

(No Model.)

H. F. HENRY.  
SCREW DRIVER.

No. 572,800.

Patented Dec. 8, 1896.

Fig 1.

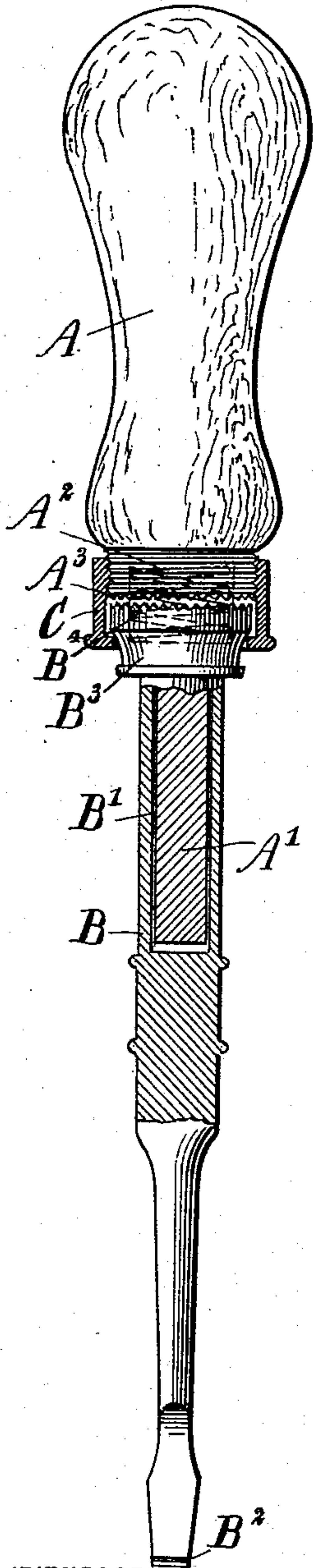


Fig 3.

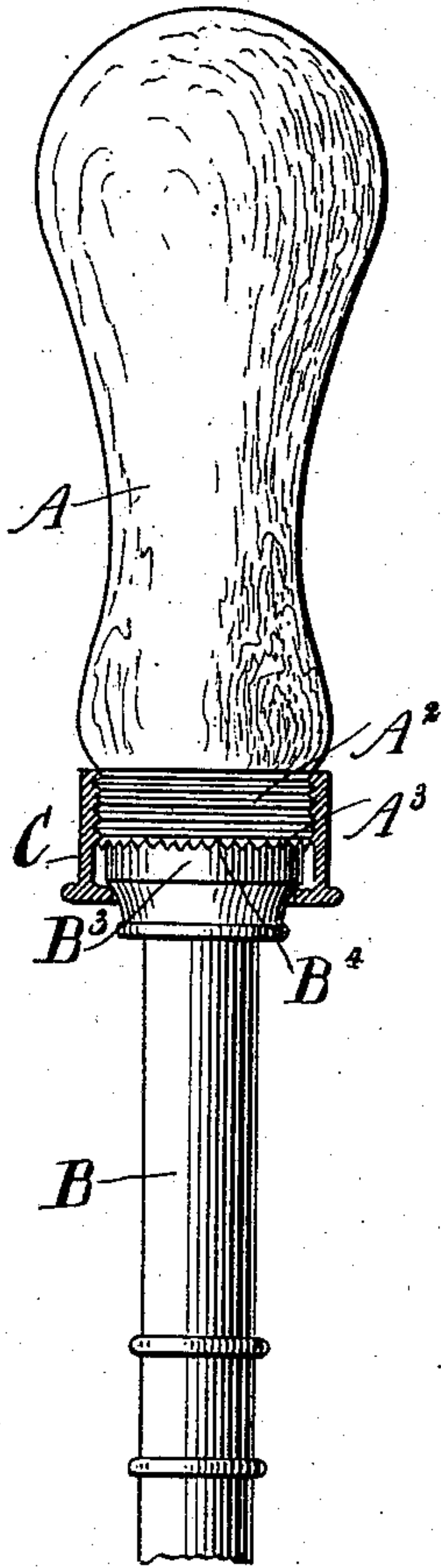


Fig 2.

