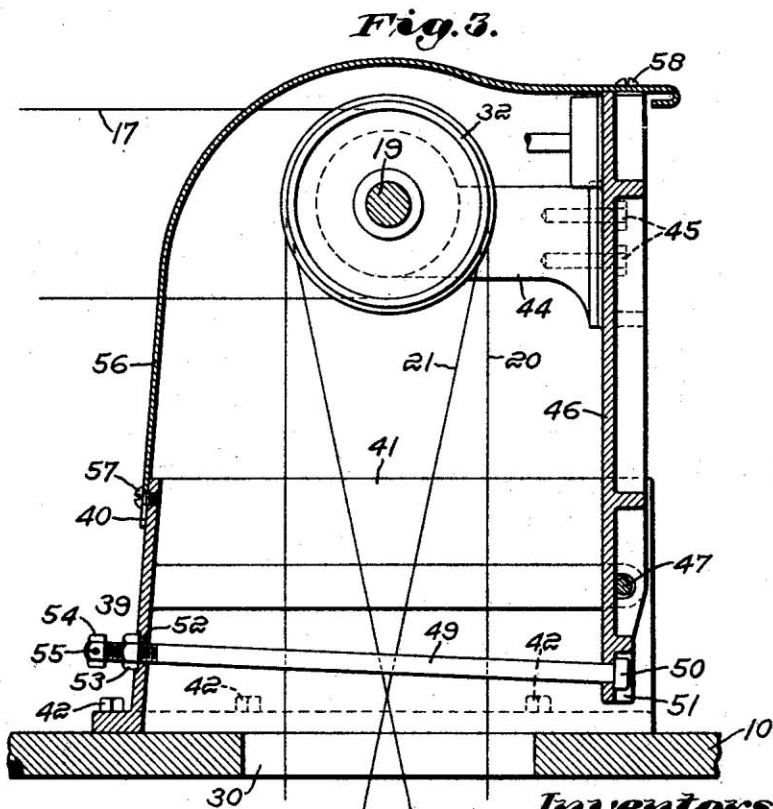
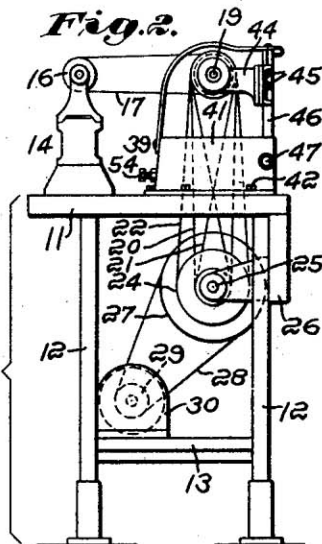
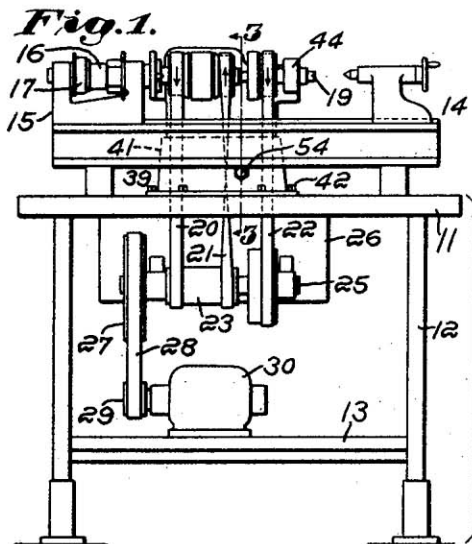


BENCH LATHE STRUCTURE

Filed June 29, 1928

2 Sheets-Sheet 1



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Fig. 4.

