(No Model.)

3 Sheets—Sheet 1.

M. E. TUCKER.

WOOD TURNING MACHINE.

No. 313,840. Patented Mar. 10, 1885.

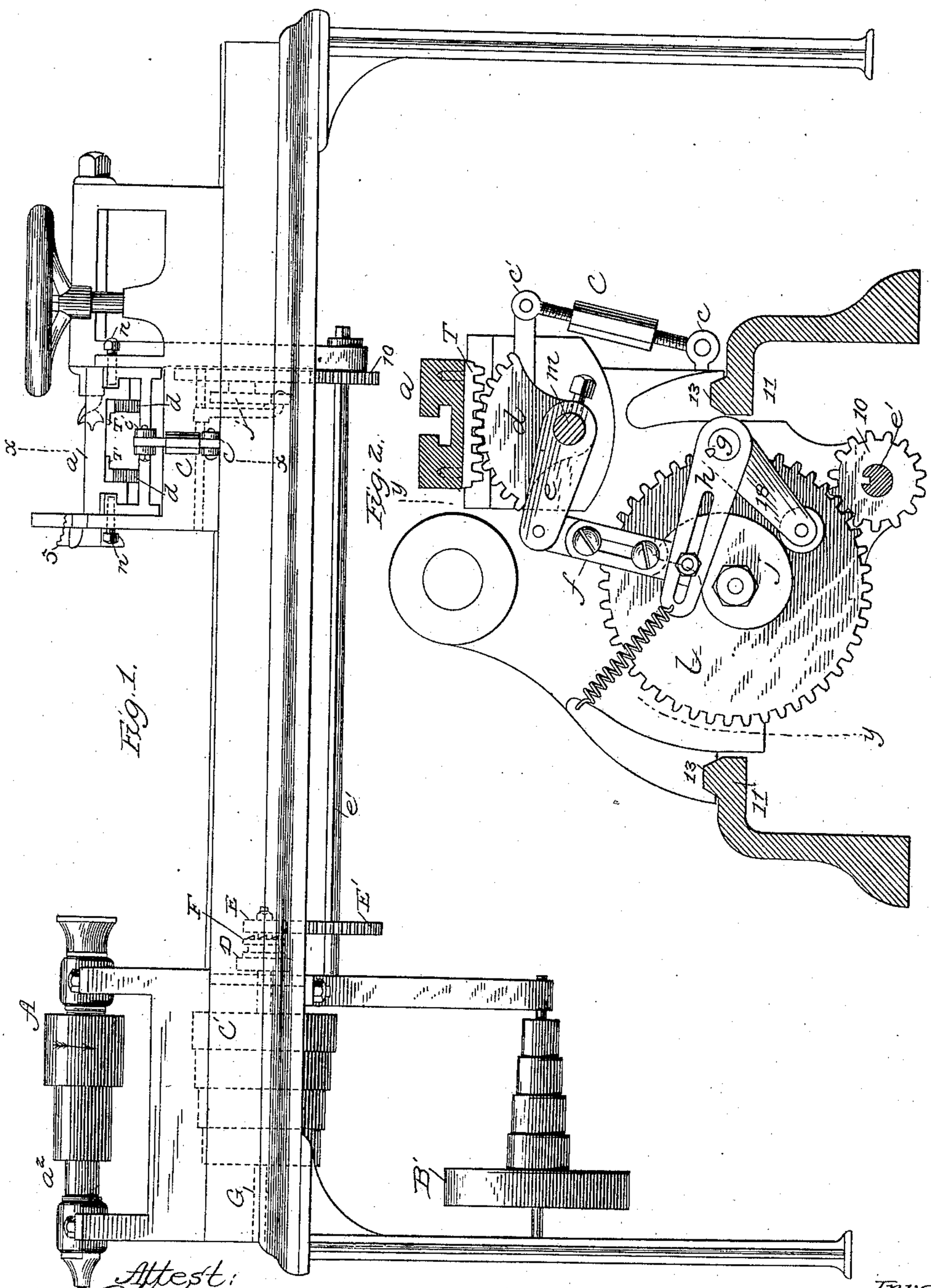

Fig. 1.

Fig. 2.

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F. L. Middleton

Inventor

Marcellus E. Tucker

by Joyce & Spear

Atty's.

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Fig. 3.

