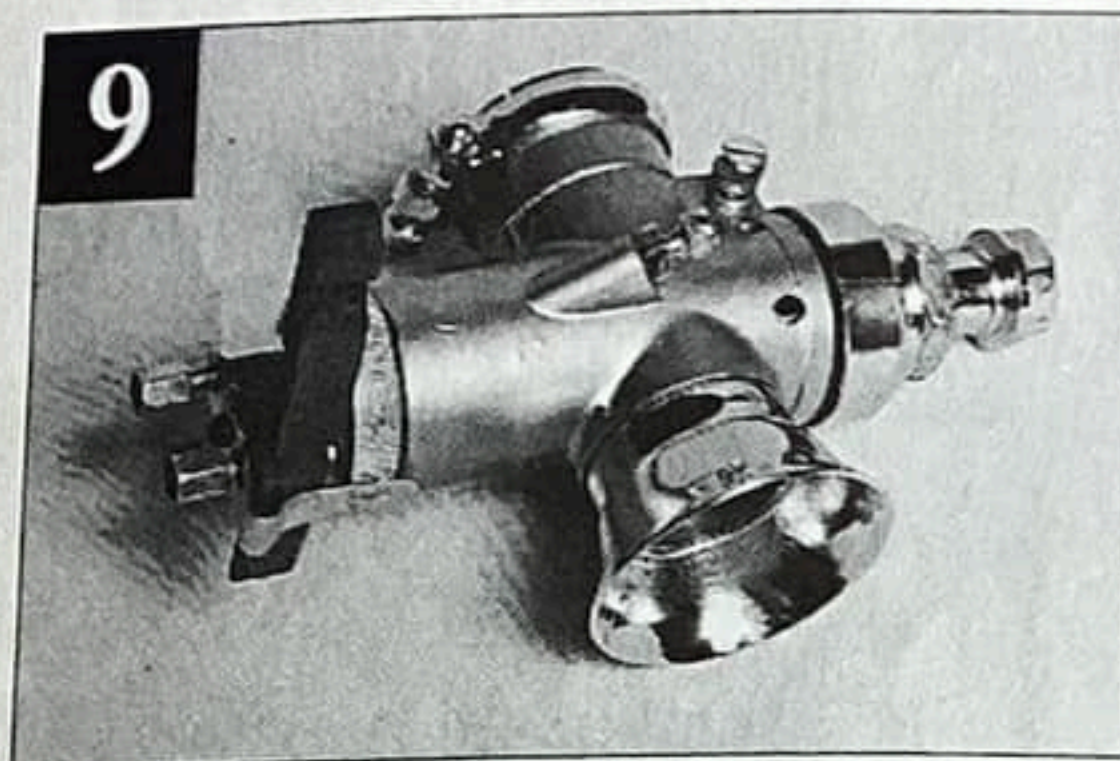
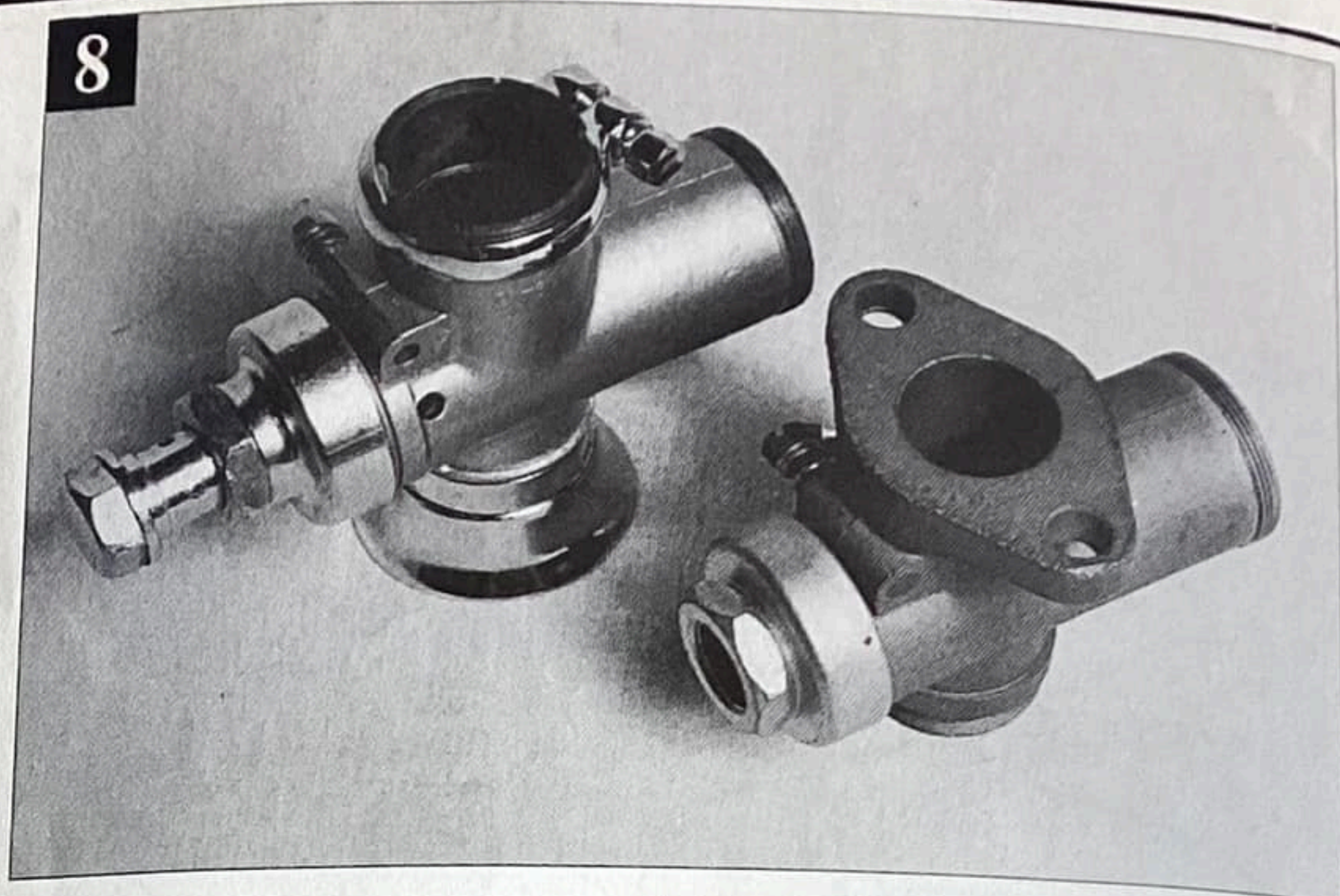
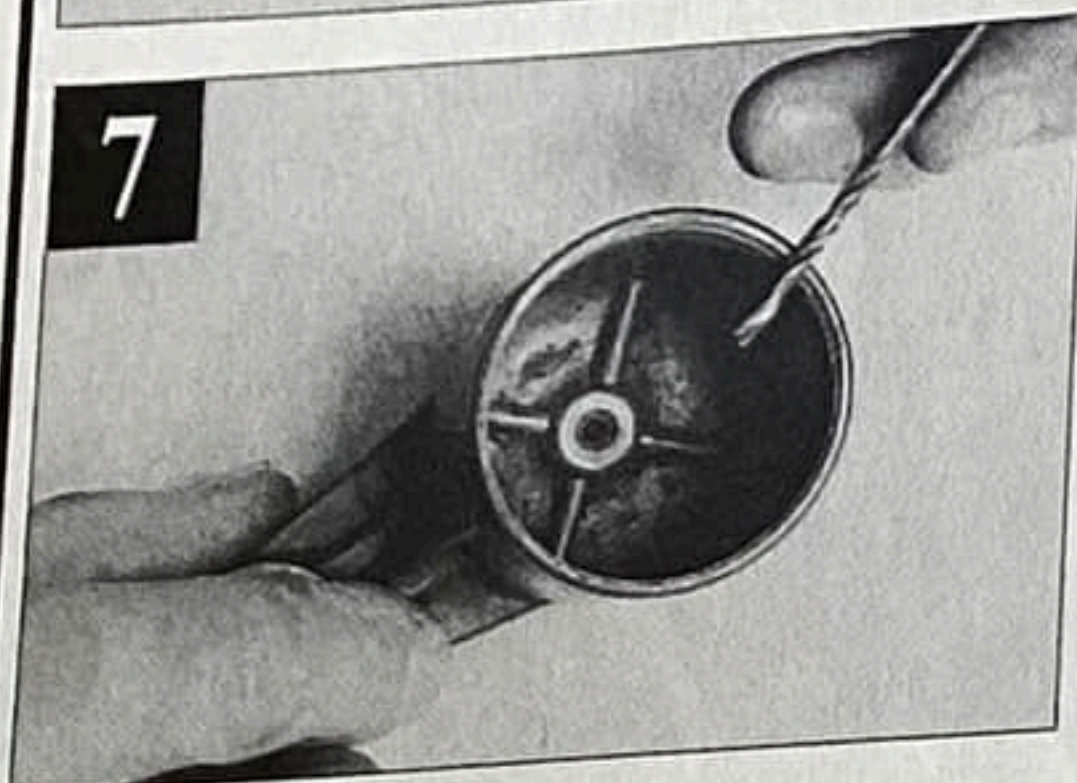
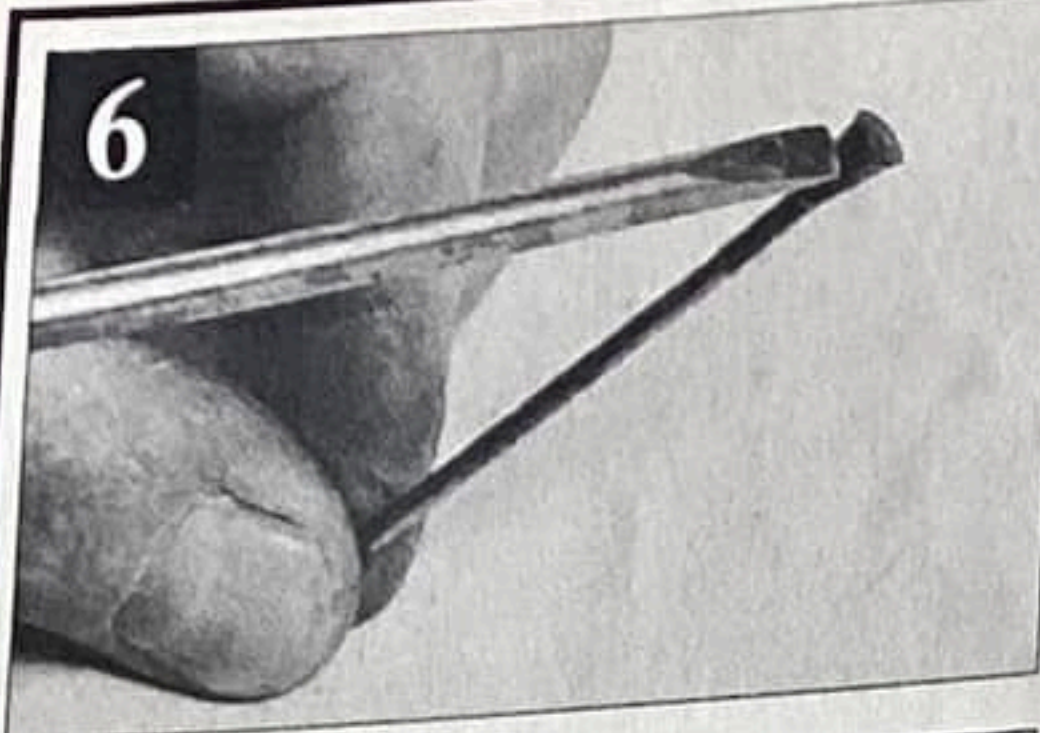
5 The top feed type does not have a lock screw for the top so it is simply a matter of unscrewing the top. In this type the needle has a pointed

