No. 625,046. Patented May 16, 1899.

C. A. MANN.

SCREW DRIVER.

(Application filed Jan. 27, 1899.)

(No Model.)

Fig. 1.

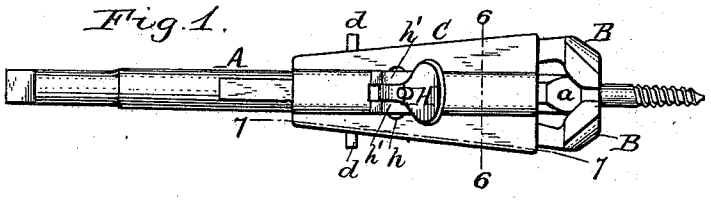


Fig. 2.

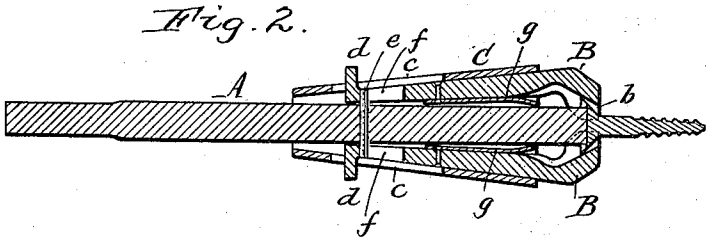


Fig. 3.

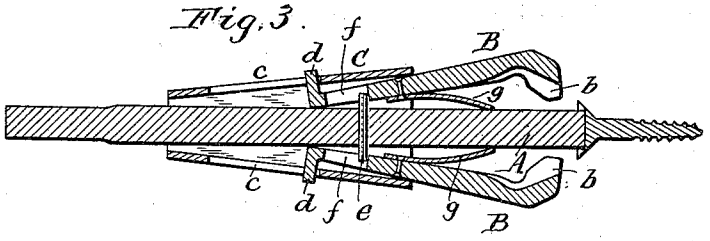


Fig. 4.

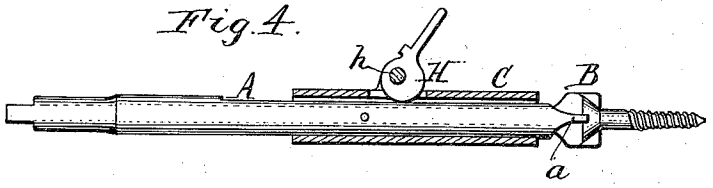


Fig. 5.

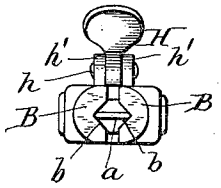


Fig. 6.

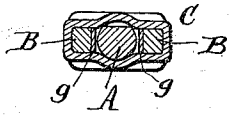
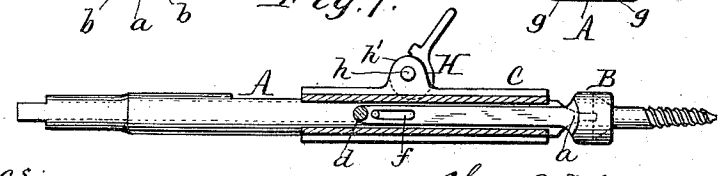


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES A. MANN, OF BUFFALO, NEW YORK.

SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 625,046, dated May 16, 1899.

Application filed January 27, 1899. Serial No. 703,548. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MANN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Screw-Drivers, of which the following is a specification.

This invention relates to screw-drivers which are provided with a pair of clamping-jaws adapted to grasp the head of the screw for firmly holding and steadying it during the operation of driving the same.

The object of my invention is the construction of a strong, simple, and inexpensive tool of this kind which can be quickly and conveniently manipulated for grasping and releasing a screw and in which the clamping-jaws have a considerable range of movement, so as to receive screws of various sizes.

In the accompanying drawings, Figure 1 is a top plan view of my improved screw-driver, showing a screw gripped between its jaws. Fig. 2 is a longitudinal section of the tool, showing the parts in the same position. Fig. 3 is a similar section showing the jaws open and drawn back to bring the same in rear of the flattened end of the driver. Fig. 4 is a longitudinal section of the tool at right angles to Fig. 2. Fig. 5 is an end or front view thereof, showing the jaws closed. Fig. 6 is a cross-section in line 6 6, Fig. 1. Fig. 7 is a longitudinal section in line 7 7, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents the shank or driver of the tool, having the usual flattened front end *a*, which enters the nick in the head of the screw. The driver may be provided with a suitable handle for turning it or have its rear end constructed to engage with the socket or holder of a bit-brace.

B B are the jaws or holders which grasp the head of the screw. These jaws are arranged lengthwise on opposite sides of the driver, and their heads are provided on their inner sides with V-shaped seats or depressions *b*, conforming approximately to the bevel of the screw-head, as shown. These jaws are carried by an operating-sleeve C, which slides lengthwise on the driver and surrounds the same. The shanks of the jaws are arranged in this sleeve and connected therewith by pins or stops *d*, arranged at their rear ends and projecting outwardly into longitudinal slots or recesses *c*, formed in the sleeve. This loose connection compels the jaws to slide rearwardly with the sleeve for retracting the former in rear of the end of the driver and at the same time allows the sleeve to slide forwardly independently of the jaws to a limited extent. The forward movement of the jaws with reference to the driver is limited by a stop or transverse pin *e*, which is secured in a transverse opening formed in the driver and projects into longitudinal slots *f*, formed in the rear portions of the jaws. This forms a pivotal connection between the rear ends of the jaws and the driver, which permits the heads of the jaws to swing toward and from the driver for grasping and releasing the screw. The sleeve C is tapered rearwardly, so that upon sliding the same forwardly the jaws are closed and caused to grasp the screw placed between them, while upon moving the sleeve in the opposite direction the jaws are allowed to open. The jaws are opened automatically when released by springs *g*, secured at their rear ends to the inner sides of the jaws by any suitable means and bearing at their free front ends against opposite sides of the driver.

