Oct. 13, 1931. R. H. BEEBE 1,826,983

JIG SAW

Filed July 12, 1930

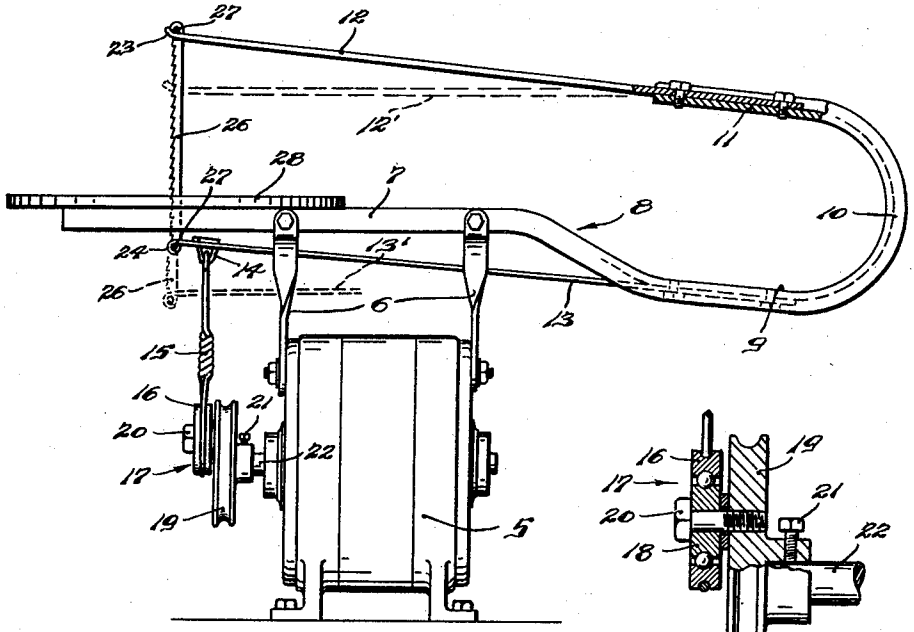


Fig. 1.

Fig. 3.

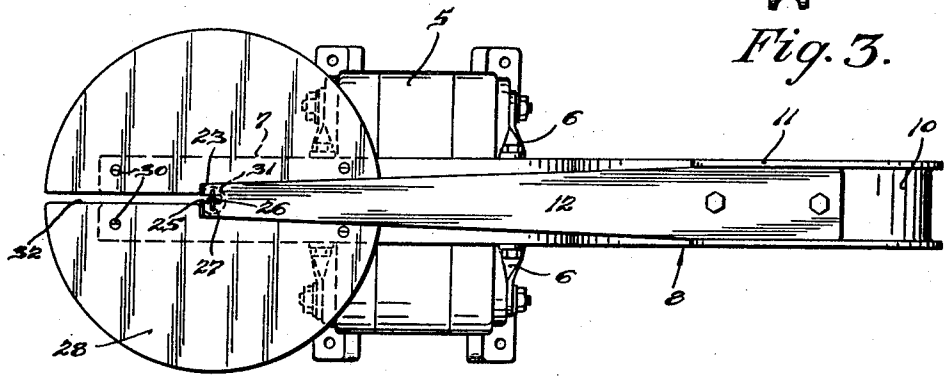


Fig. 2.

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JIG-SAW

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My invention relates to jig-saws, the object, generally stated, being the provision of a most simplified device of this character operable to effect a most advantageous action to the work.

Such objective, more particularly, lies in the provision of a jig-saw wherein novel tension devices are arranged in a most effective manner capable of eliminating guide members such as saw-supporting cross-heads and work-retaining gauge plates.

Such object further lies in the novel disposition of such saw tension members in a manner effectively eliminating work dislodgment customarily resultant of the upstroke activity of saws of this character, and in further affording a progressive cut to the work in the down stroke activity of the saw.

Further objects and advantages, with respect to crank construction, convertibility and general assembly, together with the foregoing, will become apparent in the course of the following description and claims, the invention consisting in the novel construction, the adaptation and combination of parts hereinafter described and claimed.

In the drawings,—

Figure 1 is a side elevation of apparatus embodying the present invention, parts being broken away and shown in vertical longitudinal section. Fig. 2 is a top plan view of the same; and Fig. 3 is an enlarged elevational detail illustrating preferred construction of a motive source, parts being broken away and shown in section.

