(No Model.) 3 Sheets—Sheet 1.

H. A. HARVEY.

FEEDING MECHANISM IN MACHINES FOR ROLLING SCREW THREADS.

No. 248,163. Patented Oct. 11, 1881.

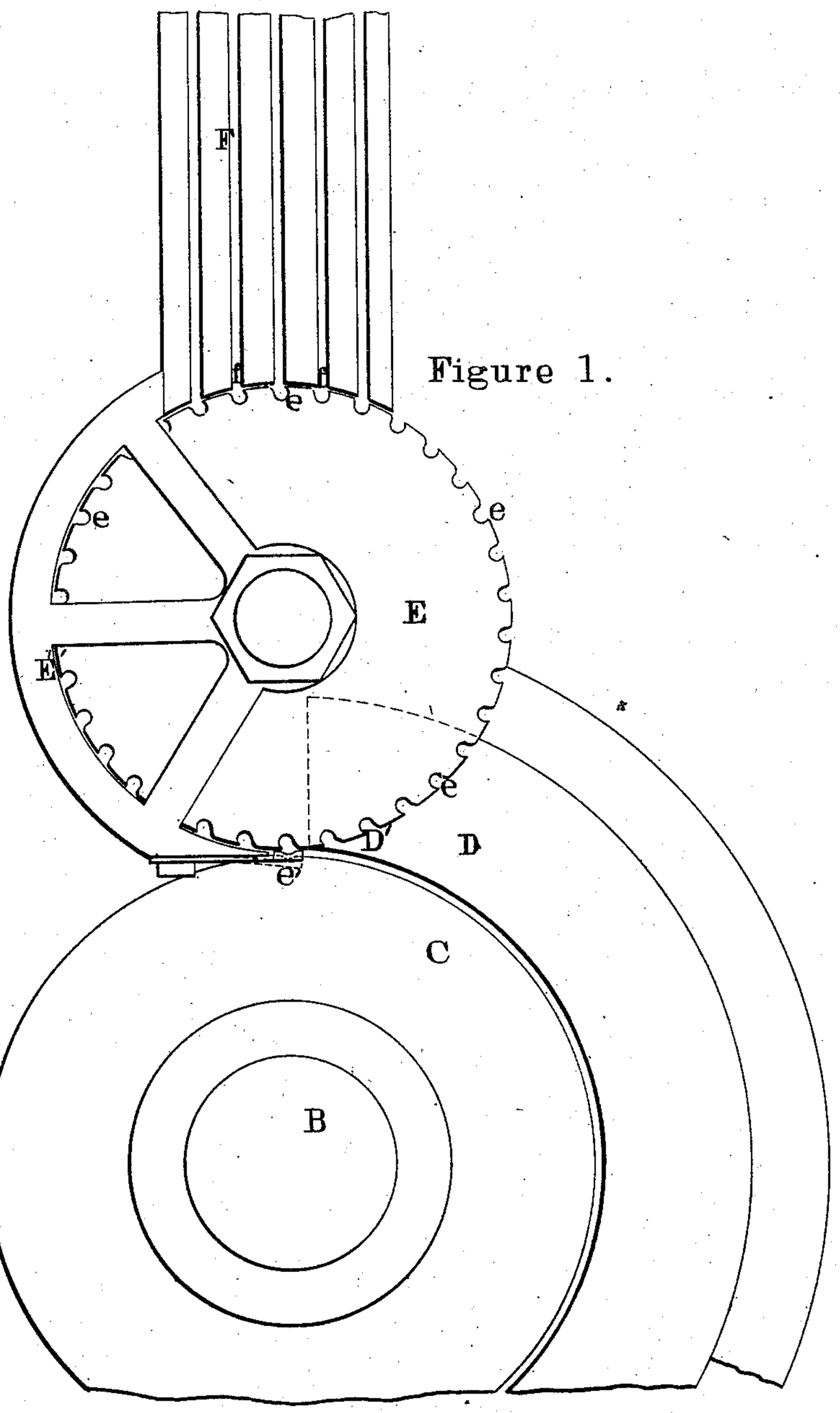

Figure 1.

