

THE 'FASTBACK' APPLIANCE for Molar Distalization

(Technical Overview and Construction Guidelines)

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INTRODUCTION

Modern Orthodontic Science is constantly exploring new non-extraction therapies through research carried out employing appliances that will allow the Orthodontist to gain space both transversally and distally. Consequentially, in recent times we have observed an increase in the number of appliances for the distalization of the upper molars. Italians have been particularly prolific in this area, probably on account of many of our young patients being reluctant to follow the therapeutic indications that come with Extra-Oral Traction.

The common goal for all those involved in developing new distalizing appliances appears to be the ability to provide a dental movement that is bio-mechanically controlled and generated by adequate forces, while keeping undesired contra-movements to a minimum. For me, the ideal Distalizer should occupy the smallest possible space, interfere as little as possible with function and provide bodily distal movement of the dental elements involved with minimal (or absence of) patient compliance. Distal movement should occur in the patient with minimal damage to the surrounding tissues and function, generating minimal (or absence of) contra-movements. The appliance used should be engineered in such a way that would make therapy management easy and safe.

The 'Fastback' Molar Distalizer is now fully established as a 'reference' appliance in the Orthodontic field. A growing number of Professionals, having had the opportunity to fully evaluate and appreciate the ease and safety of use as well as the bio-mechanical development provided by this device, are now prescribing it regularly whenever they need to gain space in the posterior region.

At the time of writing, 6 years have passed since the initial prototypes of 'Fastback' devices were introduced.

'FASTBACK' Description and Construction Guidelines



The FASTBACK 'Type 3' with Nance Button and Extensions to Cuspid

During recent visits to European Dental shows and congresses I was able to observe how some of the Orthodontic Labs who were exhibiting their wares were displaying promotional models of 'Fastback' that presented irregularities that were due to a disregard of the construction guidelines. Not observing those guidelines while constructing the appliance could result in malfunctions and eventually therapeutic failure, or even damage to the patient's soft tissues.

We must bear in mind that the guiding principle of the 'Fastback' is to apply continuous forces, generated by Memoria® Ni-Ti spring coils, to the molars. Inside the 'Fastback' kit the Orthodontic Technician will find spring coils of two different forces: 200 and 300 grams; it is recommended that he uses the lighter coil (200gr) when only the sixes are erupted, leaving the heavier coil (300gr) for those cases where the sevens are also present, whether they are partially or totally erupted. To be able to obtain the delivery of the desired pre-determined, continuous force and an accurate control of the dental movement, it is imperative that the construction guidelines provided here are observed. This will also ensure patient comfort and ease of activation of the appliance.

We are all aware that when addressing the basic principles of distalizing appliances, the main points are: 1) Adequate Anchorage and 2) Managing with precision the required distalizing forces, both in intensity and direction. We have already discussed the question of the adequate spring coil needed (see above) – now let's talk about the general guidelines to follow towards adequate anchorage.

1. **Monolateral Distalization:** Construct a 'Tripod' type of anchorage structure. A 'Nance' button can be useful if the sevens are present.
2. **Bilateral Distalization:** A wide 'Nance' button is absolutely essential. If the sevens are present, or to maximize anchorage, extensions (or Rests) to the canines, as seen in the photo, are recommended. These will have to be fixed with composite, after the appliance has been cemented on.

There are 3 versions of the 'Fastback' appliance:

- FB1 (Monolateral FB with 'Tripod' Anchorage unit) with or without 'Nance' button
- FB2 (Bilateral FB) with 'Nance' button
- FB3 (Bilateral FB) with 'Nance' button and Extensions, or Rests, to the Canines



FB 1



FB 2

200 or 300gr spring coils can be used in all 3 cases, as well as spherical or long ends. Long ends feature a hole for ligature wire to go through.

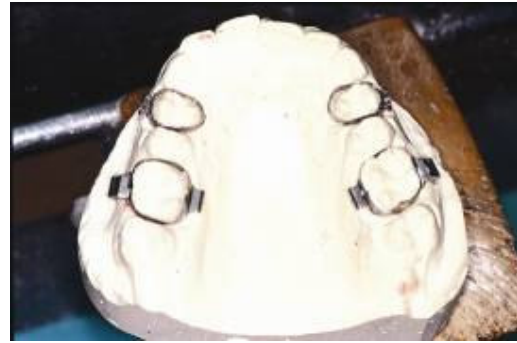
The 'Fastback' appliance can also be used with auxiliaries such as spring coils or wire '*Cavalieri*' that can be cemented to the Premolars, thus eliminating the need for Bands on those teeth. Palatal Implants can also be used in conjunction with the 'Fastback' for anchorage.