seating at the top and is not secured to the float. It is double diameter with the thin section going through the float and the lower end sitting in a hole in the bottom of the float chamber. There is a circular clip where the thin section begins. Lift out the needle and the float can be taken out.

6 The main problem that can occur in the float chamber is flooding. There are two main causes. Firstly

the float can be punctured so that it slowly fills up with petrol. Secondly, the needle seating wears to a ridge (see picture) or is damaged so that it does not shut off the petrol supply as the float rises. Do not try to grind the seating and needle together as it rarely works. A new needle should be fitted.

In the case of a punctured float a new one is again preferable. If a new one is unobtainable immerse the float in a con-



tainer of boiling water. After a few seconds a stream of bubbles will be seen as the petrol evaporates from the float. This will also show where the leak is. Mark the place and continue the treatment until the bubbles stop. You can then put a dab of solder over the hole. Only carry out this job outside and do not smoke.

One unusual problem can be caused by someone experimenting with the float level by putting another notch above the standard one in the needle. When this is done, as the float rises to full height it touches the tickler causing flooding.

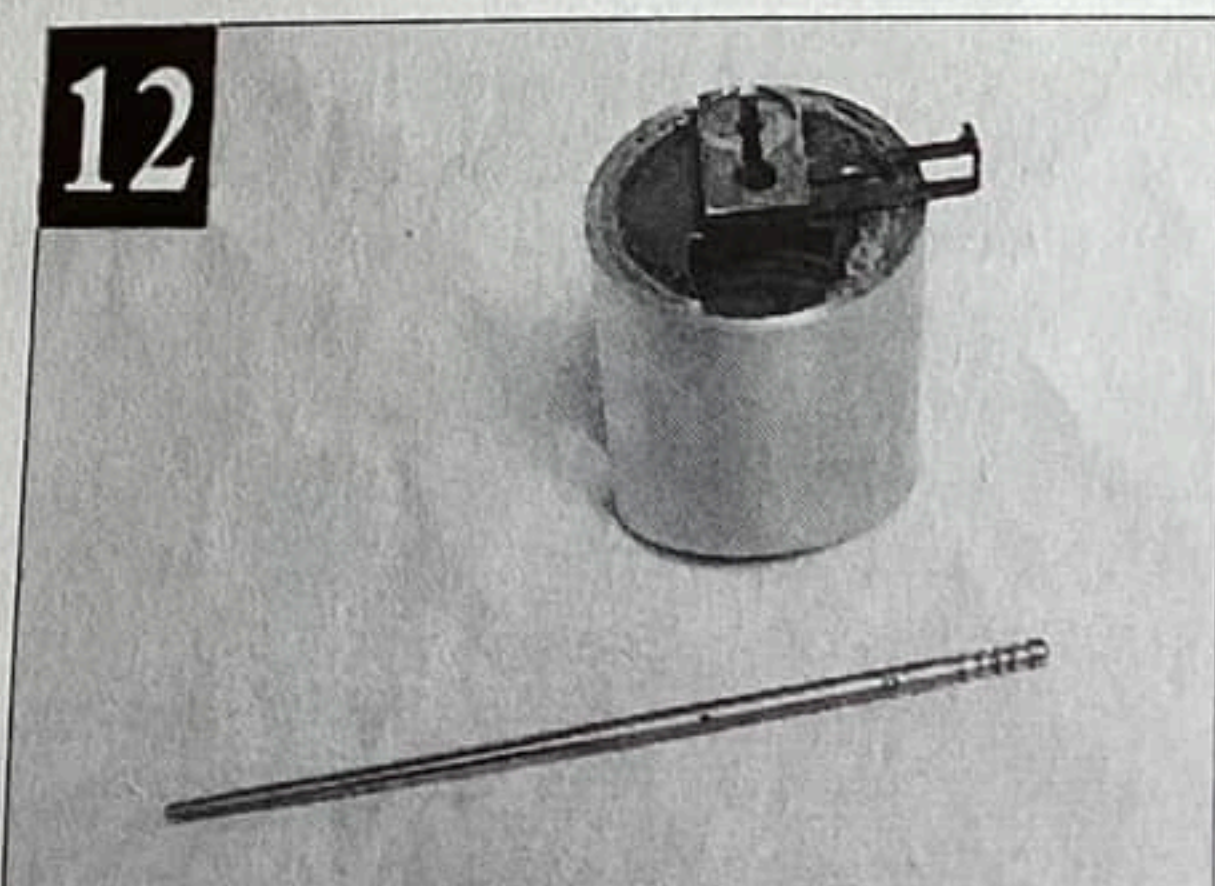
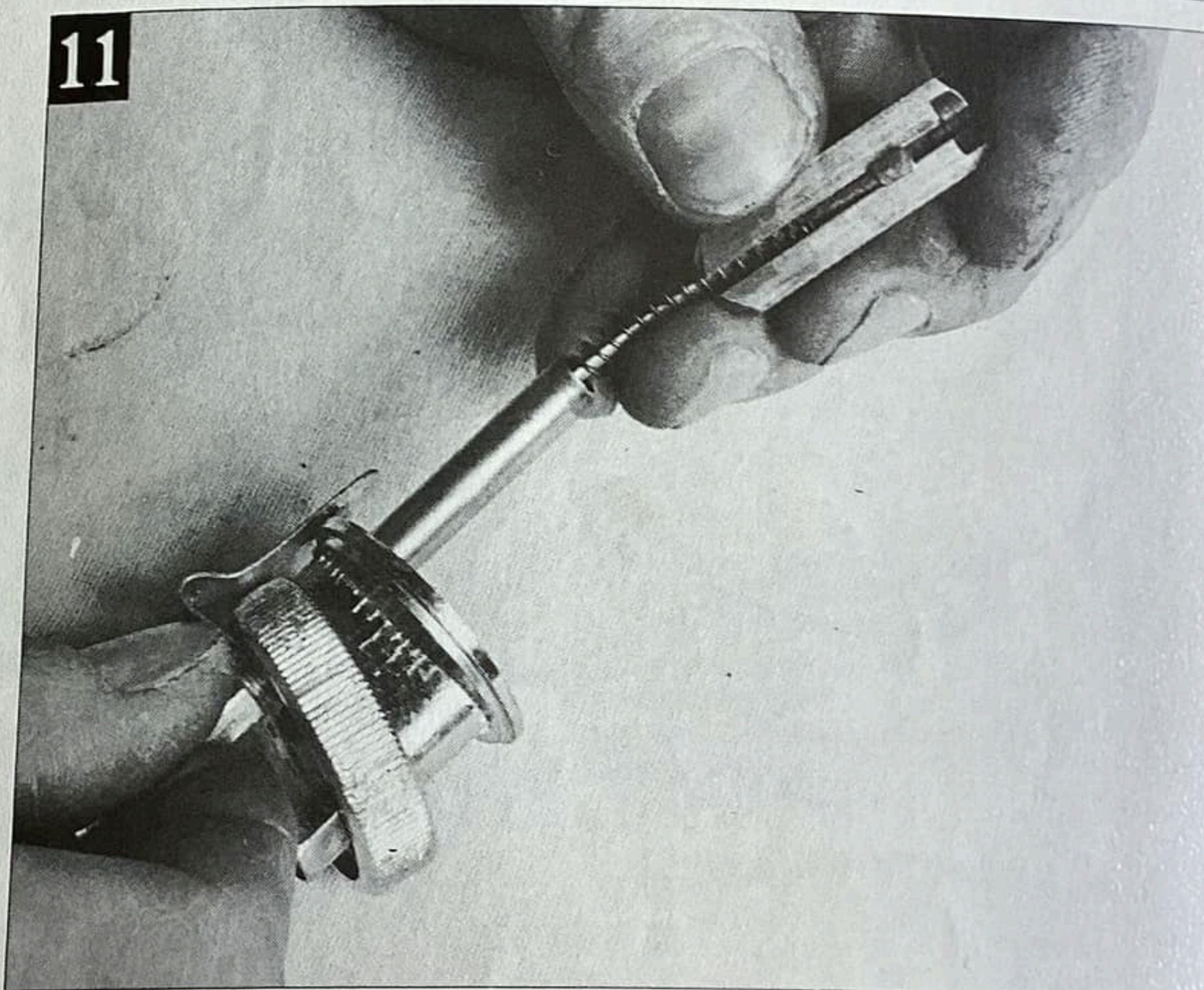
If the float is completely useless an emergency float can be made out of a lump of cork carved to size.