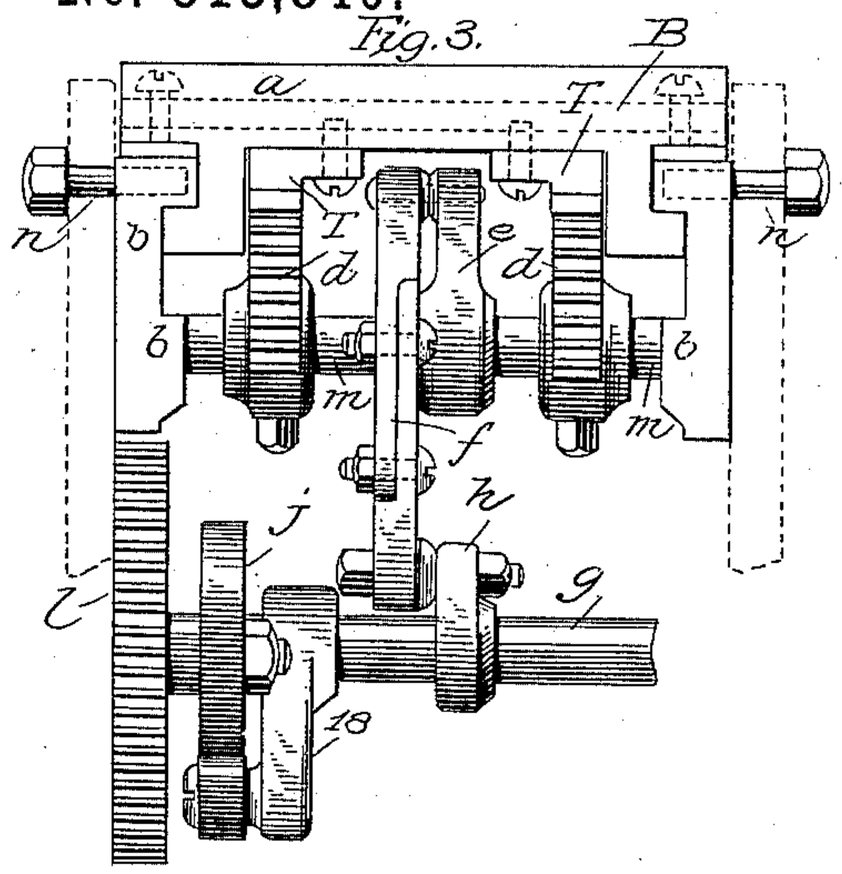


Fig. 4.

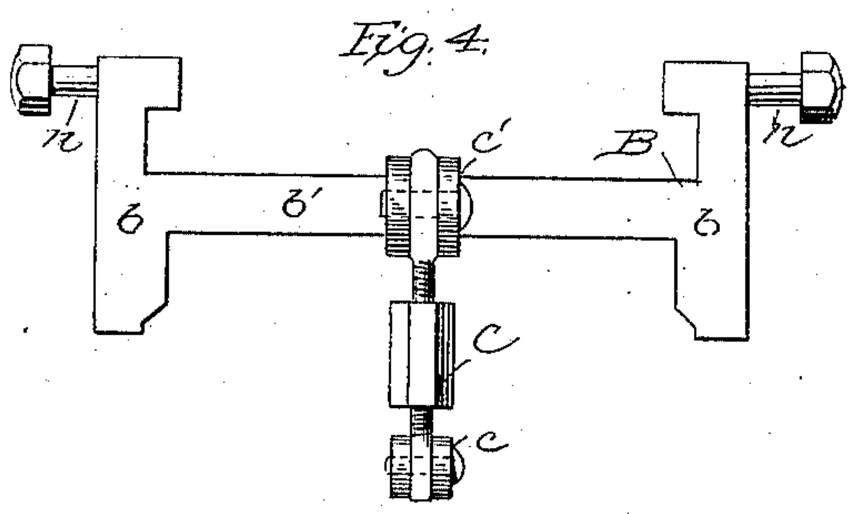


Fig. 6.

