(No Model.) 2 Sheets—Sheet 1.

C. H. MALLETT & Z. T. FURBISH.

SCREW DRIVER.

No. 275,235. Patented Apr. 3, 1883.

Fig. 1.

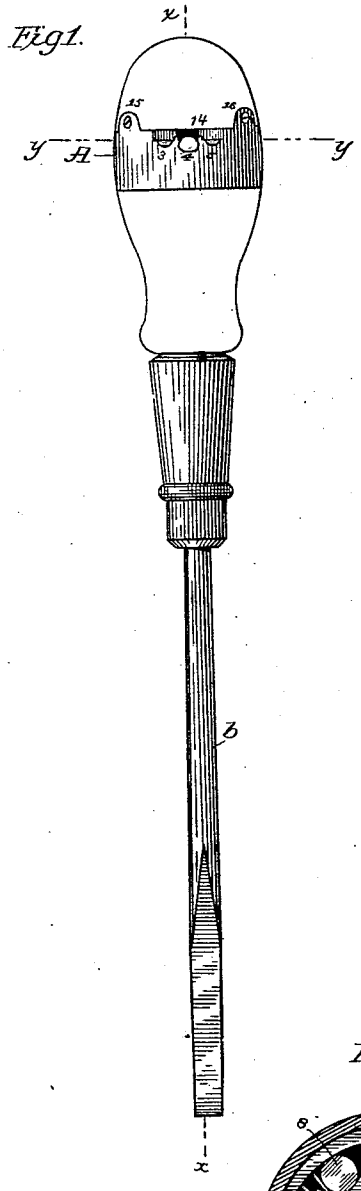


Fig. 2.

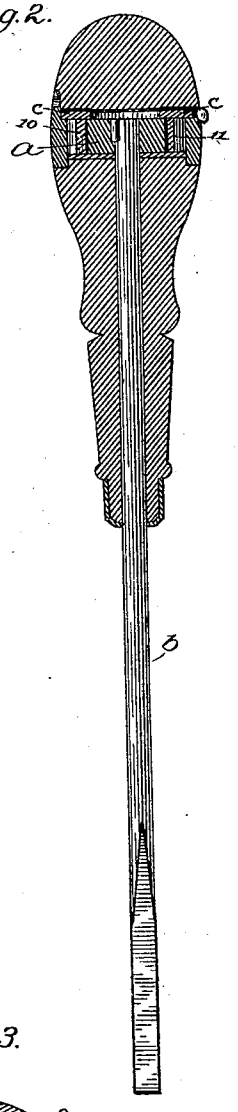
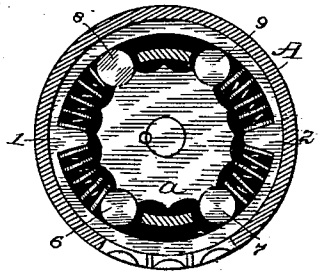


Fig. 3.



Witnesses
Walter Dwaldron
F. L. Middleton

Inventor
C. H. Mallett
by Z. T. Furbish
Elis Spear
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

C. H. MALLETT & Z. T. FURBISH.

SCREW DRIVER.

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Fig. 4.

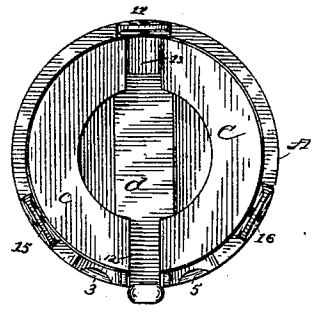


Fig. 5.

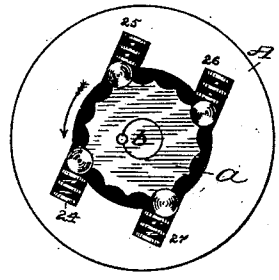
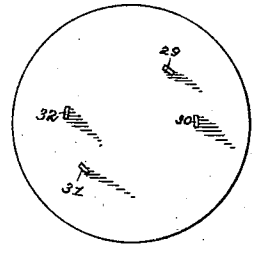


Fig. 6.



Witnesses:
Walter Donaldson
F. L. Middleton

Inventor
C. H. Mallett
by Z. T. Furbish
Ellis Spear
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

CHARLES H. MALLETT AND ZACHARY T. FURBISH, OF AUGUSTA, MAINE.

SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 275,235, dated April 3, 1883.

Application filed January 16, 1882. Renewed August 22, 1882. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. MALLETT and ZACHARY T. FURBISH, of Augusta, in the county of Kennebec and State of Maine, have invented a new and useful Improvement in Screw-Drivers; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention is an improvement in screw-drivers of that class in which the handle is provided with a clutch mechanism adapted to be reversed, so as to permit the handle to turn freely in either direction upon the shank, and to turn the shank in reverse movement, or to lock the handle to the shank against movement in both directions. The device, in its main features, is the same as shown in Letters Patent granted to us on the 27th day of September, 1881.

