(No Model.)

F. L. COES.

WRENCH.

No. 543,925. Patented Aug. 6, 1895.

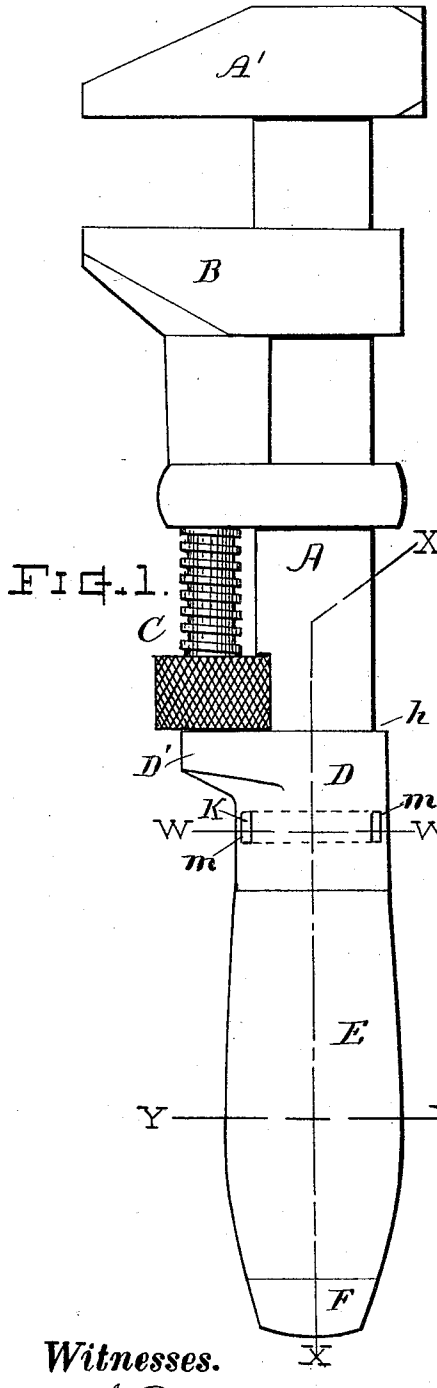

FIG. 1.

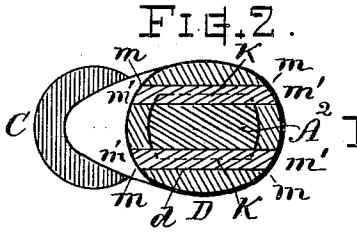

FIG. 2.

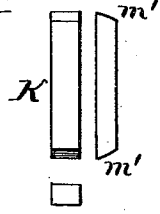

FIG. 6.

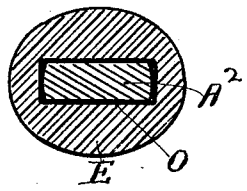

FIG. 3.

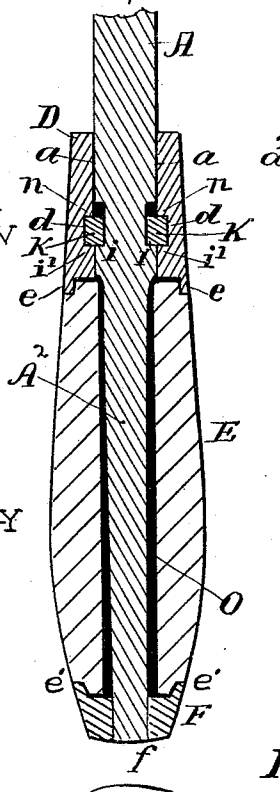

FIG. 4.

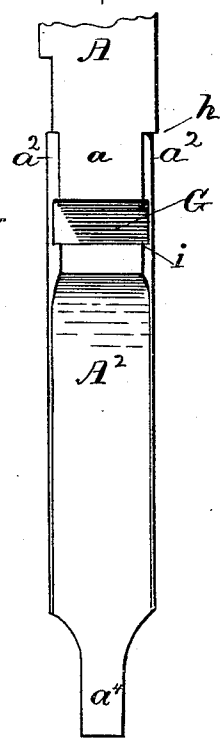

FIG. 5.

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SPECIFICATION forming part of Letters Patent No. 543,925, dated August 6, 1895.