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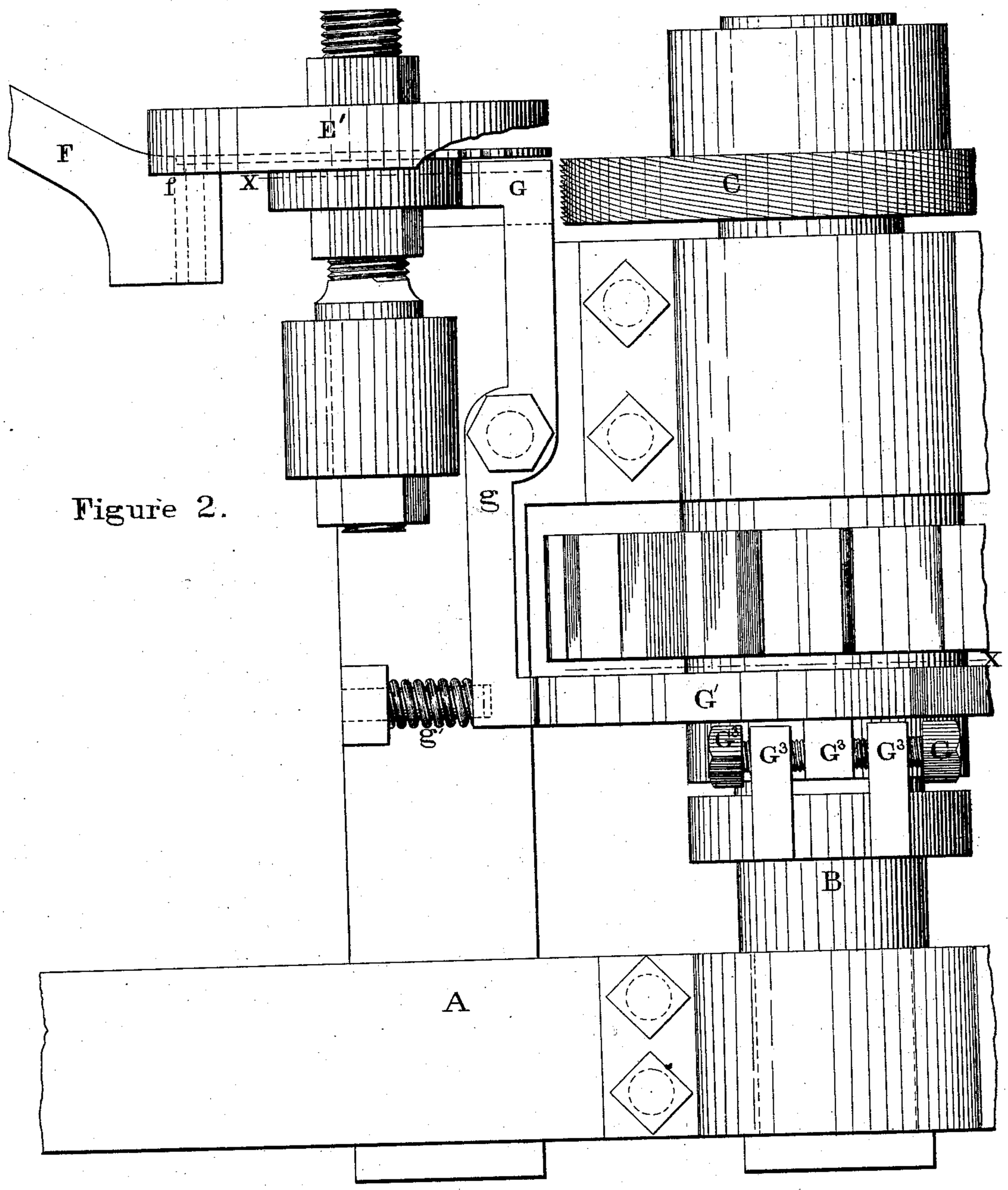

Figure 2.

