

(No Model.)

W. W. JONES.

Machine for Making Rims for Tops of Metal Vessels.

No. 235,878.

Patented Dec. 28, 1880.

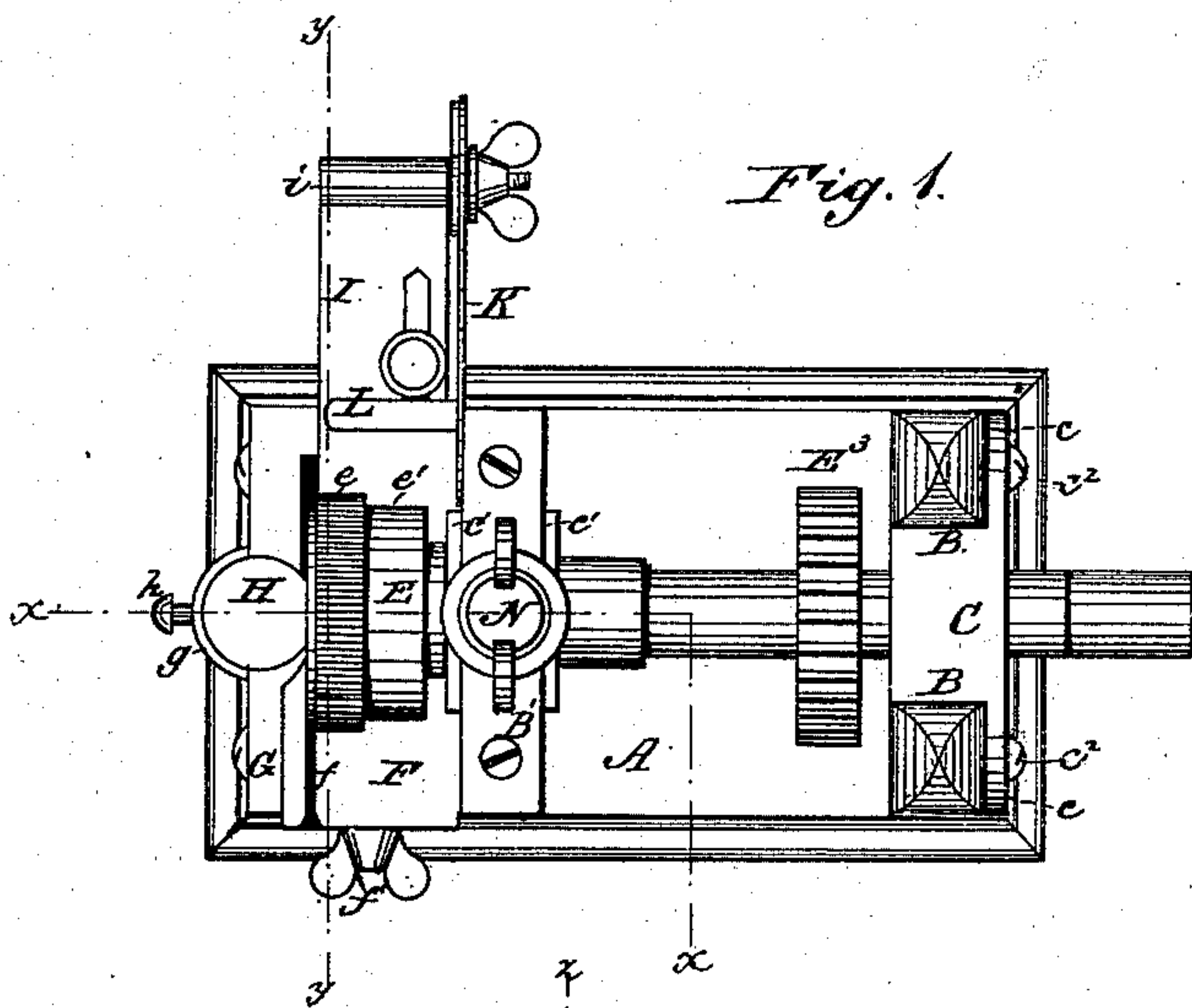


Fig. 1.