H is a clamping or locking device whereby the operating-sleeve C is retained in either of its positions for holding the jaws in their closed position or in their open and retracted position. This clamping device preferably consists of a cam or eccentric pivoted by a transverse pin *h* to ears *h'*, formed on the operating-sleeve and bearing against the driver, the cam extending through a longitudinal slot formed in the sleeve, as shown in Fig. 4.

In the use of my improved screw-driver the operating-sleeve C is shifted to bring the heads of the open jaws opposite the front end of the screw-driver. The nick of the screw to be driven is then engaged with the end of the driver, and the operating-sleeve is moved forward, whereby the jaws are closed and caused to firmly grasp the screw-head, as shown in Figs. 1 and 2. In closing the jaws the latter are prevented from sliding forwardly on the driver by the stop-pin *e*, against which the rear ends of the slots *f* of the jaws abut, as shown in Fig. 2. After closing the jaws the

same and the sleeve are locked in position by tightening the cam H. When the screw has been driven as far as the heads of the jaws will permit, the jaws are released from the screw-head by loosening the locking-cam H of the sleeve and drawing the sleeve and the jaws back to the position shown in Fig. 3. During the first portion of this backward movement of the sleeve the jaws are automatically opened by the springs *g*, and during the last portion of this movement of the sleeve the front ends of its longitudinal slots *c* come in contact with the stops *d* of the jaws, causing the jaws to be drawn back with the sleeve, so as to bring their heads behind the end of the screw-driver, as shown in Fig. 3. The jaws are retained in this position by again tightening the cam H. The jaws now fully clear the head of the screw, and the latter can be driven home in the ordinary manner. In releasing the screw the slots of the jaws permit the jaws to be shifted backward from the closed position shown in Figs. 1 and 2 to the open and retracted position shown in Fig. 3. These jaw-slots are made of such a length that the heads of the jaws stand in the proper position to grasp the screw-head when the inner ends of the slots bear against the stop-pin *e*, as shown in Fig. 2. As the springs *g* are compressed by the closing movement of the jaws they tend to shift the operating-sleeve backward and open the jaws as soon as the sleeve is unlocked.

In tightening the cam or eccentric for locking the jaws in their closed position the cam not only clamps the sleeve to the driver, but the turning of the cam in contact with the driver causes the jaws to be drawn farther backward into the tapering sleeve, thereby causing the jaws to grip the screw-head more firmly and avoiding all liability of the screw becoming loose in driving it.

In my improved tool the jaws are closed by moving a single sleeve in one direction, and they are opened for releasing and clearing the screw by simply shifting the same sleeve in the opposite direction, rendering the manipulation of the tool quick and convenient. The jaws have a comparatively large range of movement and will receive and hold large and small screws with equal security. The tool comprises a small number of parts of simple construction, and can therefore be produced at correspondingly small cost. It is obvious that the jaws are also serviceable in withdrawing a screw, as they prevent the end of the driver from slipping out of the nick of the screw.

I claim as my invention—

1. The combination with a driver and a pair of jaws adapted to grasp the head of a screw, and capable of sliding lengthwise of the driver, of a stop which limits the forward movement of the jaws, an operating-sleeve surrounding the jaws and movable lengthwise thereof, and a connection between said sleeve and the jaws which permits the sleeve to move forward independently of the jaws and at the same time compels the jaws to move backward with the sleeve, substantially as set forth.

2. The combination with a driver and a pair of jaws adapted to grasp the head of a screw, and capable of sliding lengthwise of the driver, of a stop which limits the forward movement of the jaws, an operating-sleeve surrounding the jaws and movable lengthwise thereof, a loose connection between said sleeve and the jaws which permits the sleeve to move forward independently of the jaws, while compelling the jaws to move backward with the sleeve, and a locking device applied to said sleeve and adapted to engage with the driver, substantially as set forth.

3. The combination with a driver, and a pair of jaws adapted to grasp the head of a screw, capable of sliding lengthwise of the driver and each provided with a stop or projection, a stop which limits the forward movement of the jaws with reference to the driver, and a tapering sleeve loosely surrounding said jaws and provided with longitudinal slots in which the stops or projections of the jaws engage, substantially as set forth.

4. The combination with a driver having a transverse stop-pin, of a pair of jaws arranged on opposite sides of the driver and each provided at or near its rear end with a projection and with a longitudinal slot which receives said stop-pin, and a tapering sleeve loosely surrounding said jaws and provided with longitudinal slots in which the projections of the jaws engage, substantially as set forth.

5. The combination with a driver, of a pair of jaws adapted to grasp the head of a screw, capable of sliding lengthwise of the driver and each provided with a stop or projection, a stop which limits the forward movement of the jaws with reference to the driver, a tapering sleeve loosely surrounding said jaws and provided with longitudinal slots in which the stops or projections of the jaws engage, springs interposed between the driver and said jaws for opening the latter, and a clamping cam or eccentric pivoted in an opening of said sleeve and adapted to engage against the driver for locking the sleeve and the jaws in position, substantially as set forth.

Witness my hand this 21st day of January, 1899.

CHARLES A. MANN.

Witnesses:
CARL F. GEYER,
ELLA R. DEAN.