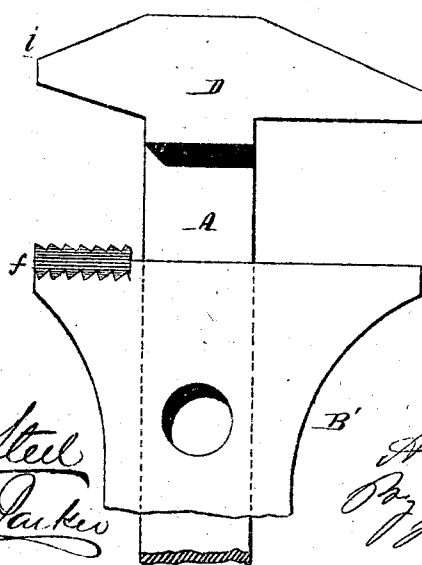
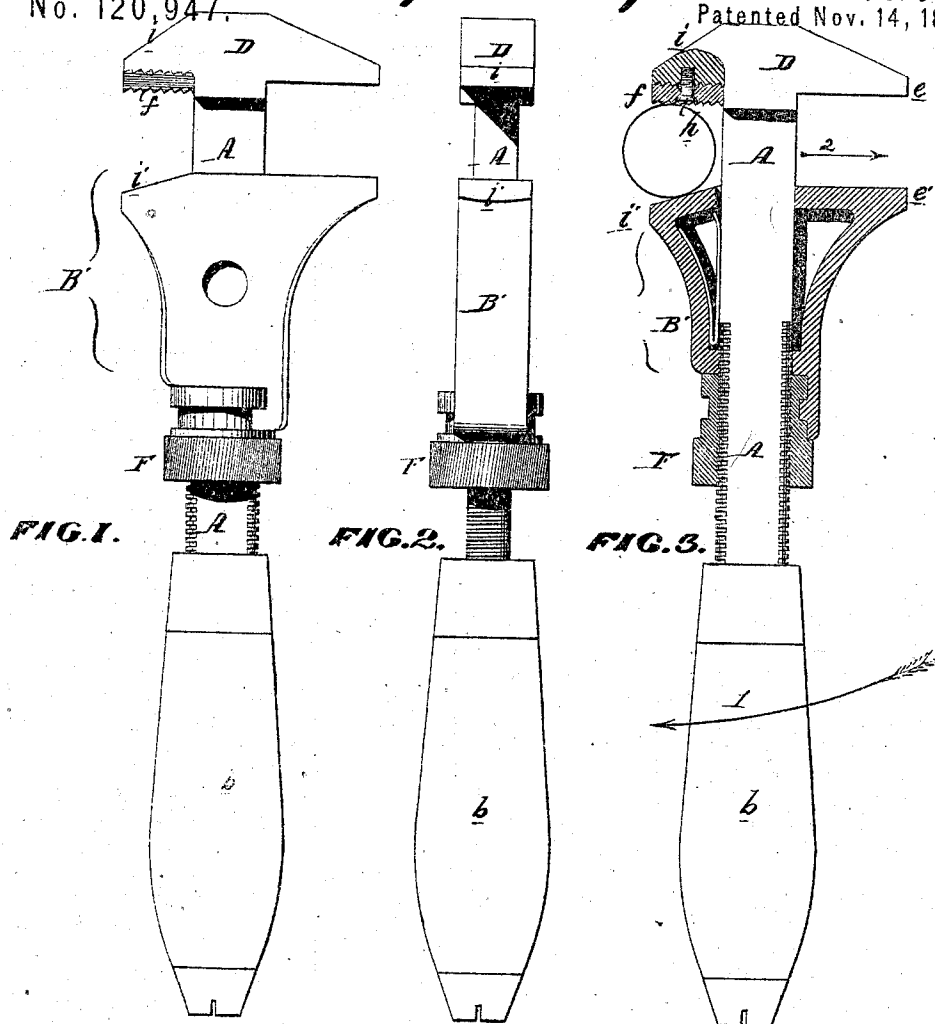


A.B. Davis - Invt. in Duplex Wrenches.
No. 120,947. Patented Nov. 14, 1871.

