

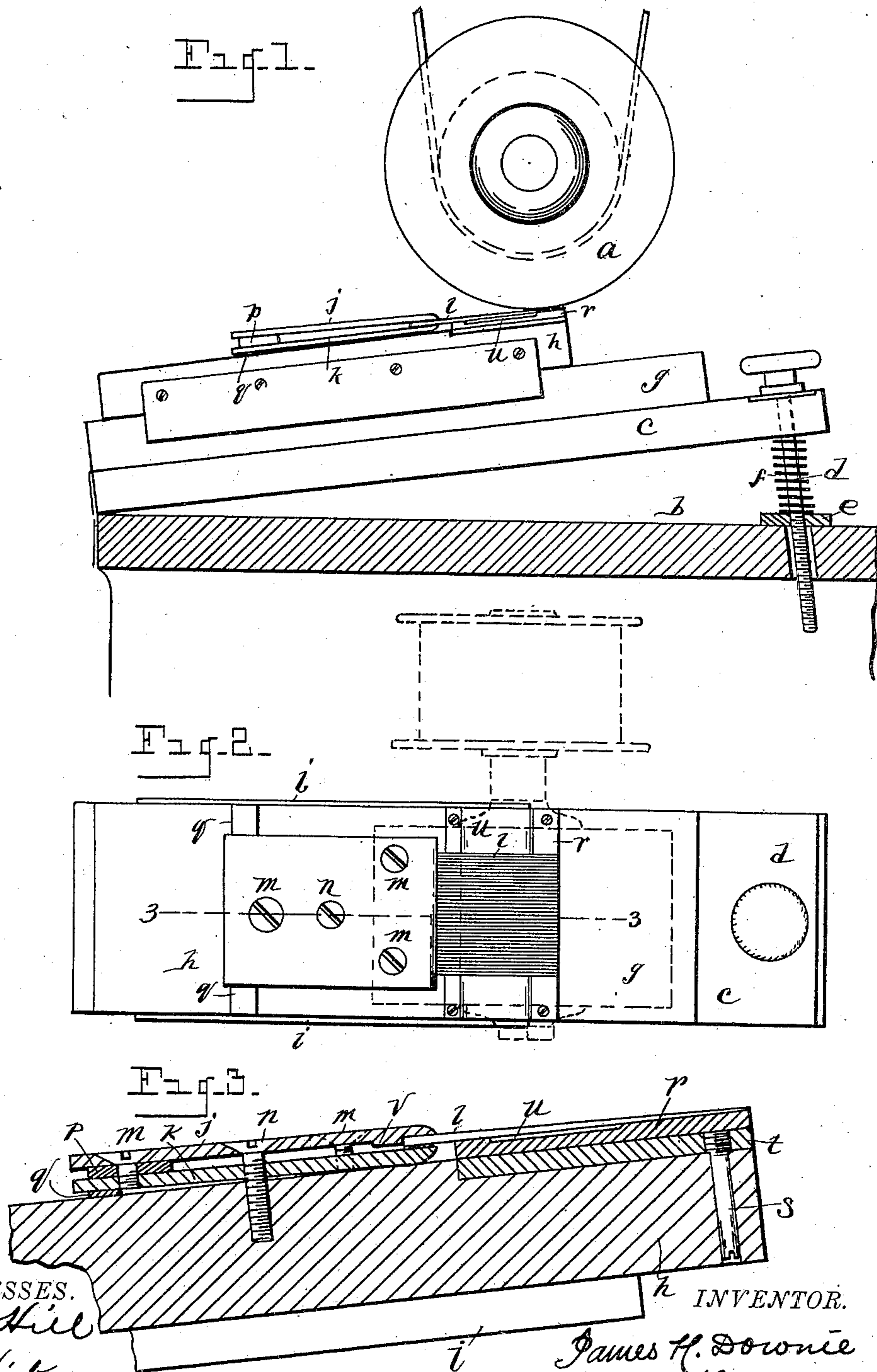
No. 662,638.

Patented Nov. 27, 1900.

J. H. DOWNIE.  
CLAMPING DEVICE.

(Application filed June 4, 1900.)

(No Model.)



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

JAMES H. DOWNIE, OF DETROIT, MICHIGAN.

## CLAMPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 662,638, dated November 27, 1900.

Application filed June 4, 1900. Serial No. 18,984. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. DOWNIE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Clamping Devices; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object a reciprocatory clamping device for holding work to a grinding-wheel; and it consists of the construction, combination, and arrangement of devices hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation, showing parts in vertical section. Fig. 2 is a plan view of the reciprocatory clamping device. Fig. 3 is a vertical section on the line 3-3, Fig. 2.

My invention has special reference to a reciprocatory clamping device for holding blanks for the construction of various dental utensils; but I do not limit myself solely thereto, as my invention embodies any use to which it may be applicable.

I carry out my invention as follows:

As shown in the drawings, a rotatable grinding-wheel is shown at *a*. A bed or table is indicated at *b* to support the clamping device.

The clamping device embodies a bed-plate *c*, made adjustable at its forward end upon the bed *b* in any suitable manner, as by means of an adjusting-screw *d*, said screw threaded into a metal plate *e* upon the bed *b*. The bed-plate *c* has a yielding engagement upon the adjusting-screw *d*, a spring *f* being engaged upon the screw between the bed-plate and the bed, as indicated.

