(No Model.) 3 Sheets—Sheet 1.

H. H. TAYLOR.

MACHINE FOR TURNING THE ENDS OF PIECES OF METAL.

No. 412,433. Patented Oct. 8, 1889.

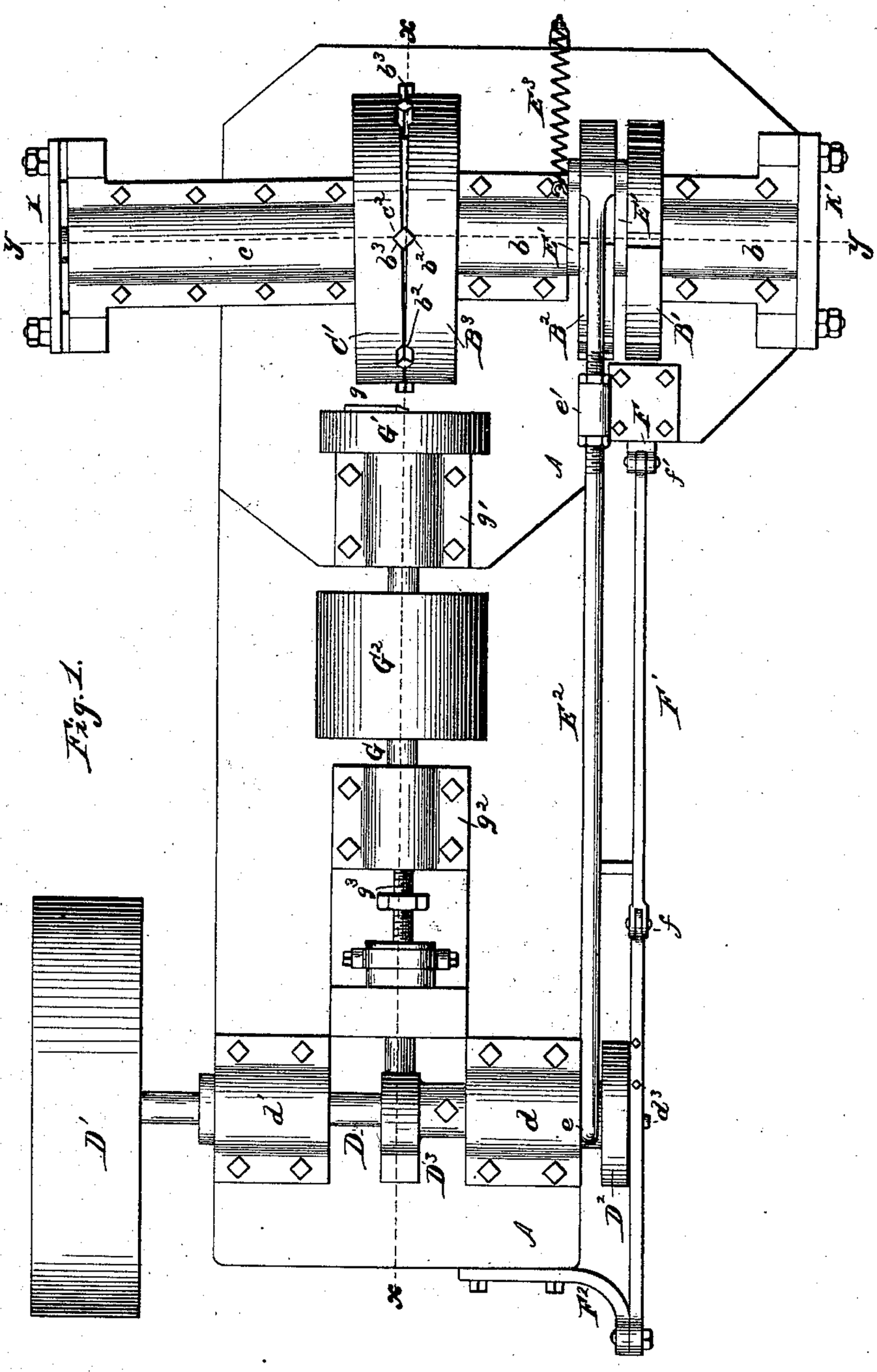

Fig. 1.

