A. Goodyear,

Turning Regular Forms.

No. 66,146. Patented June 25, 1867.

Fig 1

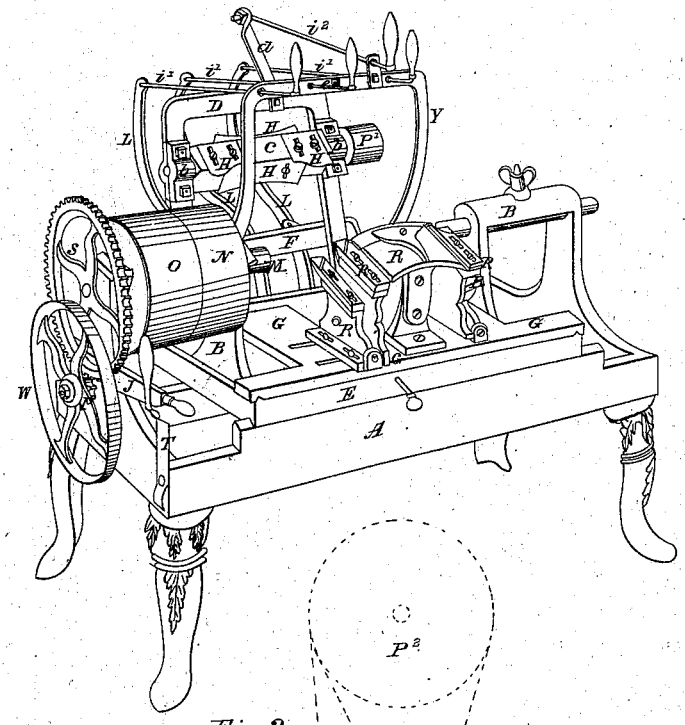
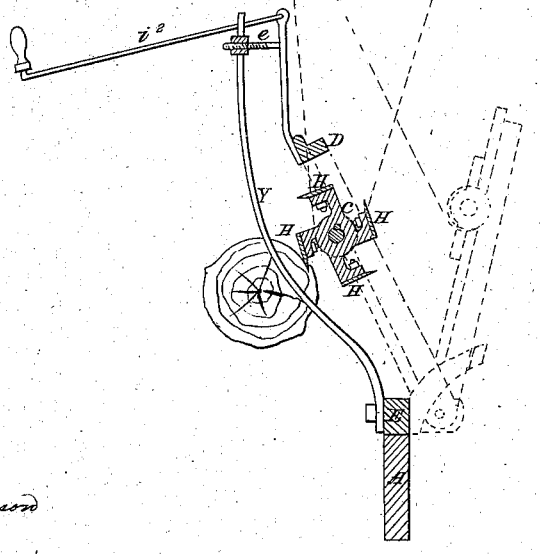


Fig 2



Witnesses:

George Johnson

Otto L. Johnson

Inventor:

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United States Patent Office.

ANDREW GOODYEAR, OF SPRINGPORT, MICHIGAN.

Letters Patent No. 66,146, *dated June* 25, 1867.

IMPROVEMENT IN WOOD-TURNING LATHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ANDREW GOODYEAR, of Springport, in the county of Jackson, and State of Michigan, have invented a new and useful Improvement in Wheel-Hub Turning Lathes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of the specification, in which—

Figure 1 is a perspective view.

Figure 2 is a cross-section of roughing cylinder, and partial side elevation of lathe.

Similar letters of reference indicate corresponding parts in both figures.

My invention relates to the use of a roughing cylinder, furnished with moulding-shaped adjustable cutters, revolving in a frame hinged to the lathe-bed, and employed in connection with a slow geared motion of the lathe-mandrel, the general construction and operation of which I will now proceed more fully to explain.