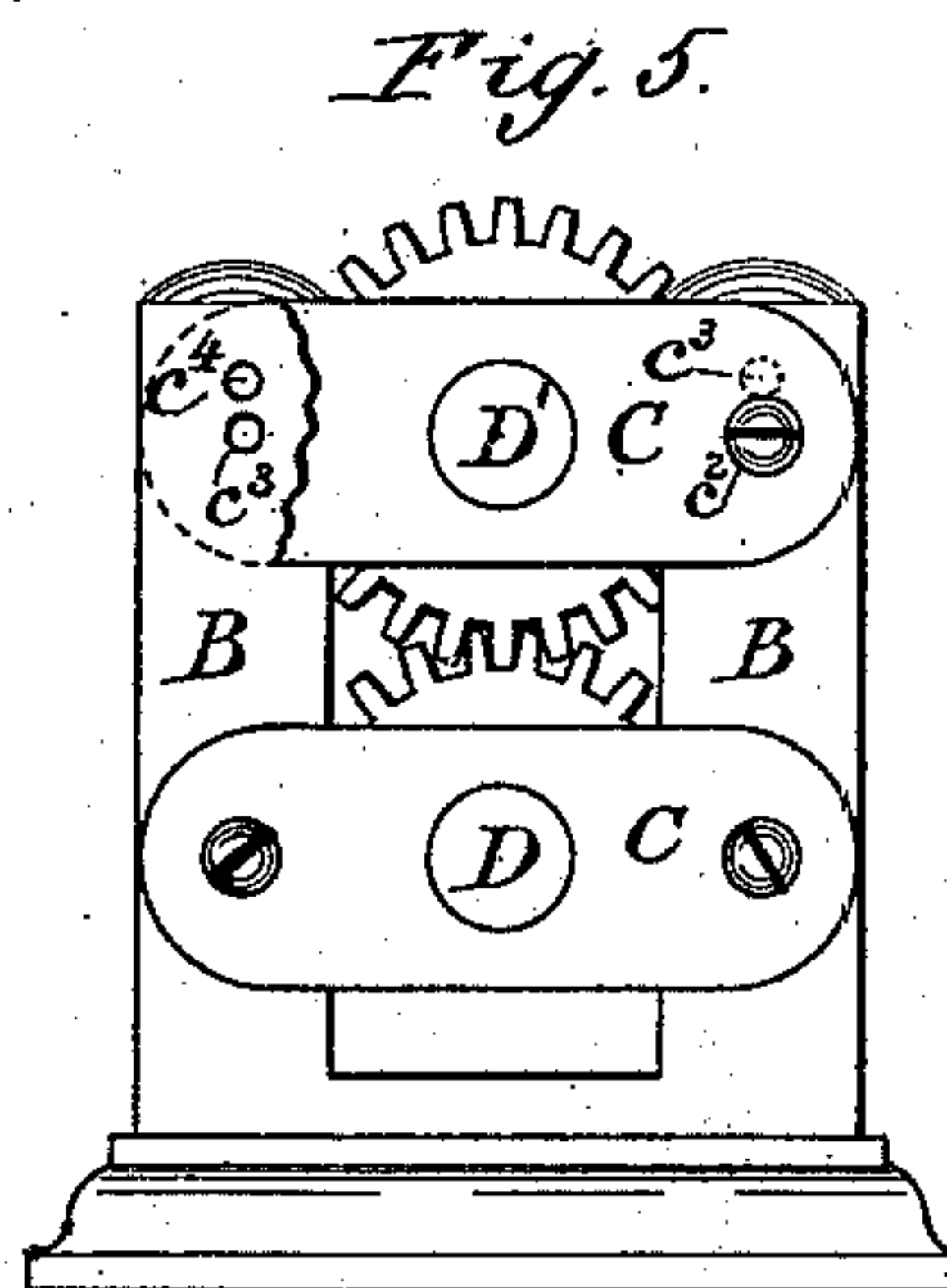


Fig. 5.