Application filed January 9, 1895. Serial No. 534,334. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK L. COES, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Wrenches, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

This invention relates to the peculiar construction and manner of combining the wrench-bar and handle by means of transversely-disposed interlocking keys introduced and upset into opposite recesses or grooves formed across the sides of the wrench-bar and within the body of the ferrule, as more fully hereinafter explained, the object of my invention being to afford a simple, inexpensive, and rigidly-strong construction in a wrench or tool of the class, as specified.

In the drawings, Figure 1 is a side view of a wrench embodying my invention. Fig. 2 is a transverse section at line W W. Fig. 3 is a transverse section at line Y Y. Fig. 4 is a longitudinal section at line X X. Fig. 5 is a side view of the bar-shank, and Fig. 6 shows the form of the interlocking key.

Referring to parts, A denotes the wrench-bar; A′, the fixed jaw; B, the movable jaw; C, the rosette-screw; D, the ferrule; E, the wood handle, and F the tip or end piece.

According to my present invention the bar-shank A^2 is made with that portion which is within the ferrule formed with flat parallel sides *a* and rounded front and rear edges a^2 below the shoulder *h*. A groove G is cut or formed in the flat side *a* of the bar-shank, extending transversely across the same, and presenting a square shoulder *i* at its lower limit. The interior opening through the ferrule D is shaped to fit the flat sides and rounded edges of the shank. A transverse groove *d* is formed in the inner surface of the ferrule, presenting a lower seating-shoulder *i′* at the position corresponding with the shoulder *i* on the bar-shank and an upper shoulder *n*, as indicated. The ends of the grooves *d* extend as rectangular openings through the body of the ferrule at positions somewhat below the rosette-steps D′ or as indicated at *m*.

The grooves in the bar-shank are preferably made somewhat wider than the grooves in the ferrule, as shown.

When the parts are assembled, a rectangular key K, the width of which corresponds with the width of the groove in the ferrule and of a thickness equal to the depth of the grooves in both the ferrule and bar-shank and of sufficient length to reach through the ferrule, is introduced or driven into the opening *m* and grooves *d* and G, which key, seating on the shoulders *i*, *n*, and *i′*, interlocks with both the bar-shank and ferrule and holds the ferrule securely in place upon the bar-shank with its end firmly against the shoulder *h*. The key is upset and wedged firmly within the groove-space and against the shoulders *i*, *i′*, and *n* by riveting down its ends *m′*, which ends are subsequently dressed off flush and smooth with the exterior surface of the ferrule, thus producing a solid and finished connection for the parts.

The wood hand-piece E, which is best formed in a single piece, has a longitudinal opening *o*, oblong in cross-section, extending therethrough for receiving the bar-shank, the respective ends of the hand-piece being reduced and inserted beneath the lips *e e′* formed on the ferrule D and tip F, as shown, and the tip being arranged upon the reduced end a^4 of the shank, which latter is riveted into the opening of the tip at *f* in well-known manner.

I claim and desire to secure by Letters Patent—

1. The wrench-bar-shank having the transverse groove formed in the flat side thereof, with a square seating shoulder at the lower limit of said groove; in combination, with the ferrule having an opposite internal transverse groove, of less width, with seating shoulders at its upper and lower limit, and openings at the ends of such groove through the body of the ferrule, and the angular interlocking-key fitting the width of said ferrule groove, upset within the opposite grooves and against the lower seating shoulders of both the bar-shank and ferrule, for the purpose set forth.

2. The wrench-handle composed of the ferrule, its interior fitting upon the bar-shank,

and having transverse internal grooves and shoulders with openings at the ends of said grooves through the body of the ferrule, the end-tip attached to the shank end and the hand piece having a transversely oblong opening longitudinally therethrough, and reduced ends engaged by the tip of the ferrule; in combination with the bar-shank having transversely disposed grooves and shoulders in its sides, opposite those in the ferrule, and the rectangular keys inserted within said grooves and interlocking with both the ferrule and bar-shank, said keys upset within the groove spaces firmly against the shoulders, their ends riveted and dressed off flush with the exterior surface of the ferrule, substantially as set forth.

Witness my hand this 3d day of January, 1895.

FREDERICK L. COES.

Witnesses:
CHAS. H. BURLEIGH,
ELLA P. BLENUS.