

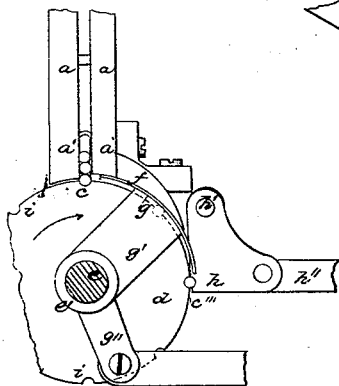
*S. W. Goodyear.*

*Screw-Cutting Machine.*

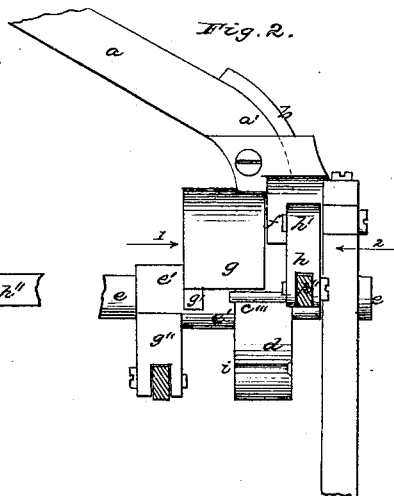
*N<sup>o</sup> 46,846.*

*Patented Mar. 14, 1865.*

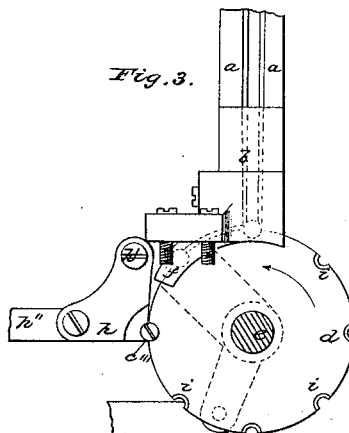
*Fig. 1.*



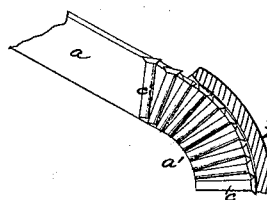
*Fig. 2.*



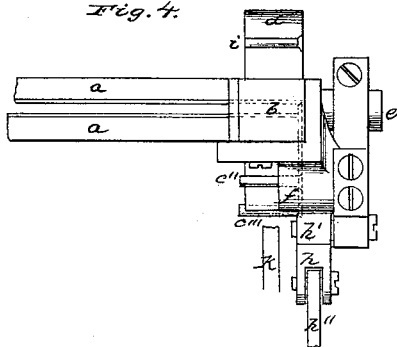
*Fig. 3.*



*Fig. 5.*



*Fig. 4.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

STEPHEN W. GOODYEAR, OF MERIDEN, CONNECTICUT, ASSIGNOR TO  
CHARLES PARKER, OF SAME PLACE.

## SCREW-CUTTING MACHINE.

Specification forming part of Letters Patent No. 46,846, dated March 14, 1865.

*To all whom it may concern:*

Be it known that I, STEPHEN W. GOODYEAR, of Meriden, New Haven county, State of Connecticut, have invented certain new and useful Improvements in Cutting Wood-Screws; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed drawings, making a part of this specification, which are fully described herein, and in which similar letters indicate similar parts throughout the figures.

My invention consists in a manner of seizing the blank when in a horizontal position, conveying the same to the place at which an operation is to be performed upon it—as nicking, threading, &c.—and holding the blank while such operation is being performed.

In the annexed drawings, *a* represents the feeding slide-trough, being two straight bars of metal placed so near to each other that the shank of the screw-blank will readily pass between, while the head of the blank will rest upon the upper and inner edges of the bars. These bars are chamfered off on those edges to receive the heads, and are set in an inclined position in a manner well known. To these bars I add at the lower end a curved part, *a'*. (Seen in section in Figure V.) The chamfer on the bars is continued down the curve, and at this part is covered with a plate, *b*, which prevents the blanks from leaving their proper position with regard to each other. The curve is carried so far down that the lowest blank, *c*, will take a horizontal position by gravity, ready to be taken off by any system of grippers. The next rests upon that, and so on, as shown, until the blank *c'* is reached, which is in the vertical position in which it has been usually delivered from the ordinary slides.

The seizing of the blank, conveying it to the place where an operation is to be performed, and holding it there during such operation I effect by means of a rotating grooved cylinder, which, in combination with a fixed and a movable covering-plate, forms a conveyor for the blank, and in combination with a movable jaw forms a holding-tool for the blank while being operated upon.

Fig. II is a side elevation showing the cylinder *d* mounted on a horizontal shaft, *e*, the fixed covering-plate *f*, the movable covering-

plate *g*, the movable jaw *h*, and the inclined feeding-slides *a*. Fig. I is a face view in the direction of the arrow No. 1 of Fig. II. Fig. III is a similar view, but in the direction of arrow No. 2, the pillar-block being removed for greater clearness; and Fig. IV is a top or plan view, the movable plate *g* being removed.

As thus shown, the tool is adapted to holding the blank for the operation of threading, and I will therefore describe it with reference to that particular part of the process.