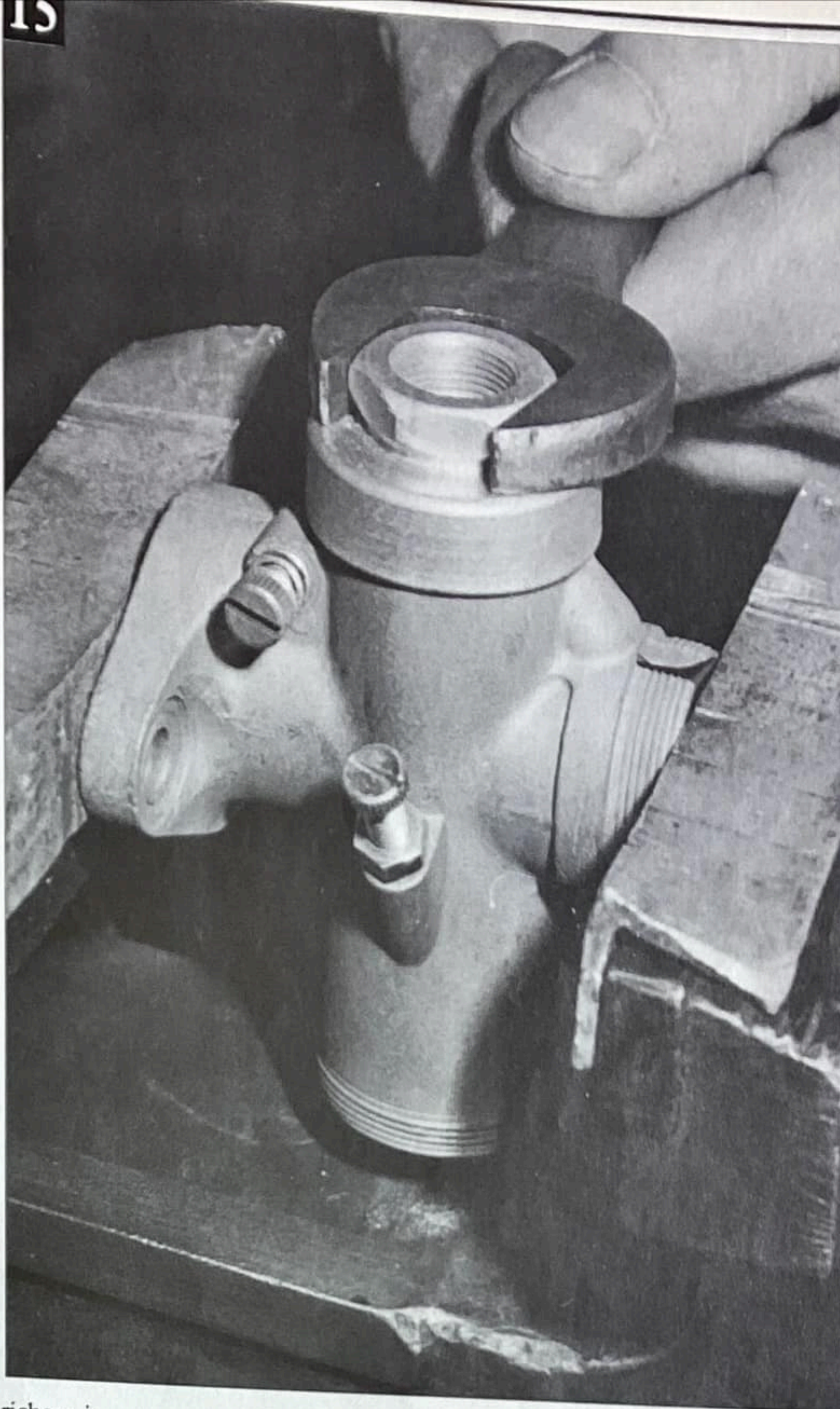
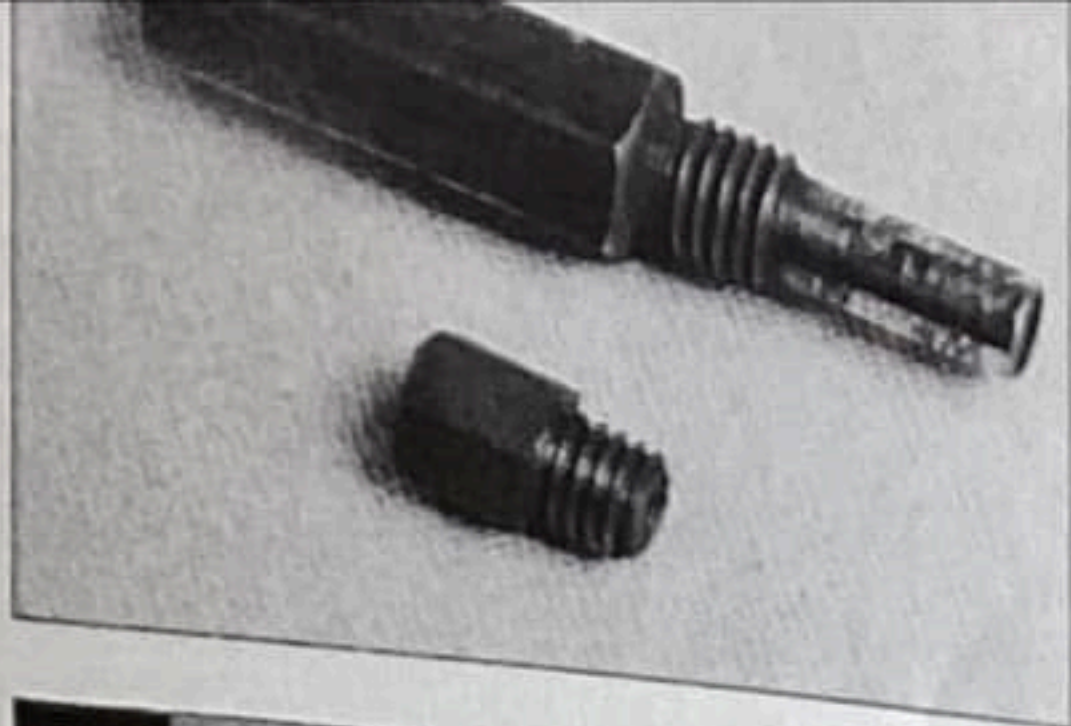
7 With the top feed type a baffling problem can occur when the chamber does not fill with fuel. This can be caused by the hole in the bottom (where the needle fits) getting filled up with dirt. The cure is to clear it with a suitable sized drill.

