

(No Model.)

H. G. COOKE.
SCREW CUTTING MACHINE.

No. 432,262.

Patented July 15, 1890.

Fig: 1.

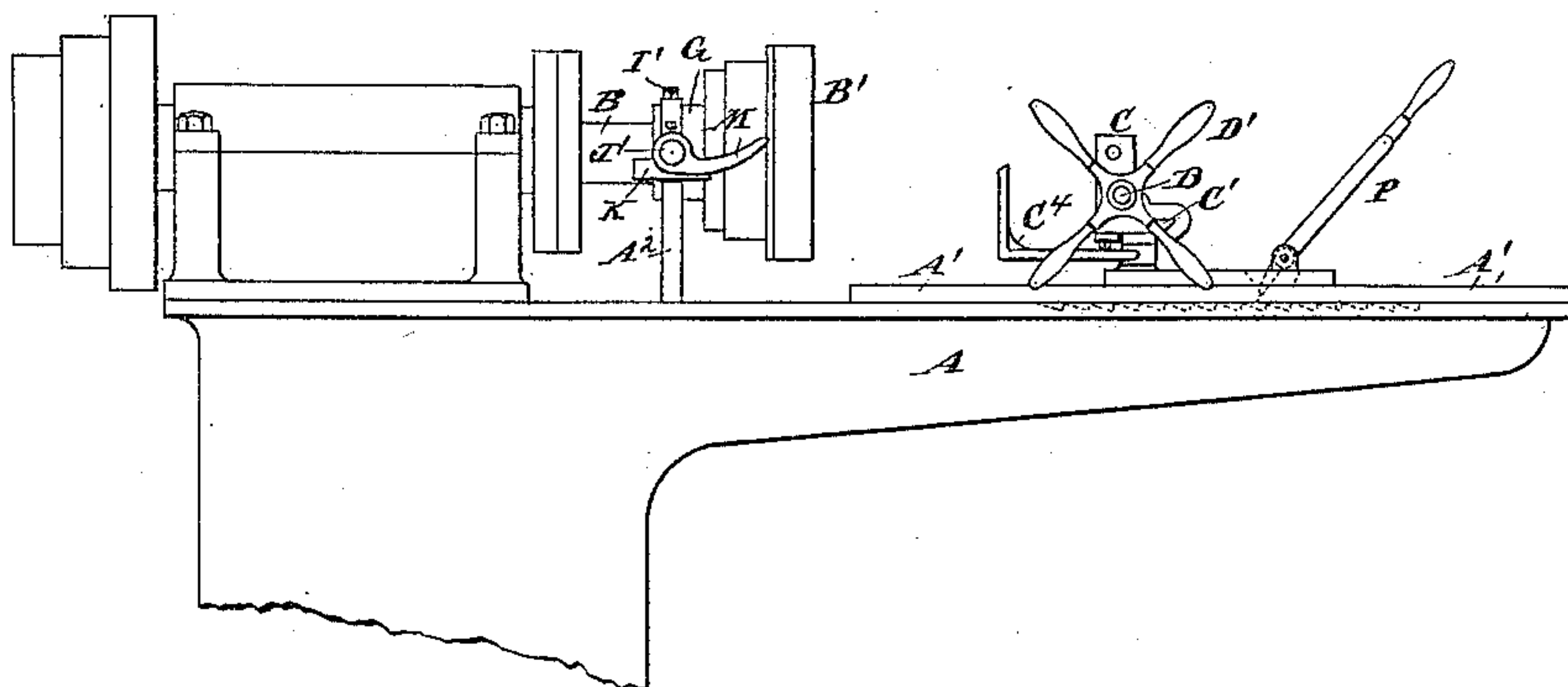


Fig: 2.

