

S. G. SANBORN.
 ROTARY WRENCH.
 APPLICATION FILED JUNE 14, 1918.

1,295,799.

Patented Feb. 25, 1919.
 2 SHEETS—SHEET 1.

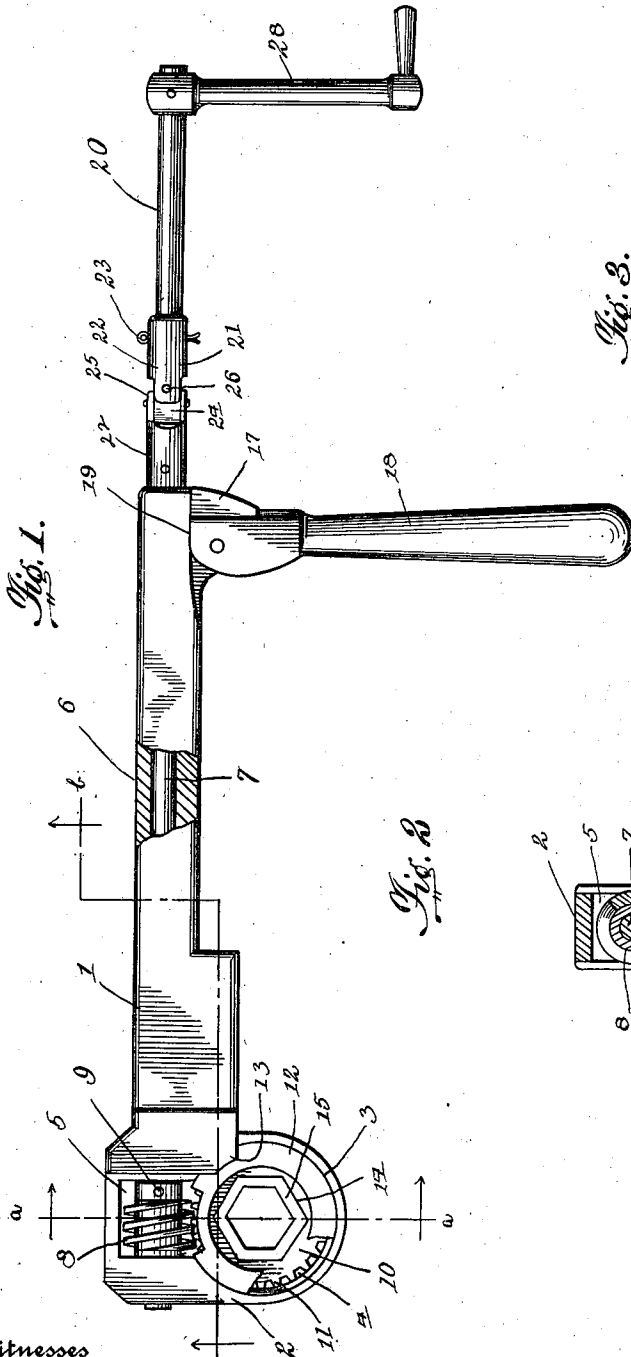


Fig. 3.

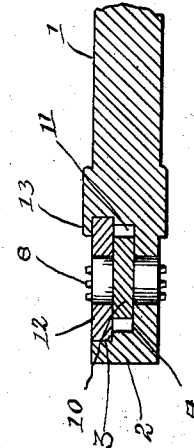
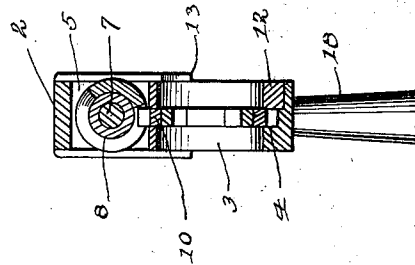


Fig. 2.



