F. S. Gregg,

Making Taps and Dies,

No. 57,124. Patented Aug. 14, 1866

Fig. 1

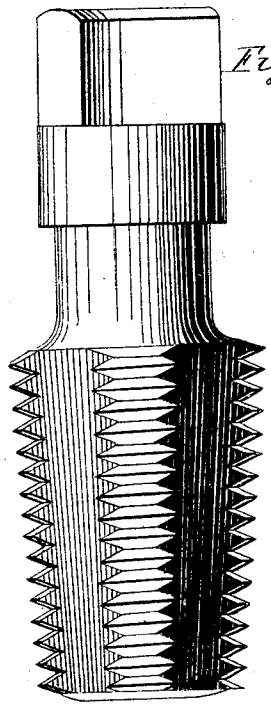


Fig. 2.

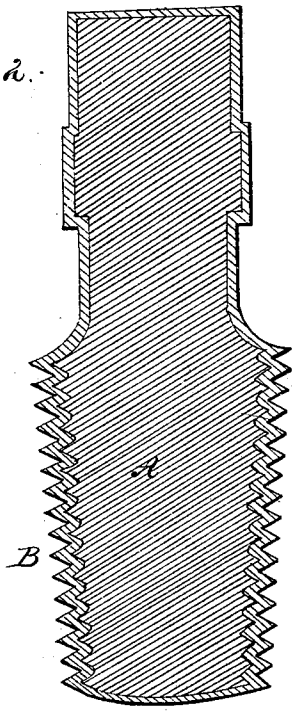
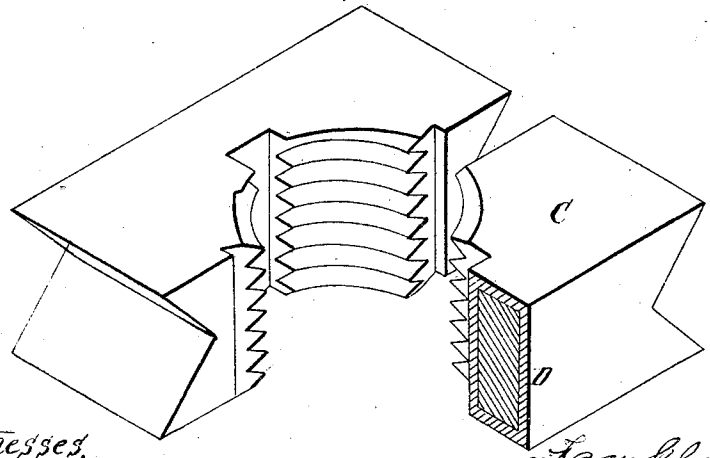


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANKLIN S. GREGG, OF CINCINNATI, OHIO.

IMPROVEMENT IN TAPS AND DIES.

Specification forming part of Letters Patent No. **57,124**, dated August 14, 1866.

To all whom it may concern:

Be it known that I, FRANKLIN S. GREGG, of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improvement in Taps and Dies; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention consists in a process to enable the employment of wrought-iron as a substitute for steel in the manufacture of taps and dies, by case-hardening the taps and dies to so great a depth as to answer all the purposes of the best steel taps and dies in cutting threads, and possess greater toughness than the latter.

My invention also lessens the first cost of taps and dies, by using a much cheaper material than steel, and a material that can be worked into the required form in a shorter time. I have succeeded, by using somewhat different materials for case-hardening than heretofore known, and by exposing the taps and dies a greater length of time to the process, in producing wrought-iron taps and dies that are fully equal to the best made steel taps and dies in ability to cut screws, while they exceed them in toughness and durability.

The taps and dies I have manufactured have been used for months and show no signs of wear, and are apparently equal in hardness and superior in toughness to those of steel.

A tap of sufficient size for one and one-half pipe-elbows of the case-hardened wrought-iron will cost in manufacture and material but one-fifth the cost of the customary steel taps of the same size.

The articles being forged, turned, and chased, I prepare my case-hardening material by burning leather to a crisp, and finely pulverize the same, and mix with each gallon thereof one quart of dry sand and one quart of salt. The articles are then embedded in the powder within a close box, and kept at a red heat for three hours, or longer, if necessary.

One advantage of the use of iron is, that it is easy to procure of any size, and does not need to be "jumped" or stove endwise in order to get the required thickness, an operation that is liable to injure the steel. The case-hardening material being already partially burnt, and being applied in the form of powder, enables it to enter minutely all the chinks and corners of the die.

Figure 1 is a side view of a tap as used for pipe elbows and couplings. Fig. 2 is an axial section of my case-hardened wrought-iron tap, exhibiting the depth to which the hardening is extended, A being the body of the tap, and B the case-hardening. Fig. 3 is a perspective view of a pair of dies case-hardened, the portion sectioned showing the depth of hardening, C being the body of the die, and D the case-hardened surface.

I claim herein as new and of my invention—

The process of manufacturing case-hardened wrought-iron taps and dies, substantially as described.

In testimony of which invention I hereunto set my hand.

FRANKLIN S. GREGG.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.