

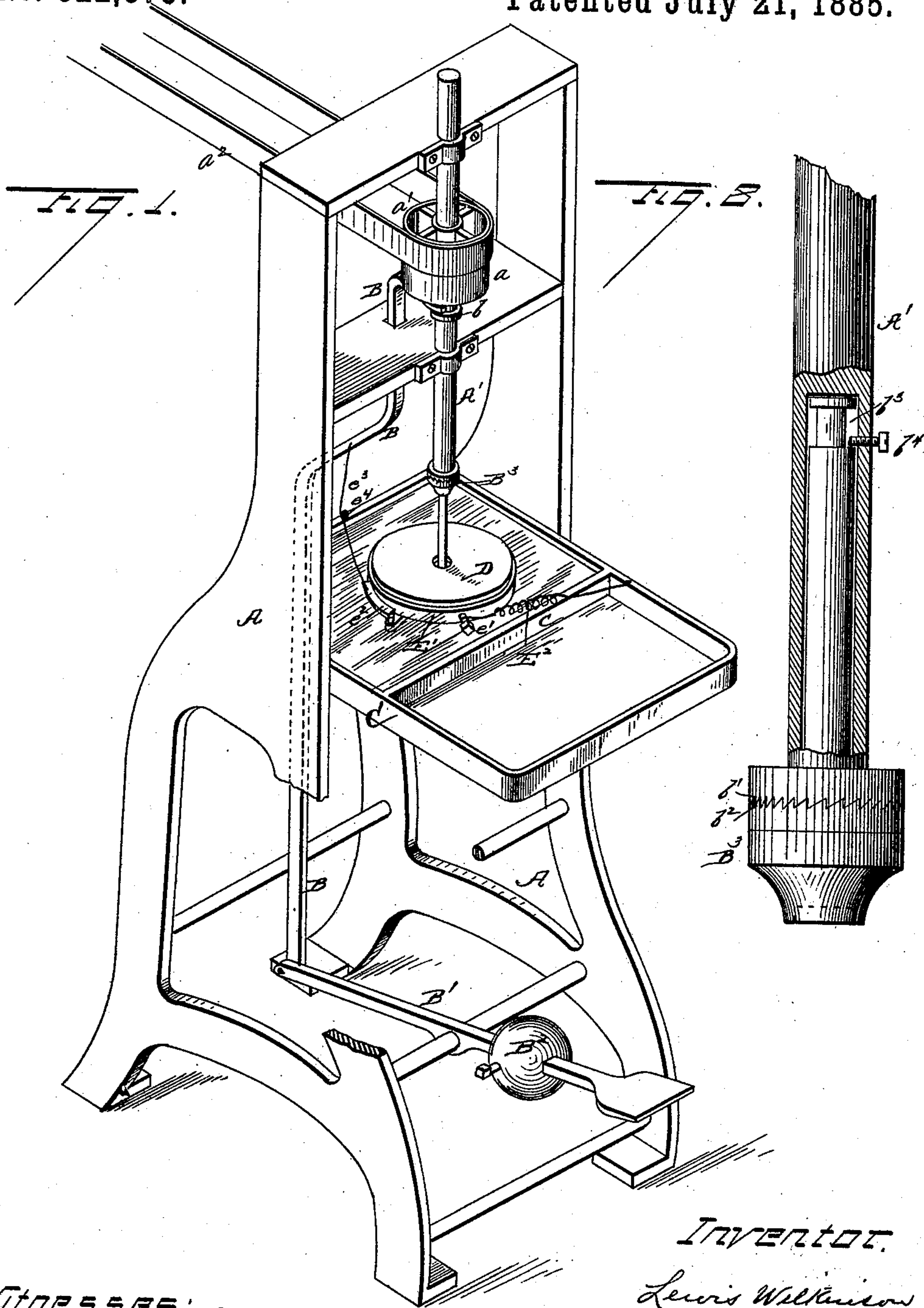
(No Model.)

2 Sheets—Sheet 1.

L. WILKINSON, Dec'd.,
F. M. STEELE, administrator.
SCREW CUTTING MACHINE.

No. 322,875.

Patented July 21, 1885.



