A. ENGEL.

Dental Forceps

No. 164,820. Patented June 22, 1875.

Fig. 1.

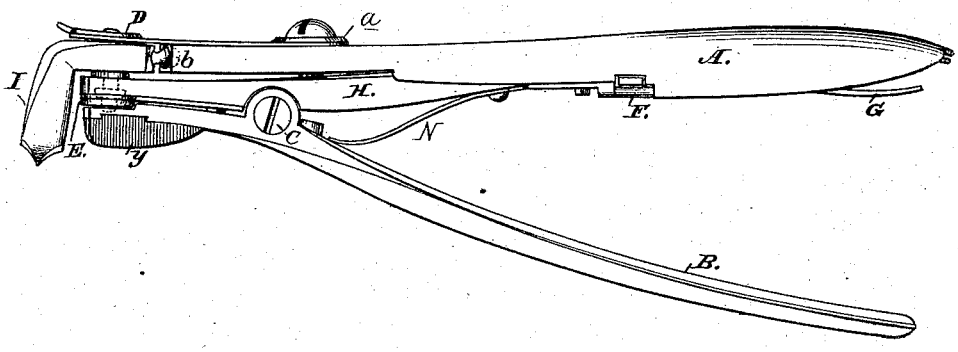


Fig. 2.

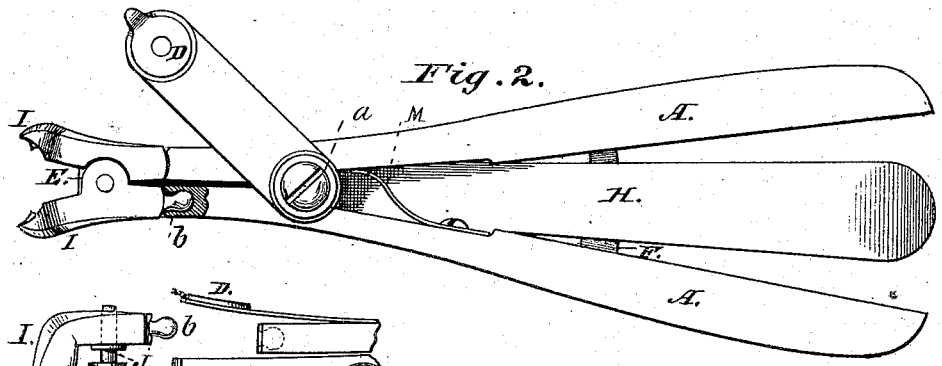


Fig. 3.

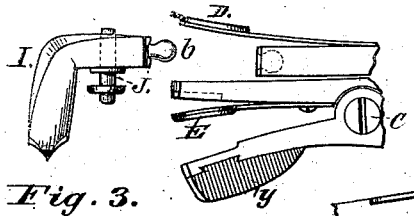


Fig. 4.

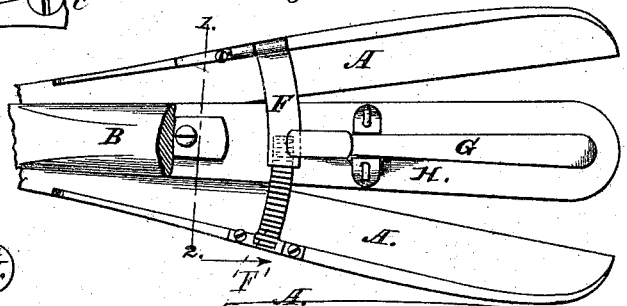


Fig. 5.

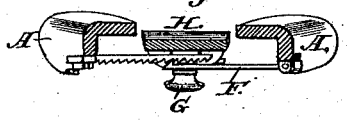
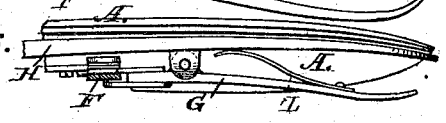


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALBERT ENGEL, OF GEESTEMUNDE, PRUSSIA.

IMPROVEMENT IN DENTAL FORCEPS.

Specification forming part of Letters Patent No. **164,820**, dated June 22, 1875; application filed June 2, 1875.

To all whom it may concern:

Be it known that I, ALBERT ENGEL, of Geestemunde, Province of Hanover, and Kingdom of Prussia, have invented certain new and useful Improvements in Instrument for Extracting Teeth, of which the following is a specification:

This invention has for its object to furnish an instrument for extracting teeth, which is very efficient and convenient, and more easily operated than the ordinary dental forceps in common use.

