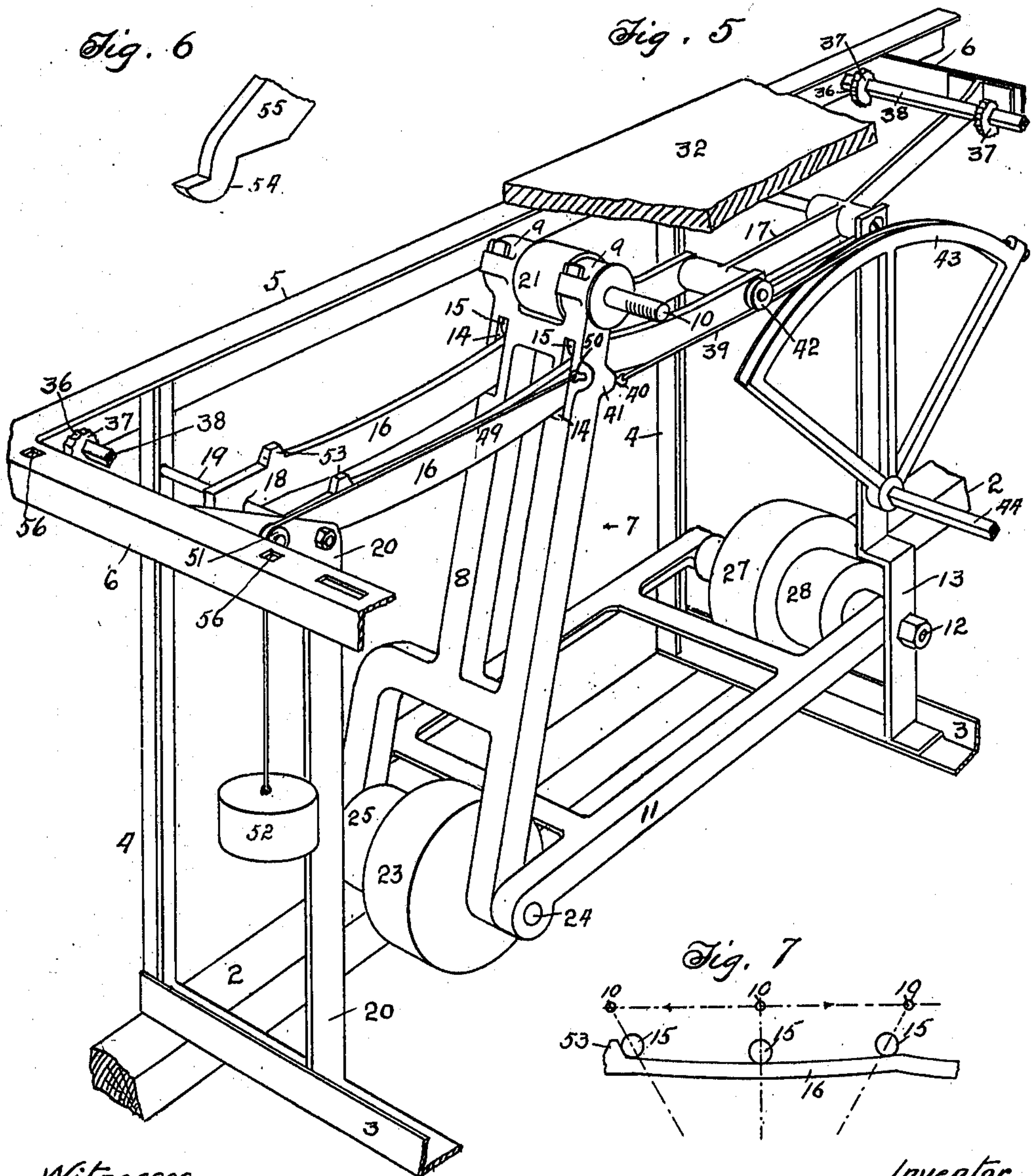


C. S. LEMON.
ADJUSTABLE CUTTING APPARATUS.
APPLICATION FILED MAR. 8, 1911.

993,607.

Patented May 30, 1911.

2 SHEETS—SHEET 2.



Witnesses

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ADJUSTABLE CUTTING APPARATUS.

993,607.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES S. LEMON, a citizen of the United States of America, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a certain new and useful Adjustable Cutting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to adjustable cutting apparatus, and it may be said to consist in the provision of the novel features and in the novel and improved construction, arrangement and combination of the parts, members and devices in the apparatus, as will be apparent from the description and claims hereinafter.

Objects of the invention are to provide improved apparatus of the class specified which is portable, simple in construction and economical to manufacture, light and strong, easy to adjust to adapt it to perform different classes of work, effective in action, and possessed of novel features which give it superiority over existing apparatus and which make it practical and marketable.