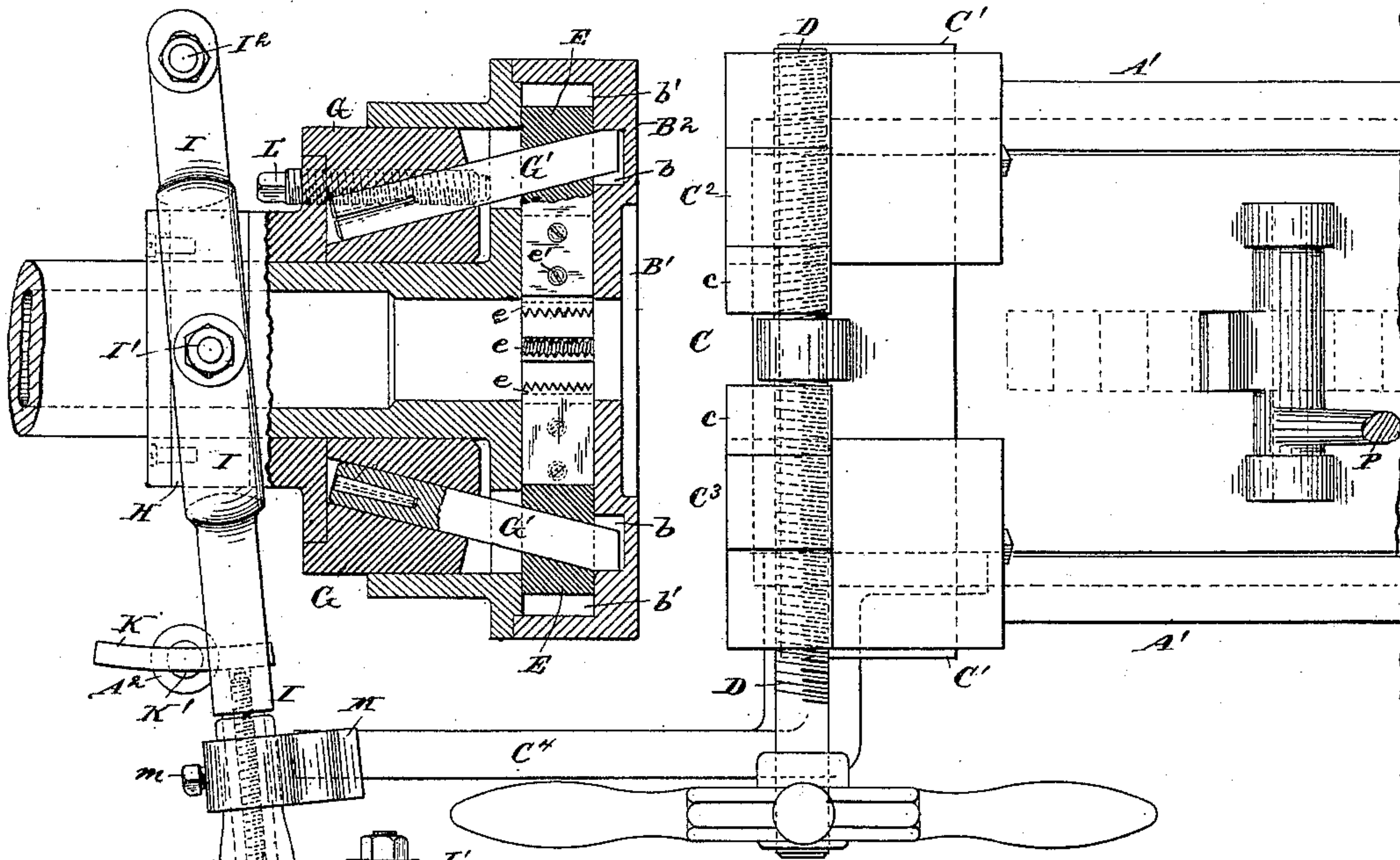
