(No Model.)

H. K. JONES.

DIE FOR SWAGING SCREW THREADS.

No. 425,035. Patented Apr. 8, 1890.

Fig. 1.

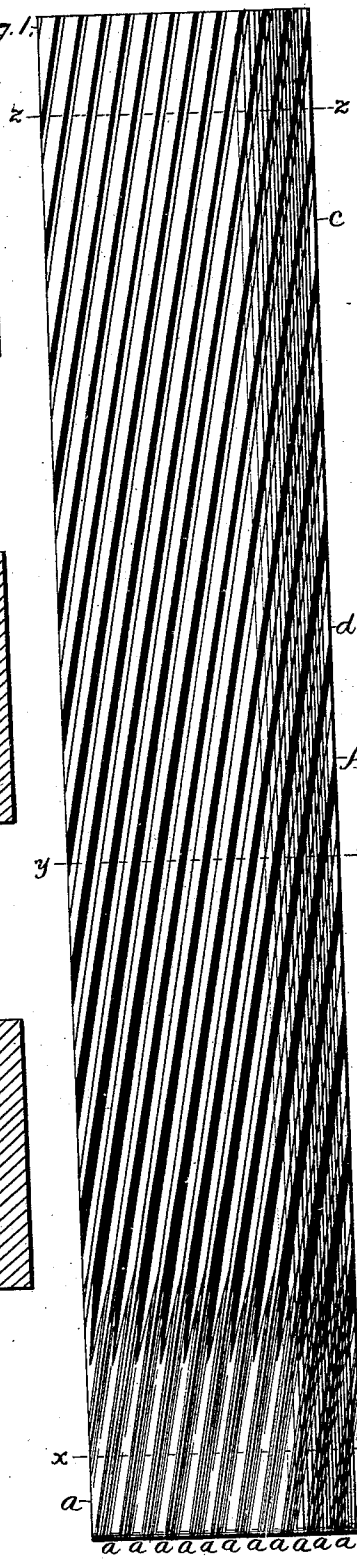


Fig. 2.

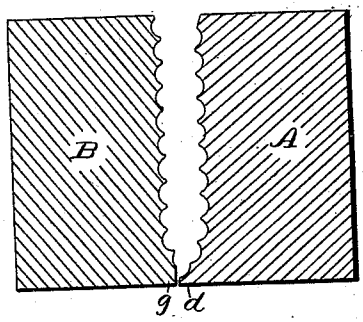


Fig. 3.

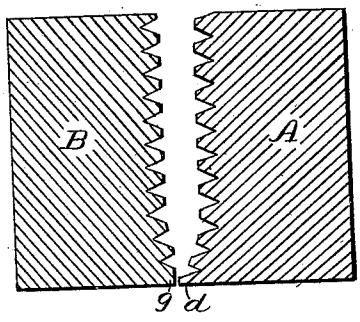


Fig. 4.

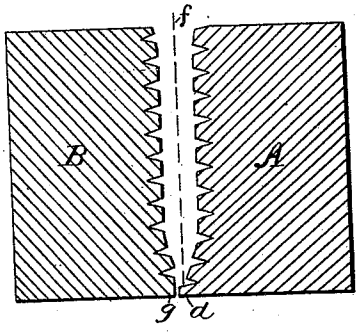


Fig. 5.

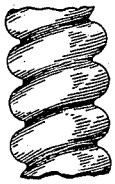


Fig. 6.

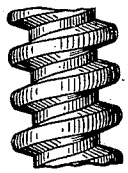


Fig. 7.

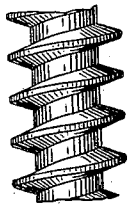
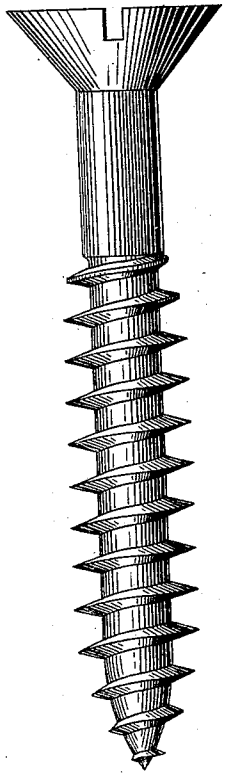


Fig. 8.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HORACE K. JONES, OF HARTFORD, ASSIGNOR TO THE RUSSELL & ERWIN MANUFACTURING COMPANY, OF NEW BRITAIN, CONNECTICUT.

DIE FOR SWAGING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 425,035, dated April 8, 1890.

Application filed November 19, 1889. Serial No. 330,844. (No model.)

To all whom it may concern:

Be it known that I, HORACE K. JONES, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dies for Swaging Screw-Threads, of which the following is a specification.

My invention relates to improvements in dies for swaging screw-threads; and the objects of my invention are to produce dies that will form a solid thread in contradistinction to a split thread; also form a cylindrical screw, and which may be adjusted for different sizes of screws.

