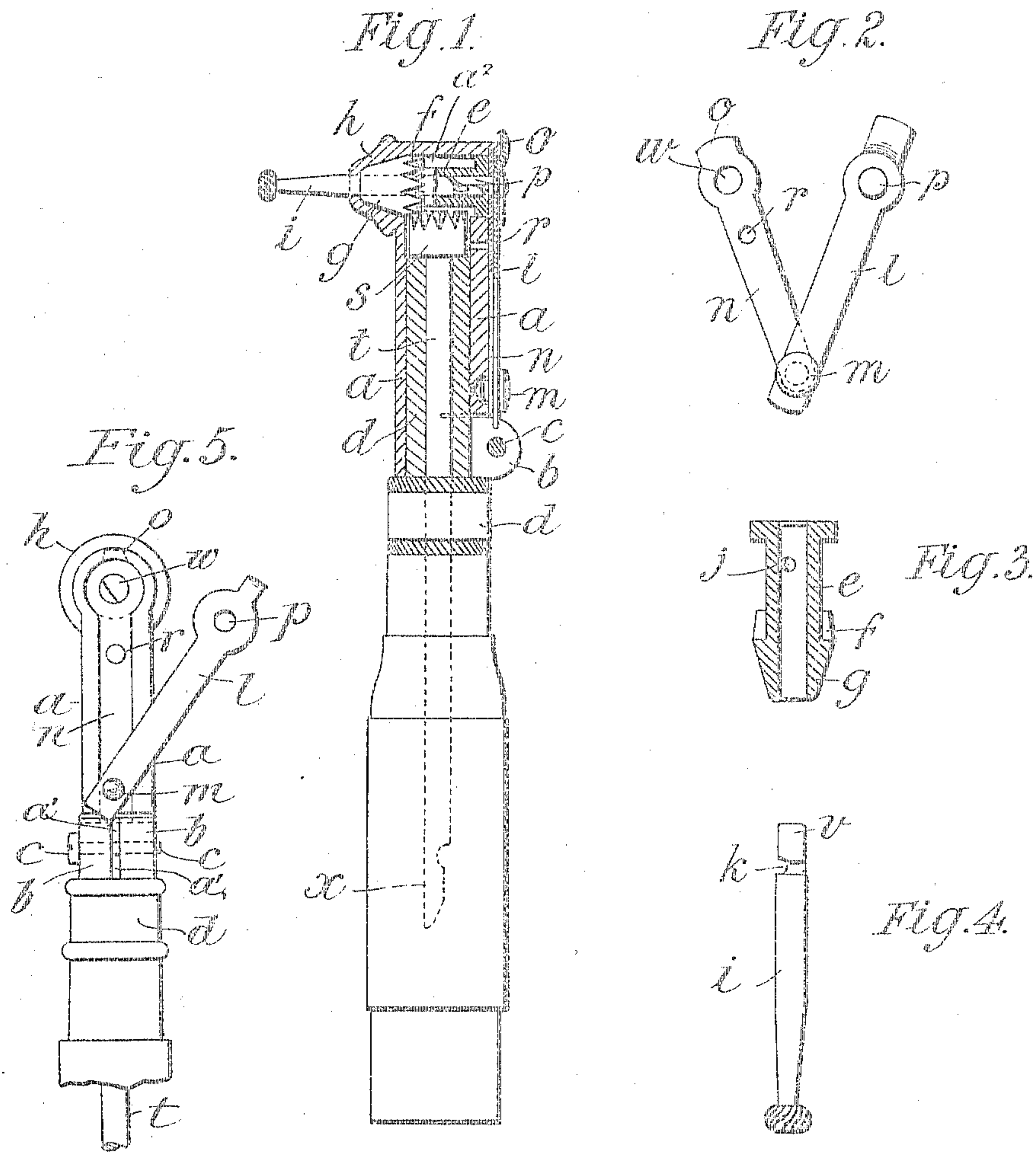


G. R. GOSSLING.
DENTAL DRILL HANDPIECE.
APPLICATION FILED APR. 5, 1904.



WITNESSES.

Chas. H. Smith
Leopold Beer.

INVENTOR.

George R. Gosling
per Harold Terrell atty

UNITED STATES PATENT OFFICE.

