

## REPAIR AND MAINTENANCE

### **Pads**

This seems as good a place as any to discuss the pads, for in some ways they are a part of a key, and in others, since they must be periodically replaced, they are not.

Pads are also a problem for the average player in that they are hard to get. After reading this section it is hoped that you will be aware of what type of pads are suitable for your flute, where they can be bought, how they can be made, and how they can be put on.

Early keyed instruments including the baroque one-keyed flute, had a key which instead of a cup, had simply a flat 'flap' of metal over the tone hole. This was provided with a flat piece of leather which was glued to the key. In order to make this seal the hole, the leather was dampened and the key tightly bound down, to make the leather take up the impression of the hole. There was no seating as such, but the body of the flute would be flattened around the hole.

This method remained in use until the early years of the 19th century, but then quickly gave way to the cupped key and the stuffed pad, as the old method was too unreliable, especially with the 'extra' keys. However you will find eight-keyed flutes which are 'padded' in this way.

The stuffed or 'purse' pad was the next step in the search to find a reliable method of sealing key holes. Basically the pad consisted of a small piece of lambswool, wrapped in very fine soft leather which was held in place by several stitches of thread.

This was initially almost spherical in shape and obviously needed a different shape of key to carry it. Hence the development of the hemispherical key cup or 'saltspoon key' as it is sometimes called. These pads were fixed in place with sealing wax as described above.

One of the main problems with this type of pad is its short lifespan, caused by hardening, but it also has a tendency to droop into the hole and protrude into the bore. This effect was halted to some extent by making a few stitches from back to front of the pad as you will see later.

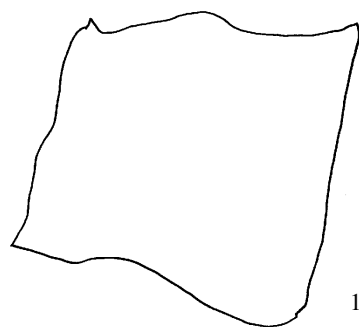
Another factor which helped the sealing of these pads was the development of a pad seating around the hole. This took the form of a raised lip around the hole which made an impression on the pad and improved its function.

The majority of the flutes considered suitable for Irish music have this type of pad, or originally had. In the case of the later 19th century flutes a flat version is found, but this is really very similar and was evolved to cover larger holes. The basic construction is similar but the introduction of a disc of stiff card, and the use of felt instead of wool, helped the pad retain its flat shape and prevented it drooping.

The type of cup which accompanied these pads was wider and shallower, and since they were quite firm the pad seating had a more pronounced edge to give a better impression on the pad.

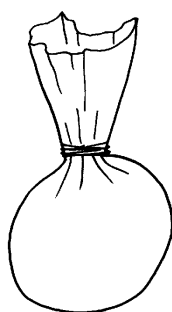
Unfortunately the 'purse' pads are no longer available and the pads sold in music shops as flute pads are only useful for the Boehm flute. However what are known as 'soft brown kid oboe or clarinet pads' are commercially available and eminently suitable for a lot of the old flutes. These can be obtained in all sizes [see Appendix 1].

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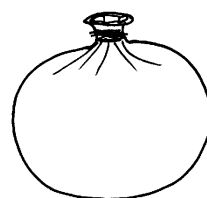


Small ball of Lambswool

1. Place ball of wool in centre of leather

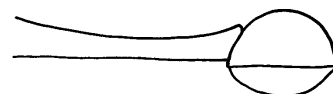
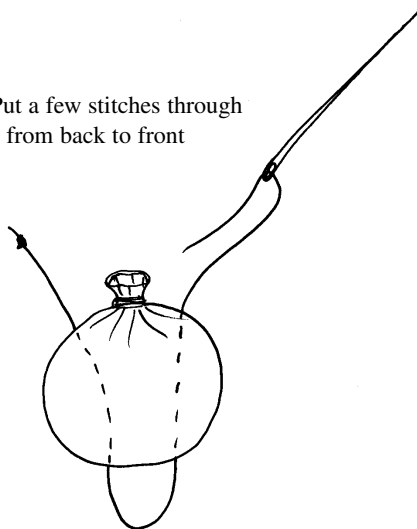


2. Bring leather up around wool and tie off with thread



3. Cut off excess as close to binding as possible

4. Put a few stitches through pad from back to front



5. Secure pad in cup with shellac or French cement

Fig 4.12 Making Purse Pads

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### Purse Pads

Such pads are suitable for all old simple system flutes, but for those which have very deep cups, or simply if you want to restore an instrument to its authentic historical condition, you will have to make your own purse pads. Sometimes flutes which have poor pad seatings can be improved by using purse pads as well.

