

DIRECT METHODS OF MAKING MOLAR BANDS*

BY HERBERT A. PULLEN, D.M.D., BUFFALO, N. Y.

STANDARDIZATION OF MATERIALS

THE materials used for the molar bands for anchorage for either labial or lingual arch should be so standardized that there is not such a wide variation in these materials in use all over the country as there is at the present time.

For example, the band material should be of gold and platinum which has a good edge strength and yet which can be easily burnished to the teeth. Pure gold is absolutely too soft, and even coin gold is not so desirable as a gold and platinum band material which has a higher fusing point.

QUALIFICATIONS OF BAND MATERIAL

The following qualities should be found in a good band material: 1. High fusing point; 2. Noncorrosive and nonoxidizing; 3. Good edge strength; 4. Capable of being easily burnished to the teeth.

1. *High Fusing Point.*—A high fusing point is needed to secure safety in soldering operations. Many of the samples of band material which have been placed on the market have been of a low fusing point, and this band material would often fuse before the solder, thus ruining the band. However, the best known manufacturers now furnish gold and platinum band material of a high fusing point. Iridioplatinum has the highest fusing point, and possesses all of the qualities of a good band material, but its cost is prohibitive for general use.

2. *Noncorrosive Materials.*—The use of the highly corroding and oxidizing German silver band material is on the wane, although there is still a large amount of this material used by those who do not understand the handicap they are under in its use. Gold and platinum band material will not corrode, and will not oxidize unless too much base metal is alloyed with it.

3. *Edge Strength.*—Edge strength is important and without it band material will continually bend instead of holding its shape while being forced between the teeth. Gold and platinum with a small percentage of silver and copper to give hardness, produces a band material of splendid edge strength.

4. *Burnishing Qualities.*—A band material which does not readily burnish to the teeth will spring away and will never perfectly fit the circumference of the molar. It is possible to obtain this quality combined with good edge strength in the best band material.

WIDTH AND THICKNESS OF BAND MATERIAL

Molar bands should be made of gold and platinum band material .007" thick and .20" wide for permanent molars. A slightly thinner band material may be used for temporary molars.

*Clinic before The American Society of Orthodontists, Atlantic City, April 30, 1921.

METHODS OF MAKING MOLAR BANDS

There have been two distinct methods of making plain bands for molars, the *indirect* and the *direct* methods.

The *indirect method* is one in which the molar band is made upon a plaster reproduction or a metal die of the tooth, all of the fitting and contouring being done in the laboratory, thus saving the operating time at the chair, although increasing the amount of work in the laboratory over the direct method.

DIRECT METHOD OF MAKING MOLAR BANDS

With the *direct method* the molar bands are fitted directly to the teeth in the mouth, and perfectly finished and contoured at the chair, an impression being

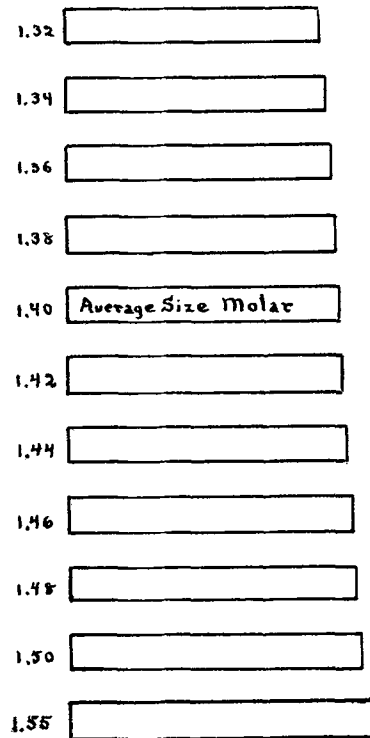


Fig. 1.

then taken with these bands in place, the bands replaced in the impression and an investment cast poured, all appliance attachments being made upon this investment cast in the laboratory. With an adequate supply of graduated sizes of maxillary and mandibular molar bands made up in stock, the minimum amount of time is consumed both at the chair and in the laboratory, especially if a technic, simplified to the last detail, is followed.