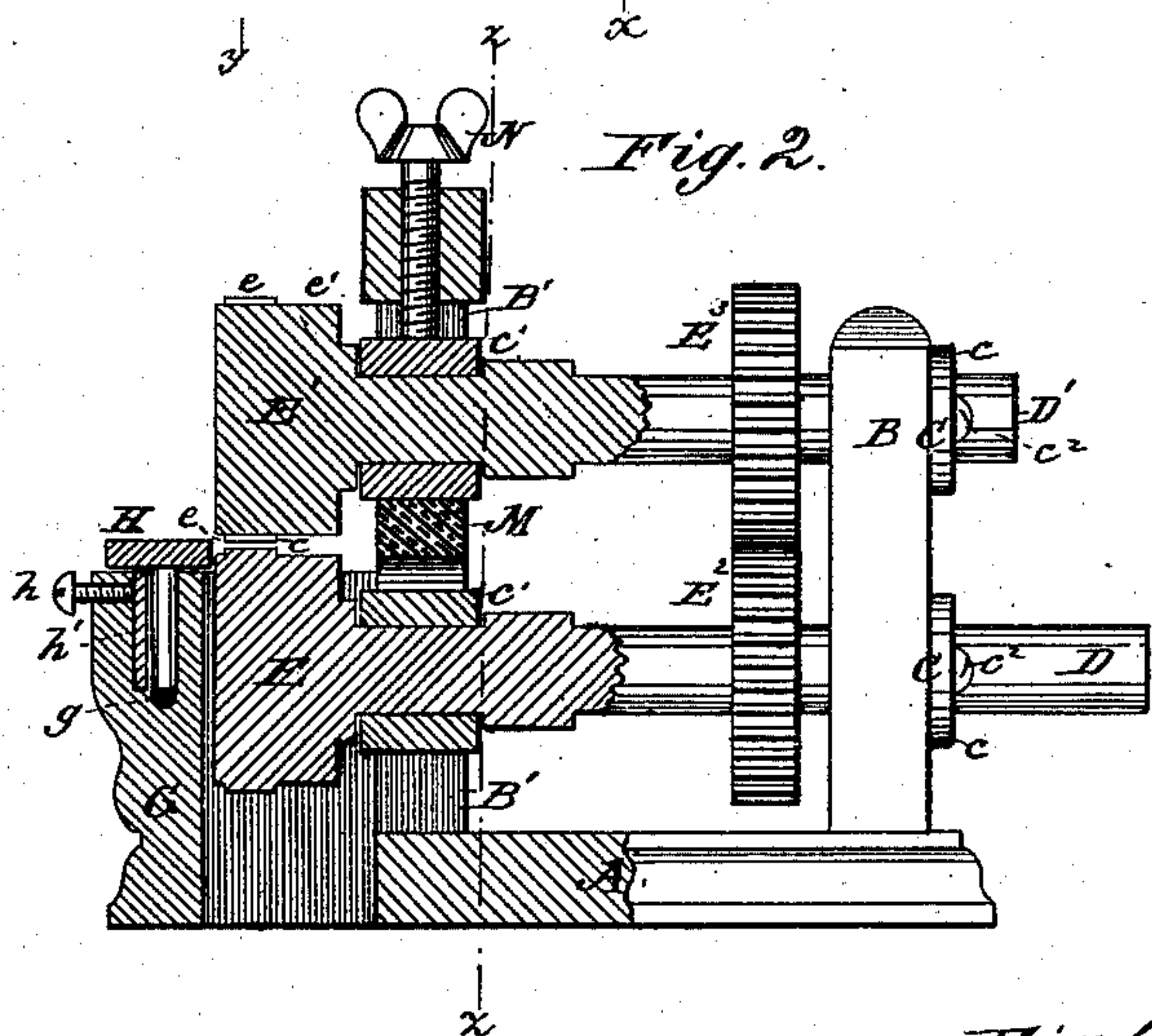


Fig. 2.

