

No. 682,774.

Patented Sept. 17, 1901.

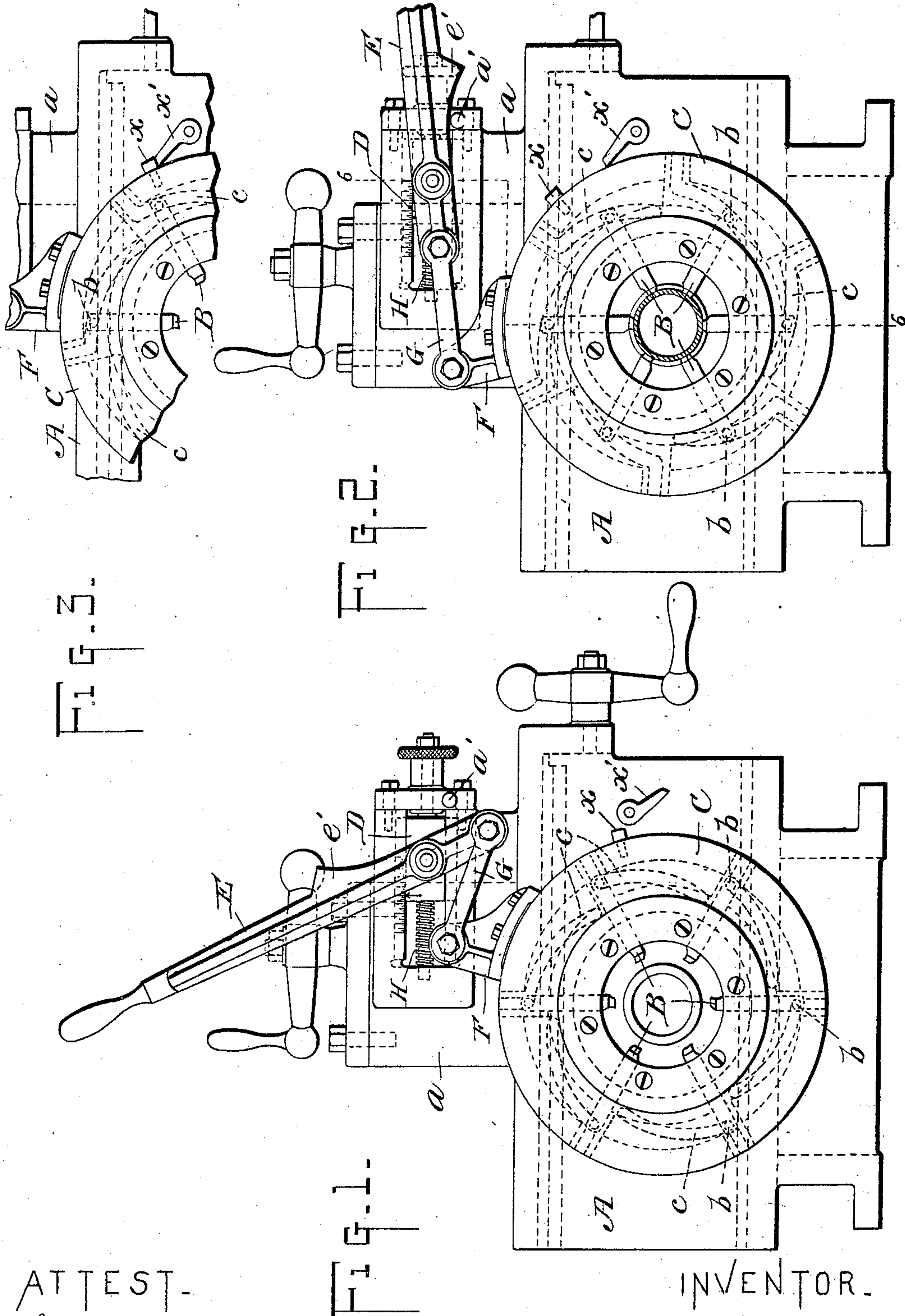
C. F. WIELAND.

MACHINE FOR CUTTING SCREW THREADS.

(Application filed Feb. 11, 1901.)

(No Model.)

2 Sheets—Sheet 1.



ATTEST.