Witnesses
 Frederick L. Fr.
 J. Warner

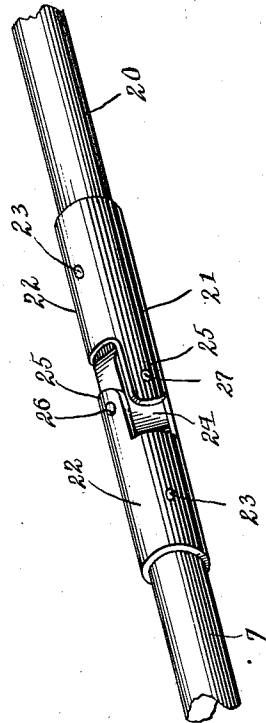
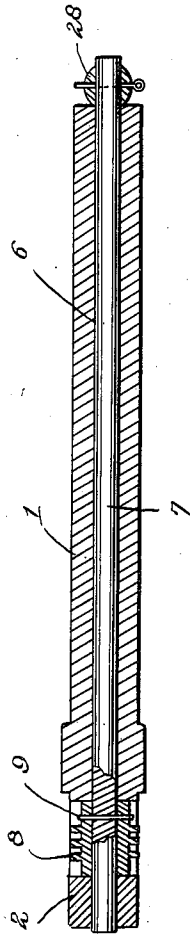
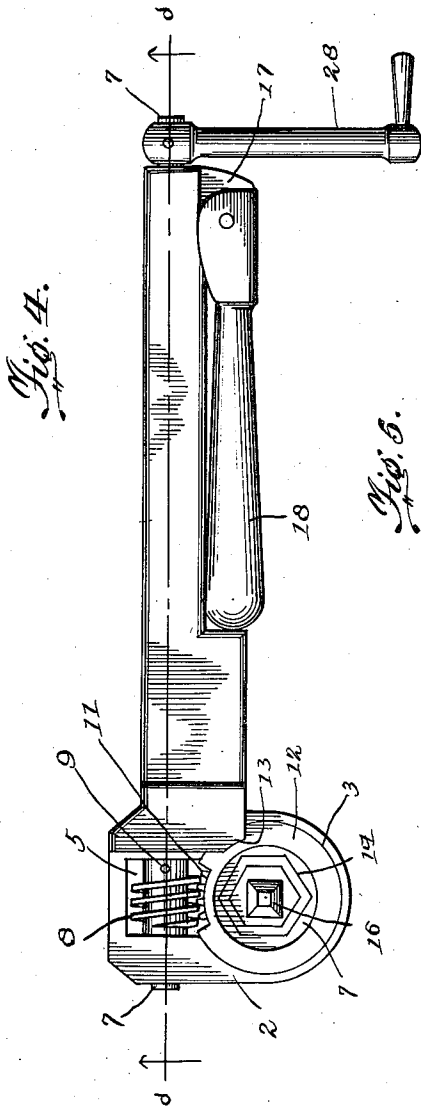
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 Attorney

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Witnesses

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UNITED STATES PATENT OFFICE.

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ROTARY WRENCH.

1,295,799.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL G. SANBORN, a citizen of the United States, residing at St. Albans, in the county of Franklin and State of Vermont, have invented new and useful Improvements in Rotary Wrenches, of which the following is a specification.

This invention is an improved rotary wrench which may be also used as a drill or reamer for operating a drill or reamer bit and which is adapted to be operated by hand and also by power as may be desired, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—

Figure 1 is an elevation of a wrench constructed in accordance with my invention, showing the same in connection with the link shaft, universal joint connector and motor crank element, parts of the wrench being indicated in section.

Fig. 2 is a detail sectional view of the same on the plane indicated by the line *a—*a** of Fig. 1.

Fig. 3 is a similar view on the plane indicated by the line *b—*b** of Fig. 1.

Fig. 4 is an elevation of the same with the hand piece folded and showing the motor crank attached directly to the worm shaft, the link shaft and the universal joint connector being discarded and the device being arranged for use in connection with a drill or reamer bit.

Fig. 5 is a sectional view of the same on the plane indicated by the line *d—*d** of Fig. 4.

Fig. 6 is a detail perspective view of the universal joint connector.

The stock 1 of my improved combined or interchangeable wrench, drill and reamer is provided at one end with an arm 2 in which is a circular opening 3 and a circular countersink 4 concentric with the said opening.

At the inner end of the arm there is also a rectangular opening 5 and the stock is provided with a longitudinal bore 6 which intersects the center of the opening 5. A shaft 7 is arranged for rotation in the bore and on the shaft is a worm 8 which is arranged in the opening, 5, bears against the ends of the said opening and is detachably secured to the shaft as by means of a pin or other suitable device 9. Hence, the worm while permitting the shaft 7 to rotate freely in the

bore 6 prevents said shaft from moving longitudinally.

