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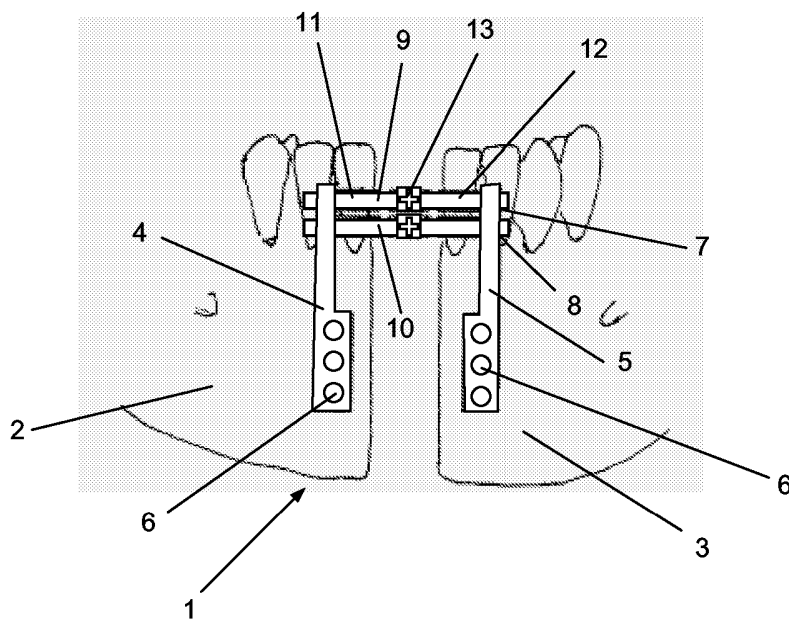
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(54) Title: DEVICE FOR WIDENING A JAW



(57) Abstract: The invention concerns a distracting device for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another, whereby this device comprises two fixing elements which must each be fixed to one of said bone parts, whereby these fixing elements have means for fixing at least an expansion element which must extend between said fixing elements so as to connect the latter to each other, characterised in that said expansion element is made relatively rigid and has two parts which are hinge-mounted to each other.

WO 2006/137045 A2

## DEVICE FOR WIDENING A JAW

The invention concerns a distracting device for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another, whereby this device comprises two fixing elements which must each be fixed to one of said bone parts, whereby these fixing elements have means for fixing at least one expansion element which must extend between said fixing elements so as to connect the latter to each other.

The invention is characterised in that said expansion element is made relatively rigid and has two parts which are hinge-mounted to each other.

Practically, said parts of the expansion element are connected to each other via a cardan hinge.

Advantageously, the far ends of said expansion element are threaded in the opposite sense, whereby these far ends can be fit in corresponding recesses in said fixing elements such that, by subjecting said expansion element to a rotation, the fixing elements are moved in relation to each other.

According to a preferred embodiment of the distracting device according to the invention, it comprises two expansion elements.

The invention also concerns an expansion element for a distracting device for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another, whereby this expansion element has two rigid bar-shaped parts which are connected to each other at one of their far ends by means of a hinge point.

According to an interesting embodiment of the invention, said hinge point is formed of a cardan hinge.

Other particularities and advantages of the invention will become clear from the following description of a few special embodiments of the distracting device and of the expansion element according to the invention; this description is given as an example only and does not restrict the scope of the claimed protection in any way; the figures of reference used hereafter refer to the accompanying drawings.

Figure 1 is a schematic front view of the frontal part of a lower jaw, provided with a distracting device according to a first embodiment of the invention.

Figures 2 and 3 are schematic front views of a distracting device which is to be fixed laterally to a lower jaw according to a second embodiment of the invention.

Figures 4 to 6 are schematic representations of a distracting device according to a third embodiment of the invention.

Figure 7 is a schematic side elevation of the supporting element from figure 2.

Figure 9 is a schematic side elevation of the supporting element from figure 3.

In the different drawings, the same reference figures refer to the same or analogous elements.

The invention generally concerns a distracting device and an expansion element for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another.