8 There are two normal methods of securing the body to the engine. It can be pushed on to a stub and held with a clamp or have a flat flange and be secured with two bolts. Apart from one or two exceptions the flange bolts are set at 2" centres.

Just before the war a major modification was made. The primary air system was changed so that the early model, which had holes around the body just above the large jet block securing nut, was altered. The holes were blanked off and a single aperture was made just inside the bell mouth. This had the double advantages of strengthening the body and also making it harder for dust and water to enter the body.

Most mixing chambers are vertical but there are a few exceptions where it is mounted horizontally. An example can be seen on the AJW Grey Fox featured in the September 1991 issue. The reason for this is because the magdyno unit is too tall to allow a vertical type to be fitted.





9 Carry on dismantling the carburetor by unscrewing the top ring and pull out the throttle slide and choke slide if fitted. The top ring has a locking lip which should be held back with a small wooden wedge. Use half of a wooden clothes peg.

10 The throttle slide is hooked on to the end of the cable and held by spring tension. To prevent it jumping out there should be a very small split pin fitted across the slot but this is usually missing.

11 The choke cable is located in the bottom of the choke slide and is removed by pushing up the slide and pulling the cable out of the slot.

12 The jet needle is held in the slide by a lip which locates in one of five grooves cut in the needle. These grooves are for mixture adjustment. Lowering the needle weakens the mixture and raising it

richens it.

The needle adjustment affects the mixture from about one quarter throttle to three quarters throttle. The makers number the notches from the top so if your instruction book says number two notch then that is second from the top.

13 The throttle slides have a different cutaway at the bottom to adjust mixture. This cutaway faces away from the engine. The size of the cutaway is measured in steps of 1/16" from the bottom of the slide.

The size is marked on the top of the slide so a 6/3 slide is for a type 6 carb and has a cut-away of 3/16". The larger cutaway has the effect of weakening the mixture from tickover to one quarter throttle. Less cutaway obviously richens the mixture.

