No. 705,451. Patented July 22, 1902.

E. H. SEARS.

WRENCH HANDLE.

(Application filed May 9, 1902.)

(No Model.)

Fig. 1

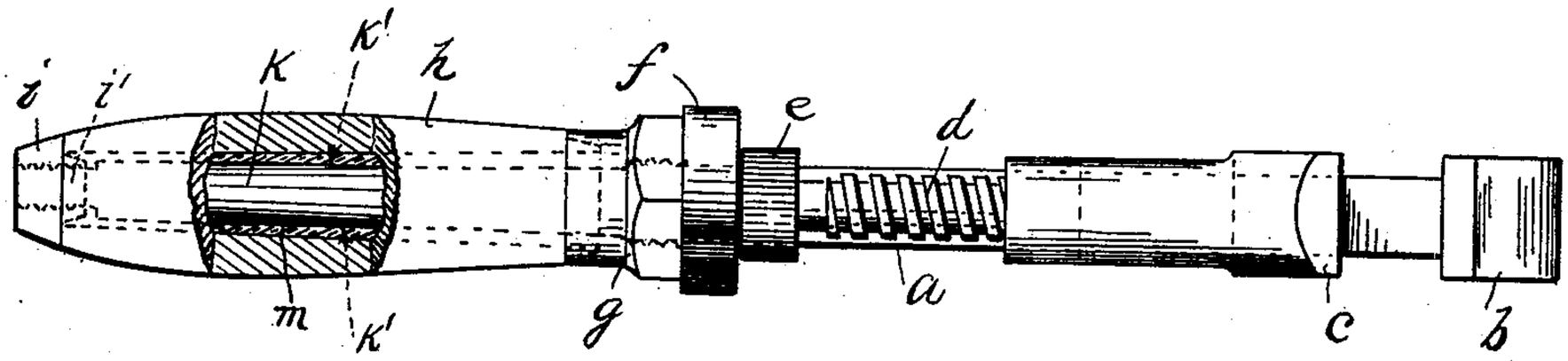


Fig. 2.

