No. 703,638. Patented July 1, 1902.

# J. D. CAMPBELL & J. K. GUNN.

## SCREW DRIVER.

(Application filed May 2, 1901.)

(No Model.)

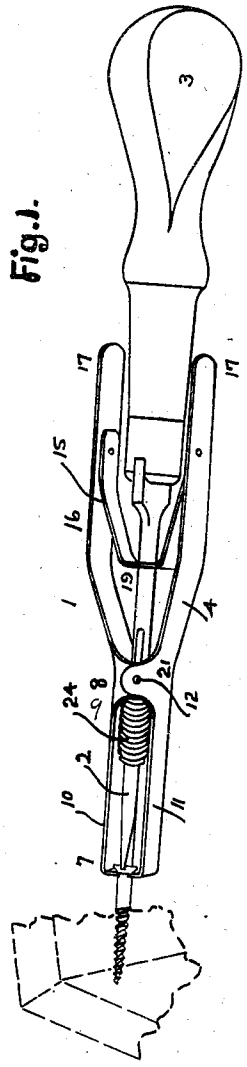


Fig. 1.

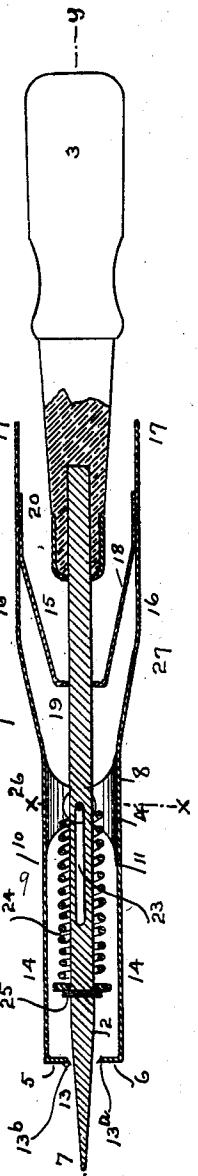


Fig. 2.

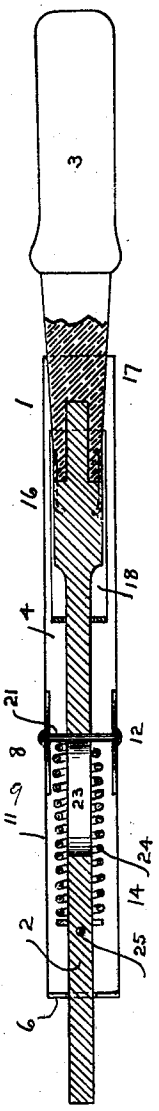


Fig. 5.

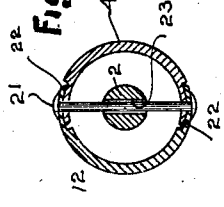


Fig. 3.

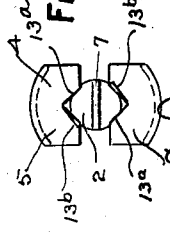


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHN D. CAMPBELL AND JUDSON K. GUNN, OF NEWTON, NEW JERSEY.

## SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 703,638, dated July 1, 1902.

Application filed May 2, 1901. Serial No. 58,486. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN D. CAMPBELL and JUDSON K. GUNN, both citizens of the United States, residing at Newton, in the county of Sussex and State of New Jersey, have invented certain new and useful Improvements in Screw-Drivers, of which the following is a specification.

This invention relates to screw-drivers; and it has for its object to provide an improved screw-driver which will be superior in point of convenience, in that it will enable the driving of screws in corners and other places difficult of access, and in which the guiding of the screw and manipulation of the screw-driver are attended by a lack of facility.

A further object of the invention is to provide an improved device of this class which shall be relatively simple in construction and generally durable and efficient in use.

