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B. E. JARVIS ET AL

BAND SAW MACHINE

4 ← Filed June 30, 1921

2 Sheets-Sheet 1

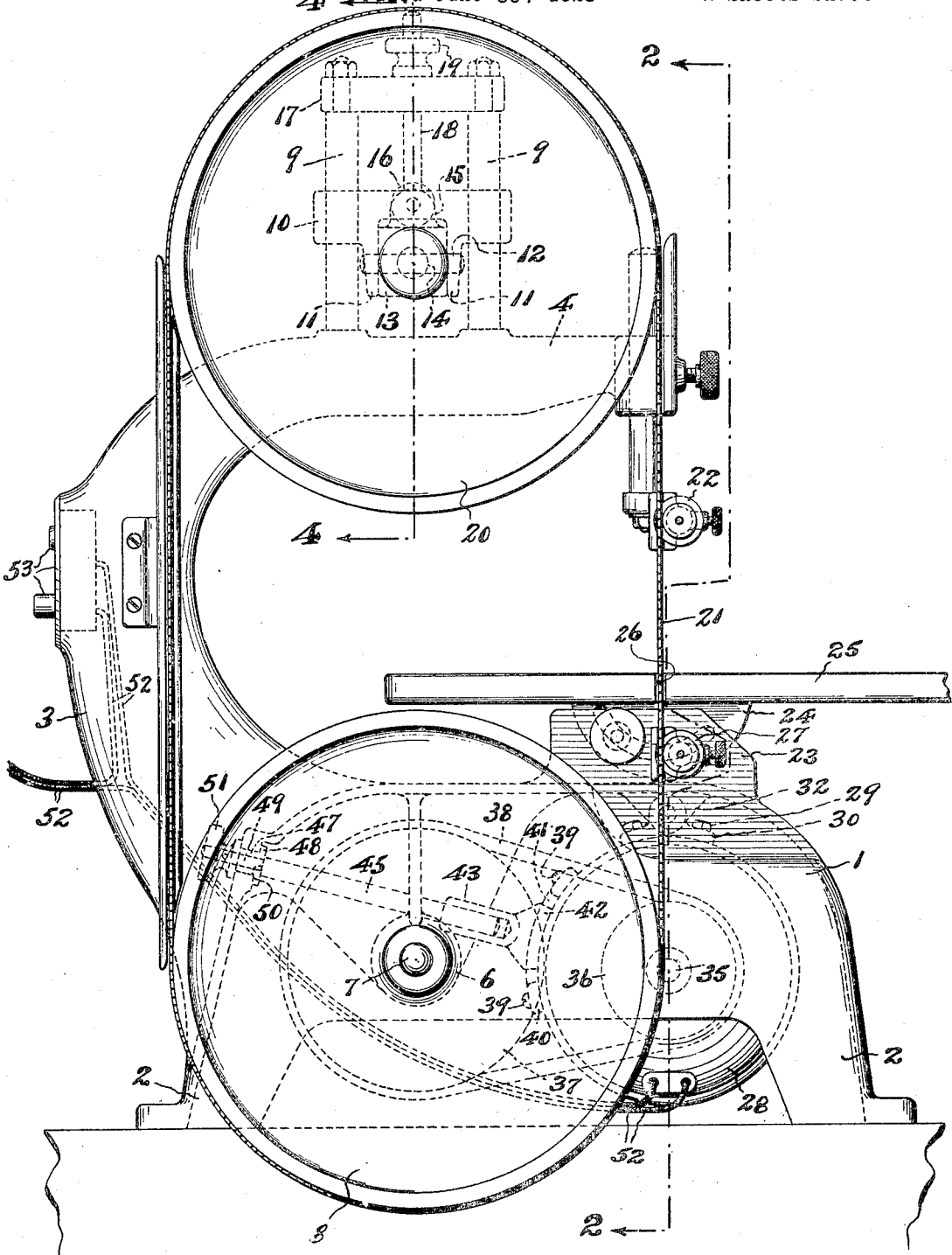


Fig. 1

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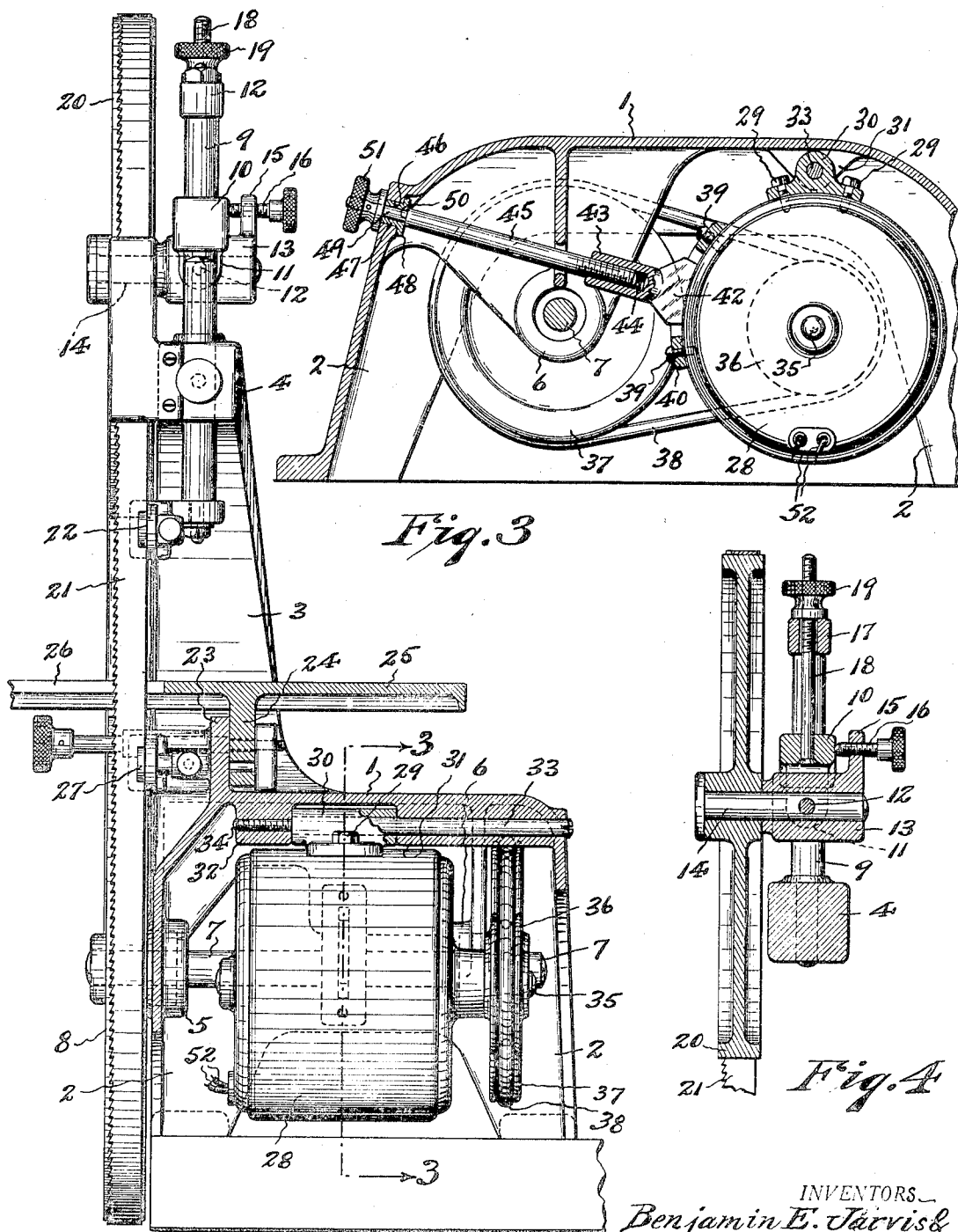


Fig. 2

Fig. 3

Fig. 4

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UNITED STATES PATENT OFFICE.

BENJAMIN E. JARVIS, OF EAST ORANGE, AND LEONARD C. LOTZ, OF NEWARK, NEW JERSEY.

BAND-SAW MACHINE.

Application filed June 30, 1921. Serial No. 441,531.

To all whom it may concern:

Be it known that we, BENJAMIN E. JARVIS and LEONARD C. LOTZ, citizens of the United States, residing at East Orange and Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Band-Saw Machines; and we 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The herein-described invention relates, generally, to power transmission mechanism; and the invention has reference, more particularly, to an improved construction of electric motor driven power transmission.

The invention has for its principal object to provide a transmission mechanism in combination with a self-contained power element in the form of an electric motor, the latter being mounted in connection with the supporting frame or base of a machine so as to be protected against dirt, and the same being arranged in a novel relation to the power transmission mechanism of the machine.

