No Model.)

H. H. JOHNSON & S. G. HILL.

RUBBER DAM CLAMP.

No. 420,876. Patented Feb. 4, 1890.

Fig. 1.

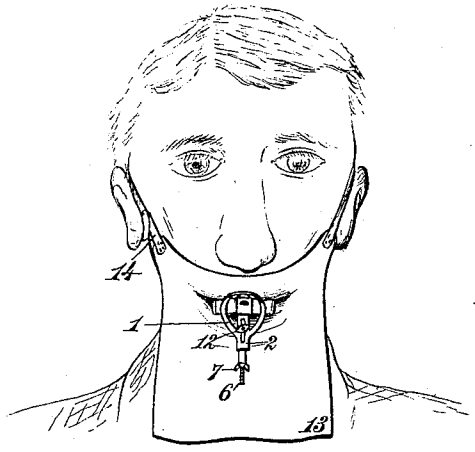


Fig. 2.

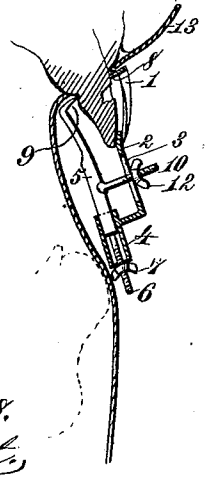
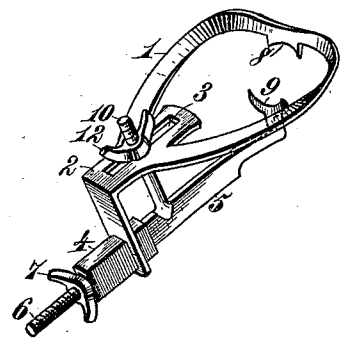


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY H. JOHNSON AND SYLVESTER G. HILL, OF LONDON, ENGLAND; SAID HILL ASSIGNOR TO SAID JOHNSON.

RUBBER-DAM CLAMP.

SPECIFICATION forming part of Letters Patent No. 420,876, dated February 4, 1890.

Application filed May 11, 1889. Serial No. 310,412. (No model.)

To all whom it may concern:

Be it known that we, HENRY H. JOHNSON and SYLVESTER G. HILL, citizens of the United States, residing at London, England, have invented new and useful Improvements in Rubber-Dam Clamps, of which the following is a specification.

In filling labial cavities in incisors, cuspids, and bicuspids, where such cavities extend to or under the gum, it is necessary to have free access to the cavity and perfect freedom from moisture, such as naturally arises from the moisture of the salivary glands. These necessities are provided for by the rubber-dam clamp for which Letters Patent No. 370,194 were issued September 20, 1887, to one of the present applicants; but in the former construction the clamp is made of sheet metal, and is held in place on the tooth by the inherent elasticity of a clasp or tongue, which rendered it necessary for security to tie the upper end of the device by a tape or cord passing around the head. While such device performs the functions for which intended, it is in a measure inconvenient and objectionable; and the objects of the present invention are to improve the prior construction; to provide a novel rubber-dam clamp which is firmly held in correct position by claws without relying upon spring-pressure alone to secure it; to avoid the employment of a tape for tying the clamp; to provide such a construction that after the clamp is placed in position it can be adjusted to retract or raise the gum; to provide a more firm, substantial, and convenient device that can be fixed in position on a tooth and the gum retracted with little if any pain to the patient; to provide a rubber-dam clamp that can be adjusted as occasion demands; to provide means whereby the frame of the clamp having the work-opening or the opening through which the dentist operates is held against movement in any direction, and to otherwise improve instruments of this type to render them more useful, efficient, and satisfactory, and lessen the discomfort of the patient.

To such ends our invention consists in a rubber-dam clamp combining in its structure a frame having a work-opening and adapted to retract or force the gum above the cervical margin of the cavity, and provided at its upper edge with a claw, an arm having a tongue point or claw to engage the inner surface of the tooth, and means whereby the frame and claw-arm can be drawn toward each other to grip the tooth, and the frame and arm be adjusted one upon the other in the direction of the length of the tooth.

