

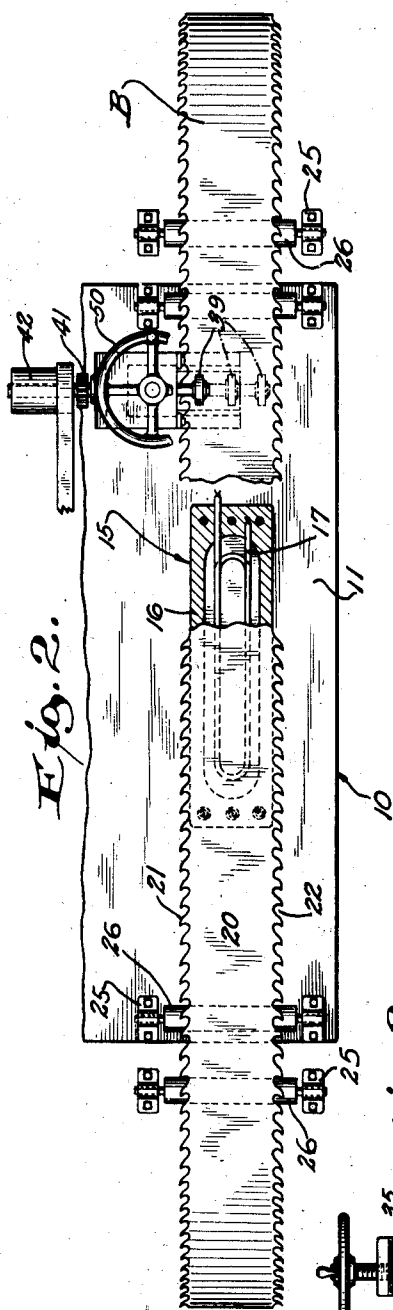
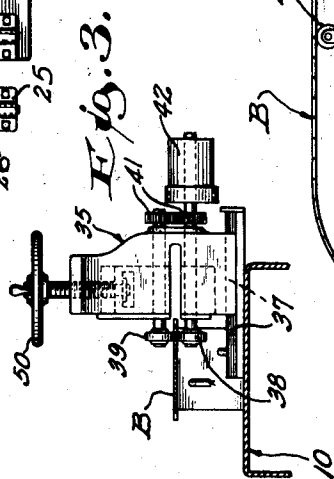
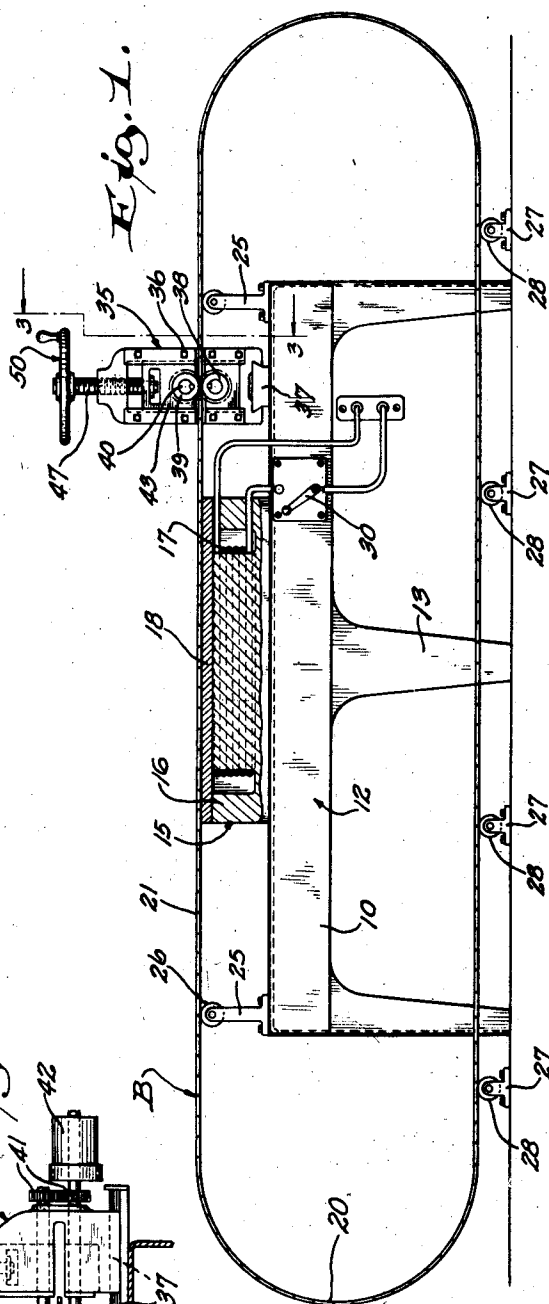
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COMBINATION ANVIL AND MAGNETIC CLAMP

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COMBINATION ANVIL AND MAGNETIC CLAMP

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This invention relates to a combination anvil and magnetic clamp designed and adapted for use in realigning and properly dimensioning the web or body portion of a band saw.

