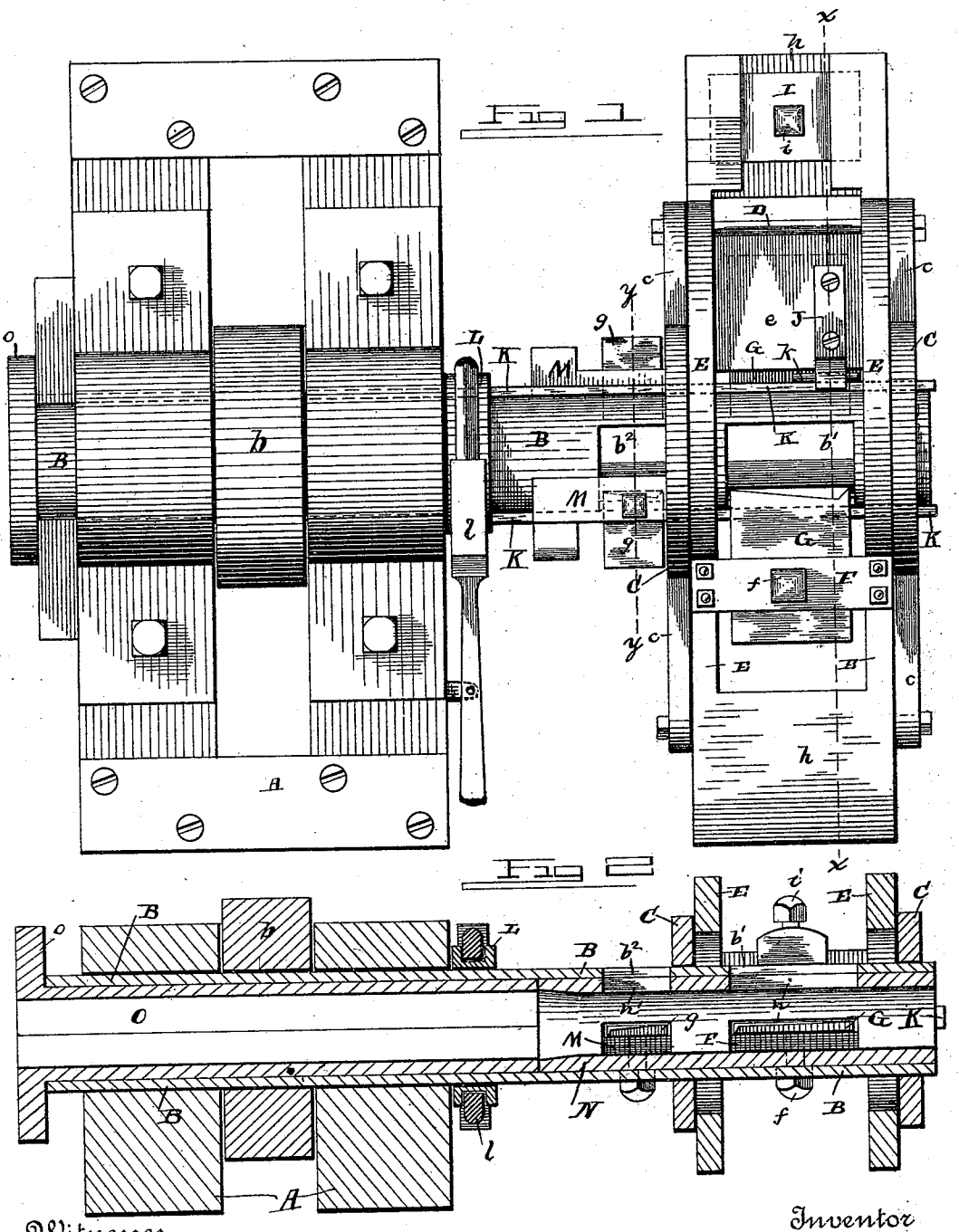
(No Model.) 2 Sheets—Sheet 1.

W. D. SNYDER.

AUTOMATIC LATHE FOR TURNING HANDLES.

No. 456,317. Patented July 21, 1891.



Witnesses

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Arthur E. Towell

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(No Model.) 2 Sheets—Sheet 2.

