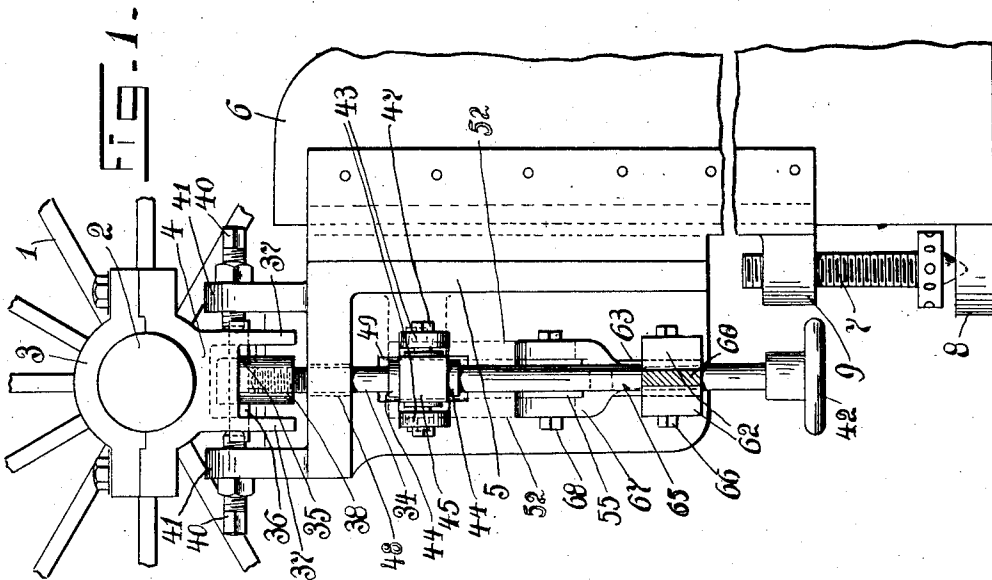
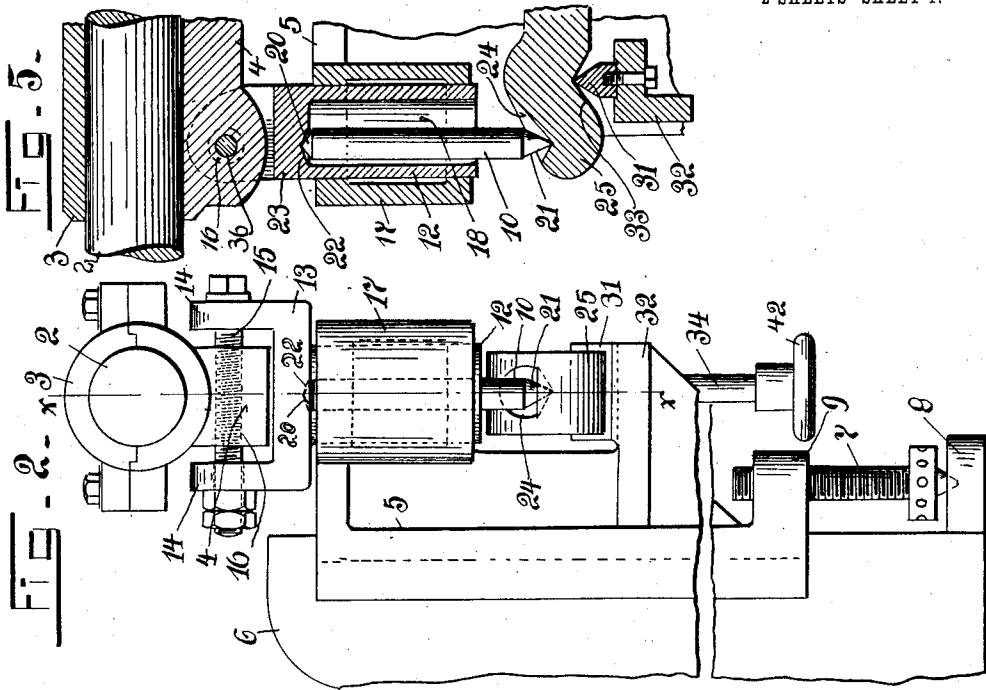


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BAND SAWING MACHINE.  
APPLICATION FILED NOV. 1, 1909.

