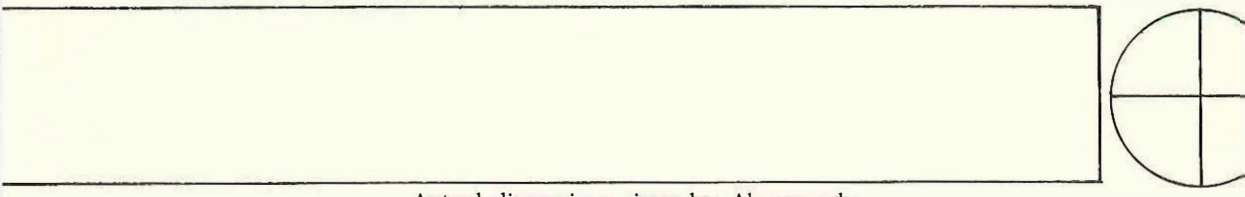
ON THE MAKING OF BASSOON REEDS

Karl Almenraeder

(Editor's note. This famous article, from "Die Kunst des Fagottblasens" (Schott. Mainz. c. 1842), last seen in English translation in Woodwind Magazine of 1953, is here presented fully translated anew from a copy of the original text and with photo-copies of Almenraeder's original drawings. Thanks for translation to my friend and recent pupil, Ester Froese, of St. Catherines, Ontario. I have made comments on the text at various places in accordance with my prior articles in a continuing series, A History of Bassoon Reedmaking begun by Lawrence Intravaia and continued by myself.)

The bassoonist, even when arriving at an advanced stage through study and practice, must nevertheless depend to a great extent upon his reed. He may have one of the finest instruments and may be in a perfect mind for practicing, but if his reed is defective he will remain its slave; a slave to whom all freedom of movement is prohibited. It is therefore indispensible, even if one does not want to make his own reeds that at least an exact knowledge of reed construction be acquired, if only to be in the position to indicate to the maker the exact dimensions required. Reeds may be desired wide or narrow, short or long, here thinner and there thicker, as dimensions generally can be so varied. Often a reed which is clear and in tune on one bassoon will be out of tune on another. It is advisable to use the same style of reed once a certain type has been found which plays the instrument at the correct pitch. In communicating these general ideas on reed making, it must be kept in mind that they apply particularly to the kind of reeds that I use.

For these reeds I use cane from either Spain or Italy. Until now I have used more of the former than the latter, not because the latter is less suitable but because I have scarcely had any opportunity of obtaining any. I do not know the kind that comes from the south of France. In Germany the Spanish cane is best obtained from the manufacturing areas where it is used in large quantities in making a certain tool used by weavers. For making reeds the cane must be straight and of a cylindrical form. It must be at least an inch (not less than a pouce) in diameter and twice the length of the finished reed. Each cylinder is split into four equal parts so they have the same width and breadth along their entire length.