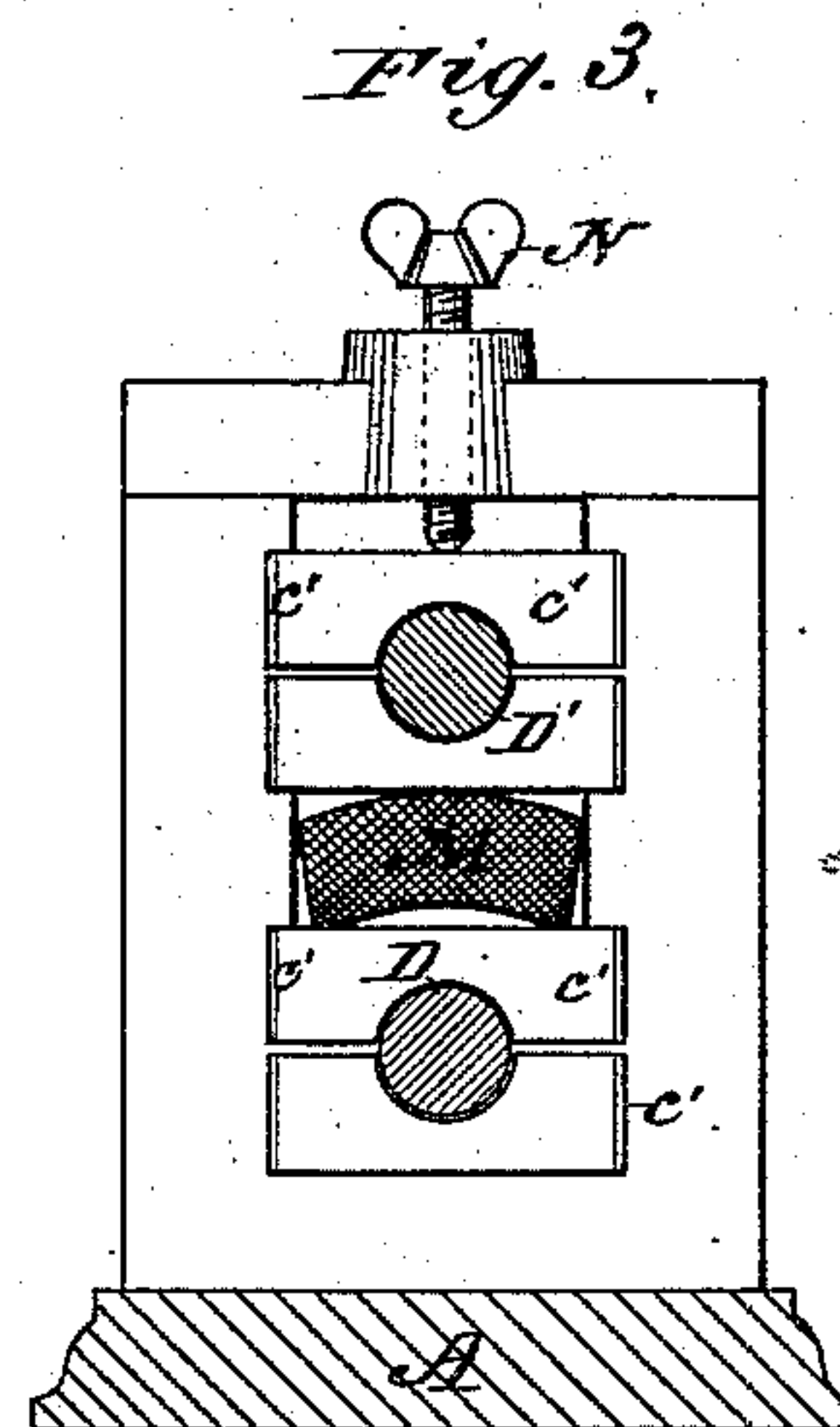


Fig. 3.