1,037,900.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.



Witnesses:  
C. H. Ostermann.  
Lillian Burnett

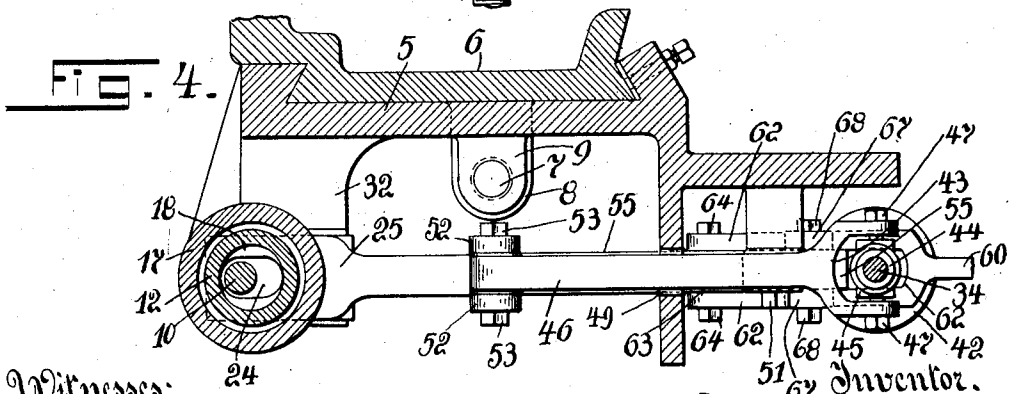
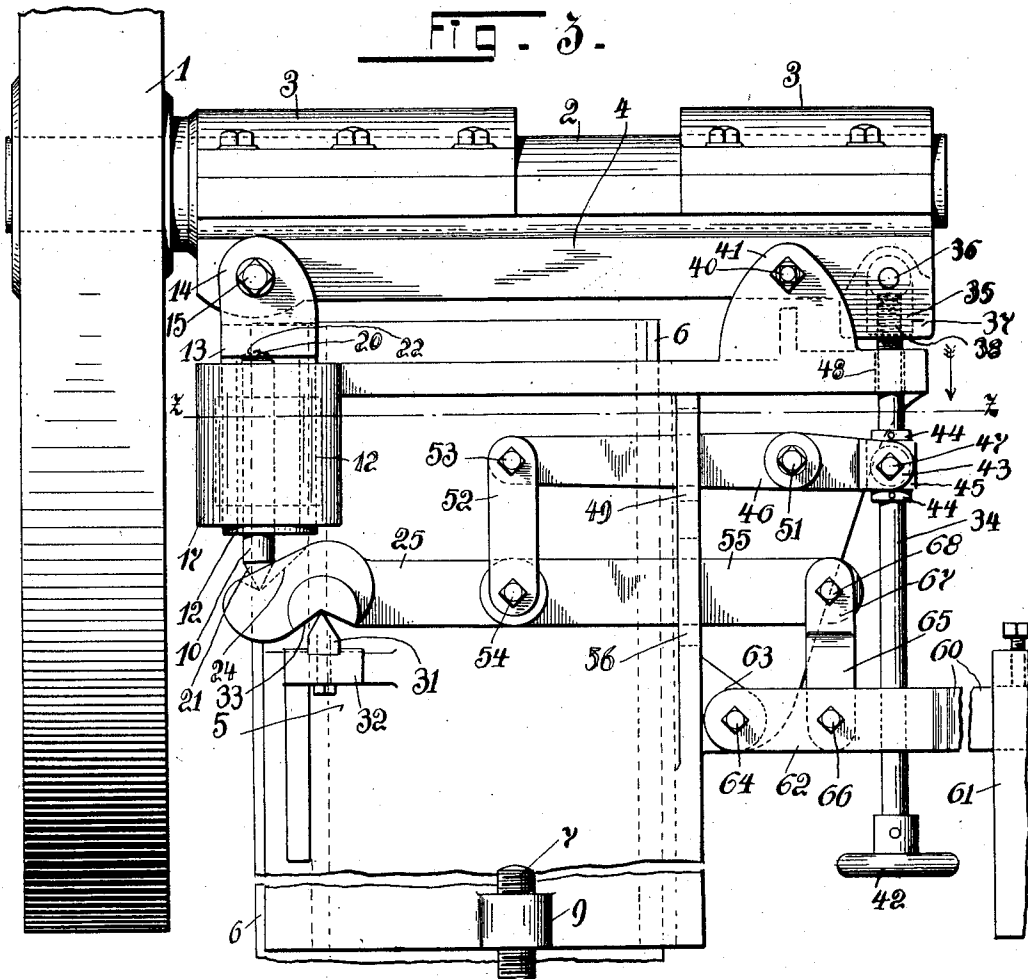
Inventor.  
Louis J. Hanhart,  
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C. Klostermann,  
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# UNITED STATES PATENT OFFICE.