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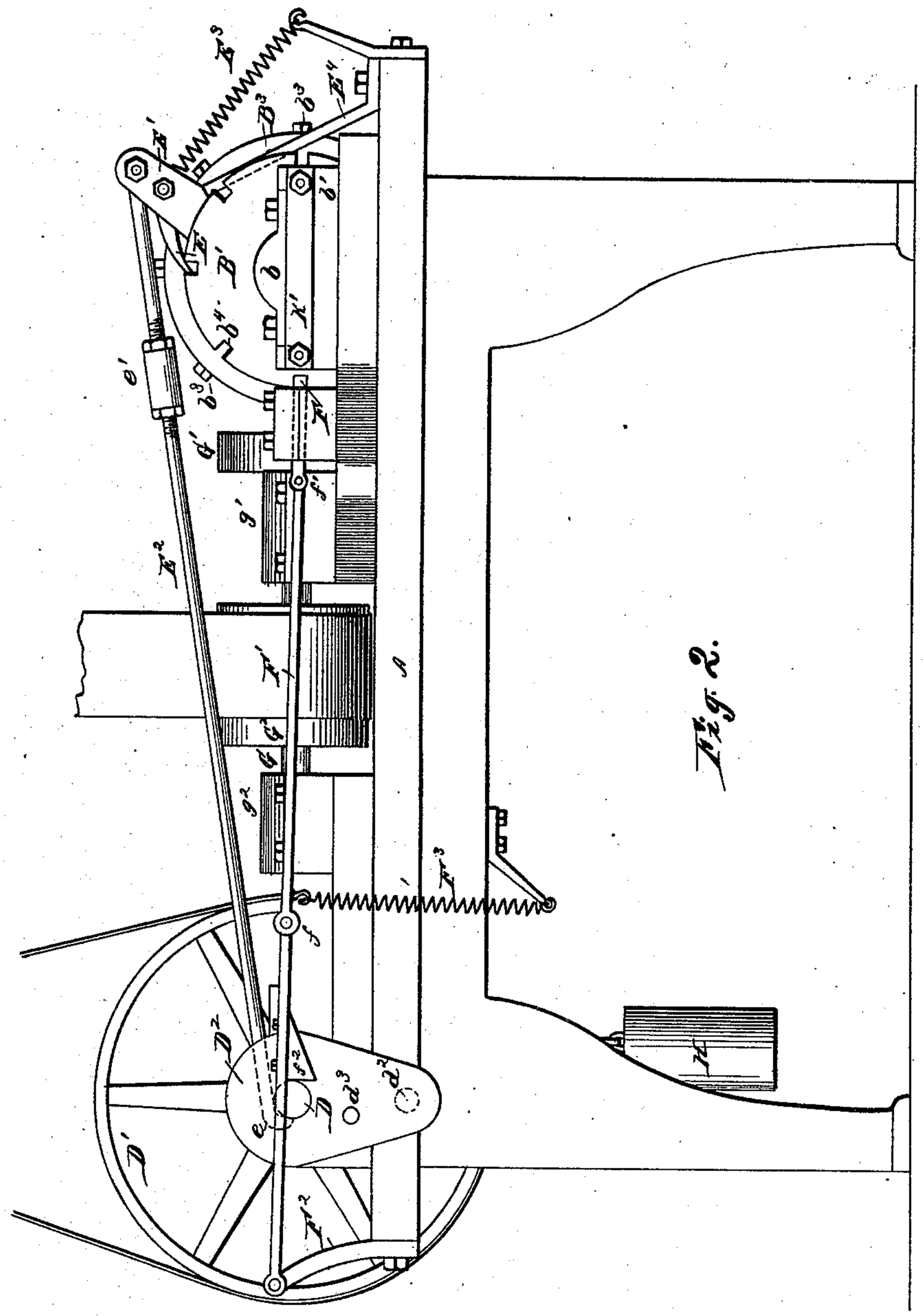

