

July 26, 1938.

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2,124,603

BRAKE GAUGE

Filed July 25, 1936

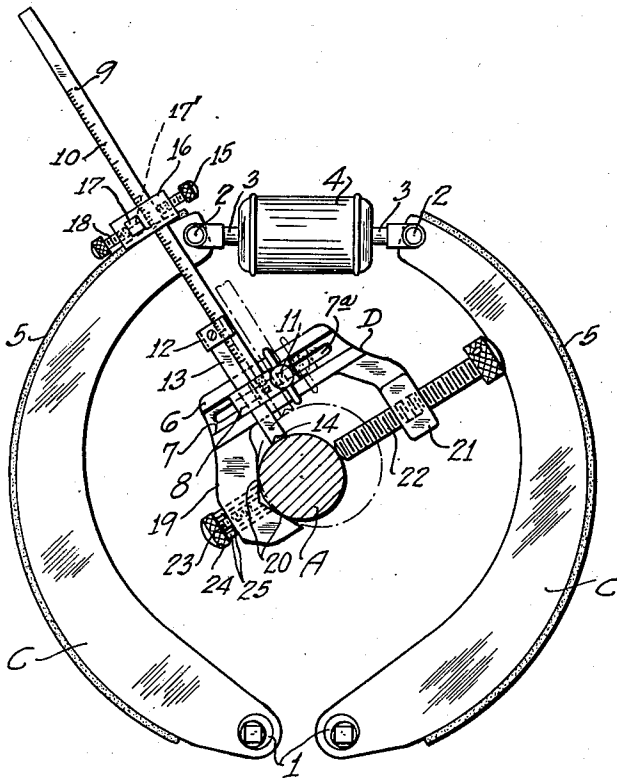


Fig. 1.

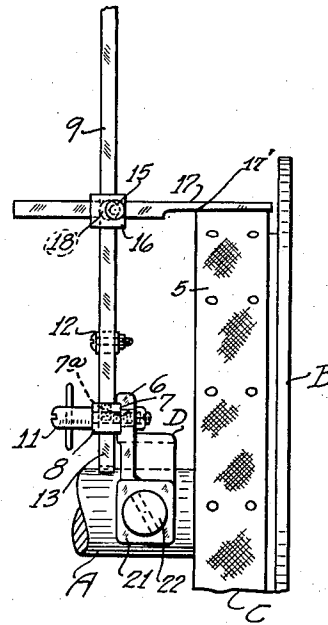


Fig. 2.

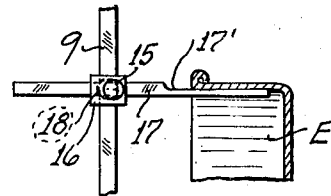


Fig. 5.

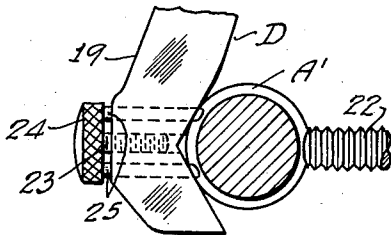


Fig. 3.

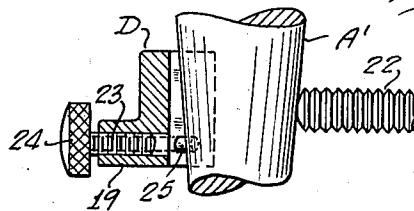


Fig. 4.

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2,124,603

BRAKE GAUGE

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Application July 25, 1936, Serial No. 92,532

17 Claims. (Cl. 33—180)

This invention relates generally to gauging tools and, more particularly, to a certain new and useful improvement in tools especially, though not exclusively, adapted for the precision gauging and setting of automobile brake-shoes and the like.

Automobile brakes usually comprise cylindrical drums rigidly fixed to the wheels and expandible and contractible shoes suitably operably mounted pivotally with respect to the drums for applying braking pressure to the drums and hence also to the wheels. For applying such pressure, the shoes are lined with suitable fabric or other friction material, such as asbestos strips, and for obtaining the maximum of braking efficiency, it is essential that the shoes not only be accurately positioned with proper drum-clearance both at toe and heel when contracted, but also that the respective drum-engaging faces of the linings have precise and accurate curvature relatively to the cylindrical faces of the respective drums.

My present invention has hence for its chief object the provision of a portable tool so constructed for accurately setting the lining-equipped shoes throughout their peripheral surface to the desired drum-clearance when contracted for uniform effective braking-engagement when expanded with their surrounding drum.

My invention has for a further object the provision of a tool of the type and for the purpose stated, which is simple, sturdy, and durable in structure, which may be manipulated readily, conveniently, and with facility in brake-shoe calibrating and setting operations, which may be operably mounted upon any spindle, front or rear and whether of tapering or other contour or formation, and which is efficient in the performance of its intended functions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing,—

Figure 1 illustrates a brake-gauging tool of my invention in spindle-mounted position for a brake-shoe checking and setting operation;

Figure 2 is a side elevation of the tool in operable position as in Figure 1;

Figures 3 and 4 are enlarged fragmental elevational and sectional views, respectively, of the spindle-engaging members of the tool; and

Figure 5 is a fragmentary side elevation of the tool in brake-drum measuring position.