Start by taking a good impression, in alginate or one-phase silicon, with the bands in place. Obviously, should an impression be taken with bands *not* in place, it will be down to the Lab to place anchorage bands on the model.

- The following images document the construction of a type -3 'Fastback' (with Cuspids Rests).



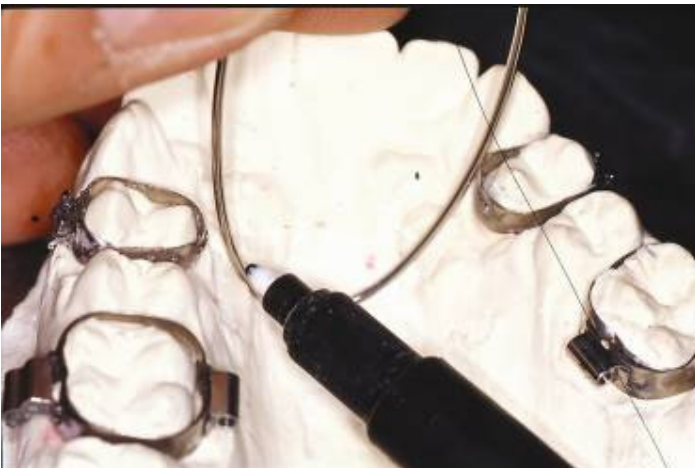
Buccal Tubes and Brackets are being welded on to the bands.



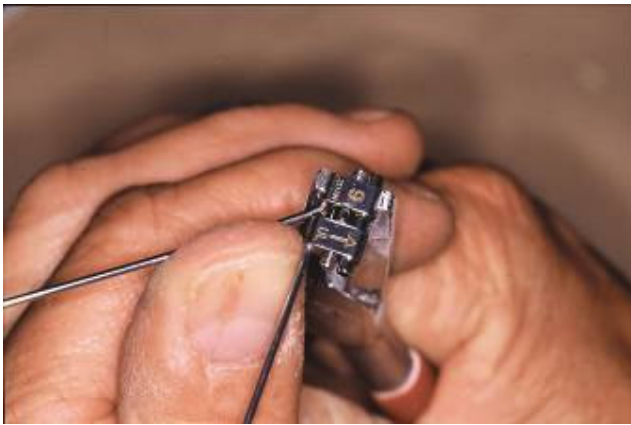
1. Welding of the 'Fastback's palatal tubes. These must be perfectly horizontal and oriented for the desired distal movement.



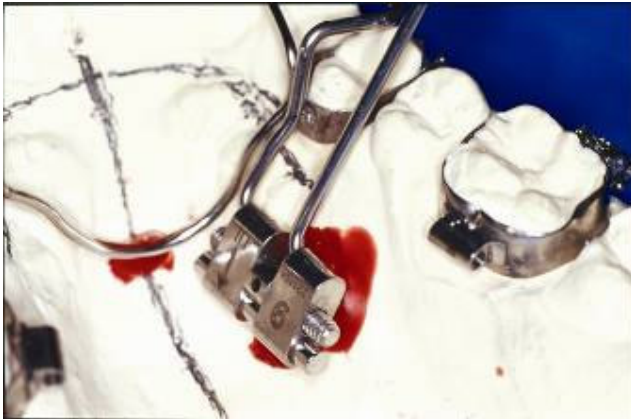
2. Tracing the Midline and 'Nance' button outline.



Using 0.9mm wire, model the trans-palatal anchorage bar, joining the first premolars. Secure with wax.



3. The arms of the Distalizer screws are being shaped and blocked with wax (at this stage the posterior arms are not yet being bent), then some thermo-insulating paste is applied to protect the screws from soldering heat. This is also a good time to make the Cuspids Rests, also using 0/9mm wire. We will use them later on



4. Soldering of metallic parts.



5. Soldered parts are refined and polished.



6. Bending the posterior arms of the screws in the exact distalizing position (make sure the arms are totally passive inside the palatal tubes).