GEORGE ROBINSON GOSSLING, OF WALTON-ON-THAMES, ENGLAND, AS-
SIGNOR TO CLAUDIUS ASH & SONS LIMITED, OF LONDON, ENGLAND, A
COMPANY INCORPORATED IN GREAT BRITAIN.

DENTAL-DRILL HANDPIECE.

SPECIFICATION forming part of Letters Patent No. 794,006, dated July 4, 1905.

Application filed April 5, 1904. Serial No. 201,673.

To all whom it may concern:

Be it known that I, GEORGE ROBINSON GOSSLING, a subject of the King of Great Britain, residing at Walton-on-Thames, Surrey, Eng-
land, have invented a certain new and useful
Improved Handpiece for Dental Engines, of
which the following is a specification.

The invention relates to the construction of
the handpiece portion of a dental drill of the
class known as "right-angle" attachments in
which the drill or other removable tool oper-
ates at right angles to the handle of the holder;
and the object of the invention is to provide
a simplified device wherein the tool and other
parts may be readily removed, cleansed and
sterilized, and replaced in a few moments.

The device comprises an attachment adapt-
ed to be secured on the main handpiece, hav-
ing a removable socket for the tool, an outer
spring locking-plate for the tool and its socket
and carrying a means adapted to lock the tool
in the socket against displacement when in
use, and an inner plate which is both a bear-
ing and a locking plate, the arrangement en-
abling the tool to be quickly inserted or
changed and the other internal parts to be re-
moved when required.

In the accompanying drawings, Figure 1 is
a part-sectional elevation of the device. Fig.
2 is a view of the detachable outer locking-
plate and the inner locking-plate to which it
is pivotally attached. Figs. 3 and 4 are re-
spectively a section through the cog and tool
socket and an elevation of the tool drawn to
a larger scale to show the means whereby the
tool is held in place in the socket; and Fig. 5
is an elevation of the device looked at from
the back, showing the split back with the in-
ner plate in position and the outer locking-
plate turned about its pivot to permit the re-
lease of the inclosed parts.

In Fig. 1, *a* is a casing having a split back
a', Fig. 5, terminating in two lugs *b*, provided
with a screw *c*, the whole forming a clamp
whereby the casing is drawn together on or
released from the body *d* of the handpiece.
The forward part of the casing consists of a
hollow head or chamber *a''*, Fig. 1, disposed
at a right angle to the body of the casing *a* and

to handle *d* to form a seat for the tool socket
or holder *e*. This chamber *a''* is provided at
one end with an internal conical bearing-sur-
face *h*, terminating in an opening for the tool,
and at its other end is fully open, so that the
tool-socket *e* can be readily inserted and with-
drawn. Said socket *e* has a cog-gear *f* and
a truncated conical bearing-surface *g*, which
seats on the correspondingly internally-coned
part *h* of the chamber *a''*. The tool *i* is re-
movably fitted in the socket *e* and is held
against longitudinal displacement by means
of a projection *j*, located within the socket,
which engages a slot or opening *k* in the stem
of the tool, Fig. 4. Said tool-stem is also
provided with a flat surface at its extremity *v*
for locking it by engagement with a pin *p*,
having a corresponding flat surface and car-
ried loosely, so as to be capable of turning in
a detachable locking-plate *l*, pivotally con-
nected at *m* to an inner plate *n*, provided at
its outer end with a projection *o*, which is
adapted to enter a recess in the outer end of
the casing *a* to partially lock or secure said
inner plate *n* in the casing, said pin *p* passing
through a hole *w* in the plate *n* to engage the
flat side of the tool-stem, whereby the tool *i*
is securely locked to be rotated with the socket
e. The cog-gear *f* on the socket *e* engages a
similar cog-gear *s*, mounted upon a spindle *t*,
adapted to revolve within the body of the
handpiece.

The outer locking-plate *l* is extended at its
rear or pivoted end, which extension can en-
gage in slots cut in the lugs *b*, which are
thereby additionally utilized to secure the
plates *l*, said extended rear end of the plate *l*
being turned out of said slot on its pivot *m*
to release the plate *l* from the casing *a*, the
pin *p*, carried by said plate for locking the
tool in its socket, having been previously re-
leased by springing back the plate *l*. It will
be seen that both the inner and outer plates
n and *l* are locking-plates, inasmuch as both
are necessary to secure and provide an end
thrust for the socket (and also secure the tool)
against displacement when in use, the inner
plate *n* being locked in the upper part or
head of the casing *a* by reason of the projec-

tion *o* entering the recess therein and the outer plate being locked by reason of its extended rear end engaging in the slots formed in the lugs *b*, and thus also indirectly completing the securing of the inner plate *n*, to which it is pivoted. Such a double-locking arrangement while amply securing the parts against displacement when the handpiece is in use also provides a simple and expeditious means of releasing said parts for sterilizing and the like purposes, so that they may be treated and reassembled quickly without the aid of any tool.

