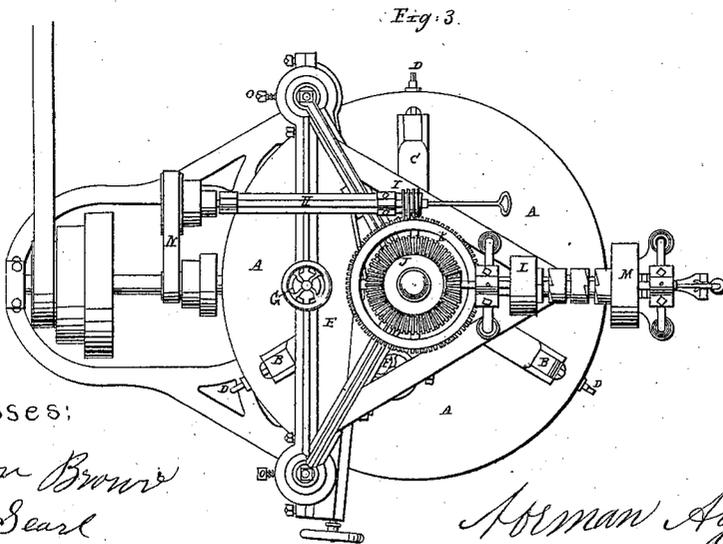
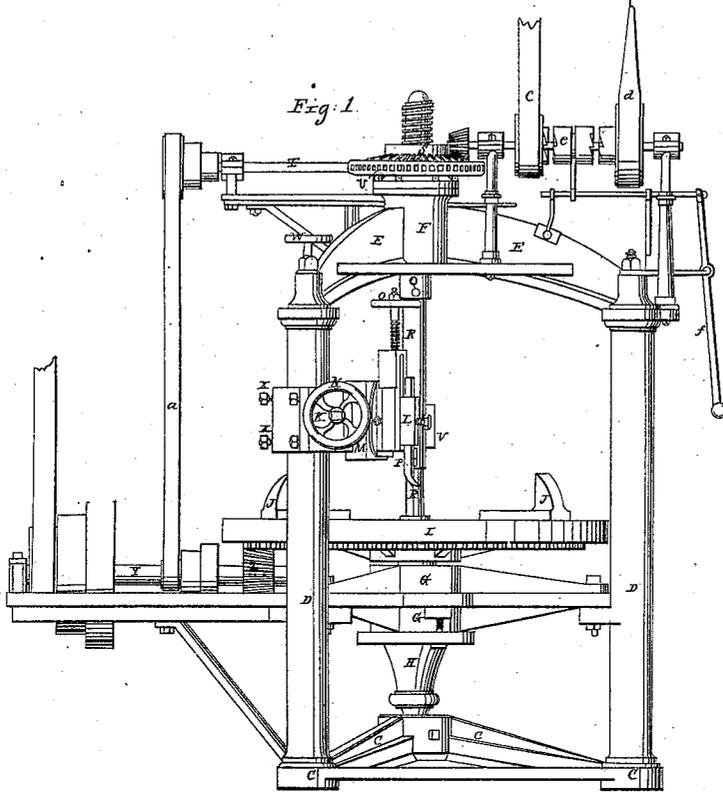


N. Aylsworth,

Shaping and Slotting Metals,

N^o 12,117.

Patented Jan. 2, 1855.



Witnesses:

Hanson Brown
H. R. Seal

Inventor:

Norman Aylsworth

N. Aylsworth,

Shaping and Slotting Metals,

Patented Jan. 2, 1855

N^o 12,117-

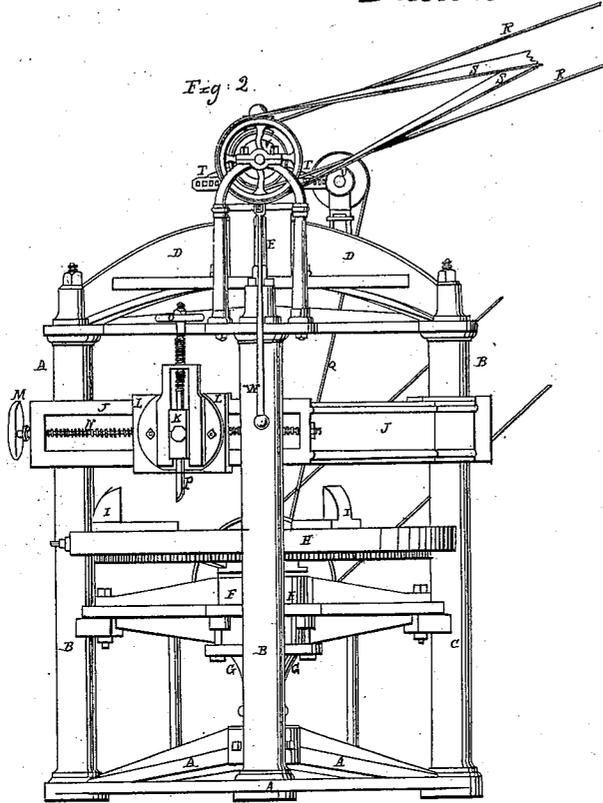
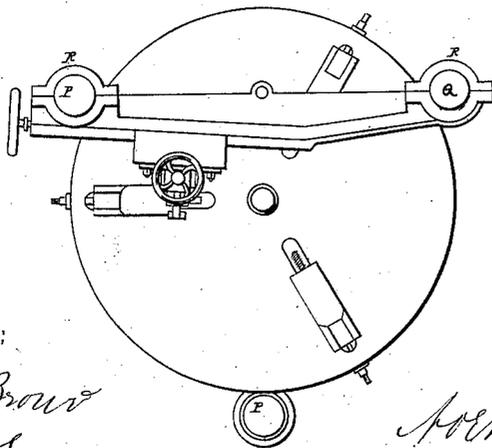


Fig. 4.



Witnesses:

Alanson Brown
H. R. Searl

Inventor:

Norman Aylsworth

UNITED STATES PATENT OFFICE.

NORMAN AYLSWORTH, OF ROCHESTER, NEW YORK.

MACHINE FOR BORING, PLANING, AND SLOTTING METALS.

Specification of Letters Patent No. 12,117, dated January 2, 1855.

To all whom it may concern:

Be it known that I, NORMAN AYLSWORTH, of Rochester, in the county of Monroe, in the State of New York, have invented a new and Improved Machine for Turning, Boring, and Cutting Key-Seats in Car-Wheels or any other Work; and I do hereby declare that the following is a full and exact description thereof, reference being had to the annexed drawings and to the letters of reference marked thereon.

The nature of my invention consists in so arranging the several operative parts of a machine for turning, boring, and cutting key seats, as that the three several operations may be completed from the same centers, without unchucking the piece of machinery to be so wrought upon, by which means more accurate work can be done, with less labor, than when the piece is removed or rechucked, in two or more machines.

I construct my machine with three columns resting on a triangular base, with a triangular arch on the top of the columns and which is supported by the columns. In the center of the arch supported by the columns there is an upright mandrel which passes through a hub. I attach, at the lower end of the mandrel a tool stock with rimmers and cutters for the purpose of boring a car wheel. I also attach to two of the columns a cross head which works up and down on the columns; to the cross head I attach a sliding head which carries a cutter horizontally for the purpose of turning the hub of the wheel at the same time that it is bored and with the same motion.

In my machine the wheel to be turned and bored revolves instead of the drill, and the drill is fed down through the wheel by means of gearing above the arch, the sliding head is also fed by a screw so as to turn the hub of the wheel at the same time that it is drilled, so that the wheel is bored and drilled with the same motion and consequently more perfect than it otherwise would be, and thereby saving the time of turning the hub of the wheel. I also make use of the upright mandrel for the purpose of cutting a keyseat in the hub of the wheel, without changing the position of the wheel, so that a wheel may be put onto my machine and turned off, bored and a keyseat cut without changing the position of the wheel.

In order that my invention may be more fully understood I will refer to the annexed drawings.

Figure 1 shows a front elevation or work side of my machine. Fig. 2 shows a side elevation. Fig. 3 is a view of my machine as seen when looking directly down upon it. Fig. 4 shows a section through A B, Fig. 2.

C C C C, Fig. 1, show the triangular base of my machine.

D D, Fig. 1, show two of the columns, which rest on the triangular base.

E E, Fig. 1, show a part of a triangular arch.