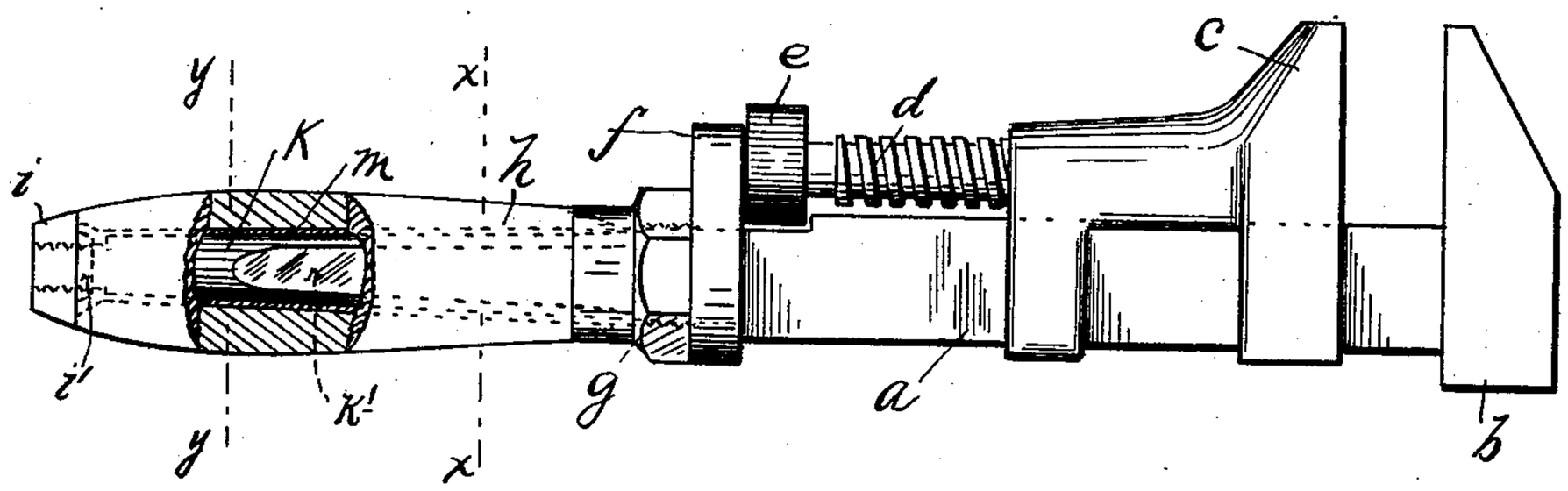


Fig. 3

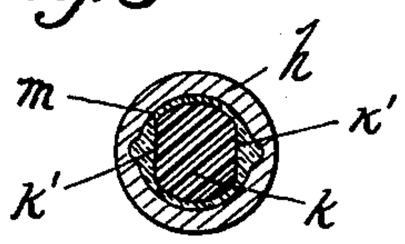


Fig. 4

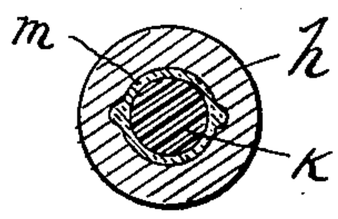
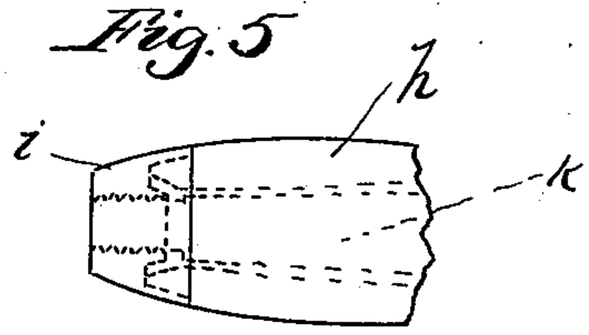


Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD H. SEARS, OF COLLINSVILLE, CONNECTICUT, ASSIGNOR TO THE COLLINS CO., OF COLLINSVILLE, CONNECTICUT, A CORPORATION OF CONNECTICUT.

WRENCH-HANDLE.

SPECIFICATION forming part of **Letters Patent No. 705,451**, dated July 22, 1902.

Application filed May 9, 1902. Serial No. 106,588. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. SEARS, a citizen of the United States of America, residing at Collinsville, in the county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Wrench-Handles, of which the following is a specification.

The object of the improvement is the production of an improved wrench-handle having certain features of novelty and advantage.

In the accompanying drawings, Figure 1 is a front or face view of a wrench embodying said improvement with features of interior construction denoted by dotted lines. Fig. 2 is a side view of the same wrench with features of interior construction denoted by dotted lines. Fig. 3 is a view of the wrench in horizontal cross-section on the plane *x x*. Fig. 4 is a view of the wrench in horizontal cross-section on the plane *y y*. Fig. 5 is a view of a modification of the nut-collar at the lower end of the wrench-handle.

In the accompanying drawings the letter *a* denotes the wrench-bar; *b*, the wrench-head; *c*, the movable jaw; *d*, the operating-screw, and *e* the rosette, by which the operating-screw is rotated.

The letter *f* denotes the step-plate, which is supported by the ferrule-nut *g*. This is a nut which has a depending ferrule embracing the upper end of the handle *h*, which is preferably of wood.

The letter *k* denotes the shank attached to the wrench-bar and inserted through the handle *h*. On its lower end it takes the nut-collar *i*, which bears on its upper side a part *i'*, which enters and centers the handle, as shown in Figs. 1 and 2, or, as modified in Fig. 5, it may be so shaped as to embrace and center the handle. The shank is non-cylindrical in shape and preferably that end is attained by slabbing off the sides as shown by dotted *k'* in Fig. 3. The hollow interior of the handle is also non-cylindrical, and preferably that end is attained by means of grooves, as illustrated in Fig. 4.

The letter *m* denotes soft metal, preferably type-metal, which makes contact with the exterior of the shank and with the interior of the handle. It is poured into place in a molten condition and allowed to cool and solidify. This use of the soft metal gives the wooden handle a firm bearing and support upon the metallic shank from end to end of the handle, making the handle every way firmer and more durable and prevents the handle from turning on the shank. Any plastic material which can be introduced to fill the space between the shank and the interior of handle which will harden and when hardened be of sufficient strength is the equivalent of the soft metal.

I claim as my improvement—

1. In combination, the non-metallic handle interiorly larger than the shank, the shank inserted through the handle, the collars on the shank at the two ends of the handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

2. In combination, the hollow wooden handle interiorly non-cylindrical, the non-cylindrical shank inserted through the handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

3. In combination, the shank having flattened sides, the ferrule-collar on the shank embracing the upper end of the handle, the nut-collar on the shank centering the lower end of the handle, the interiorly-grooved handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD H. SEARS.

Witnesses:

E. M. LOWE,

D. I. KREIMENDAHL.