

No. 637,338.

Patented Nov. 21, 1899.

T. L. JAMES.
DENTAL HANDPIECE.

(Application filed Aug. 6, 1898.)

2 Sheets—Sheet 1.

(No Model.)

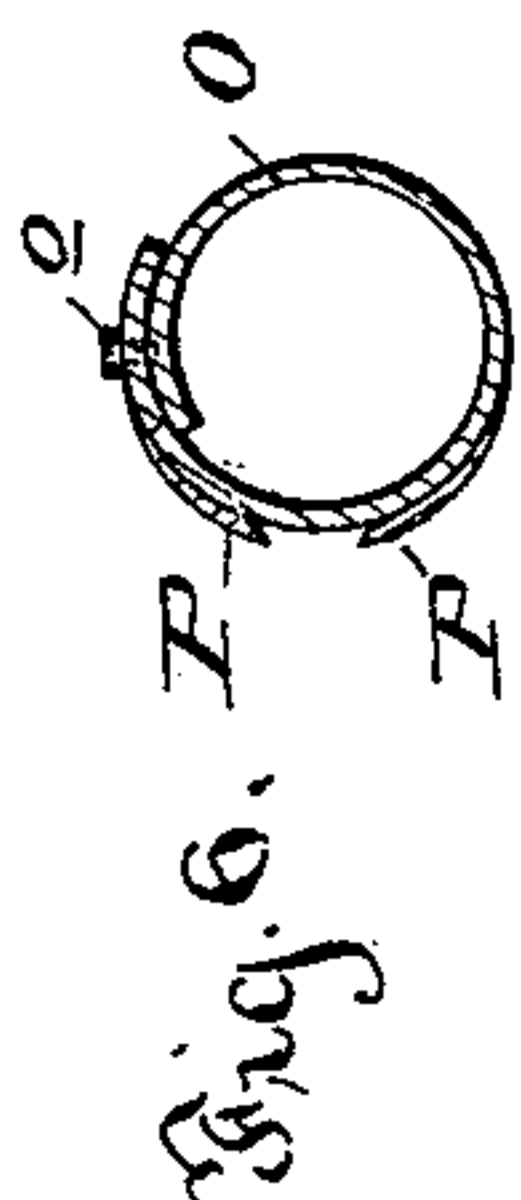
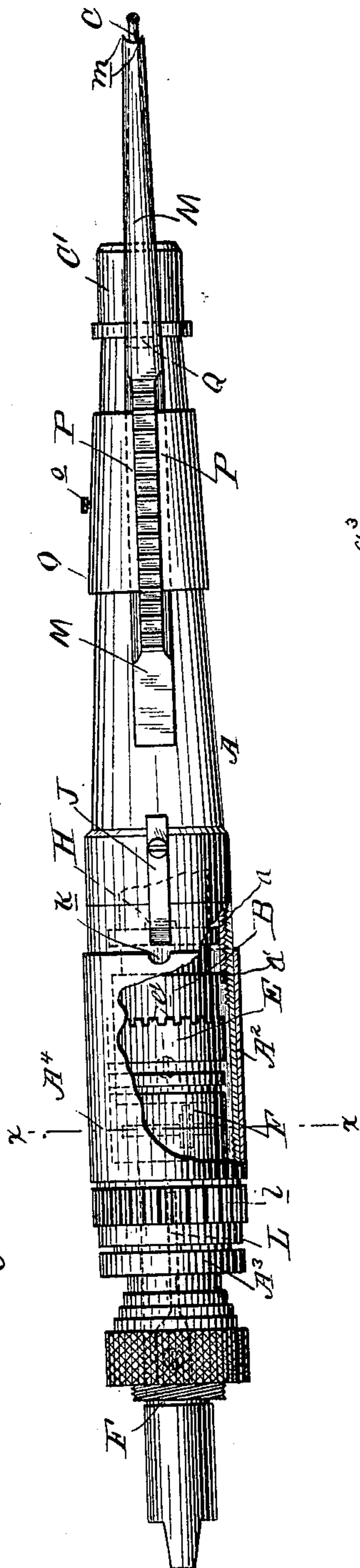


Fig. 1.



Witnesses,
Geo. W. Milam.
H. C. Ammer.

