G. H. Fuller,

Making Watch-Keys,

No. 43,108. Patented June 14, 1864.

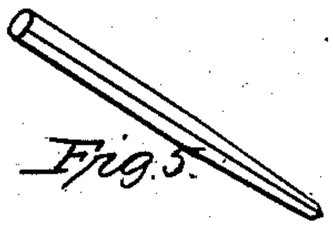

Fig. 5.

Fig. 4.

Fig. 3.

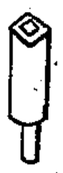

Fig. 1

Fig 6.

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE H. FULLER, OF PAWTUCKET, RHODE ISLAND.

IMPROVEMENT IN THE MANUFACTURE OF WATCH-KEYS.

Specification forming part of Letters Patent No. **43,108**, dated June 14, 1864.

To all whom it may concern:

Be it known that I, GEORGE H. FULLER, of Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in the Method of Making the Pipes for Watch-Keys; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 shows the key-pipe in the rough as it appears in the process in common use before the outside has been turned off. Figs. 2, 4, and 5 are the instruments with which my improved process is carried out. Fig. 3 shows the wire with the hole in it, ready to be swaged. Fig. 6 shows the finished pipe.

The article of manufacture known to the trade by the name of "key-pipe" has heretofore been exclusively manufactured in foreign countries and by the following process: A piece of wire, much larger in diameter than it is intended the pipe shall be when finished, is cut to the proper length, and after a longitudinal hole has been drilled in it, Fig. 1, a square punch is driven into the hole and the metal of the wire set up to the square by blows upon the outside. It is then placed in a lathe and the outside is turned off until the diameter is reduced to the proper size for a pipe.

Attempts have been made in this country to make this article by the same process, but from the amount of hand-labor required, and the absence of any mechanical contrivance for reducing the cost, it has been found impossible to compete with foreign manufactures. The great item of cost has consisted in the time necessary to be expended in turning off the surplus metal, no attempt having heretofore succeeded in making the square in a piece of wire of the same gage as the pipe should be when finished, without splitting the wire. I have succeeded in producing this article with a rapidity which will reduce the cost of the same below that at which they can be made and imported by the following means, which dispenses with the chief item of cost in the manufacture above stated. I take a piece of annealed wire of the size which it is intended the pipe shall be when finished, and drill in it a longitudinal hole to the required depth—say three-sixteenths of an inch. I then drive the wire into the collar, Fig. 4, which is made of hardened steel. It is necessary that the wire should be compressed by the collar, as otherwise the wire will at the next operation be split open. I next place the collar, Fig. 4, under a press, which is provided with a hardened-steel punch, Fig. 5, with four faces and force it into the hole in the pipe by the application of power to the press, whereby the proper form is given to the interior of the pipe, the compression of the collar preventing the pipe from being split. The pipe is then forced out of the collar by the application of pressure, and needs only to be polished and have the shank where it enters the key milled to be ready for market.

The process above described is not only exceedingly simple and capable of rapid execution, but the density of the metal is so much increased by the severe pressure of the punch and counter compression of the collar that a pipe made in this manner is more durable than one made in the manner heretofore practiced.

What I claim as my invention, and desire to secure by Letters Patent, is—

Making a key-pipe for watch-keys by the method and on the principle substantially as herein described.

GEORGE H. FULLER.

Witnesses:

BENJ. F. THURSTON,
THOS. H. PEABODY.