F, Fig. 1, shows a hub in the center of the triangular arch.

G G, Fig. 1, show a center beam which is attached by arms to the three columns.

H, Fig. 1, shows a spindle which revolves on a pivot in the base C C C C and passes up through the center beam G G by which it is supported.

I, Fig. 1, shows a revolving table or face plate which is firmly fixed to the upper end of the spindle H. The wheel to be turned is placed onto the revolving table I and held in its position by means of three dogs, two of which are shown J J Fig. 1.

K, Fig. 1, shows the end of the cross head which slides up and down on two of the columns.

L and M, Fig. 1, show a sliding head which works on the cross head.

N, Fig. 1, shows a hand wheel which is firmly fixed to a screw, and by means of which the sliding head L and M is moved backward or forward horizontally.

O, Fig. 1, shows a hand wheel, which is firmly fixed to a screw and by means of which the part of the sliding head marked L is raised or lowered.

P, Fig. 1, shows a turning tool which is firmly fixed into the part of the sliding head L, Fig. 1.

Q, Fig. 1, shows a mandrel which works up and down in the hub F.

R R, Fig. 1, show a tool stock which is firmly fixed into the center of the mandrel Q. When the mandrel Q is brought down the tool stock, passes down into the spindle H, for the purpose of steadying the cutters and rimmers. The mandrel Q does not revolve but works up and down in the hub F. There is to be a feather firmly fixed into

the hub F, and a groove cut in the mandrel which works on the feather, and which prevents the mandrel from revolving.

5 S, Fig. 1, shows a nut which works on a screw on the mandrel and by means of which it is raised or lowered. The nut is worked, and the mandrel fed down by means of a worm, working into a worm gear. The worm is attached to the shaft T, Fig. 1.

10 U, Fig. 1, shows the worm gear by which the nut S is worked, and the mandrel Q raised or lowered.

V, Fig. 1, shows the cutter or rimmer which is firmly fixed to the tool stock R R.

15 W, Fig. 1, shows a hand wheel by means of which the cross head K is worked up and down on the columns. The cross head K is held in any required position by means of set screws shown X X Fig. 1.

20 Y, Fig. 1, shows the main shaft by which the motion is given to the machine.

Z, Fig. 1, shows a pinion which is firmly fixed to the shaft Y and by means of which the motion is given to the table or face plate I.

a, Fig. 1, shows the belt by which the motion is given to the worm shaft T.

30 b, Fig. 1, shows a pinion which works in a beveled gear and by means of which a motion is given to the nut S.

c, Fig. 1, shows a belt by means of which the mandrel Q is raised.

35 d, Fig. 1, shows a crossed belt by means of which the mandrel Q is lowered. The motion of the mandrel is reversed by means of a clutch e Fig. 1 between the two pulleys on which the belts c and d work.

40 The motion described by b c and d is used for the purpose of slotting or cutting key-seats. f Fig. 1 shows a lever by which the clutch e is moved backward or forward.

A A A, Fig. 2, show the triangular base shown C C C C, Fig. 1.

45 B B, Fig. 2, show the two columns shown D D, Fig. 1.

C, Fig. 2, shows one of the columns not shown in Fig. 1.

50 D D, Fig. 2, show the triangular arch shown E E Fig. 1.

E, Fig. 2 shows the hub shown F Fig. 1.

F F, Fig. 2, show the center beam shown G G, Fig. 1.

55 G G, Fig. 2, show a part of the spindle shown H Fig. 1.

H, Fig. 2, shows the revolving table or face plate shown I Fig. 1.

I I, Fig. 2, show the dogs shown J J Fig. 1.

60 J J, Fig. 2, show the face of the cross head the end of which is shown K Fig. 1.

K, Fig. 2, shows that part of the sliding head shown L, Fig. 1.

65 L L, Fig. 2, show the face of the sliding head, the edge of which is shown M Fig. 1.

M, Fig. 2, shows the hand wheel N, Fig. 1. N, Fig. 2, shows a screw to which the hand wheel M Fig. 2 and N Fig. 1 is attached. The screw N, Fig. 2, is for the purpose of carrying the sliding head backward or forward. 70

O, Fig. 2, shows the hand wheel shown O Fig. 1.

