June 23, 1936. T. L. HEDGPETH 2,044,983

BELT AND PULLEY MEASURING APPARATUS

Filed Jan. 18, 1936

Fig. 1.

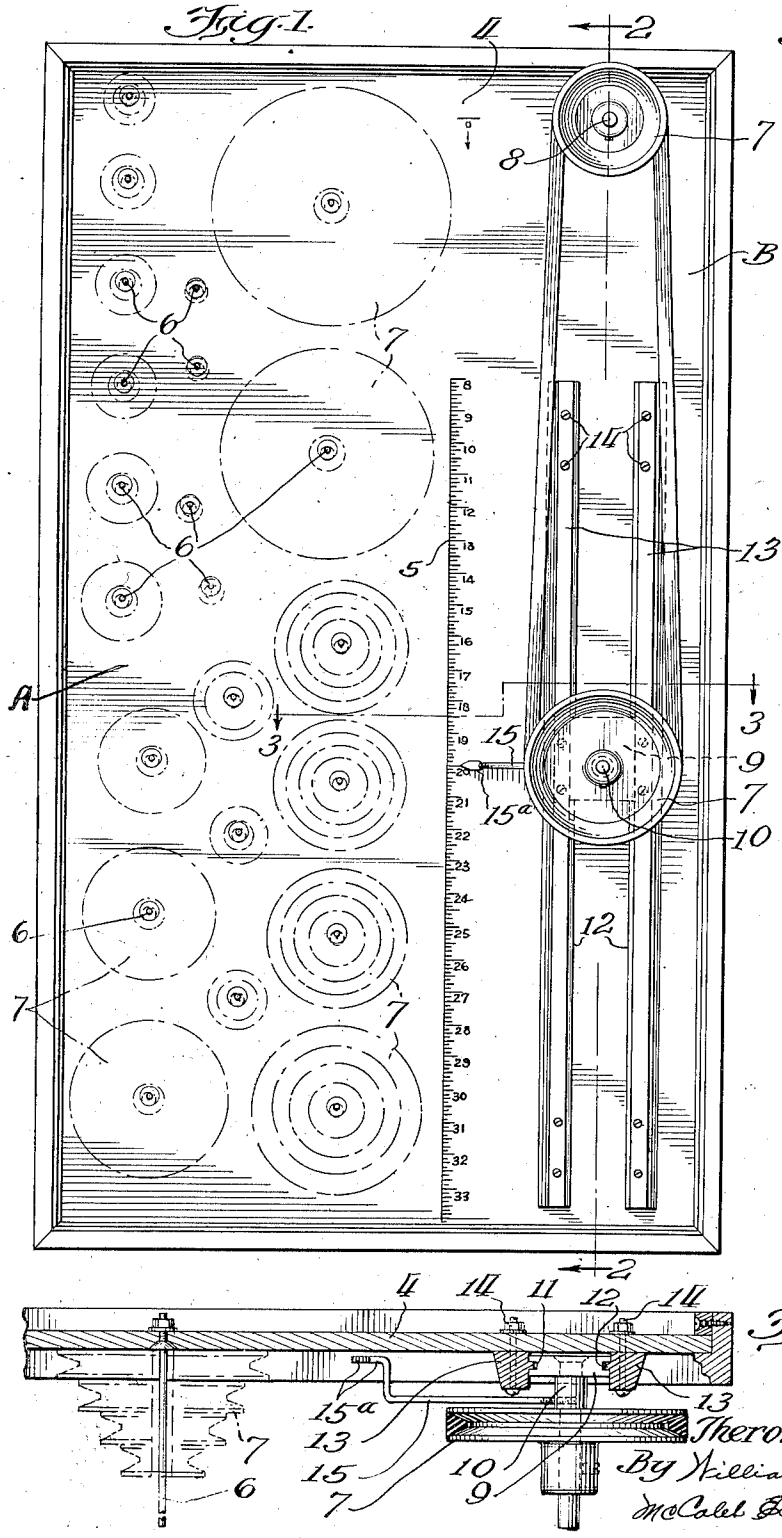


Fig. 2.