The invention also consists in the construction and combination of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a view showing the position of the clamp in use with a rubber dam; Fig. 2, a central vertical section from front to rear, and Fig. 3 a detail perspective view of the clamp on an enlarged scale.

In order to enable those skilled in the art to make and use our invention, we will now describe the same in detail, referring to the drawings, where the reference-numeral 1 indicates the frame composed of a metal piece bent into semi-lunar form with a shank 2, having a longitudinal slot 3, and turned down at one end at right angles and provided with a guide-bearing 4 in the form of a sleeve through which loosely passes an arm 5, provided at its outer end portion with a screw-thread 6, on which is mounted a thumb-nut 7. The upper edge 8 of the frame constitutes the gum-retractor, and is provided with a claw—here shown as comprising two spurs or short prongs that are adapted to bear upon the labial surface of the tooth and constitute a steady-rest which steadies, supports, and holds the frame in correct position. The inner end of the arm 5 is provided with a tongue point or claw 9, preferably a bifurcated projection, to bear upon and engage the inner surface of the tooth, and said arm is furnished with an attached screw-threaded stem 10, which projects up through the slot 3 in the shank 2 of the semi-lunar frame and carries a thumb-nut 12, whereby the frame and arm can be drawn together and caused to firmly clamp or grip the tooth between them, as represented in Fig. 2. The slot 3 also permits the frame and arm to move lengthwise in such manner that after the clamp is set or fixed in position upon a tooth the semi-lunar frame can be moved upward

to retract or raise the gum above the cervical margin of the cavity to be filled. This movement of the frame is conveniently effected by screwing up the thumb-nut 7 on the screw-threaded portion of the arm 5, such nut acting against the guide-bearing or sleeve 4 of the semi-lunar frame.

The adjustment of the parts and the fixing of the clamp in position by screws render the device more convenient, useful, and satisfactory in practice, while it can be applied and the gum retracted gradually, so that the patient suffers comparatively little if any pain or discomfort.

The frame and arm are preferably composed of spring metal, so that the device is clamped with a yielding pressure.

The rubber dam 13 is composed of a thin sheet of rubber, and is applied as fully explained in the Letters Patent before alluded to, and as shown in Figs. 1 and 2 of the drawings. This dam, as usual, is provided with a tape 14, or similar means, to pass around the head and support the dam in position so that the lip and gum are covered.

By careful and scientific adjustment to the anatomy of the tooth the clamp can be firmly fixed in position with comparatively no pain to the patient, and it provides ample access through the work-opening of the frame to the tooth for filling and other operations.

Having thus described our invention, what we claim is—

1. A rubber-dam clamp comprising a frame having a work-opening, and a laterally-projecting claw located at its top edge to bear upon the labial surface of a tooth and form a steady-rest for the frame, an arm having a lateral claw at its upper end, which projects toward the lateral claw on the frame to engage the inside surface of the tooth, and devices for moving the frame on the arm and clamping the claws on the tooth, substantially as described.

2. A rubber-dam clamp comprising a semi-lunar frame having a work-opening, a longitudinal slot and a claw at its upper edge, an arm having a claw and on which the semi-lunar frame is movable, a screw for adjusting the frame on the arm, and a screw on the arm extending through the slot in the frame for adjusting the arm and frame toward each other to grip a tooth between the claws, substantially as described.

3. A rubber-dam clamp comprising an arm having a claw at one end and a screw-thread at the opposite end, a frame having a longitudinal slot, a work-opening, a claw at its upper edge, and a sleeve at its lower edge, through which the arm loosely passes, a screw-stem on the arm which passes through the slot in the frame, and thumb-nuts on the arm and stem, substantially as described.

In testimony whereof we have affixed our signatures in the presence of two witnesses.

HENRY H. JOHNSON.
SYLVESTER G. HILL.

Witnesses:
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