

Sheet 1-2 Sheets.
S. C. & W. W. Hurlbut,

Resawing Machine,

No. 13,618.

Patented Oct. 2, 1855.

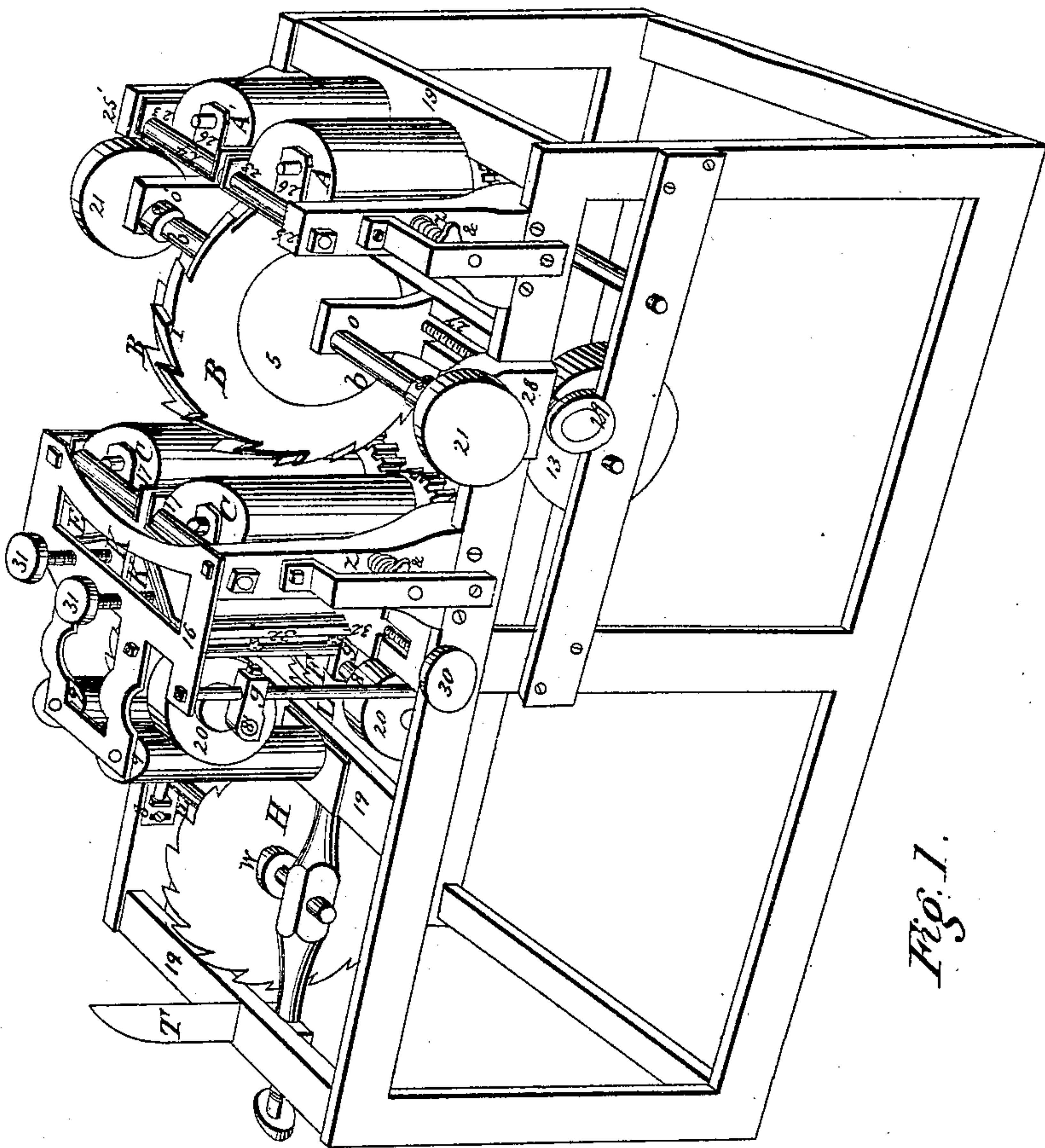


Fig. 1.

