

(No Model.)

G. S. LONG.
SCREW CUTTING TOOL.

No. 541,209.

Patented June 18, 1895.

Fig 1

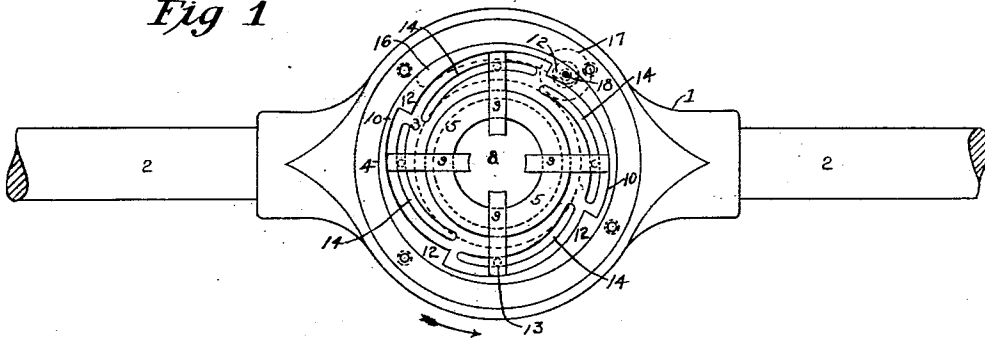


Fig 2

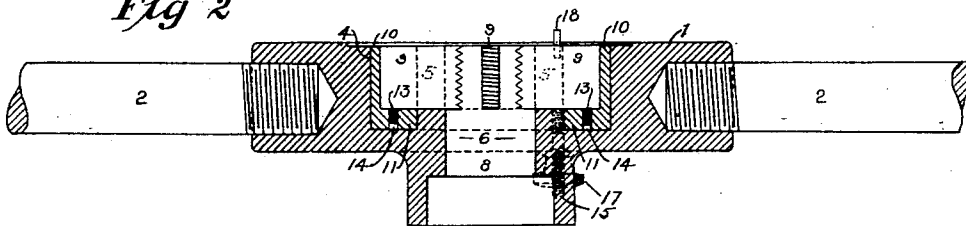


Fig 3

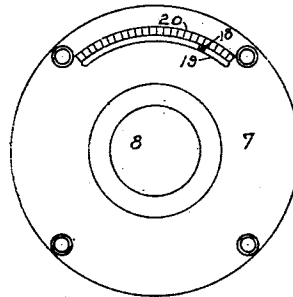
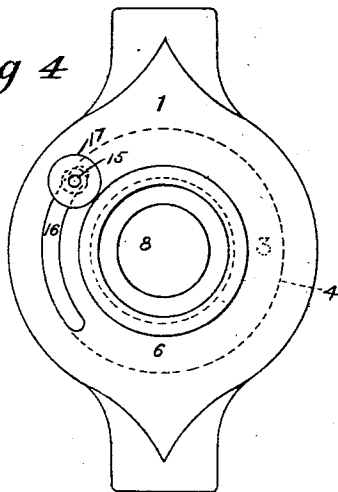


Fig 4



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE S. LONG, OF ROCKY HILL, ASSIGNOR TO THE PRATT & LONG
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SCREW-CUTTING TOOL.

SPECIFICATION forming part of Letters Patent No. 541,209, dated June 18, 1895.

Application filed August 20, 1894; Serial No. 520,793. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. LONG, of Rocky Hill, in Hartford county, Connecticut, have invented certain new and useful Improvements in Screw-Cutting Tools, which improvements are described in the following specification and are illustrated by the accompanying drawings.

My invention relates to that class of tools which are used for the purpose of cutting screw threads on cylindrical pieces of metal, such as bolts, bars and pipes. Such a tool is commonly called a die-stock and die.

It is the object of my invention to produce in a superior manner the necessary opening and closing movements of the die, and to provide a convenient gage of those movements, and in general to increase the efficiency of tools of that class. To accomplish these objects I make use of a cam of peculiar construction, for the purpose of moving the cutters, and a pointer and graduated scale, for the purpose of indicating and determining the movements of the cutters.