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Fig 3

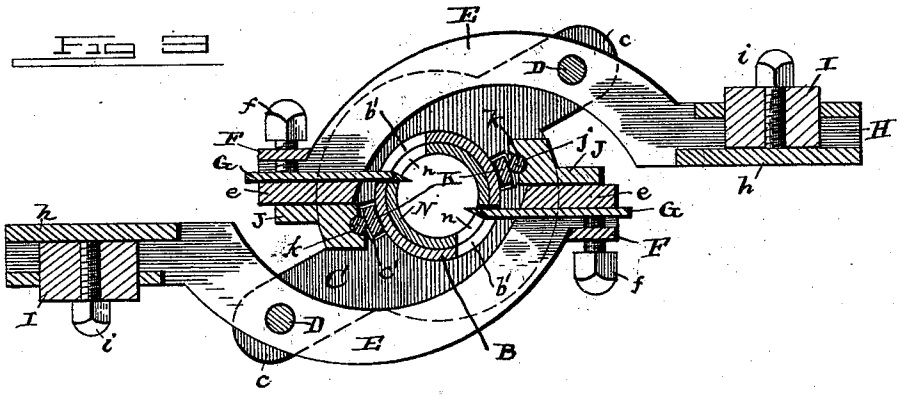


Fig 4

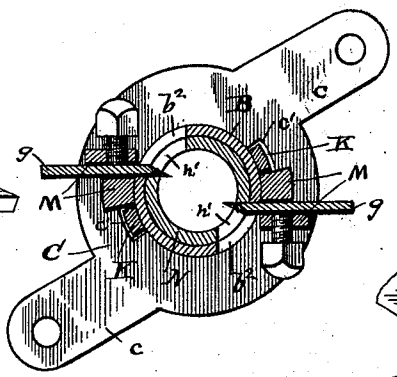


Fig 8

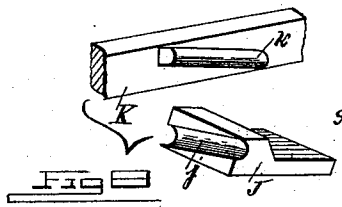


Fig 5

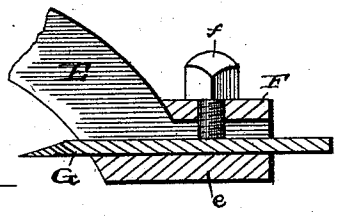


Fig 6

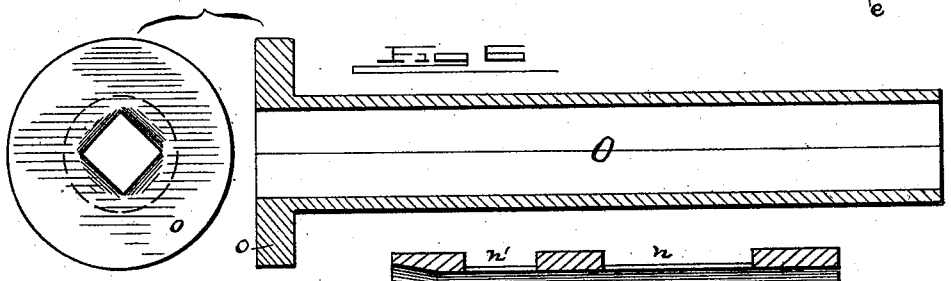
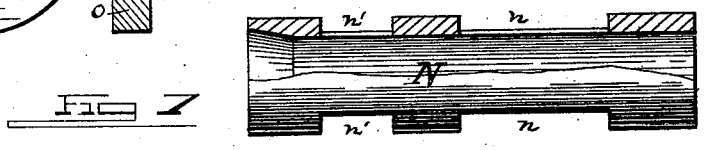


Fig 7



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UNITED STATES PATENT OFFICE.

WILLIAM D. SNYDER, OF PETOSKEY, MICHIGAN.

AUTOMATIC LATHE FOR TURNING HANDLES.

SPECIFICATION forming part of Letters Patent No. 456,317, dated July 21, 1891.

Application filed January 15, 1891. Serial No. 377,884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. SNYDER, of Petoskey, in the county of Emmet and State of Michigan, have invented certain new and useful Improvements in Automatic Lathes for Turning Handles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a top plan view of my improved lathe-arbor for making wooden handles and cylindrical rods, &c. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a transverse sectional view on line *x x*, Fig. 1; Fig. 4, a similar section on line *y y*, Fig. 1. Fig. 5 is a detail view illustrating the means of securing the finishing-knives. Figs. 6 and 7 are detail views of minor parts. Fig. 8 is a detail view of the adjusting devices for the finishing-knife frames.