The writer has used the direct method to a considerable extent and has developed a simplified technic which may be described in sequence as follows:

GRADUATED LENGTHS OF BAND MATERIAL

The band material is cut as shown in Fig. 1, into eleven different lengths for the various sizes of permanent molars found, ten of these varying each .02"

in length from 1.32" to 1.50" for either maxillary or mandibular molars. An especially long one is made 1.55" in length for unusually large molars. The bands are usually made up in pairs of the same length, as the molars on each side of the mouth are identical in size. It will be found also that the circumference of each of the four first permanent molars is the same, again simplifying the construction of the bands through the uniformity of sizes of the bands, although the flare of the bands for mandibular molars is considerably greater than for maxillary molars, which is prepared for by cutting deeper end angles on the mandibular molar bands than on the maxillary. It is possible to make up maxillary and mandibular molar bands with predetermined end angles for the average molars as will be shown.

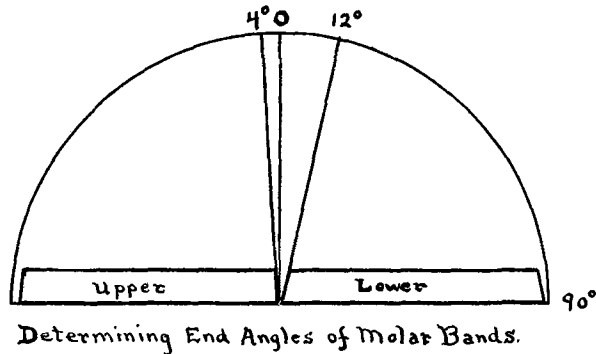


Fig. 2.



Fig. 3.



Fig. 5.

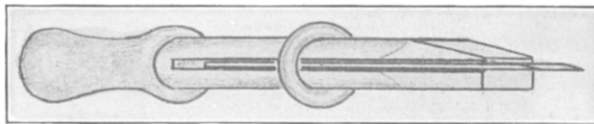


Fig. 4.

DETERMINING END ANGLES OF CUT BANDS

The ends of these cut bands should be trimmed to definite angles, Fig. 2, for maxillary and mandibular molar bands, the maxillary bands being cut to a 4° angle and the mandibular bands to a 12° angle, these angles giving the proper flare to the finished bands for the average molar teeth, both maxillary and mandibular.

BEVELING ENDS OF BAND MATERIAL

The ends of each length of band material are next beveled as in Fig. 3 so that when lapped, the joint will be a smooth one, and partially invisible.

The writer has adapted a jeweler's clamp, Fig. 4, to hold the band material rigidly so that the proper bevel may be made with a gold file, following the bevel on the end of the clamp.

BENDING BAND MATERIAL IN A CIRCLE

The beveled band lengths should be bent in a circle until the bevels overlap as in Fig. 5, and the writer has devised a plier, the beaks of which appear as in Fig. 5, to quickly bend the band lengths into circular form.

SOLDERING LAPPED JOINT

By fluxing the lapped joint and holding the band in a soldering clamp in the blowpipe flame, touching the joint with a piece of 18 to 22 K wire solder at the

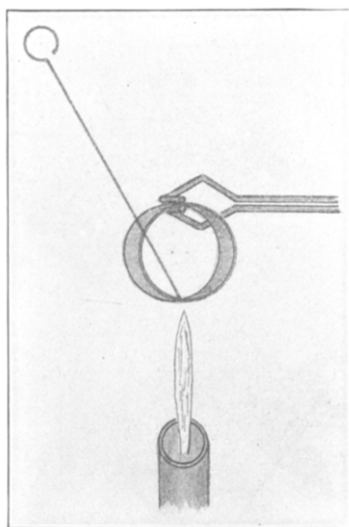


Fig. 6.



Fig. 7.

proper time, as illustrated in Fig. 6, will fuse the solder in the lapped joint when the band will be ready for trimming and contouring. The series in pairs of either maxillary or mandibular bands from 1.32" to 1.55", as shown singly in Fig. 7, may now be placed in small consecutively adjacent compartments in the cabinet designed for them, from which they may be selected to fit the various sizes of molars, and trimmed and contoured after such selection.

