

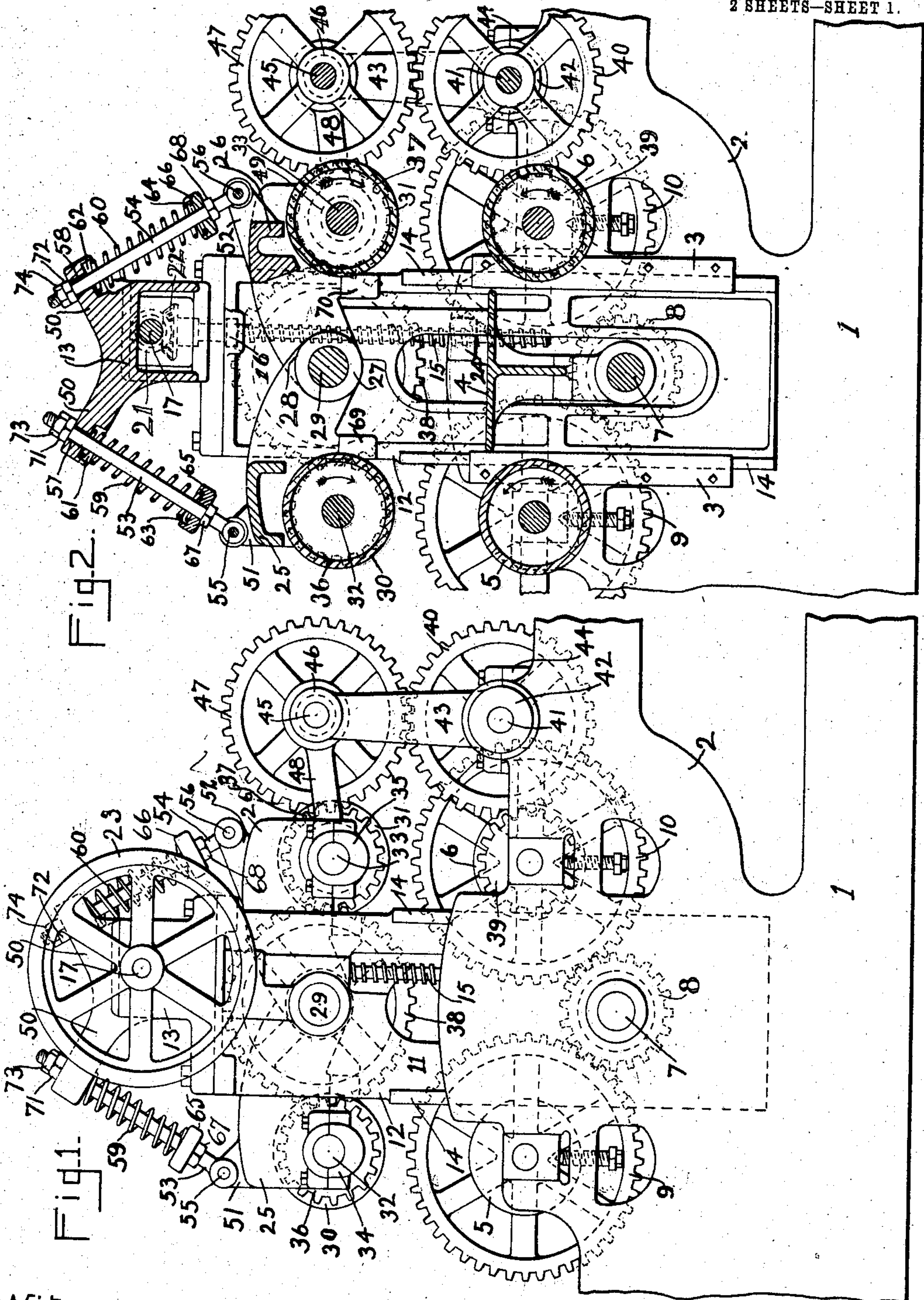
No. 833,858.

PATENTED OCT. 23, 1906.

J. R. THOMAS.
FEEDING DEVICE FOR WOODWORKING MACHINERY.

APPLICATION FILED APR. 2, 1906.