This invention is an improvement in wood-turning machines; and it relates especially to mechanism for cutting or turning wooden handles for brooms and garden implements, stair-rods, &c., from wooden blanks; and it consists in a rotary arbor and adjustable gouge or rough-cutting and finishing knives attached to the arbor, and in the novel means of attaching said knives and controlling the operation of and adjusting the same, and in certain other novel details of construction and combination of parts hereinafter clearly described and claimed.

Referring to the drawings by letter, A designates the frame of the machine, and B designates a cylindrical tubular arbor journaled in bearings in the said frame, and *b* is a pulley on said tube, by which it can be rotated.

C C designate opposite similar plates fixed to one end of the arbor and having oppositely-projecting lugs *c c* on their sides, which lugs are connected by bolts D D.

There are two finishing-knife-holding frames supported on the arbor directly opposite each other, and each consists of side pieces E E, which are pivoted on bolts D D and extend inward over the arbor between plates C C, and their inner ends are connected by transverse plates F *e*, between which is adjusted the finishing-knife G, secured by a set-screw *f* or other proper fastening, as indicated. The other ends of the pieces E, which project beyond bolts D, are connected by a transverse piece *h*, and they have grooves H in their inner faces to engage tongues on adjustable weights I, fitted thereto, which weights can be fastened by screws *i*, as indicated. These weights are intended to counterbalance the weight of the knives, so as to enable the frames to be oscillated easily, as hereinafter explained, and one side piece E might be marked with a scale to enable the weights to be quickly adjusted to counterbalance knives of varying sizes that may be put in the holder.

J designates a lug on the under surface of each plate *e* and having an inclined groove *j* in its end or face adjoining the arbor, which groove is engaged by a similarly-inclined tongue *k* on a longitudinally-movable rod K, which lies parallel with the arbor B and close to the same and is supported and guided in notches *c' c'* in plates C. The inner ends of rods K are connected to a sliding collar L on the arbor, which can be shifted by a lever *l*, pivoted to the frame, and thus move rods K longitudinally, which will cause the frame-holders to be slightly oscillated to throw the knives G toward or from the arbor. The knives G G engage with the blank, passing through the arbor through openings *b' b'* in the latter, as indicated.

Between collar L and the inner plate C are gouge or roughing knives *g g*, which are adjustably mounted in slotted holders M M, attached to the arbor or plate C, as indicated. The knives *g* engage the blank through openings b^2 b^2 in the arbor.

N designates a removable gage-tube, which can be secured within the arbor and is provided with openings *n n'*, corresponding to and registering with openings *b' b²*. A set of such tubes is intended to be used, having bores of varying sizes, so that they can be interchanged, according to the diameter of handle to be turned, and thus support the blank properly within the arbor and insure smooth finishing thereof.

O designates a removable tube inserted in the receiving end of the arbor and having an angular bore corresponding to the blanks to be turned. This tube has a flange or head *o*

on its outer end, which is fastened to the frame of the machine by screws or other means to prevent the tube rotating with the arbor. Interchangeable tubes O, having bores of varying sizes or form, may be provided with the machine.

In operation the arbor, with the knives and their frames, revolves rapidly. A blank is then inserted into tube O and forced forward through the arbor, and tube O is of such length that almost immediately upon passing from said tube the blank is operated upon by knives *g g* and reduced to a rough cylindrical form. Then after moving about an inch farther the knives G G operate upon the blank and finish it as desired. Thus the blank is well supported during the cutting operations and the knives act near together. By means of lever L, rods K, inclined tongue *k*, and grooved lugs J the knives G can be vibrated or moved slightly toward or from the arbor, thus varying their cut and the thickness or diameter of the finished blank, and by controlling the movement of lever *l* by a cam-pattern (not shown) the handles may be cut and finished, having varying diameters in different portions of their length. The mechanism for adjusting the knives, while simple, is very powerful and certain in its operation, and the knives cannot be thrown out by their contact with the blank. By hinging the knife-bearing frames at the side directly opposite the knife they are adapted to keep the knife at all times at the proper angle to the work to cut the blank properly whether swung in or out from the same, thus obtaining the same movement and swing of the knives as in common gage-lathes, and this is an important feature of this machine, enabling it to produce smooth work without tearing the timber. Of course the knives would operate at either end of the arbor and the inner tubes might be omitted without destroying the efficiency of the machine, but impairing its perfect operation to a limited extent.