WITNESSES:
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(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

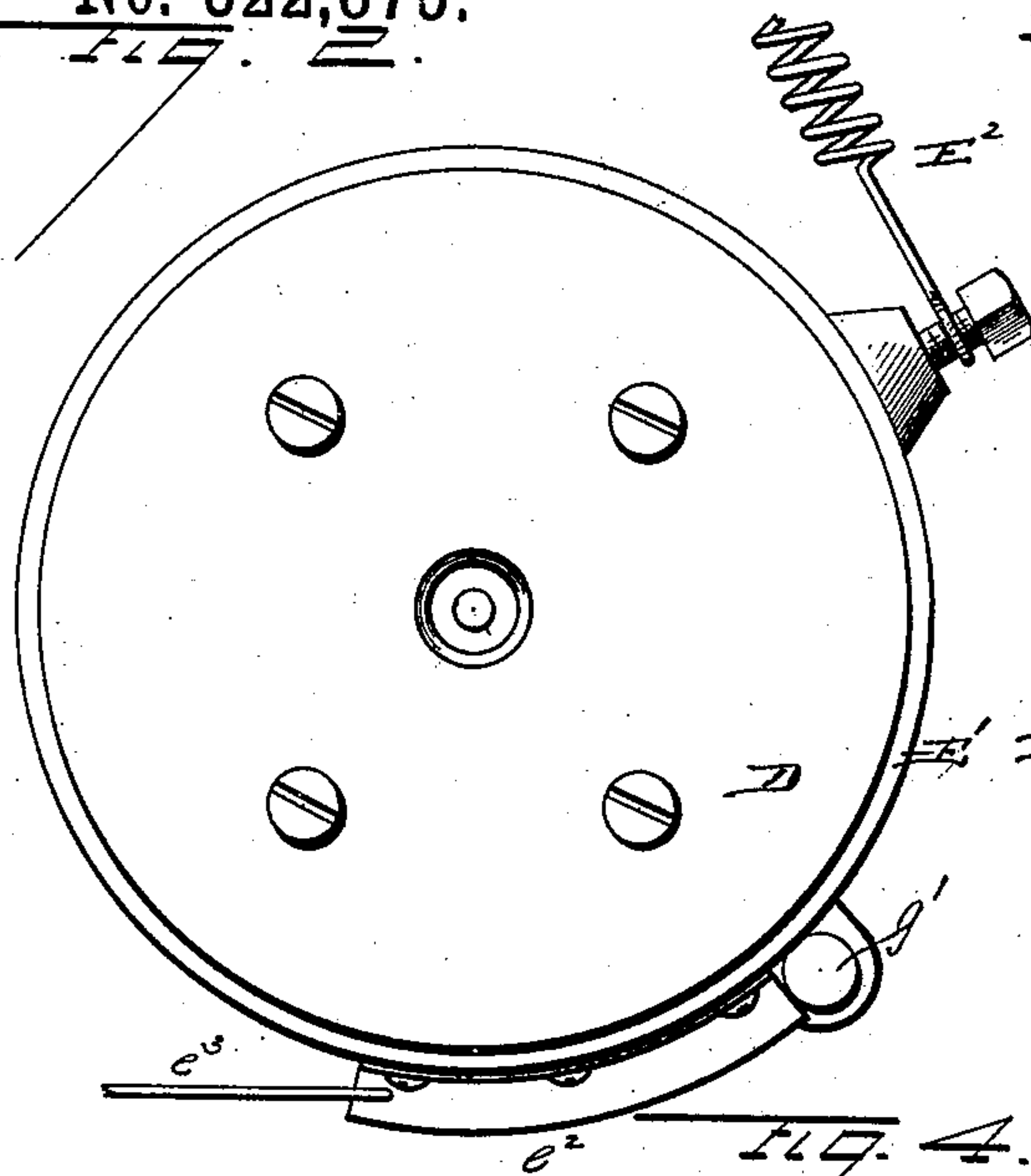


FIG. 3.

