

(No Model.)

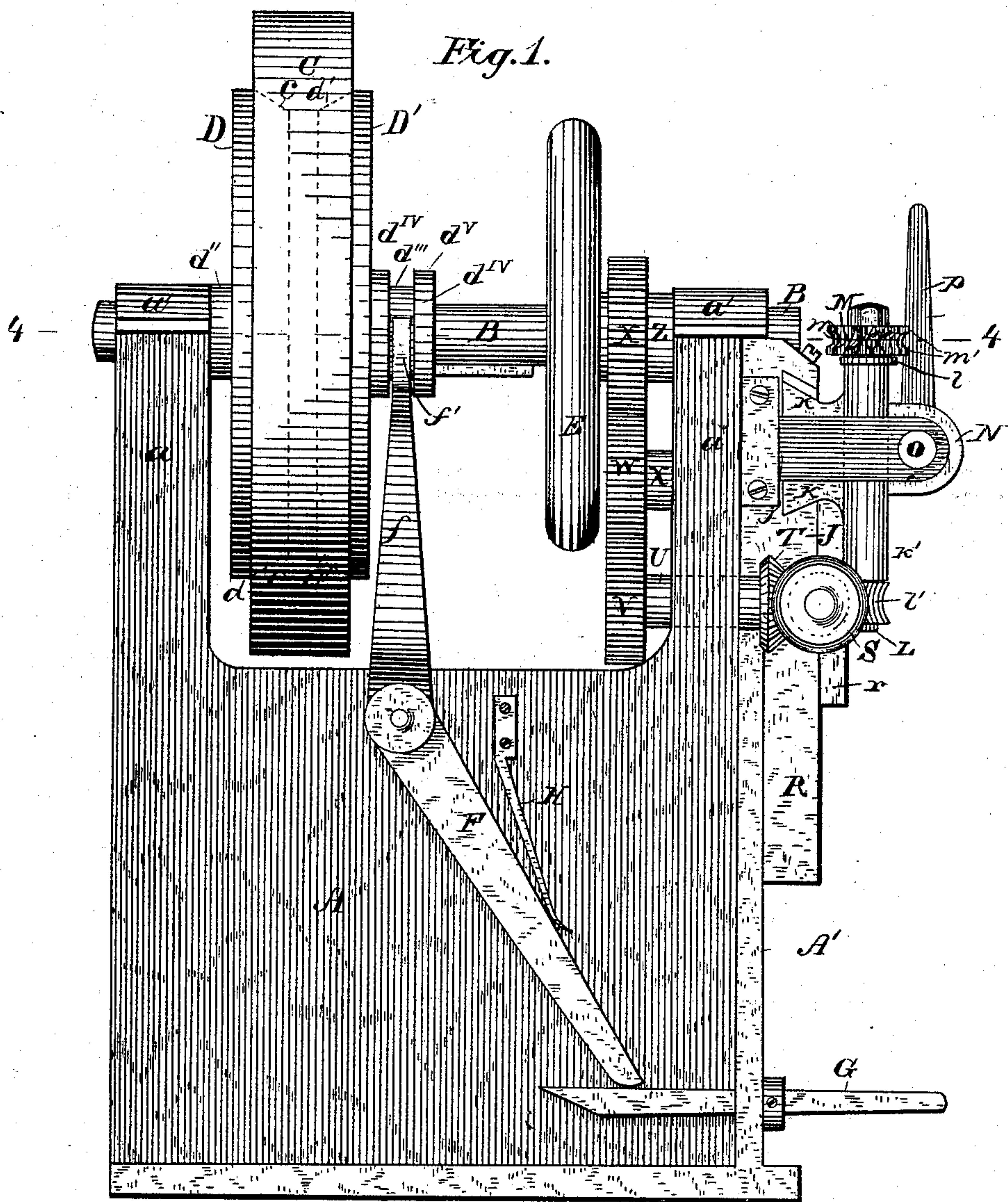
4 Sheets—Sheet 1.

W. TUCKER.

MACHINE FOR TWISTING AUGER BITS.

No. 283,304.

Patented Aug. 14, 1883.



Witnesses
Wm. J. Tanner
Walter Allen

Inventor
William Tucker.
By his Attorneys Knight Bros.