The cylinder *d* has on the periphery a number of grooves, *i*, each parallel with the axis of the cylinder, and of such form and size that each will receive one-half, or nearly so, of a screw-blank if divided on a plane passing through the axis of the blank. The other half of the blank then projects beyond the cylinder, as seen at *c''*, Figs. I, III, and IV. The grooves are placed at uniform distance apart, and each is countersunk on the end at which the head of the blank is, so that said head may lie flush with the end of the cylinder. The feeding-slide is so placed with reference to the cylinder that the lower blank, *c*, will fall by gravity against the periphery of the cylinder, and then into the groove, when one comes under it, as seen in Fig. I. The cylinder is made to rotate with a regularly-intermitted motion by means of a ratchet or similar device acting on its shaft, and the interval of rest is that required for the action of the chasing-tool in threading. At each pause the cylinder rests with one of the grooves under the feeding-slide. Attached to the slide and projecting over the cylinder is a fixed covering-plate, *f*, which extends over the periphery of the cylinder about one-half its width, as seen in Figs. II and IV, and has a right-angled flange extending far enough down the countersunk face of the cylinder to cover the heads of the blanks, as shown in Fig. III, and, being in contact with that face, it keeps the heads of the blanks in the countersinks. That part of *f* which is over the periphery is concentric with the cylinder, and at such distance from it that only the shank of a blank when lying in a groove can pass under, as seen in Fig. I; but to admit of the passing of the head the plate *f* has a groove along its under surface at the line in which the heads travel. (Shown in dotted lines in Fig. IV, wherein a

blank,  $c''$ , is also shown as having its head in said groove and its shank covered to the proper extent by the plate  $f$ .)

A movable covering-plate,  $g$ , is affixed by an arm,  $g'$ , to a sleeve,  $e'$ , upon the shaft  $e$  of the cylinder, and upon this sleeve is another arm,  $g''$ , by which intermitted motions are given to  $g$  by connecting with an appropriate cam. This plate  $g$  is concentric on its under side with the cylinder and coincident with that of the fixed plate  $f$ , along the side of which it moves holding to the cylinder that part of the blank which projects beyond  $f$ , as seen in Fig. II. The blank would be held in its proper groove in the cylinder by the plate  $f$  so long as the blank is passing under that plate; but it presses upon the blank only near its head, and for some of the operations the blank is also to be held by or near its head between the cylinder and a movable jaw. The purpose, therefore, of the plate  $g$  is to effect the certain holding of the blank upon the cylinder from the position under  $f$  to the place where the chaser is to act upon it—that is, when held in place by the movable jaw. The plate  $f$  then extends from the point where a blank is received upon the cylinder to nearly the point where the blank is to be further operated upon, as seen in Fig. I. In that figure the blank  $c'''$  is in position for the chaser to act upon it, and so soon as that is withdrawn the plate  $g$  is caused to move down over  $c'''$ , when the movable jaw can be withdrawn and the cylinder  $d$  moved forward to the extent of one groove.

When the blank has arrived at the position  $c'''$ , and the plate  $g'$  is still holding it by a portion of its shank against the cylinder, it is clasped at the head by the movable jaw  $h$ , which is hung on a center at  $h'$  and caused to vibrate appropriately by the connecting-rod  $h''$ , operated by a suitable cam. At the place where it will meet a groove in the cylinder the jaw is made, being a semicircular cut corresponding with the groove, and, like that, countersunk, so that as the face of  $h$  is to be at this part in the same plane as that of  $d$  the face of the head of the blank will be in the same plane.

The operation will be as follows: The blanks put into the feeding-slide in the ordinary manner will assume the horizontal position shown at  $c$  by reason of the curved form of the slides, being kept from getting out of place by the cover  $b$ . The lower blank drops into the first groove of the cylinder, and is by the onward motion of that carried under the fixed plate  $f$ . This holds the blank in its groove properly, so far as  $f$  extends around the cylinder; but as the blank is to be seized in such manner that a subsequent operation can be performed, and as the fixed plate  $f$  would be in the way of such operation, it need not extend farther than will cover the blank

until it can be taken onward by the movable plate  $g$  and the cylinder.

In Fig. I a blank is shown in dotted line as held down under both  $g$  and  $f$ . The cylinder  $d$  is now at rest. The blank  $c'''$  is shown as held between the cylinder and the jaw  $h$ . In this position a chasing-tool, as at  $k$ , Fig. IV, is to be brought up to act upon the shank of the blank. The head has been previously nicked and a screw-driver is made to take into the nick and give the blank suitable rotation for the chaser to act upon it, the groove in the cylinder serving the purpose of a rest against which the blank bears while being threaded, and in combination with the jaw  $h$  forming a journal in which the blank rotates. So soon as the threading is completed and the chaser and screw-driver withdrawn, the movable plate  $g$  receives a short motion far enough to cause its lower end to pass over and press on the blank  $c'''$ , which is now to be carried away. The jaw  $h$  is then withdrawn, and the cylinder is moved onward to the distance of the next groove. The plate  $g$  accompanies it in this motion, thus transferring another blank to the position of  $c'''$  and holding the threaded screw in the groove to be dropped when  $g$  commences to return. The jaw  $h$  now comes up again and closes upon the blank, the plate  $g$  is returned to its normal position, and the chaser once more comes into action.

It is obvious that some little variation of this is required to make it a holding tool for each of the several operations. For instance, in threading, the blank is held as in a journal; but for nicking it is to be held as in a vise.

I claim—

1. The combination of the rotating grooved cylinder with a fixed covering-plate which bears horizontally upon the shanks of the blanks, but endwise against their heads, and with a movable covering-plate for the purposes and in the manner substantially as described, thus forming a conveying-tool.

2. The combination of the cylinder with the movable jaw forming together a vise in which the blank may be rigidly held for such operations as nicking, or a journal, in which the blank may be rotated for threading, &c., thus forming a holding-tool.

3. The combination of a cylinder, such substantially as is herein described as having its fixed and movable covering-plates, with the curved feeding slide trough, whereby without the use of the usual system of grippers, &c., the blank may be conveyed to the place where it is to be operated on, as set forth.

In witness whereof I have hereunto subscribed my name.

Witnesses: STEPHEN W. GOODYEAR.

S. H. MAYNARD,

C. L. JONES.