Figure 1 represents a first embodiment of the distracting device according to the invention when fixed to a person's lower jaw 1. This lower jaw 1 has been surgically divided in two parts 2 and 3, whereby subsequently, by means of the illustrated distracting device, these two bone parts 2 and 3 are gradually moved away from each other.

This distracting device comprises two fixing elements 4 and 5 which are each fixed to one of said bone parts 4 and 5 by means of screws 6. Between these fixing elements 4 and 5 extend two expansion elements 9 and 10. Further, on the far end opposite the one that is fixed to the jaw, these fixing elements 4 and 5 have two recesses in the shape of cylindrical bore holes 7 and 8 in which is provided internal screw thread.

Said expansion elements 9 and 10 are formed of a rigid metal rod with two parts 11 and 12 which are hinge-mounted to each other via what is called a cardan hinge 13.

Said expansion elements 9 and 10 are threaded in the opposite sense on their far ends, whereby these far ends can be fit in said bore holes 7 and 8 in said fixing elements 4 and 5, such that, by individually subjecting each of said expansion elements 9 and 10 to a rotation, the fixing elements 4 and 5 are moved in relation to each other such that the position of these fixing elements can be adjusted in relation to each other.

Figures 2, 3, 7, 8 and 9 represent a second embodiment of a distracting device according to the invention. This distracting device also comprises two fixing elements 4 and 5, and it must be laterally fixed to a lower jaw.

5 A first fixing element 4 has two bore holes 7 and 8 for mounting said expansion elements 9 and 10, and it is further provided with two plates 14 and 15. This first fixing element 4 must be fixed to the bone part of a lower jaw which is connected to the maxillary joint. The plates 14 and 15 are hereby folded such that they fit up to the bone of the lower jaw, and they are subsequently fixed to the jaw bone by means of screws.

10 A second fixing element 5, which is schematically represented in figures 2, 7 and 8, also has two bore holes 7 and 8 and a plate to be fixed to the second part of the lower jaw by means of screws.

Both fixing elements 4 and 5 must be connected to each other with two expansion elements 9 and 10. As already described above, these expansion elements 9 and 10 have two rigid, bar-shaped parts 11 and 12 which are connected to each other at their far ends by means of a cardan hinge 13.

Thus, thanks to the presence of these specific expansion elements 9 and 10, the position of the two bone parts concerned can be adjusted in two directions by rotating said expansion elements 9 and 10 round their axis.