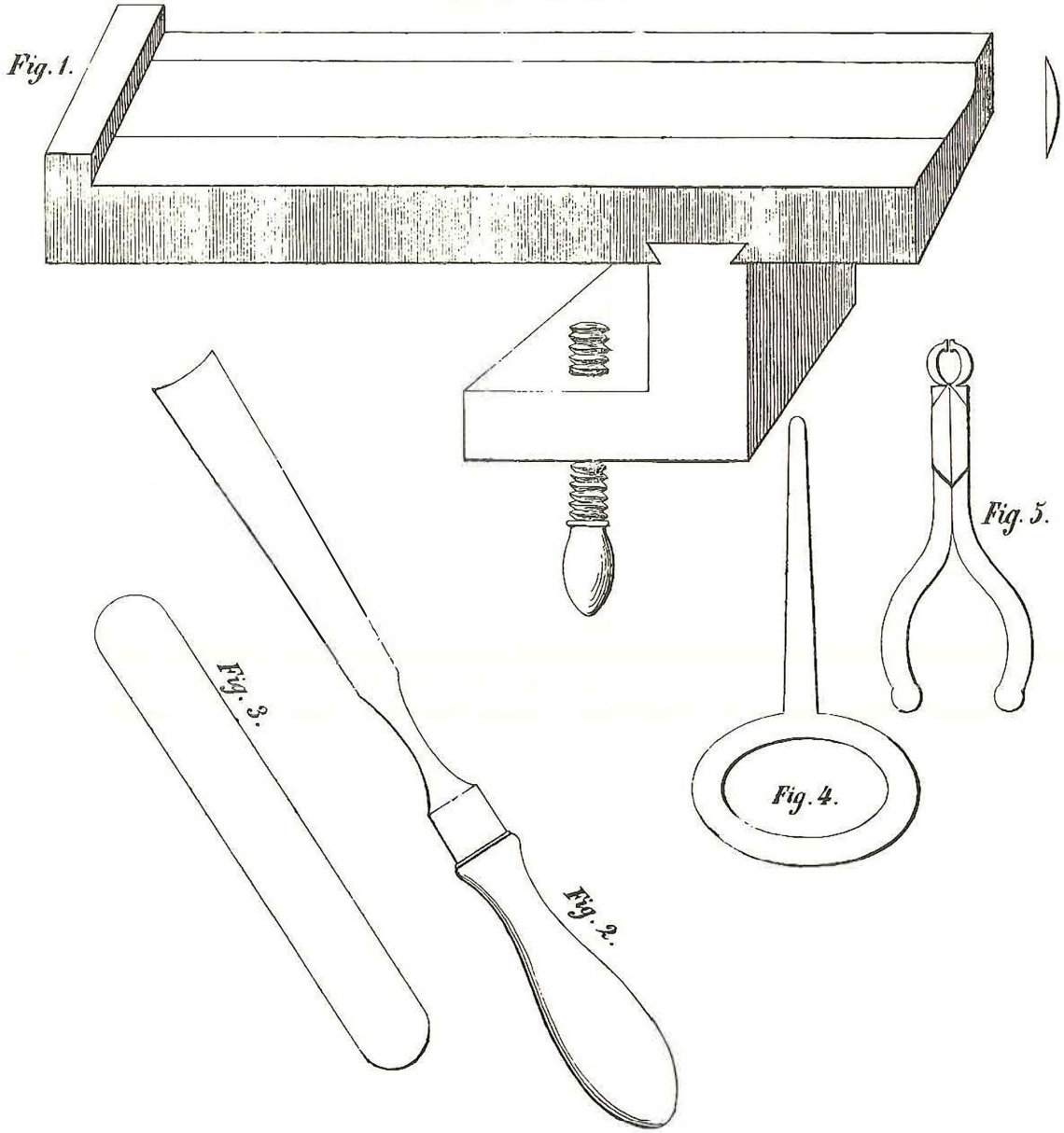
Actual dimensions given by Almenraeder

The quality of cane best suited for making bassoon reeds can best be judged during the actual construction of the reed. The cane must be neither too hard nor too soft, nor must it have been stored improperly for any length of time. During storage the cane must be in a position to have air circulating around it. Otherwise it will tend to rot or to mold. The pulp of the wood must be strong, fresh and uniformly white throughout. It must also have a certain toughness which can be readily determined during the gouging process as it makes for a smooth procedure. There are those who claim to know many more distinctions between good and bad cane, such as whether the outer color is light yellow or deep yellow and the meanings of the markings on the cane. They claim that cutting into the cane and wetting it will enable them to observe whether the wood soaks up too rapidly and to observe if the pores of the wood are too large. As much as I have tried to follow these indicators in choosing cane, I have found that at best they rest on shaky premises and do not "hold water." The only test which has proved reliable besides mine outlined above is the finger nail test. Run the thumb nail over the bark of the cane following its curvature, and observe whether with normal pressure any mark is impressed upon the cane. If none is left, you can be sure that the wood is too hard. Although many will reply that "The hardest most solid cane is most suited to the making of bassoon reeds," I will answer that if such reasoning were followed to its conclusion, apparently even better reeds could be made from wood that is harder and more solid than cane. Personally, I would rather make my reeds out of a piece of pine wood than use the hard cane which some bassoonists use.

