

(No Model.)

H. A. HARVEY.

TAP AND DIE.

No. 250,728.

Patented Dec. 13, 1881.

FIGURE 1.

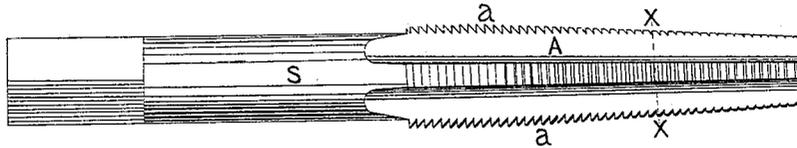


FIGURE 3.

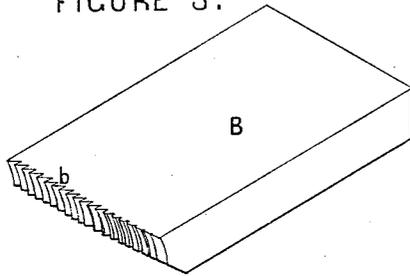


FIGURE 2.

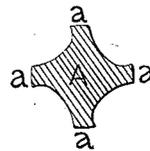


FIGURE 4.

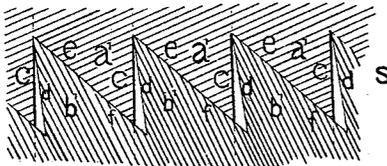


FIGURE 5.

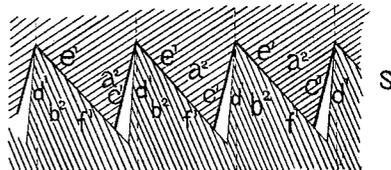


FIGURE 6.

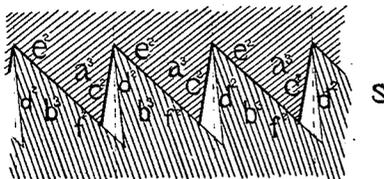
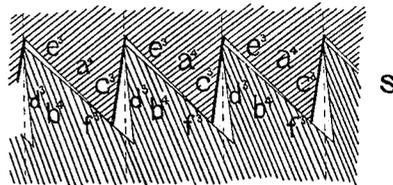


FIGURE 7.



WITNESSES

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TAP AND DIE.

SPECIFICATION forming part of Letters Patent No. 250,728, dated December 13, 1881.

Application filed July 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, HAYWARD A. HARVEY, of Orange, New Jersey, have invented certain Improvements in Taps and Dies, of which the following is a specification.

My invention relates to the construction of a die and tap, respectively, cutting male and female screw-threads of like pitch, but of relatively different angles, upon one or both sides.

The accompanying drawings, illustrative of the character of my invention, are as follows:

Figure 1 is a view of the tap. Fig. 2 is a transverse section of the tap through the line xx on Fig. 1. Fig. 3 is an isometrical perspective of the die. Fig. 4 is a section, upon an enlarged scale, of several of the teeth of the tap and the die, brought into juxtaposition with each other for the purpose of illustrating their different shapes in cross-section. Figs. 5, 6, 7 are similar sections, illustrating various modifications in the forms of the cutting-teeth in cross-section.

The tap A, as will be seen, has cutting-teeth a , which incline toward the shank S of the tap—that is, the side of each cutting-tooth toward the shank is nearly perpendicular to the axis of the tap, while the opposite side of the tooth is inclined to the axis of the tap.

The die B is provided with teeth b , having the same pitch as the teeth a of the tap, but varying in the angles of one or both of their sides from the corresponding angles of the tap-teeth. Thus in Fig. 4 the teeth a' of the tap are upon side c perpendicular to the axis of the tap, while the corresponding sides, d , of the die-teeth b' are slightly undercut, so that the apices only of the die-teeth are in contact with the sides c of the tap-teeth. In this case the inclined sides e of the tap-teeth have the same angle as the inclined sides f of the die-teeth.

In the modification illustrated in Fig. 5 the sides e' of the tap-teeth are slightly inclined from a line perpendicular to the axis of the tap, and the corresponding sides, d' , of the die-teeth are inclined in the same direction, but in

a less degree. The other sides, e' , of the tap-teeth and the corresponding sides, f' , of the die-teeth also vary slightly in their respective angles of inclination, so that the apices only of the tap-teeth e' are in contact with the sides f' of the die-teeth.

In Fig. 6 the tap-teeth a^3 are represented as being of substantially the same shape in cross-section as the tap-teeth a^2 , (shown in Fig. 5.) The sides d^2 of the die-teeth b^3 are undercut to a somewhat less extent than the sides d of the die-teeth b' , (illustrated in Fig. 4.)

In Fig. 7 the die-teeth b^4 are represented as being of the same shape in cross-section as the die-teeth b^3 , (illustrated in Fig. 6.) The sides e^3 of the tap-teeth are also represented as having the same angles as the sides e^2 of the tap-teeth, (illustrated in Fig. 6;) but in the modification (illustrated in Fig. 7) the sides e^3 of the tap-teeth differ more considerably in their angles from the angles of the sides f^3 of the die-teeth.

In Figs. 4, 5, 6, 7 the direction of the shank of the tap from the teeth shown in those figures is indicated by the letter S.

It will, of course, be understood that an infinite number of variations may be made in the relative angles of the sides of the cutting-teeth of the tap and die respectively without departing from my invention.

In using a nut and bolt cut with my improved tap and die the effect of jamming the nut against the object through which the bolt is inserted is to set the outer portions of the teeth of the bolt backward toward the point of the bolt.

I claim as my invention—

The die B and tap A, each provided with cutting-teeth for cutting, respectively, male and female screw-threads of like pitch, but of relatively different angles, upon one or both sides, substantially as shown and described.

H. A. HARVEY.

Witnesses:

GRACE G. PIKE,
WM. RUMBLE.