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Resawing Machine,

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Fig. 2.

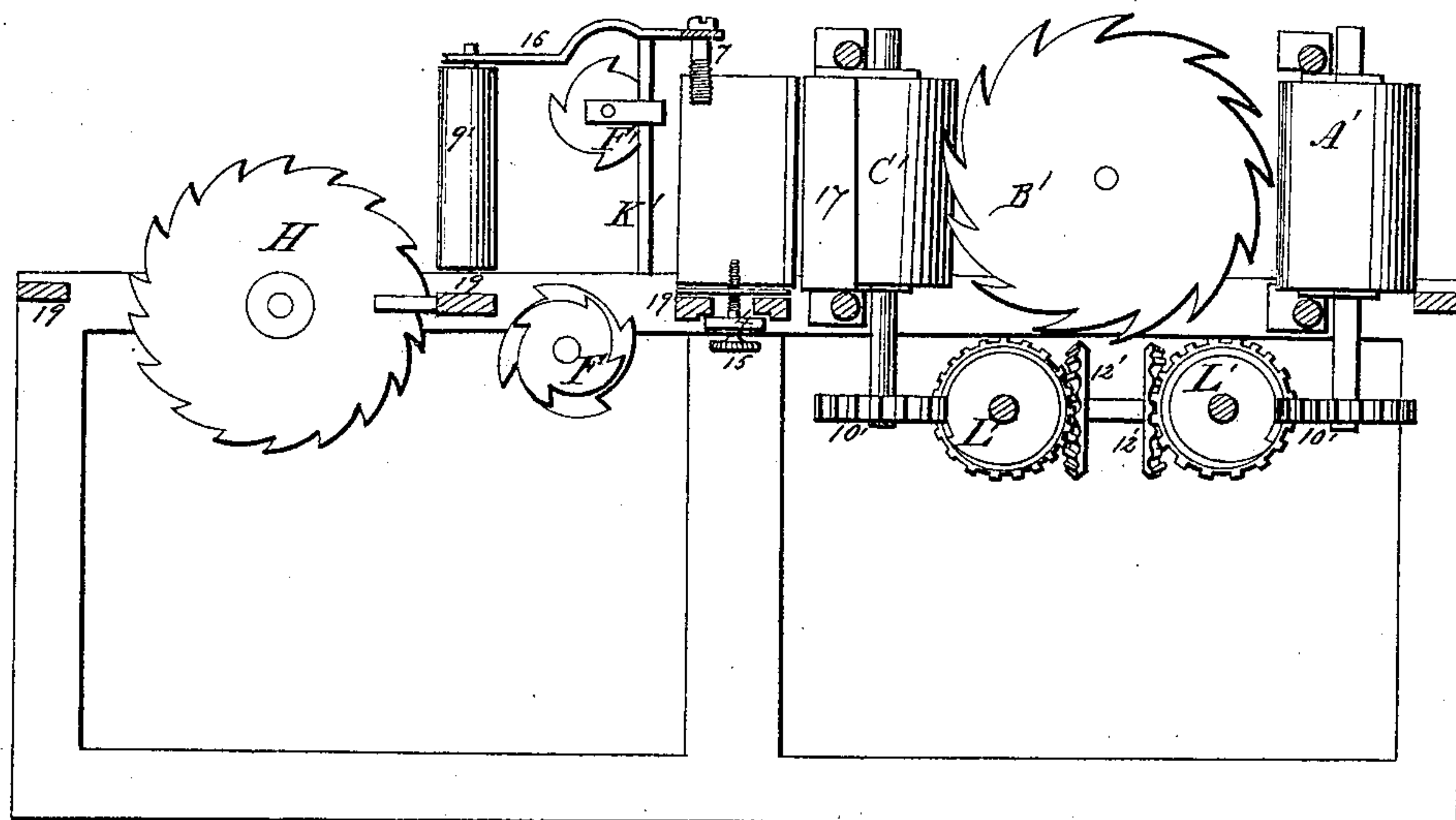
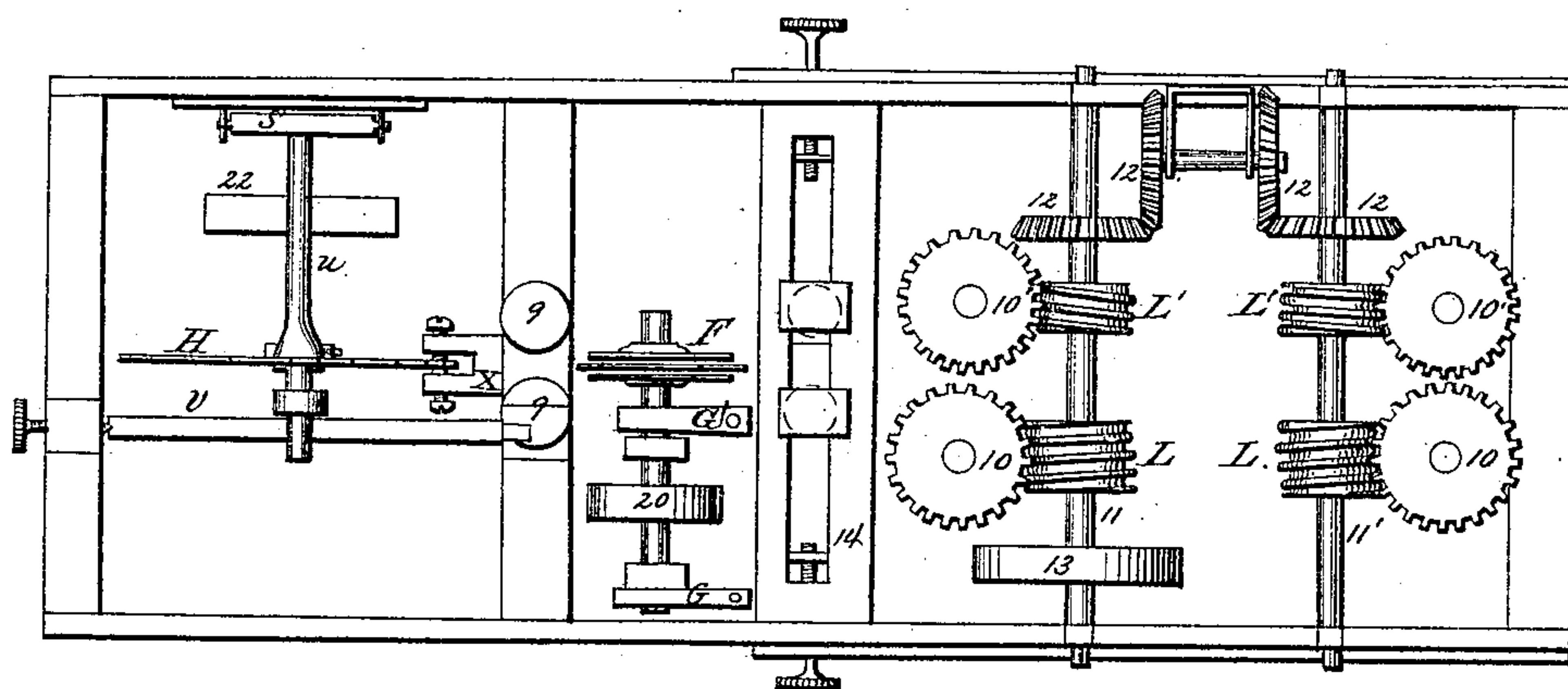