Inventor;
Thomas L. James,
M. Orian
By *Att'y.*

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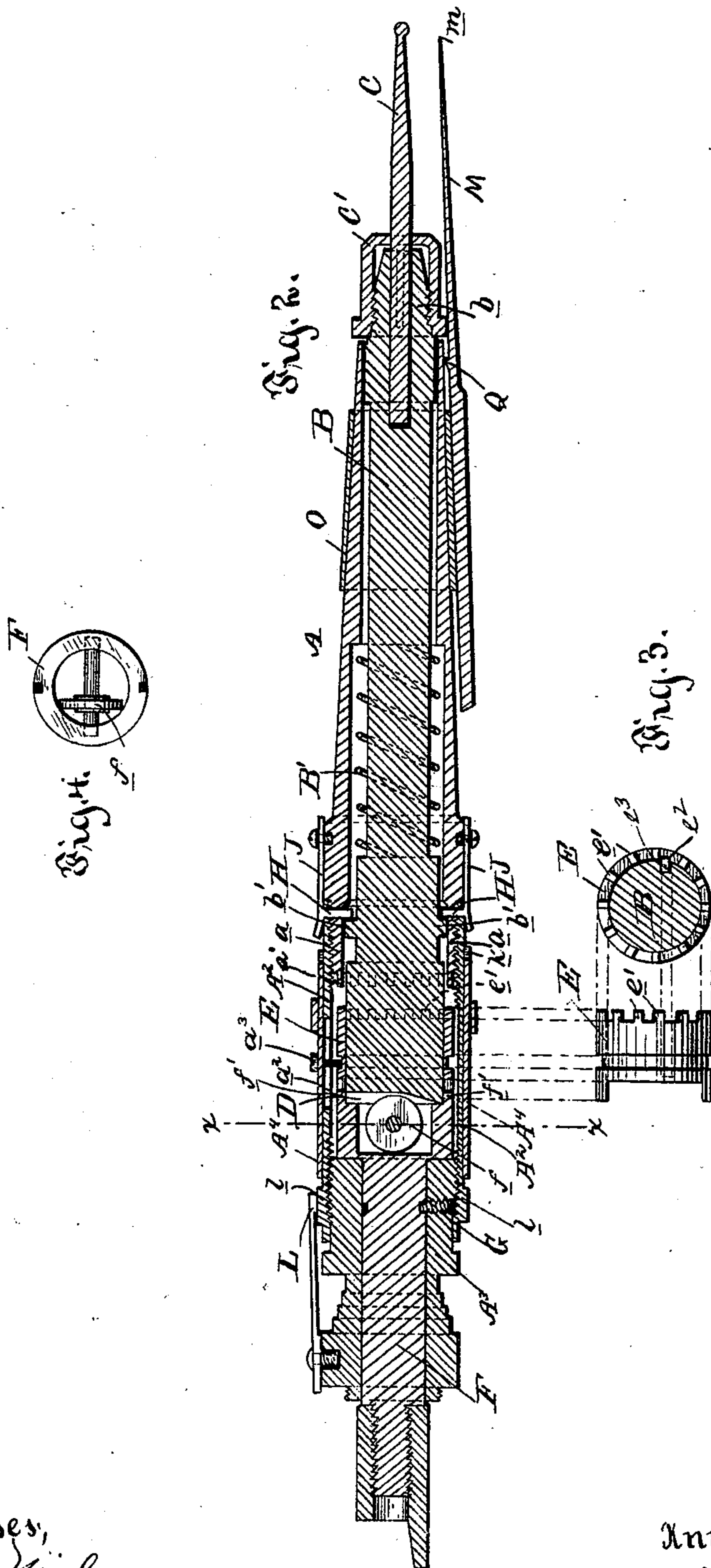
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Witnesses,
J. N. Milans,
A. P. Lumsden.

Inventor,
Thomas L. James,
By M. W. Orian
Att'y.

UNITED STATES PATENT OFFICE.

THOMAS LOUIS JAMES, OF FAIRFIELD, IOWA.

DENTAL HANDPIECE.

SPECIFICATION forming part of Letters Patent No. 637,338, dated November 21, 1899.

Application filed August 6, 1898. Serial No. 687,940. (No model.)

To all whom it may concern:

Be it known that I, THOMAS LOUIS JAMES, a citizen of the United States, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Dental Handpieces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in dental handpieces, and it is embodied in the construction and arrangement of parts hereinafter described, and defined in the claims.

