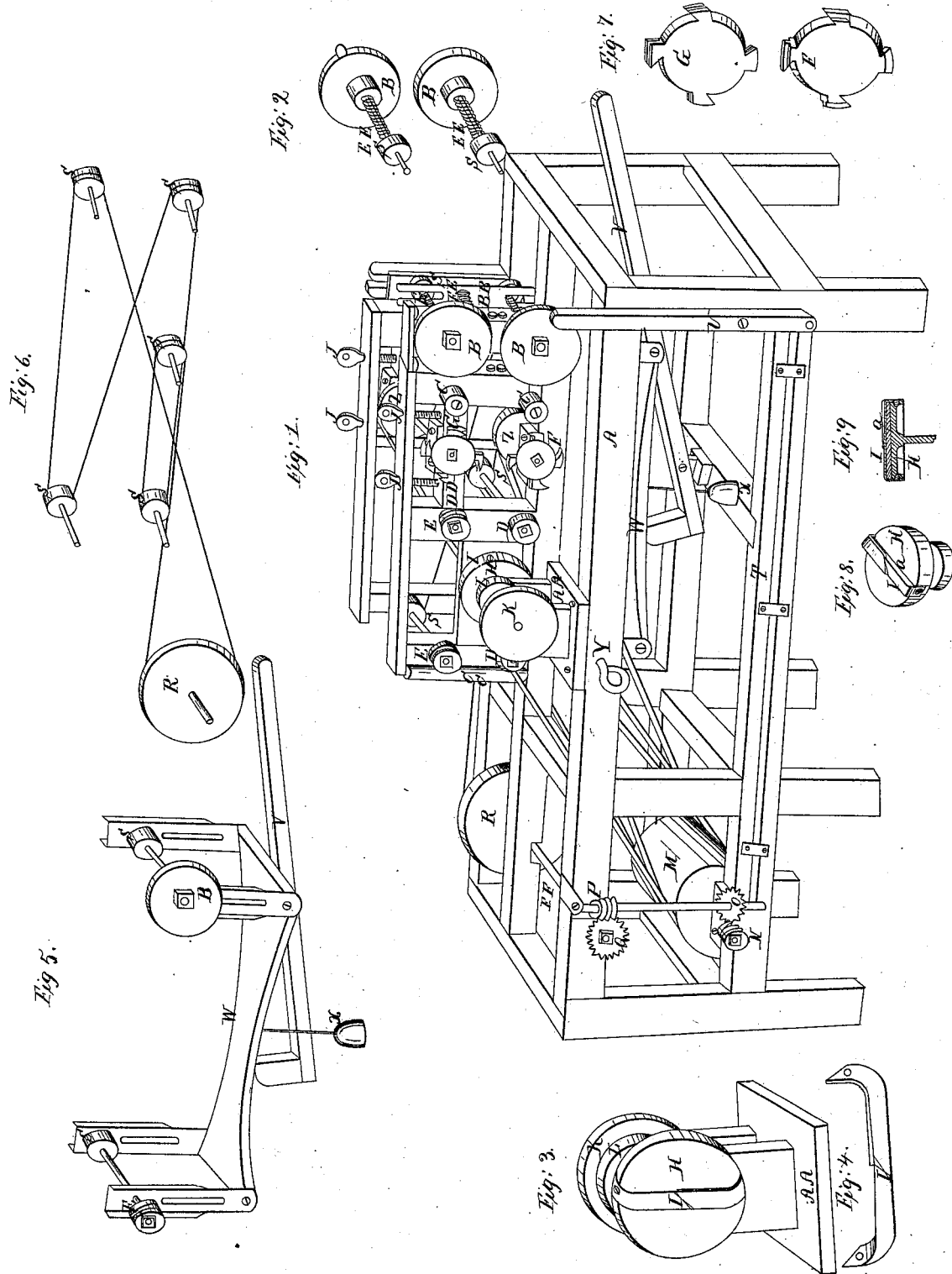


A. Caldwell, Planing and Matching Machine.

N^o 5,334.

Patented Oct. 16, 1847.



UNITED STATES PATENT OFFICE.

ANDREW CALDWELL, OF LEXINGTON, KENTUCKY.

IMPROVEMENT IN CUTTER-HEADS FOR PLANING-MACHINES.

Specification forming part of Letters Patent No. 5,334, dated October 16, 1847.

To all whom it may concern:

Be it known that I, ANDREW CALDWELL, of the city of Lexington, county of Fayette, and State of Kentucky, have invented a new and useful machine for smoothing the surface of boards or any other description of plank used for building purposes, also for tonguing and grooving flooring-plank or any other description of plank where the same is to be tongued and grooved; and I do hereby declare the following is an exact description, reference being had to the annexed drawings.

The nature of my invention consists in the manner in which I construct the turning or planing wheel for operating on the face of the boards or plank—viz., the bit I being in one piece and secured across the face of a wheel H, (or a cross-head,) in the manner represented in Figures 3, 8, and 9 in the accompanying drawings, the ends of the bit having curved cutting-edges, which serve as gouges or roughers, and the horizontal cutting-edges extending from the curves at each end of the bit to a little past the center of the same, serving as smoothing-cutters.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, to wit:

In Fig. 1, letter A is the frame of the Eclipse turning and tongue-and-grooving engine, the length of which is sixteen feet, width four feet, height three feet six inches.

