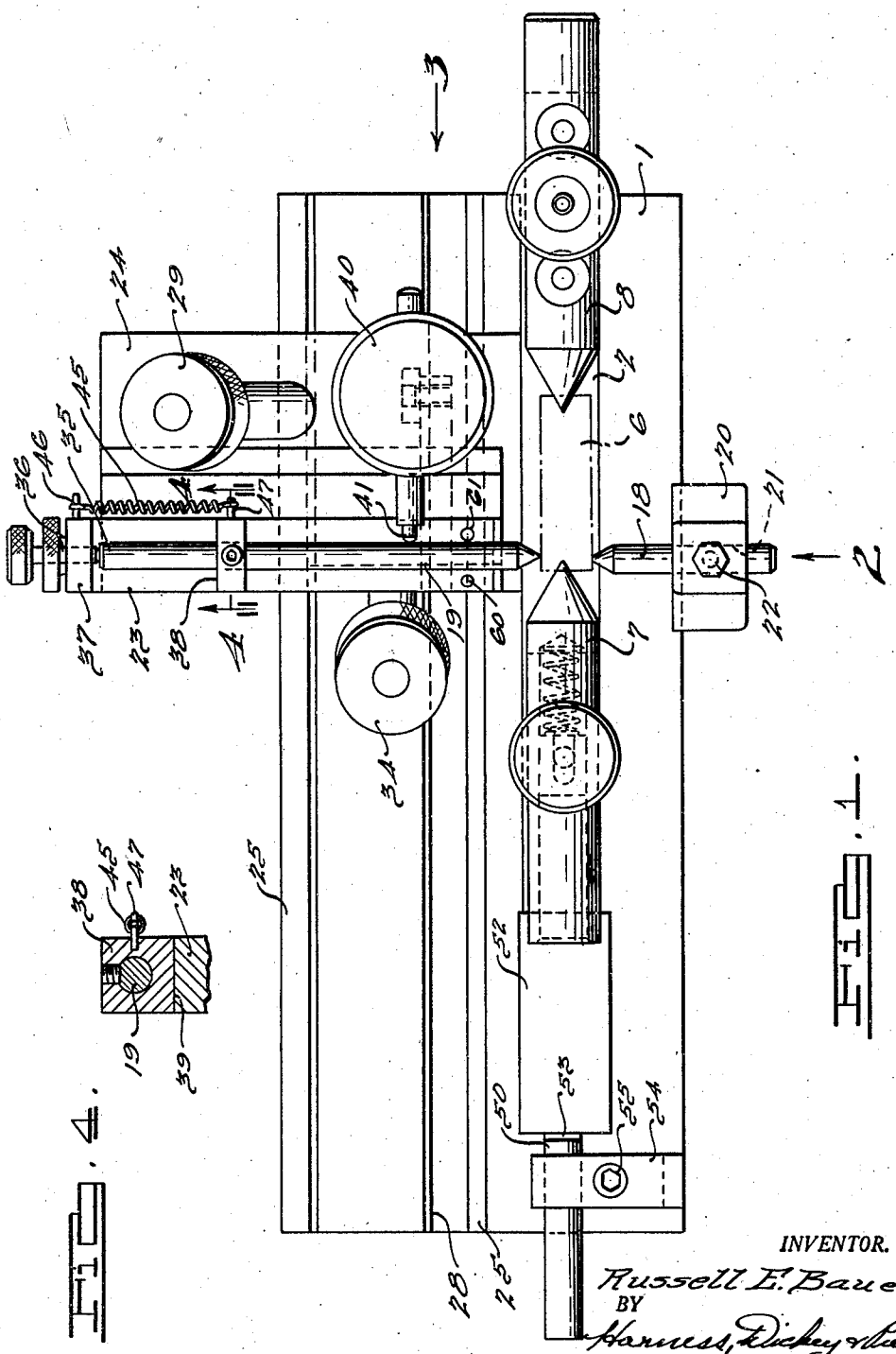
Oct. 22, 1946. R. E. BAUER 2,409,924

THREAD CHECKER

Filed Nov. 10, 1944 3 Sheets-Sheet 1



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Filed Nov. 10, 1944 3 Sheets-Sheet 2