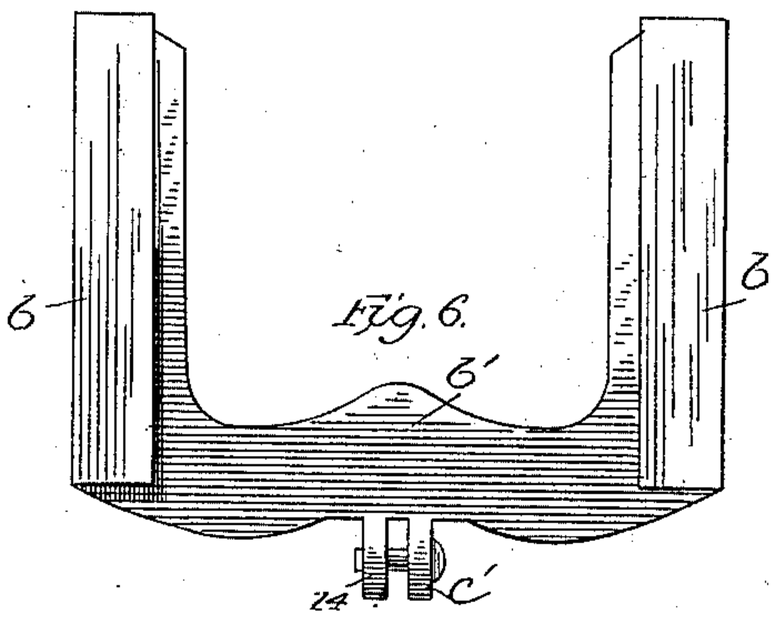
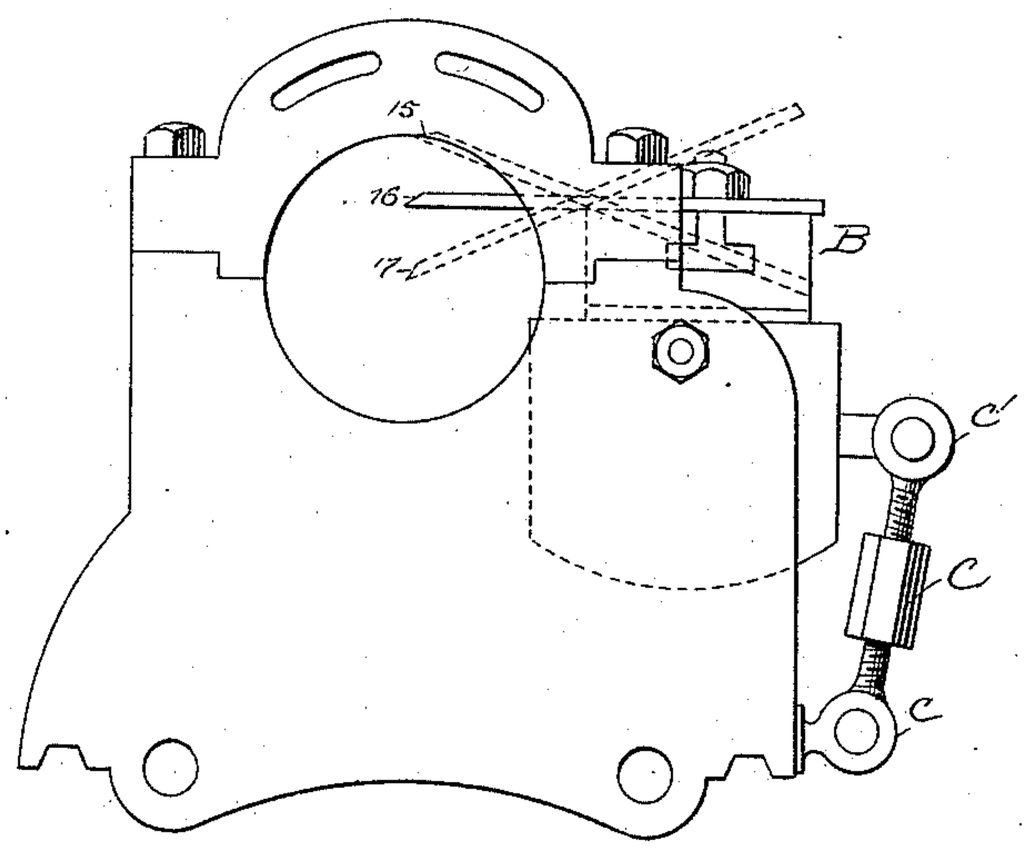


Fig. 5.



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(No Model.)

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M. E. TUCKER.

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Fig. 8.