Fig. 3.

UNITED STATES PATENT OFFICE.

S. C. HURLBUT AND W. W. HURLBUT, OF BOONVILLE, NEW YORK.

FEED-MOTION FOR PLANING-MACHINES, &c.

Specification of Letters Patent No. 13,618, dated October 2, 1855.

To all whom it may concern:

Be it known that we, SETH C. HURLBUT and WESTEL W. HURLBUT, of the town of Boonville, in the county of Oneida and State of New York, have invented a new and useful Machine for Planing, Resawing, and Tonguing and Grooving Boards, Planks, and other Lumber; and we 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 this specification, in which—

Figure 1, is a perspective view, Fig. 2, a vertical section of one half of the machine, and Fig. 3, a longitudinal view, intended to show the gearing and some other parts of the machine.

Like letters and figures refer to the same parts of the machine.

The operative parts of the machine, are mounted upon a frame about eight feet in length, three feet wide and two and one half feet high, consisting of two side bars extending the whole length as above and connected by four or more cross-bars, the whole being supported by six posts or legs, and may be constructed of wood or iron, the dimensions, however being governed by the nature of the business to be performed, by the machine.

Letters A, A' in Fig. 1, are feeding rollers, of iron, about eight inches in diameter, and of sufficient length to admit of boards of such width as may be desired, being passed between them, and are placed side by side, standing perpendicularly, with their base or lower ends, level with the top of the frame above described, and are held in their proper positions by means of shafts 22, 22' one of which passes downward through the center of each roller, and has suitable bearings 26, 26' above and below the ends of the rollers in which they revolve.

The rods 24, 24' pass through the plates, 23, 23' which are connected to the bearings of the feed rollers, 26, 26', said rods passing back of, and at right angles with the shafts of the feed rollers, A, A' and are secured at their ends, by means of a nut and screw on each end against the outside of the upright standards 25, 25' through which they pass, both above and below the ends of the feed rollers, A, A'. The plate 23' as seen on the farther side of the machine, extends downward and forms the bearing on the lower

rod, in the same manner as its upper end on rod 24'. The roller A' on the farther side of the machine, may be adjusted by means of a screw, passing through the standard 25' into the plate 23' and thereby moving the roller A' in either direction lengthwise of the rod 24' and holding it in a proper position. This roller above described should be smooth on its surface, and the roller A, on the front side of the machine, has its surface fluted lengthwise, and is adjusted by means of the spiral spring 3, passing through the standard 25, and pressing against the plate 23, thereby holding the roller A, sufficiently firm against the board to carry it forward when in motion. The spring 3, may be tightened or liberated by turning the nut &c. on the screw or rod passing through lengthwise of the spring 3.

B, B' are circular saws the diameters of which, should each exceed the length of the feed rollers A, A' about one fourth and are placed directly back of the rollers A, A'.

The shafts of the saws *b*, *b'* are raised above the top of the frame, allowing the lower edge of the saws to remain two inches or less below the level of the top of the frame.

The saw B, on the front side of the machine, should be one fourth inch or more in thickness, and hung at the extreme end of its shaft *b*, by means of screws passing through the saw into the collar 5, which is securely attached to the shaft 6, by means of a key or otherwise, thereby leaving the entire surface of the saw, on its side opposite the collar 5, smooth and admitting of nearly its whole diameter being used at the same time. The teeth of the saw are all set toward the smooth side, and are filed with the edge or point on that side the longest to prevent the saw being crowded from the board.

Back of the saws B, B' are arranged and secured in the manner as above described with their smooth sides placed toward each other, there being in each saw at 1, 1' a tooth sharpened in the form of a chisel, which serves to partly smooth the sides of the nearest board or plank.

The shafts, *b*, *b'* are each hung and adjusted as follows:

27, is a slotted bar extending across the frame of the machine, directly under the center of the saws B, B' the top of which is below the top of the frame.

O, is an upright standard, through which the shaft, *b*, passes and which forms its bearing nearest the saw B.

The saw, B, is adjusted for dressing different thicknesses of lumber, by drawing the bearing, O, to the desired position, on the slotted bar 27, by means of the screw, 29, and is secured by a nut and screw on its lower end, on the under side of the slotted bar, 27.

28, represents the bearing supporting the outer end of the shaft 6, and is fastened to the side bar of the frame by means of bolts.

21, 21' are pulleys on the shafts *b*, *b'* which receive the belts for driving the saws B, B'.

