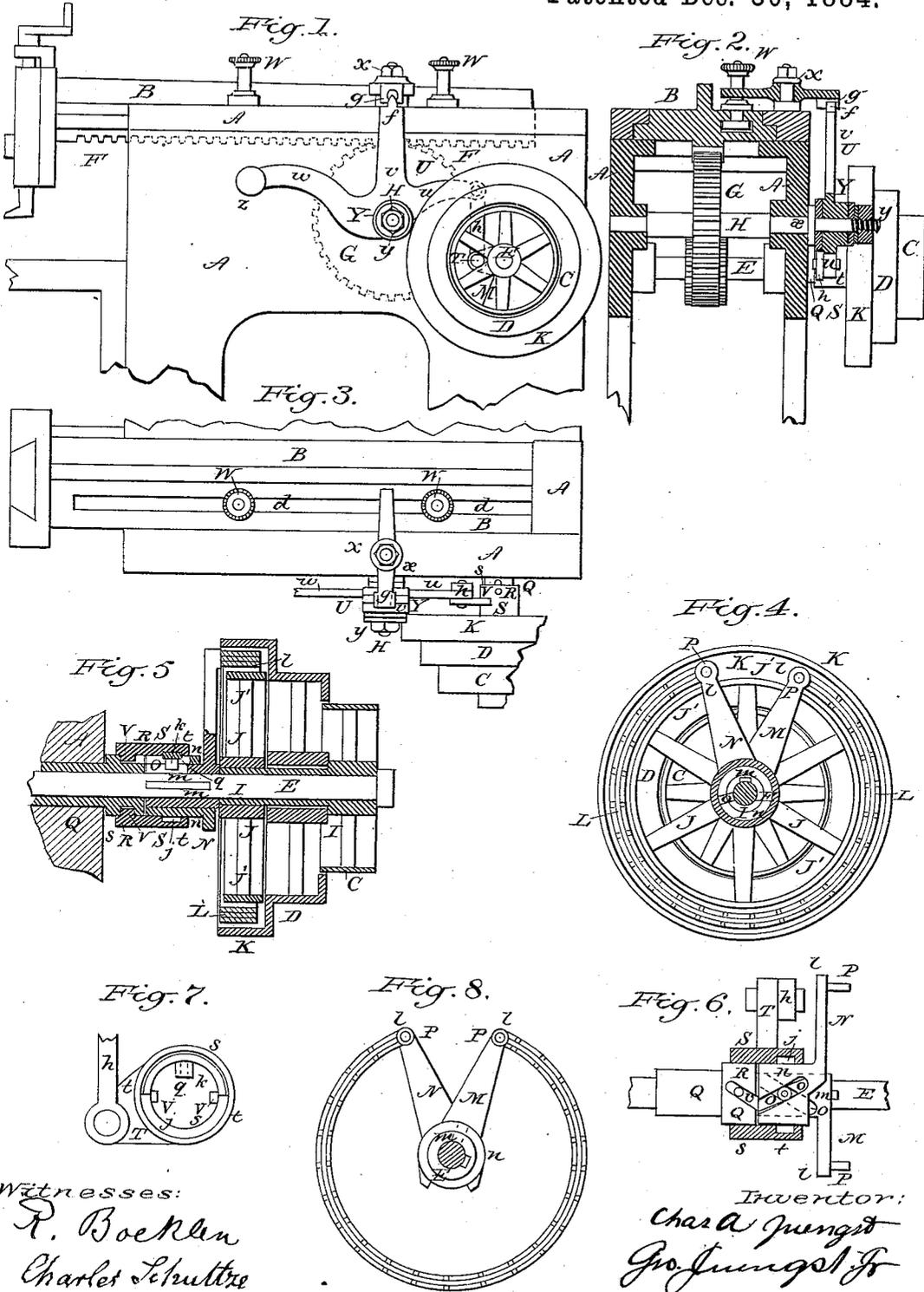


(No Model.)

C. A. JUENGST & G. JUENGST, Jr.
VARIABLE RECIPROCATING PLANER MOTION.

No. 309,857.

Patented Dec. 30, 1884.