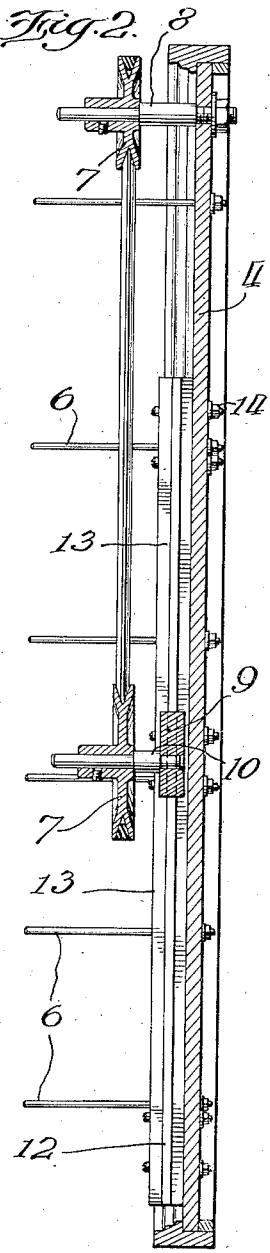


Fig. 3.

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Patented June 23, 1936 2,044,983

UNITED STATES PATENT OFFICE

2,044,983

BELT AND PULLEY MEASURING APPARATUS

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Application January 18, 1936, Serial No. 59,664

4 Claims. (Cl. 33—125)

My invention contemplates and provides an apparatus which facilitates the proper selection, and consequently the sale, of appropriate belts, pulleys and suitable combinations of the same.

Power tools of the kinds now extensively used by amateur craftsmen are usually motor driven through the agency of so-called V belts cooperating with driving and driven pulleys having peripheral grooves for the reception of such belts. The grooves of different makes of pulleys frequently vary as to both depth and the angularity of their side walls. Different makes of belts also may vary as to the dimension between their inner and outer surfaces, as well as the angularity between their lateral surfaces. These circumstances have made it a difficult matter for dealers' salesmen to select, or assist amateur craftsmen in selecting, belts, pulleys and belt-pulley combinations suitable for association with any given tool and its driving motor—even though the distance between the centers of the pulley shafts of the tool and motor be known. It is to the elimination of this difficulty that the present invention is directed.

In the accompanying drawing:

Fig. 1 is a front elevational view of a pulley display board to which I have elected to apply the improvements of the present invention;

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1 and looking in the direction indicated by the arrows,—the displayed pulleys, in this instance, having been removed from their supporting pins to simplify the figure; and

Fig. 3 is a fragmentary sectional view, on somewhat enlarged scale, taken in the horizontal planes of the line 3—3 of Fig. 1 and looking in the direction indicated by the arrows.

Similar characters of reference refer to similar parts throughout the several views.

At 4 I have illustrated a suitably framed display board intended to be vertically mounted or suspended against a salesroom wall. The obverse face of the board may be regarded as divided into two fields A and B by the vertically extending scale 5 which is a part of the improvements of the present invention. Such scale, which is applied to the board 4 in any suitable manner, is preferably graduated in inches.

Located in the field A, and projecting horizontally and forwardly therefrom, is a plurality of pins 6—6 adapted to project through, support and display pulleys 7—7 of the kinds usually employed in connection with amateur craftsmen's tools,—i. e., peripherally grooved pulleys, in the usual sizes, of both the single groove type and the cone type having a plurality of peripheral grooves of graduated diameters.

Located in the field B, and cooperating with the scale 5, are the instrumentalities, now to be described, with which the present invention is concerned.

Fixedly supported by and projecting horizontally and forwardly from the board 4 is a pin 8, the reduced forward end of which constitutes a male bearing whereon any one of the pulleys 7—7 may be mounted for free rotation. Located beneath the bearing pin 8 is a vertically reciprocatory cross head or bearing carriage 9 from which projects a bearing pin 10 having its axis at all times maintained in parallelism with the axis of pin 8,—the reduced forward end of this pin 10 also being adapted to receive any one of the pulleys 7—7.

Cross head 9 is provided in each of its vertical edges with a groove 11 which slidingly receives a correspondingly shaped tongue 12 formed integrally with the adjacent one of a pair of spaced-apart vertically disposed guide rails 13—13. The guide rails are secured to the board 4 by any suitable means, for example, the bolts 14—14.

Having one end threaded into the larger diameter portion of pin 10, and projecting laterally and horizontally therefrom, is a rod 15 having a pointed extremity 15—*a*, which is offset to lie adjacent board 4 and cooperate with graduated scale 5.

The practical utility of the apparatus of the present invention readily can be appreciated by giving consideration to several often encountered situations wherein the apparatus is most useful.