Reference being had thereto, the numeral 5 indicates a source of energy, such as an electric motor, utilized in the present invention as a base member for supporting, through the medium of upwardly converging legs 6, the horizontal arm 7 of a channel-conformed standard 8.

Said standard, moreover, is configured to present, contiguous with said arm, an offset 9 therebelow, an upturned hook 10, and a terminal 11, said terminal and offset being disposed in spaced parallel planes angularly arranged to the horizontal, and retrogressively from the standard arm 7 in a manner to support respective major and minor parallel spring leaf members 12, 13.

Operatively secured to said spring 13, as by a staple member 14, I provide a connecting rod 15 preferably conformed of wire for encasing engagement about the grooved wheel 16 of a ball bearing assembly generally represented as 17.

Hub 18 of said assembly is secured eccentrically of the axis of a pulley 19 as by a cap screw 20, set screw 21 securing the pulley hub to the arbor 22 of the aforesaid motor. More particularly, the axis of said bearing assembly is arranged, relative to arbor 22 to provide a spring working stroke from the aforesaid angularity to a disposition substantially horizontal as represented by dotted lines 12^1, 13^1, of Fig. 1.

Terminals of said springs are conformed in oppositional hooks 23, 24, slotted as at 25 for the interposition of a conventional saw blade 26, pins 27 of which are arranged for bearing engagement to outer face portions of the hooks.

Integrally secured as by countersunk screws 30, a work supporting table 28 is rigidly arranged above the horizontal standard arm 7, being conformed to present a centrical aperture 31 and a communicating radial slot 32 thereto for inserting the blade 26 in detachable engagement over the yieldable spring terminals.

The reciprocatory operation of the device is believed clear, downstroke activity of the major spring member 12 cooperating with the minor guiding spring 13 in affording outward activity of the blade progressively to the work, upstroke activity receding the blade in preventing a tendency to work dislodgment.

Leaf spring 12 is desirably constructed of a greater rigidity than the guide spring 13 in retaining blade tension responsive to the retractile up-stroke activity.

It is to be noted that an excessively high speed of operation, heretofore impossible in jig saws, is attained through novel structural features. In this particular, the ball bearing assembly 17 reduces frictional tendencies, relative rigidity of spring member 12 cooper-

ating in the provision of a most effective tensional force. Ready replacement of the wearing parts, namely blade 26, staple 14 and connecting rod 15 is afforded. Cap screw 20 may be removed in utilizing pulley 19 for such other work as might be desired.

While I have illustrated and herein described my invention in a preferred manner best seen to attain novel objectives contemplated, it is not my intention to confine myself thereto except as by the scope of the hereto annexed claims.

What I claim is,—

1. A jig-saw comprising a rigid motor, a standard mounted on the frame of said motor and having a horizontal arm extending over said motor, said standard being conformed to provide an offset portion below and a terminal portion above the plane of said arm, said offset and terminal being arranged parallel, one with the other, and at an inclination to the horizontal, said offset and terminal portions having leaf springs secured thereto for disposing the same in normal upwardly inclined dispositions, hooks provided in end extremities of said springs, a work supporting table mounted on said horizontal arm, said table having an aperture therein disposed in the vertical plane of said hooks, a radial slot communicatively disposed to said aperture, means for detachably engaging a saw blade inserted through said slot over said hooks, and means cooperative with spring retraction for reciprocating said saw blade to provide a working stroke from the aforesaid normal spring angularity to a horizontal disposition of the springs, said last named means comprising a pulley rigid with the arbor of the motor, a crank arm eccentrically disposed on said pulley, and a connecting rod interconnecting said crank arm to the lowermost spring.

2. In apparatus as described in claim 1, wherein said crank arm constitutes a detachable ball bearing assembly.

3. A jig saw comprising a base, a standard mounted on said base, said standard providing a horizontal arm, and an offset portion below and a terminal portion above the plane of said arm, said offset and terminal portions being disposed at inclinations from the horizontal and substantially parallel, one with the other, a work supporting table mounted on said horizontal arm, leaf springs secured to said terminal and offset portions to dispose the same in normally inclined planes above and below said table, an aperture in said table arranged in vertically aligned disposition to the extremities of said springs, means to insert a saw blade through said aperture into detachable engagement to said spring extremities, a crank, operative connection between said crank and one of said springs, and means to rotate said crank for imparting reciprocation to the saw blade in a stroke activity from the aforesaid normal spring angularity to a substantial horizontal disposition of the same.

