

(No Model.)

W. S. HOW.

RUBBER DAM CLAMP.

No. 477,546.

Patented June 21, 1892.

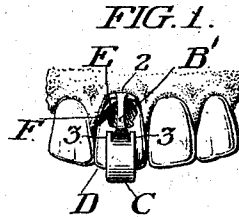


FIG. 4.

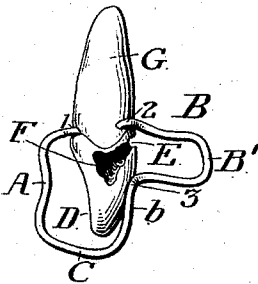


FIG. 3.

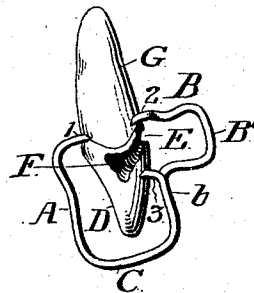


FIG. 5.

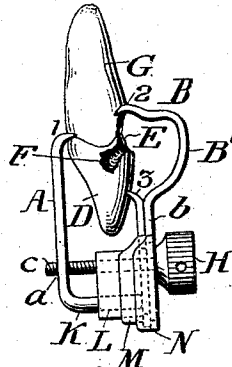


FIG. 8.

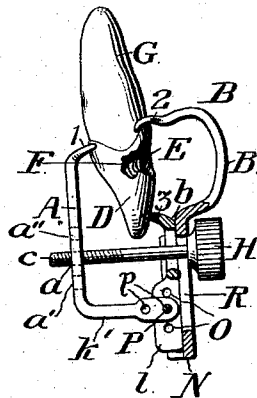


FIG. 7.

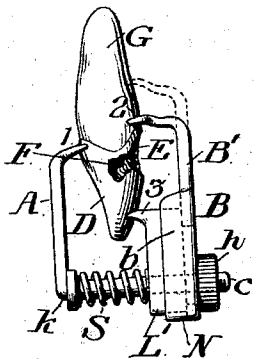


FIG. 6.

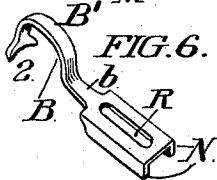
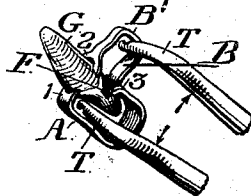


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WOODBURY STORER HOW, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME
PLACE.

RUBBER-DAM CLAMP.

SPECIFICATION forming part of Letters Patent No. 477,546, dated June 21, 1892.

Application filed April 9, 1892. Serial No. 428,432. (No model.)

To all whom it may concern:

Be it known that I, WOODBURY STORER HOW, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dental Rubber-Dam Clamps, of which the following is a specification.

My invention relates to certain improvements, as hereinafter claimed, in dentists' rubber-dam clamps, particularly that class thereof known as "cervix-clamps," and such as shown in United States Letters Patent No. 382,039, granted May 1, 1888, for my invention.

The objects of my present invention mainly are to provide cervix-clamps adapted to be readily applied and secured in desired positions and by means of which better and less obstructed access to cervical cavities in the human teeth may be had than by the use of the clamps heretofore generally employed.

In the accompanying drawings, which show a number of clamps embodying my improvements in some of the various suitable ways in which these improvements may be carried out, Figure 1 is a front elevation showing a simple form of clamp in position on a central tooth; Fig. 2, a view in perspective illustrating the manner of applying this clamp to a tooth; and Fig. 3, a side elevation, enlarged, showing said clamp in position on a tooth. Fig. 4 is a view similar to Fig. 3 with the clamp slightly modified. Fig. 5 is a side elevation illustrating a modification, the clamp being made in sections and longitudinal or vertical adjustment of parts provided for; and Fig. 6 is a view in perspective showing one section of the adjustable front jaw detached. Fig. 7 is a side elevation of a modified sectional clamp capable of longitudinal and lateral adjustment, and Fig. 8 a similar view of another modification by which provision is made for both longitudinal and lateral adjustment.

As shown by Figs. 1, 2, and 3, the clamp is made of a single strip of suitable metal with two main jaws, the rear jaw A and the front jaw B, which jaws respectively terminate in the rear and front cervical bearings or inwardly-projecting gripping-surfaces 1 and 2, and are integrally coupled by the clamping-

spring C. A bifurcated crown-bearing is formed by inward projections 3 3 of the front jaw. Above the crown-bearing the front jaw is narrowed and bowed or goose-necked, thus providing an offset portion B' of the jaw B above its base portion b or between its crown and cervical bearings.

G represents the root, and D the crown, of a tooth, to which the clamp is shown as applied to illustrate the operation of the device.