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By Bakewell Cornwall
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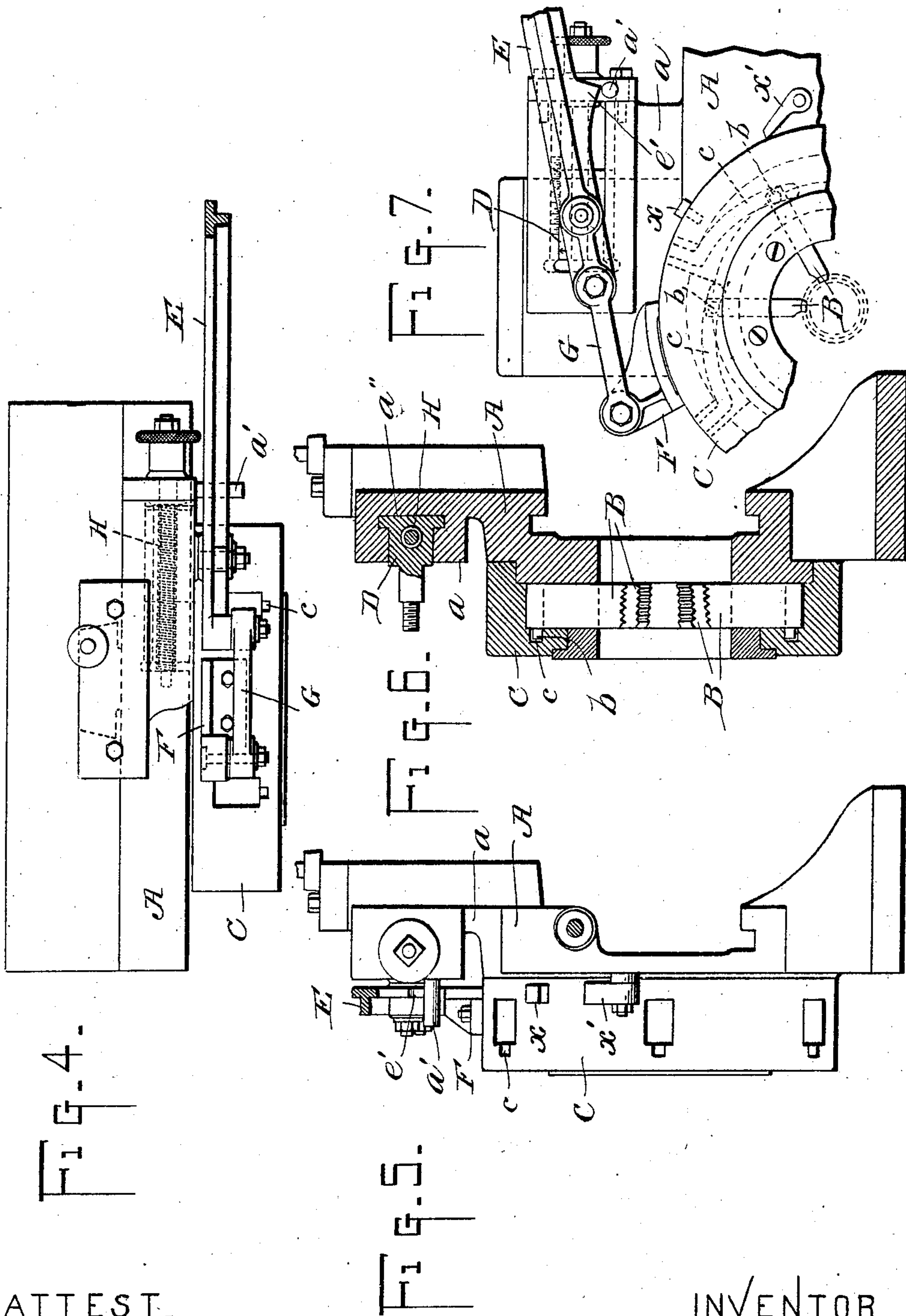
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Harry L. Ames.
[Signature]

INVENTOR.

Charles F. Wieland.

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UNITED STATES PATENT OFFICE.

CHARLES F. WIELAND, OF EDWARDSVILLE, ILLINOIS.

MACHINE FOR CUTTING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 682,774, dated September 17, 1901.