Generally speaking, the invention relates to that class of dental handpieces designed more particularly for use in connection with dental engines, and specifically to that class wherein the tool may be employed for plugging or packing purposes and also for burring purposes.

The objects of the invention are to provide a handpiece which may be used as a burring-tool and also as a reciprocating plugging-tool and which includes a structure whereby the change from a reciprocating to a rotary motion may be effected promptly with but little trouble and which will necessitate the fewest possible number of movable parts for effecting the adjustment.

A further object of the invention is the equipment of a handpiece of the character above indicated with a device for picking up or handling the material designed to be placed in the tooth when the latter is being filled.

In the accompanying drawings I have shown a handpiece embodying the invention, but desire it understood that the form illustrated is susceptible of modification and change without departing from the nature and principle of the invention.

In the drawings, Figure 1 is an elevation of the handpiece, showing parts broken away. Fig. 2 is a longitudinal vertical section. Fig. 3 is a detail view, in side and end elevation, of the coupling-sleeve. Fig. 4 is an end view of the actuating member carrying the anti-friction-wheel. Fig. 5 is a cross-section on the line $x x$ of Fig. 1, and Fig. 6 is a detail sectional view of the clamping-ring for the finger.

A represents the tubular stock of the instrument, having the usual shouldered interior, and B represents the reciprocating plunger, having a shoulder at or near its rear end and carrying the retracting-spring B' , abutting, respectively, against the shoulder of the plunger and that of the stock in a well-known manner.

C represents the plugger or burring implement, suitably clamped in the end of the plunger by a cap-nut C' , extending over and having a threaded engagement with a split and reduced extension b on the end of the plunger B. This plunger B is formed with the cam-shaped rear face D, and this portion of the plunger is somewhat enlarged and has slidably mounted thereon the coupling-sleeve E, the same being held from rotation by any convenient means, such as a spline e^3 , working in the groove e^2 , the latter being formed in the sleeve, as shown in Fig. 3, whereby the sleeve may be moved longitudinally, but is prevented from independent rotary movement.

The rear portion of the stock A is reduced and threaded, as at a . On this reduced portion is secured a rearwardly-extending barrel A^2 , to the rear end of which is secured by a threaded engagement the butt or end piece A^3 . In the barrel portion A^2 is formed an elongated slot a^2 , extending longitudinally, through which passes an actuating screw or plug a^3 , carried by a slide A^4 , sleeved on the barrel portion. The lower end of this screw or plug enters an annular channel formed in the coupling-sleeve. By this means the coupling-sleeve may be moved backward and forward on the enlarged end of the plunger.

The coupling-sleeve has formed on its opposite ends a series of teeth or projections e and e' , those on the forward end being arranged to engage with a corresponding series of teeth or projections on the rear end of the stock A.

F designates the driving-spindle, loosely extending through the butt-piece A^3 and having its forward end enlarged and carrying an eccentrically-arranged wheel or pulley f , which engages the cam-face of the rear end of the plunger. This spindle is held from longitudinal movement conveniently by a screw G, secured in the butt and projecting into an annular channel in the spindle. The forward

end of the enlarged or headed portion of the spindle is formed with the forwardly-projecting teeth f' , which are designed for engagement with the teeth e on the rear end of the coupling-sleeve.

By the above-described construction it will be seen that when the coupling-sleeve is moved forward to a point where its teeth e' engage the teeth a' on the stock the plunger will be held from rotation, and as the spindle is turned by the usual flexible shaft the wheel on the end of the spindle will engage the cam on the end of the plunger and will thereby cause the same to move forward, the spring on the plunger restoring it, the reciprocating movement of the plunger thus being attained. When it is desired to rotate the plunger, the coupling-sleeve is moved backward until the teeth e on the rear end thereof engage the teeth on the head of the spindle and the teeth e' are disengaged from the teeth a' on the stock. While in this position the plunger is held from reciprocating by spring-actuated pins H , secured to the stock and projecting through openings therein and extending inward in front of the shoulder b' , formed on the plunger, as clearly shown in Fig. 2. The constant rotary movement of the spindle is thereby transmitted to the plunger, which can then be readily used in connection with a burring instrument.