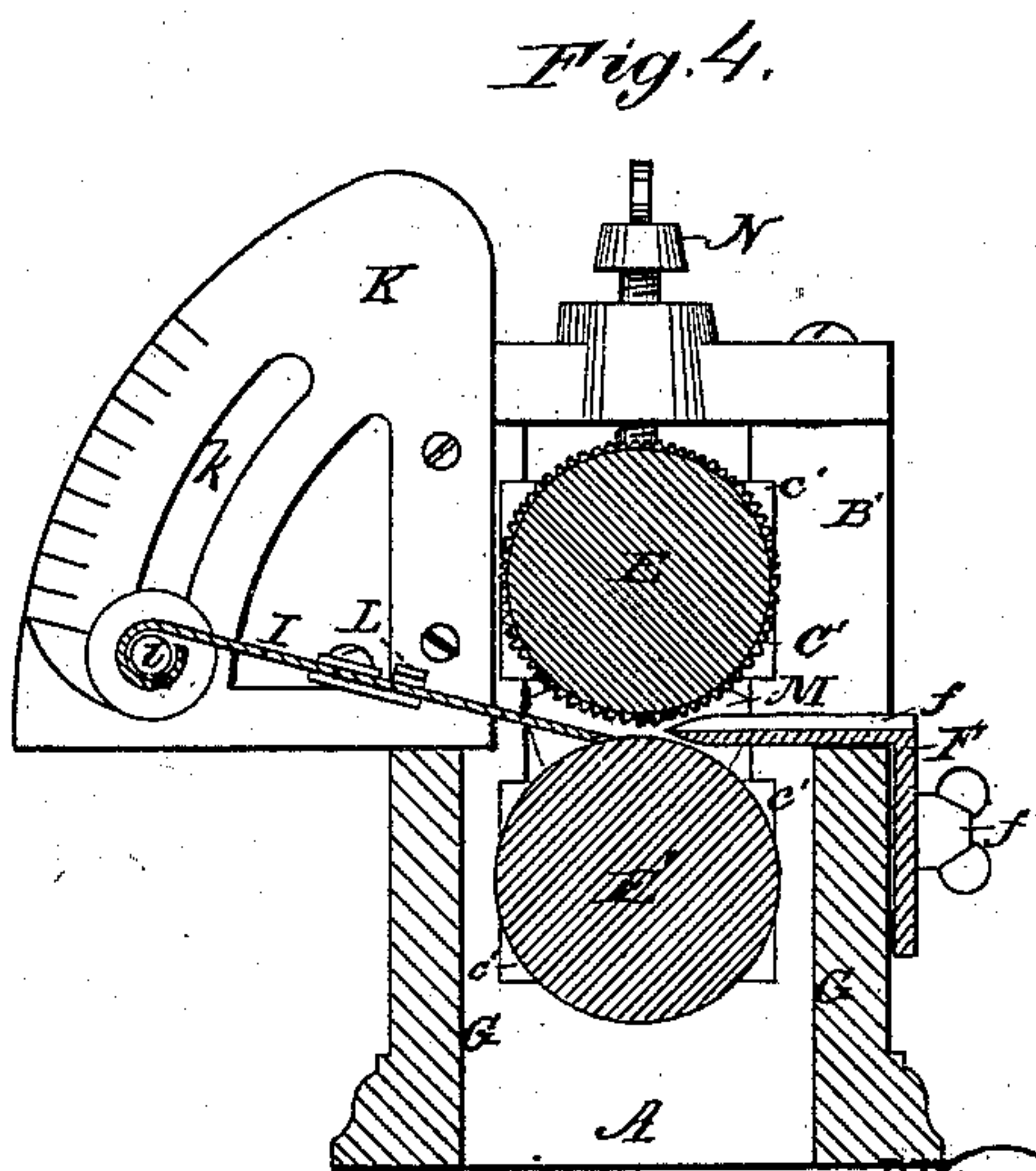


Fig. 4.

WITNESSES:

W. W. Hollingsworth,
John Kimon.

INVENTOR:

W. W. Jones.
BY *Wm. L.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM W. JONES, OF NASHVILLE, TENNESSEE.

MACHINE FOR MAKING RIMS FOR TOPS OF METAL VESSELS.

SPECIFICATION forming part of Letters Patent No. 235,878, dated December 28, 1880.

Application filed May 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. JONES, of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Machines for Making Rims for Tops of Metal Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to provide a simple machine which will operate upon a straight strip of metal flanged upon one of its edges, to convert it into a hoop of any required diameter, and of such shape in cross-section as will render it peculiarly suited to form the flange for the cover of sheet-metal vessels. The sheet-metal blanks to be acted upon by the machine are first cut into flat rectangular sheets of suitable length to form a hoop of the required diameter and of sufficient width to form the rim, and also to allow of a flange of suitable width to connect the rim to the cover.

