

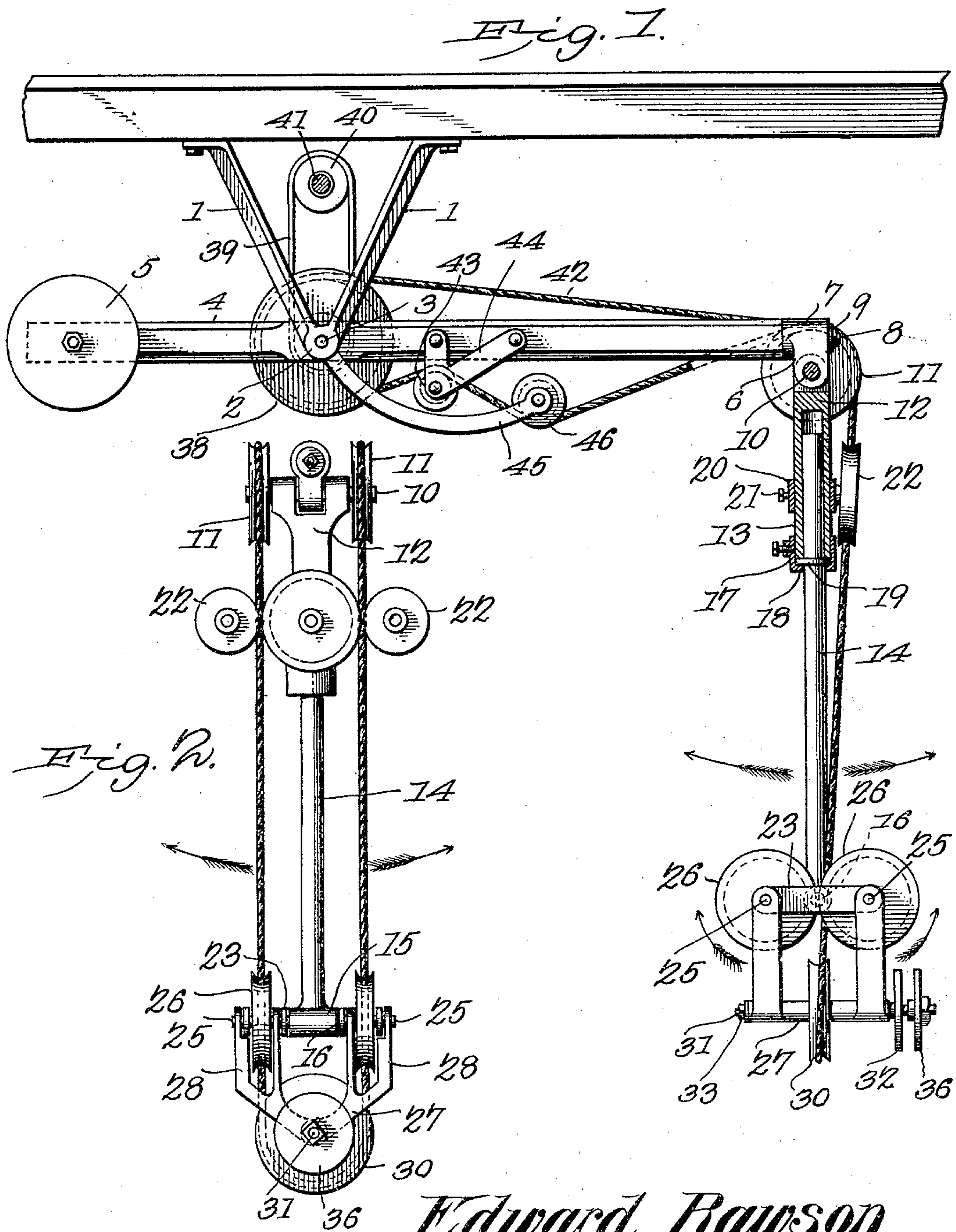
No. 773,676.

PATENTED NOV. 1, 1904.

