

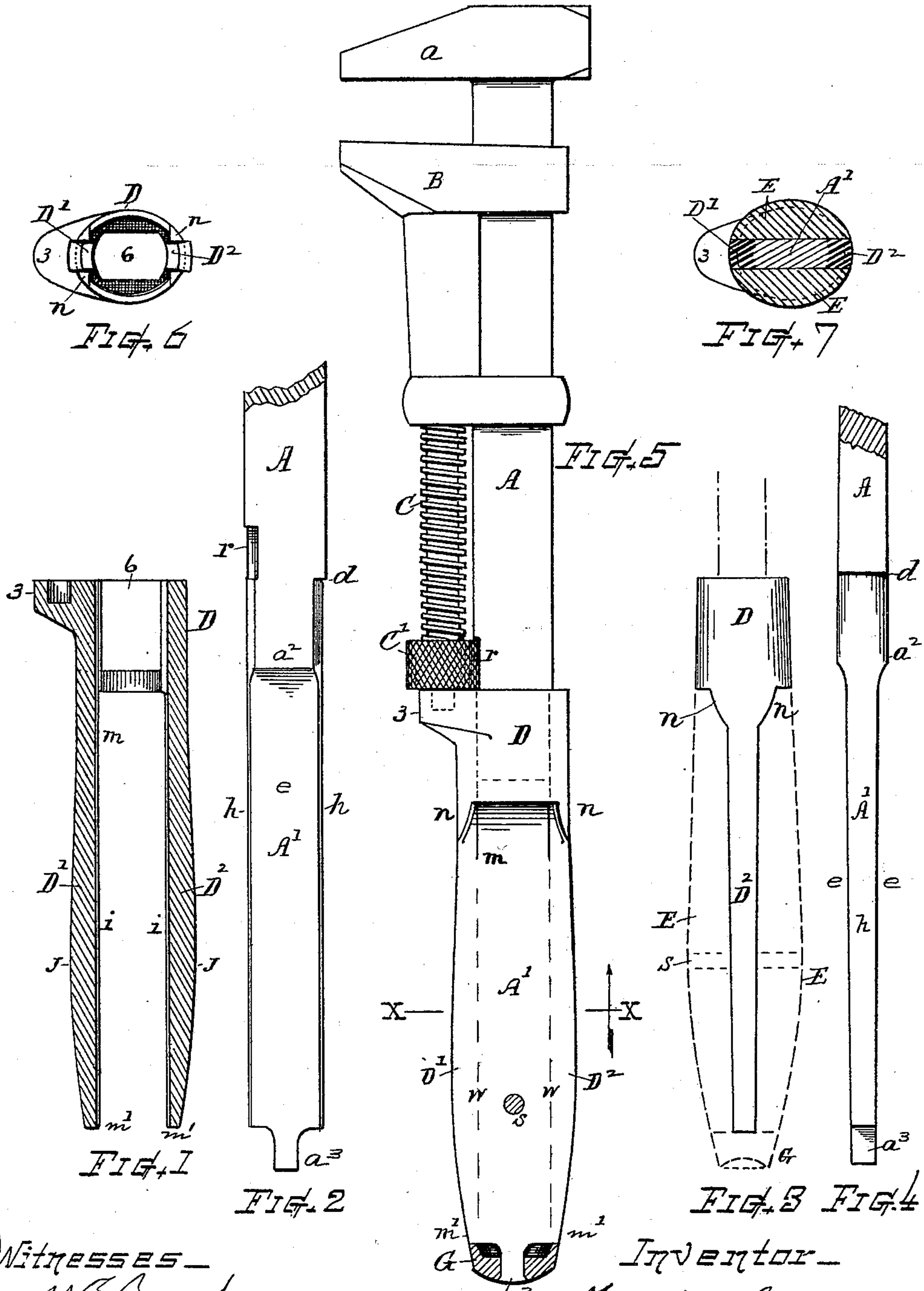
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Patented Apr. 11, 1899.

F. SEARLE.
WRENCH

(Application filed Feb. 25, 1899.)

(No Model.)



Witnesses—

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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 622,824, dated April 11, 1899.