Witnesses:
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UNITED STATES PATENT OFFICE.

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VARIABLE RECIPROCATING PLANER-MOTION.

SPECIFICATION forming part of Letters Patent No. 309,857, dated December 30, 1884.

Application filed October 10, 1883. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. JUENGST and GEORGE JUENGST, JR., both citizens of the United States of America, and residents of the city, county, and State of New York, have invented a new and useful Improvement in Variable Reciprocating Planer-Motion, of which the following is a specification.

This invention relates, first, to a combination of a double-acting friction-band between an inner and outer and oppositely-revolving friction-rims, and connected by expanding and contracting mechanism with the reversing-lever, operated either by hand or the dogs or tappets of the planer-bed; and it relates, also, to the arrangement and combination of the reversing-lever having a friction-fulcrum upon the planer-bed gear-shaft with the friction-brake and the mechanism connecting it to the reversing-lever. By these devices the stroke of the planer-bed is very conveniently and readily varied and adjusted during the motion of the planer, and the reversing-lever is powerfully held to its position after every change of motion, and is caused to perform its duty with reliability.

In the drawings hereto annexed, Figure 1 represents a side view of a shaping-machine or planer with a reciprocating motion according to our invention. Fig. 2 is a cross section of the same. Fig. 3 is a top view of the same. The parts of the machine irrelevant to this invention are omitted in these figures. Fig. 4 is a detached inner end-view of the friction-brake and belt-pulleys of the same. Fig. 5 is a detached longitudinal vertical section of the same. Fig. 6 is a detached sectional top view of the levers and clutch of the brake of the same. Fig. 7 is a detached cross-section of the clutch-sleeve and its inner loose collar. Fig. 8 is a detached end view of the friction-band with its expanding and contracting levers.

A represents the frame, and B the bed or slide, of the shaping-machine or planer.

C is the cross-belt quick-return driving-pulley, and D is the straight slow forward-motion pulley, both of which revolve loosely upon the driving-shaft E.

F represents the toothed rack-bar of the planer-bed, and G the gear-wheel, which engages in the rack-bar F, and is mounted upon the shaft H. The shaft E is geared with the

shaft H and gear-wheel G in the ordinary way to transfer the proper speed from the driving-pulleys to the wheel G and bed or slide B. Said pulley C has a long hub, I, fitted loosely and directly upon the shaft E, and the pulley D is bored to fit loosely over the hub I, and revolves indirectly over the shaft, said hub passing through the bore of the pulley D. Upon the inner end of said hub I is secured firmly the pulley J, with a friction-rim, J', and opposite to its periphery is provided a secondary friction-rim, K, formed, cast, or secured on the pulley D, and the diameter of these two friction-rims vary sufficient to have a proper annular space between them, in which the circular friction-band L is employed. Said band is made of sheet steel lined with a leather band on both its inner and outer periphery and describing the greater part of a complete circle, and formed with an eye, l, on each end, as clearly shown in Figs. 4 and 8, so that by expanding the eyes l from one another the periphery of the friction-band is caused to grip the inner periphery of the rim K, and that by closing said eyes l toward each other said band is contracted to grip the outer periphery of the rim J'.

M and N represent each a lever-arm, of which the arm M is keyed firmly upon the shaft E with its hub m, and the arm N has a hub, n, fitted loosely over the hub m, and each of these is provided with a spiral slot, O. The outer end of each arm is furnished with a stud, P, each to engage one of the eyes l of the friction-band L. The bearing of the shaft E in the frame of the machine has a bush, Q, secured in the frame from turning. The periphery of the bush Q has two opposite spiral grooves, R R, extending in the same direction with the same pitch. The spiral slots O extend in opposite direction with the same pitch, and a sleeve or clutch, S, is employed over the hub n and also over the bush Q, and fitted to slide over them. Said sleeve S is made with an arm, T, which is connected by means of a link, h, to the reversing-lever U; and the part s over the bush Q of the sleeve S has two opposite studs, V V, each engaging in one of the spiral grooves R, which, by turning the sleeve, cause the sleeve to move and screw or slide forward or rearward, according to the direction in which the sleeve is turned. The

part *t* of the sleeve fitted over the hub *n* has an annular groove, *j*, on its inner periphery, and has in said groove furnished a loose semi-roller or collar, *k*, with a studded friction-roller, *q*, attached to it. Said roller *q* projects and engages inwardly into the spiral slots O O of the hubs *m* and *n*, and by this means the forward or rearward motion of the sleeve S causes a turning motion of the arm N, and thereby either an expanding or contracting motion of the friction-band L.

