(No Model.)

H. E. GOODELL & H. D. LANFAIR.

REVERSIBLE AUTOMATIC SCREW DRIVER.

No. 591,097. Patented Oct. 5, 1897.

Fig. 1.

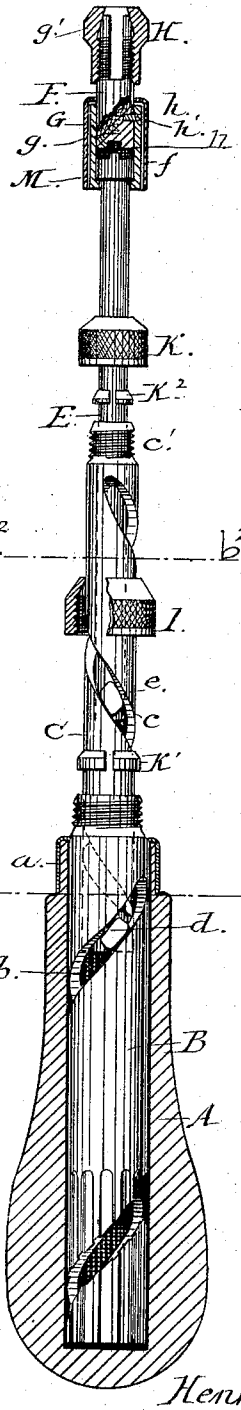


Fig. 2.

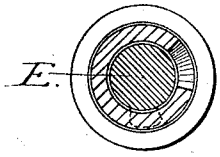
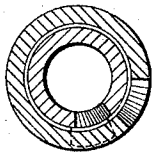


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY E. GOODELL AND HERBERT D. LANFAIR, OF GREENFIELD, MASSACHUSETTS, ASSIGNORS TO THE GOODELL BROS. COMPANY.

REVERSIBLE AUTOMATIC SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 591,097, dated October 5, 1897.

Application filed April 18, 1896. Serial No. 588,164. (No model.)

To all whom it may concern:

Be it known that we, HENRY E. GOODELL and HERBERT D. LANFAIR, citizens of the United States, residing at Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Reversible Automatic Screw-Drivers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention is an improvement in automatic screw-drivers in which the bit is revolved by pressure upon the handle in the direction of the axis of revolution of the bit.

The essential features of this device are the means employed to effect a right or a reverse movement of the bit.

The principal features of the device are, first, a hollow cylinder provided with a spiral groove moving from left to right, seated in a hollow handle provided with a metallic ferrule; second, a second hollow cylinder provided with a spiral groove running from right to left, to the base of which is fixed a stud adapted to engage the spiral groove of the first-named cylinder; third, a rod or spindle fitted and adapted to move in the second-named cylinder, provided at its base with a stud adapted to engage the groove of the said second cylinder; fourth, a screw-threaded nut adapted to run on the screw-threaded end of the grooved cylinder seated in the handle, and, fifth, a similar nut adapted to run on the screw-threaded end of the first-named spirally-grooved cylinder.

Subordinate features of our device are the beveled split rings which respectively clasp the two spirally-grooved cylinders, the cylindrical screw-threaded bit-holder, the screw-threaded nut fitting upon the same, and the loose sleeve which fits over the body of the said bit-holding cylinder.

In the drawings illustrating our invention, Figure 1 is an elevation of the essential portion of our device with the handle broken away to exhibit the portions ordinarily concealed within the said handle. Fig. 2 is a transverse sectional view at $a^2\,b^2$. Fig. 3 is a similar view through $c^2\,d^2$.

Similar reference-letters indicate like parts in all of the figures of the drawings.

Referring to the drawings, A is the handle of the screw-driver, of the ordinary form, provided with a ferrule *a*.

B is the cylinder, corrugated at its base to take hold into the wood of the handle, provided with a spiral groove *b*, running from left to right and screw-threaded at its one end. Fitting within the cylinder B is the cylinder C, screw-threaded at one end, having a left spiral groove *c* and having fixed to its base a stud *d*.

E is a rod or spindle having a stud *e* fixed at its base and at its opposite end provided with an angular tongue *f*.

F is the bit-holder, which fits loosely over the end of the rod or spindle E, provided with an angular groove or grooves *g* to engage the tongue or tongues *f* of the head of the said spindle E. Said bit-holder has a reduced screw-threaded portion *g'*, provided with a slot to receive the shank of the screw-driver bit.

H is a conical screw-threaded cap adapted to fit on the split end of the bit-holder to hold the bit firmly in place.

I is the nut, which engages the screw-threaded end of the cylinder B, and K is a similar nut to engage the screw-threaded end of the cylinder C.

K and K' are split rings of conical form adapted to fit within the screw-threaded nuts I and K, which are clamped between the rod E and nut K or spirally-grooved cylinder C and nut I to hold these features against rotation, either one with respect to the other or its fellow.

M is a sleeve or thimble fitting loosely over the larger portion G of the bit-holder F. The enlarged portion *l* of the bit-holder is secured to the smaller portion by a pin *h*. Said sleeve is provided with an annular flange to limit the movement of the said holder between the said larger portion and the screw-threaded cap. The purpose of this sleeve or thimble is to admit of a free play of bit-holder and parts connected with it without friction against the fingers of the operator.

In operating the screw-driver when it is desirable to drive a screw to the right the nut

at the head of the right spirally-grooved cylinder is driven inward to clamp the inclosed split ring to hold the cylinders B and C firmly together and the nut for the left spirally-grooved spindle is loosened. When it is desirable to drive to the left, the nut on the left grooved cylinder is driven down upon the split ring within said nut to lock the rod and cylinder C together and the nut on the right grooved cylinder is loosened.

In the operation of the screw-driver the right hand of the operator grasps the handle and the thumb and one finger take hold of the sleeve or thimble M. When one or the other of the clamping-nuts of the spindle or grooved cylinder is adjusted, pressure is imparted to the handle of the screw-driver to revolve the bit to the right or left, determined upon the adjustment of one or the other of the clamping-nuts.

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

1. The combination with the telescoping spindle, the screw-threaded spirally-grooved cylinder and the screw-threaded nut conforming interiorly to a beveled ring and adapted to engage the end of the said cylinder, of the independent interposed ring annularly beveled and laterally split, at one point, as and for the purpose set forth.

2. In a screw-driver, the combination with the rod or spindle, having a stud fixed at one end and a loosely-attached bit-holder at its opposite end, of the left grooved cylinder, screw-threaded at one end, said stud engaging said groove, the split conical ring and the conical nut adapted to engage said split ring and clasp the spindle when said nut is driven upon the screw-threaded end of the said grooved cylinder, as and for the purpose set forth.

3. The combination with the handle of the screw-driver, the right spirally-grooved cylinder fixed therein provided with a screw-threaded end, of the left spirally-grooved cylinder described having a stud fixed thereto to engage the groove of the right spirally-grooved cylinder, the conical split ring encircling the left spirally-grooved cylinder and the conical nut adapted to engage the screw-threads of the right grooved cylinder, as and for the purpose specified.

4. The combination in the right-and-left screw-driver which consists of two cylindrical tubes, each provided with a spiral groove, the one arranged to telescope into the other, and a rod or spindle telescoping into the smaller of the two cylinders, said smaller cylinder and the said spindle provided with fixed studs to engage their respective grooves and each of the said cylinders provided with nuts, and the said spindle and smaller cylinder provided with conical split rings, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY E. GOODELL.
HERBERT D. LANFAIR.

Witnesses:
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