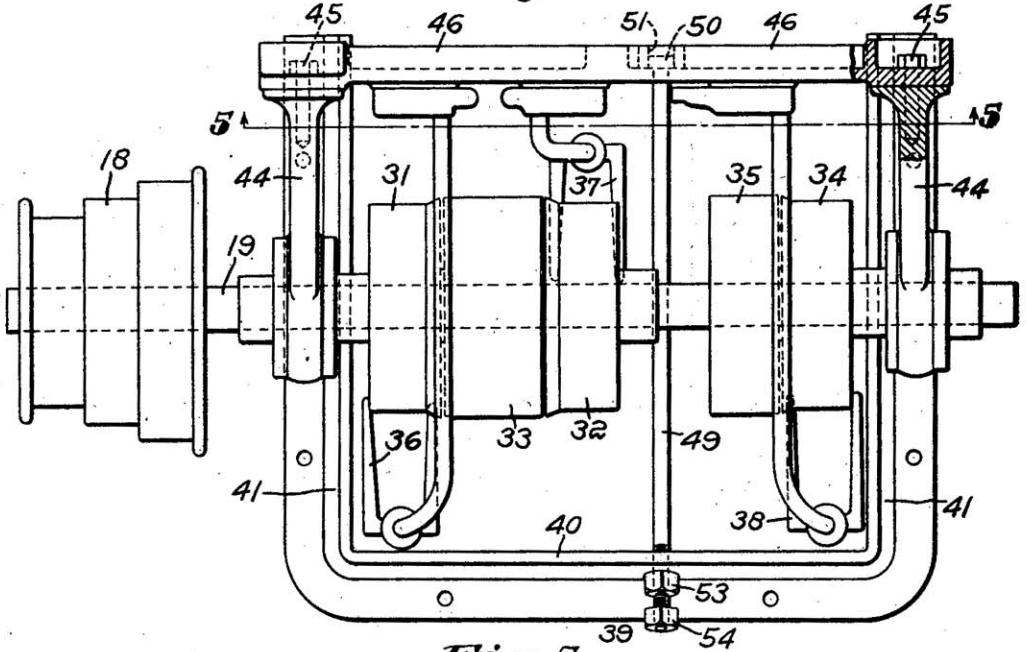
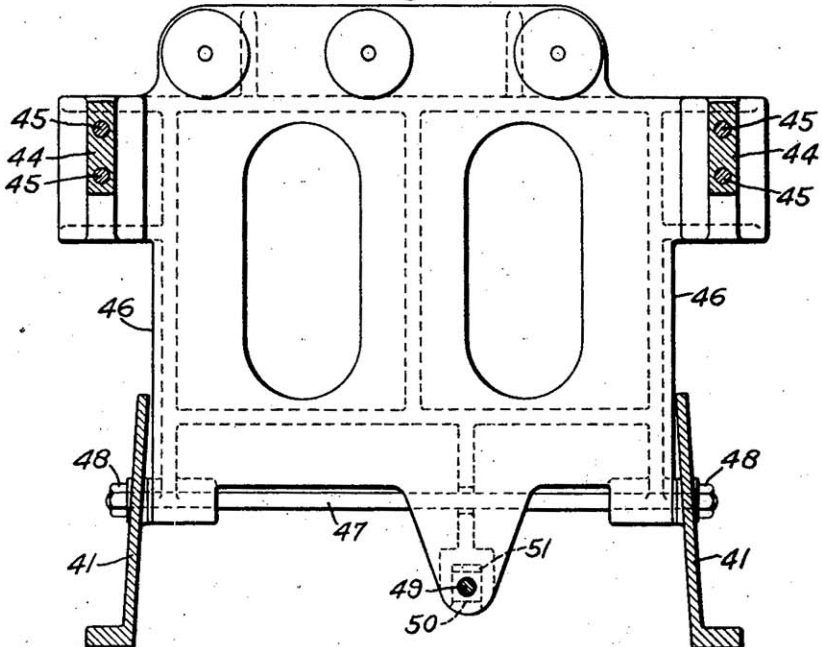


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## BENCH-LATHE STRUCTURE.

Application filed June 29, 1928. Serial No. 239,107.