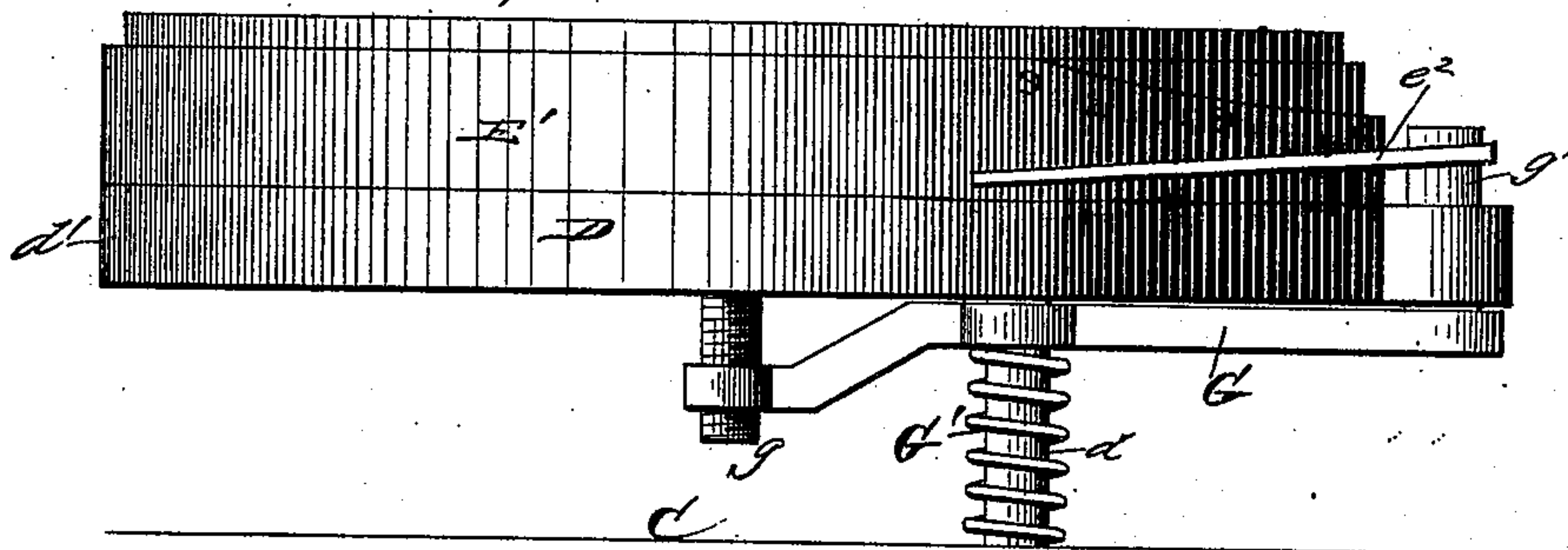
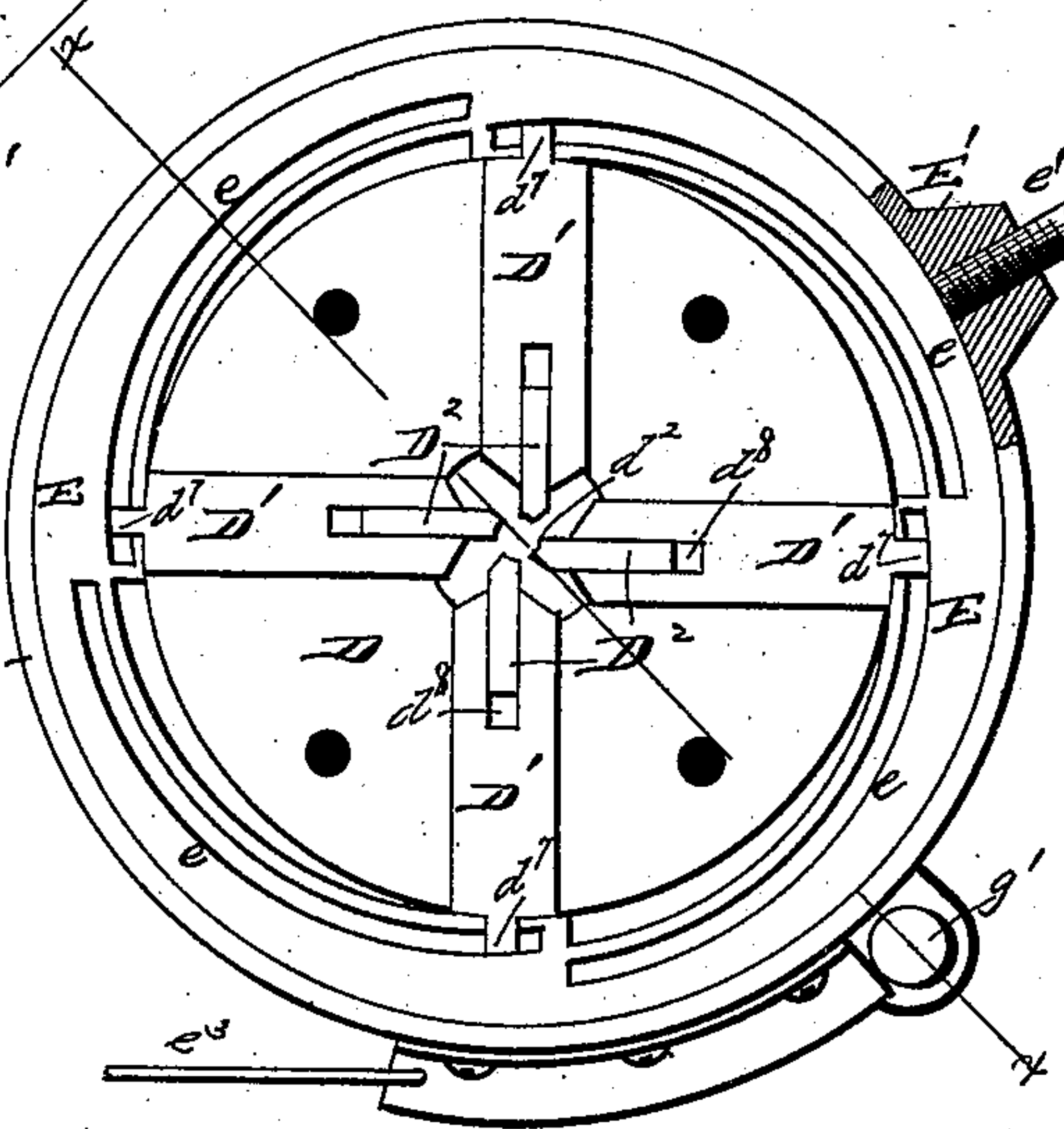