Another object of the invention is to provide novel and improved means whereby the arbor of the rotary cutter may be arranged for movement either in a substantially horizontal direction at right angles to its axis, or in a substantially vertical direction, as may be desired.

A further object of the invention is to provide novel and improved means easily adjustable to raise or lower the table to the desired degree.

Other objects and the advantages of the invention will be apparent to those skilled in the art from the following description of the preferred form of construction for the apparatus embodying it, when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus with the rotary cutter arbor arranged to travel horizontally; Fig. 2 is a similar view, partly broken away, the rotary cutter arbor being arranged to travel in a vertical direction; Fig. 3 is an elevation of the brace used when the rotary cutter is operated in a vertical direction, the brace being shown detached; Fig. 4 is an enlarged detail in elevation of one of the cams used in raising and

lowering the table; Fig. 5 is a partly broken away perspective view of the apparatus, the cutter arbor being arranged to operate in a horizontal direction; Fig. 6 is an enlarged perspective detail of one of the lower ends of the brace shown in Fig. 3; Fig. 7 is a diagrammatic view illustrating the manner in which the cutter arbor is caused to travel in a horizontal direction.

The supporting frame of the apparatus, preferably mounted on sills or skids 2 may consist of crosspieces 3 (Fig. 5) attached to the sills or skids, uprights 4, longitudinal members 5 thereon, and crosspieces 6 connected between the longitudinal members. The cutter mounting 7 may comprise a swinging frame 8 having at its upper end bearings 9 wherein is mounted the cutter arbor 10; the lower end of the frame 8 being pivotally connected to a second swinging frame 11 which has its end remote from frame 8, pivotally mounted on a shaft 12 which may be supported at one end by one of the uprights 4 and at the other end by intermediate upright 13. In order to cause the cutter arbor 10 to move in a horizontal direction, frame 8 is preferably provided near its upper end with slots 14 having therein antifriction rollers 15 which travel upon curved guides 16 which pass through said slots 14 and are pivotally attached at one end to a brace 17 secured to upright 13 and the adjacent upright 4, and also secured to one of the crosspieces 6 (Fig. 5). The ends of guides 16 remote from those just mentioned are provided with notches 18 which rest upon a short shaft 19 secured to an upright 20 and to the adjacent upright 4. The curvature of guides 16 is such as to compensate for the lowering of the cutter arbor 10 in its approach toward each of its movements owing to the inclination of frame 8 from the vertical (see Fig. 7).

The operative connections between the cutter arbor 10 and the source of power may comprise a pulley 21 upon the arbor 10 which pulley is connected by means of belt 22 to a pulley 23 loosely mounted upon the shaft 24 which forms the pivotal connection between frames 8 and 11. Pulley 23 is rigidly connected to pulley 25 which in its turn is connected by means of a belt 26 with pulley 27 loosely mounted on shaft 12. Pulley 27 is rigidly connected to pulley 28 which is connected by means of belt 29 with a source of power consisting, in this instance,

of an internal combustion engine 30 which may be mounted upon two or more of the cross pieces 3. The pulleys 23 and 25 are preferably formed of aluminum and may be of hollow construction to attain lightness.

The table 31 is preferably formed to have two parts 32 and 33 thereof on opposite sides of the cutter 48 separate and movably mounted on the top of the supporting frame of the apparatus. In order to raise and lower the parts 32 and 33 each may be provided adjacent to its corners with brackets 34 carrying rollers 35 which latter may rest in depressions 36 of cams 37 (see Fig. 4). The general outline of these cams is in the form of a spiral whereby each successive depression 36 around the periphery thereof is disposed at a slightly greater distance than its predecessor from the center of rotation of the cam. The cams at each end of the table may be slidably mounted in common upon a square shaft 38. The shafts 38 have their ends protruding through longitudinal members 5 in a position to be readily engaged by a key or wrench when it is desired to adjust to the desired degree the height of the parts 32 and 33 of the table.

To feed the cutter 48 in making a cut in a horizontal direction the arbor 10 may be moved by means of a cord 39 attached to an eye 40 (Fig. 5) screwed into lug 41 on frame 8. Cord 39 may pass under grooved pulley 42 and may be connected to quadrant 43 mounted upon square shaft 44 which may be rotatively mounted between uprights 13 and 4. Adjacent to upright 4 (Fig. 1) shaft 44 may be provided with a second quadrant 45, preferably of smaller radius than quadrant 43, to which may be attached cord 46 connected to pedal 47. The cutter may be returned to its initial position by means of a weighted cord 49 attached to an eye 50 screwed into lug 41. Cord 49 may pass over grooved pulley 51, preferably attached to upright 20, and have attached to its lower end a weight 52. Guides 16 may be provided with stops 53 to limit the movement of frame 8.