Application filed February 25, 1899. Serial No. 706,821. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK SEARLE, 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 the Construction of 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 an improved construction of the shank and handle portions of the wrench and is applicable to screw-wrenches of the kind known as the "knife-handle" or "Coes" wrenches, the improvement being more especially designed to facilitate the manufacture and enhance the efficiency and durability of wrenches of large sizes, which in service are frequently subjected to very severe usage and heavy strains liable in wrenches as heretofore ordinarily constructed to bend the bar or shank and to loosen the ferrule-joints or to break the handle-supporting frame.

One object of my invention is to afford a construction in wrenches of the class specified which will give a permanent integration of the ferrule, its supporting parts, and the bar-shank in the peculiar manner set forth and in a way which is conveniently practicable for manufacture and by which the welding or integrant unification of the parts can be effected without unduly heating the collar portion or parts located at or above the rim of the ferrule.

Another object is to provide a substantially solid construction having no abutting or transverse joints in the edges of the handle-frame at or near the base of the ferrule; also, to render the uniting of the bar-shank and parts which sustain the strain of the movable jaw and its controlling-screw positively immovable in relation to the wrench-bar.

To this end my invention consists in forming the entire edge portions of the handle-frame integral with the collar and uniting the same with the bar-shank by welding or permanent integration of their longitudinal joint-surfaces in the manner hereinafter more fully

explained, and illustrated in the drawings, wherein—

Figure 1 is a longitudinal central section of the ferrule with its integral attaching-arms as primarily prepared for assembling. Fig. 2 is a side view of the bar-shank as prepared for assembling, (the top end of the bar, with the fixed jaw, being omitted.) Fig. 3 is a back view of the ferrule, with dotted lines indicating the full form of the wrench-handle. Fig. 4 is a back view of the bar-shank. Fig. 5 represents a side view of the assembled metal parts of the wrench-bar without the overlying wood scale of the handle and with the tip-piece shown in section. Fig. 6 is a bottom end view of the ferrule and its integral attaching-arms; and Fig. 7 is a transverse section of the wrench-handle at line X X on Fig. 5, looking upward.

Referring to the drawings, A indicates the main bar, having the fixed jaw *a* thereon. B denotes the movable jaw, mounted to slide on said bar; C, the adjusting-screw, threaded into the lower front part of said movable jaw and provided with the rosette or head C' for supporting and operating the jaw B in the usual well-known manner.

The shank or portion A' of the bar A, upon which the handle is located, is made to extend through the full length of the handle and from the position *a*² to its end is reduced laterally or made of less thickness than the main portion of the bar. The bar-shank is forged or formed with flat sides *e e*, and the edges *h h* are formed or milled off preferably cylindrical, as indicated, producing the shoulders *d*, which fix the top end limit of the handle, while the extreme end of the shank is formed as a suitable tang *a*³, upon which to secure the tip-piece G.

The ferrule-piece D in accordance with my invention is made of weldable steel or iron or other suitable material cast or drop-forged in appropriate molds or dies, and it consists, essentially, of a complete circumferential collar portion provided at its lower end with two integrally-formed oppositely-faced longitudinal arms D' and D² of sufficient length to extend the full length of the handle to the tip end. The upper portion of the arms in-

tegrally merge into the collar portion or rim respectively at its front and back with flush inner and outer surfaces, the arms being preferably broadened at their outer merging angles, as at nn . The outer edges J of the arms D' D^2 are shaped to correspond with the outline contour of the handle form, and their inner edges i i are shaped to countermatch the respective edges h h of the bar-shank A' , the space between said arms being approximately the same as the width of said bar-shank. This ferrule or collar is provided with the usual projection 3, having therein a cavity that serves as a step-bearing for the adjusting-screw C , the head C' of which bears against the top of said projection for sustaining the thrust strain from the movable jaw when the wrench is in use. The internal opening 6 through the collar is formed to fit the neck of the bar adjacent to the shoulder d , and said opening and the inner surfaces of the integrally-attached arms D' and D^2 are dressed off with a suitable broaching tool or instrument to accurately fit the size and shape of the bar-shank and along its edges h . The thickness of the arms D' D^2 is made approximately the same as the reduced shank A' , and as primarily formed these are given a size slightly in excess of the desired finished dimension, so that reducing pressure may be applied for welding the parts. The two arms and collar being integral or a single piece, the furcated parts rigidly maintain their relation during the operations of fitting and assembling and become properly located on the shank and temporarily retained by merely slipping the ferrule onto the neck of the bar, thus obviating frequent dropping or displacement of parts in the varied manipulations in the manufactory.