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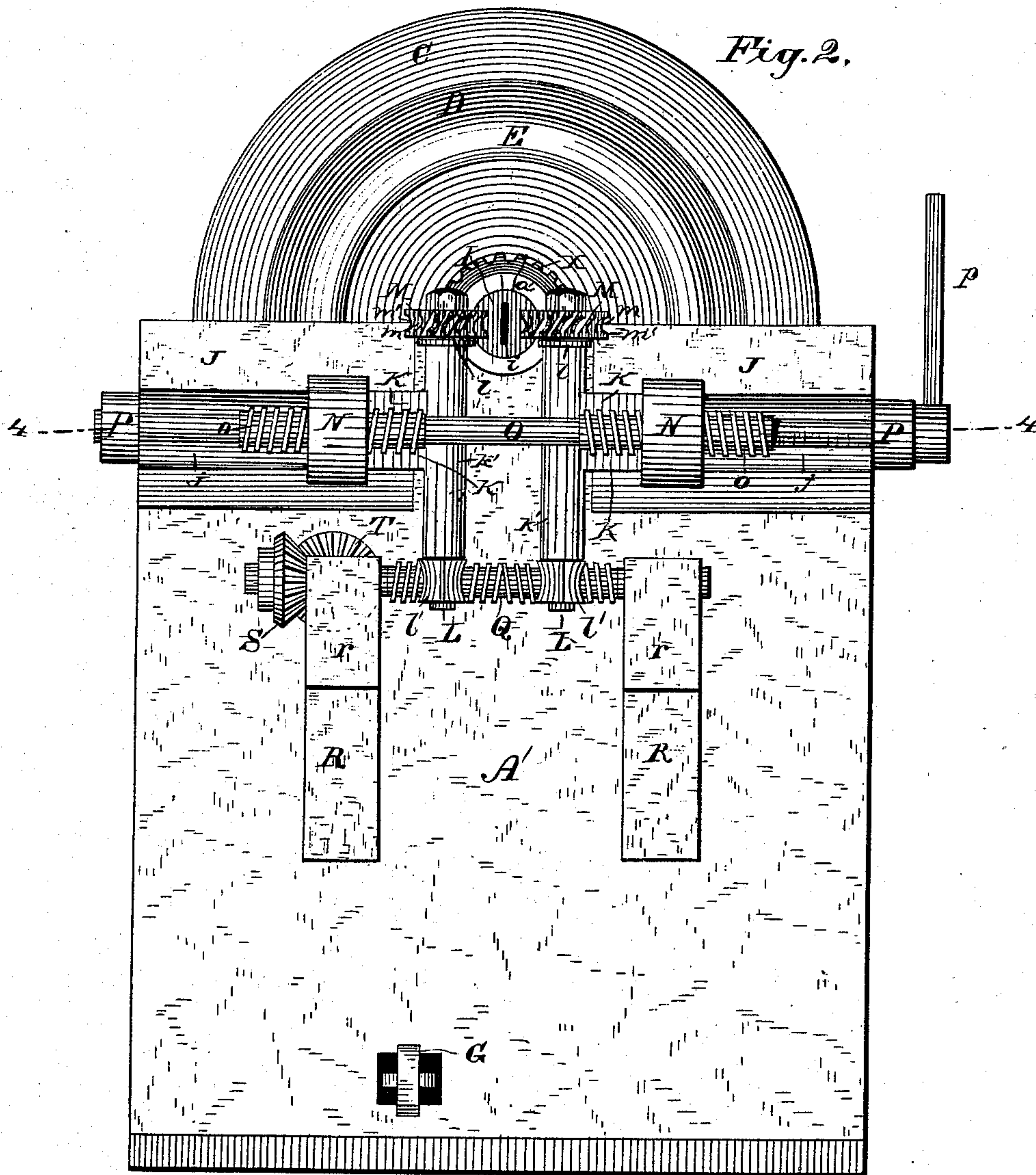
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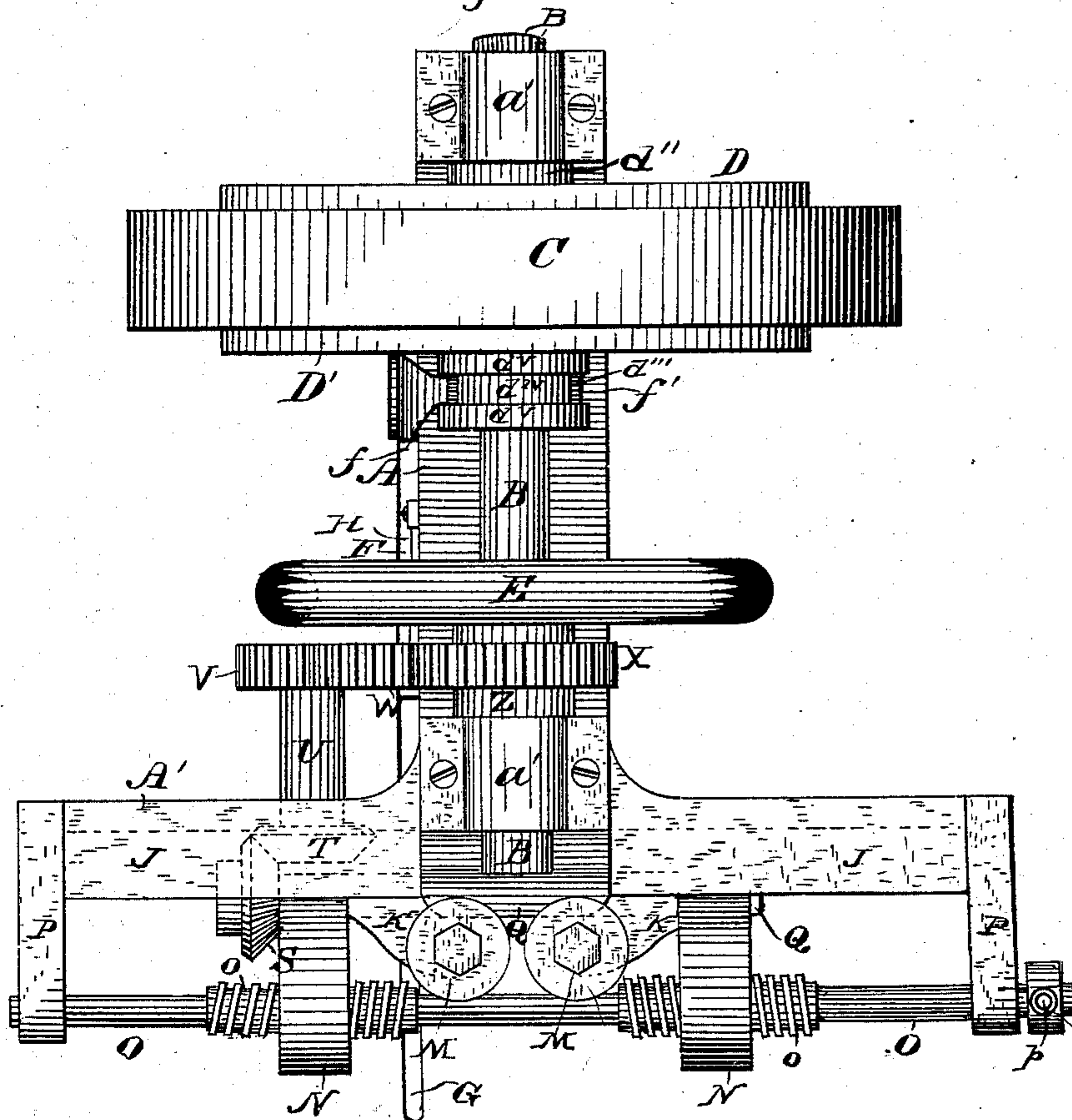
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Fig. 3.