2 SHEETS—SHEET 1.



Witnesses
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Ella Purcell

Inventor.
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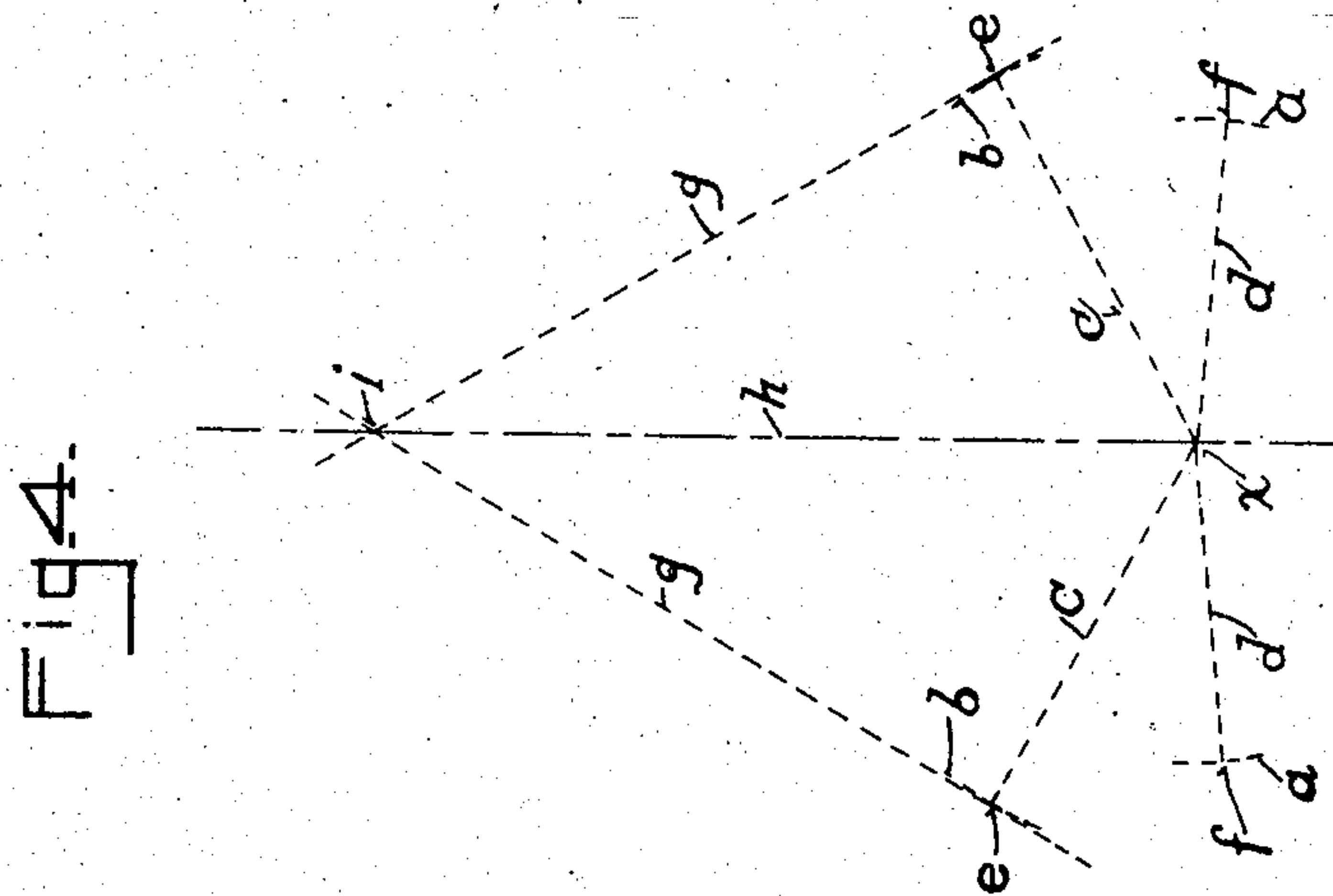
