

(No Model.)

J. M. STROUT.  
DENTAL MATRIX.

No. 545,389.

Patented Aug. 27, 1895.

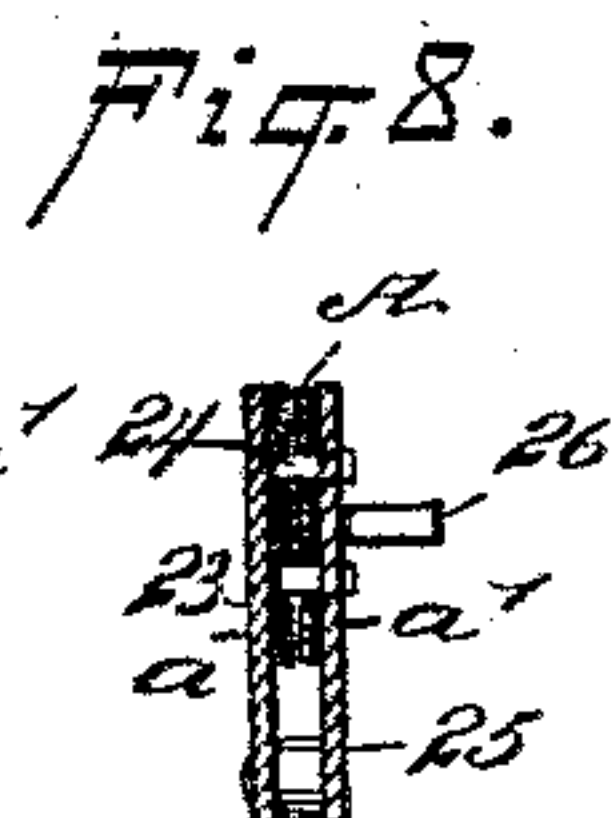
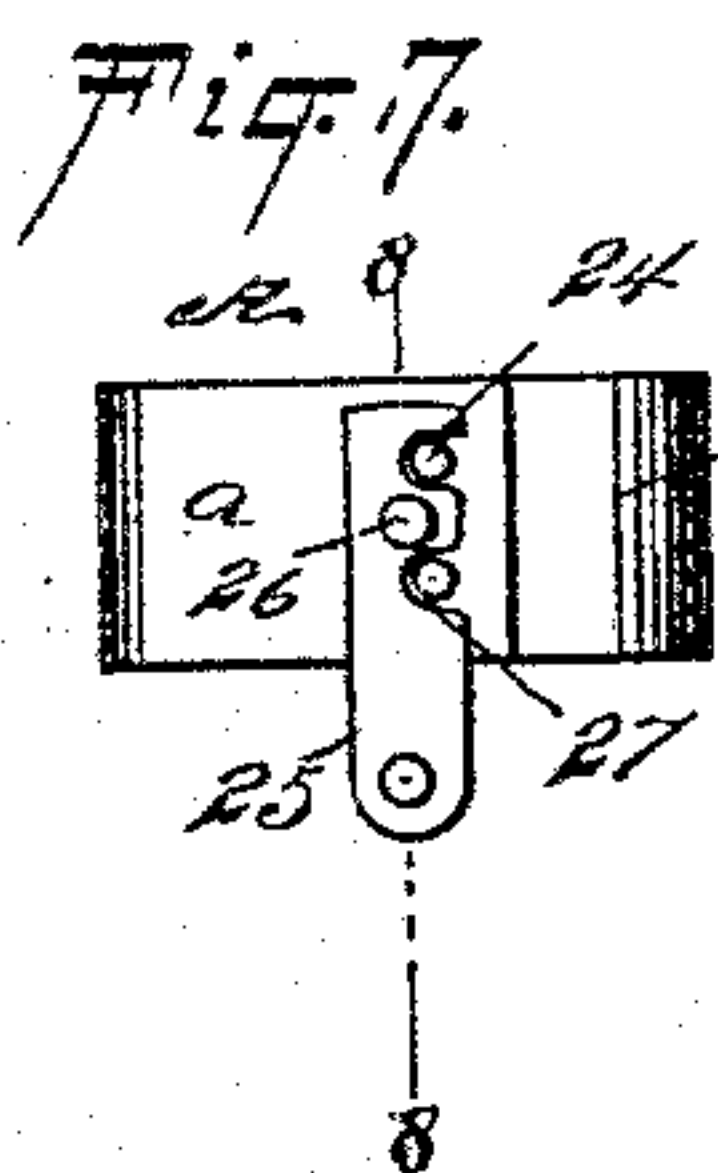
