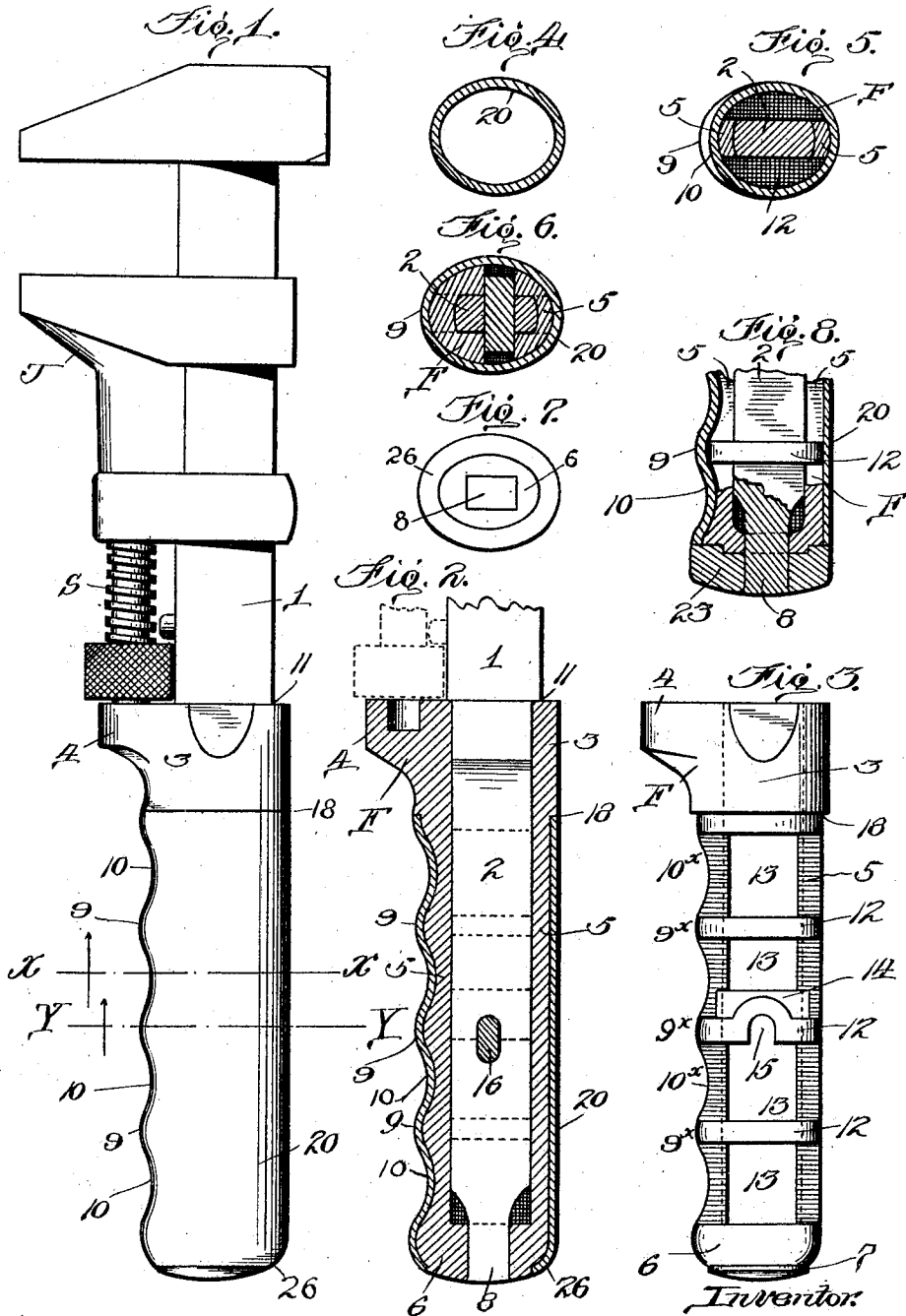


R. R. COES.
METHOD OF MAKING WRENCH HANDLES.
APPLICATION FILED JULY 1, 1920.

1,395,222.