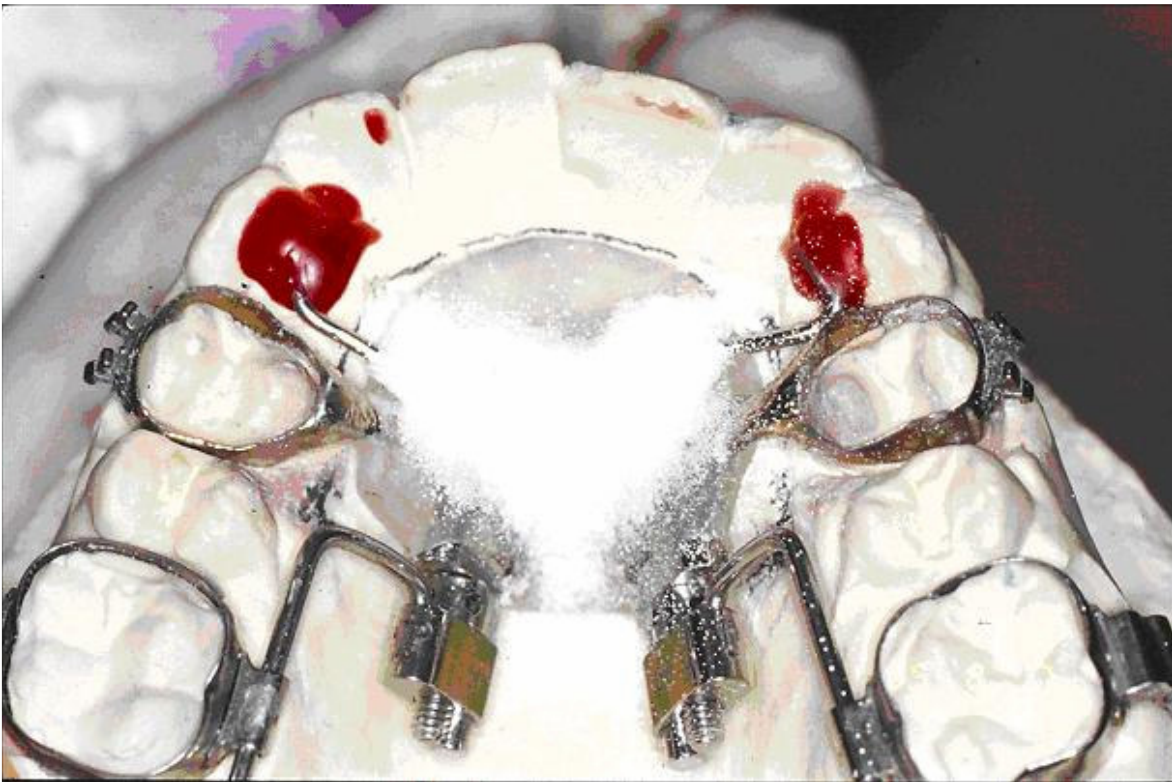
7. The 'Nance' button is being made using a 'Salt & Pepper' technique.



The 'Nance' button, finishing phase



8. The Cuspids Rests are now inserted in the acrylic button. You can make them now or you could have had them ready from P.3.



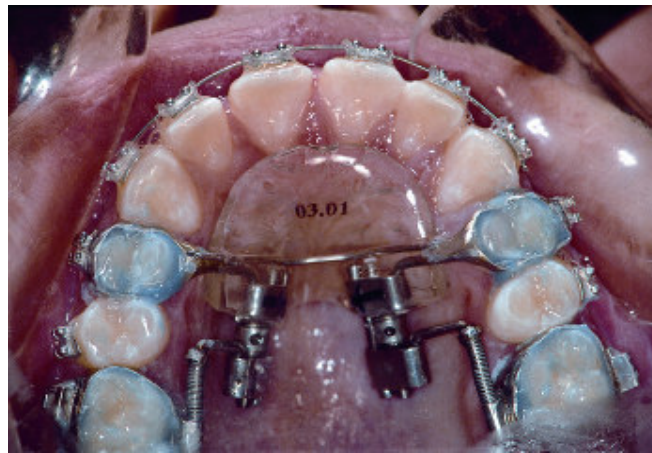
9. 200 or 300gr Spring Coils and spring-compression Stops are now inserted. At this stage, the spring coils must be lightly compressed (15-20%).