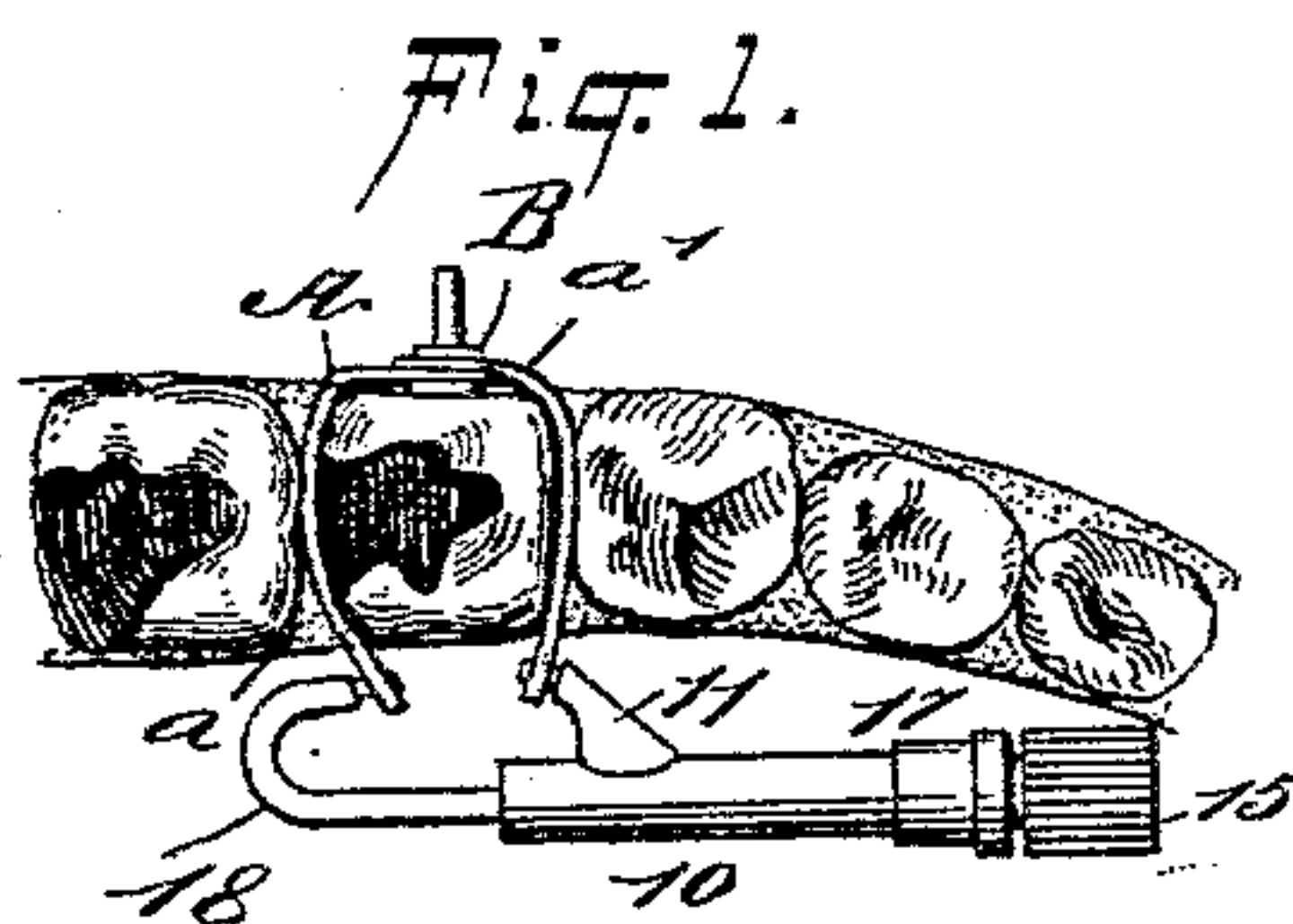