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

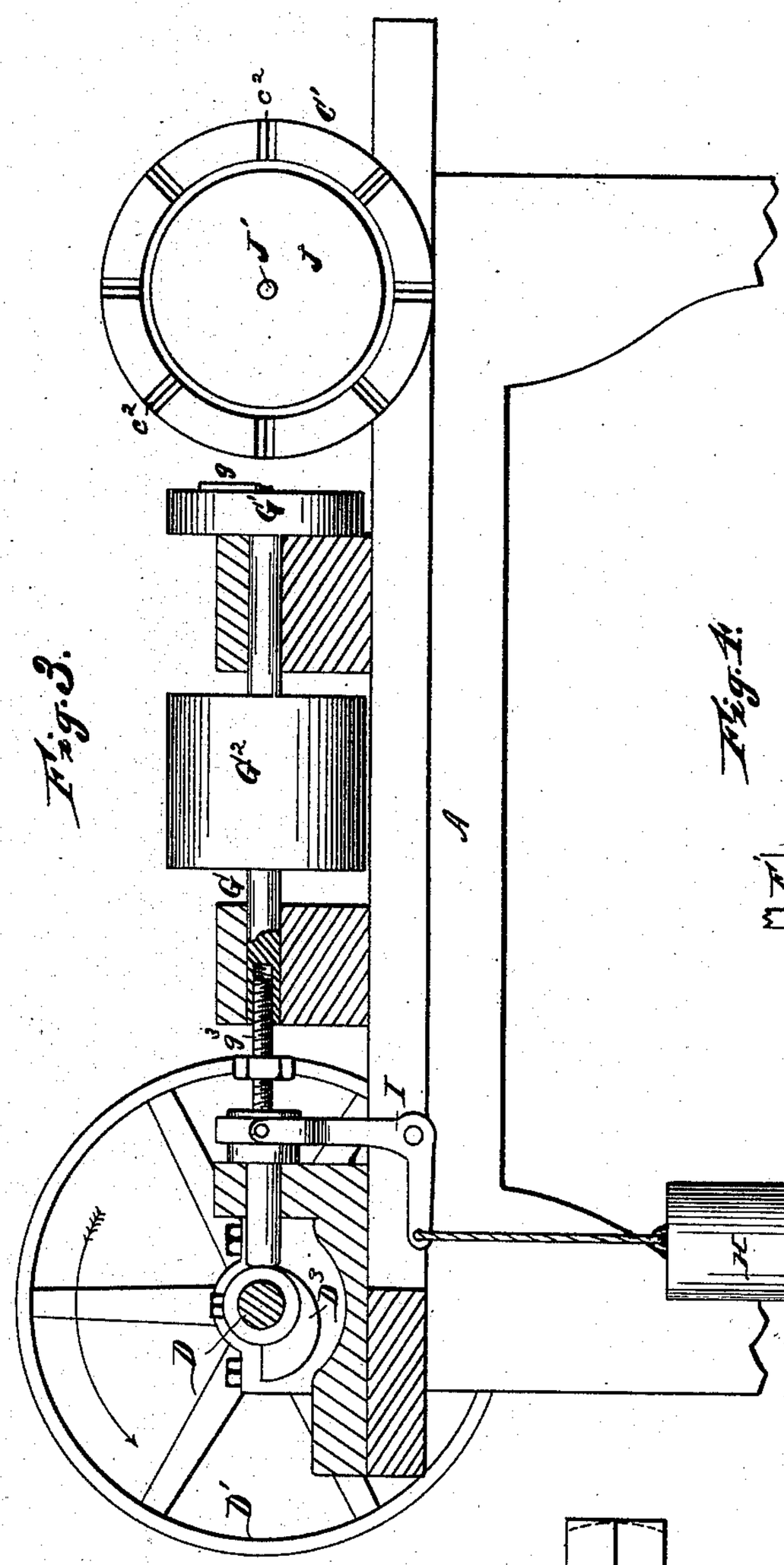


Fig. 4.