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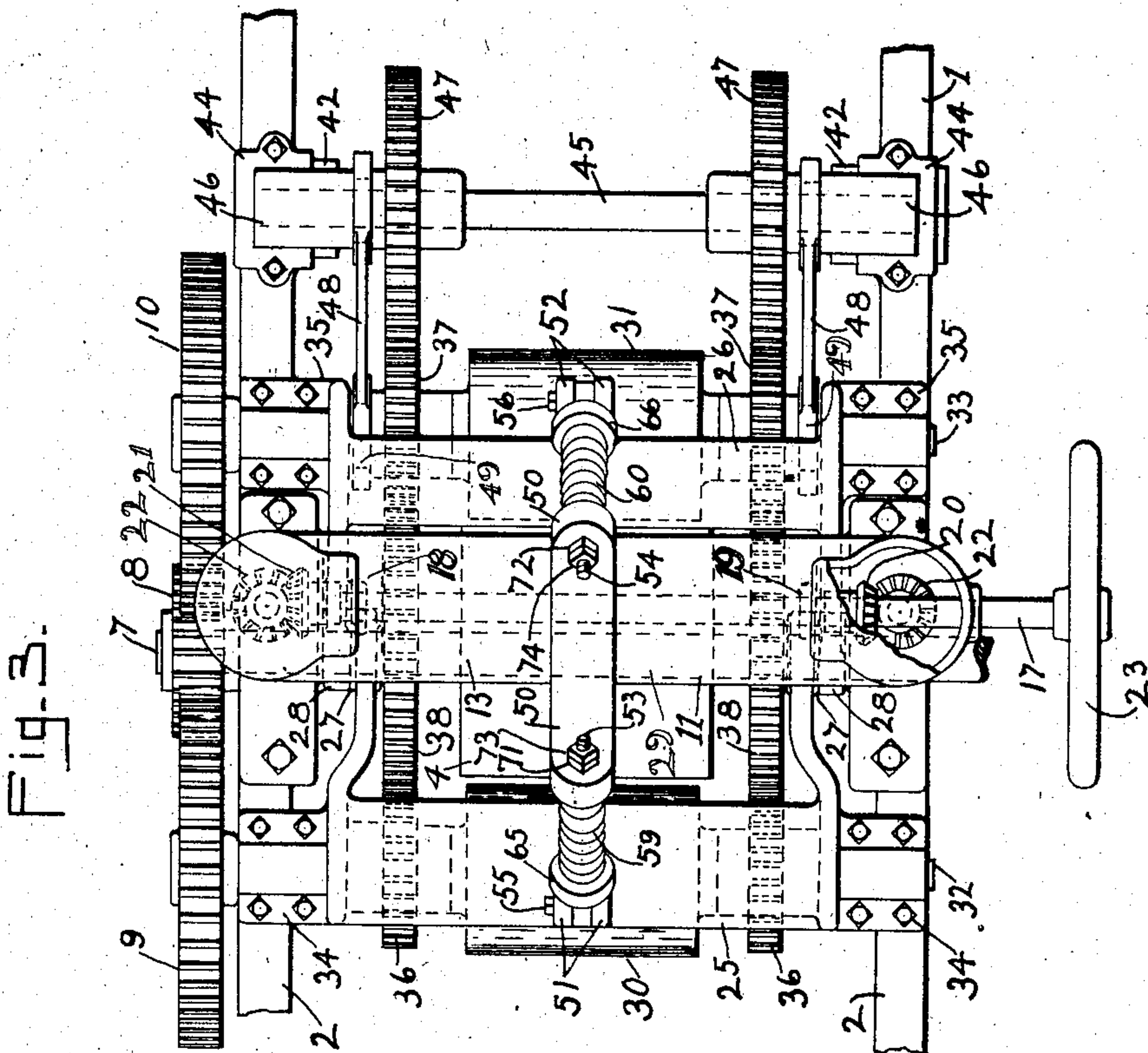
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UNITED STATES PATENT OFFICE.