When putting the members of the wrench together, the movable jaw B is first placed upon the main bar A and the screw C assembled therewith, its head resting in the depression r , formed in the bar for its reception. The ferrule D is then slipped or driven onto the shank of the bar until its square top end abuts firmly against the shoulder d , the arms D' and D^2 extending along the edges h h of the shank. The shank and the arms embracing the edges thereof are then properly heated, and by the aid of suitable compressing-dies their adjacent surfaces or edges h and i are welded or solidly integrated together from a point, as m , at or near the collar-rim down to their extreme lower or outer ends at m' , thereby effecting a permanent union of the integrally-attached ferrule-arms with the bar-shank along the opposite edges where indicated by dotted lines ww on Fig. 5, the shank and arms together forming a solid unbroken flat plate-like center for giving the strength to the handle and for supporting the wooden scales E or externally-rounded side plate, while the collar portion fits firmly upon the neck of the bar and is held immovable by

reason of the integral connection of the arms therewith.

After the welding on of the ferrule-attaching arms the outer end is trimmed in a cutting-die to give the desired outline contour for the handle and to form the tang a^3 of proper dimension to receive the tip G .

The side plates E have flat inner faces and are applied to the sides of the shank and secured thereon in well-known manner by the end tenons and rivet-pins s , passing transversely through the parts.

By forming the bar-shank in the manner described and making the screw-supporting ferrule or collar complete with the integral front and rear arms extending to the tip and forming the welded-on edges of the shank or handle-bar I attain several important advantages and produce a very efficient and rigid construction. Among these advantages may be mentioned economy and facility in the manufacture, as the parts can be readily formed, fitted, and assembled. The structure of the edge-reinforce arms integral with the collar avoids any transverse joints that can be strained or opened by a spring or strain on the handle and also increases the ultimate strength of the wrench in the direction in which strain is applied in its use. The arms being permanently integrated or welded to the edges of the bar-shank A' affords practically the same advantages as a solid, swaged, and expanded shank, while the manufacture is simpler in process and the heating preliminary to the welding-on attachment can be performed without effecting an excessive heating of the collar portion itself or carrying the heat so far up the bar as to affect the screw C or its rosette-head C' while resting in its normal position against the step 3. The exterior of the collar does not become scaled by heat and the finishing thereof is more easily rendered.

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

1. A screw-supporting collar or ferrule provided with integral longitudinally-extended arms or prongs, in combination with a wrench-bar shank upon which said collar is fitted and secured by welded integration of the extended portion of said arms with the extended portion of the bar-shank, for the purpose set forth.

2. In a wrench comprising a bar having a fixed jaw, a movable jaw mounted on said bar and an adjusting-screw for controlling said movable jaw; the combination, as described, of the bar-shank laterally flattened and fitted with a shoulder and receiving-surfaces at its opposite edges, and the collar or ferrule having the projecting step-bearing for the adjusting-screw spindle, and provided at front and back with integral arms that extend the length of the handle, their inner edges fitted to countermatch the edges of the bar-shank and their outer edges correspond-

ing to the handle outline, said arms permanently integrated or attached to the respective edges of said bar-shank from a point below the collar-rim to the extremities of the
5 arms, substantially as set forth.

3. In a wrench, the ferrule-piece formed of weldable metal and consisting of the complete collar portion having a central opening that fits the wrench-bar neck, and provided
10 at the front and back thereof with integral longitudinal arms the inner faces of which

are flush in continuation of said opening and extend to the end of the handle, said inner faces adapted for welding or integrant attachment in combination with the edges of
15 the bar-shank, as set forth.

Witness my hand this 23d day of February, 1899.

FREDERICK SEARLE.

Witnesses:

CHAS. H. BURLEIGH,
LORING COES.