In the drawings, Figure 1 is a perspective view of our improved screw-driver in use. Fig. 2 is a detail longitudinal sectional view of the improved screw-driver with the parts in normal or inoperative position. Fig. 3 is detail transverse sectional view taken upon the line *x x*, Fig. 2. Fig. 4 is a detail front end view of the improved screw-driver. Fig. 5 is a detail longitudinal sectional view of the improved screw-driver, taken upon the line *y y*, Fig. 2.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring to the drawings, 1 designates our improved screw-driver, which comprises a shaft or shank 2, the handle portion 3 of the shaft or shank 2, and a screw-clamping member 4, which operates to hold the screw to the shaft or shank 2 in the operations of setting and unsetting the screw. The screw-clamping member 4 embodies jaws 5 and 6, which operate with respect to the pointed end 7 of the shaft or shank 2, and said screw-clamping member 4 is slidably connected with the shaft or shank 2, as at 8, so as to permit projection of the jaws 5 and 6 into operative position or retraction of the same into inoperative position. Means 9 are provided for normally maintaining the jaws 5 and 6 in retracted or inoperative position.

In the preferred form of construction the screw-clamping member 4 consists of two arms or levers 10 and 11, respectively, which are pivoted together intermediate of their ends, as at 12, at the point 8 of slidable connection of the screw-clamping member 4 with the shaft or shank 2. The forward ends of the arms 10 and 11 are bent inwardly at right angles, as at 13, to form the jaws 5 and 6. Each of the jaws is provided with a V-shaped cut-away portion $13^a$, which V-shaped cut-away portion is formed to closely engage with the shank of the screw in the operation of the screw-driver, as above described. One edge $13^b$ of each of the cut-away portions $13^a$ is operatively sharpened or beveled to serve as a cutting edge in the operation of setting the screw, and these cutting edges serve to countersink the work to receive the head of the screw. The diagonally opposite edges of the cut-away portions $13^a$ are sharpened for this purpose. The portions 14 of the arms 10 and 11, between the jaws 5 and 6 and the point 12 of pivotal connection of the arms 10 and 11, extend normally in parallel arrangement at either side of the shaft or shank 2, the jaws 5 and 6 being normally maintained in engagement with the forward end of the shaft or shank 2 by tensional means 15, which operate with respect to the rearward end portions 16 of the arms 10 and 11, which rearward end portions are bowed or flared outwardly to form handles 17, which extend in proximity to the handle 3 of the shaft or shank 2. The tensional means 15 operate with respect to the handles 17 and consist in the preferred form of construction of a band-spring 18, which is carried centrally, as at 19, upon the rearward end portions of the shaft or shank 2, and which bears at its ends, as at 20, upon the inner sides of the handles 17 of the arms 10 and 11.

In forming the slidable connection of the arms 10 and 11 with the shank or shaft 2 a pin 21 is passed through spaced ears 22, which are formed upon each of the arms 10 and 11 and at both sides of the shaft or shank 2, and said pin 21 is also passed through an elongated slot 23, which is formed longitudinally of a predetermined portion of the shaft or shank 2. The pin 21 thus constitutes the means of pivotal connection at 12 of the arms 10 and 11. The screw-clamping member 4 is limited in its movements longitudinally of

the shaft or shank 2 by engagement of the pin 21 with the opposite end walls of the elongated slot 23. The means 9 for normally maintaining the screw-clamping member 4 in retracted position may consist of a coiled spring 24, which is coiled around the shaft or shank 2 between the pin 21 and a pin 25, which is passed through the shaft or shank 2 forwardly of the forward end of the elongated slot 23. In arranging the pin 25 in connection with the shaft or shank 2 it is so arranged as to accommodate the spring 24 between the pins 21 and 25 when said spring is in fully-compressed condition. The relative tension of springs 18 and 24 is such that the screw-clamping member 4 will be retracted upon the shaft 2 automatically when the jaws 5 and 6 are withdrawn from the head of a screw.

The operation and advantages of our improved screw-driver will be readily understood.

