(No Model.) 2 Sheets—Sheet 1.

# J. F. WELCH.

## WOOD PLANING AND SAWING MACHINE.

No. 262,167. Patented Aug. 1, 1882.

*Fig. 1.*

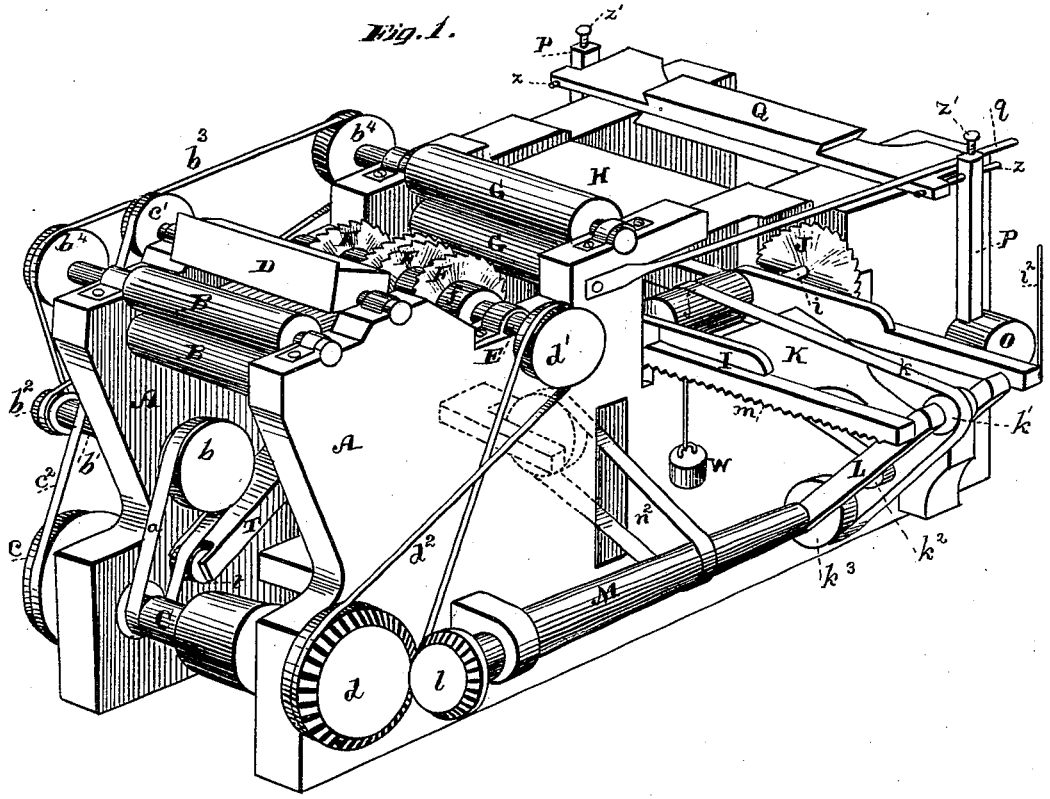
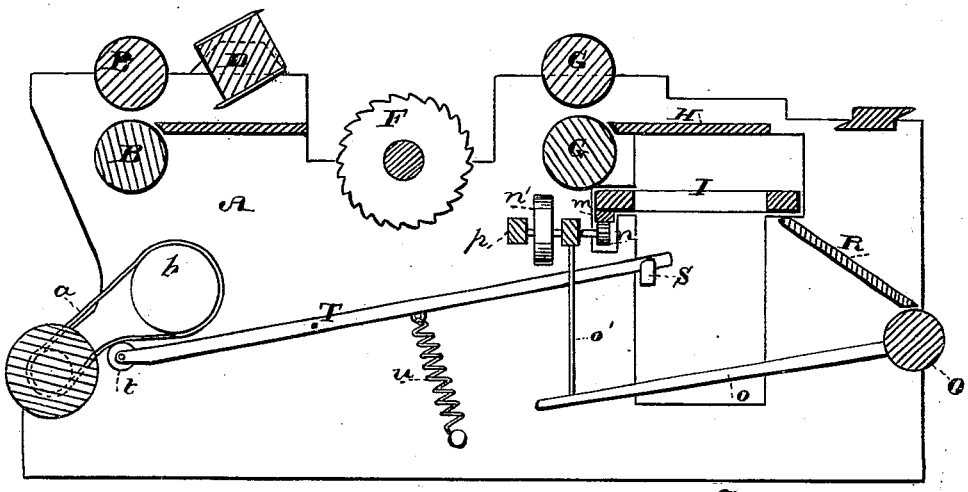



*Fig. 2.*

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(No Model.) 2 Sheets—Sheet 2.