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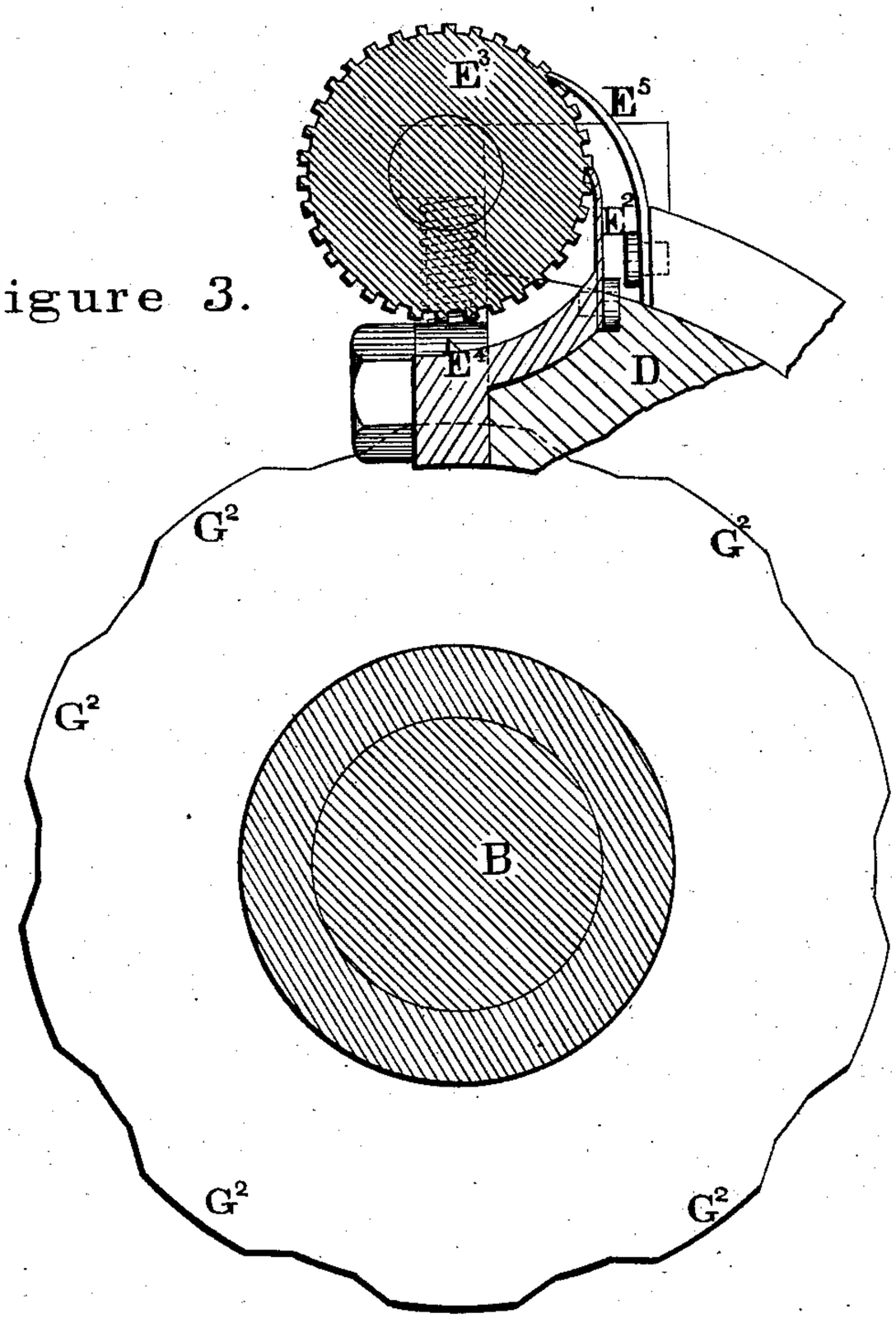
Figure 3.