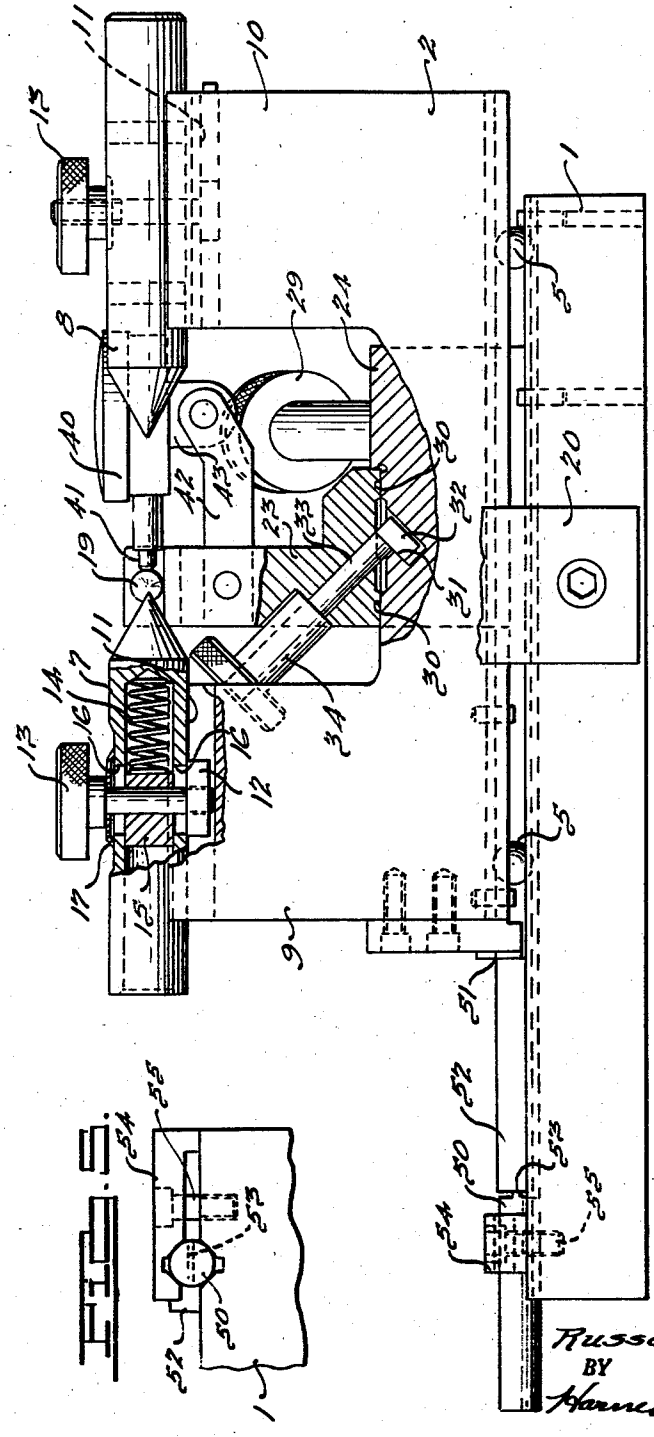


FIG. 2.

FIG. 5.