Patented Oct. 25, 1921.



Inventor:
Russell R. Coes
By Chas. H. Burleigh
Attorney.

UNITED STATES PATENT OFFICE.

RUSSELL READ COES, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO
COES WRENCH COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF
MASSACHUSETTS.

METHOD OF MAKING WRENCH-HANDLES.

1,395,222.

Specification of Letters Patent.

Patented Oct. 25, 1921.

Original application filed July 24, 1919, Serial No. 312,923. Divided and this application filed July 1,
1920. Serial No. 393,230.

To all whom it may concern:

Be it known that I, RUSSELL R. COES, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Methods of Making Wrench-Handles, of which the following is a specification.

This invention relates to a novel method of making wrench-handles, as more particularly hereinafter set forth; the object being to provide a practically workable, efficient and convenient method of manufacture whereby metal handles of the character described can be successfully produced.

Another object is to afford an economic method of making wrench-handles, comprising the assembling of a handle-frame internally fitting upon the wrench-bar shank, and having protuberant brace-members integrally thereon; with an exterior grip-member consisting of a straight metal tubing of uniform gage, placed upon said frame and die-compressing to conform it to the supporting surfaces and to the end-disk-face, and to form depressions along the edge of the handle.

These objects I attain by the method explained in the following description and illustrated by the accompanying drawings, showing in detail the structure of a screw-wrench, to the manufacture of which my invention is adapted.

The present application is a division from my earlier application, Serial No. 312,923, filed July 24th, 1919, now Patent No. 1,357,848, dated November 22, 1920.

In the drawings, Figure 1 is a side view of the screw-wrench. Fig 2 is a longitudinal section of the handle assembled upon the wrench-bar-shank. Fig. 3 is a side view of the handle-frame separate from other parts; Fig. 4 a cross-section of tubing as may be used for the exterior grip-surface of the handle: Fig. 5 a transverse section at line X X on Fig. 1; Fig. 6 a transverse section at line Y Y; Fig. 7 an end view of the handle, and Fig. 8 indicates a modification of the tip-end form.

In the drawing, Fig. 1, the numeral 1 indicates the bar of the wrench and 2 the wrench-bar shank; which bar and shank are formed substantially as heretofore em-

ployed; the shank having flat sides and parallel longitudinal edges transversely rounded.

F indicates a cast-metal handle-frame, which is preferably made in the peculiar skeletonized form illustrated; it comprises the neck-supporting ferrule 3; with the bearing-step 4 for the jaw-adjusting screw S; front and rear longitudinal shank-embracing edge-members 5, and tip-end disk 6, integrally united with the ferrule 3 by said edge members 5, the inner faces of which fit against the edges of the bar-shank 2 and have firm support thereon, while the ferrule embraces the neck of the bar and fits firmly up against the shoulder 11. An opening is formed in the end-disk 6 for the reception of the reduced end 8 of the shank.

Upon the outer edge of the handle-frame, below the ferrule or screw-bearing step, I provide, along the shank-embracing member 5, a plurality of protuberances 9* and depressions or concavities 10*; the latter presenting, longitudinally, inwardly curved surfaces between the protuberances, and having, laterally, a convex or rounded contour. The two longitudinal members 5 are integrally united at intervals across each side of the shank-receiving space by narrow transverse braces or laterally outstanding cross-ties 12 severally disposed in substantially coincident alinement with the protuberance 9*, and having open intervening spaces 13 between the several cross-ties, as best shown in Fig. 3. The inner surfaces of the cross-ties seat flatly against the sides of the wrench-bar shank 2, and their outer edges are rounded or arched to correspond with the cross-section shape of the handle.

The central cross-tie is preferably reinforced, as at 14, and provided with a recess 15 to accommodate the key or pin 16 that is inserted through the shank for securing the handle frame thereon.

The periphery of the end-disk 6 is best rounded or beveled off at its outer angle, with or without a slight shoulder, as at 7.