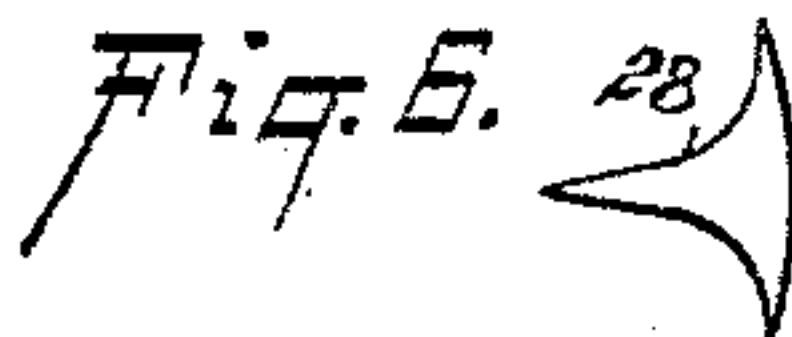
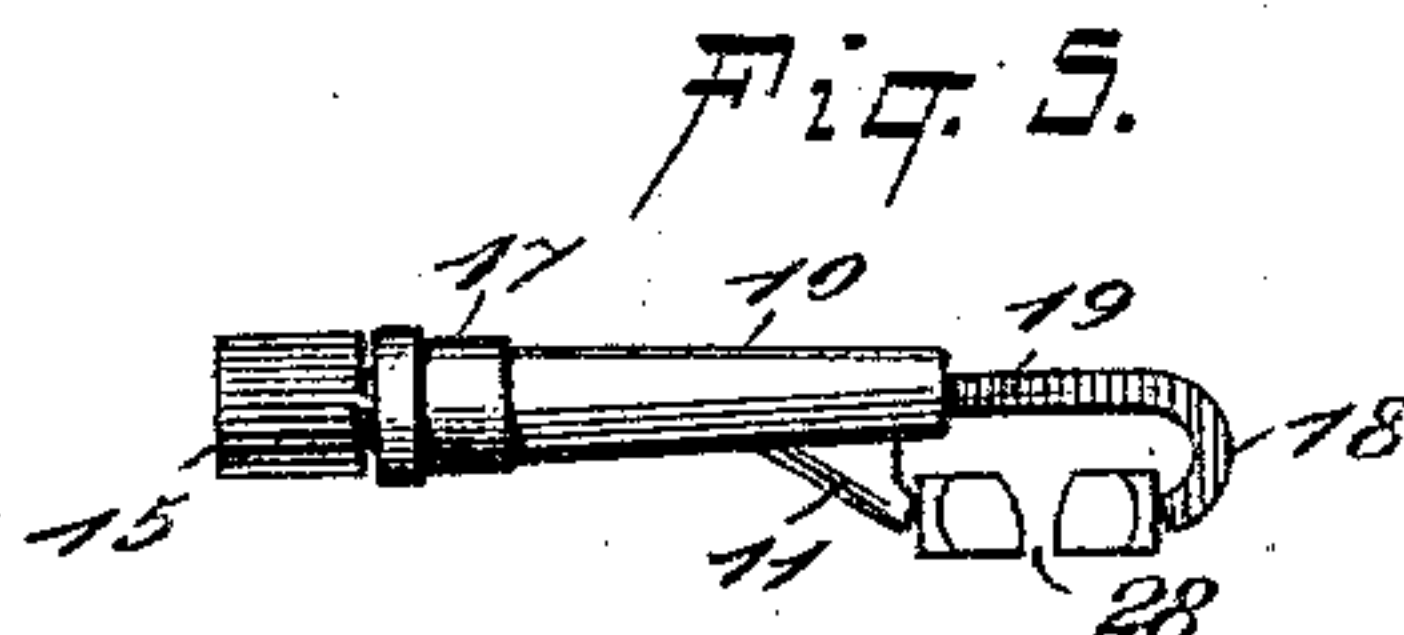