When it is desired to use the rotary cutter in making vertical cuts guides 16 may be disconnected from shaft 19 and raised to a substantially vertical position; cord 49 having been previously disconnected from eye 50. The ends 54 of brace 55 may then be inserted into the openings 56 in cross-piece 6 and the opposite ends 61 of the brace attached to guides 16 by being sprung apart and passed at each side of said guides until the holes 57 in the ends 61 are entered by the ends of bolt 58 passing through guides 16. The ends 61 of brace 55 may then be drawn together by nut 59 upon the bolt 60 which connects the ends 61. A cord 62 of greater length than cord 49 may be attached to eye 50, passed over

pulley 63 and over pulley 51 and attached to weight 52. To compensate for the downward pull by gravity occasioned by the changed position of the parts, there may be provided a retractile spring 64 attached at one end to brace 55 and at its other end to a cord 65 passing over pulley 66 attached to brace 55, said cord passing downwardly to its point of attachment to frame 8.

In the operation of the apparatus, assuming that it is desired to make a cut requiring the cutter arbor to travel in a horizontal direction, the parts may be arranged as shown in Figs. 1 and 5. Engine 30 being set in operation and the table 31 having been adjusted to the desired height by rotating shafts 38, and the work being in position upon the table, pedal 47 may be depressed, thus causing cord 46 to rotate quadrant 45, shaft 44, and quadrant 43, drawing cord 39 toward the right (in the figure), thus moving frame 8 carrying arbor 10 and cutter 48, feeding the latter to the work to the desired extent. Upon release of pedal 47, weight 52, through cord 49, will draw frame 8 toward the left until further movement thereof is limited by the stops 53. It is to be understood that when desired the usual gages may be applied to the table parallel with the cutter and the latter used in the form of a rip saw in the ordinary manner with the frame 8 stationary. In using the rotary cutter for vertical cuts, the parts of the apparatus may be arranged as shown in Fig. 2 and already described. In this use of the cutter, part 33 of the table may be removed and the work supported upon the part 32. The direction of pull of cord 39 being changed from horizontal to vertical by pulley 42, depressing the pedal 47 causes a downward movement of the arbor 10, feeding the cutter 48 through the work from above the same. On release of the pedal 47 the lowered parts may be raised by the descent of weight 52 drawing cords 62 and the retraction of spring 64 drawing cord 65 as has already been described.

While one form of construction in which the invention may be embodied has been illustrated and particularly described, there are various changes and modifications thereof that will readily occur to those skilled in the art, and therefore the right is reserved to all such changes and modifications which do not depart from the spirit and scope of the invention.

I claim:

1. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the second swinging frame, and means to cause said cutter to move in a substantially horizontal direction, said means including

curved guides carried by the supporting frame and rollers carried by the second swinging frame and adapted to travel on the guides.

2. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the second swinging frame, means including curved guides carried by the supporting frame to cause said cutter to move in a substantially horizontal direction, a table movably mounted on the supporting frame, and means adapted to raise or lower said table.

3. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the second swinging frame, and means to cause said cutter to move in a substantially vertical direction, said means including substantially vertically disposed guides carried by the supporting frame and a brace interposed between said guides and the supporting frame.

4. In apparatus of the class specified, the combination of a supporting frame, a table movably mounted thereon, rollers mounted on the table, shafts mounted on the frame, and spiral cams mounted on the shafts, said cams adapted to engage the rollers and provided with depressions on the periphery thereof in which said rollers may rest, substantially as described.

5. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the

second swinging frame, and means to cause said cutter to move in a substantially horizontal direction, said means including curved guides carried by said supporting frames.

6. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the second swinging frame, pivotally mounted guides carried by the supporting frame, rollers on the second swinging frame adapted to travel on said guides, a brace removably interposed between said guides and said supporting frame, and means to operate the second swinging frame.

7. In apparatus of the class specified, the combination of a supporting frame, a shaft mounted thereon, a swinging frame on the shaft, a second swinging frame connected with the first, a rotary cutter carried by the second swinging frame, pivotally mounted curved guides carried by the supporting frame, means to hold the guides in a substantially horizontal position on the supporting frame, means detachably connectable between said supporting frame and said guides to hold the latter in a substantially vertical position, rollers on the second swinging frame adapted to travel on said guides, and means to operate the second swinging frame.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses at Los Angeles, county of Los Angeles, State of California, this 28th day of February A. D. 1911.

CHARLES S. LEMON.

Witnesses:

FRED A. MANSFIELD,
A. H. LIDDERS.