Other objects of the invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of this invention in view, the same consists, primarily, in the novel construction of transmission mechanism machine hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same all of which will be hereinafter more fully described, and then finally embodied in the claims appended hereto.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of a band-saw machine having power transmission means made according to and embodying the principles of this invention; Figure 2 is a vertical longitudinal section, taken on line 2—2 in said Figure 1, the motor being shown in elevation; Figure 3 is a transverse vertical longitudinal section, taken on line 3—3 in said Figure 2, the motor being shown in ele-

vation; and Figure 4 is a detail vertical longitudinal section, taken on line 4—4 in said Figure 1.

Similar characters of reference are employed in all of the hereinabove described views to indicate corresponding parts.

Referring now to said drawings, the reference character 1 indicates a frame or base having suitable supporting legs 2. Said frame or base 1 is provided at its front portion and at one side thereof with an upwardly extending post 3 which terminates in a transversely disposed overhanging bracket or carrier arm 4 spaced above said frame or base 1. Connected with said frame or base 1 are bearing portions 5 and 6, which are longitudinally alined, and in which is journaled a longitudinal main shaft 7 which extends beneath said frame or base 1.

Fixed on the forwardly projecting end of said main shaft 7, so as to be disposed at the front of said frame or base 1 is a driver band wheel or saw drum 8.

Secured to said overhanging bracket or carrier arm 4, so as to project upwardly therefrom, are a pair of parallel guide rods or posts 9. Slidable upon said guide-rods or posts 9, so as to be vertically adjustable thereon, is a movable cross-head 10, having intermediate its ends a pair of perforate ears or lugs 11 which support a transverse fulcrum pin 12. Mounted upon said fulcrum pin, between said ears or lugs 11, is a tilting-block 13, to which is fixed a forwardly projecting journal stud 14, which is positioned vertically opposite said main shaft 7. Connected with the rear end of said tilting-block 13 is an upwardly projecting lug 15 which receives the threaded engagement of an adjusting screw 16 which bears against the rear side of said movable cross-head 10. Secured to the upper free ends of said guide-rods or posts 9 is a fixed cross-head 17 having a central vertical perforation. Fixed to said movable cross-head 10 is an upwardly extending screw-shank 18, which projects through said perforation of said fixed cross-head 17. A nut member 19 is engaged upon the free end of said screw-shank 18, the same bearing upon said fixed cross-head 17 when operated to adjust the elevation of said movable cross-head 10 upon the guide-rods or posts 9.

Mounted upon said journal stud 14 for free rotation thereon is an idler band wheel

or saw drum 20. Mounted to run over said band wheels or saw-drums 8 and 20 is a band-saw 21.

Suitably supported at the free end of said bracket or carrier arm 4 is a vertically adjustable saw guide device 22.

Connected with the upper side of said frame or base 1 in a suitable position is a flange 23 to which is secured the supporting fin 24 of a saw-table 25. Said saw-table 25 possesses a slot 26 through which the band-saw runs.

Supported from said flange 23, in a suitable manner so as to be disposed beneath said saw-table is a second saw guide device 27.

The reference character 28 indicates an electric motor, to the casing of which is secured, by bolts 29, or in any other suitable manner, a pivot knuckle 30. Integrally formed in connection with the under side of said frame or base 1 in a suitable location are longitudinally aligned fixed knuckles 31 and 32, between which is inserted the pivot knuckle 30 of said motor 28. A pivot pin 33 is inserted through the knuckle 31 and the pivot knuckle 30, said pivot pin having a threaded extension 34 of reduced diameter which screws into said knuckle 32 to retain said pivot pin against accidental displacement. By the above described means said motor 28 is pivotally suspended so as to swing toward and away from said main shaft 7, the armature shaft 35 of the motor being parallel to said main shaft. Fixed on said motor armature shaft 35 is a driving pulley 36, and fixed on said main shaft 7 is a driven pulley 37. Running over said pulleys 36 and 37 is a driving belt 38. Secured to the side of said motor 28, by screws 39 or any other suitable fastening means, is a socket-plate 40 having a socket or seat 41 adapted to receive a presser-foot 42. Said presser foot 42 possesses a shank-portion 43 provided with an internally screw-threaded opening 44. Threaded into said opening 44 is the end of an adjusting screw 45 which extends transversely toward the side wall of said frame or base 1. Supported in said side wall of said frame or base 1, in an opening 46 provided therefor, is a bushing 47 having a flange 48 which engages the inner side of said rear wall to prevent outward displacement of said bushing. Said adjusting screw 45 is provided at its outer end with a reduced extension 49 providing a shoulder 50 which thrusts against the inner end of said bushing. The free end of said extension 49 projects exteriorly of said frame or base 1, and fixed upon its outwardly projecting free end is a finger-piece 51.