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HAYWARD A. HARVEY, OF ORANGE, NEW JERSEY.

FEEDING MECHANISM IN MACHINES FOR ROLLING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 248,163, dated October 11, 1881.

Application filed May 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, HAYWARD A. HARVEY, of Orange, New Jersey, have invented certain Improvements in Feeding Mechanism in Machines for Rolling Screw-Threads, of which the following is a specification.

My improvements relate to feeding mechanism for that class of screw-threading machines in which the thread is formed by the combined rolling action upon the screw-blank of two dies, the opposed faces of which are formed with systems of parallel ribs inclined respectively in opposite directions; and my invention consists in the employment of an intermittently rotating feed-wheel having notches in its periphery into which screw-blanks are deposited from any required number of guide channels or ways extending from a hopper or hoppers to the edge of the feed-wheel, the distances between the discharge ends of the ways being the same as the distances between the notches. Thus when the feed-wheel is stationary some one of its notches stands opposite the discharge end of each of the ways, and, if empty, may receive a blank discharged from the ways, or, if it fails to receive a blank from one pair of ways will have other opportunities of being supplied as it is brought by the step-by-step rotation of the feed-wheel successively opposite the discharge ends of the other ways. The blanks are held in the notches by a curved guard extending around the edge of the feed-wheel to the place where the blanks are successively pushed outward from the notches against the working-face of one of the dies, which, being in motion, rolls the blank off the face of the pusher into the space between the two dies. By suitably increasing the number of guide channels or ways the notches in the feed-wheel may be placed near together, so that after a blank has been delivered to the dies a very small range of movement of the feed-wheel will be sufficient to bring another blank into position for delivery, and the operation of feeding can thus be carried on with great rapidity.

The accompanying drawings, representing my improvements applied to a machine for forming screw-threads by rolling screw-blanks between a rotating cylindrical die and a stationary curved die, are as follows:

Figure 1 is a top view of a portion of the machine, showing the feed-wheel and portions of the guide channels or ways for conducting blanks from a hopper or hoppers. Fig. 2 is a side elevation with a portion of the feed-wheel guard broken out to show the edge of the feed-wheel. Fig. 3 is a horizontal section through the offset line X on Fig. 2.

The drawings represent a portion of a screw-threading machine, substantially of the character of that shown and described in the Letters Patent of the United States, No. 223,730, granted to me January 20, 1880.

In this machine a suitable frame, A, affords the bearings for the vertical shaft B of the rotating cylindrical die C, which, in conjunction with the stationary curved die D, performs the preliminary operation of impressing a spiral groove upon the body of the screw-blank.

The mechanism for feeding the blanks to the action of the dies consists of the horizontal feed-wheel E, having the equidistant notches *e* formed in its edge. Screw-blanks deposited in these notches from the lower ends, *f*, of the inclined guide channels or so-called "ways" F are prevented from slipping out by the curved guard E′ until they successively arrive at a point adjacent to the end D′ of the stationary die D. The blank having arrived at this point is held in its notch by the movable spring-guard *e′*, which is affixed to the end of the curved guard E′.

The inclined ways F are supplied with blanks from a hopper or hoppers of ordinary construction. The blanks, hanging by their heads in these ways, slide down by their own gravity and slip from the ends of the ways into the notches *e* in the feed-wheel.

The delivery of the blanks successively from the notches *e* to the dies is effected by the pusher G upon the upper end of the rocking lever *g*, the lower end of which is kept against the face of the rotating cam G′ by the spiral spring *g′*.