The materials you will need are as follows:

1/ Some very fine kid leather. This is absolutely necessary for the success of the operation. ( the type of leather you need goes by the name of 'Pneumatic Lamb Skiver' )  
[See appendix 1]. It is possible to find suitable leather in some kid gloves, but if they have been cleaned this will have made the leather too hard.

2/ Lambswool - by this I mean the fleece, not the yarn used for knitting.

3/ A fine needle and some fine, strong, thread.

The method is as follows [see Fig. 4.12].

Take a small pinch of wool and roll it up into a little ball. Then surround this with the leather, using a corner of the whole sheet rather than a piece cut from it. Begin at a corner of the leather so as to get as many pieces as possible from it.

Pull the leather up around the wool and using the thread tie it off.

You should now have a little bag of leather with the wool inside which looks rather like an old fashioned purse - hence the name.

The idea is to cover the wool as tightly as possible so the turns of thread should also be very tight (this is why you must use strong thread). Tie it as close to the ball of wool as possible - this helps to pull the leather tightly over the wool. Cut the leather behind the tying as closely as possible to the thread without cutting it.

You should now have a little spherical pad which you can shape better by moulding it between your fingers.

This is the basic pad, but it is usual to put a few stitches through it from back to front to help prevent the drooping which sometimes occurs.

Don't expect to produce a perfect pad on the first few attempts - your first attempts will probably be far too large and the leather will be too loose, but practice will perfect!

### Seatings

The seating is the recess cut in the body of the flute around the key hole which presents an edge for the pad to contact thus ensuring the hole is sealed.

It takes a different form in different types of flutes.

Originally it was just a flat area around the hole and this style survived into the early eight-keyed flutes. The advent of purse pads led to the seating being a hollow in the surface, and this in turn led to it being a raised lip around the hole. The earliest forms of this were rounded and stood up smartly from the hole, but these were eventually replaced by the sloping type, which presented a sharper edge to the pad. [see Fig. 4.13]

The main problem with seatings is that the edge gets damaged in some way thus preventing

it showing an even surface to the pad and this allows air to escape through the resulting gap. This can be remedied by building up the gap, or in severe cases by machining away the seating and completely replacing it.

The older type of hollow seating can be difficult to use with modern pads. Using purse pads in these situations will solve the problem as they are much softer and will take up the form of the seating more easily.

One modern material can help considerably where the problem of deformed or chipped pad seatings, and shallow, poorly-formed cups presents.

This is closed cell foam, which is commonly used in some forms of packaging, and as a draft-proofing strip for windows and doors. Simply cut a circle of the correct size and thickness using small scissors, and use in place of a normal pad.

This material has an uncanny ability to mould itself to even the most damaged and lopsided seating. It doesn't work so well for open standing keys as it tends to lose the impression of the seating with time.

### **Pewter Plugs**

A word here about the pewter plugs which are found on the foot joint of most old flutes ( and on every key of flutes by some makers, notably Potter).

These are essentially metal pads with a tapered edge which fit into a similarly tapered hole in a metal plate attached to the flute, or sometimes into a tapering metal tube in the hole.

Pewter can corrode over a length of time and will no longer fit into the plate and seal the hole. Damage can also occur to the plate but this is rarer, and sometimes the plug becomes loose, allowing it to rotate.

All these can combine to make the action of pewter plugs very uncertain, and many people find them impossible to use.

There are several tricks which can help to improve things here but first you would be well advised to test if you are capable of blowing the lower notes at all. To do this remove the two lower keys and block the holes with modelling clay. Then try to play the bottom note [C].

Even when you know the holes are sealed like this you may find them hard to play because the embouchure they require is even more braced than that needed for the bottom D. Thus it is as well to practise the notes when you are sure the holes are sealed before blaming the action of the keys for the failure of the notes to sound.