LOUIS J. HANHART, OF CINCINNATI, OHIO, ASSIGNOR TO J. A. FAY & EGAN COMPANY,  
OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

## BAND SAWING-MACHINE.

1,037,900.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed November 1, 1909. Serial No. 525,707.

*To all whom it may concern:*

Be it known that I, LOUIS J. HANHART, 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 Band Sawing-Machines, of which the following is a specification.

It is one of the objects of my invention to provide new and improved means for tensioning or "straining" the band-saw blade whereby the mandrel for the band-saw wheel which moves in the straining action will move and yield in such manner as to occupy positions which are parallel throughout.

A further object is to provide a new and improved straining device for an overhung band-saw wheel which is supported on a knife-edge at its wheel-end and provided with a hold-down support at its rear end, the said supports acting for maintaining the saw-wheel mandrel parallel in its various positions during operation against the overbalancing weight of the overhung band-saw wheel; and further in mounting said supports on levers which extend under and parallel to the saw-wheel mandrel and have pivotal axes at substantially right angles to said mandrel.

A further object is to provide the straining device with new and improved means for adjusting the axis of the saw-wheel mandrel in a vertical plane for "tipping" the overhung band-saw wheel so as to adjust the periphery of the yieldable band-saw wheel into such relation to its mate as to cause the band-saw blade to properly travel about said peripheries, the adjustment being dependent upon the character of blade and the character of work being performed; and means are also provided for laterally adjusting the yieldable saw-wheel mandrel in order to change the direction in which the rotary axis of said mandrel extends for properly "tracking" the band-saw blade.

It will be understood that in band-sawing machines, there is a band-saw blade which travels about band-saw wheels, of which there is usually a pair, one of said wheels being yieldable. My invention acts upon the yieldable band-saw wheel and is primarily applicable to a band-sawing ma-

chine employing an overhung band-saw wheel.

The invention will be further readily understood from the following description and claims, and from the drawings, in which latter:—

Figure 1 is a rear end elevation of my improved device, so much of a column of the band sawing machine being shown as is necessary to illustrate my invention, the yieldable band-saw wheel being partly broken away. Fig. 2 is a front end elevation of the same with the band-saw wheel omitted. Fig. 3 is a side elevation of my improved device. Fig. 4 is a horizontal cross-section of the same on the line  $z-z$  of Fig. 2; and, Fig. 5 is a detail in section on the line  $x-x$  of Fig. 2 showing the front support for the yieldable saw-wheel mandrel.

1 represents the yieldable band-saw wheel secured to a mandrel 2 shown journaled in bearings 3 of a saddle 4. The wheel is shown as an overhung band-saw wheel, the bearings for its mandrel being to one side of said wheel, and the saddle is shown as an integral saddle. The saddle is shown supported from a slide 5 adjustable on a column 6 by a screw-rod 7 supported in a bearing 8 on the column and having threaded engagement in a threaded bearing 9 on the slide. In the present exemplification the slide forms a stationarily positioned support for the saddle-sustaining parts, but other support may be provided for these parts. The wheel-end of the saddle is supported from a thrust-rod 10, a barrel 12 being preferably interposed between the thrust-rod and saddle. The barrel is provided with a yoke 13, in the bearings 14 of which there is a screw-rod 15, on which the saddle is adapted to rock, being threaded thereon in a bearing 16. This barrel is slidable in a bearing 17 on the slide and has a bore 18 in which the thrust-rod is loosely received. The thrust-rod is provided with pointed ends 20 21, forming sharp-ended bearings for the thrust-rod. The sharp-ended bearing 20 is received in a socket 22 in the web 23 of the barrel and the sharp-ended bearing 21 is received in a socket 24 of a lever 25. The said sockets have walls which recede from the points more abruptly than the side faces of said pointed ends so

that the said walls will not interfere with said side faces in the movements of the parts.