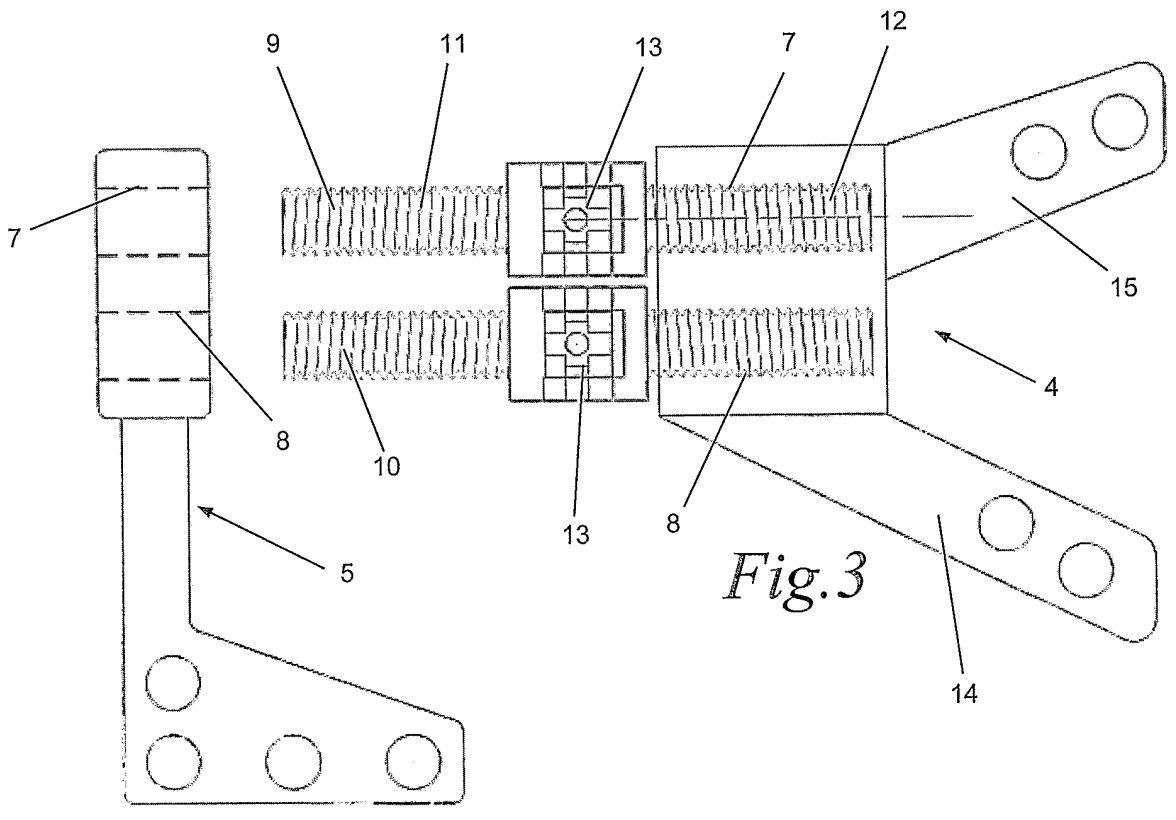
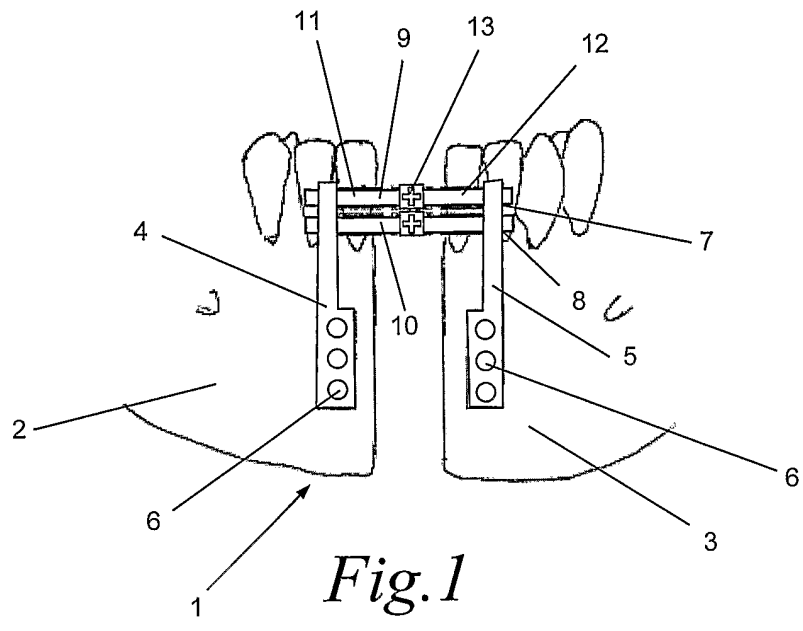
20 Figures 4 to 6 represent a third embodiment of the distracting device according to the invention. This distracting device comprises only one expansion element.

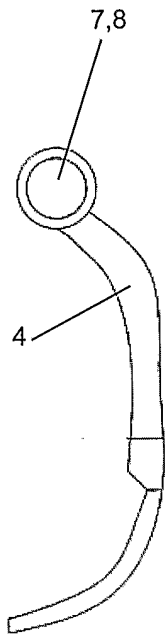
Although in the aforesaid first and second embodiment are provided two expansion elements which are both relatively rigid and have a cardan hinge, it is possible, of course, to use only one expansion element with a cardan hinge, whereas the other expansion element is elastically bendable in the centre part.

The invention also concerns the expansion elements as such as described above. These expansion elements are used to extend or widen a person's jaw by moving two parts of this jaw gradually away from each other.