Application filed February 11, 1901. Serial No. 46,845. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WIELAND, a citizen of the United States, residing at Edwardsville, county of Madison, State of Illinois, have invented a certain new and useful Improvement in Machines for Cutting Screw-Threads, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevational view of my improved screw-thread-cutting machine. Fig. 2 is a similar view showing the parts in a different position. Fig. 3 is a detail view showing some of the parts in still another different position. Fig. 4 is a top plan view of my machine when the parts are in the position shown in Fig. 2. Fig. 5 is an end elevational view of the same. Fig. 6 is a vertical sectional view of the same, taken on line 6 6, Fig. 2; and Fig. 7 is a view illustrating the position of the parts when the fulcrum-block is adjusted inwardly.

This invention relates to a new and useful improvement in a machine for cutting screw-threads upon metal bars or pipes, and has for its object to produce a simple, practical, and inexpensive device of that character having certain new and useful mechanisms for attaining the objects desired.

This present invention is designed particularly, though not exclusively, as an improvement upon the machine illustrated and described in United States Letters Patent granted December 16, 1884, to M. E. Bignall and G. W. Whitman and numbered 309,374.

The essential features of my present invention reside, first, in the novel construction and arrangement of the main operating-lever and its cooperating parts, which render the fulcrum of said lever and its associate parts variable by the manipulation of certain adjusting means; second, in the novel means employed for causing the centers of the main operating-lever and the link connected thereto and to a rotatable part of the machine to always occupy a dead-central position, practically forming a lock for said lever when the same is in its working position, and, finally, the invention consists in the novel construc-

tion, arrangement, and combination of the several parts of the device, all as will hereinafter be described and afterward pointed out in the claims.

I attain the objects sought and to which I have in the foregoing referred by the mechanism illustrated in the accompanying drawings, wherein like characters designate like parts throughout the several views.

In the drawings, A indicates a supporting-casting of appropriate construction, in which is radially mounted the dies or cutting-tools B, held in place by a rotatable cam-ring C. This cam-ring C is provided with a plurality of cams and cam-grooves *c*, eccentrically arranged with respect to the horizontal axis of the machine, and with which grooves *c* a projection *b*, formed on each of the tools B, co-operates for obvious reasons.

a indicates an upwardly-extending portion, preferably formed integral with the casting A, which is provided with a dovetail or T-shaped way or groove *a''* for receiving and supporting a slidable fulcrum-block D for the operating handle or lever E, pivotally connected thereto in any suitable manner.

F indicates a lug or bracket carried by the cam-ring C, and pivotally connected to said lug and to one end of lever E is a link G.

H indicates a screw, preferably formed with a left-hand thread, said screw being mounted in the portion *a* and in engagement with a screw-threaded portion formed in block D. By the manipulation of the screw the block is adjusted or moved longitudinally in either direction for the purpose of regulating the number of degrees the cam-ring C will move when said lever is raised and lowered, and consequently the radial thrust of the cutting-tools is regulated.

As shown in Figs. 1 and 2, I prefer to employ a scale at the edge of the guideway in which the block D is mounted, whereby the operator may adjust the position of said block in order to limit the inward movement of the cutting-tools with exact precision when the lever is thrown. As the point of attachment of link G to the cam-ring moves in an arc of a circle while the adjustment of the fulcrum of the operating-lever is in a straight line, it is obvious that some provision must be made to arrest the throw of the operating-lever at

varying points to preserve the dead-central position of the fulcrum of the lever and pivotal points of the link and lock the cam-ring in different positions. As shown in Fig. 2, it will be seen that the operating-lever has been depressed, being arrested in such position by a pin or projection a' , the block D in this figure occupying a position near the outer end of its guideway, the cam-ring has been rotated to the left, and the cutting-tools are shown as being in engagement with a pipe. The pivotal points of the link G and the fulcrum of the operating-lever are in a straight line or a line of dead-central position, so that the cam-ring is locked in its adjusted position, the weight of the outer end of the lever tending to hold the parts in the position shown in Fig. 2 at all times. If, however, the fulcrum-block D is adjusted inwardly, it follows that the fulcrum of the lever will move in a straight path, so that when the lever is thrown and the cam-ring rotated said lever would, if provision were not made to prevent it, move past a position of dead-centers. I have provided the outer end of the lever with a fin e' , the under face of which is preferably curved downwardly, said fin being designed to cooperate with the stop-pin a' in the various positions of adjustment of the lever-fulcrum, so that the outer end of the lever will be arrested in its downward movement at various points to accommodate the throw of the cam-ring and cause the pivotal point of the link G and the fulcrum of the lever to always be in alignment. The extreme throw of the lever when the fulcrum-block is adjusted to this innermost position is shown in Fig. 7. So far as I am aware this method of locking the cam-ring in different positions by alining the pivotal centers of the operating-lever and its connecting-link is new. In order to arrest the cam-ring in its backward rotation, I provide the same with a stop x , with which cooperates a pawl x' , said pawl when in the position shown in Fig. 2 being in the path of movement of the stop, so as to arrest the backward rotation of the cam-ring, as shown in Fig. 3. When the stop is in contact with the pawl, the operating-lever occupies substantially a vertical position, and so saves the operator the unnecessary labor of making a long stroke for moving the cutting-tools into and out of operative position. As shown in Fig. 1, this pawl may be turned away from the cam-ring, in which event the operating-lever can be thrown inwardly, which rotates the cam-ring backwardly to a greater degree than would be permitted were the pawl in operative position.