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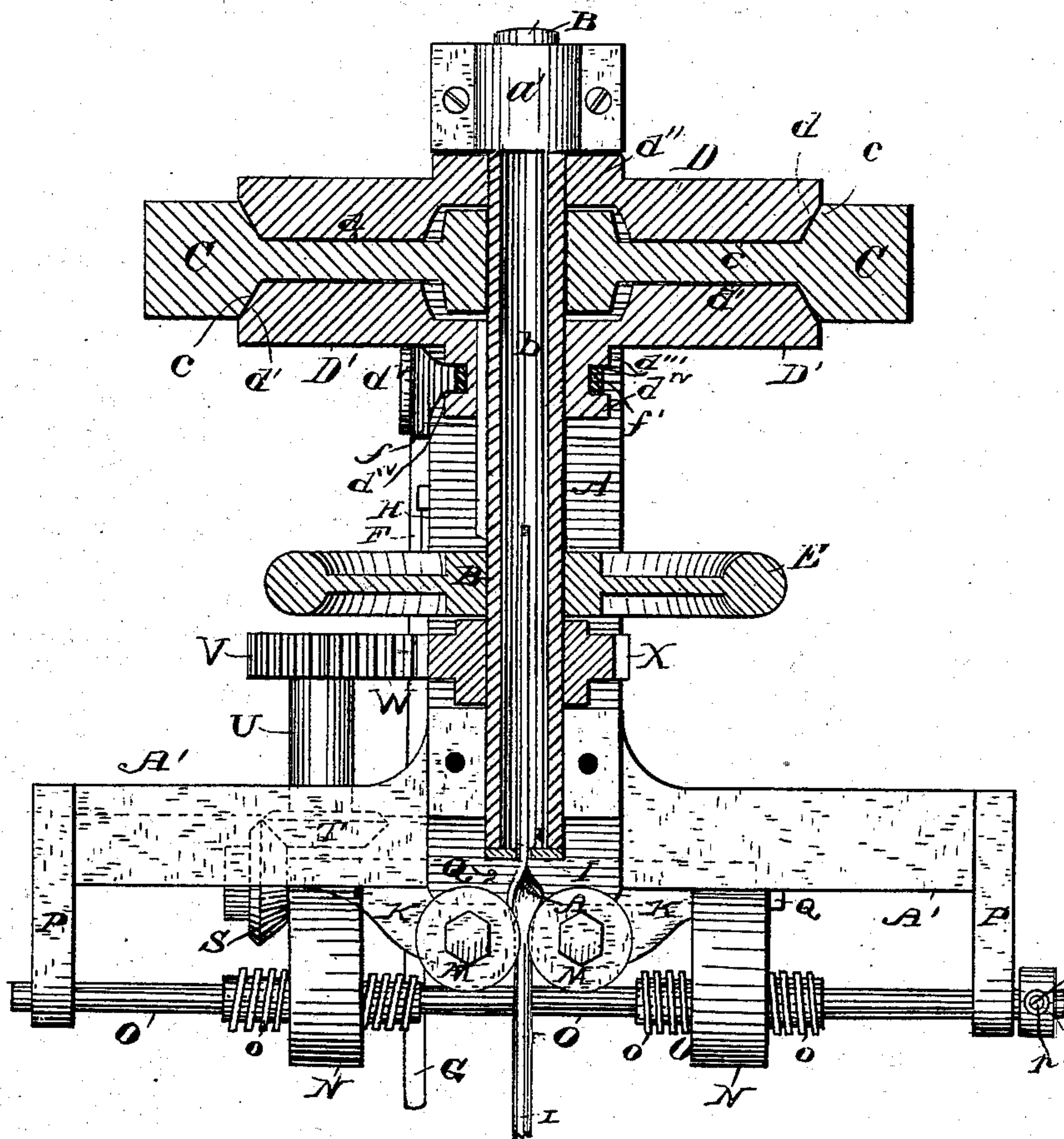
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Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM TUCKER, OF EAST BROOKFIELD, MASSACHUSETTS.