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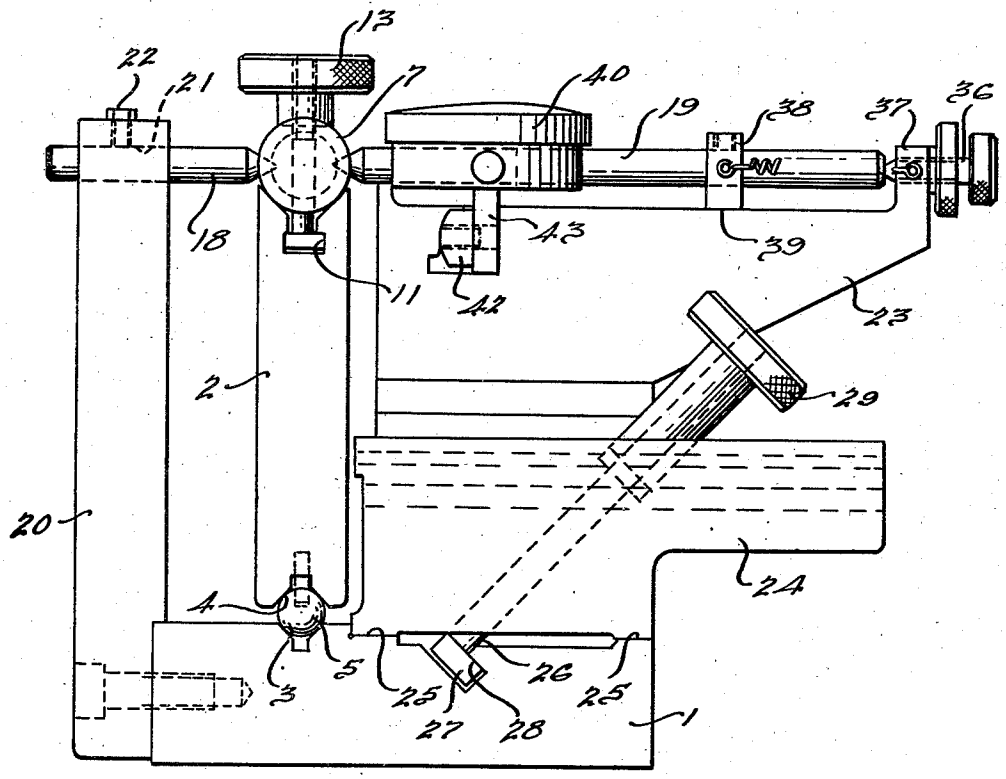


Fig. 3.

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THREAD CHECKER

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3 Claims. (Cl. 33—199)

1

The present invention relates to thread checking devices and particularly relates to such devices for checking the drunkenness and lead of threads.

The primary object of the present invention is to provide improvements in devices of the type mentioned by which the drunkenness and/or lead of a thread may be quickly and accurately checked. The term "drunkenness" or "drunken lead" is known and understood in the art as a thread which is staggered from a true helical thread, and while the lead may check by measurement along one side of the threaded workpiece in a certain plane, in a plane opposite thereto or on the opposite sides of the workpiece in the same plane the thread may be off from the true helix.

Other objects of the invention will become apparent from the following specification, the drawings relating thereto, and from the claims hereinafter set forth.

In the drawings, in which like numerals designate like parts in the several views throughout:

Figure 1 is a top plan view of the thread checking and measuring device embodying features of the present invention;

Fig. 2 is a view taken in the direction of the arrow 2 of Fig. 1, with parts removed and showing parts in cross-section thereof;

Fig. 3 is an end elevational view taken in the direction of the arrow 3 of Fig. 1 and with one of the centering means removed;

Fig. 4 is a cross-sectional view taken substantially along the line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary end view taken from the left end of Fig. 2.

Referring to the drawings, the thread measuring and checking device comprises a base 1 having a workpiece carrying and supporting member 2 mounted thereon. The supporting member 2 is mounted for longitudinal translation and transverse tilting movement with respect to the base. In order to so mount the member 2 the upper surface of the base is formed with a longitudinally extending raceway 3, which is generally V-shaped in section. The underside of member 2 is also formed with a longitudinally extending raceway 4 which is also V-shaped and which is positioned to face the raceway 3. Ball bearings 5 are disposed in the raceways 3 and 4 in spaced relation so that the member 2 may roll longitudinally of the raceway 3 and may tilt transversely thereof in either direction. Suitable stops may be provided on the raceways to limit the movement of the balls and to retain them in properly spaced relation.