E. RAWSON.
WOODWORKING MACHINE.
APPLICATION FILED JAN. 16, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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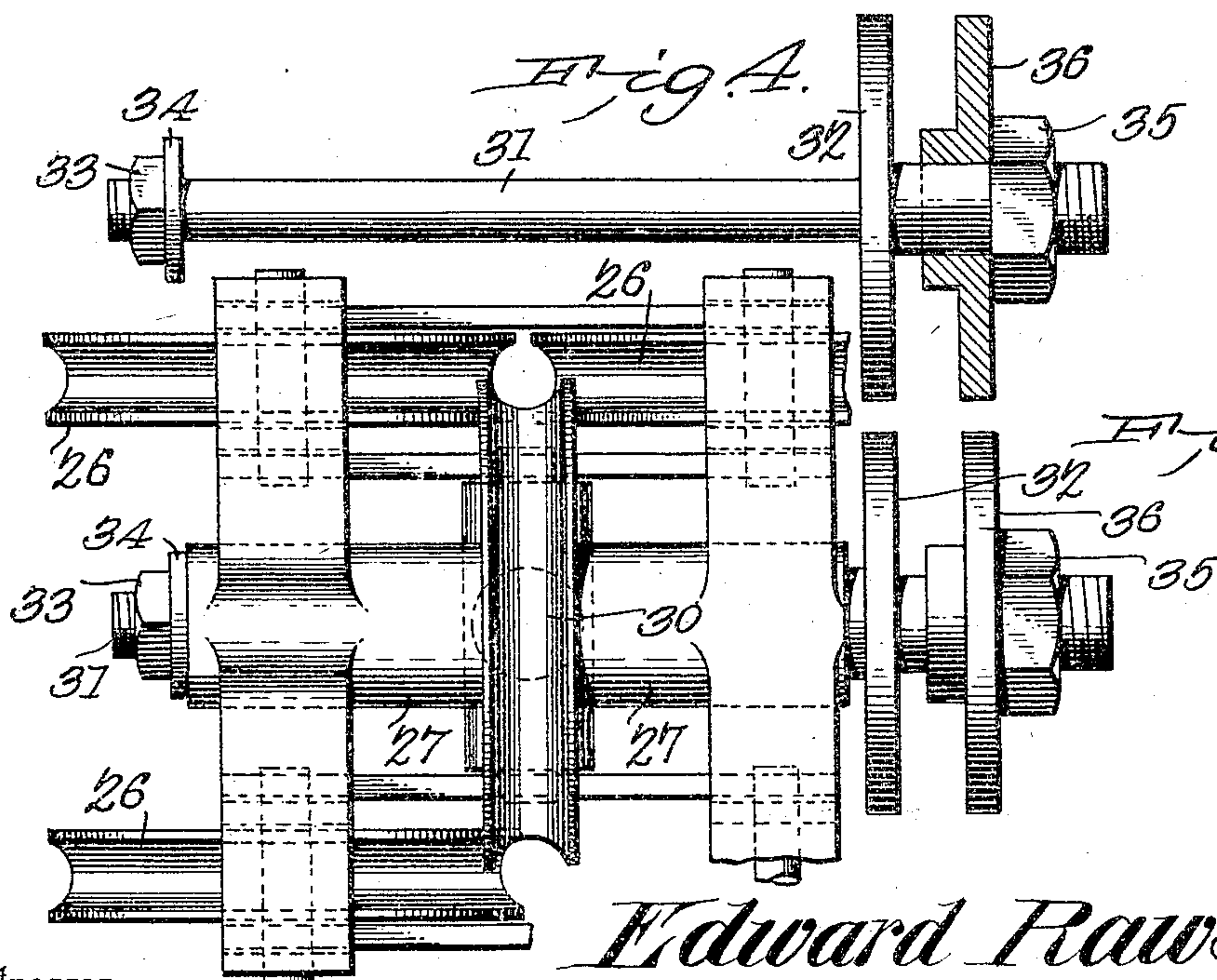
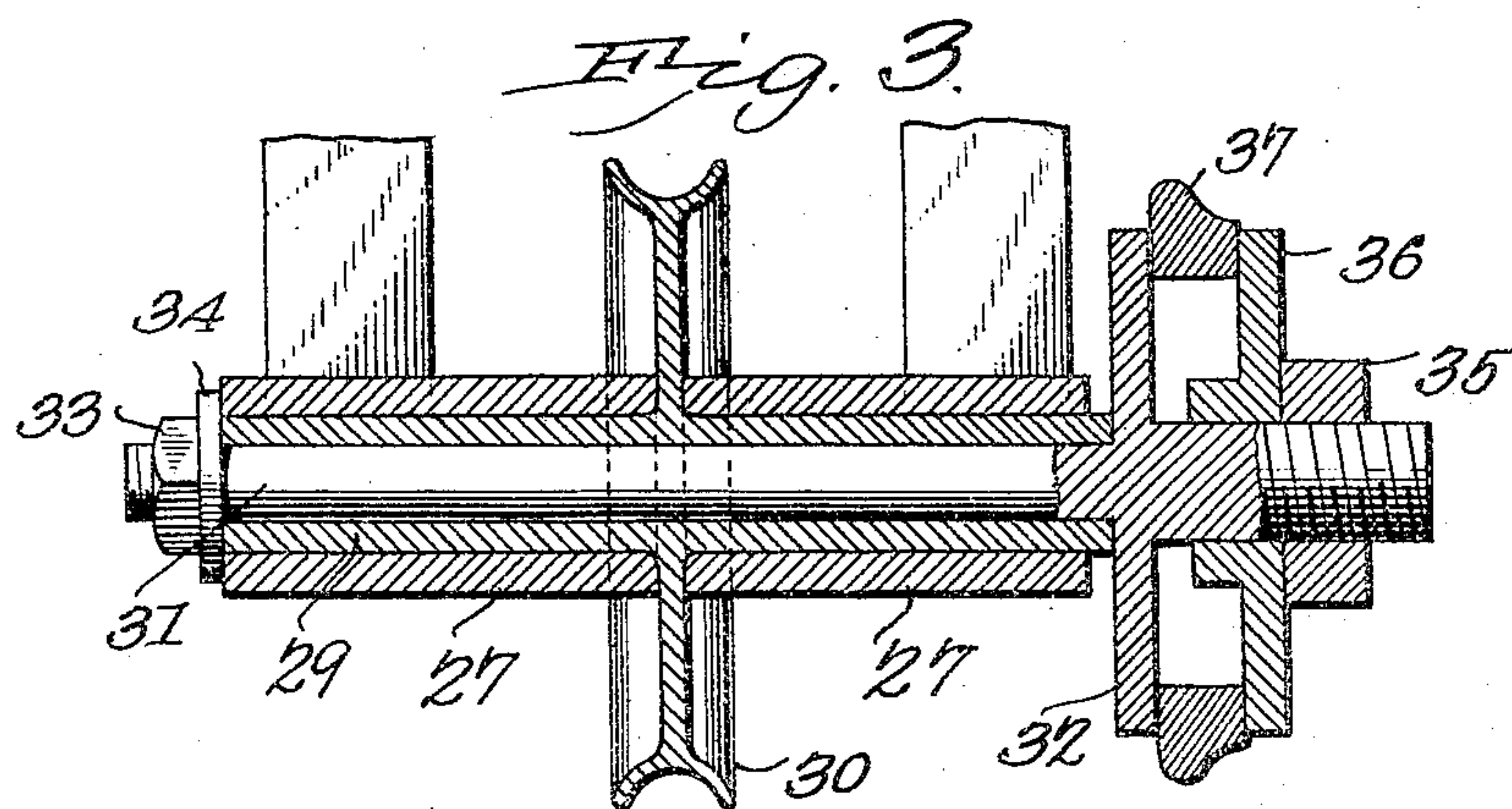