FIG. 5.

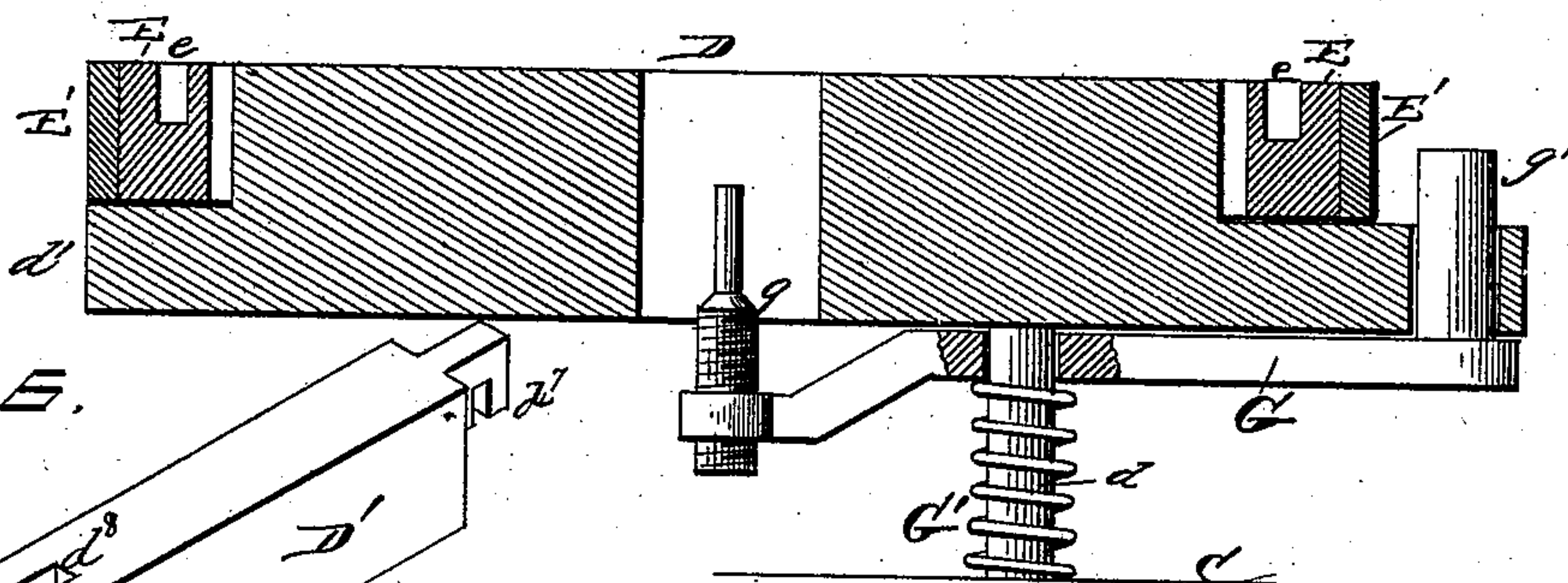


FIG. 6.