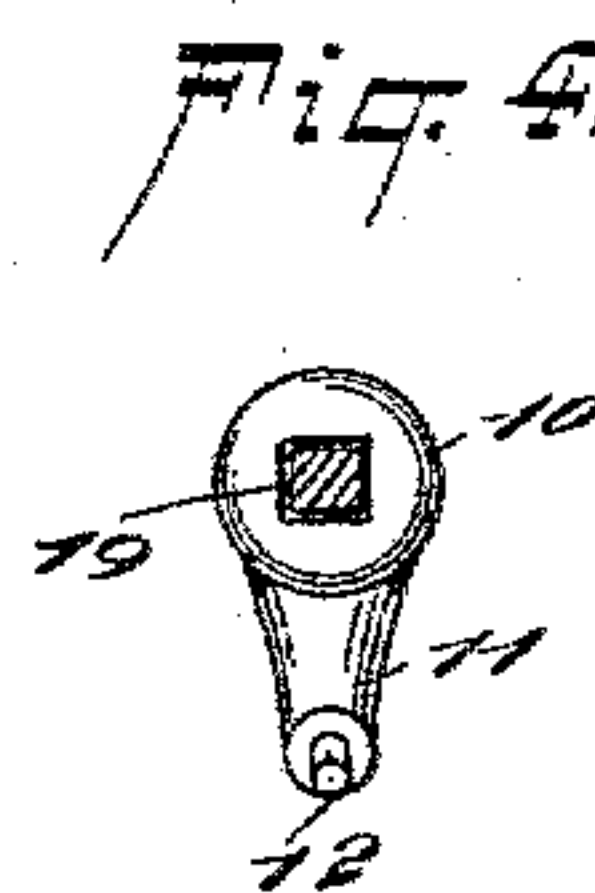
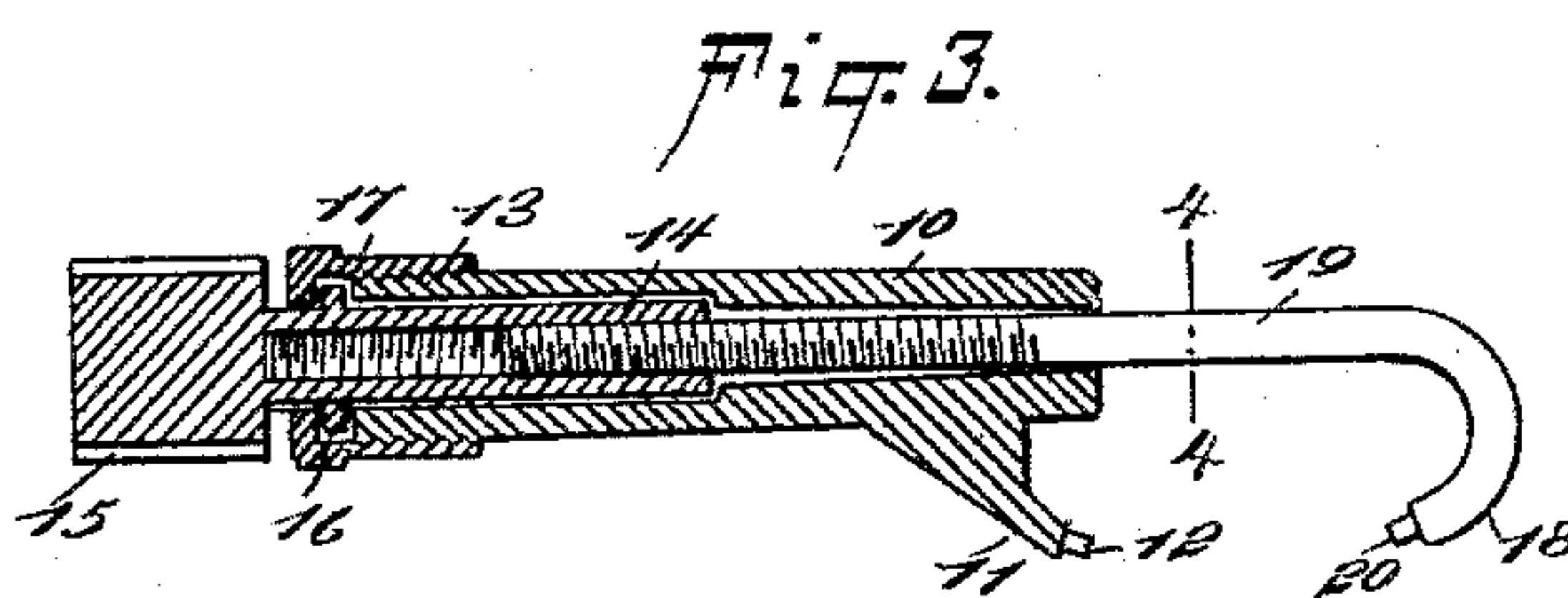