31 is a knife-edge bar secured to a bracket 32. The lever 25 has a socket 33 which is received about the knife-edge bar.

34 is a hold-down rod which supports the rear end of the saddle and is shown as an adjusting screw for adjusting the relative elevation of the saw-wheel end and the rear end of said saddle for adjusting the rotary axis of said saw-wheel mandrel relatively to a horizontal plane, and thereby causing "tipping" adjustment of the yieldable saw-wheel.

35 is a collar slidable crosswise of the saddle as on a pin 36 in lugs 37 depending from the saddle. The adjusting screw has threaded engagement with the threaded shank 38 of the collar. The construction supports the rear end of the saw-wheel mandrel and holds said rear end down against the over-weight of the overhanging band-saw wheel, crosswise relative movement between the saddle and adjusting screw being however permitted so that the saw-wheel mandrel may be swung laterally in a substantially horizontal plane for swinging either side of the saw wheel forwardly or rearwardly and thereby "tracking" the band-saw blade. This latter adjustment is accomplished by set-screws 40 received at the respective sides of the saddle and adjustable in ears 41 of said slide, the barrel 12 being permitted to swivel in its bearing for permitting lateral adjustment of the rear end of the saddle.

45 is a positioning collar in which the adjusting screw 34 is journaled and held against endwise movement by collars 44 on the adjusting screw. The positioning collar is pivoted to a lever 46 by pivot bolts 47 received through the tines of a fork 43 of said lever. The lever 46 is received through an opening 49 in the slide. The adjusting screw has a handle 42 and preferably passes loosely through an aperture 48 in the slide. The lever 46 is pivoted to the slide as on a bolt 51, and is articulated with the lever 25 by links 52 received at the respective sides of said levers, the articulation of said links with the lever 46 being had by bolts 53 and with the lever 25 by bolts 54. The articulation of the links 52 with the lever 46 is at the end of said lever. Beyond the articulation of said links with the lever 25, the said lever has an extension 55 received through an opening 56 in the slide.

It will be noted that in the form shown the pivots of the levers 25 and 46 are located between the saddle-supports for said levers, thereby bringing the parts within narrow compass. Also that the levers 25 and 46 are levers of the first class, which are connected for combined movement, the extension 55 constituting the power end of said lever 25

a lever of the second class, so that said lever 25 with its extension is both a lever of the first and of the second class. By this construction simplicity and a minimum number of articulations are obtained.

60 is a tension lever and is shown provided with a weight 61. It is shown provided with a fork 62 at its inner end between the tines of which it is pivoted to a lug 63 on the slide by a pin 64, the adjusting-screw 34 being received through the space between the tines of said fork.

65 is a link, one end of which is shown received between the tines of the fork of the lever 60 and there pivoted by a bolt 66, its other end being forked as shown at 67 and received about the outer end of the extension 55 of the lever 25, where it is articulated by bolts 68. The tension exerted by the tension lever is communicated through the link 65 to the extension 55 of the lever 25, and thence through the fulcrum of said lever and the thrust-rod 19 by means of sharp-ended bearings to the saw-wheel end of the saw-wheel mandrel, for permitting that end, at which I have found it desirable that the most delicate yielding means shall be provided, to yield automatically upon sharp-ended bearings to the various strains, both slight and great, to which the band-saw blade is subjected in practical operation. While permitting this delicate yield, the saw-wheel end of the saddle is also prevented from lateral displacement by the connection of the barrel between the saw-wheel end of the saddle and the stationarily positioned support therefor. At the same time the rear end of the saw-wheel mandrel is also connected with the same lever upon which the saw-wheel end of said saddle directly acts, the connection being such that there is an equal movement in the same direction at both ends of the saddle for maintaining the saw-wheel mandrel in parallel positions throughout the various movements thereof. The connection of this rear end of the saddle is also such that unintentional forward tipping of the upper edge of the saw-wheel is prevented, the rear end of the saw-wheel mandrel being held downwardly by the lever support. It will be noted further that the thrust-rod at the wheel-end and the hold-down rod at the rear end of the saw-wheel mandrel are located preferably centrally under the saw-wheel mandrel and act upon the same with a direct upward thrust and are so connected as to cause this upward thrust and the yielding movements of the mandrel to take place preferably in a vertical plane so that no lateral movement of the band-saw wheel will take place in accommodating itself to the saw-strains. By these means no lateral deviation of the path of travel of the band-saw blade will take place, with the result that the board sawed