To effect the simultaneous withdrawal of the pins from in front of the shoulder on the plunger when the instrument is to be used for plugging purposes, I conveniently support the pins on flat springs J , secured to the outer face of the stock in advance of the pins, and on the forward edge of the sliding sleeve A^4 I form suitable lifting points or wedges k , which are adapted to take under the springs, and thereby force the same outward, thus carrying the pins out of contact with the shoulder and at the same time locking the plunger against rotation by throwing the teeth of the coupling-sleeve into engagement with the teeth on the stock.

It may often be necessary to vary the extent of the reciprocation of the plunger. To accomplish this, it is only necessary to turn the butt-piece in or out of the barrel, the same being permitted by the threaded engagement therewith. To hold the butt-piece in its adjusted positions, I conveniently form a series of longitudinal ribs l on the outer face of the rear portion of the barrel and secure to the butt-piece a spring-pressed dog L , the forward end of which engages with the ribs on the barrel.

On the forward end of the stock is removably clamped a picking-up finger M , having picking-up teeth or points m , curved to approach the end of the plugging-tool. This finger may be conveniently made of spring metal, so that the same may be forced laterally when desired. In securing the finger on the stock I conveniently employ a ring-clamp O , having overlapping ends, the outermost

of which is formed with an elongated slot therein, through which the stem of the set-screw o passes, the lower end of the screw being secured to the under portion of the ring. On this clamping-ring is secured or formed two parallel cleats P , having inclined adjacent faces, thereby forming between them a dovetailed groove, in which is slidably held the finger M . To enable the finger to be moved forwardly or backwardly by the finger or thumb of the operator, I conveniently mill the upper edge thereof, as shown.

In using the finger in connection with a plugging instrument it is essential and important that the plugging instrument should be thrown out of action. This may be effected by the instrumentalities above referred to and also by stopping the engine. It is, however, often inconvenient to resort to such methods, and I have provided means for avoiding this necessity. To this end I form a projection Q on the inner face of the finger, which is designed and so arranged that when the finger is moved forward the projection will engage a rib or shoulder on the instrument-securing cap of the plunger. By moving the finger outward until the projection engages the cap a further movement of the finger will force the plunger outward against the tension of the spring and out of contact with the spindle, thus holding it against reciprocation.

It is to be understood that the finger attachment of this instrument, while being an important adjunct thereto, is not necessarily limited to its use in connection with this particular instrument, as the same may be applied to other plugging implements.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a dental handpiece the combination with a stock and spring-actuated plunger therein, of a series of rearwardly-projecting teeth on the stock, a slidable sleeve on the rear of the plunger held from independent rotation thereon and formed with teeth on its opposite ends, those on its forward end arranged to engage the teeth on the stock, a driving-spindle carrying means for reciprocating the plunger and having a series of forwardly-projecting teeth with which the teeth on the rear of the sleeve engage, substantially as described.

2. In a dental handpiece, the combination with a stock, of a spring-actuated plunger having a cam-surface on its end, of a rotary spindle provided with an eccentrically-arranged wheel engaging the cam, means for adjusting the wheel toward and from the cam, and means for locking the same in adjusted position, substantially as described.

3. The combination with a stock, of a reciprocating plunger therein, means for reciprocating the plunger, a spring-actuated pin on the stock for preventing the reciprocation of the plunger, a coupling-sleeve on the plun-

ger, means for moving the sleeve into engagement with the actuating means for rotating the plunger, and a projection connected with the sleeve for removing the pin from engagement with the plunger upon the forward movement of the sleeve, substantially as described.

4. The combination with a stock, of a reciprocating plunger therein, a series of pins or stops engaging the plunger carried by the stock, a barrel secured to the stock and having an elongated opening therein, a sleeve on the barrel, means on the forward end of the sleeve for retracting the pin, a coupling-sleeve on the plunger, and a projection passing through the barrel carried by the sleeve and engaging the coupling-sleeve, substantially as described.

5. The combination with a dental plugger,

of an adjustable picking-up finger attached thereto, substantially as described.

6. The combination with a dental plugger, of an adjustable picking-up finger removably attached thereto, substantially as described.

7. In a dental handpiece the combination with a spring-actuated plunger formed with a projection at its outer end, of an adjustable picking-up finger on the plugger having a projection adapted to engage said other projection for moving the plunger outward, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS LOUIS JAMES.

Witnesses:

W. G. ROSS,

JNO. H. MERCKENS.