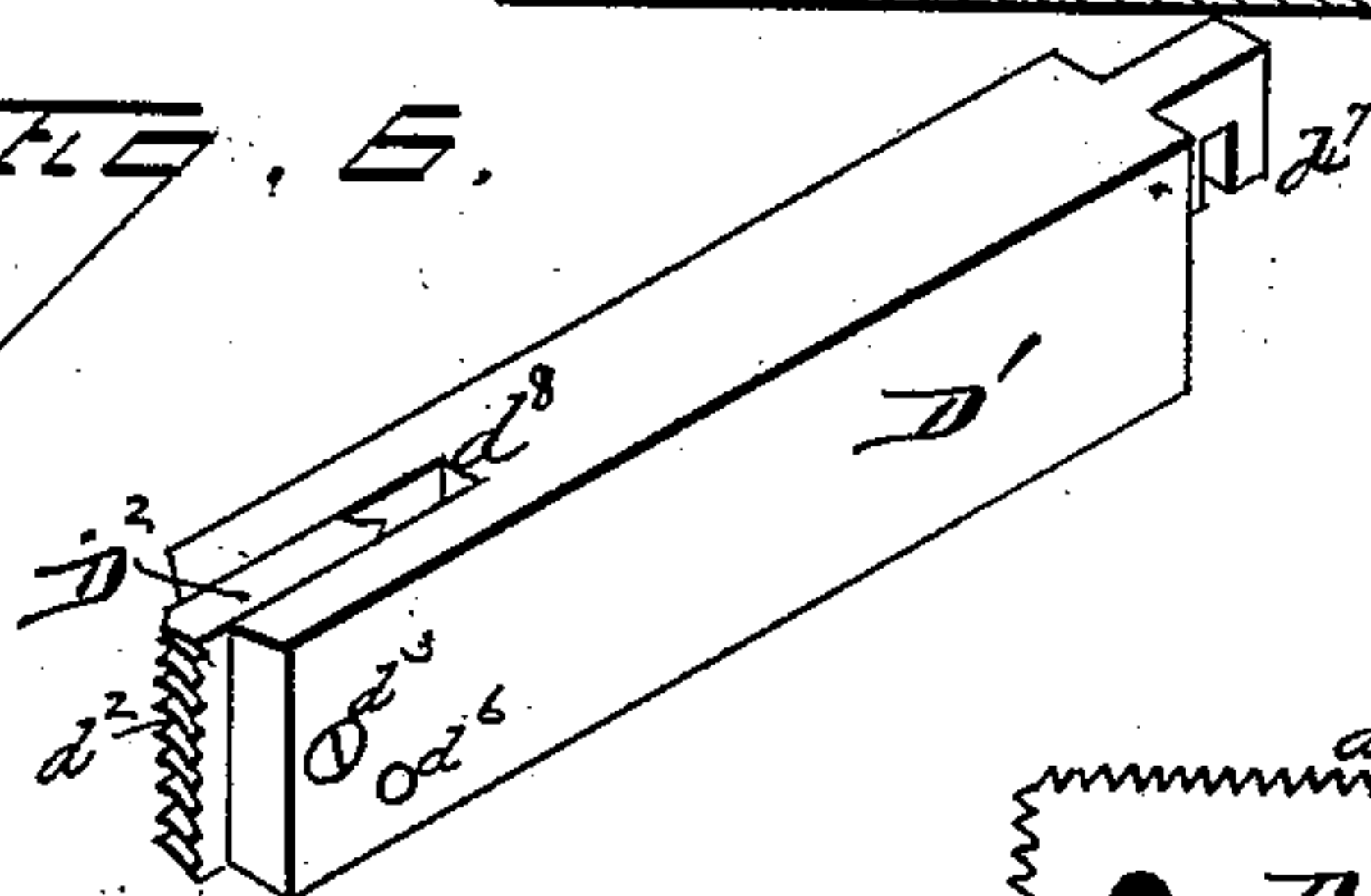
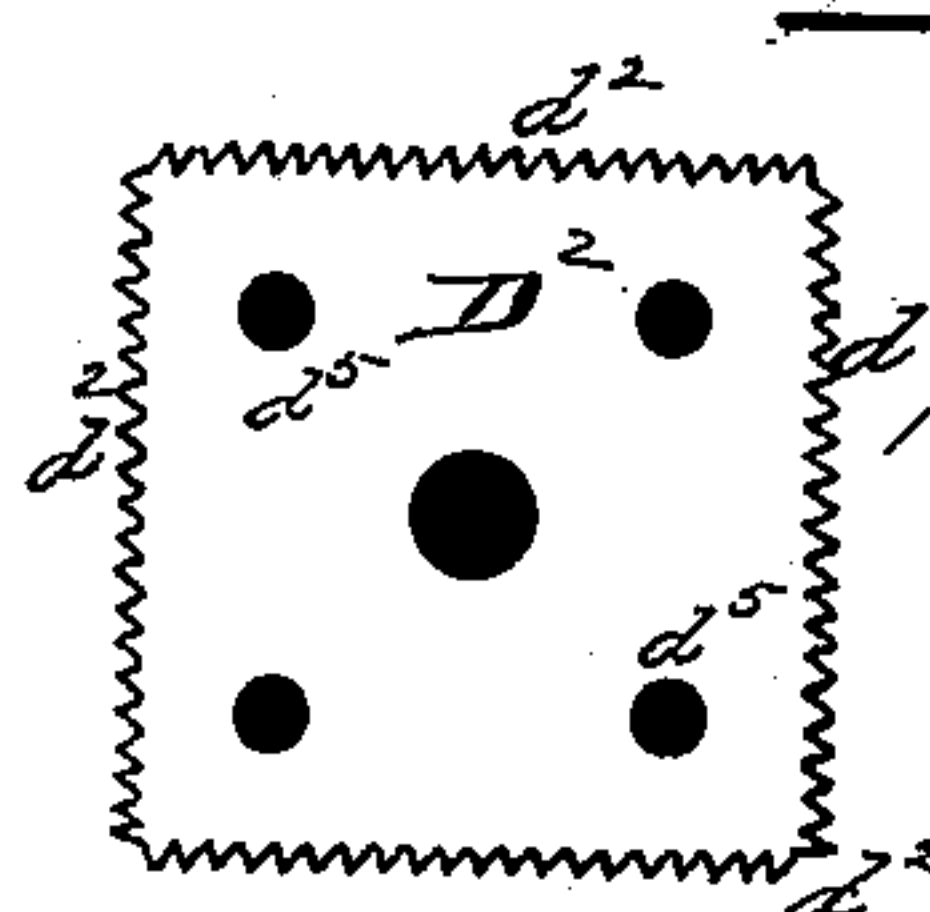


FIG. 7.



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UNITED STATES PATENT OFFICE.

LEWIS WILKINSON, OF CHICAGO, ILLINOIS; FREDERICK M. STEEL, ADMINISTRATOR OF SAID WILKINSON, DECEASED.

SCREW-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,875, dated July 21, 1885.

