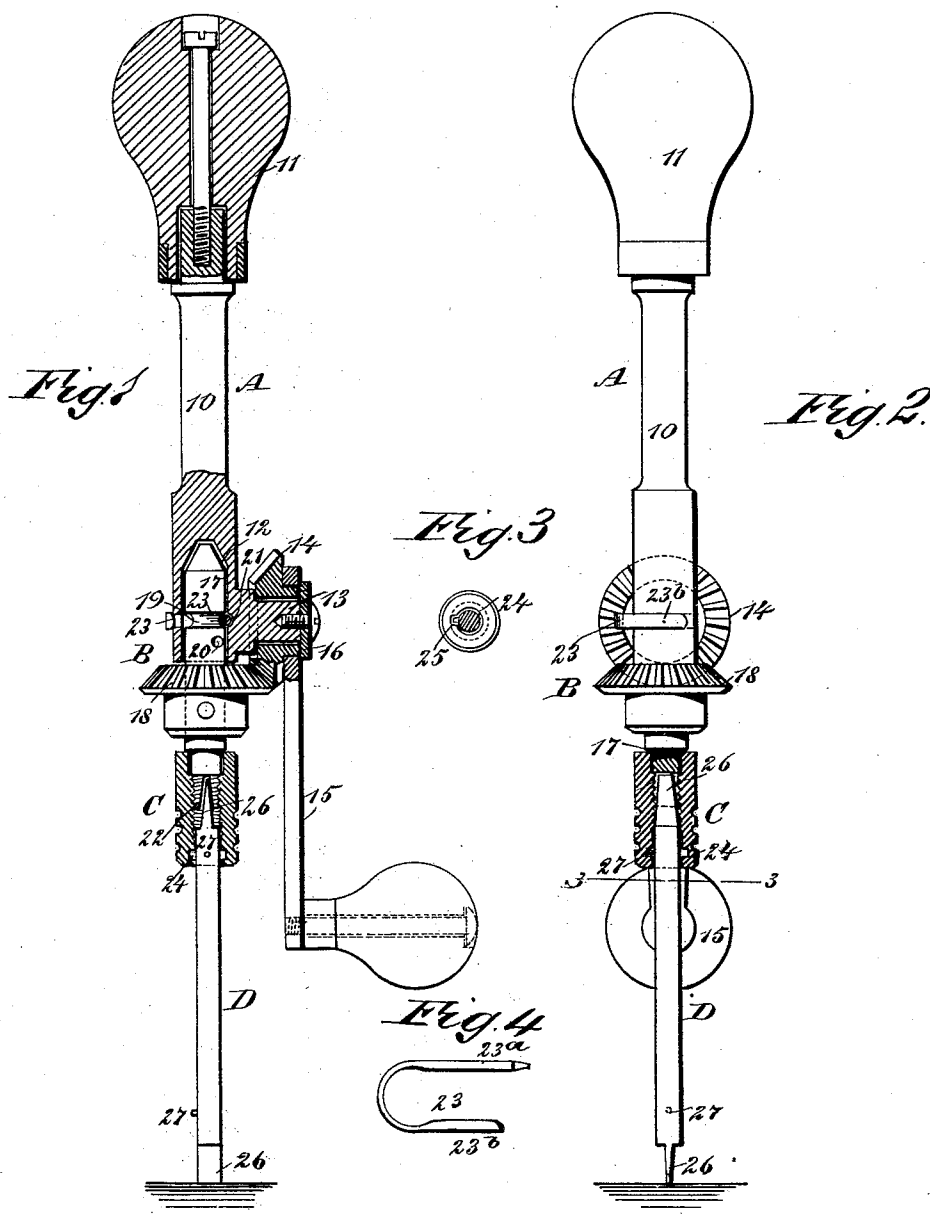


(No Model.)

W. E. DAILY.
SCREW DRIVER.

No. 484,654.

Patented Oct. 18, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM EDGER DAILY, OF MORRISTOWN, TENNESSEE.

SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 484,654, dated October 18, 1892.

Application filed September 10, 1891. Serial No. 405,271. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDGER DAILY, of Morristown, in the county of Hamblen and State of Tennessee, have invented a new and useful Improvement in Screw-Drivers, of which the following is a full, clear, and exact description.

My invention relates to an improvement in screw-drivers, and has for its object to construct such an article in a manner whereby the bit may be revolved and a screw thereby be rapidly and conveniently withdrawn from or forced to place and to accomplish a rotary movement through the medium of a crank-handle and gearing.

Another object of the invention is to provide a means whereby the bit may be held to turn only with the shank of the screw-driver and constitute a fixture thereof; and another object of the invention is to so construct the bit that one end may be utilized in connection with large-sized screws and the other end in connection with screws of similar sizes.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a central vertical section through the screw-driver. Fig. 2 is a side elevation, the chuck being in vertical section. Fig. 3 is a section taken particularly on the line 3 3 of Fig. 2, and Fig. 4 is a detail view of the key employed in connection with the screw-driver.