4. A jig saw comprising a base, a rigid work supporting table above said base, leaf springs, means to support said springs in parallel normally inclined dispositions above and below said table, an aperture in said table arranged in vertical alignment to extremities of said springs, means to insert a saw blade to said aperture for detachable engagement to said spring extremities, a crank, operative connection between said crank and one of said springs, and means to rotate said crank for imparting reciprocation to the saw blade in a stroke activity from the aforesaid normal spring angularity to a substantial horizontal disposition of the same.

5. A jig saw comprising a base, a rigid work supporting table above said base, leaf springs, means to support said springs in parallel normally inclined dispositions above and below said table, an aperture in said table arranged in vertical alignment to extremities of said springs, means to insert a saw blade to said aperture for detachable engagement to said spring extremities, and means cooperating with said springs for imparting reciprocation to the saw blade in a stroke activity from the aforesaid normal spring angularity to a substantial horizontal disposition of the same.

6. A jig-saw having a saw blade secured to extremities of angularly disposed parallel leaf springs, and means cooperative with the retractile energy of said springs for imparting reciprocatory activity to the blade, the angularity of said springs being arranged such, relative to the plane of work progression, as to feed said blade to the work in the down-stroke activity thereof, and to recede from said work in the upstroke activity thereof.

7. A jig-saw having a saw-blade suspended between a spring tension member and a movable guide, and means cooperative with the retractile energy afforded by said tension member for imparting reciprocation to the blade, said tension member being arranged such as to progressively feed and recede the blade to and from the work in respective down and up strokes of reciprocation.

8. A jig-saw having a saw blade, a crank, a hub member adapted for detachable securement to said crank, a ring member freely mounted for revoluble activity about said hub, and a connecting rod secured to said ring member and having operative connection with said blade for imparting reciprocatory activity to the latter responsive to revoluble activity of the crank arm.

9. In apparatus as described in claim 8, wherein said hub securement comprises a bolt interengaging said hub and the crank.

10. In apparatus as described in claim 8,

wherein said revoluble mounting for the ring member constitutes a ball race interposed therebetween and the hub.

11. A jig-saw comprising a rigid work supporting table having a frame therefor projecting rearwardly of said table and turned upwardly to afford a work-receiving throat and a return terminal above the plane of said table, a leaf-spring having one end rigidly attached to said terminal to have its free end project over the table, a second leaf-spring having one end rigidly attached to said frame to have its free end project under said table, a saw blade suspended between the free ends of said springs, said springs being parallel one with the other and said upper spring being characterized by a rigidity relatively in excess of said lower spring to retain tension on said blade in maintaining the same in attached relation with respect to the spring ends, and means co-operative with the retractile energy of said springs for imparting reciprocatory activity to the blade.

12. A jig saw having a saw blade suspended between a pair of vertically-spaced vibratory arms, and a connecting rod having operative connection with one of said arms and serving to reciprocate said blade, said reciprocatory activity disposing the arms at inclinations to the horizontal in the extreme up-stroke cycle of reciprocation of said blade and in approximate horizontal dispositions in the extreme down-stroke cycle of reciprocation of said blade.

13. In a jig-saw, a saw-blade, a pair of parallel vertically-spaced vibratory arms, means to suspend the blade between free ends of said arms, and a connecting rod having operative connection with one of said arms and serving to reciprocate said blade said reciprocatory activity feeding the blade throughout the down stroke cycle of reciprocation outwardly from a plane taken through the point of vibratory suspension of said arms, and directively toward said suspension plane throughout the upstroke cycle of reciprocation.

14. A jig-saw having a saw blade supported to maintain the same perpendicularly throughout reciprocatory activity of the same, and a connecting rod having operative connection with said blade to afford a movement of the perpendicular plane thereof directively toward the work throughout the down-stroke cycle of reciprocation and directively from the work throughout the upstroke cycle of reciprocation.

15. A jig-saw having a saw blade supported in an upright disposition and reciprocated by a connecting rod having operative connection therewith, the plane of said blade feeding and receding horizontally to and from the work throughout the respective down and up stroke cycles of reciprocation, and wherein said horizontally moving planes are constantly maintained parallel, one to another.

16. In a jig-saw having a saw-blade supported to feed the blade directively to and from the work in respective down and up strokes of reciprocation, spring tension means serving to normally maintain said saw-blade in its uppermost disposition, and means co-operative with the retractile energy afforded by said spring tension means for imparting said reciprocatory activity to the blade.

Signed at Seattle, Washington, this 25th day of June, 1930.

ROBERT H. BEEBE.