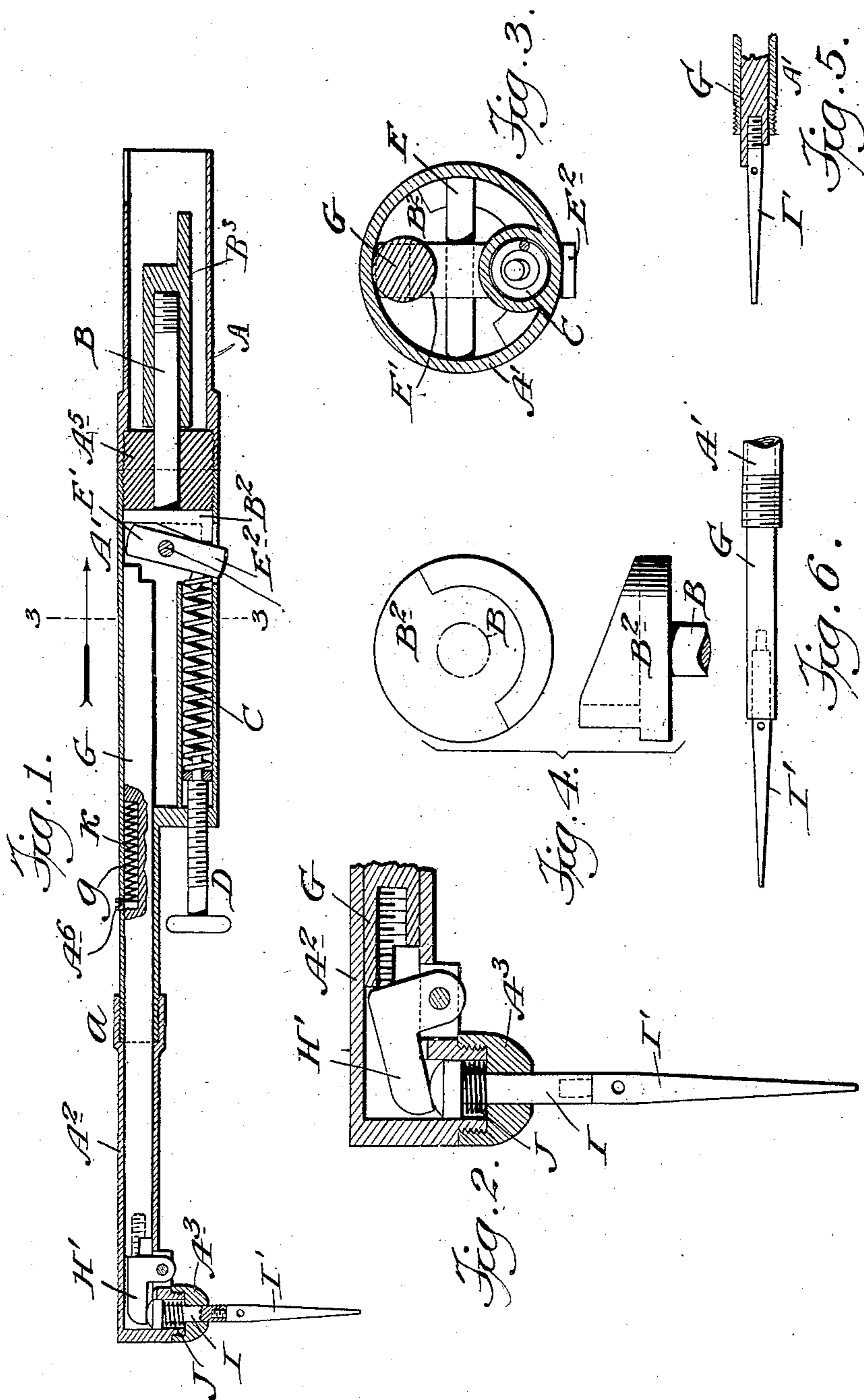


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Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM WEICHELBAUM, OF SAVANNAH, GEORGIA.

DENTAL PLUGGER.

No. 915,137.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed September 25, 1906. Serial No. 336,181.

To all whom it may concern:

Be it known that I, WILLIAM WEICHELBAUM, a citizen of the United States, residing at Savannah, in the county of Chat-
ham and State of Georgia, have invented a
certain new and useful Improvement Re-
lating to Dental Pluggers; and I do hereby
declare that the following is a full and exact
description thereof.