A labio-cervical cavity is indicated at E with a proximal extension F. It will of course be understood that the rubber dam is placed in position, as usual, either before or after the application of the clamp.

In applying the clamp the forceps-jaws T T, Fig. 2, engage with the offset B' of the front jaw and with the rear jaw near its bearings, and to facilitate this engagement the rear jaw may be bent or bowed slightly just beneath its bearing, as best shown in Fig. 3. It will be seen that by forming the front jaw with the offset between its bearings 2 and 3 and making the jaw quite narrow at this part practically free access may be had to the cavities, a great advantage of which is that it permits the unobstructed filling and finishing of operations in confluent cervical cavities.

Although the two-point or bifurcated crown-bearing 3 is preferable, because it insures such a firm rest of the clamp on each side of the horizontally-convex crown as to increase the grip of the clamp in resisting casual stress tending to its lateral displacement, this form of crown-bearing may be dispensed with and a concave crown-bearing, as in Fig. 4, be provided.

Figs. 5 and 6 show a modification wherein the clamp is of sectional construction and longitudinal adjustment provided for in order that the front-jaw bearings 2 and 3 may be adjusted toward or from each other and relatively to the rear-jaw bearing 1. In this modification the main section of the front jaw B is provided at its lower end with side flanges N N, constituting a guideway by which this section engages with and is adapted to slide upon the other section M of the jaw, which is provided with the crown-bearing 3. The main section of the front jaw is longitudinally slotted at R, and the section M is similarly slot-

ted, and, like the main section, is provided with side flanges to constitute a guideway fitted to slide upon a guide L at the lower end of the rear jaw A, the round extension K of which jaw passes freely through a hole in the guide. A securing-screw *c* passes through the slots R of the front-jaw sections, as well as freely through the guide-piece L, and engages with a threaded opening *a* in the rear jaw A. The securing-screw is provided with a head H, by which to turn it and clamp the parts together when properly adjusted. As will readily be understood, the bearings 2 and 3 may be carried as far onto the root G and crown D, respectively, as desired, these adjustments being designed to adapt the clamp to long or short crowns in cases in which there are cavities in or beyond the necks of the teeth. In this modification, as well as in those yet to be described, the desirable spring of the clamp to insure proper gripping action is imparted to it by making either the front or the rear jaw or both jaws of suitable metal and of proper dimensions.

In accordance with the construction shown by Fig. 7 the main section B of the front jaw is adapted to be longitudinally adjusted by providing it with side flanges N and a slot, as at R, Fig. 6. The guideway formed between its side flanges adapts the main section of the front jaw to slide upon the other section L' thereof, so that the bearing 2 may be adjusted toward or from the bearing 3 of the jaw-section L'. The extension *k* of the rear jaw A passes freely through the section L', as well as through the slot of the main section of the front jaw, and is threaded to constitute a screw *c* to receive the nut *h*, by which the parts are clamped when adjusted on a tooth. The expanding-spring S facilitates the adjustment, as it maintains the jaw-sections B L' in contact with each other and yieldingly holds them up to the nut *h*.

In the sectional adjustable clamp shown by Fig. 8 the main section B of the front jaw is provided with a guideway by means of the flanges N and with the slot R, as before described, and may be slid longitudinally on the slotted and side-flanged guide-section *l* of the

jaw which has the crown-bearing 3. The screw *c*, with clamping-head H, adjustably engages the rear jaw A, which has a series of threaded openings *a a' a''* for the screw. The rear jaw has a right-angled extension *k'*, by way of which it is adjustably pivoted to the front jaw by means of a pin P, passing through those of the holes *p* and O in the extension and front-jaw section *l* which may be selected.

In the various modifications the front jaw has the narrow offset portion B', (the fundamental feature of my invention,) which enables the dentist to freely view, prepare, fill, and finish the filling in a cervical cavity involving the labial and either or both of the mesial and distal portions of a carious tooth. In Fig. 7 it will be seen that the offset of the jaw between the bearings 2 and 3 instead of being formed by curving or bowing the jaw is attained by making the section L' of the jaw of suitable thickness to leave the desired space between the tooth-cavity and that portion of the front jaw which is opposite the cavity.

I claim as my invention—

1. A rubber-dam clamp, one of the jaws of which has two bearings with the narrow offset portion between them, substantially as set forth.

2. The rubber-dam clamp having the rear-jaw bearing and the two front-jaw bearings and provided with the means for varying the relative positions of the front bearings, substantially as set forth.

3. The combination of the adjustable rear jaw having the bearing, the front jaw consisting of two adjustably-connected sections, each having a bearing, and means by which to connect the jaws and adjust the sections of the front jaw to vary the relative positions of the front and rear bearings, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

WOODBURY STORER HOW.

Witnesses:

S. P. CAMPBELL,
H. MARION ZANE.