C, C' are a second pair of feed rollers, the surfaces of which are smooth, and are, in all other respects of the same dimensions, and are arranged and adjusted in the same manner as the rollers, A, A' before described.

17, 17' are plates which form the bearings on the upper and lower rods supporting the rollers C, C' the same as at 23; on rod 24, and extend backward on a line with the sides of the rollers, C, C' nearest to each other, nearly to the edges of the knives or stationary plane-irons, E, E' serving as, or forming self-adjustable throats to the same, and preventing the grain of the wood from being raised, as the shavings are removed from the board by the finishing planes E, E', which are arranged as follows:

The stocks, K, K' to which the plane irons E, E' are attached are of iron, of equal length with the above described feed rollers, and are placed upright upon the slotted bar, 14' which extends across the frame of the machine. Each of the stocks, K, K' are adjusted or moved lengthwise of the bar 14' by means of the screws as seen at 30, passing through the side bar of the frame, into a nut attached to the lower end, of each of the said stocks, and are secured in their proper places, by means of screws or bolts passing upward, through a sliding block on the under side of the slotted bar 14, into the stocks of the knives K, K' which are fastened directly opposite to each other, and are held at their upper ends, by screws 31, 31' passing downward through the cross bar of the frame, 16, which is attached to the top of the upright standards, which support the rollers C, C'.

The knives E, E' and their respective caps, or additional parts, forming each a double plane-iron, are of the same length of the stocks K, K', and are secured to them by means of bolts passing through both the knife and cap, into the stock, and are set or adjusted for operation by means of set-screws against their back edges, as seen at 32.

Directly back of the knife stocks, K, K', are F, F', each of which is composed of three or more circular saws, which are se-

cured to their respective shafts 8, 8' by means of collars and nuts in the usual method of attaching circular saws to their shafts.

The saws above mentioned are eight inches or more in diameter, and by placing in one of the combinations, the center saw of larger diameter than each of the others, and in the other combination, one of a less diameter, the tonguing and grooving, is performed, or the edges of the board or plank may be dressed plain or irregular in form, by properly adjusting, or changing the saws when desired.

The shafts 8, 8' have bearings through which they pass, as *g*, *g'* on the perpendicular rods L, L', which are attached at their lower ends, to a plate projecting from the under side of the slotted bar 14, and are secured at their upper ends by passing through the frame 16. The shaft 8' is fastened at the desired height by means of set-screws, through the boxes or bearings, *g*, *g'* against the rods, L, L' on which they may slide.

20, 20' are pulleys on shafts 8, 8' by which they are driven.

9, 9' are rollers of the same length as the feed rollers above described and of about one half their diameter being placed directly back of the matching saws F, F' to serve as guides to the board as it approaches the splitting saw H, which is an ordinary circular saw, of sufficient diameter to split boards of such width as may be desired, either square or diagonally for clap-boards, or other purposes.

The saw is secured to its shaft in the ordinary manner, and the end of the shaft *u*, together with the self-adjusting box or bearing, S, may be raised and held in the position required, by means of screws or bolts through the slotted bar on the inner side of the frame, as seen near S. The bearing at the opposite end of shaft *u*, is also self-adjustable, being hung on centers, or a point at each end, on which it may revolve.

The saw, H, is brought into line with the center of the board to be split by means of the movable collars W, permitting the shaft U, to be moved lengthwise in its bearings, and held in its proper place by fastening the movable collar with a set-screw on the shaft, against the bearing of the shaft.

T represents a wedge to open the boards after being split, and to prevent their being caught, by the teeth of the saw.

Letter, X, in Fig. 2, represents a guide, through which the edge of the saw, H, runs, and is placed below the board, 22, in same figure, represents the pulley, on shaft, U, by which the saw, H, is driven.

In Fig. 1, the rollers, A, A', C, C' and, 9, 9', are leaned slightly, in the direction of the saw, H, thereby tending to confine the

board, down onto the bed of the machine 17, 17, 17, in its passage through the machine.