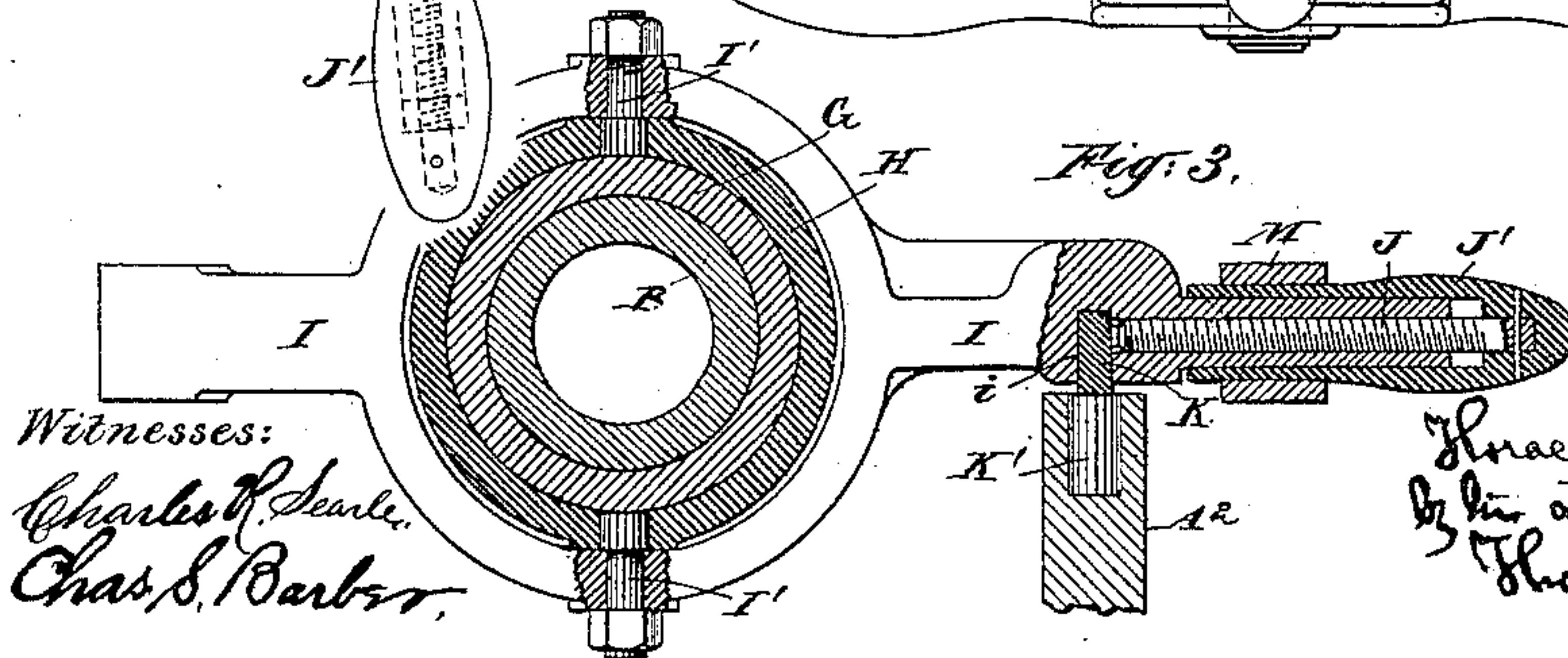