Application filed June 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEWIS WILKINSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful improvements in Screw-Cutting Machines of which the following is a specification, to wit:

This invention relates to machines for threading bolts and screws; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings in which,—

Figure 1 is a perspective view of a machine embodying my improvements. Fig. 2 is a top view of the cutting-head; Fig. 3, a similar view, with the cap removed, showing the dies and their action. Fig. 4 is a side elevation of the cutting-head; Fig. 5, a cross-section of the same on line *xx*, Fig. 3. Fig. 6 is a perspective view of one of the cutting-arms; Fig. 7, a detail of my reversible die; and Fig. 8 is a detail view of the bolt or screw holder and its clutch.

A represents the main frame of a screw and bolt cutting machine, having a vertical driving-shaft, *A'*, journaled in suitable boxes thereon, and arranged to slide therein a suitable distance to properly feed the screw or bolt to the stationary cutting-head below, which carries the dies, as will be presently described. This shaft is provided with fast and loose pulleys *a a'*, driven by a belt, *a''*, from any desired power, and below these pulleys the shaft is provided with a collar, *b*, with which engages a shifting-arm, *B*, which extends downward and is jointed to a foot-lever, *B'*, fulcrumed in the lower part of the main frame. This foot-lever is provided with a shifting weight, *B''*, which is adjusted upon the lever to nearly balance the weight of the driving-shaft and its attachments, and serves the double purpose of aiding the pressure of the foot in lifting this shaft and controlling the downward pressure which it exerts upon the bolt or screw in feeding it to the dies. The

lower end of the driving-shaft is made hollow, and its end is formed with a clutch or ratchet face, *b'*, which engages with a similar face, *b''*, upon the upper side of the driving-head *B''*, the shank of which extends within the hollow driving-shaft, and has its upper end formed with a broad circumferential groove, *b'''*, which engages the end of a screw, *b''''*, in the shaft, and prevents the head from dropping out of the shaft, while allowing it sufficient play to release it from the clutch and allow it to stop running as soon as the thread is formed upon the bolt or screw under operation.

The main frame is also provided with a shallow pan or receptacle, *C*, divided by a partition, *c*, into two compartments, the outer of which serves to hold the work to be operated upon, and the inner, beneath the driving-shaft, is wholly or partially filled with oil, as indicated in Fig. 1. Upon one or more short standards, *d*, in this oil-pan is supported a stationary cutting-head, having dies inclosed therein. The cutting-head is composed of a circular plate, *D*, having a flange, *d'*, around its lower edge, and formed with a series of radial grooves in which are placed the die-carrying arms or holders *D'*. These are on their forward ends formed with a slot, *d''*, in which is placed the steel die *D''*, consisting of a steel-plate formed with four equal sides, two or more of which are provided with cutting-teeth *d'''*, as shown in the drawings, Figs. 6 and 7. These dies are pivoted in the slotted arms by a pin or screw, *d''''*, passing through their center, and are formed with a series (preferably four) of holes *d'''''*, through one of which passes a pin, *d''''''*. These dies may be removed and replaced at any time, and when one face is dull the pin *d''''''* is removed, the die turned upon its pivot to present a new working-face, and the pin again replaced, the holes *d'''''* in the die being all formed equidistant from its center, and therefore all corresponding to the position of the locking-pin, as will be evident. The die may have two or all of its faces formed with cutting-teeth, and, if desired, these may be of various sizes suitable for cutting different threads.

The rear ends of the die-holding arms *D'* are formed or provided with hook-shaped

lugs d' , which engage cam-grooves e in a ring, E, surrounding the main body of the head D, and resting upon its flanges; and it is evident that the turning of this ring will withdraw or advance the dies to release or engage the bolt or screw under operation. Around the cam-ring E is a second ring, E', fitting closely thereon. This ring is held in proper adjustment upon the ring E by means of a set-screw, e' , and is provided upon its outer side with a cam-plate or incline, e^2 . A spring, E², connects the outer ring with the main frame of the machine, and throws the dies back, while they are automatically thrown forward by a cord or wire, e^3 , attached to the adjusting-ring and running over a small pulley, e^4 , on the frame, and attached to the shifting-rod B, as in Fig. 1.

Upon the standard d , below the cutting-head, is a sliding arm, G, the inner end of which carries a screw-threaded pin, g , entering the center of the plate D between the ends of the dies, and the outer end of which carries a stop-pin, g' , passing up through the flange d' , and engaging the incline e^2 on the ring E'. The sliding arm is held up by a spring, G', upon the standard, as shown.

