

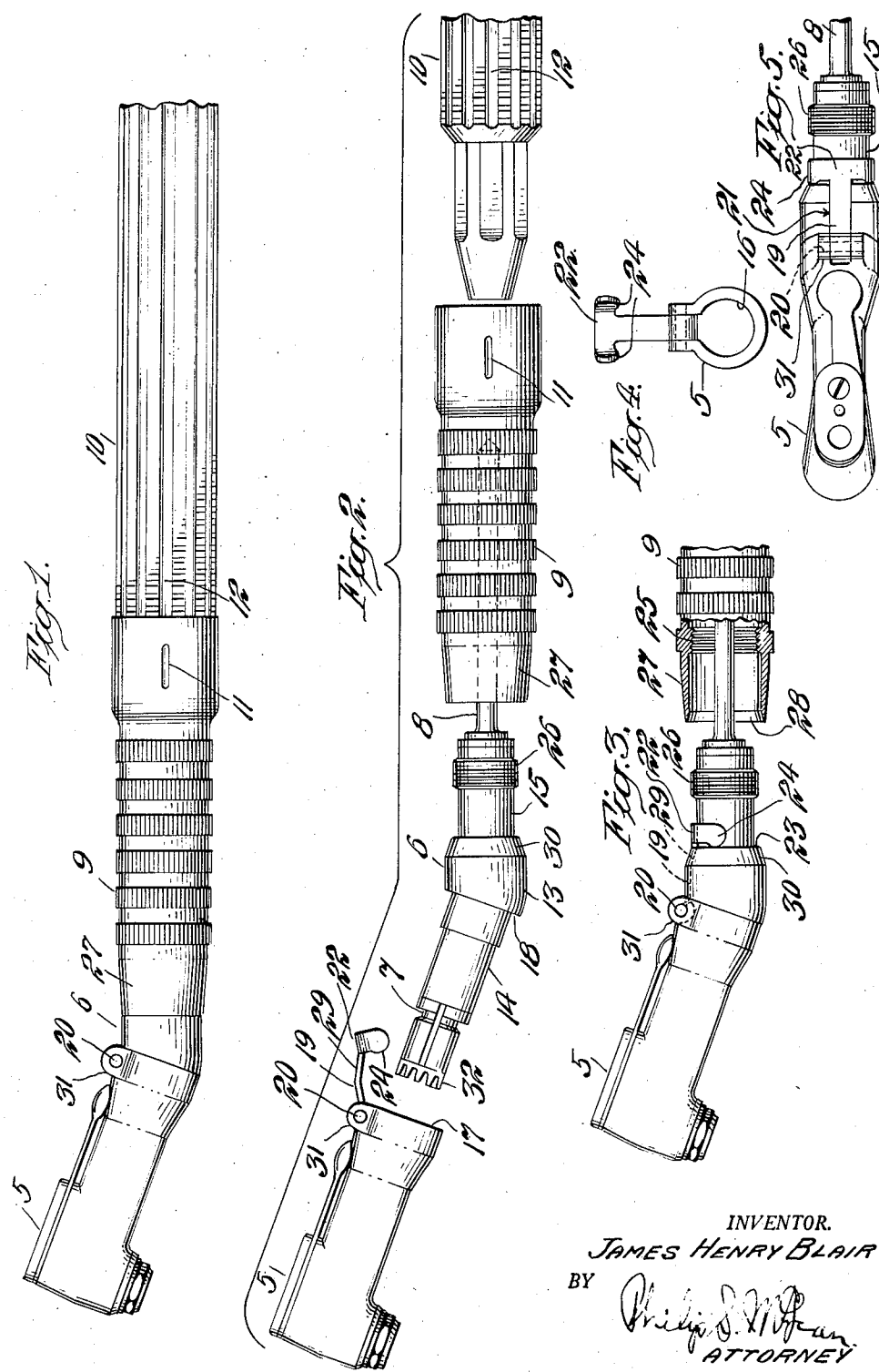
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J. H. BLAIR

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CONTRA ANGLE ATTACHMENT FOR DENTAL HANDPIECES

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INVENTOR.
JAMES HENRY BLAIR
BY *Philip S. M. [Signature]*
ATTORNEY

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CONTRA-ANGLE ATTACHMENT FOR DENTAL
HANDPIECESJames Henry Blair, Staten Island, N. Y., assignor
to Nat Chayes, Rye, N. Y.