The invention consists more particularly in the construction of the disk, which is keyed to the upper end of the shank, whereby a more secure hold or lock is obtained; and, further, in the construction of the shifter and the parts immediately connected therewith.

In the accompanying drawings, Figure 1 shows a side elevation of our improved screw-driver. Fig. 2 shows a section on line *x x* of Fig. 1. Fig. 3 shows a section on line *y y* of Fig. 1. Fig. 4 shows a plan view with the top removed. Fig. 5 is a section corresponding to Fig. 3, showing a modification. Fig. 6 is the plate adapted to that modification.

In these drawings, A represents a chambered casting, which forms a part of the enlarged upper end of the handle of the screw-driver, the casting being a sufficiently strong shell, having therein a nearly annular chamber to receive the disk *a*, keyed to the upper end of the shank *b*, which, when not locked, turns freely in the handle. This chamber is provided with small lugs 1 2 opposite each other, and each a quarter-turn removed from the central locking-notch, 4, in the front of the wall of the chamber. The wall is thickened at that point so as to contract the space between the inner surface of said wall and the surface of the disk *a*, which in other parts is of uniform width, except at the rear opposite the first thickening named, where the wall is thickened in a corresponding manner. Small steel rollers 6 and 7 on the front and 8 and 9 on the rear are pressed forward by springs compressed between said rollers and the lugs, which springs, when free to act, press the rollers to cause them to bind in the narrowing space between the disk and the wall. In this respect the construction is not materially different from that shown in our patent aforesaid; but in order more securely to lock the disk within the head when under the great strain sometimes put upon it when at work, we have formed the disk with grooves or notches across its periphery, fitting the grooves or notches to receive the small steel rollers. The parts are so proportioned that when the rollers are pressed forward they fit on one side into the grooves and on the other bear against the thickened wall, thereby securely locking the parts against any possibility of turning. We have shown four rollers, which is the preferred number; but manifestly two may be used instead of four. Upon the top of the plate we place the shifting ring *c*, which has lugs 10 11, passing down between the pairs of rollers on each side and fitted to the space, so that when the disk is turned to the right, for example, it will throw out the rollers 7 and 8, permitting the handle to turn in one direction freely and binding in the other, and when the plate is turned to the other side the reverse movement takes place; but when the shifting plate remains in its central location all the rollers bear closely in the narrowed spaces, and the head is locked in both directions. This shifting ring is fitted exactly within the cavity of the head, so as to turn without binding, and is provided with notches 12 13, in which lie the extremities of a spring-plate, *d*, made in the form shown, so as to be held within the ring by the shoulders thereon. The end of this plate projecting to the front is slightly bent downward and provided with a small knob on the outside, by means of which it can be manipulated. This projecting end fits into notches 3, 4, and 5 in the bottom of a shallow recess, 14, in the wall of the shell. The spring-plate *d* is held down by a small stud or screw in the center of the cap, adjusted to bear upon the plate; but by pressing down this little knob in front the

spring can be raised out of one notch and shifted sidewise to another. This spring-plate and the construction of the shifting ring adapting it thereto constitute this part of the improvement. These parts may all be cheaply made and very readily put together, and are not liable to get out of order. Small lugs 15 16 17 are perforated to receive screws, which hold the cap upon the shell, thus completing the handle.

In Fig. 5 we have shown a modification of the chambered head A, in which is a central circular opening for the disk which is fixed to the upper end of the shank of the driver, which disk nearly fills the circular space. The steel rollers and their springs are located in small lateral pockets 24, 25, 26, and 27. These pockets are set inclined, in the manner shown, nearly tangentially to the periphery of the disk. The pockets hold the springs and rollers in place, when the roller turns toward the pocket in the direction shown by the arrow, and tends to push the roller back, while the reverse movement binds and locks the disk.

Fig. 7 shows a plate having studs 29, 30, 31, and 32 fitted to pass into the narrow annular space between the disk and the chamber, so that when the plate is turned it pushes back two of the rollers opposite each other, in the manner heretofore explained. When the rollers are pressed forward by the springs the head is locked to the shank. The springs may be coiled or bow springs, or of any suitable construction. This construction, though shown in connection with a screw-driver, is applicable to a bit-stock or any equivalent article.

Having thus described our invention, what we claim is—

1. The combination of the handle, chambered as described, with the grooved or serrated disk, fixed to the shank, and with the rollers and springs, adapted to bind against the walls and to interlock with the serrations or grooves, substantially as described.

2. The combination of the chambered head, the disk fixed to the shank, the rollers, and their springs, with the shifting ring provided with downwardly-projecting lugs, and the spring-plate adapted to lie in notches in said ring and to interlock with notches in the front wall, whereby the shifting ring is moved or held, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHAS. H. MALLETT.
ZACHARY T. FURBISH.

Witnesses:
J. E. BADGER,
S. LANCASTER.