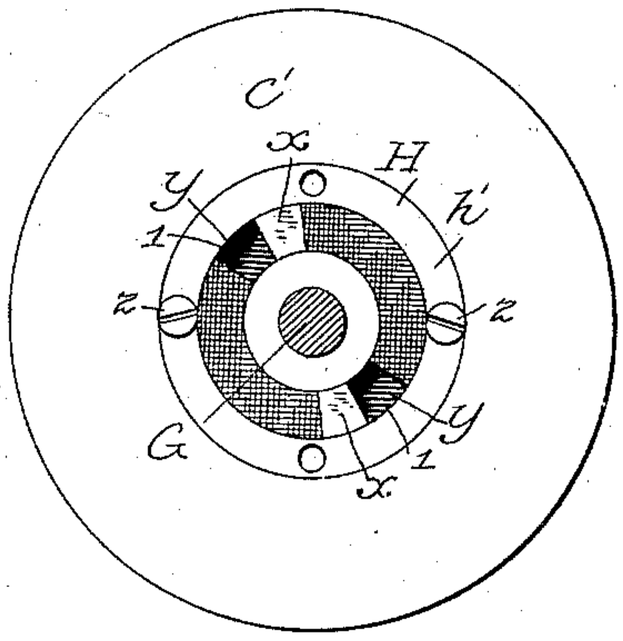
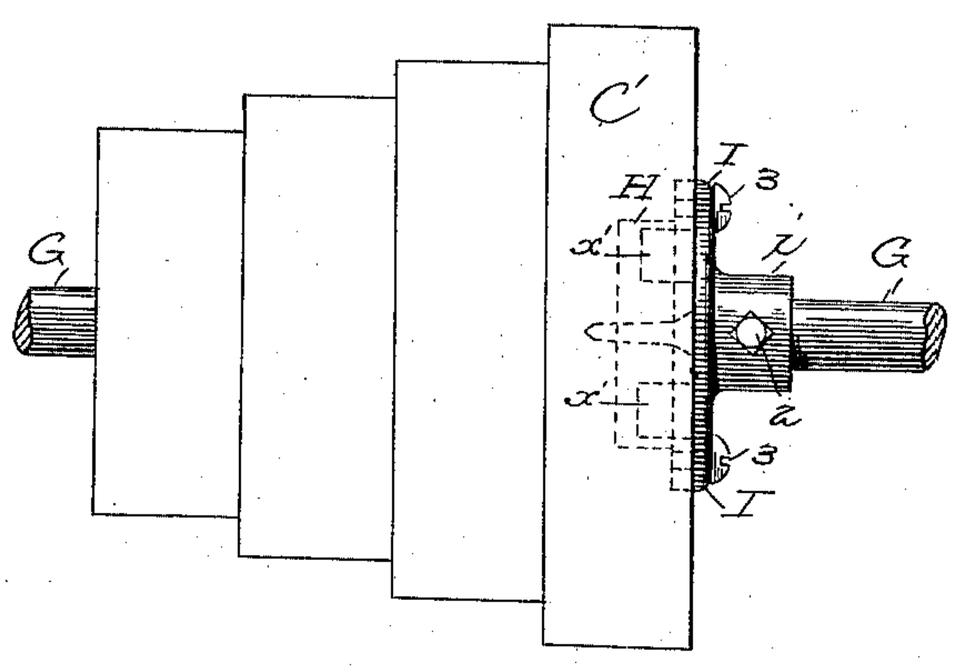


Fig. 7.