In the accompanying drawings, Figure 1 is a plan view of the machine. Fig. 2 is a side elevation of the machine with the roller end of the machine in section in the line xx of Fig. 1; Fig. 3 a vertical transverse section of the machine in the line zz of Fig. 2, looking toward the front of the machine; Fig. 4, a transverse vertical section in the line yy of Fig. 1, and Fig. 5 an end elevation of the machine.

A suitable base, A, supports housing B B', to which is fitted boxing C C' that supports the journals of gudgeons D D', arranged one above the other and connected by spur-pinions E² E³, of equal diameter, to revolve the gudgeons in opposite directions at equal speed. The gudgeons D D' pass through their boxing and extend outside the housing B' at the front of the machine, and are provided with rollers E E', secured to their outer ends. Each of the rollers is provided with a rim, e , between which the blanks are rolled, of slightly larger diameter than the hub portion e' , which will admit of the inner portion of the blank near the flange to be expanded, and allow the outer or unflanged portion of the blank to pass freely between the rolls without being acted upon by them. The edge of the blank is turned down to form the flange by means of

a folder or other well-known mechanical means, and the blank is then ready to be fed to the machine.

My invention essentially consists in a machine provided with three rollers, two of them upon horizontal axis, between which the body of the blank is passed, and a third roller, arranged upon a vertical axis, to bear against the flanged edge of the blank and stretch the flange in a corresponding degree with the expansion or flare given to the body of the blank by the action of the other rollers.

My invention further consists in means, hereinafter described, for feeding the blank to the rollers, for determining the diameter of the hoop formed by the machine, for guiding the blank after it has left the rollers, and for regulating the flare given to the body of the blank, and for adjusting the rollers to operate in an equally effective manner upon blanks of different widths, to form either broad or very narrow rims.

A bed-plate, F, has a gutter, f , formed in its upper surface to receive the flange of the blank and direct it to the rollers and hold the blank in proper position as it passes between them. The plate F is secured to a frame or casing, G, that surrounds the roller E, and is adjusted thereon relatively to the rollers by means of a set-screw, f' .

A narrow-faced roller, H, of about one-half the diameter of the rollers E E', is provided with a stud-axle that is held vertically in a socket, g , in the casing, so that the periphery of the roller will bear against the flange of the blank at a point directly opposite the point of contact of the rollers E E', and is forced against the flange with any required degree of pressure by a set-screw, h , pressing against a bearing-block, h' , against which the axle of the roller H rests. The pressure of the roller H upon the flange expands the metal of the blank at that point by pressing it against the lower roller, E, to conform to the expansion given to the body of the blank by the action of the rollers E E'. The upper roller, E', is milled upon the rim portion e , and is caused to press with sufficient force upon the blank, as it passes beneath it, to crimp the inner or middle portion of the band upon its upper surface and expand the metal at its lower sur-

face by pressing it against the smooth surface of the lower roller. The flange and middle portion of the body of the blank is thus expanded, and the unflanged edge or rim of the blank is not acted upon, so that a flaring and somewhat convex shape is given to the blank in its cross-section. The expansion and crimping of a portion of the metal only, in the manner described, will bend the blank into the form of a true circle, the diameter of which is determined by guide-plates in the following manner:

A guide-plate, I, rests at one end upon the surface of the lower roller, E, near its point of contact with the roller E' and opposite the bed-plate F, and is supported at the other end by a pin, i, adjustably secured to a slotted segment-plate, K, secured to the housing B'. The slot k in the plate K is formed in the arc of a circle of which the plate I is the radius and its point of contact with the roller E is the center. The angle of the plate I and its tangential relation to the rollers E E' may be varied without changing the relation of its edge in contact with the lower roller.

A finger-plate, L, is adjustably secured upon the plate K by means of a slot in the plate and a set-screw passing through it. The finger-plate L extends across the plate a little above its surface, and may be adjusted, by means of the slot and set-screw, at any required distance from the rollers.