This invention relates to a novel and improved bench lathe structure, and will be best understood by reference to the following description, when taken in connection with the accompanying drawings of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a front elevation of a bench lathe structure exemplifying the invention;

Fig. 2 is a side elevation of the same, as viewed from the right-hand side of Fig. 1;

Fig. 3 is a sectional view, on an enlarged scale, on line 3—3 of Fig. 1;

Fig. 4 is a plan, partly in horizontal section, illustrating the countershaft mechanism, the belt guard, and the means for supporting the countershaft mechanism on the belt guard; and

Fig. 5 is a sectional view on line 5—5 of Fig. 4.

Referring to the drawings, and to the embodiment of the invention which is illustrated therein, and having reference at first to Figs. 1 and 2, there is shown a bench 10, comprising a top 11, legs 12 and a shelf 13. On the top, there is mounted a bench lathe 14, having a head stock 15, provided with a cone pulley 16. This pulley is driven by a belt 17, which extends rearwardly therefrom in a generally horizontal direction, and in turn is driven by a cone pulley 18 (now see Fig. 4) on a countershaft 19.

In the present instance, the countershaft mechanism is of the type which furnishes high and low forward speeds and a reverse, and, as shown in Fig. 1, involves the use of three belts, namely a belt 20 for the forward low speed, a crossed belt 21 for reverse, and a belt 22 for the forward high speed. The belts 20 and 21 are driven by a wide-faced pulley 23, and the belt 22 by a wide-faced pulley 24, both secured to a jack-shaft 25, which in the present example is mounted beneath the bench top 11 on a support 26. Herein, the jack-shaft has an individual motor drive, and to that end, there is secured to the jack-shaft a large pulley 27, connected by a belt 28 to a small pulley 29 secured to the shaft of an electric motor 30, which is supported on the shelf 13.

Referring to Fig. 3, the belts 20, 21 and 22 extend from the jack-shaft in an upward di-

rection through an opening 30 in the bench top, and upwardly beyond the latter to the countershaft mechanism, which, as shown in Fig. 4, includes loose pulleys 31 and 32, and an interposed tight pulley 33 for the belts 20 and 21, and a loose pulley 34 and tight pulley 35 for the belt 22. Suitable belt shifters 36, 37 and 38, are provided for these belts. Disposed about these belts and about the opening in the bench top, there is a belt guard 39, herein of U-shaped form as viewed in plan, the same having a front wall 40 and two side walls 41, and being secured to the bench top as by bolts 42 (see Figs. 1 and 2).

The countershaft is mounted in bearing brackets 44, which, as best shown in Fig. 4, are suitably secured as by cap-screws 45 to an appropriate carrier, herein a plate 46, which is movably mounted to effect an adjustment of the tension of the belts. Herein, this is conveniently accomplished by pivotally mounting the plate on the belt guard, as by providing a rod 47 extending through the side walls 41, and threaded to receive nuts 48, which may be tightened to clamp the side walls against the plate, thereby to prevent any looseness or vibration at this point.

As well illustrated in Fig. 3, the location of the pivot 47 is such that swinging of the plate 46 about the axis of the rod will vary the tension of the belt 17, as well as the belts 20, 21 and 22. Adjustment of the plate is conveniently effected by a rod 49, suitably connected to the plate below the pivot 47, as by providing the rod with a non-cylindrical head 50, received in a pocket 51 (best shown in Fig. 4), which prevents its rotation. Referring again to Fig. 3, the adjusting rod extends loosely through an opening 52 provided in the front wall 40, and is threaded to receive a nut 53. By turning this nut in the proper direction, the plate 46 is rocked on its pivot to place the belts under the proper degree of tension. Loss of the adjusting nut 53 is conveniently prevented by providing a second nut 54 threaded onto the rod, and secured thereto as by a pin 55.