Band saws, after actual use, become distorted, due to the unpredictable reaction of the wood. Naturally, the teeth of the saw encounter fiber of different strength or density, knots, and even imbedded, harder material than the wood, and the body or blade or web of the saw, backing up the teeth, is subjected to great variations in stress and strain. As a consequence, the blade or body of this band saw, as constituted, heretofore, becomes mis-aligned or distorted. This throws the teeth of the saw out of effectiveness with the result that its capacity to perform its intended work is impaired or perhaps destroyed.

It has been the practice to correct the distortions by laying successive portions of the saw on an anvil, having as its upper surface a flat, plane, steel plate, solidly and rigidly supported and then pound or peen the mis-aligned or distorted portions back in their proper positions. Such a practice requires not only a high degree of craft or art but also along with that a substantial amount of laborious effort, for not only must the distorted portions of the band saw be laid flatly against a plane, flat supporting surface but it must be pressed or pushed into engagement with such a surface. This for two reasons, first, because the reactive engagement of the supporting surface is required, and second, the man who is performing the action must be able to discern the distortions.

In accordance with previous practice the pressing or forcing of the successive portions of the saw blade against the anvil surface has been accomplished by the act of laying heavy weights successively on the portions to be corrected. These weights, which are constituted of iron or steel, must be lifted and deposited on the body of the saw blade and, of course, must be removed as the work goes on.

The labor and problem referred to is a difficulty which the present invention overcomes, but in addition to that, this invention, while providing a means for far more expeditious performance, also avoids the possibility of impairment of the teeth of the saw blade, since the man that is doing the work, careful as he may be, may, sometime, under the influence of fatigue or perhaps for other reasons, will not lift the weights entirely clear of the teeth, but will impact or strain them and consequently deform them and get them out of line.

The present invention proposes a means comprising a flat, plane anvil surface and underlying it a magnetic clamp which pulls the body or blade of the saw flatly and forceably against the surface of the anvil. The necessity avoids resort to the use of weights and their handling. The possibility of the weights distorting the teeth is, of course, eliminated.

The action of the magnetic clamp is controllable by a manually operable switch which, by a simple press of the finger, may be turned on and off. Such a control instrumentality lends itself advantageously to the successive steps that must be taken in correcting a distortion of the band saw, and to the action of the pressure feed rolls which are utilized in connection with the peening operation of the craftsman, with his hammer, in stretching or realigning the body or web of the saw, or as may be required.

These objects of the invention and other ancillary advantages are attained by the mechanism, construction, and arrangement illustrated in the accompanying drawing forming part hereof, in which—

Fig. 1 is a view partly in side elevation and partly in longitudinal, vertical cross section showing a machine embodying the present invention;

Fig. 2 is a view of the machine in top plan with parts broken away for the purpose of illustrating the construction; and

Fig. 3 is a view in transverse vertical cross section taken on line 3—3 of Fig. 1.

Referring to the drawing the numeral 10 designates generally a table or bench which provides the supporting structure. This table or bench may be of any suitable construction. It necessarily has a top which is flanged, as at 12, for strength and is supported by a suitable number of legs 13. On the top of the table or bench 10, the operative instrumentalities of the machine are supported.

Principally among these is a combined electro-magnetic clamp and anvil designated as a whole at 15. This element 15 may comprise a substantial block-like structure 16 which may be advantageously constituted of iron or a suitable metallic alloy of appropriate, magnetic permeability. It is fashioned or machined to house the coils or windings 17 of an induction coil serving the purpose of inducing lines of electro-magnetic flux which flow vertically and exert an attractive force or downward pull through the iron block 16.

In addition to the iron block and its exciting coil, a plate 18 of hardened steel is provided.

This plate 18 rests flatly on the top of the iron block 16 and provides an anvil surface. Through it the flux lines from the electric magnet exert their magnetic force.

The band saw which is to be realigned and reshaped is designated generally at B and comprises a body portion or blade 20 and saw teeth 21 and 22, which, of course, are formed along the edges of the blade.

The band saw B is endless and is extended around, that is, over and under, the construction or machine previously described. To support and control its way of travel, suitable guide rollers are provided.

In the machine illustrated these are shown as comprising suitable supporting brackets 25 mounted on the top of the table or bench 10 and having suitable bearings, which in turn support rollers 26. The rollers 26 are in rolling engagement with the underside of the upper run of the band saw B. Below the bench or table 10, a suitable number of brackets 27 are provided and these in turn support rollers 28 which engage the underside of the body or blade or the band saw B during its traverse on its feed to the anvil.

The magnetic clamp previously referred to is excited or energized from a suitable source of current and selectively so under the control of a suitable switch and rheostat designated generally at 30 (see Fig. 1). This is to enable the operator to control the clamping and feed action conveniently from the same side of the bench from which he exercises his hammering or peening operation.