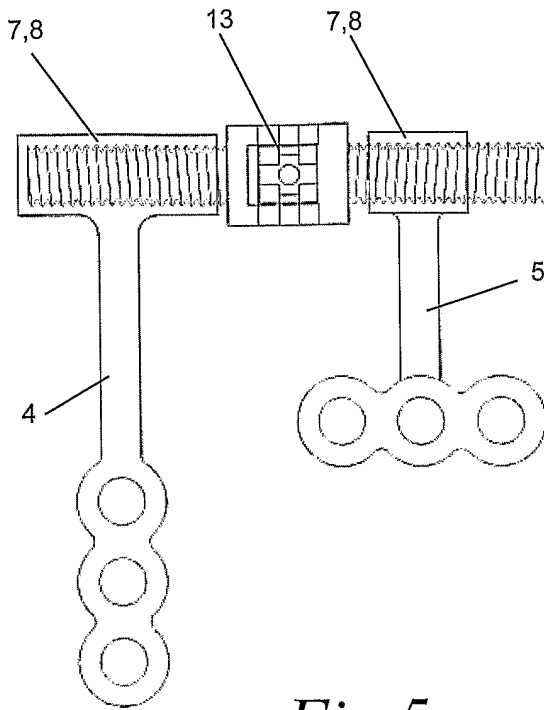
## CLAIMS

1. Distracting device for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another, whereby  
5 this device comprises two fixing elements which must each be fixed to one of said bone parts, whereby these fixing elements have means for fixing at least an expansion element which must extend between said fixing elements so as to connect the latter to each other, characterised in that said expansion element is made relatively rigid and has two parts which are hinge-mounted to each other.
- 10 2. Distracting device according to claim 1, characterised in that said parts of the expansion element are connected to each other via a cardan hinge.
3. Distracting device according to claim 1, characterised in that said parts of the expansion element are connected to each other via a ball joint.
4. Distracting device according to any one of claims 1 to 3,  
15 characterised in that said expansion element is threaded in the opposite sense on its far ends, whereby these far ends can be fit in corresponding recesses in said fixing elements such that, by subjecting said expansion element to a rotation, the fixing elements are moved in relation to each other.
5. Distracting device according to any one of claims 1 to 4,  
20 characterised in that it comprises two expansion elements.
6. Expansion element for a distracting device for widening or extending a person's jaw by gradually moving two opposite bone parts of the jaw in relation to one another, characterised in that this expansion element has two rigid bar-shaped parts which are connected to each other on one of their far ends via a hinge  
25 point.
7. Expansion element according to claim 6, characterised in that said hinge point is formed of a cardan hinge.
8. Expansion element according to claim 6 or 7, characterised in that its far ends are threaded in the opposite sense.

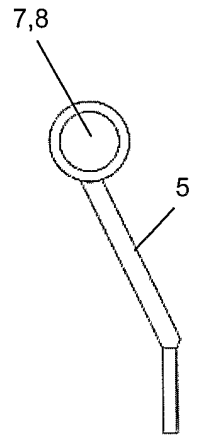




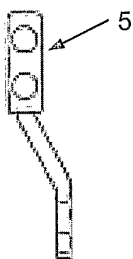
*Fig. 4*



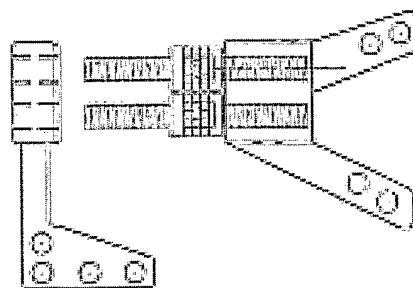
*Fig. 5*



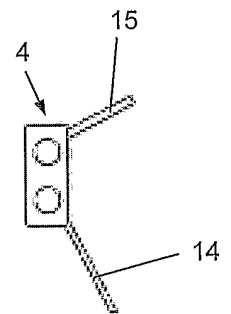
*Fig. 6*



*Fig. 7*



*Fig. 8*



*Fig. 9*