14 Returning to the mixing chamber having removed the float chamber you will see the main jet and needle jet screwed in the

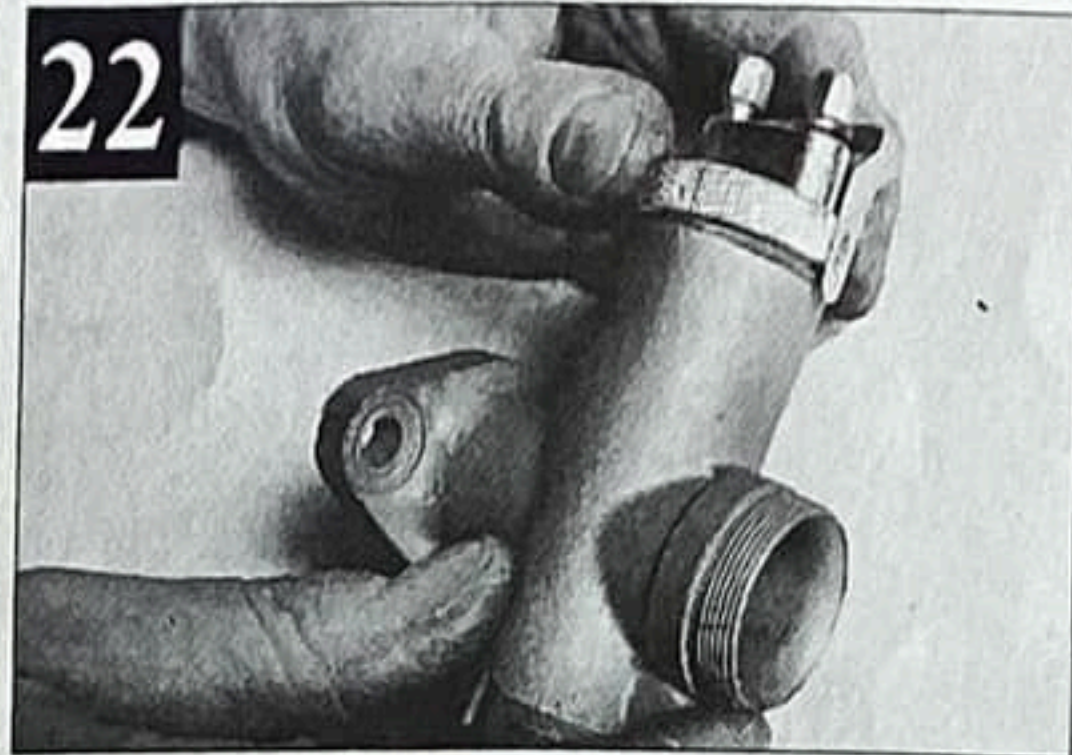