In setting the screw the handles 17 are forced inwardly, and the screw-clamping member 4 is then forced forwardly into the position in which the jaws 5 and 6 project beyond the end 7 of the shaft or shank 2. The jaws 5 and 6 are then allowed to move toward each other under the influence of the tensional means 15 and are brought into engagement with the shank of the screw, beneath the head of the same. The tensional means 9 are then permitted to retract the screw-clamping member, which is so guided that the slotted head of the screw is seated in firm operative position upon the pointed end of the shank 2. The screw-clamping member 4 maintains the screw in firm operative connection with the pointed end of the shaft or shank 2, and the necessity of manually holding and guiding the same is obviated, permitting the operator to devote his entire attention and energy to the customary manipulation of the shaft or shank 2 by means of the handle 3. When the screw has been driven nearly home, the handles 17 are forced inwardly to withdraw the jaws 5 and 6 from the head of the screw, and the tensional means 9 then forces the screw-clamping member 4 into fully-retracted position, and the jaws 5 and 6 are brought into normal position in contact with the shaft or shank 2 by the tensional means 15. The screw may then be entirely driven home in the customary manner. In unsetting or withdrawing the screw the operation is reversed, the screw being started with the screw-clamping member 4 in retracted position. When the head of the screw has been withdrawn sufficiently to permit the insertion of the jaws 5 and 6 beneath the same, the screw-clamping member 4 is projected against the tensional means 9, and the jaws 5 and 6 are first separated against the tension of the tensional means 15 and are then passed beneath the head of the screw, at opposite sides of the shaft or shank of the same. The operation of unsetting the screw is then completed in the ordinary manner, and the screw is withdrawn upon the pointed end 7 of the shaft or shank 2, in which position it is maintained by the jaws 5 and 6.

The advantages in operation of our improved screw-driver when setting and unsetting screws in corners and closely-confined interiors will be manifest. The necessity of manually holding and guiding the screw is obviated, and the screw is held firmly by the screw-clamping member in position to be operated upon by the shank or shaft 2. The operator has the free use of both hands in driving or withdrawing the screw, and the operative end 7 of the shaft or shank is maintained at all times in operative connection with the head of the same.

It is manifest that our improvements may be applied to any type of screw-driver whether driven directly by handle, as illustrated, or by a bit-stock or otherwise, the screw-clamping member being adaptable to any form or type of shank. Although it has been stated that the jaws 5 and 6 are positively withdrawn from the screw previous to the final setting of the latter, it results that said jaws will be automatically withdrawn from the screw when the work into which the screw is being driven comes into contact with the outer end of said jaws, as said jaws will ride over the beveled face of the head of the screw under the pressure of the work upon the ends of the jaws, supplemented by the action of the tensional means 9.

We do not desire to be understood as limiting ourselves to the details of construction and arrangement as herein described and illustated, as it is manifest that variations and modifications may be made in the features of construction and arrangement, in the adaptation of the device to various conditions of use, without departing from the spirit and scope of our invention and improvements. We therefore reserve the right to all such variation and modification as properly falls within the scope of our invention and the terms of the following claims.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at one end with jaws adapted to engage the head of the screw and pivoted intermediate their ends through the slot, and a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop, the organization being such that the spring normally holds the jaws in a retracted position on the shank.

2. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at one end with jaws adapted to engage the head of the

screw and pivoted intermediate their ends through the slot, a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop the organization being such that the spring normally holds the jaws in a retracted position on the shank, and a spring slidably mounted on the shank above the slot and normally pressing the jaws toward each other.

3. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at their outer ends with opposing jaws and at their inner ends with handle portions and pivoted intermediate their ends through the slot, and a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop the organization being such that the spring normally holds the jaws in a retracted position on the shank, and a collar provided with two spring-arms normally forcing the handle portions apart and slidably mounted on the shank above the slot.

4. An improved screw-driver, comprising a shank member, a clamping member embodying pivoted levers carried by the shank and provided at one end with jaws for engaging the head of the screw and at the other end with handle portions, a pin carried by one of said members and working in an elongated slot in the other of said members, a spring coiled around said shank member and bearing at one end against said pin and at the other end against a stop carried by one of said members, and a spring embodying two arms secured to the handle portions and normally pressing them apart and a body portion connecting said arms and provided with a central opening to receive the shank member.

In testimony whereof we have signed our names in the presence of the subscribing witnesses.

JOHN D. CAMPBELL.
JUDSON K. GUNN.

Witnesses:
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