P, Fig. 2, shows the turning tool shown P Fig. 1. 75

Q, Fig. 2, shows a part of the belt shown d Fig. 1.

R R, Fig. 2, show the belt shown c, Fig. 1.

S S, Fig. 2, show the belt shown, d, Fig. 1. 80

T T, Fig. 2, show the nut shown S, Fig. 1, and by means of which the mandrel is raised and lowered.

V, Fig. 2, shows the end of the worm which works into the worm gear in the nut T T and S, Fig. 1. 85

V, Fig. 2, show one end of the clutch shown e Fig. 1.

W, Fig. 2, shows the lever by which the clutch is worked and which is shown f, Fig. 1. 90

A A A, Fig. 3, show the top of the revolving table or face plate, the edge of which is shown I Fig. 1 and H, Fig. 2.

B B, Fig. 3, show the dogs shown J J Fig. 1. 95

C, Fig. 3, shows a dog which is not shown on Fig. 1. The three dogs are for the purpose of holding the wheel to be turned, onto the face plate. 100

D D D, Fig. 3, show screws for the purpose of moving the dogs backward or forward.

E, Fig. 3, shows the top of the cross head shown K, Fig. 1, and J J, Fig. 2. 105

F, Fig. 3, shows the hand wheel shown O, Fig. 1, and O, Fig. 2.

G, Fig. 3, shows a hand wheel by which the cross head E, Fig. 3, is raised or lowered. 110

H, Fig. 3, shows the shaft shown T, Fig. 1.

I, Fig. 3, shows the worm which drives the worm gear, shown v Fig. 1.

J, Fig. 3, shows the top of the nut shown S, Fig. 1. 115

K, Fig. 3, shows the top of the bevel gear in which the pinion b, Fig. 1, works.

L, Fig. 3, shows the pulley on which the belt c, Fig. 1, works. 120

M, Fig. 3, shows the pulley on which the belt d, Fig. 1, works.

N, Fig. 3, shows the belt shown a Fig. 1.

O O, Fig. 3, shows the set screws by which the cross head is held in any required position. 125

P P, Fig. 4, shows a section of the two columns shown D D, Fig. 1, and B B, Fig. 2.

Q, Fig. 4, shows a section of the column shown C, Fig. 2. 130

R R, Fig. 4, show the top of boxes by means of which the cross head is attached to the columns.

In turning and boring a car wheel, I place the wheel on the revolving table or face plate and fasten it in a proper position by means of the dogs shown B B and C, Fig. 3, as has been described. I then pass the tool stock down through the hub of the wheel so that the lower end of the tool stock enters the upper end of the spindle. I then set the revolving table in motion by means of the shaft Y, Fig. 1, and when the shaft Y is put in motion, the shaft T, Fig. 1, revolves and the worm operating in the worm gear causes the mandrel Q to move down and the cutter V being attached to the tool stock R R, is moved down and bores the wheel, and by the hand wheel O the turning tool P is moved down in a proper position for turning off the hub of the wheel. By means of the hand wheel N I give a horizontal motion to the turning tool P, so that it will be seen that the wheel is bored and turned at the same time, and with the same revolving motion, and thereby done more perfectly and in less time than it could be if the boring and turning were done separately.

In order to cut a keyseat as a slot in a car wheel, I stop the motion of the revolving table or face plate, and throw the worm connected with the shaft T, out of gear, and also

take out the tool stock R R which is placed in the mandrel Q and put into its place a tool stock with a cutter properly made for cutting a keyseat. I then give a motion to the nut S by means of the pinion b it being driven by the belt c or d and by means of the clutch between the two pulleys, on which the belts work. I reverse the motion alternately, causing the mandrel to work up and down, and by means of the tool stock which is placed into the mandrel Q in the place of the tool stock R R having a proper cutter attached which passes down and up, through the hub of the wheel, the keyseat is cut.

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent is—

The so arranging of the several operative parts of a machine for turning, boring, and cutting key seats, in car wheels, cranks and other machinery, as that the three several operations may be completed from the same centers, without unchucking a piece of machinery, by which means more perfect work can be done, than when the piece so removed or rechucked, for two or more successive operations—the wheel being achieved in the manner set forth.

NORMAN AYLSWORTH.

Witnesses:

ALANSON BROWN,
H. R. SEARL.