W W represent the dogs or tappets of the planer slide or bed B, which has a dovetail or properly shaped groove, *d*, in which the dogs are readily adjusted and secured. The reversing-lever in the case of applying this invention to a shaping-planer, as shown, has an assistant intermediate lever, X, which is pivoted upon the frame A and has two arms. one of which projects across the groove *d* to receive the motion from the dogs W, and the other arm to transfer their motion over to the reversing-lever, which engages said arm by a tooth, *f*, passing into a slot, *g*, on said latter arm.

The reversing-lever is constructed with three arms, *u*, *v*, and *w*, and has its fulcrum-bearing or hub Y arranged and fitted upon the end of the shaft H of the gear G, which for this purpose properly projects out from the frame, and has a fixed collar, *x*, close to the frame, and a threaded end with a screw-nut, *y*, at its extremity, and the hub Y is faced smoothly and furnished with proper leather friction-washers on its ends, and said nut *y* furnished with a metal washer, so that by said nut *y* a suitable friction is caused on the hub of this lever, and by this means the motion of the shaft H causes the lever to become somewhat locked or rigid to maintain with certainty its position after every change. The arm *u* of said lever is pivoted to the link *h*, the arm *v* has on its extremity the tooth *f*, and the arm *w* carries a knob or handle, Z, to operate the reversing-lever by hand. The reversing-lever U is journaled loosely upon the rotating shaft H. By means of the nut *y*, the washers, and the collar *x* a frictional contact is secured between the shaft H and the hub Y of the reversing-lever; hence as soon as the reversing-lever U and lever X have been placed or moved by the tappet, at the termination of the stroke of the planer-slide, they are constantly pressed and held to and in that position, as if held by the operator's hand, until the succeeding tappet near the next determination of the stroke causes the succeeding movement of said lever and reversing-lever to the position proper for the

return of said slide. The motion and change of position of said levers are entirely effected by their contact with the tappets. The frictional contact of the proper moving shaft H may have become very minute by wear, but be still sufficient to place back the levers X and U in case they had been jarred loose from their position proper. If said levers were held by minute friction with a dead or stationary part of the machine and became jarred loose from their position, they may not return to the proper position, and the machine may in consequence stop its operation on the following stroke.

It will be observed that instead of attaching the link *h* to turn the sleeve S therewith, the said link may be attached to the bush Q, which in this case is made to turn loose in the frame A, and in such case the said sleeve is held from turning by a suitable stud secured on the frame, on which the said sleeve may slide.

There may be other modifications used as a medium expanding and contracting mechanism from the reversing-lever U to the friction-band L.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with the slide B of a planer and its tappets W W, the belt-pulleys C D and the reversing-lever U, the rims J and K, the double-acting friction-band L and its expanding and contracting devices described, substantially as and for the purpose herein set forth and shown.

2. The arrangement and combination of the slide B, its tappets W W, its rack-bar F, and gear G and shaft H, with the reversing-lever U, its friction-hub Y, and washers and screw-nut *y*, described, and to operate substantially as and for the purpose herein stated and shown.

3. The combination of the slide B, its tappets W W, the shaft H, the rack-bar F, and gear G, the pulleys C and D, the rims J and K, with the reversing-lever U, the clutch S, the grooved bush Q, the spiral slotted arms M and N, the stud V, the collar *k*, the groove *j*, the roller *q*, and the friction-band L, substantially as and for the purpose herein mentioned and shown.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 10th day of September, 1883.

CHAS. A. JUENGST.
GEO. JUENGST, JR.

Witnesses:

R. BOEKLEN,
P. ALEXANDER.