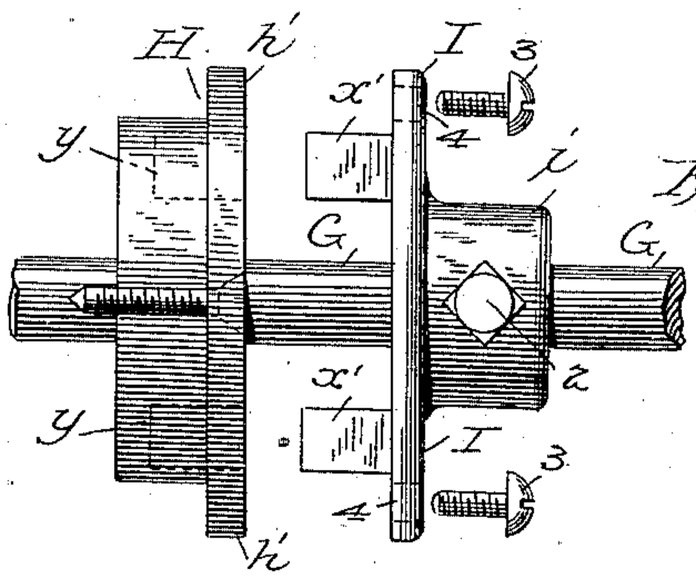
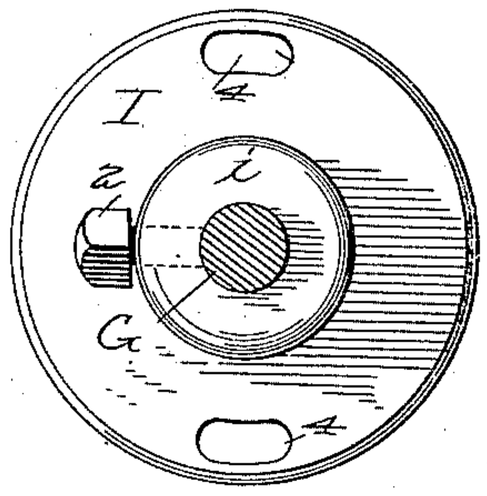


Fig. 9.



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UNITED STATES PATENT OFFICE.

MARCELLUS E. TUCKER, OF BRANDON, VERMONT.

WOOD-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 313,840, dated March 10, 1885.

Application filed November 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, MARCELLUS E. TUCKER, of Brandon, in the county of Rutland and State of Vermont, have invented a new and useful Improvement in Wood-Turning Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to wood-turning machines of the class shown in the patent of Newton, granted November 17, 1857, No. 18,646.

The invention consists in various improved details, the object of which is to render the machine more efficient and to enlarge its capacity.

The improvements are shown in connection with the old parts of the machine in the accompanying drawings, in which—

Figure 1 represents the machine in side elevation; Fig. 2, a vertical cross-section on line *x x* of Fig. 1. Fig. 3 shows a like section on line *y y* of Fig. 2. Fig. 4 represents an end view of the carriage. Fig. 5 is an elevation of the front end of the carriage. Fig. 6 is a plan of the frame. Fig. 7 is a side elevation of the shaft and pulley. Fig. 8 is a front view of the pulley and its hub. Fig. 9 shows the details of the hub and connections with the shaft.

In the drawings, a^2 represents the pulley of the head-stock A, which pulley is driven from the counter-shaft in the direction of the arrow. From the smallest pulley, a^3, the power is communicated to the pulley B′, and from stepped pulleys on the same spindle with pulley B′ power is transmitted to stepped pulleys on the shaft G. The gear-wheel D on the shaft G imparts motion to the gears which run the screw that moves the carriage. These parts are old and well known and require no specific description; so, also, is the gear E on the same shaft, which imparts motion through the gear-wheel E′ to the grooved rod.

It will be understood that the gears D and E are loose upon the shaft, and either one or the other may be held to the shaft by a clutch, F, adapted to be shifted frome one gear to the other in the manner set forth in the aforesaid patent of Newton.

I have devised means for attaching the cone C to the shaft for the purpose of lessening the shock upon the machinery, this being shown in Figs. 7, 8, and 9. The larger pulley is recessed to receive a flanged hub, H, which fits on over the shaft. This hub has an annular recess, *y*, interrupted by blocks *x x* on opposite sides of the hub, leaving two narrow recesses on opposite sides of the hub for the reception of rubber blocks. The hub is held to the face of the pulley by screws *z*. The rubber blocks do not occupy the entire extent of the cavity, but leave spaces 1 for the reception of projections *x′* on a disk, *l*, attached to or forming part of a sleeve, *i*, slipped upon the shaft G. The disk *l* fits closely to the flange *h′* of the hub H when the projections *x′* are inserted into the cavities 1 1. The sleeve *i* is held to the shaft by set-screw 2, and the disk *l* is attached to the hub by screws 3, which are inserted through slots 4 in the disk. When power is applied to the pulley, it is transmitted to the disk and sleeve *i* through the rubber blocks, whereby the shock of starting is taken up.

The especial construction of the parts not only relieves the machine from the shock and liability of breaking the gears, but also prevents the oil from injuring the rubber. The power thus transmitted operates the screw and the splined rod *e′* in the ordinary manner, and the splined rod communicates motion to the mechanism upon the carriage in the manner heretofore explained.