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The invention herein disclosed relates to contra angles for dental handpieces.

Particularly, the present invention relates to contra angles of the so-called "come-apart" type, in which the head portion carrying the chuck is readily separable from the angle portion carrying the angularly related sections of drive shafting. The means for detachably securing these parts together has added objectionably to the bulk of the tool and right at the elbow portion of the tool where any projection may obstruct free use of the tool in a patient's mouth or even injure the mouth of the patient. Also it has happened that such tools have come apart accidentally by unintentional release of the push button or other form of securing means.

Special objects of this invention are to provide a contra angle in which objectionable features such as mentioned will be wholly avoided and eliminated and particularly to provide a device of this character, in which the parts will be firmly held together by non-projecting elements which will not add to the external size or bulk of the tool and in which the parts though readily separable intentionally, will not be releasable accidentally.

Other desirable objects and the novel features by which all objects of the invention are attained will appear or are particularly set forth in the following specification.

The drawing accompanying and forming part of the specification illustrates a present commercial embodiment of the invention. Structure however, may be modified and changed all within the true intent and broad scope of the invention as hereinafter defined and claimed.

Fig. 1 of the drawing is a side elevation of the contra angle in the form of an attachment applied over the end of a straight handpiece, only the end portion of the latter appearing in this view.

Fig. 2 is a combination view illustrating the three main parts of the contra angle separated from each other and from the end of the handpiece.

Fig. 3 is a broken part sectional side elevation showing the sleeve portion of the attachment unscrewed from the intermediate angle piece.

Fig. 4 is an end view of the head piece showing the latch or securing pawl in raised relation.

Fig. 5 is a broken plan view of the device.

As here shown, the invention comprises three main parts, a head piece 5, carrying the chuck for holding the dental tool, an angle piece 6,

carrying the sections 7, 8, of angle connected shafting and a base sleeve 9. The latter, as indicated in Figs. 1 and 2, is engageable over the end of the sheath 10, of a straight dental handpiece, in which position the shaft section 8 is gripped in the chuck of the straight handpiece.

The sleeve 9, usually has one or more longitudinal indentations 11, to enter longitudinal grooves 12, in the sheath, thus to key the attachment in non-rotatable engagement over the end of the handpiece.

The angle piece 6, is shown as comprising an intermediate collar portion 13, chambered to contain the angularly related gears connecting the adjoining ends of shaft sections 7 and 8, and having the bearing bosses 14, 15, projecting in angled relation from opposite ends of the same, for shaft sections 7 and 8.

The head piece 5, has a central bore 16, to snugly receive the bearing boss 14, and an end shoulder 17, to abut the inclined shoulder 18, at the base of the hub portion 14.

The parts described are interlocked and secured together in the properly angled relation illustrated by a small pawl or latch lever 19, pivoted at 20, on the upper side of the end portion of the headpiece and snugly engageable in a groove 21, in the top of the intermediate collar portion 13, said lever having a transversely extended arched portion 22, at the free end of the same engageable over the end shoulder 23, of the angle piece.

The arched portion 22, is shown as terminating in rounded lugs 24, proportioned to take a sliding wedging engagement over the shoulder 23.

It will be noted in Figs. 2 and 3, that the location of the pivotal center 20, at the upper side of the headpiece and the extension of the lugs 24, downwardly to engage the shoulder 23, at or near the longitudinal center of the angle piece, enables the lever, in swinging downward into final position, to draw the headpiece into snugly seated engagement over the angle piece. This coupling lever may be of spring metal and the arched portion and bearing lugs 24, be so proportioned that a tensioning of these parts will be occasioned when the members are drawn together in fully seated engagement. Thus the headpiece and angle portion may be held coupled together under a certain degree of spring tension, to avoid any possibility of looseness which might cause vibration.