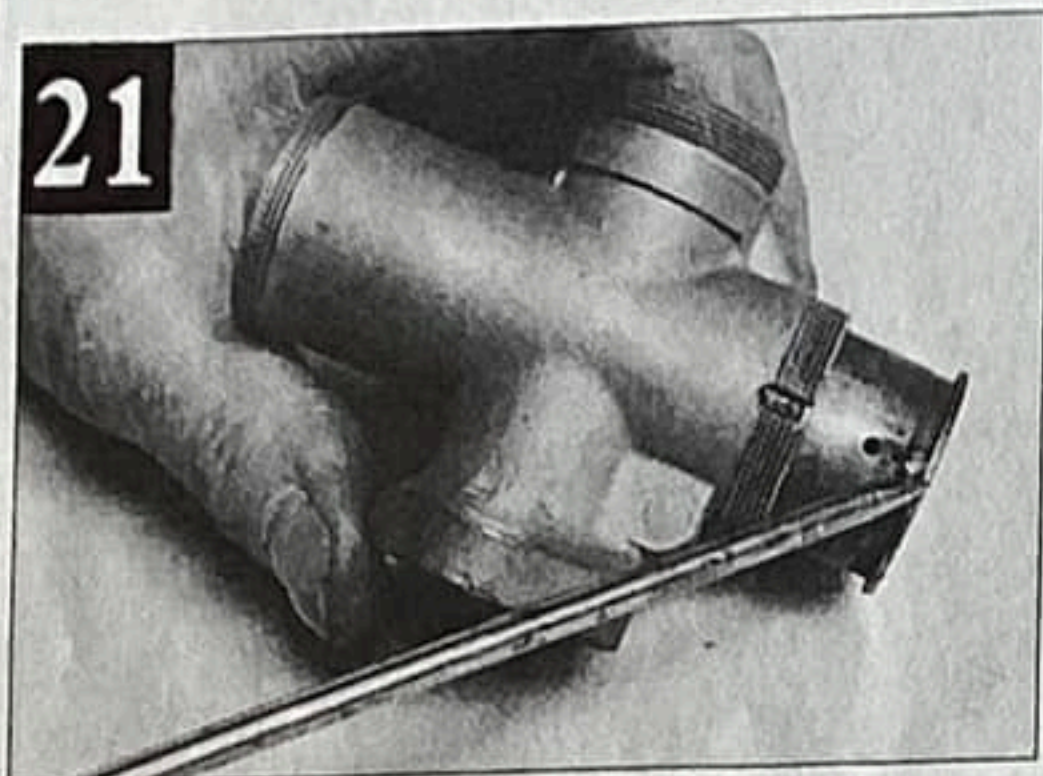
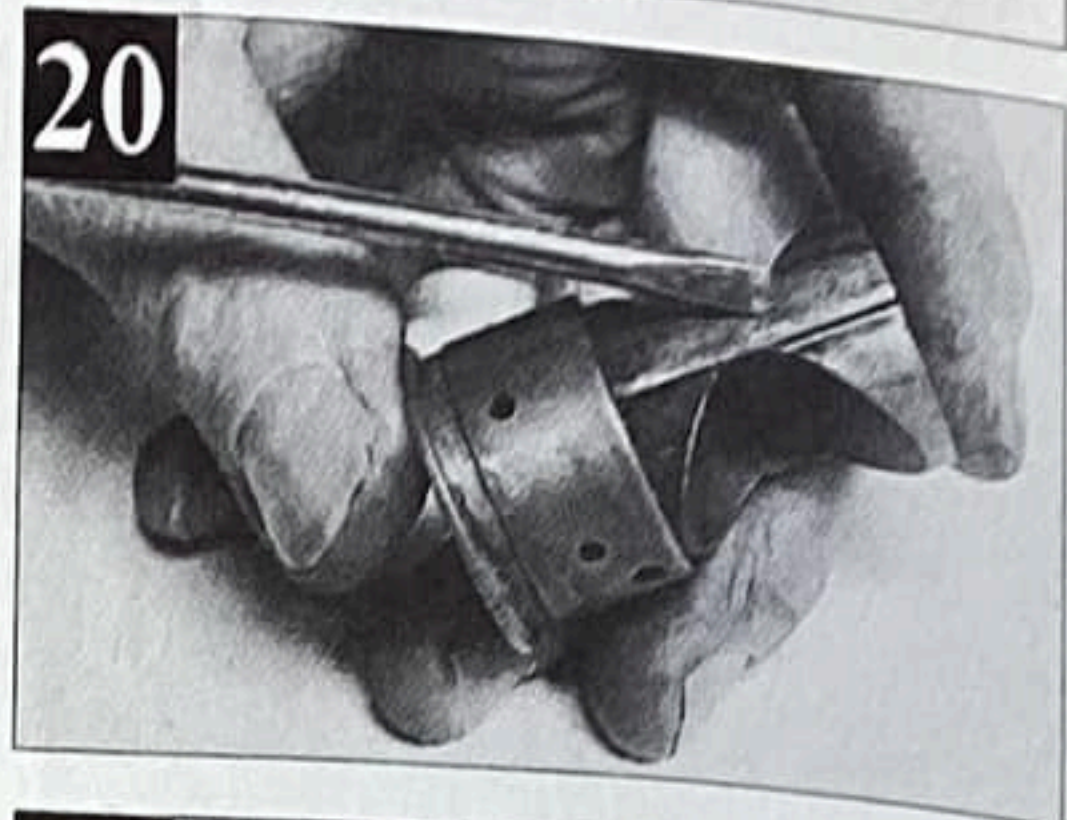
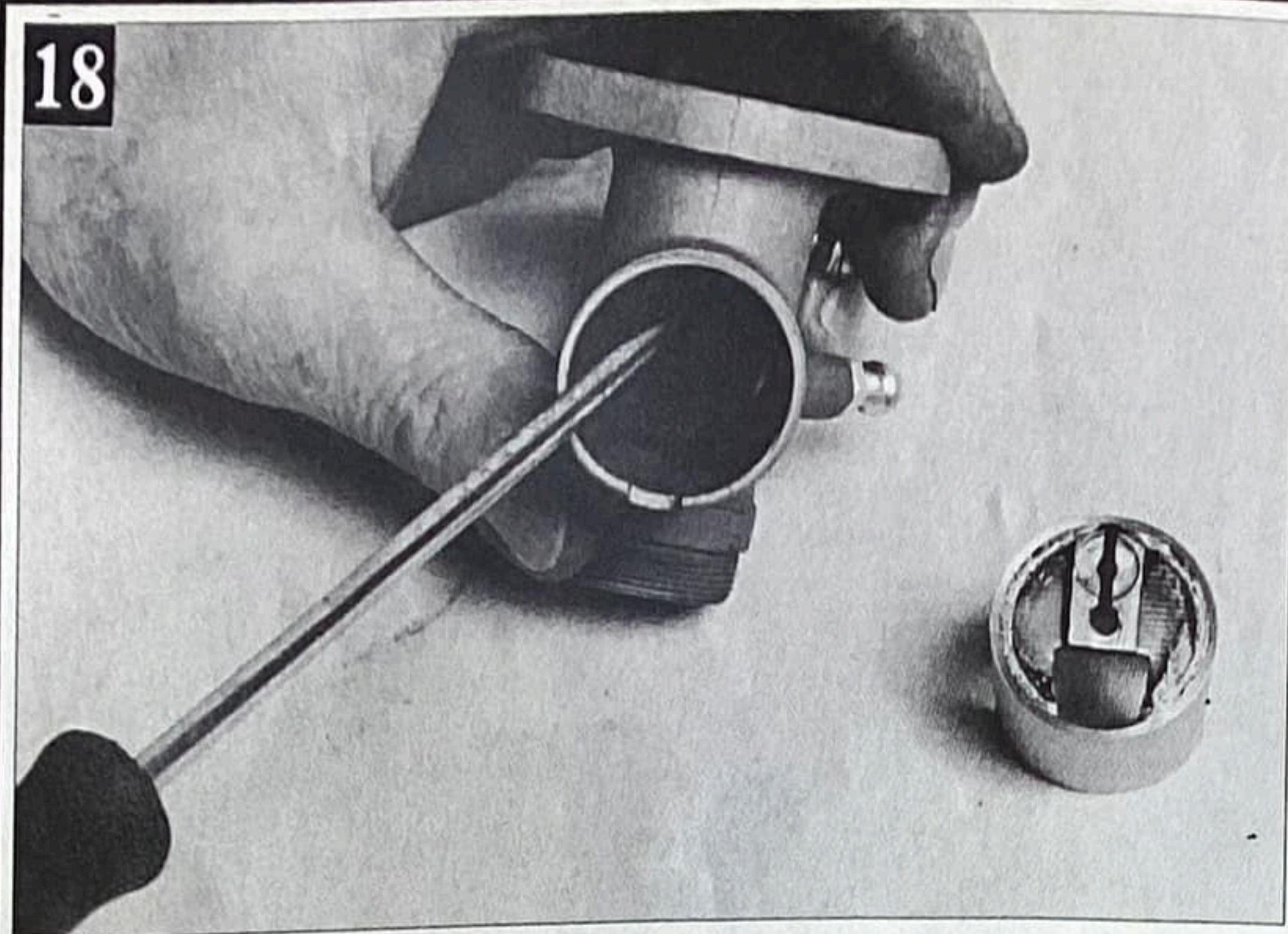
bottom. The main jet is the small jet screwed in the end of the needle jet.