Electric circuit wires 52 for supplying current to said motor 28 enter beneath said frame or base 1, and are electrically con-

nected with a switch-device 53 fixed in connection with said post 3, and thence with said motor, whereby a convenient control means is furnished for starting and stopping said motor 28.

From the above description it will be apparent that the novel pivotal suspension of the motor 28, permits the same to be swung away from or toward the main shaft 7, thereby permitting the driving belt 38 running over the pulleys 36 and 37 to be quickly tightened or loosened as occasion may demand, thus providing a very convenient, compact and novel adjustable combined power unit and driving means for the main shaft of the band-saw machine. The operation of adjusting the motor position for the purposes above mentioned, is accomplished by turning the finger-piece 51 to rotate the adjusting screw 45. Rotation of the adjusting screw 45 in one direction, causes the shank-portion 43 of the presser-foot 42 to ride outwardly on the threads of said adjusting screw, thereby forcing the presser-foot 42 toward the motor 28, whereby the latter is swung away from the main shaft 7 and held in the position to which it is thus moved, so that slack of the belt 38 is taken up by the movement of the motor pulley 36 away from the pulley 37. If the driving belt 38 is too tight, it may be slackened by rotating the adjusting screw 45 in the opposite direction, which causes the shank portion 43 of the presser-foot 42 to ride inwardly on the threads of said screw, whereby the presser-foot is withdrawn from the motor 28, allowing the latter to swing toward the main shaft 7, and consequently moving the motor pulley 36 toward the main shaft pulley 37, and thus slackening the driving belt running over said pulleys.

Since the motor 28 is suspended beneath the frame or base 1 it is covered and protected by the latter from dirt, saw-dust and refuse from the sawing operations.

We are aware that some changes may be made in the arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of our invention, as set forth in the foregoing specification, and as defined in the appended claims. Hence, we do not limit our invention to the exact arrangements and combinations of the several devices and parts as described in said specification, nor do we confine ourselves to the exact details of the construction of said parts as illustrated in the accompanying drawings.

We claim:—

1. The combination with a base of an electric motor pivotally suspended beneath and covered by said base, a driving pulley on said motor, a main shaft journaled in said base, a driven pulley on said shaft, a driv-

ing belt running over said pulleys, a presser foot engaging the side of said motor toward said driven pulley, an internally threaded shank on said presser foot, an adjusting screw threaded into said shank, means for rotatably journaling said adjusting screw on said base, and said adjusting screw having an external end provided with a finger piece for manipulating the same.

10 2. A base, a transmission mechanism mounted in said base, an electric motor pivotally supported from said base, said motor having a driving pulley, a driving belt operated by said driving pulley to drive said
15 transmission mechanism, and means for moving said motor relative to said transmission mechanism to tighten said driving belt, comprising a presser foot engaged with the side of said motor toward said transmission mechanism, an adjusting screw in
20 threaded engagement with said presser foot, a thrust bearing connected with said base for rotatably journaling said adjusting screw, and a finger-piece fixed on said adjusting screw for rotating the same.

25 3. A base, a transmission mechanism mounted in said base, an electric motor piv-

otally supported from said base, said motor having a driving pulley, a driving belt operated by said driving pulley to drive said transmission mechanism, and means for moving said motor relative to said transmission mechanism to tighten said driving belt, comprising a socket-plate fixed to the side of said motor toward said transmission mechanism, a presser foot engaged in said socket plate, said presser foot having at its outer end an internally threaded shank, an adjusting screw threaded into said shank, the outer end of said adjusting screw having a reduced extension forming with said screw a thrust shoulder, a thrust bearing in the wall of said base in which said extension is journaled so that its free end projects beyond said base, and a finger-piece fixed to the free end of said extension.

In testimony that we claim the invention set forth above we have hereunto set our hands this 24th day of May, 1921.

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LEONARD C. LOTZ.

Witnesses:

GEORGE D. RICHARDS,
EVA E. DESCH.