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Witnesses { *Wm A Steel*
John Parker

A. B. Davis
Pay his A/c
Hewson & Co

UNITED STATES PATENT OFFICE.

AUGUSTUS BALL DAVIS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. 120,947, dated November 14, 1871.

To all whom it may concern:

Be it known that I, AUGUSTUS BALL DAVIS, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Duplex Wrenches, of which the following is a specification:

My invention relates to an improvement in the duplex wrenches for which Letters Patent were granted to me and my assignee August 24, 1869, and for which I obtained a patent on the 9th of August, 1870; and my improvement consists of a toothed plate so combined with the permanent or movable jaw of a duplex wrench, and arranged in respect to the opposite jaw having an inclined face, so that when the teeth on one side have become worn or otherwise ineffective the plate can be reversed and the instrument thereby restored to its original efficiency as a medium for gripping and turning cylindrical objects of different diameters.

Figure 1 is a side view of my improved wrench; Fig. 2, the same, partly in section; Fig. 3, an edge view of the wrench; and Fig. 4, a side view, illustrating a modification of my invention.

A is the flattened screw-shank of the duplex wrench, and is provided with the usual handle B; and B' is the movable jaw, having its position on the shank controlled by a nut, F, as described in the patent No. 94,085, granted to me and my assignee, W. C. Ewing, August 24, 1869, and also in my patent No. 106,129, of August 9, 1870. D is the permanent jaw of the wrench, secured to or forming a part of the shank A and having two projections, *i* and *e*, the latter being used in connection with the projection *e'* of the movable jaw to operate on nuts and other like objects, while the projection *i*, in connection with the inclined portion *i'* of the movable jaw, is adapted to the gripping and turning of pipes and other cylindrical objects.

In the aforesaid patents the projection *i* of the permanent jaw had on its under side transverse teeth or serrations, so inclined that when the instrument was applied to a round object and moved in the direction of the arrow 1, Fig. 2, the movable jaw would be forced in the direction of the arrow 2, and the object would necessarily be firmly gripped by and between the projection *i* of the permanent jaw and the inclined portion *i'* of the movable jaw. Precisely the same effect is produced in the present instance; but instead of depending upon the

teeth formed on the permanent jaw itself for gripping the object, I use a plate, *f*, having teeth or serrations on both sides, and so secured by a screw, *h*, or otherwise, that it can be readily detached and reversed. The teeth are necessarily subjected to severe strains, and are apt to be broken or to become so worn as to effectually lose their gripping effect. If teeth made directly on the permanent jaw are solely relied upon and these teeth are broken or deteriorated, the instrument becomes useless as regards its application to cylindrical objects.

In my present improvement, however, the teeth on the permanent jaw are merely used as a means of retaining the steel plate *f*, the teeth on both sides of which are adapted to those of the jaw, so that when the teeth on one side of the plate have become worn it can be reversed and new teeth thus presented for action on the round objects; and when the teeth on both sides of the plate are rendered useless by wear or breakage, the purchase of a new plate and its application in place of the old one to the instrument will restore the latter to its original efficiency. If desired the reversible toothed plate *f* may be applied to the movable jaw, as shown in Fig. 5, in which case the under side of the projection *i* of the permanent jaw should be inclined, as shown. I prefer, however, to attach the plate to the permanent jaw, as shown in Figs. 1, 2, and 3.

I am aware that single detachable and reversible teeth have been secured to the jaws of wrenches, and make no broad claim to the same; but it will be seen that such teeth would not be efficient in a wrench of the above description, where one of the faces is inclined and the bearing point varies with the diameter of the object operated on, requiring an extended bearing surface instead of a single point.

I claim—

The detachable and reversible toothed plate *f*, in combination with the permanent or movable jaw of the wrench, and arranged in respect to the inclined face of the opposite jaw, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

Witnesses:

A. B. DAVIS.

WM. A. STEEL,
FRANK B. RICHARDS.

(100)