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## WOOD PLANING AND SAWING MACHINE.

No. 262,167. Patented Aug. 1, 1882

*Fig. 3.*

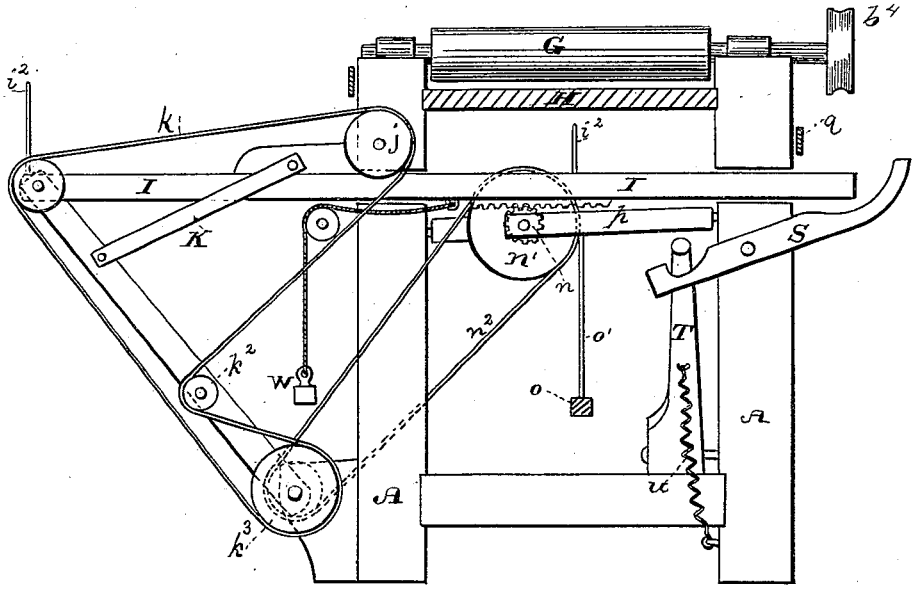
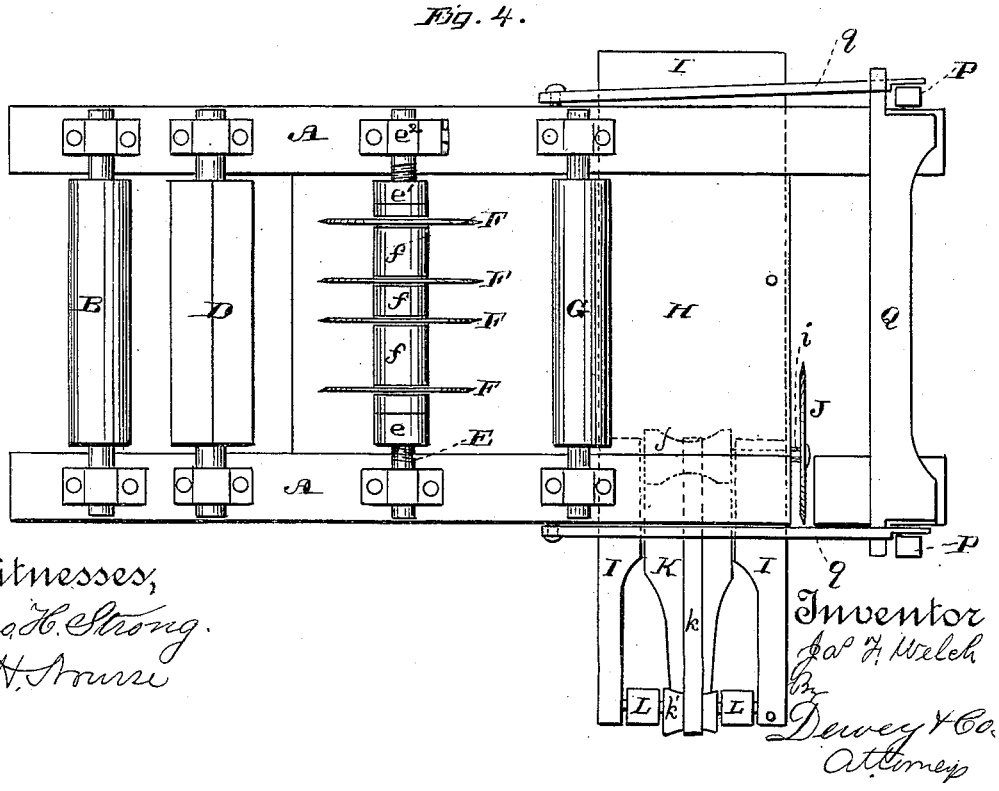



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

JAMES F. WELCH, OF GLOBE, ARIZONA TERRITORY.