MACHINE FOR TWISTING AUGER-BITS.

SPECIFICATION forming part of Letters Patent No. 283,304, dated August 14, 1883.

Application filed September 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM TUCKER, a citizen of the United States, residing at East Brookfield, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Machines for Twisting Auger-Bits and Augers, of which the following is a specification.

My invention relates to those machines in which a hollow twisting-shaft is employed.

My improved machine is constructed with a solid or rigid base or bed, which supports in suitable bearings or journal-boxes a main shaft, formed with an axial bore, adapted to receive the blank to be operated upon. The end of the main shaft is armed with a disk, which covers the bore, except a narrow slot for the passage of the blank. A balance-wheel is mounted on the rear portion of the shaft, and is recessed on both sides to receive correspondingly-formed faces of a pair of clutch-disks, one clutch-disk being stationary and the other being adapted to slide on the shaft. Mounted in front of the forward end of the main hollow shaft are a pair of rotary die-wheels, having their peripheries formed with grooves and recesses adapted to fit the usual twist of the auger or bit passed between them. These die-wheels are caused to rotate relatively to and in conjunction with the main shaft, which does the twisting, these parts being connected by gear-wheels and shafting. The die-wheels are mounted in slides, which are caused to approach toward or recede from each other to adjust them to the blank to be supported and drawn between the die-wheels.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a front view. Fig. 3 is a top view. Fig. 4 is a horizontal section on the line 4 4, Figs. 1 and 2, showing a blank in position, its forward end being shown supported between the die-wheels.

A may represent the base or bed of the machine, having vertical arms *a a*, whose tops form bearings for a twister-shaft, B, having a bore, *b*, to receive a blank, *1*, of an auger or auger-bit, and seated on the arms *a a*, and cov-

ered by cap-plates *a' a'*, which secure the shaft in place. C is a large pulley or balance-wheel by which the shaft is revolved. This pulley is recessed at *c c* on each side to form frictional surfaces, on which the frictional projecting faces *d d'* of clutches D D' are adapted to bear. One clutch, D, bears by its hub *d''* against the rear arm, *a*, and the other clutch, D', is provided with an annular groove, *d'''*, in its hub *d''*, forming collars *d''*, between which the fork *f'* of the short arm *f* of a lever, F, plays to move the clutch D' on the shaft against the pulley and the pulley against the clutch D, to connect the pulley with the shaft by frictional contact with the clutches, which are keyed to the shaft in suitable manner. The lever F is moved to engage the clutch D' with the pulley C by means of a treadle, G, and released by a spring, H, secured to the side of the bed.