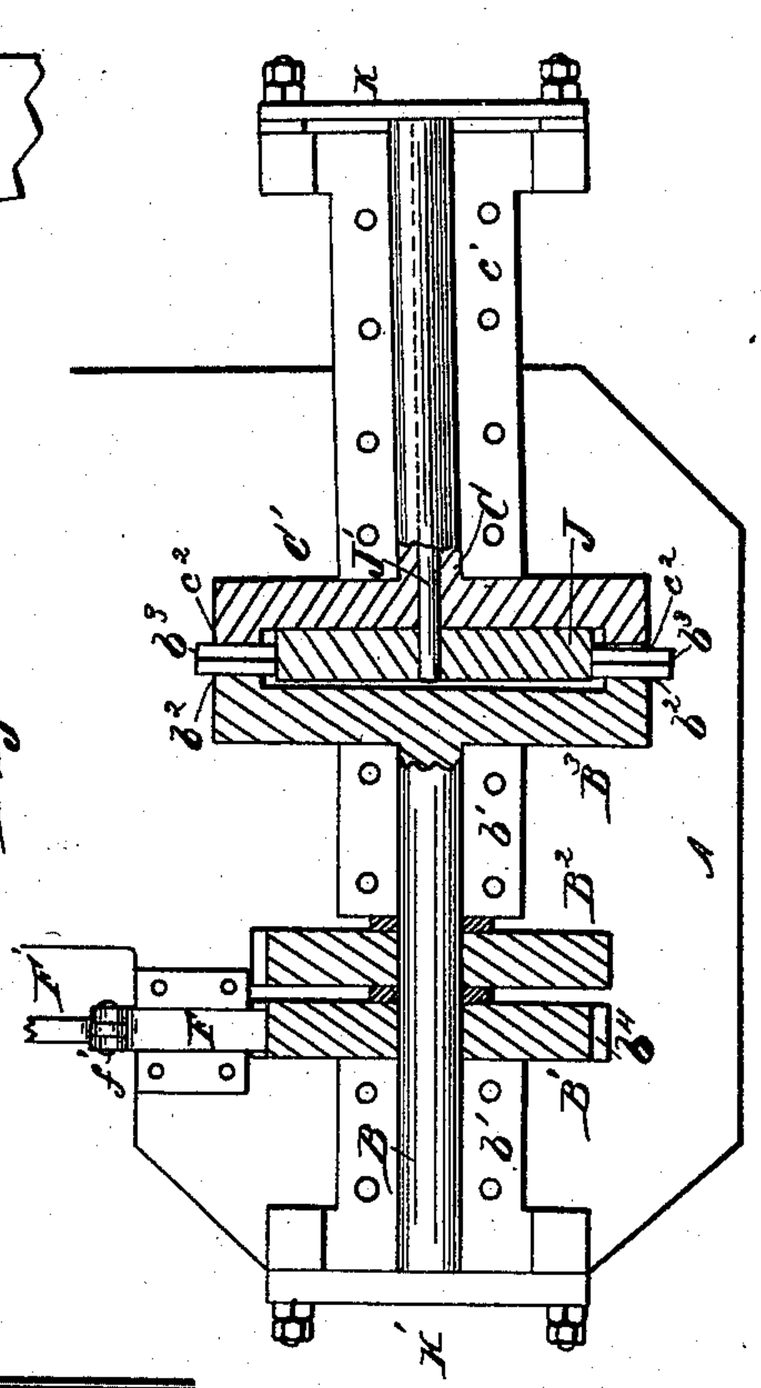


Fig. 5.

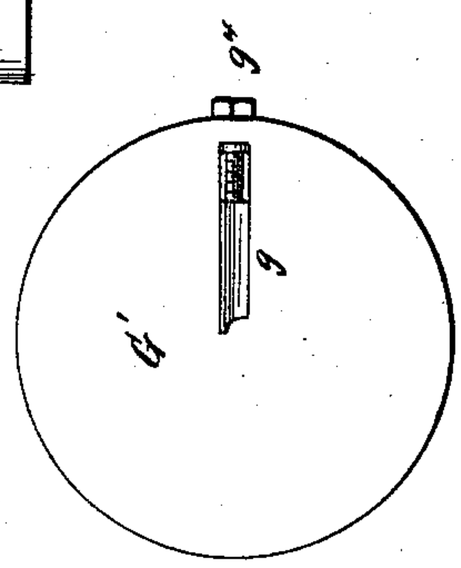
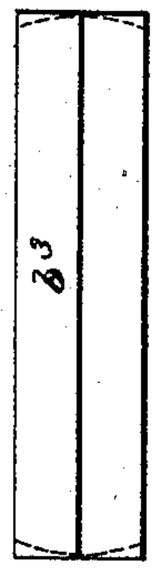


Fig. 6.



Attest.
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UNITED STATES PATENT OFFICE.

HARRISON H. TAYLOR, OF DETROIT, MICHIGAN, ASSIGNOR TO THE DETROIT MACHINE SCREW WORKS, OF SAME PLACE.

MACHINE FOR TURNING THE ENDS OF PIECES OF METAL.

SPECIFICATION forming part of Letters Patent No. 412,433, dated October 8, 1889.

Application filed May 15, 1888. Serial No. 273,991. (No model.)