JOHN R. THOMAS, OF CINCINNATI, OHIO, ASSIGNOR TO J. A. FAY & EGAN COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

FEEDING DEVICE FOR WOODWORKING MACHINERY.

No. 833,858.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed April 2, 1906. Serial No. 309,362.

To all whom it may concern:

Be it known that I, JOHN R. THOMAS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Feeding Devices for Woodworking Machinery, of which the following is a specification.

It is the object of my invention to provide a new and improved feeding device for woodworking machinery having great feeding power and which is very sensitive in its yield to inequalities in the stock, while exerting great pressure upon the stock throughout the various degrees of yield and causing the application of the pressure to be continuous irrespective of any yield to any inequality in the stock. I accomplish these objects by mounting the upper feed-rolls in housings which swing from a common center mounted on a supplemental frame having long sides projected above and below the table or platen of the machine and slidable in long slideways on the machine, the said supplemental frame having a cross-girth connecting the top of its sides; in providing springs which are diagonally disposed between the cross-girth and the outer ends of the roll-housings for magnifying the motion which said housings have at the rotary axes of the feed-rolls and transmitting such magnified motion from the outer ends of said housings to said springs, which springs are so correlated with the housings and cross-girth that upon yield of the rolls the springs are instantly compressed; in providing a pivoted housing backed by a spring whose longitudinal axis intersects the vertical plane of the pivot of said housing outside a circle having a radius equal to the distance from said pivot to the point at which said longitudinal axis meets said housing; and the invention will be further readily understood from the following description and claims and from the drawings, in which latter—

Figure 1 is a side elevation of my improved device. Fig. 2 is a central vertical section of the same. Fig. 3 is a plan view of the same, partly broken away; and Fig. 4 is a diagram view illustrating the movement of my improved device.

1 represents the frame of a machine, which may be a woodworking-machine of any de-

sired kind—such as a planing-machine, a molding-machine, or other desirable machine for the purpose intended—and description of which is not here necessary. This frame comprises sides 2, respectively having long ways 3, extending considerably below the stock-supporting table 4 or platen of the machine.

5 6 are a pair of lower feed-rolls, driven in suitable manner, as from a shaft 7, having a gear 8 thereon meshing with gears 9 10 on the axles of the respective lower feed-rolls 5 6.

11 is a supplemental frame having long sides 12, connected at their tops by a cross-girth 13, the sides being respectively provided with long slides 14, operating in the slideways 3 of the sides of the machine. For adjusting the supplemental frame upon the main frame the former is provided at each side thereof with a screw-rod 15, held against endwise movement therein by a collar 16. A cross-shaft 17 is journaled in bearings 18 19 in said supplemental frame and carries bevel-gears 20 21, meshing with the bevel-gears 22 on the upper ends of the screw-rods 15, a handle 23 being provided for operating the cross-shaft. Each of said screw-rods screws into an internally-threaded lug 24 of the respective sides of the main frame, the manipulation of the screw-rods causing the supplemental frame to raise or lower, depending on the direction in which said cross-shaft is turned.

25 26 are roll-housings, respectively having bearings 27 28, having coincident axes. These bearings are mounted about a stationary shaft 29, thereby being provided with a common axis of swing. Upper feed-rolls 30 31 are respectively mounted on shafts 32 33, respectively mounted in bearings 34 35 in said respective roll-housings 25 26. For driving said upper feed-rolls I have shown them provided at their respective ends with gears 36 37, with intermediate gears 38, meshing with said gears 36 37 and rotated about said shaft 29. The axle of the lower feed-roll 6 is provided at each end thereof with a gear 39, meshing with a gear 40, mounted on a shaft 41, journaled in the hubs 42 of swinging arms 43, which hubs are mounted in bearings 44 in the respective sides of the frame. A shaft 45 is mounted in bearings 46 in the upper ends of said swing-

ing arms and carries at each end thereof a gear 47, respectively meshing with the gears 40 and with the gears 37 at the respective ends of feed-roll 31, a link 48 at each end of said shaft taking about said bearings 46 and studs 49 of bearings 35 of the feed-roll shaft 33 for maintaining mesh between said gears 47 and 37. This construction drives the feed-rolls in the directions indicated by the arrows shown in Fig. 2, the feeding-in sides of the upper feed-rolls being driven down. The expansion-links are shown projected toward the front or feeding-in side of the roll mounted in the housing with which the expansion-link mechanism connects, the pivot of said housing being at the rear or feed-out side of the said roll.

The cross-girth 13 is provided with ears 50, and the respective upper feed-roll housings with ears 51 52. The ears 51 52 are at the outer ends of said feed-roll housings, and the ears 50 preferably project diagonally—i. e., upwardly and outwardly—from the cross-girth. Rods 53 54 are articulated with said housing on bolts 55 56 and take through openings 57 58 in said ears 50. Springs 59 60 take about said rods for exerting pressure upon said housings. They take into pockets 61 62 in the ears 50 and into pockets 63 64 in washers 65 66, taking about said rods and backed by nuts 67 68 for adjusting the position of said washers, and thereby regulating the tension of said springs. The housings normally rest on lugs 69 70 on the sides of the supplemental frame; but, if desired, the downward limit of movement of the upper feed-rolls may be adjusted by threading the upper ends of the rods and providing nuts 71 72 and jam-nuts 73 74 therefor.