A workpiece 6, which is a screw-threaded element, is supported on the member 2 and is centered thereon by means of a pair of facing centers 7 and 8. The centers 7 and 8 have facing

2

and pointed ends which are adapted to be received within centered recesses formed in the ends of the workpiece 6 so that the workpiece 6 is properly centered on the mounting member 2 with the axis of the workpiece extending parallel to the axis of raceways 3 and 4.

The member 2 is generally U-shaped and has upwardly extending arms 9 and 10, upon which the centers 7 and 8 are mounted, respectively. The upper surfaces of the arms are formed with T-slots 11 which receive the heads of screws 12 therein. The screws extend upwardly through the centers 7 and 8 and have thumb nuts 13 threaded to the upper ends thereof so that the centers 7 and 8 may be fixed in their longitudinal positions on arms 9 and 10. One of the centers, such as 7, is hollow and has a compression spring 14 disposed therein, one end of which abuts against the inner surface of the center 7 and the opposite end of which abuts against a block 15 which is also received within the hollow center 7. The shank of the screw 12 extends through the block 15 and through elongated openings 16 formed in the center 7 so that the center 7 may may be resiliently urged toward the workpiece. Clamping member 17 is disposed under the thumb screw 13 and engages the upper surface of the center 7 so that such center may be frictionally held in its longitudinal position.

A pair of oppositely disposed thread contacting members 18 and 19 are mounted on the base 1 and are positioned to engage the thread of the workpiece on opposite sides thereof. The members 18 and 19 have pointed ends which engage in the thread. The contact member 18 is mounted on an upstanding bracket 20 which may be fixed to one side of the base 1. The member 18 is received through an aperture 21 formed in the member 20 and may be adjustably fixed therein by means of a setscrew 22.

The member 19 is relatively long and is movably mounted on the top surface of a carrier or slide 23. The slide 23 is mounted for movement along the top surface of another slide 24. The slide 24 is mounted for longitudinal movement along the base 1. The upper surface of base 1 is formed with trackways 25, which slidably support the carriage 24 thereon for movement parallel to raceway 3. Carriage 23 may be fixed in any of its longitudinal positions by means of a bolt 26 having a laterally offset head 27 which is received within a longitudinally extending angular recess 28. The bolt 26 extends through the carriage 24 and the threaded upper end thereof is threadably received within the threaded shank of a thumb nut 29. By tightening the thumbnut it will be seen that the adjacent surfaces of the head 27 and recess 28 are pulled together so that the carriage 24 is fixed in position.

The carriage 23 is slidably mounted on the top

surface of carriage 24 for movement toward and from the axis of the workpiece, or in a direction transverse to the direction of movement of carriage 24. To so mount the carriage 23 the upper surface of carriage 24 is formed with trackways 30 upon which the undersurface of carriage 23 slides. A recess 31, similar to recess 28, is formed in the top surface of member 24 and receives the offset head 32 of a screw 33 which extends upwardly through carriage 23 at an angle. A thumb nut 34 is threaded to the threaded end of screw 33, and the carriage 23 may be adjusted along the length of recess 31 with respect to carriage 24.

The contact member 19, which is in the form of an elongated rod, is mounted on the top surface of carriage 23 for pivotal movement about its end indicated at 35. Such end 35 has a center recess formed therein into which the pointed end of a centering screw is received. The centering screw 36 may be threaded into a tapped opening in an upwardly projecting end 37 of the carriage 23. The contact member 19 is supported above the top surface of the carriage 23 by means of a supporting member 38 which is slidably received on the top surface of carriage 23. The member 38 may be moved along the contact 19 to its proper position and may be fixed in position by means of a setscrew which extends through the top thereof and engages the contact 19. The lateral movement of the contact 19 is limited by upwardly projecting stop pins 60 and 61 which are mounted on the top surface of slide 23 adjacent the pointed end of contact 19.