SELECTING PROPER SIZES OF MOLAR BANDS

The average first permanent molar is 1.40" in circumference, this measure holding good for all four first molars, hence this size and the nearest approxi-

mating sizes, 1.38 and 1.42, will the most often be used from the made up stock and will have to be replaced more frequently. It is best to select the 1.40" band first and slip it over the crown of one first molar and if it is too large try a band a size or two smaller, or if too small try a size or two larger.

A little experience will enable one to determine the proper size almost at a glance.

FITTING BANDS TO MOLAR TEETH

When the proper size of band is found, it should be flattened slightly mesially and distally with the flat nose pliers, and placed with soldered joint

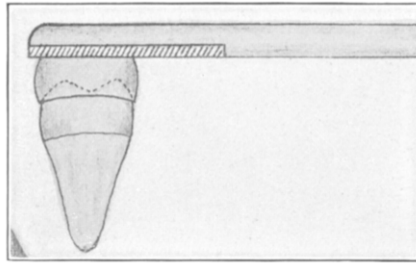


Fig. 8.

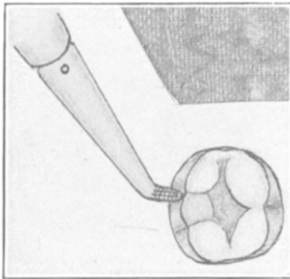


Fig. 9.

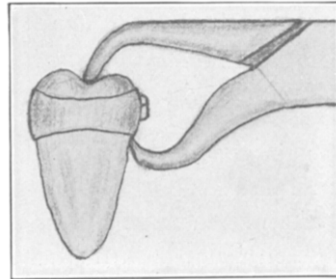


Fig. 10.

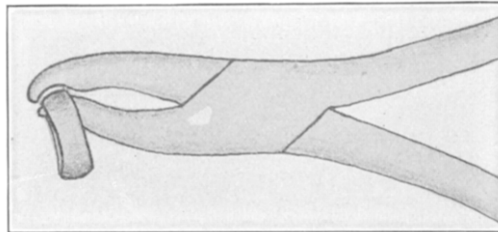


Fig. 11.

buccally over the crown of the molar, and with the band setting instrument should be forced between the proximate contacts of adjoining teeth, and rocked into place as far as the gingivæ as illustrated in Fig. 8. The writer uses an all metal band setter with a piece of pure tin soldered on the end as in Fig. 8 to catch the edge of the molar band and prevent slipping.

TRIMMING AND CONTOURING THE BANDS

While the molar band is in this position, it can be noticed whether it impinges upon the gum tissue mesially or distally and if so, it can be trimmed to relieve this impingement at once. The band should then be replaced upon the tooth, and burnished into all of the buccal and lingual grooves, with the serrated burnisher designed by Dr. J. Lowe Young, as illustrated in Fig. 9.

At no point should the band be allowed to cover over the occlusal surface of the molar as occlusion upon such overlapping edges wears away the cement and leaves a lodging place for food and detritus.

BAND REMOVING AND CONTOURING PLIERS

The band should next be removed with the band removing plier, Fig. 10, a design of the writer's, and contoured buccally and lingually with a special



Fig. 12.



Fig. 13.

contouring plier, Fig. 11. The finished band, trimmed and contoured, should appear as in Fig. 12.

ANCHORAGE ATTACHMENTS

If the lingual or buccal arch is to be constructed upon these bands, the half round tubes should be soldered, as in Fig. 13, buccally and lingually, before the band is replaced upon the molar, so that these attachments will be in readiness in case either or both lingual and buccal arches are desired.

SEAMLESS BANDS

Seamless bands made in the same sequence of sizes and forms, partially contoured for maxillary and mandibular molars, would save considerable time in the following out of the technic in the direct method of fitting molar bands at the chair, and it is to be hoped that the manufacturers of band materials will not long delay the promised production of such ready made bands for the improvement of the technic.