For illustrating the operation of my improved device I have shown the diagram view of Fig. 4. In this view x denotes the center of swing of both the roll-housings, and the dotted arcs a indicate the arcs in which the rotary axes of the upper feed-rolls swing. The dotted arcs b indicate the arcs in which the outer ends of the upper feed-roll housings swing at the points where the rods 53 54 are articulated to the same. It will be noted that the radii c of these latter arcs are longer than the radii d of the arcs a , and therefore that pressure applied at e , where the rods meet the housings, need be less than the resistance applied at f —the location of the rotary axes of the upper feed-rolls—for overcoming that resistance. The dotted lines g represent the normal direction of projection of the rods 53 54, and consequently the longitudinal axes or directions of pressure of the springs 59 60. The outer ends of said housings are subjected to slight motion, as the maximum yield of said upper feed-rolls in machines of the character described for which this device is particularly applicable is very slight, the range of such movement in

practice being about two inches, representing a movement in the arcs at the outer ends of the roll-housings of approximately ten degrees, the usual range of yield, however, being only three-eighths to one-half inch, or about three degrees. The springs extend longitudinally away from the circle of swing of the housings.

The longitudinal axis of the spring is substantially tangent to the circle of swing of the outer end of the housing, the said longitudinal axis being normally at substantially right angles to the radius of the arc of swing of said housing at its connection with the rod. The longitudinal axis of said spring intersects the vertical plane h of the pivotal axis of the housing outside the circle of said arc, as see the point i , the longitudinal axes of both springs intersecting said vertical plane preferably at the same point. It will therefore be noted that any yield of the upper feed-rolls is immediately multiplied at the outer ends of the housings and resisted by the direct pressure of the springs exerted longitudinally of those springs without motion being lost between the beginning of the yield and the application of resistance to that yield. As the roll-housings yield the rods 53 54 have movement longitudinally in the openings 57 58. The feed-rolls yield in coincident or concentric circles. My improved construction enables effective pressure to be brought to bear upon thick stock when the cutter-heads of the machine are taking a heavy cut for effectively feeding the stock and also permits thin stock from which a light cut is being taken to be effectively fed without crushing the stock, the construction permitting the feeding device to be accommodated to all conditions.

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

1. In a feeding mechanism for planing-machines, the combination with the main frame, of a supplemental frame adjustable thereon, feed-roll housings having coincident pivotal axes on said supplemental frame, said supplemental frame having a cross-girth, pressure-springs extending diagonally between said cross-girth and the outer ends of said respective housings, the longitudinal axes of said springs intersecting each other outside the arcs having the pivotal axes of said housings as their centers and described through the points at which said longitudinal axes intersect said housings.

2. In a feeding mechanism for planing-machines, the combination, with the main frame, of a feed-roll slide therefor, a feed-roll housing pivoted to said slide, and a spring between said housing and slide, the longitudinal axis of which spring intersects the vertical plane of the pivotal axis of the housing outside a circle having said pivotal axis as its

center and intersecting the point of intersection of said longitudinal axis of said spring and said housing.

3. The combination, in a feeding device for woodworking machinery, with a pivoted feed-roll housing, of a spring-pressure means backing said housing whose longitudinal axis is substantially perpendicular to the radius of the arc of swing of said housing intersecting the point of attachment of said spring-pressure means to said housing.

4. The combination, in a feeding device for woodworking machinery, with a pivoted feed-roll housing, of a spring backing said housing whose longitudinal axis is normally substantially tangential to the arc of swing of said housing whose radius intersects the point of pressure application of said spring to said housing.

5. The combination, in a feeding device for woodworking machinery, with feed-roll housings having coincident pivotal axes, of springs backing said housings whose longitu-

dinal axes are normally substantially tangential to the respective arcs of swing of said housings, whose radii intersect the respective points of pressure application of said springs to said housings respectively, said longitudinal axes intersecting the vertical plane of the pivotal axes of said housings.

6. The combination, in a feeding device for woodworking machinery, with feed-roll housings having coincident pivotal axes, of springs backing said housings whose longitudinal axes are normally substantially tangential to the respective arcs of swing of said housings, said longitudinal axes intersecting the vertical plane of the pivotal axes of said housings and each other.

In testimony whereof I have subscribed my name hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.

Witnesses:

WILLIAM B. GRIESE,
GARLAND BROWN.