The operation of a machine of the character herein described is well known, as also the uses to which such a machine may be put. I will state, however, that in introducing the cutting-tools into the rotatable cam-ring said ring is moved so as to aline the openings therein for the introduction of the cutting-tools, after which the ring is partially rotated

to throw the openings out of registration and to hold the tools in place. The pawl which engages with the projection on the rotatable cam-ring prevents said ring from rotating rearwardly to such abnormal limits as to register the tool-openings. When the tools are in position and it is desired to adjust them—say for the purpose of cutting threads on the end of the pipe—the fulcrum-block D is adjusted inwardly when the operating-lever is in its lowered position, and when the cutting-tools occupy the proper position inwardly, depending upon the type and depth of the thread to be cut, the operating-lever is thrown up, which results in withdrawing the tools from their inward positions, said tools moving outwardly in a radial line. When the pipe is introduced in place, the operating-lever is moved down, so as to move the tools inwardly, said operating-lever, as before described, being locked in position, which results in locking the rotatable cam-ring in its adjusted position. By this arrangement various tools may be employed in the rotatable ring, and by adjusting the position of the fulcrum of the operating-lever pipes of various diameters may be accommodated.

I am aware that minor changes in the arrangement, construction, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with a rotatable cam-ring for moving the tools into and out of operative position, of an operating-lever, a connection between said lever and said cam-ring, means for adjusting the fulcrum of said lever, and mechanism for preserving the alinement of the lever-fulcrum and the connection between said lever and the cam-ring in all the adjusted positions of the fulcrum of said lever; substantially as described.

2. In a machine of the character described, the combination with a rotatable cam-ring for moving the tools into and out of operative position, of an operating-lever, a link connecting said operating-lever and the ring, means for adjusting the fulcrum of the lever, and a device for limiting the movement of the lever in one direction, whereby alinement of the pivotal points of the link and the fulcrum of the lever is preserved in the adjusted positions of the lever-fulcrum; substantially as described.

3. In a machine of the character described, the combination with a rotatable cam-ring for moving the tools into and out of operative position, of an operating-lever, a link connecting said operating-lever and said cam-ring, a slidable block on which said lever is fulcrumed, means for adjusting the position

of said block, a fin on the lever, and a stop-pin cooperating with said fin and arresting the limit of movement of the lever in one direction; substantially as described.

5 4. In a machine of the character described, the combination with a rotatable cam-ring for moving the tools into and out of operative position, of means for limiting the backward rotation of the ring, mechanism for predeter-
10 mining the forward rotation of said ring, said mechanism comprising an operating-lever, an adjustable fulcrum for said lever, a link connection between said lever and ring, and mechanism for preserving the alinement of
15 the lever-fulcrum and the connection between said lever and the cam-ring in all the adjusted positions of the fulcrum of said lever; substantially as described.

20 5. In a machine of the character described, the combination with a rotatable cam-ring

for moving the tools into and out of operative position, of a frame forming a guideway, said frame being provided with a scale at the edge of said way, a fulcrum-block slidably mounted in said way, means for adjusting said block 25 in said way, a lever fulcrumed on said block, a link connection between said lever and said rotatable cam-ring, and means for arresting the movement of said lever in one direction, whereby the pivotal points of the link and 30 said lever are maintained in alinement in all adjusted positions of the fulcrum-block; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, 35 this 8th day of February, 1901.

CHARLES F. WIELAND.

Witnesses:

WM. H. SCOTT,

H. L. AMER.