Combined with the instrumentalities described is a feed and pressure roll arrangement designated generally at 35. This feed and pressure construction is of conventional construction and comprises a carriage 36 supported for transverse movement back and forth, across the top of the table, by means of conventional undercut guides and ways, designated as a whole at 37.

Supported in the carriage 36 is a lower pressure roller 38 which is engageable with the underside of the blade or body of the band saw. Above the band saw B and engageable with the top of the blade or body portion thereof is a pressure roller 39 in cooperative relation with the pressure roller 38. These pressure rollers 38 and 39 are fixed to arbors or shafts 40.

The arbors or shafts 40 are constrained to roll together by twin gears 41. One of the arbors or shafts 40 is connected to a suitable source of drive or torque diagrammatically represented in Figs. 2 and 3 as a pulley 42.

The rollers 38 and 39 are required to exert heavy or extreme pressure on portions of the body or blade of the band saw B subject to correction, and for this purpose the arbor of the upper roller 39 is supported in bearings in a slidable bearing block 43 mounted for vertical movement in the carriage 36.

Screw and nut mechanism, designated generally at 47, is provided for exerting the required force on the bearing block 43 and this may be manipulated by power or by hand. In the construction shown it is manipulated by means of a hand wheel 50.

With the construction described, the man who is to reshape or refashion the band saw blades B, in his proper position with respect to the machine described and shown in the drawing, will successively press to the anvil 18 of the machine, portions corresponding in length to the length to that of the anvil.

In each instance this is accomplished, first by sight-aligning the portion of the blade to be treated, in its proper position on the anvil 18. Then the switch 30 is turned on, and the portion that is to be corrected is magnetically clamped to the anvil. The operator then applies the requisite pressure to the controlling rollers, and when that has been done, employs a machine hammer to peen or hammer out the distorted portions of the body or the blade of the saw.

The correction that is applied by the peening to the body or blade is facilitated and controlled by the squeezing and pulling and pressing action of the control rollers.

After one portion of the blade has been reshaped, then the operation is repeated, and so on, until the entire saw is reconditioned for use.

While I have shown and described one construction in which the invention may be advantageously embodied, it is to be understood that the construction shown has been selected merely for the purpose of illustration or example, and that various changes in the size, shape, and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

What I claim is:

1. A machine for reshaping band saw blades and comprising a support, mobile means for facilitating the traverse of the band saw across the support, electro-magnetic means for holding successive portions of the band saw to the surface of the support, and means engageable with the band saw for tensioning the same so as to put portions of the blade under control of an operator, while the operator applies corrective action to the distribution of its thickness and dimensions, under the influence of impact.

2. A machine for re-aligning band saw blades comprising a supporting bench having a flat, plane top constituted of hard steel, means for supporting and guiding a band saw, with the successive portions laying flatly against the flat, plane top of the supporting bench, electro-magnetic means supported below the top of the bench and active to clamp magnetically successive portions of the band saw flatly and in flush engagement with the top of the workbench, and means traversable across the blade portion of the saw and effective to stress and tension portions of the saw blade in magnetic clamping engagement with the surface of the table.

3. A machine of the character described comprising a supporting bench, means for guiding a band saw across the supporting surface of the bench, electro-magnetic means for pulling successive portions of the band saw blade into flat, plane engagement with the surface of the bench, and means working on the upper and the lower surfaces of the blade or body of the saw for stretching and tensioning it while it is under the influence of its magnetic hold.

4. A machine for re-dimensioning band saws and putting them into shape for effective use and comprising a bench, means above and below the bench for supporting the band saw, a combined anvil and magnet mounted on the top of the bench and below the upper run of the band saw, manually operable means for controlling the energization and deenergization of the magnet, and power operated means inclusive of two transversably operable feed rollers for exerting pressure on selected portions of the blade or body of the saw and exercising tension against the influence of the magnetic clamp.

5. A machine comprising a support inclusive of a flat, plane surface and adapted to support successive portions of a band saw, means for forcing successive portions of the band saw into flat, plane engagement with the surface of the support and holding such portions in position, and means grasping advanced portions of the band saw and stretching and tensioning it while held so that the portions held will be positioned and supported in condition to be reformed.

6. A machine for reconditioning band saws and comprising a bench, means above and below the bench for supporting the band saw for movement with its upper run movable across the top of the bench and in spaced relation thereto, an electro-magnet mounted on the bench below the upper run of the band saw and comprising a block of metal of appropriate magnetic permeability, a coil

associated with said block for inducing lines of magnetic flux through and beyond the upper surface thereof, an anvil plate of hard metal supported on the top of the block and adapted to be traversed by the lines of flux, said anvil plate presenting a flat, plane, upper surface on which successive portions of the upper run of the band saw may be presented, and means grasping portions of the upper run of the band saw advanced beyond the anvil plate for stretching, tensioning, and pressing such portions while the upper run of the band saw is electro-magnetically clamped to the anvil plate under the control of an operator so that the operator may apply corrective action to distorted or realigned portions of the band saw by appropriate peening or hammering.

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