The grip-face or exterior member 20 of the handle is made of single straight section of comparatively thin wrought-metal, drawn or welded tubing of uniform thickness, preferably of No. 12 gage, more or less, cut to the required length; said tubing being of a caliber that will conveniently fit onto the

exterior of the handle-frame and be supported by the peripheral surfaces of the cross-ties 12, disk 6 and the end of the ferrule 3, which latter is best reduced, as at 18, to accommodate the thickness of the tube metal.

The method of making my improved wrench-handles is as follows: The handle-frame F of cast metal, is preparatively formed with protuberances 9⁺ and depressions 10⁺ along its edge, and with the transverse cross-ties 12 coinciding in their relation with the protuberances; the intervening spaces 13 relatively coinciding with the depressions 10⁺; the lower end 18 of the ferrule, the end-disk 6 and exterior contour of the cross-ties being of approximately similar diameter and rotundity. The interior of this handle-frame is formed or broached out to a size of opening that will closely fit upon the shank 2. After placing the sliding-jaw J upon the bar, said handle-frame is assembled upon the wrench-bar shank, against the shoulder 11 and the key-pin 16 driven tightly into place; said key-pin being a well known form of fastener. The reduced end of the shank is also riveted at the outside of the end-disk, as at 8.

The grip-surface member or piece of plain straight wrought-metal tubing 20 of the character specified, cut to proper length, is then adjusted or forced onto the exterior of the handle-frame F, its upper end abutting against the ferrule, or fitting a shoulder formed thereon, as at 18. Said tubular member, as placed, extends straight across the depressions 10⁺, but rests upon the protuberances 9⁺ and the outer edges of the cross-ties or braces 12. The assembled handle is then subjected to pressure in dies having a suitably shaped matrix whereby the exterior grip-surface or tubular member 20 is compressed firmly upon the exterior of the outstanding supporting members of the handle frame, and portions of the tube between the protuberances 9⁺ are forced into the intervening spaces or depressions 10⁺, thereby affording a plurality of permanent transversely disposed finger-receiving corrugations 10 and ridges 9 along the front edge of the handle, below the projecting screw-bearing step; said corrugations laterally diminishing and smoothly merging with the plain non-corrugated surface of the grip at the respective sides of the handle, as best shown in Figs. 1 and 5. Also, the

lower end of the tubular member is curled inward, as at 26, and crimped firmly against the rounded or beveled periphery of the integrally attached end-disk 6, meeting the shoulder 7, (see Figs. 2 and 7) thereby making a neat end form which can be readily finished or polished as desired.

If in any instance it is desired to have the tip-member separate from the handle-frame, then the end of the tubular member 20 may be made to abut against the run of the tip-piece 23, as in Fig. 8, instead of crimping in the end, as at 26.

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

1. The method of making wrench-handles, which consists in forming a handle-frame comprising the neck-embracing ferrule, and longitudinal edge-supporting members integrally connected by laterally projecting transverse braces or cross-tie members disposed at intervals thereon with intervening spaces, providing a plurality of protuberances and depressions along the handle-frame; assembling and securing said handle-frame upon the wrench-bar shank, inclosing said shank and frame within a straight section of wrought-metal tubing of uniform gage and of a size suitable to fit the exterior of the frame members, then subjecting the assembled handle to pressure in dies, thereby compressing the tubing rigidly upon the exterior of the outstanding member of the handle-frame and forcing portions of the tubular member inward into the intervening depressions to form finger-receiving corrugations in the exterior grip surface.

2. The method of making wrench-handles, which consists in preparing a skeletonized handle-frame with external protuberances and depressions and laterally outstanding brace members, assembling and securing such handle-frame upon the bar shank, applying to the exterior of said handle-frame a thin straight cylindrical grip-surface member approximately corresponding with the diameter of the outstanding members, then compressing said cylinder to seat firmly against the supporting surfaces on said outstanding members and forcing portions of the grip-surface permanently inward into the depressions or intervening spaces.

Witness my hand this 30th day of June, 1920.

RUSSELL READ COES.