Fig. 5.

Witnesses
E. C. Stewart
Dexter Norton

Edward Rawson
Inventor
by *C. A. Snow*
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD RAWSON, OF MOSCOW, IDAHO.

WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 773,676, dated November 1, 1904.

Application filed January 16, 1904. Serial No. 189,357. (No model.)

To all whom it may concern:

Be it known that I, EDWARD RAWSON, a citizen of the United States, residing at Moscow, in the county of Latah and State of Idaho, have invented a new and useful Woodworking-Machine, of which the following is a specification.

This invention relates to woodworking-machines, reference being had more particularly to woodworking-machines comprising a rotating cutter-head and a support therefor by means of which the cutter-head may be held in any desired position and operated in any position in which it may be held, thereby adapting the machine for a great variety of operations.

The object of the invention is to provide in a machine of the character specified an improved form of supporting and driving mechanism for the cutter-head to facilitate the operation of the cutter-head under any and all conditions and to provide an improved form of cutter-head in which the bits may be easily secured and which may be easily removed from or inserted into the machine when desired.

With the object above mentioned in view the invention consists in the novel construction and combination of parts of a universal woodworking-machine, hereinafter fully described, illustrated in the accompanying drawings, in which there is shown the preferred form of embodiment of the invention, and having the novel features particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, and exact mode of assemblage of the elements exhibited may be made without departing from the spirit of the invention or sacrificing the advantages thereof.

In the drawings, Figure 1 is a view in side elevation of the complete machine. Fig. 2 is a front elevation of the complete machine. Fig. 3 is a detail view, in longitudinal section, through the cutter-head. Fig. 4 is a detail view, in side elevation, of the cutter-head and spindle removed from the supporting-sleeve. Fig. 5 is a reverse plan view of the frame in which the cutter-head is supported and the

pulleys by which the movement of the driving-belt is controlled.