10. Cut off excess arm lengths (leave approximately 3mm to allow distalization movement). This is followed by the soldering of the compression Stops and Arm Ends. These can be either spherical or elongated ones, as both types are supplied with every 'Fastback' kit.



11. Final polishing of the appliance. Before the appliance is sent to the Orthodontist/Dentist and in those countries where the Health Authorities require this, fill the maintenance and user's sheet.



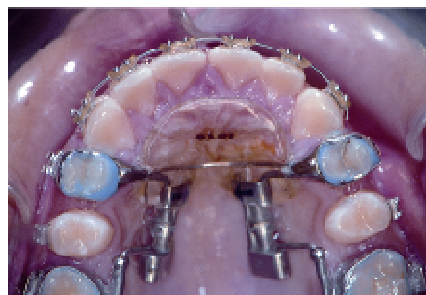
FASTBACK ACTIVATION

The 'Fastback' appliance is delivered to the Orthodontist with its spring coils slightly activated, as described above (see P.12). The Orthodontist, after cementing the bands, will activate the Distalizer by giving it 3-4 activations (every activation generates 0,2mm of expansion -and spring compression) bringing the Memoria® spring coil up to its active state. It is conventionally accepted that Nickel-Titanium spring coils deliver the force indicated by the manufacturer when activated by a minimum of 20% to a maximum of 80% of their capacity. To obtain the desired progressive, continuous forces, the Orthodontist will have to stay within this range.

Distalization of Molars (Diastemas beginning to appear) will start to show after approximately 3 weeks; dental movement will be maintained by approximately 1/1.5mm every 4 weeks.

It will be possible for the Orthodontist to re-activate the appliance every 4/6 weeks until the therapeutic plan has been fulfilled. It will also be possible for the Orthodontist to use the 'Fastback' Molar Distalizer in conjunction with buccal brackets.

Some Professionals recommend that The 'Fastback' types 2 and 3 be used activating only the screw on one side at a time, as you would do with a FB Type-1 (Monolateral), starting with the Patient's right-hand side, then after 6-8 weeks, the left side. This way of managing the appliance is useful in further reducing any possible contra-movements (mesial) that may occur during therapy.



'FASTBACK' FEATURES

- Easy to plan and assemble
- Reduced bulk
- Minimal Patient discomfort
- Good Aesthetics
- Continuous, constant forces are at work at all times
- Intensity and direction of the forces applied can be accurately controlled
- Reduced or Minimal loss of Anchorage
- Reduced or Minimal Contra-Movements
- Bodily Distalization occurs, no risk of undesired movements
- Easy, non-frequent Activation
- Checks every 4/6 weeks, cost-effective Patient management
- Spherical or long Ends ensure the appliance stops when not activated, should the Patient skip one or more appointments.
- The 'Fastback' can be used in conjunction with fixed buccal appliances (Brackets).

Like I have previously said, there are a number of factors that can lead to a malfunctioning of the 'Fastback' appliance. These mistakes normally made during the planning or the construction of the Distalizer can have a negative influence on the Bio-Mechanics involved in the Therapy. I have identified these recurring factors and they can be described as follows:

- The arms of the appliance are not straight; therefore they will generate friction inside the palatal tubes, making it impossible for the spring coil to release its force with continuity.
- The 'Nance' button is too small or absent. This may result in anterior loss of anchorage and mesial contra-movement of the frontal group.
- The FB Screw is malpositioned. This may generate contact during activation between the distal end of the body of the screw and the mucosa, creating sores and/or abrasions.
- The palatal tube –and therefore the arm of the screw- is horizontal-buccally malpositioned. This may result in the development of distalizing forces that are also undesirably palatal and/or buccal.
- The palatal tube-and therefore the arm of the screw-is vertical-occlusally malpositioned. This may result in the development of distalizing forces that are also undesirably intrusive or extrusive.
- The 'Nance' button has been made using coloured resin, making it difficult to spot any sores or infections of the involved area of the palate. ALWAYS USE CLEAR ORTHODONTIC RESIN for this appliance!
- Finally, if excessive space is left between the distal end of the palatal tube and the safety ends, this can make it difficult for the Orthodontist, should the Patient miss one or more appointments, to stabilize the therapy.



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