In the present embodiment, the belts 20, 21 and 22, and all of the pulleys on the countershaft, with the exception of the cone pulley 18, are further guarded by an auxiliary guard 56, herein conveniently made of sheet metal secured at one edge as by screws 57 to the front wall 40 of the main guard, and

secured as by screws 58 to the upper edge of the plate 46. This auxiliary guard has sufficient flexibility to permit swinging of the plate 46 by the adjusting means, without substantial resistance. This plate is shown in Figs. 2 and 3, but is omitted in Fig. 1 for the sake of clearness.

Referring now to Figs. 1 and 2, it is evident that several important advantages result from the described structure. One of these advantages is a greater degree of safety, because of the fact that the belts are short and well guarded, and because the belt 17 extends rearwardly instead of upwardly. Another advantage is that there is much less obstruction of light from a window in front of which the bench is placed. Still another advantage is that there is less noise and vibration because the belts, being adjustable, require no lacings, and cemented belts can be used.

Having thus described one embodiment of our invention, but without limiting ourselves thereto, what we claim and desire by Letters Patent to secure is:

1. The combination of a bench, a bench lathe thereon comprising a head stock having a pulley, a counter-shaft mechanism supported by said bench at the rear of said lathe, a belt extending in a generally horizontal direction from said pulley rearwardly to said counter-shaft mechanism to transmit power from the latter to the former, a belt guard at the rear of said lathe, a support for said counter-shaft mechanism movably supported on said belt guard, and means providing for adjustment of the tension of said belt by moving said support relatively to said belt guard.

2. The combination of a bench, a bench lathe thereon comprising a head stock having a pulley, a counter-shaft mechanism supported by said bench at the rear of said lathe, a belt extending in a generally horizontal direction from said pulley rearwardly to said counter-shaft mechanism to transmit power from the latter to the former, a jack-shaft below said counter-shaft, belts connecting said jack-shaft to said counter-shaft mechanism, a guard for the last-mentioned belts, a support for said counter-shaft mechanism movably supported on said belt guard, and means providing for adjustment of the tension of the first-mentioned belt by moving said support relatively to said guard.

3. The combination of a bench, a bench

lathe thereon comprising a head stock having a pulley, a counter-shaft mechanism supported by said bench at the rear of said lathe, a belt extending in a generally horizontal direction from said pulley rearwardly to said counter-shaft mechanism to transmit power from the latter to the former, a jack-shaft below said counter-shaft, belts connecting said jack-shaft to said counter-shaft mechanism, a guard for the last-mentioned belts, a support for said counter-shaft mechanism pivotally supported on said belt guard, and means providing for adjustment of the tension of the first-mentioned belt by moving said support relatively to said guard.

4. The combination of a bench, a bench lathe thereon comprising a head stock having a pulley, a counter-shaft mechanism supported by said bench at the rear of said lathe, a belt extending in a generally horizontal direction from said pulley rearwardly to said counter-shaft mechanism to transmit power from the latter to the former, a jack-shaft below said counter-shaft, belts connecting said jack-shaft to said counter-shaft mechanism, a guard having walls at the front and sides of the last-mentioned belts, a support for said counter-shaft mechanism pivoted on the side walls of said guard to swing about a horizontal axis parallel with said shafts, and means to adjust said support on its pivot to vary the tension of said belts.

5. The combination of a bench, a bench lathe thereon comprising a head stock having a pulley, a counter-shaft mechanism supported by said bench at the rear of said lathe, a belt extending in a generally horizontal direction from said pulley rearwardly to said counter-shaft mechanism to transmit power from the latter to the former, a jack-shaft below said counter-shaft, belts connecting said jack-shaft to said counter-shaft mechanism, a guard having walls at the front and sides of the last-mentioned belts, a support for said counter-shaft mechanism pivoted on the side walls of said guard to swing about a horizontal axis parallel with said shafts, and means extending from said support through the front wall of said guard to adjust said support on its pivot to vary the tension of said belts.

In testimony whereof, we have signed our names to this specification.

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THORVALD S. ROSS.