The cam G′ has the projections G^2 formed upon its periphery, and means of adjustment G^3 are provided for accurately seating the cam G upon the shaft B in proper relation with the die C, so that when the projections G^2 strike against and push out the lower end of the lever *g*, and the pusher G consequently pushes

a blank out of one of the notches *e* against the face of the rotating die, and the rotating die rolls such blank into the space between the two dies, the ribs upon the stationary die, at their points of first engagement with the blank, will occupy elevations midway between the elevations occupied by the ribs of the rotating die at the same time in engagement with the opposite side of the blank.

The movable guard *e'* yields as the pusher G pushes the blank out of its notch against the face of the rotating die, and after the blank has been engaged by the rotating die and rolled away from the face of the pusher, the guard *e'* springs back into position to perform its function for the blank in the next succeeding notch.

The circumference of the rotating die is made substantially a multiple of the circumference of the shank of the screw-blank which is intended to be operated upon, and what may be called the "feeding-points" upon the rotating die equal in number the number of times which the circumference of the blank is contained in the circumference of the die.

The projections G^2 upon the cam G' equal in number the feeding-points upon the die, and as these projections are equidistant it follows that an adjustment of the cam with relation to the die which properly times the feeding of a blank to one of the feeding-points, likewise properly times the feeding of blanks to all the feeding-points successively.

The feed-wheel is intermittently rotated by means of the pawl E^2, projecting backward from the upper end of the lever *g* and engaging the teeth upon the cog-wheel E^3.

The range of backward movement of the pusher-lever and its pawl, and the diameter of the cog-wheel E^3 are calculated with reference to giving sufficient rotation to the feed-wheel to bring the notches *e* successively over the space in front of the pusher; and to insure the bringing of the feed-wheel to rest at the proper point a detent or projection, E^4, is also affixed to and projects backward from the pusher G in position to enter one of the spaces between the teeth of the cog-wheel E^3, and stop its further rotation when the actuating-pawl E^2 has completed its backward movement.

Any reverse rotary movement of the feed-wheel F is prevented by the stationary spring detent-pawl E^5.

Whenever the feed-wheel E is stationary one of the notches *e* is held immediately opposite the discharge end *f* of each of the ways F, and, if empty, may receive a blank therefrom. If for any reason an empty notch passes the end of one pair of ways, it may receive a blank from the discharge end of one of the other pairs of ways, in front of all of which it will be successively brought to rest during the operation of delivering the blanks from the notches in the feed-wheel to the dies.

It will be seen that by this organization of the feeding mechanism a very small range of movement suffices to effect the delivery of a blank from the feed-wheel to the dies and a very slight movement of the feed-wheel suffices to bring another blank into position to be delivered, and hence the feeding operation can be performed with a degree of rapidity commensurate with the requirements of the class of screw-threading machines in which the thread is formed by rolling the blank between two dies.

I claim as my invention—

1. In a machine for forming screw-threads by rolling blanks between the faces of two dies having systems of parallel ribs inclined respectively in opposite directions, an intermittently-rotating feed-wheel provided with notches in its periphery, in combination with a pusher for pushing the blanks successively out of the notches when the feed-wheel is at rest against the face of the moving die, substantially as described.

2. An intermittently-rotating feed-wheel provided with notches in its periphery, and two or more pairs of ways for conducting blanks from a hopper or hoppers into the notches of the feed-wheel, which are successively brought to rest opposite the discharge end of such ways, in combination with a curved guard for holding the blanks in the notches during the rotation of the wheel while carrying the blanks from the points where they are deposited in the notches to the point where they are successively delivered from the notches against the face of the moving die, substantially as set forth.

3. The feed-wheel E, provided with the notches *e* in its periphery, and the toothed wheel E^3, affixed to the shaft of the feed-wheel, in combination with the pawl E^2, the detent E^4, the rocking lever *g*, and the cam G', substantially as and for the purpose set forth.

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Witnesses:
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