The screw-driver is constructed virtually in three sections—namely, a shank-section A, an intermediate rotary section B, held to turn in the shank-section, and a chuck C, adapted to receive the bit D. The shank-section A consists of a rod or bar 10, having a handle 11 fixed to its upper end. The lower portion of the bar 10 is provided with a chamber 12 in the lower end thereof, the upper end of which chamber is preferably conical, and at one side, near the lower end, the rod 10 of the shank-section is provided with a circular

branch or offset 13, extending horizontally or at a right angle to the bar, as is best shown in Fig. 1. Upon the circular offset or branch a bevel-gear 14 is loosely mounted, and upon the hub of the bevel-gear the upper end of a crank-arm 15 is secured by being welded, brazed, or otherwise rendered virtually an integral portion of the hub, and the combined crank-arm and bevel-gear are held to turn upon the branch or offset and prevented from slipping off therefrom through the medium of a washer 16, engaging with the outer end face of the branch or offset and held in position by a screw or its equivalent, as is likewise best shown in Fig. 1.

The intermediate revoluble section B of the screw-driver consists of a circular post 17, having horizontally secured thereon a bevel-gear 18, adapted to mesh with the gear 14. That portion of the circular post above the gear 18 is adapted to enter and turn in the chamber 12 of the upper section. Therefore the upper extremity of the post is made essentially conical, and between the upper end of the post and the gear 18 an annular groove or channel 19 is produced in the post, and a diametrical aperture 20 is formed beneath the groove or channel.

An aperture 21 is made in the upper section A in a manner to intersect the annular groove or channel 19 in the post, and a second aperture is produced in the said section A, which is adapted to register with the aperture 20 in the post.

The lower end of the post 17, or that beneath the gear 18, is exteriorly threaded, and in the extremity a vertical slot 22 is made. The revoluble section is held in engagement with the upper section A through the medium of an essentially-U-shaped key 23. This key is made of spring metal, one member 23^a being circular and tapering at its lower end, while the other member 23^b is flattened considerably upon its inner face, as is likewise the bow section of the key, as is best shown in Fig. 4. The member 23^a of the key is passed through an aperture 21 in the upper section, thereby entering the groove or channel 19 in the post 17, and the opposite member 23^b engages with the outer face of the upper section, as is illustrated in Fig. 2. It will be observed that by this means the interme-

diate section is held in connection with the upper section and yet is free to revolve therein.

The chuck C is adapted to screw upon the threaded lower end of the post 17. At or near its lower end the chuck is provided with an inner circumferential channel 24, which is intersected by a vertical channel 25, produced in the lower end of the chuck. The bit D is provided at each end with a screw-driver point 26, the point at one end being narrower than that at the opposite end to enable the bit to be used to manipulate screws of different sizes. The bit near each point is provided with a small stud 27, the studs being preferably placed below the outer edge of each point and at opposite sides of the shank, or essentially so.

In operation when a bit is to be placed in the chuck C the stud 27 near its upper end is caused to enter the vertical channel 25 of the chuck, and when it enters the annular channel 24 the bit is revolved to carry the post 27 out of alignment with the vertical channel. The chuck is then screwed upon the post 17, which will carry the upper point into the slot 22 at the lower end of the post, thus effectually preventing the bit from turning. It will be observed that by turning the crank-handle 15 and pressing upon the upper fixed handle 11 the intermediate section of the screw-driver may be revolved in either direction—that is, to the right or to the left—and that the bit will be revolved with it, thus admitting of a screw being conveniently and expeditiously manipulated.

In the event that the screw-driver is to be used as an ordinary screw-driver, it is necessary that the revoluble section be firmly locked to the upper or shank section, and this is conveniently accomplished by removing the key 23 from the aperture 21 in the shank-section and placing the member 23^a in the lower aperture of said section, whereby it will pass through the aperture 20 in the post and thereby hold said post in rigid engagement with the shank-section.

The screw-driver comprises but few parts and is capable of economic construction.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In a screw-driver, the combination, with the upper or shank section provided with a branch or offset at one side and a chamber in its lower end, said chambered end being provided with two apertures extending through, of a post one end of which is located in the chamber of the upper section and is provided with an annular groove and a through aperture, the lower end of the post being threaded, a bevel-gear secured to the post, a similar gear meshing with the post-gear and provided with an attached handle mounted to turn upon the offset or branch of the upper section, a chuck adjustably located upon the lower threaded end of the post, provided with a vertical groove at its lower end intersecting the interior annular groove, and a removable key adapted to have one of its members passed through either aperture in the upper section, as and for the purpose specified.

2. The combination, with the shank-section having a socket provided with transverse apertures, of the tool-post entering said socket and provided with an annular groove to register with one of the apertures and with an aperture to register with the other socket-aperture, and a key adapted to pass into the registering apertures and lock the post against rotation or to pass through the other aperture into the groove and permit the post to rotate in the socket, and means for rotating the post, substantially as set forth.

3. The combination, with the double-pointed bit D, having a transverse stud near each point, of the solid post having one end provided with a slot corresponding in shape with and adapted to receive either point of the bit to rotate it and provided with exterior threads, and the internally-threaded chuck or sleeve screwed upon the post and having an internal annular groove near its outer end to engage either bit-stud, and an intersecting longitudinal groove to admit the stud into the annular groove, substantially as set forth.

WILLIAM EDGER DAILY.

Witnesses:

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