will be of true dimensions. The levers upon which the said rods are supported are also shown extending parallel to and located centrally under the saw-wheel mandrel, their pivotal axes being at substantial right angles to said mandrel.

If it is desired to intentionally change the relative elevation between the saw-wheel end and the rear end of the mandrel, the adjusting screw is turned, thereby raising or lowering the rear end of said mandrel with relation to the saw-wheel end, this adjustment acting upon the same parts which cause parallel movements of the saw-wheel mandrel throughout the yielding movements of the same, and having the effect of maintaining parallelism of movement irrespective of the relative elevation between the ends of the saw-wheel mandrel. The means for lateral adjustment of the saw-wheel mandrel also act upon the same parts.

By means of my improved device, I am enabled to accomplish the adjustments and permit all the movements that may be necessary in the proper "straining," "tipping," and "tracking" of the band-saw blade by convenient means which are simple in construction and permit sensitive yield and accommodation for slight as well as great differences in strain and stress upon the band-saw blade.

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

1. In a band-sawing machine, the combination of an overhung band-saw wheel, a mandrel therefor having support solely at one side of said wheel, said support comprising a sharp-ended support adjacent to said wheel and a hold-down support distanced from said wheel, said sharp-ended and hold-down supports normally located under the center of said mandrel solely to one side of said wheel, said sharp-ended and hold-down supports and mandrel moving in vertical planes substantially parallel with said mandrel, equalizing straining means between said sharp-ended support and said hold-down support connected to equalize reverse strains on said last-named supports for causing equal movements thereof in similar directions, and a vertical guide for said mandrel at said sharp-ended support between said band-saw wheel and hold-down support.

2. In a band sawing machine, the combination of an overhung band-saw wheel, a mandrel therefor having support solely at one side of said wheel, said support comprising a support adjacent to said wheel and a hold-down support distanced from said wheel and arranged for transmitting the stress of the weight of said wheel to said respective last-named supports in opposite directions, a vertical guide for said

mandrel adjacent to said wheel, and equalizing straining means acting between said last-named supports in opposite directions on both said last-named supports whereby movement of said band-saw wheel in vertical lines and parallelism of said mandrel in its various positions are maintained.

3. In a band sawing machine, the combination of an overhung band-saw wheel, a mandrel therefor having support solely at one side of said wheel, said support comprising a sharp-ended support adjacent to said wheel and a hold-down support distanced from said wheel and arranged for transmitting the stress of the weight of said wheel to said respective last-named supports in opposite directions, a vertical guide for said mandrel adjacent to said wheel, and equalizing straining means acting between said last-named supports in opposite directions on both said last-named supports whereby movement of said band-saw wheel in vertical lines and parallelism of said mandrel in its various positions are maintained.

4. In a band sawing machine, the combination of an overhung band-saw wheel, a mandrel therefor, a saddle in which said mandrel is journaled solely at one side of said wheel, a support for said saddle adjacent to said wheel and a hold-down support for said saddle distanced from said wheel and arranged for transmitting the stress of the weight of said wheel to said respective supports in opposite directions, a vertical swivel-guide for said saddle solely adjacent to said wheel and equalizing straining means acting in opposite directions on both said supports, whereby movement of said band-saw wheel in vertical lines and parallelism of said mandrel in its various positions are maintained, and lateral shifting means between said hold-down support and the end of said saddle distanced from said band-saw wheel, whereby said saddle is shifted about said swivel-guide.

