N. A. DURHAM.

Dental-Forceps.

No. 165,808. Patented July 20, 1875.

FIG. II.

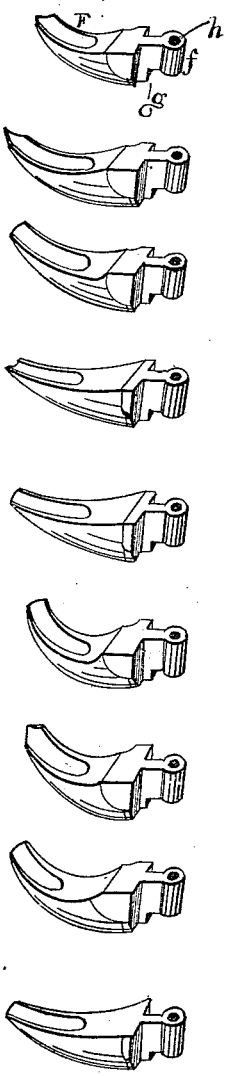


FIG. I.

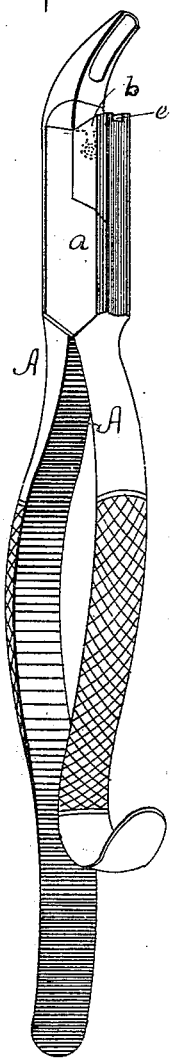


FIG. III.

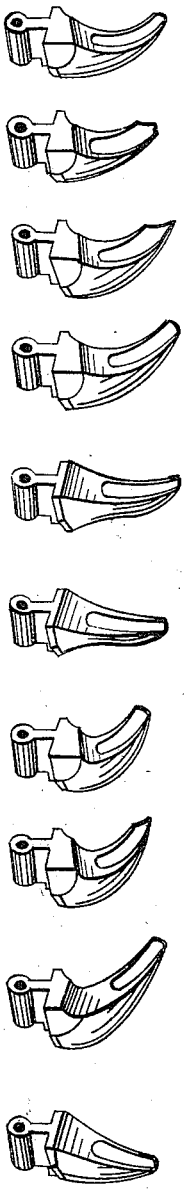


FIG. IV.

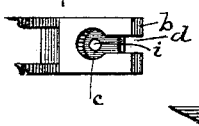
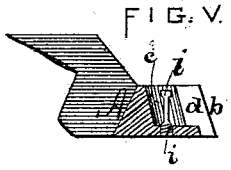


FIG. V.



WITNESSES.

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By his Atty

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UNITED STATES PATENT OFFICE.

NEPTHALI A. DURHAM, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN DENTAL FORCEPS.

Specification forming part of Letters Patent No. **165,808**, dated July 20, 1875; application filed May 21, 1875.

To all whom it may concern:

Be it known that I, NEPTHALI A. DURHAM, of Hartford, in the State of Connecticut, have invented an Improvement in Dental Forceps, of which the following is a specification:

This invention relates to that class of dental forceps provided with removable beaks, the shanks whereof are fitted and enter with a lateral movement into curved sockets in the forceps-handles, so that pressure of said beaks upon any interposed object will tend to drive said shanks home into said sockets.

Heretofore said sockets and corresponding shanks have been made not only curved, but with angular cross-sections, very difficult of accurate construction, and not affording a steady attachment for the beak until entirely home upon its seat.

My invention consists, first, in making the socket straight, and with circular cross-section, and entering the handle in a lateral direction from its inner side. Second, in making the said socket parallel with the end surface of the handle, against which the shoulders of the beak rest. Third, in the pin-spring or friction-detent located in the middle of said socket, and in an axial orifice in the shank of the beak.

That others may more fully understand the detail of construction of my invention, I will more particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of my forcep, with one of the beaks detached. Fig. 2 represents in perspective the set of left-hand beaks. Fig. 3 represents in perspective the set of right-hand beaks. Fig. 4 is a longitudinal section of the socket. Fig. 5 is a plan of the same.

The handles A A are jointed together in the usual way at *a*. Just in front of the joint *a* the handles terminate with a plan, shoulder, or surface, *b*, slightly inclined inward to the axis of the handle. At about one-quarter of an inch below the shoulder *b*, on the inner surface of the handle A, I make the socket C circular in cross-section, because of the mechanical ease of production. The socket C penetrates the handle exactly parallel with the surface *b*, and extends through about three-fourths the width of the handle, measuring from inner to outer surface. A groove, *d*, is formed, connecting the socket C with the surface *b*; said groove is less in width than the diameter of the socket, and extends to the same depth. At the outer end, the groove *d* is extended over to the outer surface of the handle, as shown at *e*. The beak F is made with a shank, *f*, exactly corresponding to and fitting the socket *c* and groove *d*, with an offset, *g*, fitting the groove-offset at *e*.

It will readily be perceived that when the shank *f* is inserted in its socket it will be held there positively, as against the strains incident to use, without the employment of any latching or movable holding devices whatever.

Frequent insertion and removal of the shank from its socket will cause a slight wearing of the surface and a consequent looseness. To correct the objectionable result of this slight wearing of the surface, a friction-spring is inserted in the socket, which will always press the shank forward and bring into contact the resisting surfaces, so that, however loosely the shank may fit its socket, the beak will always be in operative position and will not yield when brought into use. A friction-spring for this purpose may be inserted in a variety of ways, which will readily occur to any skillful mechanic; but I prefer to insert it as shown in Fig. 5 of the drawing. The enlarged portion of the shank *f* is perforated, as at *h*, lengthwise, and a steel screw, *i*, is inserted axially in the socket *c*. The opposite sides of the screw are cut away so as to form a spring, leaving a knob or boss at its outer end, which, entering the perforation *h* as the shank is inserted, presses against the forward side of said perforation and near the inner side of the beak, so as to constantly press the resisting surfaces of the shank and socket together and keep them always in operative position.

By this means the shank is held securely against all pulling strains; but twisting or side strains are also effectually resisted by the web of the shank, which extends across the entire width of the handle at *e g*.

Having described my invention, what I claim as new is—

1. A forcep-handle, provided with a straight

socket, having a circular cross-section, entering laterally from the inner side of said handle, and provided with a slot, *d*, combined with a beak constructed with a corresponding shank, as set forth.

2. A forcep-handle, A, constructed with the plane end *b* and the socket *c* parallel with said surface *b*, combined with the beak F, provided with the shank *f* fitted to said socket and groove, as set forth.

3. The pin-spring *i*, located in the middle of the socket *c*, combined with the shank *f*, constructed with the orifice *h*, for the purpose set forth.

NEPTHALI A. DURHAM.

In the presence of—
DWIGHT W. CLARK,
WILLIAM W. CROSBY.