I have not found positive proof that cane should only be cut when fully mature. However, I suspect that if cane is cut during the time of the year when the sap is running and then stored in an improperly ventilated place where it cannot dry properly, this cane will

be seriously damaged. I have not been able to determine whether this wood ripens every year or whether it takes two to three years to mature although I have made every effort to get this information. (A reliable source tells me that cane should be cut in its third year of growth.) It would certainly be a boon to reed makers to be able to know specifically about such matters.

TAB III.



For making bassoon reeds one needs a pair of pliers for wire ring fastening, a vise attached to a table, two flat files - one course and one fine -, a three-cornered file and the tools illustrated in Table III; Fig. 1, a gouging bed made of very hard wood with a wood screw for fastening it to a table; Fig. 2, a good steel gouger; Fig. 3, a scraper of fine steel; Fig. 4, a thorn (mandrel), round and cleanly polished; Fig. 5, a pair of pliers with smooth jaws.

Exact size for measurement

TAB IV.

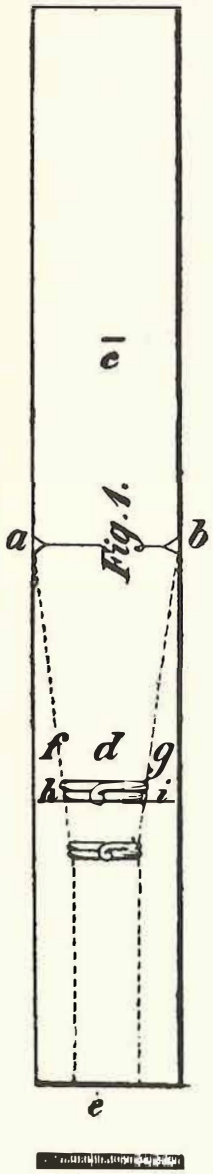
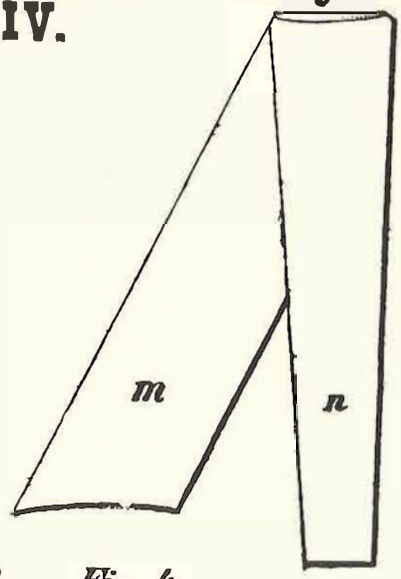
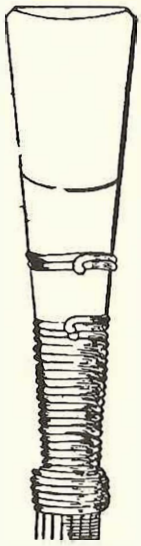
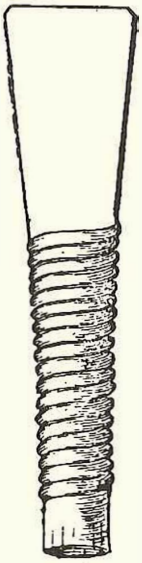
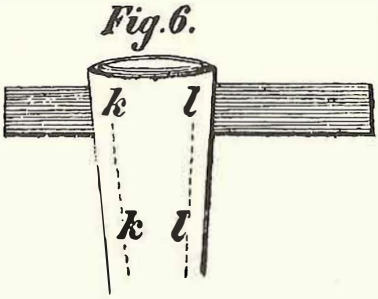


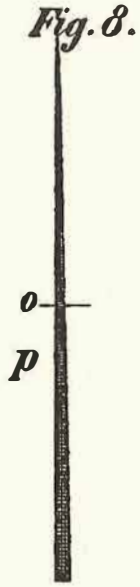
Fig. 2.