Let us suppose that a dealer's salesman is informed by a customer that the latter wishes to purchase a V belt for cooperation with peripherally grooved driving and driven pulleys of six inch and four inch diameter, respectively, located on shafts having their centers sixteen inches apart. The salesman, if equipped with the apparatus of the present invention, immediately places a six inch pulley on pin 8 or pin 10, a four inch pulley on the other of said pins 8 and 10, places what he conjectures to be the proper size belt around the said pulleys, and permits (or causes) the cross head 9 and parts carried thereby to gravitate in guide rails 13—13 until the belt is tautened. If, in these circumstances, the pointer 15—*a* indicates "16" on the scale 5, the salesman knows that the tested belt is the one which the customer requires. On the other

hand, if the pointer does not indicate "16", a longer or shorter belt, as the case may be, must be similarly tested and proven to be of the proper length to meet the requirement of the customer.

Offhand it might occur to one that the customer could simplify the selection of the proper belt by wrapping a string around his pulleys, measuring the string and then give the salesman the length of the string as the inside length of the required belt. But such a method (while satisfactory enough in the selection of a flat belt for cooperation with its appropriate pulleys) is not feasible when the problem is to fit a V belt to appropriately grooved pulleys,—this because V belts seldom, if ever, extend into the apices of the grooves of their cooperating pulleys. Furthermore, many pulleys are not built with the idea of having the angular side walls of the pulley grooves ride on the pitch line of the belt. Therefore, and for the reason last mentioned, it is desirable that the trial pulleys, against which the purchased belt is tested in the apparatus of the present invention, be of the same make, or be known to be substantially identical with, those pulleys of the customer's equipment with which the purchased belt is to cooperate.

Now let us suppose that the salesman is advised by the customer that the latter is employing a six inch driving pulley and a four inch driven pulley, on centers sixteen inches apart, and that he wishes to increase his speed by the expedient of substituting a three inch pulley for the four inch pulley, but does not know what length of V belt he will require after the substitution of pulleys has been effected. In such a situation, the salesman places a six inch pulley on one of the bearing pins 8 or 18, a three inch pulley on the other of said bearing pins, and applies belts to the said pulleys until one of the said belts is properly tautened, under the gravitational pull of cross head 9 and parts carried thereby, with the pointer 15—*a* indicating sixteen inches on scale 5.

Other situations in which the apparatus of the present invention will assist both salesman and customer in the adaptation of belts to pulleys and vice versa, will readily suggest themselves in the light of the specific examples hereinbefore given.

Having thus illustrated and described a preferred embodiment of my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In an apparatus for facilitating the selection of belts and pulleys, the combination of a vertically disposed support, a pair of vertically displaced bearings carried by the support, each of said bearings being in the form of a horizontally disposed pin to which a pulley may be removably applied, said bearings being maintained with their axes in the same vertical plane, a cross head by which the lower one of said bearings is carried, a pair of spaced-part vertically disposed guide rails, carried by the support, on and between which the cross head is movable toward and away from the upper bearing while maintaining the axis of the lower bearing parallel with the axis of the upper bearing, a graduated scale carried by the support, and a pointer, carried with the cross head, for indicating the distance between the axes of said bearings when a belt, placed around pulleys mounted on said bearings, has been tautened by the gravitational pull of the cross head and parts carried thereby.

2. In an apparatus for facilitating the selection of belts and pulleys, a support, a pair of vertically displaced bearings, to each of which a pulley may be removably applied, carried by the support, the upper bearing being held against any movement which will shift its axis relatively to the support, a bearing carriage, mounted on the support, wherewith the lower bearing is movable toward and away from the upper bearing while having its axis maintained parallel to the axis of the upper bearing, means for guiding movements of the bearing carriage toward and away from the upper bearing, and means for indicating the distance between the axes of said bearings when a belt, placed around pulleys mounted on said bearings, has been tautened by the gravitational pull of the said bearing carriage and parts carried thereby.

3. In an apparatus for facilitating the selection of belts and pulleys, a support, a pair of bearings, to each of which a pulley may be removably applied, carried by the support, one of said bearings being held against any movement which will shift its axis relatively to the support, a bearing carriage, carried by the support, wherewith the other bearing is movable toward and away from the first bearing while having its axis maintained in parallelism with the axis of the first bearing, means for guiding movements of the bearing carriage on the support toward and away from the first bearing, and means for indicating the distance between the axes of said bearings when a belt, placed around pulleys mounted on said bearings, has been tautened by movement of the carriage, and the bearing carried thereby, away from the said first bearing.

4. In an apparatus for facilitating the selection of belts and pulleys, a support, a pair of bearings, to each of which a pulley may be removably applied, carried by the support, devices for permitting relative movements between said bearings while maintaining in parallelism the axes of the pulleys carried by said bearings, and instrumentalities for indicating the distance between the axes of the said pulleys when a belt, placed around the said pulleys, has been tautened by separation of said bearings.

THERON L. HEDGPETH.