Fig: 3.



Witnesses:
Charles F. Seale,
Chas. S. Barber.

Inventor:
H. G. Cooke
By his attorney
Thomas Drew Peterson

UNITED STATES PATENT OFFICE.

HORACE G. COOKE, OF PATERSON, NEW JERSEY, ASSIGNOR TO HIMSELF AND
JAMES W. COOKE, OF SAME PLACE.

SCREW-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,262, dated July 15, 1890.

Application filed April 28, 1890. Serial No. 349,821. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. COOKE, of Paterson, in the county of Passaic and State of New Jersey, have invented a certain new and useful Improvement in Screw-Cutters, of which the following is a specification.

The improved machine is adapted to cut proper screw-threads on screws, bolts, pipes, and other articles varying considerably in diameter. The tools may be set in the approximately correct position for any size of bolt in a wide range. I effect both the opening and closing of the dies with a positive motion and effect this by a single simple reciprocating movement. The mechanism acts obliquely or edgewise to effect both movements. I employ a reliable stop to fix the dimensions to which the threaded portion of the bolt may be reduced. I provide means for holding the cutting-dies in that position and to cut a long screw-thread.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a general side elevation. Fig. 2 is a plan view, partly in horizontal section. It is on a larger scale. Fig. 3 is a vertical cross-section, partly in elevation.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is a fixed frame-work or bed, of cast-iron or other suitable material, certain portions being designated, when necessary, by supernumerals, as A'.

B is a hollow shaft mounted in fixed bearings in the framing A, and B' is a head cast thereon or rigidly fixed thereto, both revolved by a belt running on a pulley or by other suitable means, as gearing. (Not shown.) The bolt being treated is held by a vise C, which is free to slide longitudinally in ways A' and provided with two jaws C² C³, mounted and capable of being moved apart and together on a transverse way C'. They are tapped right and left hand, and are engaged by a right-and-left screw D, operated by a hand-wheel D'. The removable bearing-pieces in the jaws C² C³ are adapted to hold bolts of

various sizes always correctly centered. The freedom of movement of the entire vise in the ways A' allows the vise and the bolt firmly held therein to be traversed longitudinally of the machine, as required, during the cutting of the thread and to be traversed in the opposite direction by any sufficient force after the thread is completed in putting the machine in condition for cutting the next. The hollow interior of the shaft B allows the bolt to extend any distance in the line of the axis. The screw-threads are produced, as usual in machines of this class, by dies *e*, each held in a carriage E, mounted in the radial ways in the head B', with provisions for adjusting the whole readily apart or together by shifting a single lever. The motion is positive in both directions. I attain the end by eminently simple mechanism. Each carriage E is bored obliquely and receives a cylindrical pin G', fitted rigidly in a movable ring or sleeve G in the inclined position represented. (Shown in Fig. 1.)

H is a ring fitted in a groove in the tail of the sleeve G. It is engaged by two pins I', which project inward from a lever I, which loosely embraces the ring H and turns on a fixed center I². The lever I is formed with a loop or opening of sufficient capacity to loosely embrace the ring H. Beyond or farther from the fixed center I² this lever I is provided with a notch *i*, into which a screw J, operated by the handle J', mounted on the cylindrically-finished end of the lever I, may be set at will.

K is a wing held by its pivot K' in a hole provided in a stud A², mounted on the bed-casting A. This wing K is received in the notch *i*, and is curved to correspond with its sweep. When the screw J is out of use, the lever I may be shifted easily in one direction and the other, correspondingly sliding the sleeve G, and through the inclined pins G' draws the carriage E, and consequently the dies *e*, together by a movement in one direction and moves them uniformly apart by the motion of the lever I in the opposite direction. The motion in both directions is positive.

L is a gage-screw tapped through the sleeve

G and striking against a fair surface on the head B'. In cutting a set of screws the sleeve G is in every instance moved to the right until the gage-screw L strikes against such bearing-face. If the screw-threaded portion is short, the attendant simply holds the lever I firmly by hand for the brief period required; but if a long screw is to be cut he turns the handle J' and pinches the wing K. Then he may leave it alone, and the dies will be held in a uniform position for any period, and the cutting may proceed on the bolt to any length for which the ways A' may be adapted.

As a safeguard against possible accident, I provide an automatic throw-off for this clamping device.