The opening 5 communicates with one side of the countersink 4 and in the latter is arranged a rotary head 10 which is provided with peripheral spurs 11 for engagement by the worm. This head is held in place in the countersink by means of a locking ring 12, one side of which is engaged by a lip 13 that partly overhangs the countersink and with which the stock of the tool is formed. The locking ring has a segmental recess in one side, as shown, to clear the lip and enable the ring to be arranged in place or removed from the stock. The revoluble head 10 has a central polygonal opening 14 adapted to receive a socket piece 15. This socket piece may be of any suitable size and construction and may be adapted to engage a nut as where the tool is to be used as a wrench as shown in Fig. 1 and may be adapted to engage the squared and tapered inner end of a drill or reamer bit 16, as when the tool is for use as a drill or reamer, as shown in Fig. 4.

In practice, a number of socket pieces of different sizes and of different construction will be provided for use interchangeably with the tool so as to adapt the latter for use for all the purposes of a wrench and also for the purposes of a drill or reamer. The stock is also provided at the end opposite the arm 2 with a lug 17. The bifurcated inner end of a hand piece 18 is arranged astride of and pivoted to the said lug so that the hand piece may be extended from the stock at right angles thereto as shown in Fig. 1 or may be folded against the stock out of the way when it is not desired to use the said hand piece as shown in Fig. 4.

When the hand piece is at right angles to the stock its inner end bears against one side of the stock, as at 19. To enable the tool to be used in a contracted space, I provide a link shaft 20 and a universal joint connector 21 to connect the link shaft to one end of the shaft 7 and enable the shaft 7 and, hence, the worm and the head to be driven by the link shaft and when the latter is at an angle to the shaft 7. The universal joint connector comprises a pair of tubular members 22 adapted, respectively, to receive the shaft 7 and the link shaft at their outer ends and to be attached to said shafts as by means of pins 23, and an intermediate member 24

which is arranged between the meeting ends of the members 22.

Each member 22 has a pair of lugs or ears 25 at its inner end, the lugs of one member 5 being arranged opposite the spaces between the lugs of the other member, or in other words, at right angles to the lugs of the other member and the intermediate member is arranged between the lugs of both 10 the members 22 and is connected pivotally to the lugs of said members by pivot pins 26—27 which are arranged at right angles to each other and, hence, the said universal link connector may be arranged in extended position or with one of its members 22 at any 15 desired angle with respect to the other member 22, thus adapting the link shaft 20 to be correspondingly arranged with respect to the worm shaft 7.

20 I also provide a motor element 28 which is here shown as a hand crank and which may be detachably connected either to the outer end of the link shaft 20 or to the outer end of the worm shaft 7 when the 25 universal joint connector has been detached from said shaft 7. Hence, the worm shaft may be driven either directly or through the instrumentality of the universal joint connector and the link shaft, as may be desired. 30

A suitable power element such as a pulley may be substituted for the hand crank 28 when it is desired to drive the tool by a motor.

35 I claim:—

1. In a tool of the class described, a stock provided with an arm having a circular opening and a circular countersink concen-

tric with said opening, the stock being further provided with a rectangular opening 40 at the inner end of the arm and also with a longitudinal bore which intersects the center of said opening; a shaft arranged for rotation in the bore, a worm on the shaft and arranged in the opening, a revoluble head 45 arranged in the countersink and having peripheral spurs engaged by the worm, and a locking ring in said circular opening and holding the head in place, said locking ring having a peripheral recess and said stock 50 having a lip bearing on the outer side of the locking ring, said recess serving to clear the lip to enable the locking ring to be removed and replaced.

2. In a tool of the class described, a stock, 55 a revoluble head mounted therein and having gear teeth, an operating shaft also mounted in the stock and having a worm engaging the gear teeth of the head; a link shaft, a universal joint connector at one end 60 of the operating shaft and also connected to the link shaft and a driving element adapted to be attached directly to the worm shaft or to the link shaft at will, the said universal joint connector including an element 65 adapted to be detachably secured to the worm shaft so that the driving element may be employed to rotate the worm shaft either through the instrumentality of or independently of the link shaft. 70

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

SAMUEL GORDON SANBORN.

Witnesses:

AVERY G. SMITH,
ALFRED E. BLAKE.