When in use, the desired tool *i* is readily fitted and secured within its socket *e* after the latter has been placed in position within the chamber *a*² and the outer tool-locking plate *l* and inner plate *n* also secured in place by inserting the locking end of the tool-stem through the opening in the coned part of the chamber *a*², so that only the tool *i* projects outwardly therefrom, and twisting it round until the slot *k* in said stem engages the projection *j* on the inside of the socket *e*, and the flat extremity *v* of the tool-stem engages the corresponding flat face on the loose pin *p* of the locking-plate, when the tool *i* will be locked against displacement to revolve with its socket *e* and cannot be removed therefrom until the locking-plate *l* is pulled back to withdraw the pin *p* from engagement with the aforesaid flat end *v* of the stem and the stem itself twisted round to disengage the slot *k* therein from the projection *j*. The remaining parts are readily separated when it is desired to clean and sterilize same by again springing the locking-plate *l* back until the pin *p* thereon is clear of the socket and inner plate *n*, when the said plate *l* may be turned about its pivot *m* until the rear end is clear of the slots in the lugs *b*, when both inner and outer plates can be removed from the back of the casing by withdrawing the projecting end *o* of plate *n* from the recess in the head of the casing. The casing *a* can be disconnected from the body *d* of the handpiece by loosening the screw or clamp *c* and removed, together with the socket *e* and driving cog-gear *f* thereon, after which the cog-gear *s* and revoluble spindle *t* can also be removed. The latter is connected and driven by a flexible shaft through the usual flat face and joint *x* or otherwise.

It will thus be seen that all the parts of the tool can be separated for cleaning and reassembled without the aid of any instrument than a screw-driver for loosening the screw *c*, there being thus no crevices which cannot be cleaned, as happens in this class of tool where the tool-holding plate is usually pivoted or attached to the casing either permanently or in such a way, as by screwing it thereto, that it is either not necessary to entirely remove it to

get at the tool holder or socket, as is required in the present case, or it necessitates the use of a tool to so remove it.

What I claim is—

1. In dental handpieces, the combination with the casing having a hollow head closed at one end and open at the other and disposed at a right angle to the body of the casing and handpiece, of a tool-carrying socket adapted to be seated and rotate in said head, a tool carried thereby, means for rotating the socket, a locking-plate for holding the socket in said casing, an outer locking-plate pivotally connected to the first plate, means for securing the latter plate in the head of the casing and thereby forming an end thrust for the socket, and means carried by the outer locking-plate to complete the locking of the inner locking-plate and the socket, the two plates being detachable from the casing on the unlocking of said outer plate.

2. In dental handpieces, and in combination a casing having a hollow head closed at one end and open at the other and disposed at a right angle to the body of the casing and handpiece, and a split back, means for drawing the separated portions of such back together, slotted lugs formed on said casing, a socket adapted to be seated and rotate in said head, a tool carried by said socket, means for rotating the socket, an inner locking-plate, means for securing it in the head of the casing, an outer locking-plate, and an extension carried by same adapted to engage in the slot in the lugs on said casing whereby the outer plate when in line with the inner, locks both to the casing, while when its end is turned out of the slot both plates are detachable from the casing.

3. In dental handpieces, and in combination, a casing having a hollow head closed at one end and open at the other, and disposed at a right angle to the body of the casing and handpiece, a slotted portion carried by said casing, a tool-carrying socket adapted to be seated and rotate in said head, a tool carried by said socket, means for rotating the socket, an outer locking-plate, an inner locking-plate pivotally attached thereto, means for securing said inner plate in the head of the casing, and means carried by the outer locking-plate co-acting with the slotted back of the casing to complete the locking of the inner and outer plates in said casing, the two plates being detachable from the casing on the unlocking of said outer plate.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE ROBINSON GOSSLING.

Witnesses:

EDWARD POWER,
EDWARD A. HIGGS.