A conventional dial indicator 40, having the conventional plunger 41, is mounted on carriage 23 by means of a rigid bracket 42. On end of the bracket 42 is fixed to the carriage 23, and the opposite end is fixed to a depending lug 43 which may be fixed to the dial indicator casing. As mentioned, the dial indicator 40 is of conventional construction and has the conventional pointer which is actuated through a spring ratchet by the plunger 41.

The plunger 41 bears against the adjacent side of contact 19. Contact 19 is resiliently urged into contact with the plunger 41 by means of a coil spring 45. One end of the coil spring 45 is connected to a pin 46 which in turn is fixed to the projection 37; and the opposite end of the spring 45 is fixed to a pin 47 which is fixed to the collar 38.

To check the drunkenness of the thread of a workpiece 6, the device is set up so that contacts 18 and 19 engage in the thread on opposite sides thereof. The base 1 is preferably tilted by placing a shim under the right-hand end (viewing Fig. 2), so that the carriage or supporting member 2 tends to roll toward the left. This insures the threads will bear against the points at all times during the operation. By then rotating the workpiece 6 so that the carriage 2 runs along its raceways any deviation in the thread from the true helix will effect a lateral displacement of contact 19. The deflection of contact 19 will cause plunger 41 to move and indicate the extent of deflection on the dial indicator 40.

To check the lead of the thread, the contact 18 is removed and the workpiece is positioned against contact 19 so that it leans thereagainst. A stop 50 in the form of a bar of the same diameter as the balls 5 is mounted in the trackway 3 for adjustment therealong adjacent one end of the raceway 3. The stop 50 has a diametric projection 53 along one end, and the carriage 2 is

then moved so that the face of a stop 51 mounted thereon abuts against the projection of the stop 50. The stop 50 is held in adjusted position by a clamp 54 which has a V-groove on the undersurface thereof engageable with the top surface of stop 50. The clamp 54 is mounted on the base 1 by means of a screw 55. The carriage 2 is then positioned so that the thread is engaged by the pointed end of contact 19. The rim of the dial may then be turned so that the pointer is at zero. If it is then desired to check the lead for a particular length therealong a gage block 52 of that particular dimension is disposed between the faces of stops 50 and 51 with such faces engaging the opposite ends of the gage block. The thread is then brought into engagement with contact 19, and any variation in the lead will then be indicated by a deflection of the pointer 19 which will depress plunger 41 to move the pointer of the dial indicator 40.

Formal changes may be made in the specific embodiment of the invention described without departing from the invention, the scope of which is commensurate with the appended claims.

What is claimed is:

1. A device for measuring and checking threaded workpieces comprising a base, a workpiece supporting member, center mounting members on said supporting member and adapted to mount a centered workpiece therebetween, means mounting said supporting member on said base for movement along and tilting movement transversely to the longitudinal axis of said workpiece, said last-named means including facing raceways formed on said supporting member and said base with ball members interposed therebetween, thread contact means mounted on said base and positioned to engage the thread of the workpiece, said contact means including an element having an end positioned to engage said thread, means movably mounting said element, and indicator means mounted on said base actuated by movement of said element.

2. A device for measuring and checking threaded workpieces comprising a base, a workpiece supporting member, center mounting members on said supporting member and adapted to mount a centered workpiece therebetween, means mounting said supporting member on said base for movement along and tilting movement transversely to the longitudinal axis of said workpiece, a pair of oppositely disposed thread contact members mounted on said base and positioned to engage the thread of the workpiece, means movably mounting one of said contact members, and indicator means mounted on said base and actuated by movement of said one of said contact members.

3. A device for measuring and checking threaded workpieces comprising a base, a workpiece supporting member, center mounting members on said supporting member and adapted to mount a centered workpiece therebetween, means mounting said supporting member on said base for movement along and tilting movement transversely to the longitudinal axis of said workpiece, said last-named means including facing raceways formed on said supporting member and said base with ball members interposed therebetween, a pair of oppositely disposed thread contact members mounted on said base and positioned to engage the thread of the workpiece, means movably mounting one of said contact members, and indicator means mounted on said base and actuated by movement of said one of said contact members.

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