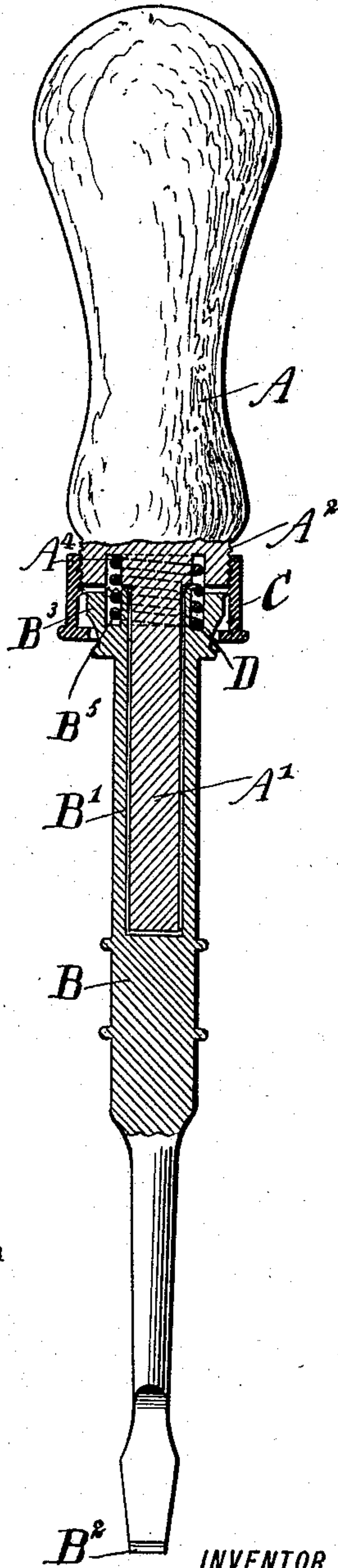
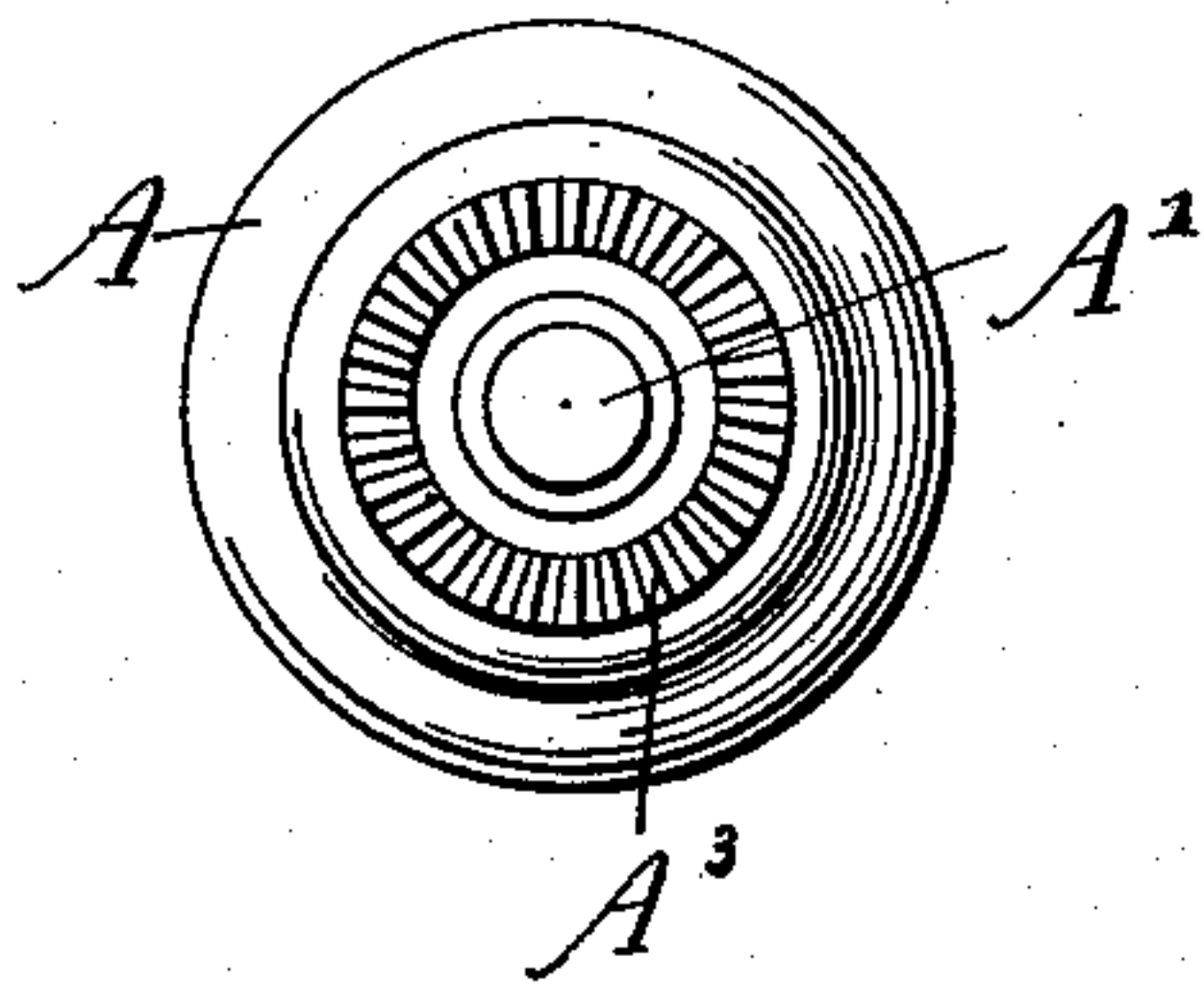


Fig 4.



WITNESSES:

Paul J. ...  
Geo. G. ...

INVENTOR

H. F. Henry.

BY

...

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HIRAM F. HENRY, OF CLEVELAND, OHIO.

## SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 572,800, dated December 8, 1896.

Application filed March 25, 1896. Serial No. 584,864. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM F. HENRY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Screw-Driver, of which the following is a full, clear, and exact description.

The invention relates to ratchet screw-drivers; and its object is to provide a new and improved screw-driver which is simple and durable in construction and arranged to permit of working the handle rapidly and effectively forward and backward without disengaging the shank from the screw-slot and without requiring adjusting of the parts.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

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

Figure 1 is a sectional side elevation of the improvement, showing the parts in a normal or disengaged position. Fig. 2 is a sectional side elevation of the same with the teeth in mesh. Fig. 3 is a side elevation of the same with the cap in section, and Fig. 4 is an inverted plan view of the handle.

The improved screw-driver is provided with a handle A, formed at its lower end with a spindle A' and fitting into a correspondingly-shaped recess B', formed in the upper end of the shank B, provided at its lower end with the usual bit B<sup>2</sup> for engagement with the slot in the screw. The upper end of the shank B is formed with a head B<sup>3</sup>, made cylindrical and provided at the top with teeth B<sup>4</sup>, adapted to be engaged by correspondingly-shaped teeth A<sup>3</sup>, formed on the under side of the lower threaded part A<sup>2</sup> of the handle, said threaded part being engaged by a cap C, engaging the lower reduced part of the head B<sup>3</sup> to hold the latter in place in the cap and to permit vertical movement of the head in said cap. The teeth A<sup>3</sup> and B<sup>4</sup> are held normally out of mesh, and for this purpose I employ a coil-spring D, set with its lower end in an annular recess B<sup>5</sup>, formed in the top of the head B<sup>3</sup>, the upper end of the spring extending into a similar recess A<sup>4</sup>, formed in the under side of the threaded

part A<sup>2</sup> of the handle A. Now it will be seen that by the arrangement described the spring D normally holds the handle A and shank B out of mesh at their teeth A<sup>3</sup> and B<sup>4</sup>, respectively, but when the bit B<sup>2</sup> is engaged with the slot in the screw and a longitudinal pressure is given to the handle A then the teeth A<sup>3</sup> are moved in mesh with the teeth B<sup>4</sup>, so that the operator upon turning the handle A rotates the shank B to drive the screw inward or outward, according to the direction in which the handle A is turned.

When the operator has given a turn to the handle A for screwing or unscrewing, and he desires to repeat it, then he slightly releases the longitudinal pressure on the handle without, however, disengaging the bit B<sup>2</sup> from the slot in the screw. As soon as the pressure on the handle is reduced the spring D forces the handle A outward to move the teeth A<sup>3</sup> out of mesh with the teeth B<sup>4</sup>, to permit of returning the handle A to its former position without the operator releasing the grip on the handle and without disengaging the bit B<sup>2</sup> from the slot in the screw.

It will be seen that this screw-driver is very simple and durable in construction and permits of readily and effectively working the handle forward and backward without disengaging the shank from the screw-slot and without requiring an adjustment of the parts.

By forming the shank B with the recess B' the handle A may be left solid, thus preventing the weakening of the wooden handle by forming a recess therein. On the other hand, the metal shank B can well stand the weakening effect of producing the recess.

By fitting the opposite ends of the spring in annular recesses formed, respectively, in the handle and in the shank such ends of the spring are securely held and all breaking and bending of the spring is avoided, every coil being in the construction shown held at some part at all times in either the recess of the handle or that of the shank, as shown most clearly in Fig. 2.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The tool herein described consisting of the handle having at its lower end a central downwardly-projected spindle, having at its



inner or upper end an annular enlargement  
and an annular recess surrounding such en-  
largement and having surrounding such re-  
cess a flange having the series of teeth, the  
5 tool-shank having in its upper end a socket  
to receive the spindle of the handle, having  
a flange surrounding the upper end of such  
socket and inclosing an annular recess sep-  
arated from the socket and coincident with the  
10 recess in the lower end of the handle, said  
flange having a series of teeth in position for  
engagement by those of the handle, the spring  
fitted at its opposite ends in the recesses in  
the handle and tool-shank and devices con-  
15 necting the handle and shank, substantially  
as shown and described.

2. The tool herein described consisting of  
the handle having at its lower end a central  
downwardly-projected spindle having at its  
20 inner or upper end an annular enlargement  
and an annular recess surrounding such en-

largement and having surrounding such re-  
cess a flange having the series of teeth, the  
tool-shank having in its upper end a socket  
to receive the spindle of the handle, having 25  
a flange surrounding the upper end of such  
socket and inclosing an annular recess sep-  
arated from the socket and coincident with  
the recess in the lower end of the handle, said  
flange having a series of teeth in position for 30  
engagement by those of the handle, the spring  
fitted at its opposite ends in the recesses in  
the handle and tool-shank and the tool-shank  
having an enlarged portion surrounding its  
upper end, and the cap held to the handle and 35  
having an inwardly-extending flange fitting  
below such enlargement of the tool-shank, all  
substantially as shown and described.

HIRAM F. HENRY.

Witnesses:

GEORGE REXFORD,  
JESSE C. MOORE.