To lock the centering and holding lever in securing position, the sleeve is shown as internally threaded at 25, to screw over a threaded portion

26, of the bearing hub 15, and as having an extended tubular portion 27, to reach over and enclose the arched end portion of the lever. The end of this housing extension of the sleeve is shown as internally bevelled at 28, to engage over the correspondingly angled portion 29, of the lever and the bevelled shoulder 30, at the base of the bearing boss 15.

Constructed as described, the parts are securely locked together in proper angled relation and there is no possibility of accidental release because the securing lever and particularly the end holding portions of the same are seated in and substantially wholly enclosed within the connected parts. This construction avoids any projections, except possibly for the small lugs 31, carrying the pivot 20, and which are located out of the way at the upper side of the instrument. The lower, elbow portion of the instrument is left free and clear of any obstructions or projections, enabling it being used without danger or injury in positions of limited space within the mouth. The sleeve, as particularly shown in Fig. 1, may be tapered down into substantially flush relation with the intermediate collar portion 13, of the angle piece and this whole structure is externally smooth and small in size and conveniently and comfortably held in the grasp of the fingers of the operator.

The sleeve, by engagement over the end of the securing lever, locks the parts firmly together, but the parts can be quickly and easily separated at any time, as for cleaning or sterilizing, by simply unscrewing the sleeve and lifting the securing lever, as in Fig. 2.

The gears connecting the angled shaft sections 7 and 8 and the chuck in the headpiece are not shown, since these may be of any present approved form, but the pinion for driving the chuck, which comes away with the shaft section 7, when the parts are separated, appears at 32, in Fig. 2. As particularly shown in Figs. 3 and 4, the transversely extended end portion of the lever forms in effect an arched spring hook which straddles over the top of the bearing boss 15, and by engagement with shoulder 23, and swinging downward on a convergent arc, pulls the parts all the more firmly together as the sleeve is screwed to its finally seated engagement over the bevelled shoulder 30. This engagement of the sleeve with the inclined shoulder provides a frictional interlock opposing accidental loosening of the sleeve and also provides a stop preventing the sleeve from being screwed so far as to possibly injure the spring holding lever.

It is contemplated that the invention may be made up in the form of an integral handpiece instead of as an attachment for application over the end of a straight handpiece and that there may be other such changes, all within the true scope of the invention.

What is claimed is:

1. A contra angle attachment comprising separably connected headpiece, angle piece and sleeve, said headpiece having a telescopic engagement with said angle piece, a lever pivotally mounted on said headpiece and having a hooked engagement with said angle piece for holding said two parts together and said sleeve being engageable with said angle piece over said hooked engagement of said lever for covering and confining said lever in the holding relation described.

2. A contra angle attachment comprising separably connected headpiece, angle piece and

sleeve, said headpiece having a telescopic engagement with said angle piece, a lever pivotally mounted on said headpiece and having a hooked engagement with said angle piece for holding said two parts together and said sleeve being engageable with said angle piece over said hooked engagement of said lever for confining said lever in the holding relation described and said angle piece having a groove receiving a portion of said lever for keying the headpiece and angle piece together in non-rotatable relation.

3. A contra angle attachment comprising separably connected headpiece, angle piece and sleeve, said headpiece having a telescopic engagement with said angle piece, a lever pivotally mounted on said headpiece and having a hooked engagement with said angle piece for holding said two parts together, said sleeve being in engagement with said angle piece over said hooked engagement of said lever for confining said lever in the holding relation described, said lever having an arched end portion partly surrounding a portion of the angle piece and said sleeve having a tubular confining portion surrounding and enclosing said arched end portion of the lever.

4. A contra angle attachment comprising separably connected headpiece, angle piece and sleeve, said headpiece having a telescopic engagement with said angle piece, a lever pivotally mounted on said headpiece and having a hooked engagement with said angle piece for holding said two parts together, said sleeve being engageable with said angle piece over said hooked engagement of said lever for confining said lever in the holding relation described, said lever being of spring material and said sleeve having a binding engagement over the same.