## WOOD PLANING AND SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 262,167, dated August 1, 1882.

Application filed April 18, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. WELCH, of Globe city, county of Gila, Arizona Territory, have invented an Improved Wood Planing and Sawing Machine; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in wood-working machines; and it consists in sundry specific details of construction and arrangement, as hereinafter fully described, and precisely pointed out in the claims, reference being made to the accompanying drawings.

Figure 1 is a perspective view of my invention. Fig. 2 is a longitudinal vertical section. Fig. 3 is a transverse vertical section. Fig. 4 is a top view.

Let A represent the frame of the machine, in the top of which are journaled the ordinary feed-rollers, B. These, though I have not deemed it necessary to show minutely, will be provided with the various devices used upon feed-rollers—namely, means for raising and lowering, expansion feed-gear, pressure-bars, &c. I have here shown them as driven by a belt, *a*, from the driving-shaft C to a pulley, *b*, on the inside of the frame. Pulley *b* is on a shaft, *b'*, passing through the frame and provided with a pulley, $b^2$, from which a belt, $b^3$, passes to a pulley, $b^4$, upon one of the feed-rollers and transmits power to said feed-rollers.

Journaled in the frame A, beyond the feed-rollers, is the planer or surfacer head D, in the construction of which there is no novelty, it being an ordinary device in common use. It derives power directly from the driving-shaft C by means of the pulleys *c* and *c'* and the intermediate belt, $c^2$. In the frame A, beyond the surfacer or planer, is journaled a shaft, E, upon which are the circular saws F, so set as to rip the lumber as it passes over them from the surfacer. These saws may be set at different distances from each other, in order to be adjusted to rip up the lumber to any desired width. This is done by having them loose upon the shaft and having a number of sleeves, *f*, of different lengths between them.

Upon the shaft near one journal is a collar, *e*, rigidly secured. The first sleeve *f* may press directly against this collar; or there may be intervening washers. Upon the other end of the shaft E is a nut, *e'*, the impingement of which against the sleeve next to it holds all the saws and intervening sleeves in place. One of the journals $e^2$ of the saw-shaft E is made with a hinge, so that said shaft may be raised from its bearing for the removal of any of the saws or sleeves and the adjustment of said saws by the substitution of other sleeves of suitable lengths. Thus the saws may be so placed as to cut into any desired widths the lumber which passes over them from the surfacer-head. Motion is here shown as being transmitted to said gang of saws by means of a pulley, *d*, upon the end of the driving-shaft C, a pulley, *d'*, upon the said shaft E, and an intermediate belt, $d^2$.

G represents a second set of feed-rollers, journaled in the frame A back of the gang of saws. They are driven by the same belt which drives rollers B.

H is a cross-board of the frame, upon which the lumber passes after leaving feed-rollers G.

In the side of frame A are made openings, in which a table, I, is placed transversely, its ends projecting upon both sides. One end of this table is forked or cut out, and has journaled upon it a shaft, *i*, which carries a saw, J. This saw is upon the side of the table I, and in such position that by the movement of the table, hereinafter described, it travels across the frame along the back edge of the cross-board H, and its teeth project far enough above said board to come in contact with and by their revolution cut off the lumber which passes over said board.

Between the forked ends of table I is journaled a lever, K, the outer end of which is pivoted to a double standard, L, which is itself journaled at its lower end upon a horizontal side shaft, M. By this construction the table I is adapted to travel back and forth across the frame and to carry its saw across the work. In order to give it this motion I have the following: The pulley *d* upon the driving-shaft is provided with cogs, which mesh with a gear, *l*, upon the end of the shaft M. The side of

the table I is provided with a rack-bar, *m*, which meshes with a pinion, *n*, within the frame, and which is driven by a pulley, *n'*, and a belt, $n^2$, from the horizontal shaft M.

Motion is transmitted to the cut-off saw J as follows: Its shaft *i* is provided with a pulley, *j*, from which a belt, *k*, passes over a pulley, *k'*, in the top of swinging standard L, a pulley, $k^2$, lower down, and a pulley, $k^3$, upon horizontal shaft M. In operating the cut-off saw J to cut the lumber into required lengths it is necessary to provide for the timely movement of the swinging table I, and also to stop the feed-rollers, so that the lumber will cease to be advanced while the saw is operating.