My improved plugger is capable of being
used either with the ordinary long-known
thrusting motion or with a lateral motion.
I have in my experiments effected the lateral
motion at an exactly right angle to the central
line of the instrument, and will describe the
instrument as thus constructed, but it will
be understood that the angle may be made
greater or less.

The improved instrument with its pro-
vision for striking laterally, makes possible
and easy, work not before attainable. By
a change, easily made, the main portion of
the same instrument presents an approved
form of the ordinary direct thrusting instru-
ment.

It is important in dental work, in com-
pacting the filling within a cavity, to act
with considerable force at the point of the
plugger without much jarring the tooth.
This condition has long been attained by
using a light plugger with a quick striking
motion. I do the same. My improved in-
strument attains this end not only with the
direct thrusting blows, but also with the
lateral blows. The train of connection is
unusually simple and frictionless, the return
motion is attained by separate springs for
the several parts. Provision is arranged
for changing from angular to direct plugging.
The tool in either condition is slender and
convenient, gives a wide range of variations
in the force of the blows and attains any re-
quired change in the force by turning one
conveniently arranged thumb-screw.

The following is a description of what I
consider the best means of carrying out the
invention.

The accompanying drawing forms a part
of this specification.

Figure 1 shows the instrument prepared
for lateral action. It is a central longitudi-
nal section with the plugger at rest but with
the cam nearly in position for liberating it
and striking the gentle blow. Fig. 2 is a cor-
responding section of a portion on a larger
scale, showing the condition which obtains

when the blow has been struck. Fig. 3 is a
cross-section on the line 3—3 in Fig. 1 viewed
from the left. It is on a still larger scale.
Fig. 4 shows the cam, giving two correspond-
ing views on the same scale as Fig. 3. The
upper part is a face view seen from the left,
the lower part is an elevation. Fig. 5 is a
longitudinal section of the working end of the
instrument on the same small scale as Fig. 1,
adjusted for thrusting in a direct line.
Fig. 6 is a side view showing another modi-
fication.

Similar letters of reference indicate like
parts in all the figures where they appear.

A is the tang, a tubular piece, which it will
be understood is screw-threaded, as partly
shown, to engage at one end with the arbor
of a standard dental engine, not shown, and
at the opposite end to engage with a hand-
piece, A¹, constituting an extension of the
casing.

A⁵ is a centrally bored block, screw-
threaded within both the tang A and the
hand piece A¹ and constitutes a coupling
firmly uniting them and also a bearing for a
rotary shaft B, which latter carries a face-
cam B² and also provides an end pressure
bearing for such cam, and being connected
by the coupling piece B³, with a connection
from the ordinary dental engine not shown,
operates with the obvious rotary motion.
The working face of the cam B² is inclined so
as to lift gradually and has an abrupt shoul-
der so that it will release suddenly.

C is a spiral spring housed in a cylindrical
chamber forming a part of the hand-piece
A¹ and extending parallel to, but consider-
ably out of, the center line of the casing.

D is a screw serving as an abutment for
the spring and which can be turned to adjust
its force with delicacy, making it very slight
if such be required, but its force must be
sufficient to overcome two gentle opposing
springs to be presently described.

Referring to Figs. 1, 2, 3 and 4, E¹, E² is a
lever which can be rocked on a shaft or pivot
E, one end E² subject to the action of the
spring C and cam B², and the other end E¹,
extending across the path of a longitudinally
movable bar G.

The slender portion A² of the casing ad-
justed to extend into and operate in small
spaces, is rigidly connected to the larger
portion parallel thereto. This slender por-
tion is slotted and provided with a pivot to
receive, and allow the rocking of, a bell-

crank lever. Another part A^3 , is held stiffly at right angles to A^2 , and supports and guides a plugger-point-carrier I and plugger-point I^1 . It also carries a gentle spiral
 5 spring J, which latter is coiled under the enlarged head of the carrier I, and is adapted to exert only so much force as is required to bring the point-carrier I and the point I^1 in again after each blow. It urges the bell-
 10 crank lever H^1 into its inward, or relaxed position, that shown in Fig. 1.

K is a gentle spiral spring housed in a longitudinal groove g , near the midlength of the bar G. One end of this spring abuts
 15 against one end of the groove g , the other end abuts against a screw-pin A^6 set in a tapped hole in the part A^1 , as shown in Fig. 1.