To all whom it may concern:

Be it known that I, HARRISON H. TAYLOR, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Machines for Turning the Ends of Pieces of Metal; and I declare the following to be a full, clear, and exact description of the invention, 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, which form a part of this specification.

My invention has for its object an improved machine for turning the ends of pieces of metal; and it consists of the combinations of devices and appliances herewith illustrated in the drawings and more fully described in the following specification and hereinafter set forth in the claims.

In the drawings, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a side elevation. Fig. 3 is a longitudinal vertical section along the line *x x*, Fig. 1. Fig. 4 is a horizontal section along *y y*, Fig. 1, showing parts in plan; and Fig. 5 is an end view of the shaft carrying the cutter. Fig. 6 is a separate view of one of the pieces of metal, showing the blank in full lines and the ends turned by the herein-described machine in dotted lines.

I carry out my invention as follows:

A represents any suitable support.

B is a rotatable shaft journaled upon the support in any suitable manner, as in journal-boxes *b b'*, engaged thereupon. Upon said shaft is located a stop-wheel B', a ratchet-wheel B^2, and a jaw B^3, notched upon one of its faces, as at b^2, for the reception of the pieces of metal b^3, which are to be turned at their ends.

C represents also a rotatable shaft, journaled upon the support in any suitable manner, as in journal-boxes *c c'*. This shaft C is located slightly at an angle to the line of the shaft B and carries a jaw C' at its inner end, constructed with notches at c^2 upon its inner face, corresponding to the notches b^2 upon the adjacent jaw B^3. These notches may have any required shape to receive the pieces of metal to be turned, the combined notches b^2 c^2 respectively serving to receive a piece of metal. The two jaws C' B^3 are simultaneously rotatable when one or more pieces of metal are engaged in said notches, although the jaw B^3 may be rotated independently. It will be seen that owing to the shaft C being located at an angle to the shaft B the two jaws will have a binding pressure, the one inner edge against the other adjacent to the cutter, thereby gripping the metal pieces to be turned with great force, holding them firmly in place, while at the same time the said jaws opposite the cutter will be separated and opened apart, so that the pieces of metal may be readily fed into the notches, any suitable number of notches being provided. This construction permits the ready insertion and removal of the pieces, as well as serving to hold them firmly at just the required point.

The shaft B is operated in the following manner: D is a driving-shaft suitably journaled upon the support, as at *d d'*. D' is a driving-pulley. E is a pawl constructed to engage the ratchet-wheel B^2, and to this end may be supported upon a crank-arm E'. E^2 is a connecting-rod engaged with said arm and extending rearwardly, and preferably has a bent or hooked extremity *e*, adapted to rest upon the driving-shaft when in normal position. The connecting-rod may have any suitable tightening or adjusting device *e'*. The driving-shaft is provided with a crank-arm D^2, provided with a crank-pin d^2. It is obvious that as the shaft revolves said pin will come into contact with the connecting-rod above it, lift it from the driving-shaft, and as the rotation is continued the rod will be forced rearward, the pawl at the opposite end thereby forcing over in a corresponding direction the ratchet-wheel B^2 and shaft B, and consequently the jaw B^3. By making the teeth or recesses of the ratchet-wheel correspond in distance apart to the distance between the notches in said jaw, and the recesses or notches of both the jaw and ratchet-wheel to correspond to the throw of the connecting-rod, it will be seen that said throw will then bring the successive pieces of metal in the jaws adjacent to the cutter, a piece of metal being thus brought to the cutter at each revo-

lution of the driving-shaft D. A spring E^3 will draw the ratchet back for a new hold when the pin d^2 has let go the connecting-rod. A stop E^4 may be located to limit the retraction of the pawl. The stop-wheel B′ may be locked in any desired manner—as, for instance, by means of a sliding dog or bolt F, arranged to engage suitable orifices in the stop-wheel or recesses b^4 thereupon. F′ is a jointed rod engaged with the locking-bolt, the said rod being jointed at f, and also having a jointed engagement with the bolt, as shown at f'. The rear end of the said rod is engaged with any suitable support, as upon an arm F^2, secured upon the support A. The crank-arm D^2 is provided also with an additional pin d^3, and the rod with an inclined flange or shoulder f^2. As the arm D^2 is rotated the pin d^3 will engage said shoulder f^2, flex the jointed rod upward at the point f, thereby withdrawing the locking-dog from the stop-wheel, permitting its rotation, and allowing the ratchet-wheel and jaw B^3 to rotate, the stop-wheel when dogged, however, serving to hold the rotating shaft in firm position, so that the work will be held securely to the knife or cutter. A spring F^3 will retract the rod F′, throwing the dog into engagement with the stop-wheel, and so long as the rod F′ is held in a straight position the dog will be engaged and hold the stop-wheel.