In Figs. 3 and 4 are shown more fully the tool block and frame and the ways upon which the block and frame slide, together with the mechanism inserted to give the desired movement to the frame for the purpose of holding the tool true, but at the same time allowing it to be varied in all directions. The general object of this mechanism is, of course, to turn and finish the article to be made after the square stick has passed through the die. This die is shown at 5, Fig. 1. It is upon the carriage and is in line with the head-stock, which holds the stick to be turned.

The tool-block is shown at *a*. It is adapted to slide in the frame hereinafter described, and has underneath racks T. (Shown in side elevation in Fig. 2 and in end view in Fig. 3.)

Each segment *d* is set upon a shaft, *m*, which has its bearings at *b* in the carriage-frame.

Upon the shaft *m* is set an arm, *e*, which is connected to another arm, *h*, fast on the shaft *g*.

The link *f*, connecting the two arms *h e*, is made in two parts, as shown in Fig. 3, which parts are slotted and held together by bolts and nuts, so that the link may be lengthened or shortened to adjust the position of the tool-block. The link is connected to the arm *h* by means of a bolt and nut, the bolt passing through a longitudinal slot in the arm *h*, so that the working length of the arm may be increased or diminished, and thus the amount of reciprocating movement of the segment, and consequently the tool-block, may be in like manner increased or diminished. Upon the shaft *g* is also fixed an arm, 18, upon the end of which is an anti-friction roller that bears against the face of the cam *j*. Therefore revolution of the grooved rod *e'* through the pinion 10 will turn the gear *l* and impart, through the mechanism described, reciprocating motion to the tool-block. It will be understood that the gear *l* turns upon a stud fixed to a suitable part of the frame of the carriage, and that the pinion 10 is carried back and forth by means of an arm connected with the carriage, and these parts are the same as those in common use, which need not be explained.

The carriage-ways are shown in section at 11, and the grooved parts of the carriage slide thereon, as shown at 13.

Upon one of the grooved side pieces, 13, is a stud, on which is pivoted an eyebolt, *c*, connected to a similar eyebolt, *c'*, by a nut, C. The bolts and nuts are reversely threaded, like an ordinary turn-buckle, and form a link variable in length. This connects the rocking frame B to the carriage. This rocking frame is shown more clearly in Fig. 4. Its position is represented also in Figs. 2 and 5. The end pieces, *b*, are grooved, and, together with the horizontal connecting-piece *b'*, form ways in which the tool-block slides. The frame B is pivoted upon the carriage by screw-bolts *n*, which pass through the end pieces of the carriage, and are inserted in ways tapped in the upper part of the end pieces, *b*. The bolts *n* are smooth near their heads and turn in bearings in the end pieces of the carriage. This mode of hanging the frame allows it to swing laterally upon the bolts *n* as upon trunnions. The ears 14 are shown in Fig. 6, which shows also the frame in plan.

It will be apparent that when the connecting-link *f* is lengthened or shortened the frame B will be tipped and held in position according to the adjustment given it; but this gives varied direction to the tool, as shown at 15, 16, and 17 of Fig. 5, the tool being there indicated in its various positions in dotted lines. It may be adjusted to any directions, and is there rigidly held, and the change in direction in no way interferes with the reciprocating movement of the tool-block.

It will be understood from the description heretofore given that the tool is advanced once in each revolution of the gear-wheel *l*, and its advance may be regulated to accord with the step-by-step movement given to this class of machines.

The tool-head has a T-head groove for the bolt which holds the tool, as shown in Fig. 2.

I do not claim a rocking frame for the carriage of a lathe; nor do I claim a tool-block combined with a shaft and segments working in connection with rack-bars.

I claim as my invention—

In a wood-turning machine, the combination of a tool-block, *a*, adapted to slide in the frame B to and from its work, with the racks T, the segments gearing therewith fixed to the shaft *m*, the arm *e*, attached to said shaft, the two-part link *f*, connecting the arm *e*, through the sliding arm *h*, to the shaft *g*, the arm 18, fixed to the said shaft and carrying the roller bearing against the cam *j*, the spring connected to the arm *h*, the gear-wheel *l*, and the pinion 10 of the rod *e'*, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARCELLUS E. TUCKER.

Witnesses:
H. M. JAMES,
FRANK E. BRIGGS.