Having described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. In a handle-turning machine, the combination of the arbor with oscillatory knife-carrying frames hinged at one side of the arbor, overreaching the same, and carrying knives on their ends opposite their hinges and weighted at their other ends to counterbalance the knives, substantially as described.

2. The combination of the arbor with the oppositely-facing knife-holding frames hinged and weighted at one side of the arbor, overreaching the same, and carrying knives on their other ends, substantially as set forth.

3. The combination of the arbor, the swinging knife-holding frames connected thereto, the knives carried by the frames and standing at the side of the arbor opposite the hinges of the frames, and the knife-counterbalancing weights on the opposite ends of the frames, substantially as described.

4. The combination of the arbor, the swinging knife-holding frames connected thereto, the knives carried by the frames and standing at the side of the arbor opposite the hinges of the frames, and devices for shifting said frames interposed between the frames on opposite sides of the arbor and engaging the frames near the knives, substantially as and for the purpose set forth.

5. The combination of the arbor, the plates secured thereto, and the knife-holding frames pivoted between said plates and carrying knives on their inner ends and weights on their outer ends to counterbalance the knives and equipoise the frames, substantially as and for the purpose specified.

6. The combination of the side plates and the opposite oscillatory knife-holding frames having knives on their inner ends and weights on their outer ends and pivotally mounted between the plates, substantially as set forth.

7. The combination of the side plates and the opposite equipoised oscillatory knife-holding frames having knives on their inner ends and weights on their outer ends and pivotally mounted between the plates, and the sliding rods having inclined tongues adapted to engage the inner ends of the frames, substantially as described.

8. The combination of the arbor having openings for the entrance of cutting-knives, and a removable tube fitted in the arbor and having openings corresponding to those in the arbor with the cutter-knives and gouges operating through the openings in said tube and arbor, substantially as described.

9. The combination of the revoluble arbor and its cutting-knives with the non-revoluble stock-guide or holding-tube fitted in the receiving end of the arbor, substantially as specified.

10. The combination of the revoluble arbor, the gouge-knives, and the finishing-knives attached thereto, substantially as described, with the removable tube fitted in the arbor between the knives and having openings through which said knives operate, substantially as set forth.

11. The combination of the revoluble arbor and its cutting-knives and the removable guide-tube secured in the end of the arbor between the knives and revolving therewith with the stationary feed-tube fitted into the other end of the arbor and having an angular bore, substantially as described.

12. The combination of the arbor, the plates attached thereto, the knife-holding frames pivoted between said plates and having inclined grooves on their inner ends below the knives, with the longitudinally-movable rods mounted in the plates and lying between the frames, having tongues engaging said grooves, and the mechanism for operating said rods, substantially as described.

13. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blank through the openings in the arbor, and the weights on the outer ends of said frames, substantially as specified.

14. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner end of said frames and engaging the blank through the openings in the arbor, the weights on the outer ends of said frames, and the sliding rods having inclined tongues engaging grooves on the inner end of the knife-holding frames for locking and adjusting the same, substantially as described.

15. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blank through the openings in the arbor, the weights on the outer ends of the frames, and the gouging-knives connected to the arbor beside the frame, substantially as described.

16. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blank through the openings in the arbor, and the weights on the outer ends of said frames, the sliding rods having inclined tongues engaging grooves on the inner ends of the knife-holding frames for locking and adjusting the same, and the gouging-knives connected to the arbor beside the frames, substantially as described.

17. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blanks through the openings in the arbor, and the weights on the outer ends of said frames, and the removable tube having openings in it corresponding to those in the arbor and inserted therein, substantially as specified.

18. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blanks through the openings in the arbor, and the weights on the outer ends of said frames, the sliding rods having inclined tongues engaging grooves on the inner ends of the knife-holding frames for locking and adjusting the same, and the removable tube having openings in it corresponding to those in the arbor and inserted therein, substantially as described.

19. The combination of the arbor having openings near one end, the oscillating knife-holding frames connected thereto, the knives attached to the inner ends of said frames and engaging the blank through the openings in the arbor, and the weights on the outer ends of said frames, the removable tube having openings in it corresponding to those in the arbor and inserted therein, and the gouging-knives connected to the arbor beside the frame, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM D. SNYDER.

Witnesses:
C. J. PAILTHORP,
CLARENCE A. CURTIS.