The locking or stop wheel, the ratchet-wheel, and the adjacent jaws may all be constructed with an equal number of notches, equidistant from each other.

G is a rotatable spindle carrying the cutter g upon the head of the spindle G′. This spindle is journaled upon the support A, as shown at g' g^2, and is provided with a driving-pulley G^2. This shaft is made reciprocatory as well as rotatable, and may be provided with an adjusting-screw g^3, whereby its reciprocation may be controlled. The spindle is forced forward to the work by means of a cam D^3 upon the driving-shaft D. It may be retracted by any suitable means, as by a weight H, suspended to a bell-crank I, pivoted on the support and engaged with the spindle.

The cutter may be provided with a set-screw g^4 to adjust the same as desired.

The various parts are so related that the spindle will be retracted; then the bolt withdrawn from the stop-wheel; then the ratchet-wheel actuated and held in position by the retraction of the locking-bolt to engage the stop-wheel, the cutter also returning to its work.

To limit the insertion of the pieces of metal in the jaws C′ B^3, I have shown an intermediate disk J, the jaws C′ B^3 being recessed to receive it. This disk J may be centered upon a spindle J′, engaged in the tubular journal C. As so constructed and arranged the intermediate disk may be readily changed to conform to various lengths of pieces of metal to be turned. This may be accomplished by simply removing the upper journal-box c, when the journal C and related parts may be removed, the intermediate plate changed, and the whole returned to place.

As a safeguard against any liability of breaking should too large a piece of metal be located in the jaws C′ B^3, I locate at the end of the journal C a spring-bar K, which will allow the jaws to separate should they be forced too firmly together adjacent to the cutter. A bar K′ may be also located at the end of the journal B, which may or may not be a spring-bar, said bars K K′ serving to hold their adjacent journals firmly to the work, yet permitting the jaws to yield laterally if occasion requires.

What I claim is—

1. In a machine for turning the ends of pieces of metal, the combination, with the rotatable jaws C′ B^3, constructed to receive the pieces of metal between their adjacent faces, of a disk located between the jaws to limit the engagement of said pieces therewith, substantially as set forth.

2. In a machine for turning the ends of pieces of metal, the combination, with the rotatable jaws C′ B^3, constructed to receive the pieces of metal between their adjacent faces, of a removable intermediate disk, substantially as set forth.

3. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their adjacent ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, reciprocating rods E^2 and F′, a pivoted lever E′, connected to one of said rods, a pawl pivoted to said lever, a spring secured to said lever for retracting the same, a reciprocatory and rotatable cutter-spindle, a main drive-shaft provided with a cam for reciprocating the cutter-spindle, and means secured to said drive-shaft for reciprocating the rods E^2 F′, substantially as set forth.

4. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their adjacent ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, the drive-shaft provided with a crank having projecting pins, rods E^2 F′, one of which is provided with a bolt for engaging the stop-wheel and the other connected with a lever carrying a pawl to engage the ratchet-wheel, said rods being reciprocated by the pins upon the said crank when the drive-shaft is rotated, thereby operating the metal-holding jaws, substantially as set forth.

5. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their opposing ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, the drive-shaft provided

with a crank having projecting pins, rods E^2 F′, one of which is jointed and pivoted at one end and provided with a bolt at its opposite end to engage the stop-wheel, the other rod provided with a lever at one end, said lever carrying a pawl to engage the ratchet-wheel, both of said rods being operated by the pins upon the said crank when the drive-shaft is in motion, substantially as set forth.

6. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their opposing ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, a drive-shaft, a cam, and a crank engaged therewith, the crank being provided with projecting pins, rods E^2 F′, one of which is connected with a pawl to engage the ratchet-wheel and the other provided with a bolt to engage said stop-wheel, and a rotatable and reciprocatory spindle provided with a cutter, said rods and spindle being operated simultaneously by the crank and cam, respectively, on the drive-shaft, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

HARRISON H. TAYLOR.

Witnesses:
N. S. WRIGHT,
WM. TAIT.