B (represented by Fig. 2) is the plate spiral springs fluted rollers, intended to hold fast and convey the plank in a vertical or edge-wise position to the tongue and groover G F, constructed in the following manner: a shaft two feet three inches long, with a fluted roller permanently attached to the shaft, three inches in diameter, the hold-fast plate attached, running loose between the nut and the fluted roller, made of iron, from three to six inches in diameter and three-quarters of an inch thick, to suit the width of plank desired to be used. The yokes B are made of iron fourteen (14) inches long, four inches wide, slotted at each end, and pressing against pulleys S by spiral springs E E, the whole working in a stand made of wood or cast-iron, attached to the center and back rail of frame A; stand eighteen (18) inches high, four inches wide, with slot one and a quarter inch wide and eight inches long for uppershaft to work

in. CC are two perpendicular guide friction-rollers on each side of slotted stand.

C's are guides made of metal, two inches thick and four inches in diameter, revolving loose on stud-pins, lower one stationary, upper one movable, so as to suit the width of plank.

G F is the tongue and groover; G, the tongue, made of one or three steel plates, (to be made of the best cast-steel,) six inches in diameter from out to out, the plate-cutter about one and three-quarters of an inch in thickness, with notches cut out to form a circle within a circle of about four and a quarter inches in diameter, leaving the bits projecting about three-eighths of an inch.

J's are set-screws for moving the bridge-tree D D, containing the shaft on which the tonguer G works; F, the groover, formed similar to G, except the center bits, as represented by Fig. 7, G F, projecting above the side bits three-eighths of an inch, which forms the groove. The advantage of this tongue and groover over the ordinary bits is that they are permanent and need no adjusting, and can be sharpened with an emery-board, forming a tongue and groove, made by the tongue and groover by giving the bits a rotary motion backward, which can be done with ease and facility, each working upon an axle turned by the pulley Z, which is ten inches diameter, with a band from the drum M to pulleys Z.

D's are two conducting fluted pulleys, made of iron three and three-quarter inches diameter, including the tongue one and three-quarters inch in thickness, intended to hold fast in the bottom of the grooved plank to prevent it from slipping, and the more readily to convey the plank to the gouge and chisel-bit I on wheel H.

E's are grooved pulleys, made of iron three inches diameter and one and three-fourths of an inch thick, the groove three-eighths of an inch deep and three-eighths wide, as represented in D's.

H is a vertical wheel, made of cast-iron, diameter to any given size, ordinarily ten inches diameter, two inches thick, concave on the outer face, forming a flange deep enough to take in a nut, which secures the chisel-bit I, (represented in Fig. 4,) which is on the opposite side of vertical wheel H. The chisel gouge or bit is ten inches long, two inches broad, and half an inch thick, the cutting

smoothing-chisel edges being on opposite sides, extending from the curves at its ends to a little past its center, and on perfect parallels on opposite ends of the bit I, forming a complete gouging or roughing and smoothing tool, as represented in Figs. 3, 4, 7, and 8, letter I, or in place of the wheel H a cross-head may be used to secure the chisel-bit I to.

a is a rest placed under the bit I to steady the same and aid in throwing off the chips.

K is a balance-wheel, about the same size as H, connected by a shaft from H to K, in the center of which is a ten-inch driving-pulley, (marked L,) as represented in Fig. 3.

A A is a movable stand on which the pulleys H, K, and L run.

Y is a set-screw for moving stand A A, that sets the chisel and gouge bits so as to cut the plank to any given thickness.

M is the main driving-drum, made of iron circles covered with wood, three and a half feet in length and two and a half feet in diameter, revolving one thousand revolutions per minute. On one end of drum-shaft is a driving-pulley eighteen inches diameter, four inches thick, and a loose pulley of the same size. On the opposite drum-shaft is a worm-wheel N three inches diameter, with two threads working into a cog-wheel O on a perpendicular shaft, with sixty teeth for cogs.

P is a perpendicular worm-wheel on the opposite end of shaft, same size as N, working into a cog-wheel with sixty cogs attached to line extending across frame on which is the driving-pulley R.

R is a grooved driving-pulley twelve inches in diameter, which drives the five pulleys S, six inches diameter, one and a half inch

wide, turned by an endless band connected to each pulley and driven by the grooved pulley R, which drives the feeding-rollers B, as represented in Fig. 6, also the conductors D and E, as represented in Fig. 2.

W is a sliding frame, which is to regulate the weight on E and B as pressure to conduct the plank in and out.

Rollers B and E are in stirrups, made of iron or other metal, one inch thick above the slots, beneath the slots one eighth of an inch thick, two inches wide, two feet in length, to slide up and down in grooves on the side of posts, as will be seen in Fig. 5.

V is a lever for the workmen to raise the sliding frame to admit the plank, which is held securely by the weight X while in the operation of facing.

U is a lever attached to a sliding rod connected with the perpendicular shaft O P to disconnect O from N, which stops the feeding-rollers B.

What I claim as my invention, and desire to secure by Letters Patent, is—

The manner in which I construct the turning or planing wheel for operating on the surface of the plank—viz., giving the bit I curved cutting-edges at the ends, which serve as gouges or roughers, and double cutting or smoothing edges extending from the curves at the ends to a little past the center of the same, and securing the bit to the face of a wheel H or cross-head, substantially in the manner herein set forth.

ANDREW CALDWELL.

Witnesses:

GUY C. HUMPHRIES,
HAZARD KNOWLES.