The first provision is made as follows: In the back of the frame A, near its lower part, is journaled a shaft, O, having an arm or lever, *o*, projecting forward from about its center. The driving-pinion *n* is journaled in a bracket, *p*, the ends of which are pivoted in the sides of the frame, by means of which it may be rocked to cause its pinion to engage with the rack *m* or to throw it out of gear. The end of the arm *o* is connected with this rocking bracket by a rod, *o'*, and will be affected by its movement caused by the rocking of the shaft O. The shaft O has two vertical arms, P, one upon each side of the frame A. The upper ends of these arms extend above the top of the frame, and are engaged by the notched ends of spring-arms *q*, attached to the sides of the frame, as shown. These spring-arms hold the arms P in such position that the shaft O causes the pinion *n* to engage with the rack, though by the weight of the attached parts the said pinion is normally disengaged from the rack-bar.

Upon top of the frame A is a stop, Q, adapted to slide slightly thereon. It is secured to the upper ends of arms P. Upon the table I are two pins, $i^2$, which, when the table is moved across the frame, are adapted to come in contact with the spring-arms *q* and to move them to one side to disengage arms P. These devices will be better seen by explaining their operation: The table I is supposed to extend out to one side, in which position its saw is not near the lumber. When the lumber strikes the sliding stop Q it moves it forward. This moves the arms P and causes the shaft O to rock, which, as before shown, throws pinion *n* in gear with rack *m*, and the table I is then caused to travel with its saw across the frame, thus cutting off the lumber. The springs *q*, by engaging with the arms P, hold the pinion in gear until the pins $i^2$ upon table I disengage them and the stop Q returns to its place and the pinion is disengaged by the reverse rocking of the shaft O. The cut-off pieces of lumber drop down a chute, R, out of the way. The table I is then returned by means of a weight, W, which is attached thereto by a cord passing over suitable pulleys. When the table I is thrown in gear, as just described, and begun to move across the frame, its farther end strikes and pushes down a lever, S, pivoted to the frame. This lever has its inner end under a long lever, T, pivoted to the inside of the frame, and extending forward. It carries in its forward end a pulley, *t*, which presses against the belt *a* from the driving-shaft C to the pulley *b*, and which, as before shown, transmits power to the feed-rollers. This pulley serves the purpose of a tightener, and is held against the belt by the spring *u*, which is attached to the frame and to the lever T. Therefore when the table I presses down lever S the latter raises the rear end of lever T, causing its forward end to be depressed, which movement withdraws the tightener-pulley *t* and allows belt *b* to lie slack, thereby ceasing to transmit power to both sets of feed-rollers. By this means the progress of the lumber is stopped to allow the cut-off saw to travel across the work; but as soon as the table I returns, the lever S being relieved, the tightener *t* again renders operative the belt *b* and the feed-rollers again advance the lumber.

In order to vary the length into which the lumber may be cut, I have but to adjust the stop Q so that the distance between it and the cut-off saw will be increased or diminished. This may be done in any suitable manner; but I have here shown the following: The stop Q is secured to the upper ends of arms P by rods *z* passing through said arms and set by screws *z'*. By loosening these screws the stop may be set at a point between the saw R and the arms P, and by slipping the rods out and putting the stop upon the other side of the arms the distance between it and the saw may be increased indefinitely.

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

1. In a wood-working machine, the planer or surfacer D and the gang or set of ripping-saws F, in combination with the cutting-off saw J and the means for revolving said saw and causing it to travel across the work, consisting of the table I, upon which said saw is journaled, lever K, standard L, rack *m*, and pinion *n*, shafts C and M, gears *d* and *l*, pulleys *j k' k² k³ n'*, and belts *k* $n^2$, substantially as herein described.

2. In a wood-working machine, the planer or surfacer D and the gang or set of ripping-saws F, in combination with the cutting-off saw J, traveling table I, with its rack *m*, and the means for automatically throwing said table in and out of gear to cause it to travel with the saw across the work, consisting of the sliding stop Q, spring-arms *q*, arms P, rocking shaft O, arm *o*, rod *o'*, rocking bracket *p*, pinion *n*, and the returning-weight W, substantially as herein described.

3. In a wood-working machine, the feed-rollers B and G, driven by means of the driving-shaft C, pulleys *b* $b^2$ $b^4$, and belts *a* $b^3$, the planer or

surfacer D, and gang or set of ripping-saws F, in combination with the cut-off saw J and traveling table I, operating as shown, and the means for stopping the feed-rollers B and G to allow the cut-off saw to accomplish its work, consisting of the lever S, affected by the movement of table I, and the lever T, with the spring *u* and tightener-pulley *t* in contact with the driving-belt *a*, and operating to stop said belt when removed therefrom, substantially as herein described.

In witness whereof I hereto set my hand.

JAMES F. WELCH.

Witnesses:

G. S. VAN WAGENEN,

E. F. KELLNER.