The operation is as follows: The foot-lever is pressed down, thus lifting the driving-shaft, and at the same time, by means of the cord e^3 , turning the rings E E' to throw the dies into their proper place, the incline e^2 passing over the pin g' , the pin springing up again behind the incline and holding the dies in position. The bolt or screw to be cut is then placed with its head in the recessed lower end of the driving-head, and the shaft A' allowed to fall. This engages the clutches $b' b^2$, and the bolt is rapidly revolved. It is entered in the cutting-head and is threaded by the dies, being pressed down by the weight of the driving-shaft with more or less rapidity, as regulated by the adjustment of the weight upon the foot-lever. When the thread is nearly cut, the end of the bolt engages and presses down before it the pin g and arm G, which at the proper time releases the incline e^2 and allows the spring E² to throw the cam-ring around, at once drawing back the dies and releasing the bolt, the weight of which causes the driving-head to drop a short distance, and releases the clutch. The shaft A' is again lifted, the dies returned to place, and the bolt or screw removed and another substituted. The action of all the parts is thus made automatic, and it will be seen that the adjusting of the ring E' upon the cam-ring within it will cause the dies to be advanced a greater or less distance and fit different sizes of screws. The dies being held stationary within the oil-pan are always lubricated thoroughly, while none of the oil is thrown off and lost by centrifugal motion, as is the case when the dies are revolved. Then, too, the cuttings fall freely through the die-head, and do not obstruct the work or clog the machine, while the dies are

prevented from injury by being at once retracted when the thread is cut of the desired length.

It will be observed that the collar b upon the driving-shaft acts as a stop to prevent the shaft from dropping too far, and when the bolt has pressed down the trigger and released the dies the stop on the driving-shaft engages the main frame, while the incline e^2 further depresses the stop and allows the bolt and its holder to drop of their own weight and release it from the clutch. This allows the bolt to stop revolving and prevents it from injuring the dies. The incline does not pass entirely off the stop-pin, and is therefore readily drawn back again, as will be evident.

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

1. In a screw-cutting machine, the combination, with a revolving blank-holder sliding vertically in the main frame, of a cutting-head provided with dies sliding radially to and from the center, and a spring-actuated cam for operating them, and a spring arm or trigger engaging the cam during the cutting, but operated automatically by the screw under operation to release the cam when the cutting is finished, substantially as shown and described.

2. In a screw-cutting machine, a stationary die-plate, having dies sliding in radial grooves therein, and a spring-actuated stop pin or trigger upon its outer side, in combination with a ring surrounding the plate and formed with cam or eccentric grooves with which the dies engage, and a second ring surrounding the first, and adjustable thereon by means of a set-screw, and provided with a projection for engaging the stop-pin to hold the dies in place, and a spring secured to the outer ring to move it when released, substantially as and for the purpose set forth.

3. In a die-holder for screw-cutting, the combination, with the die-holding arm, formed with a slot in its forward end, of a die-plate having a series of equal-toothed cutting-edges, pivoted in the slotted holder, and having means, substantially as shown and described, for securing it with either of its cutting-edges presented for work, substantially as and for the purpose set forth.

4. In a screw-cutting machine, a driving-shaft having its lower end formed hollow, and having a clutch-face, and a blank-holder also having a clutch-face, and a shank sliding endwise a short distance within the hollow shaft, in combination with a series of radially-moving dies, and means, substantially as herein described, for withdrawing the dies and allowing the bolt to fall as soon as the thread is cut, whereby the bolt is not liable to injure the dies, substantially as shown and described.

5. In a screw-cutting machine, the driving-

shaft A', having a stop, *b*, and a clutch blank-holder sliding upon its lower end, in combination with the dies D² D', the cam-ring E, and spring E², substantially as and for the
5 purpose set forth.

6. In a screw-cutting machine, the die-plate D, formed with radial grooves, in which move the arms D', carrying the dies D², in combination with the cam-grooved ring E, ad-
10 justing-ring E', spring E², incline *e*², and stop-

arm G, having pins *g g'*, all constructed and arranged to operate substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS WILKINSON.

Witnesses:

W. C. McARTHUR,
CHAS. KRESSMANN.