In the accompanying drawings, Figure 1 is a face view of one of said dies. Fig. 2 is a transverse section of a pair of said dies, the plane of section being indicated by the line *x x* of Fig. 1. Fig. 3 is a like section whose plane is indicated by the line *y y* of Fig. 1; Fig. 4, a like section whose plane is indicated by the line *z z* of Fig. 1. Fig. 5 is a side elevation of a portion of a screw-blank, showing the result of subjecting a blank to the first portion of the dies. Fig. 6 is a like view showing the result at a further stage; Fig. 7, another like view showing the result at a still further stage, and Fig. 8 is a side elevation of a complete screw as swaged by said dies. Figs. 5, 6, 7, and 8 are on an enlarged scale.

My improvement is applicable to cylindrical dies or straight dies, as may be desired. I have illustrated my improvement as formed in a straight die, the face of the die consisting of oblique grooves of the proper pitch, the beginning or part which first acts upon the blank consisting of a series of rounding grooves *a*, with a narrow ridge between them at the face of the die, said rounded grooves in Fig. 1 extending from the lower end of the die upwardly to the point *b*, the same also being shown in cross-section in Fig. 2. These rounded grooves merge into V-shaped grooves in alignment therewith, the ridges between the V-grooves at the face of the die gradually widening as they extend upwardly on the die to the point *c*, the grooves growing proportionally narrower. The wider part of these grooves are V-shaped for convenience of construction; but the apex or bottom part at the wide end has no action in forming the thread, and might therefore be in the form of a truncated V. From the point *c* to the upper end of the die the ridges and grooves are straight and parallel instead of tapering, the same constituting the finishing portion of the die. This finishing portion should be of a length equal to one-half or more of the circumference of a screw as threaded by said dies. The faces of the dies A B are substantially alike, except at the portion *d*, which threads the gimlet-point on the die A. This portion follows the general profile of the screw, but extends beyond the plane in which the axis of the screw lies when within the dies. This plane is indicated by the line *f* in Fig. 4. The other die B follows the profile of the screw, but is truncated at the corner *g*, in order to let the corner *d* of the die A extend beyond the axial line *f* of the screw. The feature last described may be embodied in other dies than those having the rounded grooves and straight and parallel finishing-grooves. It permits the dies to be adjusted to a certain degree for threading screws of different sizes, the degree of adjustment being in proportion to the extent of projection *d* beyond the axial line of the screw. If the dies are separated a little more, a larger-sized screw may be threaded to the extreme point, so long as the projection *d* lies within a plane that is coincident with the axis of the screw being threaded. By making the die begin its action with the rounded grooves with ridges they first form a rounded thread, as shown at Fig. 5, which threads extend at their base to the core of the screw; in other words, the spaces between the threads are of the full depth of those in the finished screw, but of less width. As the blank is further acted upon by the dies the grooves between the threads are widened and the threads projected higher and narrower, but still leaving their tops somewhat rounding, as shown in Fig. 6. This action is continued until the tops of the threads are quite narrow and substantially straight across, as shown in Fig. 7, and they are finally brought to an edge and form a solid or unsplit thread, as shown in Fig. 8. If the grooves and ridges in the die continued their taper to the ends of the die,

the finished screw would not be quite round, but by leaving a finishing portion, as above *c*, with parallel grooves and ridges, said portion being of a length equal to the circumference of the screw, the tops of the thread of the screw after the screw passes said portion will be cylindrical. It is evident that this last improvement is applicable to other dies, and also that the rounding grooves for starting the thread may be employed in ordinary dies. That portion of my dies which in Fig. 1 is between the points *b* and *c* is of an old and well-known construction, excepting as I have made the projection *d* at the portion for threading the gimlet-point extend beyond the axis of the screw. It will of course be understood that the dies are to be used in a suitable machine, and as such machines are well known and constitute no part of the present invention I consider it unnecessary to make further reference to them.

I claim as my invention—

1. A die for swaging screws, having its face provided with a series of alternate tapering grooves and ridges, with a series of rounded grooves and narrow ridges at the beginning thereof, substantially as described, and for the purpose specified.

2. A die for swaging screws, having on its face a series of tapering ridges and grooves and at the end of said tapering grooves and ridges a finishing portion consisting of parallel grooves and ridges, substantially as described, and for the purpose specified.

3. A pair of dies for swaging pointed screws, both of which have the general shape in section of the profile of the screw, and one of which is truncated at the point-forming portion, and the other of which is provided at the point-forming portion with a projection *d*, extended toward the companion die to a point beyond a plane coincident with the axis of the screw swaged in said dies, substantially as described, and for the purpose specified.

4. A die for swaging screws, having its face provided with a series of alternate tapering grooves and ridges, with a series of rounded grooves and narrow ridges at the beginning thereof, and a finishing portion consisting of parallel grooves and ridges, substantially as described, and for the purpose specified.

HORACE K. JONES.

Witnesses:
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M. S. WIARD.