The metal blank, when it passes from between the rollers E E', will bend up in the form of a hoop, because of the unequal expansion of the metal, and will readily assume the form of a circle of any required diameter corresponding with the angle of the guide-plate I, and dependent somewhat upon the pressure of the rollers. The end of the blank, when it has left the rollers, is passed beneath the finger-plate L, which will prevent it from springing away from the plate, and will also aid in bending the blank to a circle of the required radius.

The plate K is graduated upon its edge, and the plate I is adjusted to conform to the graduations which indicate the radius of the circle or diameter of the hoop to be formed.

The action of the machine is such that any part or segment of a circle may be accurately bent without forming an entire hoop of metal, as the curve given the blank is determined by the position of the guide-plate and the degree of expansion caused by the pressure of the rollers.

The boxes C' C' slide vertical in the housing B', and are held in place by flanges c'. A lune-shaped spring of rubber, M, or other suitable material, is interposed between the upper and lower boxings, C' C', and holds them a suitable distance apart, which is regulated by a set-screw, N, bearing upon the top of the upper box, by which means any required pressure may be placed upon the upper roller, E', to expand the blank more or less. The boxing C C slides between the housing and is held

in place by outer flanges, c, only the flange of the upper box being secured to its housing by set-screws c², which screw into two or more sets of holes in the housing at different heights, by which means the outer end of the gudgeon B' is raised or lowered to allow either the entire face e of the roller E' to bear upon the blank equally or to cause its outer edge to bear more closely to the lower roller, to exert its pressure close up to the flange of the blank, which is required in forming hoops from narrow blanks.

By the above-described means blanks of any required width and hoops of any required diameter may be rapidly turned out, small scraps and trimmings may be utilized, as the machine will operate effectually upon short sections as well as narrow strips of metal.

When the blanks are cut from the sheet they may be cut with the square shears and edged with a folder very rapidly in a well-known manner.

The means herein described for adjusting the boxing C upon the face of the housing is a simple one, and will admit of an immediate adjustment of the rollers from one position to the other without the delay of the experimental adjustment by means of a thumb-screw. The rolls will be held positively in the position required, and are not liable to be thrown out of adjustment by accidental causes.

I claim as my invention and desire to secure by Letters Patent—

1. In a machine for rolling sheet-metal blanks to form hoops for cylindrical metallic vessels, the combination of a lower roller with a plane-faced projecting rim, the upper roller with a projecting mill-faced rim arranged to bear upon the rim of the lower roller, and the presser-roller, arranged at right angles with the lower roller, to bear against the flange of a metal blank, in the manner and for the purpose specified.

2. In a machine for rolling metal hoops, the combination of the rollers E, E', and H, in combination with a slotted bed-plate, F, to hold the blank in place and direct it to the rollers, substantially in the manner described.

3. In a machine for rolling metal hoops, the combination of the two vertical rollers, the horizontal roller, the bed-plate, and a tangential guide-plate, I, arranged for joint operation, substantially as and for the purpose described.

4. In a machine for rolling metal hoops, the combination of the two vertical rollers, the horizontal roller, the guide-plate I, and a gage-plate, K, to which one end of the guide-plate is adjustably connected, substantially as and for the purpose described.

5. The combination of the vertical rollers, the horizontal roller, the adjustable guide-plate, and the adjustable finger-plate secured thereto to hold the hoop in the guide-plates as it is being formed, substantially as described.

6. In a machine for rolling metal hoops, the combination of the rollers E E', for rolling and

crimping the body of the flanged sheet-metal blank, and a roller, H, for compressing the flange of the blank and holding it in place while being rolled, the gudgeon D', housing 5 B, and boxing C, provided with flanges c, that bear against the outer face of the housing B, and is adjusted thereon by means of screws c² and holes c³ c⁴, by which means the outer edges of the rollers E E' are brought together to bind the blank close to the flange for rolling narrow rims, substantially as specified.

WILLIAM WASHINGTON JONES.

Witnesses:

H. W. BUTTORFF,

JOHN E. ERB.