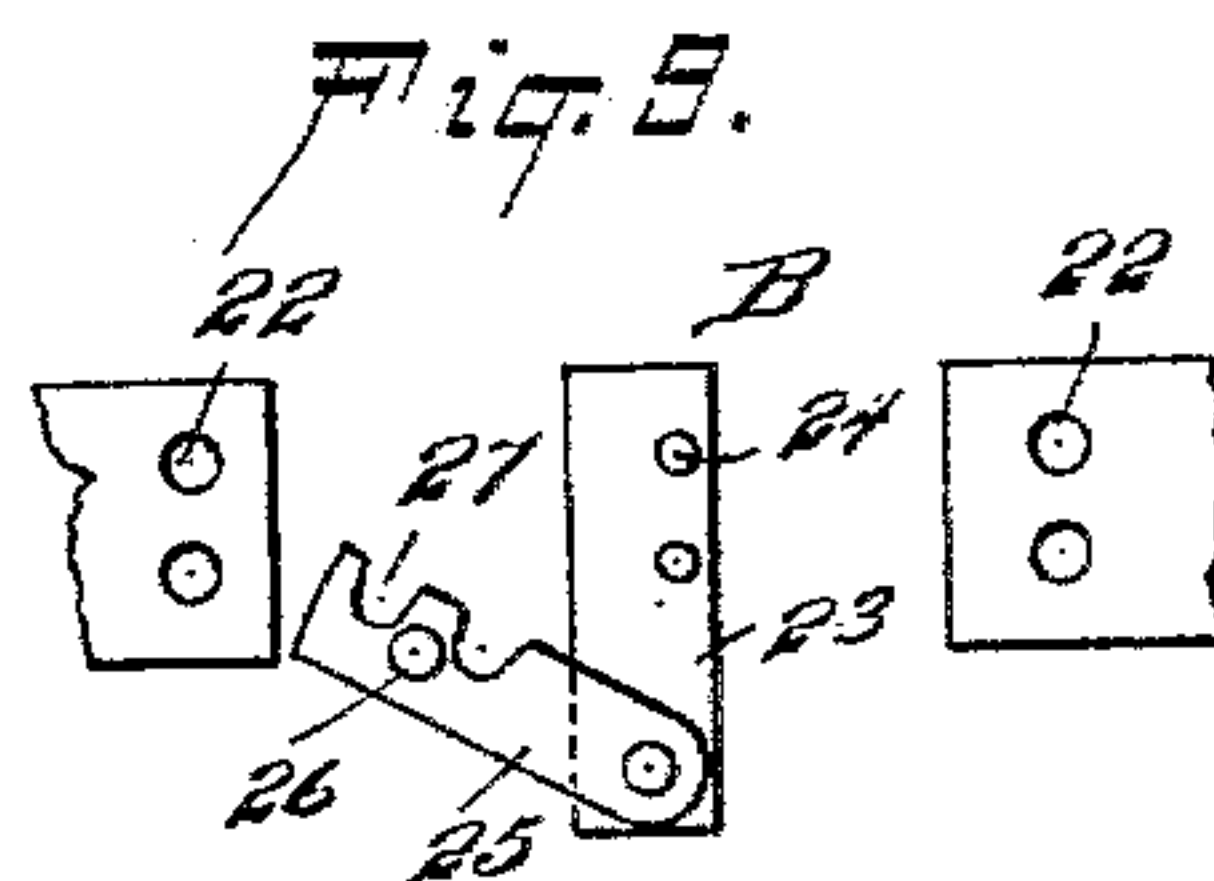
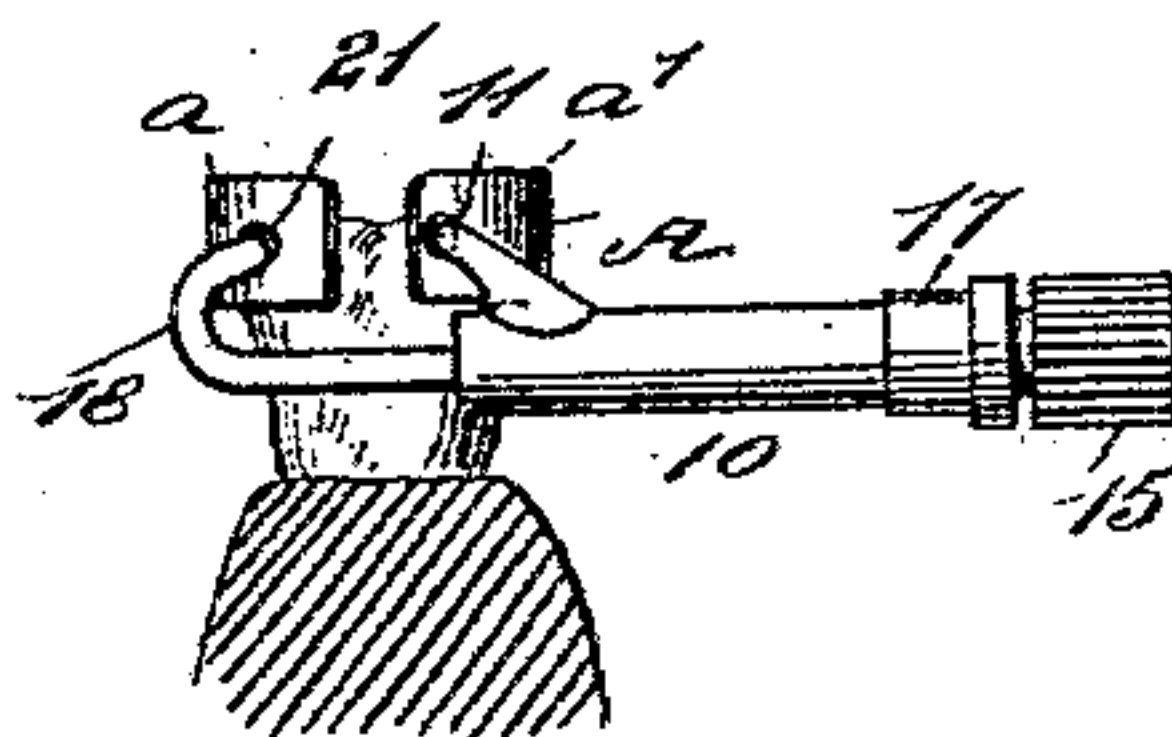