Referring to the drawings, in which corresponding parts are designated by similar characters of reference, 1 1 designate hangers adapted to be secured by bolts, screws, or other suitable fastenings means to an overhead structure, such as a ceiling, and having depending portions of triangular form, in the bottom of which are provided openings 2 to receive a shaft 3, upon which a frame 4 is pivotally mounted, as shown. The frame 4 is of elongated form and is provided at one end with a weight 5, which serves as a counterpoise for the structure supported at the other end of the frame. At the end of the frame opposite that at which the weight 5 is mounted there is pivotally supported a member 6, comprising an eye 7, fitted over a stud 8, projecting from the end of the frame and threaded at its extremity to receive a nut 9, by which the member 6 is held in position, and a cross-bar 10, whose ends serve as journals for a pair of grooved pulleys 11. The cross-bar 10 affords a support for a T-shaped member 12, pivotally mounted between the pulleys 11 and having the stem thereof made hollow to form a sleeve 13, within which is secured a rod 14, provided at its lower end with a transverse sleeve 15, which supports a shaft 16. The rod 14 is adjustably secured in the sleeve 13 in any suitable manner, as by a cap 17, having an inwardly-disposed flange 18, which engages a flange 19, formed on the rod 14, and holds it in proper position relative to the lower end of the sleeve 13. The sleeve 13 also affords support for a bracket 20, which is adjustably secured in position on the sleeve by means of a set-screw 21 and which affords support for a set of guide-pulleys 22, which are normally held in the positions shown in Figs. 1 and 2.

The shaft 16, supported in the sleeve 15 at the bottom of the rod 14, forms a cross-head, which carries the horizontally-arranged plates or bars 23, the ends of which are provided with eyes in which are supported a pair of shafts 25, on which are mounted two pairs of grooved guide-pulleys 26. Suspended from

the shafts 25 beneath the guide-pulleys 26 are two frames, each comprising a sleeve 27 and bifurcated arms 28, diverging from the sleeve, as best seen in Fig. 2, the bifurcated arms being provided with eyes in their upper ends through which the shafts 25 pass. The two frames are rigidly connected with the horizontally-arranged plates or bars 23, so that the two frames form, in effect, a unitary structure, and the sleeves 27 are alined to form bearings for a sleeve 29, which is rotatably mounted therein and is provided midway between its ends with a grooved pulley 30, formed integral therewith, as shown in Fig. 4, or rigidly secured to the sleeve in any preferred manner. The sleeve 29 is designed to receive the spindle 31 of the cutter-head, which is provided near one end with a flange 32 for contact with one end of the sleeve 29 and at the other end is threaded to receive a nut 33 and washer 34, by means of which the flange 32 is drawn into engagement with the end of the sleeve 29. The portion of the spindle 31 which projects beyond the flange 32 is of larger diameter than the portion inserted into the sleeve 29 and is threaded at its extremity to receive a nut 35, by means of which a loose collar 36 is forced into engagement with cutting-bits of any desired form, as 37, which are arranged between the flange 32 and the collar 36.

In the frame 4 at its pivotal point there is supported a double pulley 38, to which power is imparted by a belt 39, running over a pulley 40 upon a driving-shaft 41, arranged above the pulley 38. The pulley 38 also carries a belt 42, which is preferably of circular cross-section and passes over grooved pulleys 11 on the cross-bar 10 and thence downward between the guide-pulleys 22, carried by the bracket 20. The belt 42 also passes between the two pairs of guide-pulleys 26 and encircles the pulley 30, mounted on the sleeve 29, as shown in Figs. 1 and 2. In order to keep the belt 42 tight and to prevent disengagement with the pulley 38, a guide-roller 43 is secured in a bracket 44 beneath the frame 4 adjacent to the pulley 38, and a tightener comprising a pivoted arm 45, mounted on the shaft 3 and bearing a grooved roll 46, which rests upon the belt 42 between the guide-roll 43 and one of the pulleys 11, is arranged as shown in Fig. 1.

With a machine constructed in the manner described the weight of the cutter-head and the operating mechanism therefor will always be counterbalanced by the weight 5 at the end of the frame 4, so that the cutter-head and the swinging frames in which it is supported may be raised or lowered without the expenditure of any considerable effort. Moreover, owing to the fact that the member 6, upon which the cutter-head and the driving mechanism therefor are suspended, is pivot-

ally connected with the frame 4, the cutter-head may be swung to the right or left, as indicated by arrows in Fig. 2, and owing to the pivotal connection of the member 12 with the member 6 the cutter-head and its driving mechanism may be swung to the right or left, as indicated by arrows in Fig. 1. The pivotal support of the frames in the sleeve 27, on which the cutter-head turns, permits the lower portion of the cutter-head-supporting mechanism to be tilted at an angle to the rod 14, and the mode of securing the rod 14 in the sleeve 13 permits the rotative movement of the frames carrying the cutter-head in addition to the various pivotal movements already explained. It will therefore be evident that the cutter-head may be presented to the material upon which it is to operate at any angle which may be desired, and the change of the angle at which the cutter-head is held may be instantly effected without stopping the operation of the machine or in any way disarranging the driving mechanism.