5. A contra angle attachment, comprising an angle piece having oppositely projecting relatively inclined bearing hubs, angled shaft sections journaled and retained in supported relation in said bearing hubs, a headpiece engageable over one of said bearing hubs, a lever projecting from said headpiece over the other bearing hub and a sleeve engaged over said other bearing hub and in binding engagement with the projecting end portion of said lever.

6. A contra angle attachment, comprising an angle piece having oppositely projecting relatively inclined bearing hubs, angled shaft sections journaled and retained in supported relation in said bearing hubs, a headpiece engageable over one of said bearing hubs, a lever projecting from said headpiece over the other bearing hub, a sleeve engaged over said other bearing hub and in binding engagement with the projecting end portion of said lever, the end portion of said lever beneath said sleeve being extended transversely and arched to partly embrace said other hub and the latter having a shoulder engageable by said transversely extended arched end portions of the lever.

7. A contra angle attachment, comprising an angle piece having oppositely projecting relatively inclined bearing hubs, angled shaft sections journaled and retained in supported relation in said bearing hubs, a headpiece engageable over one of said bearing hubs, a lever projecting from said headpiece over the other bearing hub, a sleeve engaged over said other bearing hub and in binding engagement with the projecting end portion of said lever, the intermediate portion of said angle piece having a groove to receive the projecting portion of said lever

for keying the headpiece and angle piece against relative rotation.

8. A contra angle attachment, comprising an angle piece having oppositely faced relatively inclined shoulders at opposite ends of the same, a headpiece engageable over one end of said angle piece and cooperative with one shoulder, a sleeve engageable over the opposite end of said angle piece and cooperative with the other shoulder, the intermediate portion of said angle piece between said shoulders having a groove extending across from one shoulder to the other, a lever pivoted on the headpiece and adapted to seat in said groove, said lever having a transversely extended end portion engageable behind the shoulder at the opposite end of the angle piece and said sleeve having an end portion engageable over said transversely extended portion of said lever.

9. A contra angle attachment, comprising an angle piece having oppositely faced relatively inclined shoulders at opposite ends of the same, a headpiece engageable over one end of said angle piece and cooperative with one shoulder, a sleeve engageable over the opposite end of said angle piece and cooperative with the other shoulder, the intermediate portion of said angle piece between said shoulders having a groove extending across from one shoulder to the other, a lever pivoted on the headpiece and adapted to seat in said groove, said lever having a transversely extended arched end portion with rounded tips engageable behind the shoulder at the opposite end of the angle piece, said sleeve having an end portion engageable over said transversely extended portion of said lever, said end portion of the lever engaging said shoulder on a convergent arc tending to draw the headpiece and angle piece together and said end portion of the sleeve

exerting pressure to confine the lever in said position drawing the parts together.

10. A contra angle attachment, comprising a sleeve open at one end for engagement over the end of a straight dental handpiece, an angle piece having relatively inclined bearing bosses at opposite ends of the same and relatively angled shaft sections journaled therein, said sleeve being engageable at its opposite end over one of said bearing bosses, a headpiece engageable over the other bearing boss and a connector extending from said headpiece over said angle piece into position beneath the last mentioned end of said sleeve.

11. A contra angle attachment, comprising a sleeve open at one end for engagement over the end of a straight dental handpiece, an angle piece having relatively inclined bearing bosses at opposite ends of the same and relatively angled shaft sections journaled therein, said sleeve being engageable at its opposite end over one of said bearing bosses, a headpiece engageable over the other bearing boss, a connector extending from said headpiece over said angle piece into position beneath the last mentioned end of said sleeve, said angle piece having a groove extending across from one bearing boss to the other end receiving a portion of said connector for keying the two parts together in definitely positioned non-rotatable relation.

12. A contra angle attachment, comprising an angle piece, a sleeve engageable over one end of the same, a headpiece engageable over the opposite end of the same and a connector detachably securing said angle piece and headpiece together in nonrotatable relation, said connector having a portion extending within and secured by said sleeve.

JAMES HENRY BLAIR.