Fig. 2.



WITNESSES:

William Gabriel.  
J. Fred Atkes.

INVENTOR

J. M. Strout

BY

Munn & Co

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOSEPH M. STROUT, OF PORTLAND, MAINE.

## DENTAL MATRIX.

SPECIFICATION forming part of Letters Patent No. 545,389, dated August 27, 1895.

Application filed December 27, 1894. Serial No. 533,119. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH M. STROUT, of Portland, in the county of Cumberland and State of Maine, have invented a new and Improved Matrix and Matrix-Retainer, of which the following is a full, clear, and exact description.

My invention relates to a matrix and matrix-retainer; and it has for its object to provide a matrix-retainer that will be simple, easily adjusted, and reliable—one that can be adjusted expeditiously and used upon either the upper or the lower teeth or the bucal, lingual, or palatine surfaces and crosswise of the teeth, with the points between or on approximate surfaces.

A further object of the invention is to so construct the matrix-retainer that it can be set up by the fingers in like manner as a wrench, and whereby, furthermore, the retainer can be placed in position with the under side of the back portion of its barrel turned up or under at a right angle, in which position it will act as a napkin-holder and cheek-distender, or whereby it may be turned down close to the gum. The matrix-retainer may likewise be placed on the inside or lingual surface of the lower teeth with the matrix encircling the outside or bucal surface of the molars and bicuspids, and be at the same time out of the way of the operator, assisting also to hold the napkin down and the tongue out of the way.

Another object of the invention is to provide a matrix which will be simple, durable, and economic in its construction and made of sections united at one point in their length in a manner to be readily disengaged when they are to be withdrawn, obtaining the result of a band-matrix, yet possessing all the advantages of a two-piece matrix.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a portion of a set of teeth, illustrating the application of the re-

tainer to a matrix placed upon one of the teeth, the retainer being shown in plan view. Fig. 2 is a side elevation of the retainer and that portion of the matrix engaged thereby. Fig. 3 is a longitudinal section through the retainer. Fig. 4 is a transverse section taken on the line 4 4 of Fig. 3. Fig. 5 is a side elevation of the matrix-retainer, illustrating its application to a matrix made in two disconnected parts. Fig. 6 is a plan view of one of the sections of the matrix shown in Fig. 5. Fig. 7 is a rear elevation of the improved matrix. Fig. 8 is a section through the improved matrix, taken on the line 8 8 of Fig. 7; and Fig. 9 is a view of the improved matrix from the rear, illustrating the latch disengaged from the sections of the matrix.

In carrying out the invention the matrix-retainer is best shown in Fig 3, and consists of a barrel 10, having near one of its ends upon one side a fork 11, terminating in a spur 12. The interior of the barrel may be made in one diameter or in two diameters, as illustrated in Fig. 2 and the bore is plain.

At or near what may be termed the "outer" or "handle" end of the barrel an exterior thread 13 is produced. Within the enlarged portion of the bore of the barrel a sleeve 14 is entered and held to turn loosely, the interior of the sleeve being provided with a thread, and the said sleeve terminates at its outer end in a thumb-nut or head 15. The sleeve is further, preferably, provided near the thumb-nut with an annular exterior rib 16. The sleeve is held to turn in the barrel, yet it is prevented from leaving the same by means of a collar 17, which is screwed upon the threaded surface of the barrel and is provided with a flange at its outer end, whereby the rib on the sleeve will be received loosely between said flange and the heel or outer end of the barrel. The fork 11 may be termed a "jaw," and opposite this jaw a second jaw 18, of like character, is located, provided with a rod-like shank 19, which is exteriorly threaded and is introduced into the threaded portion of the sleeve 14. The jaw 18 is curved from the shank in direction of the fork or jaw 11 of the barrel, and is likewise preferably made to terminate in a spur 20.