5. In a band sawing machine, the combination of a band-saw wheel, a saddle at one side of said band-saw wheel, a mandrel for said band-saw wheel whose sole journal-connection is on said saddle to said one side of said wheel, a vertical guide having pivotal connection with said saddle adjacent to said band-saw wheel, a sharp-ended support for said guide, a hold-down support for said saddle distanced from said wheel, said supports located solely at said one side of said wheel, and equalizing straining means acting in opposite directions on both said supports, whereby movement of said band-saw wheel in vertical lines and parallelism of said mandrel in its various positions are maintained, said hold-down support comprising means for adjusting the end of said saddle distanced from said wheel up and down.

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6. In a band sawing machine, the combination of a yieldable overhung band-saw wheel, a mandrel therefor, a saddle for said mandrel at one side of said band-saw wheel, 5 a stationarily positioned support, a barrel on which the wheel-end of said saddle is pivoted, means for permitting lateral movement of the other end of said saddle, a bearing on said support in which said barrel is 10 slidable endwise, a lever, said lever having a sharp-ended pivot on said support, a stem having sharp-ended bearings between said barrel and lever and being located in the bore of said barrel wherein one of said 15 sharp-ended bearings is located, and a second lever for the other end of said saddle pivoted on said support, said levers being connected for combined movement, substantially as described.

7. In a band sawing machine, the combination of a yieldable overhung band-saw wheel, a mandrel therefor, a saddle for said mandrel at one side of said band-saw wheel, 20 a stationarily positioned support, a barrel on which the wheel-end of said saddle is pivoted, a bearing on said support in which said barrel is slidable endwise, an adjusting screw having hold-down connection with the 25 other end of said saddle and arranged for permitting lateral movement between said saddle and adjusting screw, means for adjusting the rear end of said saddle laterally whereby said saddle is swung about said barrel-bearing, a lever having connection 30 with said adjusting screw, a second lever, a thrust-rod having a sharp-ended bearing on said second lever and a sharp-ended bearing in said barrel, said levers being connected for combined movement, said second-named 35 lever having a rearward extension, and tensioning means having connection with said extension, substantially as described.

8. In a band sawing machine, the combination of a yieldable overhung band-saw 40 wheel, a mandrel therefor at one side of said band-saw wheel, a saddle for said mandrel at said one side of said band-saw wheel, a lever on which the wheel-end of said saddle is supported, an adjusting screw on 45 which the other end of said saddle is sup-

ported, a second lever having connection with said adjusting screw and having connection with said first-named lever, said first-named lever having a rear extension under said 55 second-named lever, a third lever under said extension and said second-named lever and having a recess under said other end of said saddle for receiving said adjusting screw therethrough, and a link articulated with 60 said extension and said third-named lever, substantially as described.

9. In a band sawing machine, the combination of an overhung band-saw wheel, a mandrel therefor, a saddle, said mandrel 65 having its sole journal-connection on said saddle, said saddle and journal connection located solely at one side of said wheel, and articulated equalizing straining mechanism between the ends of said saddle having normal thrust connection with said saddle ad- 70 jacent to said wheel and hold-down connection with said saddle distanced from said wheel and acting in opposite directions at both said connections on said saddle, and 75 means acting on said saddle from all horizontal directions for vertically guiding said saddle.

10. In a band-sawing machine, the combination of a stationarily positioned part, an overhung band-saw wheel, a saddle at one 80 side of said wheel, a mandrel for said band-saw wheel whose sole journal-connection is on said saddle to said one side of said wheel, a vertical guide on which said saddle is pivoted at the end of said saddle adjacent to 85 said wheel, and equalizing straining mechanism having hold-down connection with said saddle at a point distanced from said wheel, supporting connection with said slide, and pivotal connection with said sta- 90 tionarily positioned part between said hold-down and supporting connections, and operating substantially as described.

In testimony whereof, I have signed my name hereto in the presence of two subscribing witnesses. 95

LOUIS J. HANHART.

Witnesses:

HARPER G. ROSS,  
RICHARD D. COAN.