If the plug is not rotating and seems clean, and yet still leaks, then a little light mineral oil applied to it will help considerably. It will also make the action much quieter.

If the oil fails to make a seal, then more serious remedies beyond the scope of home repair are required, but very occasionally a light tap with a piece of wood directly on top of the plugs when the keys are closed, may help.

Pewter plugs can be completely replaced but this is an expensive proposition.

Finally check that the coupling is accurate. [see Fig. 4.14]. This is adjusted where the two keys touch, and there is often a small piece of cork there to quieten the action. If this has shrunk or is missing then the coupling of the keys will be affected. The diagrams regarding this are self explanatory. It can take quite an amount of work to get it exactly right though.

### **The Head Joint**

The head joint or headpiece can be for the moment taken to mean the head and the barrel.

In the vast majority of flutes the head is lined with a brass tube which fits into a similar one

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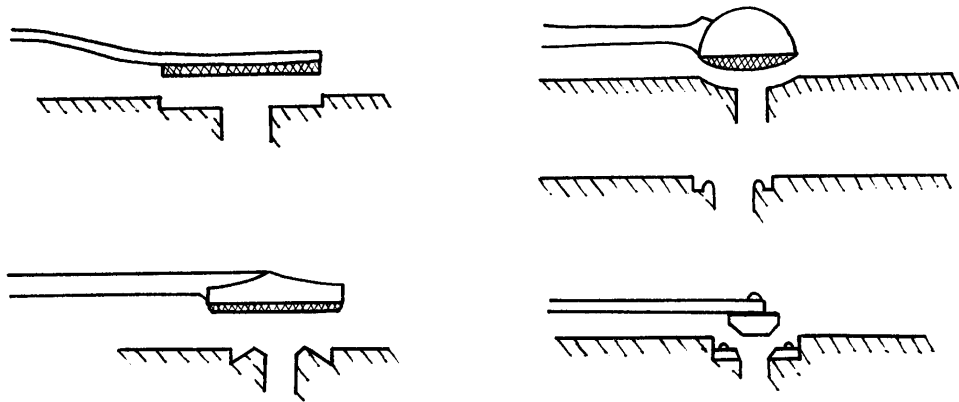


Fig 4. 13 Different types of Pad Seatings

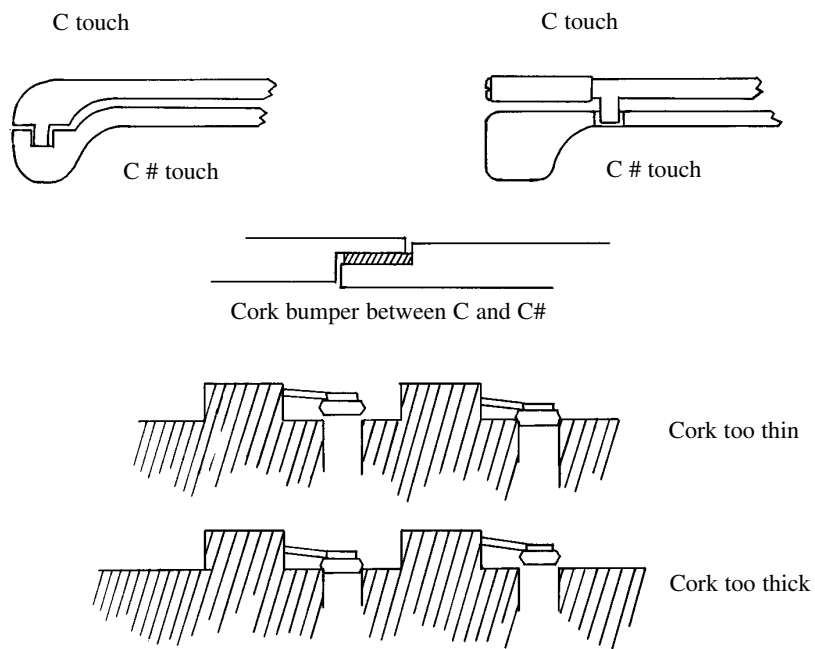


Fig 4. 14