The matrix A is preferably made of light spring metal and is in the form of a band.



It may be made in one piece, the ends being disconnected, as shown in Fig. 2; but preferably the matrix is made in two sections  $a$  and  $a'$ , the sections being connected at the back by overlapping the ends at that point and securing them together by a fastening device B.

Near each end of what may be termed the "front" of the matrix apertures or openings 21 are formed to receive the spurs of the jaws of the retainer. At the opposite or inner end of each section one or more, preferably two, openings 22 are produced, as shown in Fig. 9, and the fastening device B, which is to fasten together the inner ends of the matrix, is preferably made as shown also in Fig. 9, where it is shown as consisting of a plate 23, provided with pins 24, corresponding in number and relation to each other to the openings 22 in the matrix-sections. A button 25 is pivoted on the said plate 23, having a handle 26 and recesses 27 in one of its side edges to receive the pins 24 of the plate.

When the sections of the matrix are to be connected, the end of the section provided with the openings 22 is placed upon the plate 23, the pins 24 passing through the openings in both of the sections. The plate 23 will then be upon the inner face of the band thus formed, and by carrying the buttons 25 upward over the overlapping edges of the sections until the recesses 27 shall receive the projecting ends of the pins 24, as shown in Fig. 4, a firm and locking connection will be obtained between the sections of the retainer; and it is evident that the sections may be readily disconnected by simply removing the button from locking engagement and separating the plate from the sections. The matrix having been placed around a tooth, as shown in Fig. 1, the jaw 18, which may be termed the "stationary jaw" of the retainer, is brought to an engagement with one indented or apertured portion of the band matrix, and the nut or head 15 is then turned until the barrel has traveled sufficiently upon the shank of the fixed jaw to engage its spur 11 with the opposite side of the matrix-band, and by continuing to turn the head the band will be made to hug tightly to the tooth and will be held in firm position thereon.

When the matrix is to be removed, the fastening device is disconnected from the sections of the matrix, and the sections may be removed either by drawing either out separately from between the teeth or the two sec-

tions may be drawn out simultaneously, still in engagement with the retainer.

In Fig. 5 I have illustrated the application of a retainer to a matrix 28, which is made in two substantially triangular sections, one of which is shown in detail in Fig. 6; and it is evident that the retainer will act as effectively in this form of matrix as in the band form.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A matrix retainer, consisting of opposing jaws provided with spurs to engage the matrix, a nut and a screw device connecting the nut with one of the jaws, whereby one jaw may be moved to or from the other by the manipulation of a single nut, as specified.

2. A matrix retainer, consisting of a barrel having a jaw formed thereon, a second jaw opposed to the barrel jaw and provided with a shank entering the said barrel, each jaw having a spur to engage the matrix and a sleeve held to turn in the barrel and having threaded connection with the shank of the second jaw, whereby the barrel may be made to travel to and from the jaw with the shank, as and for the purpose specified.

3. A matrix, the same consisting of a band constructed in sections, the said sections being provided with openings at their ends, and a fastening device comprising a body having pins therein, adapted to enter the openings in the sections of the matrix, and a pivoted locking arm or button adapted to be carried over the overlapping ends of the band and to an engagement with the pins on the body of the said fastening device, as and for the purpose set forth.

4. A matrix, comprising two sections detachably connected at one end and a clamping device adapted to be connected to the opposite ends of said section whereby the same are secured together, substantially as set forth.

5. A matrix, comprising two sections detachably connected at one end and having their opposite ends perforated, in combination with a clamping device having spurs adapted to engage said perforations, substantially as set forth.

JOSEPH M. STROUT.

Witnesses:

GEORGE LIBBY,  
CARROLL W. MORRELL.