Upon the bed-plate *c* is a guide-plate *g*, upon which guide-plate is a reciprocatory carrier-plate *h*, provided with lateral depending flanges *i i*, said flanges extending downward over the adjacent sides of the guide-plate *g*.

Upon the reciprocatory carrier-plate *h* are located clamping-jaws *j k* for clamping the shanks of the blanks *l* to be ground, the shanks of the blank being engaged between the forward

edges of the jaws *j k*. Screws *m* hold the two jaws *j k* in engagement with each other, and an additional screw *n* unites both jaws to the carrier-plate *h*. The jaws *j k* are spaced the one from the other at their rear ends in any suitable manner, as by an intervening washer *p*. The clamping-jaws may have their rear edges raised also by means of a washer *q* intervening between the lower jaw *k* and the carrier-plate *h*. At the forward end of the carrier-plate *h* is located an adjustable holding-plate or work-bed *r*, upon which the forward ends of the blanks may rest to be ground. The plate *r* may be adjusted at its forward edge in any suitable manner, as by an adjusting-screw *s*, located in the plate *h* and having a threaded engagement with a bearing-plate *t* upon the plate *h*, as shown in Fig. 3. By this means the forward edge of the plate *r* may be tilted upward to any desired angle to carry upward the outer extremities of the blanks. The plate *r* to the rear of its forward edge is also recessed, as indicated at *u*. By means of the adjusting-screw *d* the plate *c*, with the plates *g* and *h* carried thereupon, may be tilted to any desired angle, so as to cause the blanks to be ground on a taper from their outer extremities toward the shanks thereof at their rear extremities.

The operation of the device is as follows: It is obvious that by removing the screw *n* the clamping-jaws *j k* may be readily removed from the plate *h*. By loosening the screw *m* the blanks *l* may readily be inserted with their shanks between the forward edges of said clamping-plates, a depending rib *v* serving as a stop for the shanks of the blanks. By tightening up the screw *m* the clamping-jaws will effectually bind the shanks of the blanks. Said clamping-plates are then secured to the plate *h*, and any desired pitch or angle may be given to the plate *t* by the adjusting-screw *s*. The plate *h* is then fed forward upon the plate *g* under the rotatable grinding-wheel. After the blanks are ground upon one side the clamping-jaws may be reversed, so that the blanks may be ground on the opposite side.

The plate *r* is formed with the recess *u* in order to get a uniform taper on the blanks when they are reversed. The blanks are ground to about the longitudinal center of

said recesses. When the blanks are reversed, were it not for these recesses the plate *r* would be made with a flat surface throughout as the blanks were reversed, the shoulder left by grinding one side of the blanks would fold the ground surface up when reversed adjacent to the shoulder, so that the balance would be ground thinner adjacent to the shank than at the point. The provision of the recess allows this shoulder to drop into the recess, so that the grinding-surface of the blank would rest upon the forward surface of the plate.

The washer *q*, it will be seen, tilts the rear edges of the clamping-jaws upward, thereby forcing the blanks firmly down upon the plate *r* and holding the blanks straight upon said plate while being ground.

What I claim as my invention is—

1. The combination with a support, of means to adjust the pitch or angle of the support, a reciprocatory carrier-plate carried upon said support, clamping-jaws upon said plate toward one end thereof to engage the work, and a work-bed upon said plate toward the opposite end thereof to support the work, and means to adjust the pitch or angle of the work-bed, said work-bed recessed upon its upper surface intermediate its forward and rear edges.

2. The combination with a grinding-wheel, of a reciprocatory carrier-plate, means to adjust the angle or pitch of said plate, clamping-jaws located upon said plate toward one end thereof to engage the work, a work-bed upon the opposite end of said holder to support the work, and means to adjust the pitch or angle of the work-bed independent of the clamping-jaws.

3. The combination with a grinding-wheel of a reciprocatory carrier-plate to carry the work under said wheel, a support for said plate, clamping-jaws upon said plate to engage the work at the forward ends of said jaws, and a work-bed upon the carrier-plate

forward of the clamping-jaws, means to adjust the pitch or angle of the carrier-plate, and additional means to adjust the pitch or angle of the work-bed, said work-bed recessed upon its upper surface intermediate its forward and rear edges.

4. The combination with a grinding-wheel of a reciprocatory carrier-plate to carry the work under said wheel, a support for said plate, clamping-jaws upon one end of said plate, and a work-bed upon the carrier-plate forward of the clamping-jaws, and means to adjust the pitch or angle of the carrier-plate, said work-bed recessed upon its upper surface intermediate its forward and rear edges.

5. The combination with a grinding-wheel of a reciprocatory carrier-plate to carry the work under said wheel, a support for said plate, a stationary bed to carry said support, clamping-jaws upon one end of said plate, and a work-bed upon the carrier-plate forward of the clamping-jaws, means to adjust the pitch or angle of the carrier-plate, and means to give a yielding movement to one extremity of said carrier-plate.

6. The combination with a grinding-wheel of a reciprocatory carrier-plate to carry the work under said wheel, a support for said plate, a stationary bed to carry said support, clamping-jaws upon one end of said plate, and a work-bed upon the carrier-plate forward of the clamping-jaws, said clamping-jaws elevated at their rear edges above the carrier-plate to give a pitch or angle to the jaws, and said work-bed recessed upon its upper surface intermediate its forward and rear edges.

In testimony whereof I sign this specification in the presence of two witnesses.

JAMES H. DOWNIE.

Witnesses:

N. S. WRIGHT,  
M. HICKEY.