You will see the size stamped on the side. They are available in steps of five up to 100 and steps of 10 over 100. The needle jets used to be made of brass but later ones are steel. There is a standard size normally fitted which does not have a size stamped on it.

For special purposes such as using alcohol fuel a special needle is used and this will have the size, such as .109", stamped on it. If a machine uses a special size this will be noted in the settings list.

15 The large mixing chamber nut can now be unscrewed. As in the case of the float chamber this is best loosened whilst the carb is still on the bike. If not it can be CAREFULLY held in the vice, using soft jaws. Do not overtighten the vice.

If the nut appears very tight do not try to bang the spanner. The zinc based alloy of the body can get brittle with age and



you may break the body in two, especially the early pattern. Soaking it in boiling water for about five minutes should free it. There is a fibre or composition washer inside the nut.

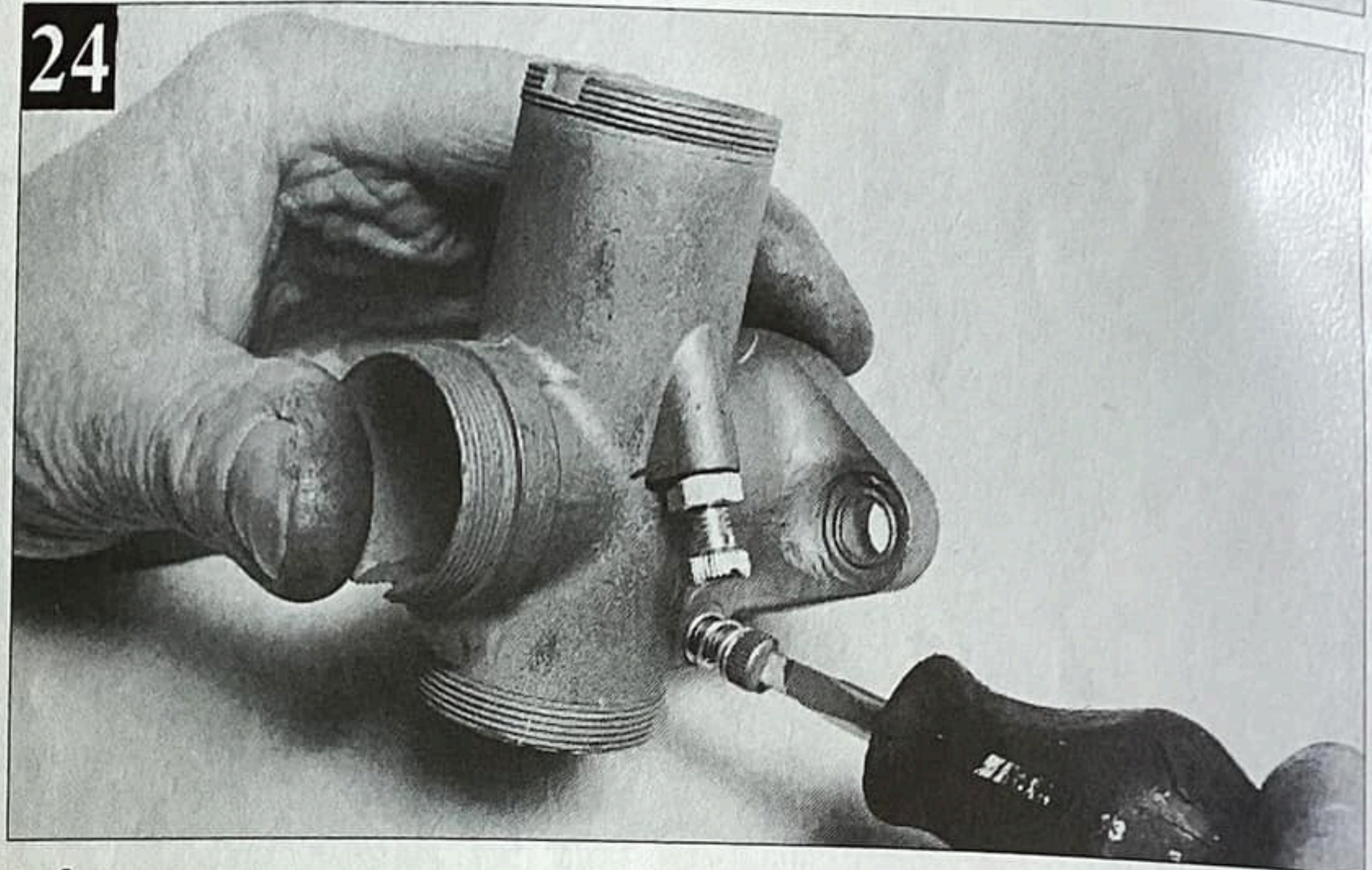
16 Next the pilot air screw can be removed noting the small spring behind it. The angled throttle adjusting screw has the end slightly belled out so that it does not drop out if the locknut is loose. It must be unscrewed carefully before you attempt to remove the jet block.

17 The jet block can now be tapped out using a piece of round wood such as a piece of small broom handle. Again care must be taken to avoid damage and as before immersion in boiling water will help.

18 With the carb now fully stripped it can be inspected for damage or wear. The main area of wear will be where the throttle slide moves up and down in the body. This will play havoc with the running of your bike and make a nice tickover impossible.

New parts are no longer available apart from what you may find at Auto-jumbles. Several people recondition the body by boring it out to remove the wear and then fit a sleeve over the slide to make as good a fit as new.

19 Another problem area can be a bowed flange caused by overtightening the bolts holding the carburettor to the engine. Check it with a ruler. If it is bowed it can be trued up by rubbing it on emery cloth on a flat



surface.

20 Some wear will also be found on the sides of the jet block where the slide moves up and down. Whilst a new part is desirable it is not too critical.

21 When refitting the jet block note that there is a locating peg that must align with the slot in the bottom of the mixing chamber.

22 The thread on the top of the body is very fine and care must be taken to make sure that the ring does not get cross-threaded.

23 A useful modification is to fit a heat spacer between the carburettor and the cylinder head to prevent heat transferring to the carburettor.

24 The tickover must be set when the engine is hot. If you set it when the engine is cold you will find it will be too fast when warmed up.

For a start the pilot air screw should be screwed in as far as it will go and then unscrewed about three quarters of a turn. It is then adjusted either way in conjunction with the throttle stop screw to get a nice tickover.

Screwing the air screw in richens it and out weakens it. If the machine has a manual ignition control it should be retarded slightly for a nice tickover.

● Next month: stripping and servicing the monobloc Amal.