M is a lever-arm fixed adjustably on the handle J' and held in the required position by the pinching-screw m. In adjusting the machine for use this lever M is so set on the handle J' that when the latter is turned and the screw J set tightly against the wing K this lever M shall stand at an angle of about forty-five degrees, as shown in Fig. 1. On the vise C is a rigid arm C', which is sufficiently extended and properly formed to strike the lever M and trip it, the parts being adjusted and the bolt to be cut being so set in the dies that this action shall take place when the proper length of screw has been cut. This action on the lever M, by giving a partial revolution to the screw J, relaxes the hold of this screw upon the wing K, after which the continued motion of the vise C, and consequently of the arm C', acting against the lever I, turns this lever and opens the dies e, and the screw-cutting action stops until the attendant shall again adjust the machine for use.

I provide notches in the frame, and a lever P, carried in the vise, which allows me to conveniently apply a considerable force to insert the end of the bolt into the dies when such is necessary.

I provide for setting the pins G' accurately and firmly in their required positions in the sleeve G by boring holes in the correct positions in the latter, and boring tapering holes in the ends of the pins and also splitting the ends by a saw, and providing tapering wedges, which I drive in the center holes after the pins are adjusted in position.

It will be observed that the carriages E are held and guided in the radial positions by being set in corresponding radial grooves b' in the head B'.

The cutters e are held in their respective carriages E by screws e', having conical points set into conical recesses in the dies. The dies are made a little long at first, the excess of length extending inward. Each is mounted in its proper carriage and set in position. Then the head is revolved and the proper screw-tap is mounted in the vise C, and, acting on the inner ends of the dies, it produces the proper shape in the correct position on all the dies. On taking out these dies and prop-

erly hardening and replacing them the machine is ready to work.

The pins G' are sufficiently thick to give great strength; but it is important that they be supported against springing in the direction in which they are most strained—outward or from the center. Each pin extends sufficiently through its respective carriage E and is received in a truly-bored recess b in a front plate B², bolted on and forming a part of the head B'. The pin G' near its outer end is finished to match exactly to the adjacent surface of the recess b, and when the dies e are brought into strong contact with the bolt to be cut and there is a tendency to spring the pins G' outward these pins are supported not only by their firm bearing in the ring G, but also by the bearing of their outer ends in the recesses b. The front plate B² is removable. The exigencies of work sometimes require the cutting of screw-threads upon short bolts. The removal of the front plate B² allows the vise C to be run up close to the path of the cutters e.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I can use three of the dies and carriages e E, corresponding radial ways being provided in the head B', or a larger number than four can be used. The machine will cut threads on tubes and other articles, which can be held and properly presented, as well as on solid screws and bolts.

I claim as my invention—

1. In a screw-cutting machine, the head B', having radial ways b', fixed on the hollow shaft B, with provision for rotating it, in combination with the carriages E and means, as e', for mounting screw-cutting dies therein, and with the sleeve G, carrying the inclined divergent pins G', arranged to move the dies together and apart by a positive motion, all substantially as herein specified.

2. In a screw-cutting machine, the front plate B², having sockets or recesses b, arranged to receive and support the outer ends of the pins G', in combination with such pins fixed obliquely in the sleeve G, and with means, as I II, for moving such sleeve axially, and carriages E, cutters e, and means e' for confining and releasing such cutters, all arranged for joint operation substantially as herein specified.

3. In a screw-cutting machine, the wing K, mounted on the framing A, the screw J, and provision, as J', for turning it, and the lever I and connections therefrom to operate the dies e, combined substantially as herein specified.

4. In a screw-cutting machine, the automatic tripping means described, consisting of the lever I, with connections for operating the dies e, and the screw J, carried thereon, said screw having a lateral arm or lever M, in combination with each other and with the

wing K, supported on the fixed bearing, and the traversing vise C for holding the piece to be threaded, provided with an arm C⁴, arranged to first liberate and then turn the lever J, all as herein specified.

April, 1890, in the presence of two subscribing witnesses.

HORACE G. COOKE.

Witnesses:

THOMAS DREW STETSON,
H. A. JOHNSTONE.

In testimony whereof I have hereunto set my hand, at New York city, this 19th day of