After splitting the cane tube into four equal parts, the pieces to be gouged are soaked in cold water for approximately one hour. A soaked piece of cane is placed in the gouging bed and its entire length is gouged to a thickness equal to that shown in Table IV, Fig. 2.

Next, the gouged cane's length is carefully measured and the center is marked by scoring the outer surface with the edge of the three-cornered file. A small triangle is notched on each side of the cane at the center mark point, as illustrated in Table IV, Fig. 1, at the letters "a" and "b". In this way the exact center is always in sight when the cane is again placed in the gouging bed.

Carefully gouge again from point "c" and "d" to the middle of the cane ("a" and "b") so that the thickness tapers gradually to one half the thickness shown at Fig. 2. This process must be executed with extreme care regarding the tapering to the center. It is good to check on the work by holding the cane to the light, which will enable one to spot uneven areas by the uneveness in the shading.

(Editor's note: Modern reed makers, be sure to note that Almenraeder directs that a taper be made on the gouge side of the cane, not the bark side (profiling). Etienne Ozi and other reed makers of the period also used gouging benches to taper the cane from the inside, removing bark from the outside cane surface only after the cane had been folded over and the tube formed. In modern reed making references there is rarely any mention made of scraping in the gouged area of the cane before putting the reed together. Two examples I can recall are: "The Art of Oboe Playing" by Robert Sprenkle - a reference to gouge tapering done by the late oboist Andraud of Cincinnati and giving his taper measurements. (Summy-Birchard Co., Evanston, Illinois); and "l'Anche" from Histoire, Acoustique le Basson by Kergomard and J. M. Heinrich (Groupe Acoustique Musicale. Bulletins 82, 83., 1975-6, Paris.) Mr. Heinrich refers to the excellent reeds made by the late Munich bassoon reed maker, Kurt Ludwig. He shows a line drawing of the gouge modification which Ludwig effected in most of his reeds (unlike Almenraeder's tapered gouge, Ludwig made a straight or parallel gouge. His modern blade type gouging machine put in this modification during the regular gouging operation.)

After the cane has dried, use the metal scraper to smooth all uneven spots on the inside area, and then soak the cane again for about 10 minutes. *(Editor's note: Today, oboists and English hornists often use small scrapers for this same smoothing purpose. Although Prestini of Italy long illustrated a bassoon cane scraper with a typical bassoon gouge curvature, I doubt that many are used or appreciated in North America.)* Use shave grass (Dutch rush) to smooth the gouged side of the cane and next proceed to cut the outline of one side of the reed by using a shape made exactly to the measurement of that shown in the diagram in Table IV, Fig. 1.

Flex the cane carefully in the area of "a" and "b" to see whether it is pliable enough to fold in half. This test is made to ascertain whether the cane can be folded without snapping in two, or, just as bad, not folding flatly into two halves. These faults will occur if the cane is not gouged thinly enough at the center, or if it is too flexible.

In the first case the situation can be corrected by gouging the inside thinner from "c" to "a-b" and from "d" to "a-b" before folding the cane. In the second case, where the wood is too elastic, it must be gouged thinner throughout, but the tone produced by a reed made from such cane will only sound raspy and unpleasant. When you think the cane is ready to be folded, take a knife with a rectangular end and notch the rear of the cane *(here Almenraeder means to score the tube section at the bottom only, as in his drawing, Table IV, Fig. 5).* The flatter the two halves are against each other at point "a" and "b", the better the prospect for a good reed. (See Table IV, Figs. 4 and 7.) Shape the other side of the reed blade to match the already shaped side and bind the halves together tightly (as shown in Fig. 5.).