By arranging the main driving-pulley 38 at the pivotal point of the frame 4 any variation in the tension of the belt from rocking the frame 4 upon its support is obviated, and the tightener for the belt arranged beneath the frame 4 will prevent any variation in the tension of the belt from the rotative movement of the rod 14 in the sleeve 13 or the shifting of the position of the cutter-head-supporting frames with reference to the rest of the machine structure.

The arrangement of the cutter-head spindle and the sleeve in which it is carried, as well as the simple means for securing the cutting-bits in the cutter-head, is designed to facilitate the quick removal of the cutter-head from the machine and ready interchange of the cutting-bits.

By the peculiar arrangement of the guide-pulleys shown and described a single belt will serve to transmit motion from the pulley 38 to the spindle of the cutter-head and the possibility of the accidental removal of the belt from the pulley on the sleeve 29 is absolutely prevented.

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

1. In a woodworking-machine, the combination with a main supporting-frame having a drive-pulley, of a hanger hinged to the main frame, guide-pulleys mounted at the axis of the hinged connection of the hanger, a cross-head suspended from the hanger, bars pivotally supported at opposite ends of the cross-head, pairs of guide-pulleys carried by the ends of the bars, a cutter-head frame suspended from the ends of the bars, a cutter-head having a pulley disposed beneath and in alinement with the interval between the adjacent guide-pulleys, and an endless driving-

belt engaging the drive-pulley, the cutter-head pulley and the intermediate guide-pulleys.

2. In a woodworking-machine, the combination with a supporting-frame, of a drive-pulley thereon, a cutter-head-supporting structure disposed at substantially right angles to the supporting-frame and hinged thereon, a pair of guide-pulleys mounted at the axis of the hinged connection between the cutter-head-supporting structure and the main supporting-frame, a cutter-head having a pulley disposed at substantially right angles to the drive-pulley, pairs of guide-pulleys carried by the cutter-head-supporting structure at opposite sides of the periphery of the pulley of the cutter-head and at substantially right angles thereto, and an endless drive-belt engaging the drive-pulley, the cutter-head pulley and the intermediate guide-pulleys.

3. In a woodworking-machine, the combination with a main supporting-frame having a drive-pulley, a hanger pivotally supported upon the frame to swing transversely thereof, a cutter-head carried by the hanger and having a pulley, a pair of guide-pulleys carried by the upper portion of the hanger, an endless drive-belt engaging the drive-pulley, the pulley of the cutter-head and the guide-pulley on the hanger, and a set of three pulleys carried by the hanger in transverse alinement below the first-mentioned guide-pulleys with the driving-belt running between the intermediate pulley and the terminal pulleys of the set of pulleys.

4. In a woodworking-machine, the combination with an intermediately-pivoted supporting-frame having a counterweight upon one end thereof, of a drive-pulley carried by

the frame at its pivotal support, a hanger having a universal connection with the opposite end of the frame and including a sleeve which is open at its lower end, guide-pulleys carried by opposite sides of the hanger at its upper end, a set of three guide-pulleys carried by the hanger and alined transversely below the first-mentioned guide-pulleys, a bar pendent from and swiveled within the sleeve and having a cross-head at its lower end, bars pivoted intermediately to the opposite ends of the cross-head, pairs of guide-pulleys carried by opposite ends of the bars, a cutter-head frame hung from the ends of the bars, a cutter-head carried by the frame and having a pulley disposed below and in alinement with the interval between the guide-pulleys carried by the bars, and an endless driving-belt engaging the drive-pulley, the guide-pulleys and the pulley of the cutter-head.

5. The combination in a woodworking-machine, of a supporting-frame, a sleeve rotatably mounted in said frame and having a driving-pulley rigidly secured thereon, and a cutter-head carried by said sleeve, said cutter-head comprising a spindle extending through the sleeve and having a flange to contact with one end of the sleeve, a nut at the end of the spindle to draw the flange into engagement with the end of the sleeve, a loose collar on the other end of the spindle, and a nut to force said collar toward said flange.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD RAWSON.

Witnesses:

WM. HUNTER,
M. M. RAWSON.