Fig. 2, shows the manner of gearing the feed rollers, A, A' and C, C', and conveying motion to them.

10, 10' and 10, 10', are spiral or spur gears, on the shafts of the feed rollers, as seen in Fig. 3, A, and C.

L, L' and, L, L', are worm wheels on the horizontal shaft, 11, 11', with right and left hand threads, by which the feed rollers, A, A' are turned in opposite directions, likewise, C, C', in the same manner and each acting to convey the board through the machine. The worm-wheels, L, L, are of sufficient length on the shafts, 11, 11', to admit of the rollers A, A' and, C, C', being moved apart, to admit of, or receive, planks if desired of any thickness, and still remain in gear, thereby removing the necessity of changing the gears of feed rollers to planing machines, when different thicknesses of lumber are to be dressed.

12, 12', and, 12, 12' are miter gears, by which motion is communicated from shaft 11, to 11' giving motion to the feed rollers, A, A'.

13, is a pulley on shaft 11, and receives the belt, giving motion to the rollers.

14, is a view of the slotted bar or bed plate, before mentioned, to which the plane stocks, K, K' are attached, and the manner of fastening them more plainly shown in Figs. 2 and 3.

The speed or motion of the several operating parts of the machine, should be nearly as follows: The cutting saws, B, B' which reduce the board to a uniform thickness, should revolve, eight hundred or more times per minute. The combined saws, F, F', should make nearly twice the number of revolutions of the saws, B, B' in the same time. The splitting saw H, may be driven at the rate of one thousand revolutions per minute or upward, and the pulley, 13, may be driven with sufficient speed, to turn the surfaces of the feed rollers, A, A' and, B, B' at the rate of thirty feet per minute.

After putting the machine in motion as above described, the board or plank is entered, edgewise between the feed rollers, A, A', with its lower edge resting upon the bed of the machine, as seen at 19. The saws, B, B' being properly adjusted, reduces the same to an even thickness as it is carried between them, by the rollers, A, A'. The rollers, C, C' next receive the board after it passes the saws, B, B' and assist in carrying it between the smoothing planes E, E', each of which being properly adjusted, finishes the surface of the board next to it. The

board after passing between the planes, is dressed upon its edges, by the saws, F, F', which by being arranged as above described, may tongue and groove the edges of the board, or by changing the saws in the combinations F, F', the edges of the board may be dressed plain or irregular as desired. The shaft 8', having been raised to its proper position, as before described. The board next passes between the guide rollers, 9, 9', and is split or resawed, diagonally, by, previously adjusting the saw, H, as before described.

The machine may be used for dressing lumber on one side only, when desired, and may be adjusted for that purpose as follows: The saw B' on the farther side of the machine, may be drawn back from the line of the rollers, A' and C', by means of the screws before described, and remains inactive. The saw B, on the front side of the machine being in motion reduces the board to an even thickness. The smoothing plane E' on the farther side of the machine is drawn back, and its stock, K', is set upon a line with the bearings of the rollers A' and C', against the board. The saws, F, F', having been arranged for tonguing and grooving the edges of the board or plank, saw H, and the wedge T, are then removed, or drawn toward the farther side of the machine, the saw H, remaining inactive.

The saw B', as described, on the farther side of the machine, is one of ordinary thickness, and is used only to smooth the surface of the board on the side next to it. The saw on the opposite side of the board, and on the front side of the machine is made thicker, and not only serves to smooth the surface of the board on the side next to it, but its extra thickness is needed to remove from the board, all unevenness which may be encountered by it.

What we claim as new and as our invention or improvement in the above described machine and for which only we desire to procure a patent is as follows:

The application of the worm-wheels, in connection with the spur-wheels, attached to the shafts of the feed-rollers, to effect their proper revolution, and to admit of their opening apart to receive various thicknesses of lumber as above described. This application we claim as novel, and as our invention in connection with the feed-rollers of a planing machine.

SETH C. HURLBUT.
WESTEL W. HURLBUT.

Witnesses:

DEXTER GILMORE,
E. J. STODDARD.