T. S. CARROLL.

Fitting-Tool.

No. 160,159 Patented Feb. 23, 1875.

Fig. 1.

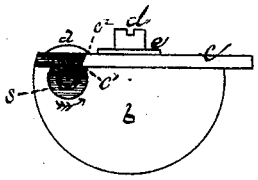
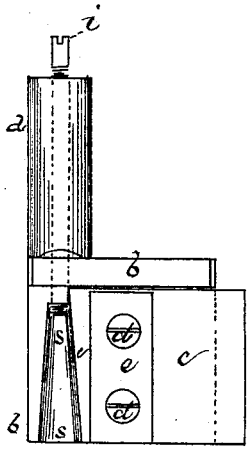


Fig. 2.



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UNITED STATES PATENT OFFICE.

THERON S. CARROLL, OF WINSTED, CONNECTICUT.

IMPROVEMENT IN FITTING-TOOLS.

Specification forming part of Letters Patent No. **160,159**, dated February 23, 1875; application filed November 27, 1874.

To all whom it may concern:

Be it known that I, THERON S. CARROLL, of Winsted, in the county of Litchfield and State of Connecticut, have invented an Improved Fitting-Tool for fitting faucet-plugs and the like, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a view of the working end of the tool. Fig. 2 is a full-length or side view of the tool.

My tool has a general resemblance to another and prior device, to wit, the lathe-tool for turning and boring plugs for gas-cocks, &c., patented to William Tweedle by Letters Patent No. 89,184, dated April 20, 1869, but differs from it in an essential particular, as I shall presently show; but, before doing so, I desire, in order that my improvement may be made the more manifest, to explain the method now commonly practiced in the manufacture of fittings of the description I have named, which method is as follows:

After a gas-cock plug is cast or otherwise gotten into its general shape it goes through two distinct operations in order to complete it. The first operation is to turn the plug, as nearly as practicable, to its finished shape; and the second operation is to grind the plug to a perfect fit in its socket, by means of a lubricator or oil and a fine sharp powder or fine emery. These two operations are entirely distinct. The first is known to gas-cock makers as "turning," and the second as "fitting." And this fitting is very hard to accomplish properly—in fact, it is rarely ever done perfectly; and it is this operation that my tool is specially designed to perform—not by grinding, but in a vastly more inexpensive manner, and with absolute perfection of the joint.

With these remarks, I will now describe the construction of my improved tool.

The letter *a* indicates a mandrel or barrel, with a swell, *b*, at the working end for supporting the chisel *c*, which is fastened to the swell *b* by screws *d d*, running, through slots in the chisel, into the flat face of the swell part *b*. The slots are for the purpose of permitting the exact adjustment of the chisel to its work, which exact adjustment is absolutely necessary. It is advisable to have a cap, *e*, under the head of the screws, and lying upon the flat face of the chisel, so that, when the screws are turned down, the rotary motion of the screw-heads may have no tendency to move the chisel and impair its exact adjustment. The letter *s* indicates a conical hole or mortise in the swell part *b*, very finely and nicely made. In making it I first make two steel reamers of exactly the same size. One I use for reaming this conical hole, and the other I use for reaming the holes in the faucets or cocks which are to hold the plugs; and by this means I have this hole of the exact size and shape of the holes for the plugs in the cocks; and, as the bodies of these cocks are of brass or other soft metal, the reamer used for reaming them will not wear perceptibly in a long time. After having reamed out the hole *s*, I grind or plane or file off the face for the chisel-seat perfectly flat and level; and this face must not be cut so low as to cut the hole *s* on the plane of its axis. The chisel-seat must be higher than that, or otherwise the plug to be fitted will not be held perfectly true and secure. I prefer the exact plane for this chisel-seat shown in Fig. 1, namely, a plane leaving the hole *s* a trifle more than three-fourths of a circle. The angle forming the edge of the chisel is but little less than a right angle—just enough to cut or scrape the plug. This edge must be kept true, and so as to exactly coincide with the edge of the hole *s*, which I will call the "pattern-socket."

It is absolutely essential that the bevel from c^1 to c^2 at the edge of the chisel, should, contrary to what is seen in the patent referred to, be on that side of the edge opposite from the face or seat on which the chisel rests, and this for three reasons, namely: First, if the bevel is on that side of the edge next the chisel-seat, the edge is raised from its solid support—the chisel-seat—by the whole thickness of the chisel, and thus may waver or "chatter"—not perceptibly, perhaps, to the senses, but the effect of such chattering is seen in an imperfectly-fitting plug. Second, when the edge is next the chisel-seat the edge of the pattern-socket affords an unfailing index and guide whereby to set the chisel, while, if the edge be raised from the chisel-seat, it is hardly possible to train the human hand and eye so per-

fectly as to enable the possessor of such hand and eye to set the chisel with that perfection of position which is necessary for this accurate and perfect work. Third, I know, from long, careful, and patient trials and experiments, that my tool cannot be made to work practically if the bevel is next the chisel-seat; and this is why the device given by the Office in reference, though good for the purpose for which it is intended—that is, the turning of the plugs—cannot be made to do the fitting. These plugs are of brass or other soft metal, and my chisel once hardened and sharpened will last to fit something over one thousand plugs. This chisel should be of good steel; and I harden it by heating it to a low cherry color, and then plunging it into cold water. I do not draw the temper.

The tool has an adjusting-screw, *i*, running longitudinally through the barrel *a*, to prevent the plugs from pressing down too far into the pattern-socket. The two screws *d d* render the chisel fixable at both ends, so that it cannot swing or move after it is adjusted.

The barrel *a* is intended to be fastened into a lathe-spindle, so as to have the tool revolve in the direction of the arrow; and the plug is inserted longitudinally into the pattern-socket, and pressed in till the chisel ceases to cut upon the plug, when the latter will be found to be perfectly fitted.

I will now state what I consider to be essential requirements in the construction of this tool.

First, the pattern-socket must be of exactly the same shape, to the extent of its surrounding walls, as the holes for plugs in the cocks. Second, the pattern-socket must be greater than a half-circle. Third, the bevel of the chisel must be on that side of the edge opposite from the chisel-seat.

And I claim as my invention—

1. A fitting-tool of the general nature set forth, having a pattern-socket, *s*, greater than a half-circle, and a chisel, *c*, fixable at both ends to the stock, with its bevel c^1 to c^2 on that side of the edge opposite to the chisel-seat, substantially as shown and described, and for the purpose set forth.

2. The mandrel *a*, having at one end the parti-circular pattern-socket *s*, combined with the chisel *c* and screw *i*, substantially as shown and described.

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Witnesses:

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