Immerse the bound reed in water for about five minutes, and after greasing the mandrel force it between the two halves, being careful not to push the mandrel quite as far into the reed as is tied with the string. If the cane has been gouged properly, the two halves will round out about the mandrel equally.

Using a wire which has had its temper removed and is flexible, attach it to the middle of the reed just where the string wrapped around it comes to an end. Unwind the string and push this wire into place as

shown in Table IV, Fig. 1, at "h" and "i", tightening the wire again with the pliers.

Score the reed across ¼-inch below the first wire, using the three-cornered file, so that the second wire once fastened into position will not be able to move. About four windings from the very bottom of the reed score the bark again so that when string is rewound onto the reed it will not slip.

After greasing the mandrel again, fasten the ring of it into the vise and place the reed on the mandrel. With a waxed cord, begin to bind the reed as tightly as possible, starting downwards from the second wire ring. The tighter this binding is made the less opportunity the two reed blades have to slip. If the reed does not come off the mandrel with ease, gently squeeze the cheeks of the reed and it will slip off readily.

With the reed held at the binding between the thumb and forefinger so that the flat part rests on the base of the thumb, and using a slender pen knife, carefully peel the bark off from the area "f" and "g". File smooth any uneveness which remains.

Dampen the blades of the reed and place them upon a flat chopping block. Using a razor pressed against the tip of the blades, separate the halves of the reed by hitting the razor with a small hammer. The reed's tip will now have the shape of Fig. 4. If the two halves are more open than is illustrated in Fig. 3, correct this by squeezing the first wire ring. If the sides, on the other hand, be too close together, they can be opened by pressing with the pliers at points "h" and "i".

With slightly dampened shave grass which has been squeezed flat, scrape the inside of the reed as far as it is possible to enter. Now try the reed on the bassoon to determine if the high or the low range responds best. If the low register is difficult, the fault is due to the wood being too thick near the first wire. In this case the reed is filed in this area on both blades, care being taken that a gradual taper to the tip is maintained.

When response is difficult in the upper register, more wood should be removed from the tip area of both blades. Generally speaking, the tip of the reed blades should approximate the thickness of writing paper, thickening gradually all the way to the first wire.

Scrape both sides of the reed (see Fig. 6, "k" and "l") a little thinner than the middle thickness of the reed. Caution must be taken that the reedmaker observe the solidity of the cane with which he works, always bearing in mind the hardness of the wood being worked. Incidentally, it is best to have the sides of the reed of equal thickness (see Fig. 8). It must be emphasized that enough thickness must be retained in the area of "o" and "p", (Fig. 8) to give the reed the needed power and strength. Additional ease of response can be assured by filing the inside of the reed with shave grass, always with the reed damp.

If all the foregoing instructions have been carefully observed, the reed should now be ready for use. During the first four, five or six days reeds undergo many changes. The blades may spread too far apart or come too close together. Adjustments can readily be made by following the previously given instructions. Reeds have a tendency to become stronger after the first few days' use. When this occurs scrape towards the tip of the blades as often as necessary using shave grass. A little wood may also be removed from the sides of the reed.

Any accumulation of food particles on the inside of the reed may be removed by using a chicken feather, and if the reed is used a great amount it should be aired out.

If by chance, during the gouging process, the cane which now lies near the first ring has remained too thick, the reed will not produce the lower tones on the bassoon freely. The blades will not vibrate freely or respond easily to the breath. To overcome this difficulty I have found it advisable to push the first wire ring closer to the second.

Should the opposite condition prevail, that is, too much wood gouged from the cane and the higher tones do not respond correctly the reed may be improved by pushing the first ring up towards the tip of the reed.

A word of caution: do not tamper with the ring too much. It is best to leave the ring in its original place, but if movement of the ring is needed, care should be taken to move it as little as possible. The finished reed must have the shape of the illustrated reed shown at Fig. 9.