The invention consists, first, in the employment of laterally-moving jaws, turning on a pivot-pin on a stock, and connected, by means of universal or ball-and-socket joints, with laterally-movable pivoted operating-handles, so that by causing the same to recede from and advance toward each other the jaws will be either opened or closed. The invention further consists in detachably applying the forceps-jaws to their pivot-pin and operating-handles, so that jaws of various sizes or forms can be used interchangeably with each other, the pivot being fixed, and a spring plate or tongue bearing upon the upper end of the same to hold the jaws in position. The invention further consists in applying to the jaw-operating handles a pair of plates overlapping each other, and the contiguous jaws of which are provided with interlocking serrations or teeth, one of the plates being rigidly attached to its handle, while the other one is hinged to the other handle, and connected with a spring-pressed finger-piece or lever pivoted to the main stock, so that by depressing the same to disengage the ratchet or serrated plates, the same are permitted to glide over each other, for rendering the movement of the jaw-operating handles possible.

In the accompanying drawings, Figure 1 is a side view of dental forceps constructed according to my invention. Fig. 2 is a plan or top view of the same, showing the jaw-retaining plate turned to one side. Fig. 3 is a detail side view of the fulcrum-block, jaw-operating handles, main stock, and one of the jaws. Fig. 4 represents the means employed for locking jaw-operating handles. Fig. 5 is a transverse section taken on the line 1 2, Fig. 4. Fig. 6 is a detail longitudinal sectional view of the handle-locking device.

The main stock of the instrument is designated by the letter H, and to it are pivoted a pair of laterally-movable handles, A A, by means of the fulcrum-pin or screw *a*. Said handles carry at their front ends laterally-movable jaws I I, having globular rear projections *b*, entering corresponding sockets on the front ends of the handles. The jaws turn on a pivot-pin, J, applied to the main stock H, and by reason of the manner in which they are attached to the handles A A they are free to turn on their pivot-pin, the ball and socket forming, as it were, a universal joint. The jaws I are detachably secured in position, so as to enable jaws of different sizes and forms to be used interchangeably with each other, according to the uses to which the instrument is to be applied. For this purpose every jaw is provided with an eye or projection, which slips readily onto the fixed pivot-pin J, and then, by putting a spring plate or tongue, D, over the same, the vertical displacement of the jaws is entirely prevented. A similar spring-plate, E, fits onto the lower end of the fulcrum-pin J, for more firmly retaining it in place. The jaw-retaining plate D is hung upon the pin or screw *a*, that connects the handles with the main stock in such a manner as to enable it to be turned readily to the side of the instrument, as shown in Fig. 2. The main stock H is pivoted at C to a handle, B, carrying at its forward end a fulcrum-block, *y*, made of hard rubber, collodion, or other suitable material not liable to injure the teeth or mouth of the patient.

When required for use the jaws of the instrument are opened by spreading the handles A A apart. The tooth to be extracted is then inserted between the jaws, and firmly grasped by bringing the handles together. A downward or upward pressure upon the handles and main stock will then cause the extraction of the tooth with comparatively little exertion of force, as the block *y* rests firmly upon an adjoining tooth or teeth, and acts as a fulcrum for the extracting-jaws.

The fulcrum-block is detachably secured in position by means of a dovetailed projection

on the same, which enters a corresponding groove in the handle B, and by this means it is possible to replace a worn block with a new one, or to use different-sized blocks interchangeably with each other. The jaw-operating handles A are forced apart by a spring, M, interposed between the same on the main stock, and retained in a closed or partially-closed position by means of a pair of serrated or ratchet plates, F F′, applied to the jaw-operating handles, extending inwardly and overlapping each other. The plate F is pivoted or hinged to its handle, while the plate F^1 is rigidly secured to the other handle, and both plates are provided on their contiguous faces with interlocking serrations or teeth. The hinged plate F is attached to a lever or finger-piece, G, which is pivoted between ears on the inner side of the main stock H, and combined with a pressure-spring, L, interposed between the lever G and main stock. The finger-piece or lever G, when in its normal position, will force the hinged plate upon the rigid plate, so as to lock both together, and hold the jaw-operating handles and jaws in any position in which they may be placed. By depressing the rear end of the lever H the locking-plates are disengaged, and the handles and jaws are then free to move apart by the action of the spring M. A spring, N, interposed between the main stock and fulcrum-handle serves to force the former, together with its attachments, away from the fulcrum-handle after the pressure of the hand of the operator is removed.

What I claim is—

1. In dental forceps, the laterally-movable jaws I and operating-handles A A, connected with each other by a universal joint, and both turning on separate pivots on a main stock, substantially as described.

2. The laterally-detachable jaws I I, in combination with the pivot-pin J and retaining-plates D E, as and for the purpose described.

3. The fixed and hinged serrated plates F F′ and lever or finger-piece G, in combination with the laterally-movable jaws A A, jaws I I, and main stock H, as and for the purpose described.

In testimony that I claim the foregoing, I have hereunto set my hand.

ALBERT ENGEL.

Witnesses:

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C. HAUPT.