The best manner in which I have contemplated applying the principles of my invention is illustrated in said drawings, in which—

Figure 1 is a front side view of a screw-cutting tool which is constructed in accordance with those principles, the cap being removed, so as to disclose the interior arrangements. Fig. 2 is a longitudinal section through the central line of Fig. 1. Fig. 3 is a side view of the cap just mentioned as removed from Fig. 1. Fig. 4 is a back side view of said tool without the handles.

In Figs. 1, 2 and 4, the numeral 1 denotes the die-stock, which is provided with handles 2, in the usual manner, as shown in Figs. 1 and 2. Within the die-stock is an annular chamber 3, which is bounded upon opposite sides by the parallel back and front walls of the die-stock, namely, the wall 6 and the cap 7, shown in Fig. 3, and is bounded outwardly by the cylindrical wall 4 of the stock 1, and inwardly by a cylindrical die-holder 5. This holder 5, being formed integrally with the remaining parts of the die-stock, surrounds the main aperture 8 of the tool, extends from wall 6 to cap 7, and is slotted radially for the accommodation of the cutters 9. Into the

annular chamber 3 is inserted a cylindrical shell, 10, which fits slidingly against wall 4 of that chamber, and has an inwardly projecting annular flange 11, in contact with the back wall 6 of the same chamber. This shell, which has a limited movement of rotation in the described position, is provided with a number of cams 12, formed by the varying thickness of its cylindrical wall. These several cams, being of a uniform size and shape, as seen in Fig. 1, are equal in number to the cutters 9. The latter, being preferably four in number, are disposed radially in the slotted holder 5, as shown in Figs. 1 and 2. Each of these cutters, being a steel plate of general rectangular form, is armed with screw-cutting threads along its forward edge, in the usual manner; and abuts at its rear end against the face of one of the described cams 12. That edge of each cutter 9, which rests upon the flange 11, is provided with a projecting pin 13; and flange 11 is provided with a number of slots 14, as many as the cams 12, and parallel to those cams respectively. By means of these pins 13, which work in slots 14 respectively, the cutters are in constant engagement with said cam shell 10.

In flange 11 is set a screw 15, which works through a slot 16 in the rear wall 6, and is provided with an external thumb-nut 17. By this slot and screw the rotary movement of the cam shell is limited to the length of slot 16, which corresponds to the length of a single cam 12, measured from the thinnest to the thickest part of the same; and the said shell is clamped immovably in any desired position, relative to the die-stock.

Shell 10 is provided with an indicator pin 18, which moves along in slot 19 in cap 7, whenever that shell is rotated in chamber 3, and so indicates the position and movement of the shell, and consequently of the cutters. Cap 7, as shown in Fig. 3, is provided with a graduated scale 20, near the edge of slot 19. Each space, which is marked off on this scale, indicates a movement of shell 10, which corresponds with an accompanying movement, of known or predetermined extent, in the cutters, as affected by the cams.

Other features of construction of my improved screw-cutting tool sufficiently appear

from the drawings and from the mode of operation.

The general mode of operation of this tool is sufficiently obvious; but certain particulars of that operation should be noted. The partial rotary movement of shell 10, carrying cams 12, in chamber 3, is effected by the manipulation of thumb-nut and screw, 17 and 15, according as the work, which passes in the usual manner through aperture 8, requires the die to be expanded or contracted. By means of the pins and slots 13 and 14, the die is expanded by turning the cam shell in the direction which is indicated by the arrow in Fig. 1; and in like manner the cutters are advanced to the work simultaneously and uniformly by cams 12, when the shell is moved in the opposite direction.

Such being the construction and operation of my improved screw-cutting tool, I claim as my invention—

A cylindrical die-stock, and a cylindrical

die-holder, formed of a single piece of metal, and forming an annular chamber about a common axis, and a number of cutters, which are provided with engagement pins, and are set radially in said holder, in combination with a cylindrical shell, working rotarily in said annular chamber, and provided with a corresponding number of inwardly projecting cams for the purpose of advancing said cutters to their work, and with an inwardly projecting annular flange having an equal number of inclined slots, engaging said pins for the purpose of retracting said cutters from their work, substantially as and for the purpose specified.

In testimony whereof I hereunto set my name in the presence of two witnesses.

GEORGE S. LONG.

Witnesses:

WILLARD EDDY,
CHARLES M. PARKER.