As thus adjusted the instrument is ready to plug by a rapid succession of lateral blows graduated with all the delicacy of the most
 20 complete direct thrusting blows. It will be seen that each revolution of the cam B^2 , rocks the lever $E^1 E^2$ in the direction to compress the strong spring C and allow the
 25 feeble springs J and K to extend and cause the point-carrier I with its plugger-point I^1 to draw inward and the bar G to move toward the cam. Now all the parts are conditioned as shown in Fig. 1. The further
 30 turning of the cam B^2 presents its square shoulder and liberates the lever $E^1 E^2$ which urged by the spring C and rocking suddenly, acts by its end E^1 against the bar G, and the
 35 latter moving end-wise strikes the lever H^1 and rocks this lever into the position shown in Fig. 2 and gives a blow by the point I^1 . It is easy to make this of just the force required by simply adjusting the screw D, leaving the
 40 weaker springs J and K to act only sufficient to insure that the point-carrier I^1 will be drawn inward and the bar G moved backward properly after each blow.

Modifications may be made without departing from the principle or sacrificing the
 45 advantages of the invention. The transversely-moving point-carrier I, may be shorter than shown and it may be of advantage in some work to have it so. There may be a shorter point I^1 . The screw-coupling a may
 50 be nearer to the lever H^1 by lengthening the part A^1 and shortening the part A^2 . Such may be preferred by some as better guiding the point in direct plugging.

My instrument is changed to the condition
 55 for ordinary work, making direct blows in a straight line, by unscrewing the L-shaped casing piece $A^2 A^3$, separating it from the part A^1 at the coupling-joint a , and substituting an ordinary plugger-point which I
 60 will describe as the same piece I^1 , but which may be any other according to the nature of the direct plugging to be done. Such is shown in Figs. 5 and 6.

Parts of the invention can be used without
 65 the whole. I can dispense with the light

spring K and with the screw-pin A^6 to serve as abutment therefor by using a correspondingly stiffer spring J under the head of the point-carrier in each position. I prefer the whole as shown.

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I claim as my invention:—

1. In a dental plugger a casing adapted to be held and guided by the operator, having a slender portion adapted to reach into contracted spaces provided with a right angularly disposed head, a tool holder located in
 75 such head, a device pivotally seated therein and adapted to contact with the tool holder, a longitudinally reciprocating bar in said slender portion adapted to contact with said
 80 device, reaching also into a larger portion of the casing, a helical spring in said larger portion extending substantially parallel to said bar, a lever arranged to engage said parts and a rotary shaft carrying a face-cam and
 85 means for operatively connecting it to a source of power.

2. In a dental plugger a casing adapted to be held and guided by the operator, having a slender portion adapted to reach into contracted spaces provided with a right angularly disposed head, a tool holder located in
 90 such head, a device pivotally seated therein and adapted to contact with the tool holder, a longitudinally reciprocating bar in said slender portion adapted to contact with said
 95 device reaching also into a larger portion of the casing, a helical spring in said larger portion extending substantially parallel to said bar, a screw also parallel to said bar for adjusting the force of said spring, a lever arranged to engage said parts and a rotary shaft carrying a face-cam and means for operatively connecting it to a source of
 100 power.

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3. In a dental plugger a casing adapted to be held and guided by the operator, having a slender portion adapted to reach into contracted spaces, provided with a right angularly disposed head, a tool holder located in
 110 such head, a device pivotally seated therein and adapted to contact with the tool holder, a longitudinally reciprocating bar in said slender portion reaching also into a larger portion of the casing, a helical spring in such
 115 larger portion extending substantially parallel to said bar, a screw also parallel to said bar for adjusting the force of said spring, a lever arranged to engage said parts and a rotary shaft carrying a face-cam and means
 120 for operatively connecting it to a source of power and springs of lesser force for returning the tool and reciprocating-bar after each stroke, all substantially as herein specified.

4. In a dental plugger a casing adapted
 125 to be held and guided by the operator, having a slender portion adapted to reach into contracted spaces provided with a right angularly disposed head, a tool holder located in such head, a device pivotally seated there-
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in and adapted to contact with the tool holder, a longitudinally reciprocating-bar in said slender portion reaching also into a larger portion of the casing, a helical spring
5 in said portion extending substantially parallel to said bar, a lever arranged to engage said parts and a rotary shaft carrying a face-cam and means for operatively connecting it to a source of power and an inclosed block
10 performing the functions of rigidly coupling certain sections of the casing supporting the

rotary shaft and forming an end bearing for the face-cam, all substantially as herein specified.

Signed at Savannah in the county of 15
Chatham and State of Georgia this 15th day
of September A. D. 1906.

WILLIAM WEICHSELBAUM.

Witnesses:

J. C. BUTNER,
GORDON PEEK.