I is a disk on the forward end of the twister-shaft, having a slot, *i*, through which the blank is projected and passed. The twister-shaft is brought to correct position, so that the slot may be vertical by means of a hand-wheel, E, keyed thereon.

The forward portion of the base or casting A extends laterally, and its front portion, A', is formed with projections J, having grooves *j*, in which slide the supporting-blocks *k* of stocks or carriages K, each formed with a vertical sleeve, *k'*, in which rotates a shaft, L, provided at top with a collar, *l*, to support it, and at bottom with a worm-wheel, *l'*.

Keyed or otherwise secured to the tops of the vertical shafts L L are a pair of die-wheels. M M, having on their peripheries grooves or recesses *m m*, adapted to fit the spiral thread 2 of the auger, and having dies or teeth *m' m'* formed thereon, with receding edges, similar to worm-wheel teeth, adapted to fit in the grooves between the thread 2 on the auger. Projecting forward on the front of the stocks or carriages are blocks N, screw-threaded transversely to receive a right or left screw-thread, *o*, respectively, on a horizontal shaft, O, journaled on bearings P, located on each side of the machine, and having secured at one end a lever, *p*, or hand-wheel, for turning the shaft O to adjust the die-wheels away from or toward each other.

The means for revolving the die-wheels in unison are as follows: Q is a right and left worm-shaft, having bearings in brackets R R on the bed of the machine, and secured by plates r r. Bolted on the end of this shaft is a bevel-gear wheel, S, meshed by another bevel-gear wheel, T, on the end of a short shaft, U, penetrating and having bearing in the front portion, A', the inner end of this short shaft carrying a gear-wheel, V, meshed by another gear-wheel, W, on a stud, X. The gear-wheel W is meshed by another gear-wheel, X, whose hub or box Z is keyed to the main shaft B.

The grooves or recesses in the peripheries of the die-wheels are formed, if desired, by burning in a heated auger-twist; or they may be cut as teeth are formed in a gear-wheel of a worm and wheel.

In operation the die-wheels are caused to revolve relatively to and in conjunction with the main shaft, which does the twisting. This relation is sustained by the connections to the main shaft. The die-wheels are made to impinge on the blank 1 while the twisting is going on, and draws the blank out of the bore in the main shaft as far as the plate is needed, and also prevents any twisting of those parts which have once passed the dies. All the twisting must be done between the die-wheels and main shaft having the slotted disk I. The form of the dies of the wheels varies somewhat, as common round shanks are twisted, or as my all-twist bit is made. In either case the bit-plate is pushed through between the die-wheels when opened by the lever p, the slot being brought vertical by the hand-wheel E. The operator then steps on the treadle G, connecting the clutches with the pulley C, which action causes the main shaft to rotate and impart motion to the die-wheel connections, which causes the die-wheels to hold and take away the auger blank or plate as fast as twisted.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with a hollow twister-shaft, a pair of die-wheels for supporting and drawing the blank, as set forth.

2. A pair of die-wheels having grooves and teeth adapted to fit the threaded portion of an auger-blank, as set forth.

3. The combination of a twister-shaft, a pair of die-wheels in front of said shaft, and gearing connecting said die-wheels to the said shaft to adapt them to rotate in unison, as set forth.

4. Carriages or stocks K, each formed with block k, vertical sleeve k', and projecting nut-block N, having a screw-thread to receive the adjusting-screw, as set forth.

5. The combination of stocks K, each formed with block k and sleeve k', and the shafts L, each provided with a die-wheel at one end and a worm-wheel at the other end, as set forth.

6. The combination of a pair of die-wheels, M M, shafts L L, stocks K K, right-and-left-threaded shaft O, and hand-lever p, as set forth.

7. The combination of a pair of die-wheels, M M, shafts L L, provided with worm-wheels l' l', stocks having sleeves k' k', right-and-left-worm shaft Q, bevel-gear wheels S T, gear-wheels V W X, and main shaft, as set forth.

8. The twister-shaft B, armed with disk I, having slot i, in combination with a pair of die-wheels, M M, as set forth.

9. The pulley C, having recesses c c, the clutches D D', having projecting faces fitting said recesses, and a lever, F, having forks f', engaging with the clutch D', in combination with a twister-shaft, as set forth.

WILLIAM TUCKER.

Witnesses:

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