A represents the bed frame; B, the poppet-heads; E, the guide-bed frame; and R, sliding-cutter rests that operate by fixed cutters, shaped and set to a pattern, and fed up to gauge-stops against a revolving hub As the hub-turning lathe exhibited in the drawing, and to which my improvement is applied, comprises most of the prominent features of the improved hub-lathe for which a patent (bearing date August 23, A. D. 1864, was awarded me, I do not deem it necessary to recapitulate the details thereof, but will confine myself to such modifications and additions as are proper to describe in connection with the parts constituting said improvement. To the back side of the adjustable guide-bed E, upon which the cutter-rests for finishing slide, I attach by strong hinge connections, a yoke-frame, D, to which a cutting cylinder, C, is hung, in the bearings *b*. This cylinder I cause to revolve at a high speed, by means of a belt, which passes over the small pulley P^1, and over a large one, P^2, (see broken lines,) hung overhead in such position that the belt will tighten as the "roughing cylinder" C is drawn to its work. The body of the cylinder may be rectangular in cross-section, and the cutter-blades H secured by tap bolts, or made with flanged arms, as in fig. 2, and the cutters secured by nuts on countersunk headed bolts, as usual. As my object is to give a rough approximate shape and size to the hub by means of this revolving cutter cylinder, leaving just sufficient wood to enable the finishing cutters on the slide-rests to clean up to a perfect form and surface, and as the various classes of wheel-hubs differ materially in size and form, I so shape the cutting edges of the sectional cutters, (usually two central and four end ones, that, by the aid of slotted bolt-holes, to allow the cutters to be twisted around, and longitudinal slots or range of bolt-holts, to permit an adjustment of the end cutters lengthwise, any desired approximation of rough form and size may be given. Three bent levers, L, jointed to a fulcrum-bar, F, have their lower ends connected by rods (not seen) to the under sides of the sliding carriages G, and their upper ends are provided with draw-rods r^1, furnished with handles within easy reach, in front of the operator. The swinging cylinder-frame, when not in use, is kept in contact with the fulcrum-bar by one or more suitable springs, *s*, and is drawn to its work by the handle of the draw-rod r^2, which may be conveniently connected by an arm, *a*. The projecting ends of the draw-rods are upheld out of the way, and guided in holes through the bent guide-yoke Y, the lower ends of which, as well as the bent ends of the fulcrum-bar, are all firmly secured to the side of the guide-bed E the cylinder-frame is hinged to. A band-wheel, W, (driven usually from below,) and furnished with a boss pinion, *p*, revolves on a stud, (not seen,) which is secured to a pivoted arm, J, that rests on spring-stops T, in such manner that the pinion may be thrown in and out of gear with the spur-wheel S, which is keyed to an overhang of the lathe-mandrel M.

The pinion being out of gear, and the driving-belt on the loose pulley *o*, a cornered block, to be turned, is driven on the turning-mandrel, which is centred in the lathe as usual, the adjustments of the various cutters and stops having been previously made for the desired pattern. The operator, grasping the handle of the rod r^2, first throwing the lathe in gear, draws the roughing cylinder against the slowly revolving block, until the arm *a* strikes against the adjustable screw-stop *e*, and holds it there until the cutting cylinder has reduced the block to the given size and shape, and he then releases his hold, when the springs *s* draw back the cylinder and frame to their former position, out of the way. Then throwing the lathe out of gear, and shipping the main driving-belt on the fast pulley N, to give a high speed to the roughly shaped hub, the operator pulls successivel

towards him, by the handles, the rods attached to the levers, whereby the sliding-cutters are advanced, and complete the work by a few clean, slicing cuts.

It is evident that by this arrangement of a double set of cutters, one of which, in a rapid and effective manner, cuts away the surplus wood and reduces the block nearly to its size and shape, the finishing cutters will preserve their cutting edges much longer, and the work be expedited and accomplished in a more perfect manner. If desired, the lathe can be thrown in and out of gear at the right moment, automatically, by any of the usual devices, in connection with the belt-shipper.

I disclaim the application, broadly, of a rapidly revolving cutting cylinder applied to a slowly revolving object, for the purpose of cutting it to some uniform and finished turned form; but I am not aware that cutting cylinders provided with sectional cutting blades, capable of being so adjusted as to give preliminary approximate form to the various classes of wheel hubs, have ever been used before, and especially in connection with sliding-cutters for finishing, like mine, whereby great perfection of finish and other important advantages are obtained; but what I do claim, and desire to secure by Letters Patent, is—

1. The combination, in one machine for turning wagon hubs, of two sets of cutters, one set of which may be brought into action for "roughing out" the hub, and a second set then brought into action for the purpose of finishing the hub, the mechanism thereof being constructed and arranged to operate substantially as set forth.

2. The combination of the yoke-frame D hinged to the main frame A, roughing cylinder C, arm a, rod r^2, and spring s, said parts being respectively constructed and arranged substantially as described.

3. So arranging the operating mechanism of the two sets of cutters that the roughing cutters shall revolve at a high speed at the same time that the hub subjected to its action revolves slowly, and the adjustable finishing cutter, fixed upon slides, shall act upon the hub when made to revolve at an increased speed, substantially in the manner set forth.

ANDREW GOODYEAR.

Witnesses:

GEORGE JOHNSON,

OTTO L. JOHNSON.