Referring now more in detail and by reference characters to the drawing, which illustrates a preferred embodiment of the tool, A designates a standard automobile-wheel axle or spindle, and forming part of what may be described as the axle-assembly, is disk-shaped member B, suitably adjustably pivoted at an end upon which, as at f, are opposed or companion brake-shoes C, in the present instance of the internal expanding hydraulic type, pivotally connected at their other end, as at 2, to, and shiftable by, piston-rods 3 working in a cylinder 4. Suitably fixed on the peripheral faces of the shoes C, are suitable lining-strips 5 for frictional wheel-braking engagement, when the shoes C are expanded, with the inner circumferential face of a surrounding drum E rigidly fixed about the hub of, and on the face of, the usual wheel, not shown, all as will be well understood.

D designates the brake-gauging tool, which includes a main or body-portion in the form preferably of a suitably elongated yoke 6 provided longitudinally upon a side face with a groove or way 7 having a through slot 7^a formed in its bottom-wall. Slidable or shiftable in the groove or way 7 is a block 8 carrying at right angles thereto a suitably elongated staff 9 equipped lengthwise with a suitable scale or calibrations, as at 10.

Projecting through the slot 7^a and engaging the yoke 6 and block 8 for retaining the block 8 and its associated members in adjusted or shifted position relatively to the yoke 6, is a securing device 11, and lengthwise slidable through the block 8 and disposed in parallelism, and having a strap-connection, as at 12, with, the staff 9, is a suitably elongated bar 13 provided at its lower end with what may be described as companion horns 14 for endwise engagement with the particular spindle A, as presently more fully appears.

Also slidable for adjustment on, and equipped with a set-screw or the like 15 for retaining engagement with, the staff 9, is a second block 16, through which an arm in the form preferably of a suitably elongated bar 17 is adjustably slidable at right angles to the staff 9, the arm 17 being preferably disposed for movement endwise through a plane longitudinally projected from the bar or staff-extension 13, and the block 16 being also equipped with a set-screw or the like 18 for engaging the arm 17 for retaining the same in selected or adjusted position.

The arm 17 is provided with a contacting sur-

face 17' which is formed preferably by milling out a portion of the arm 17, this milled out portion to extend a substantial distance back from the one end of the arm 17 to accommodate brake drums and brake linings of varying widths. The contacting surface 17' should lie in a plane parallel to the top surface of the arm 17 and should preferably be positioned exactly at the axial middle of the arm 17. This will permit the arm 17 to be withdrawn from the block 16 and turned upside-down, so that the contacting surface 17' faces upwardly. The contacting surface 17' may then be brought to bear against the brake drum E to test the concentricity thereof and, if necessary, obtain a proper setting of the block 16. The arm 17 may then be withdrawn from the block, leaving all settings of the instrument constant. The arm 17 is then reversed, so that the contact surface 17' faces downwardly, and in this position the arm 17 may be used to gauge the surface of the brake lining, so that the brake-shoes will be gauged by the same measurement as obtained from the brake-drum, assuring an accurate setting of the shoes in relation to the brake-drum. It will be noted that, since the surface 17' is at the axial middle of the arm 17, the surface will lie in exactly the same position with respect to its radial distance from the center of the brake-drum in either the upward or downward facing position, so that when the brake lining is adjusted against this contact surface 17', it will fit properly within the brake drum upon operation of the brake assembly.

Projecting laterally from an end, and forming substantially a part, of yoke 6, is a first arm or jaw 19 grooved or cut-away upon its inner face and thereby provided with opposed faces, as at 20, for engagement with the spindle A; and projecting laterally from the opposite end, and also forming substantially a part, of yoke 6 in opposed relation to the jaw 19, is a second arm or jaw 21, adjustably threaded through which for spindle-engagement, is a suitably elongated screw-member 22.

For purposes presently appearing, the arm or jaw 19 is enlarged at or adjacent its one or outer side face, as best seen in Figure 4, and mounted for threaded adjustment in, and transversely of, such enlarged portion of jaw 19, is a screw-member 23 having a manipulating head 24. Disposed upon opposite sides of the screw-member 23 for engagement by its head 24, and loosely shiftable through the jaw 19 for impinging engagement upon corresponding actuation of the head 24 with an interposed spindle in opposition to the screw-member 22, are pins 25.

So constructed, in use and operation, the block 16 is first shifted along, and selectively positioned on, staff 9 to transfer and indicate thereon substantially the exact diametrical dimension of the particular drum with which the shoes C are to function. The tool is then disposed with its yoke 6 in embracing position about, and its jaw 19 engaged with, the particular interposed spindle A, screw-member 22 being then opposingly threaded into binding engagement with, and the tool thereby firmly secured for rotative movement about, the embraced or interposed spindle A. The block 8 is thereupon shifted and then secured in its slide-way 7 to position the staff-extension 13 radially with respect to, and for endwise engagement at its horns 14 with, the interposed spindle A, with the result that the arm 17 is precisely radially centered concentrically with respect to the axis of the spindle A. The arm

17 may then, of course, be suitably shifted and secured in block 16 for engagement with the peripheral face of the lined shoes C for thus readily, conveniently, and with facility checking and enabling, on rotative movement of the tool about the spindle A, accurate and precise setting of the shoes C throughout their circumferential face and with the desired toe and heel clearance for efficient peripheral braking engagement with their co-operable surrounding drum.

As will be observed, the spindle A is substantially of uniform diametrical dimension. In the event the interposed spindle is of tapering type, as, for instance, spindle A', the jaw 19 will engage the spindle A' at or adjacent the so-called inner side-margin of the jaw, as shown. The screw-member 24 is turned and pins 25 are shifted thereby into endwise engagement with the spindle A' at points spaced from the point of engagement therewith of the jaw-faces 20. Thus the jaw 19, in opposition to screw-member 22, is evenly engaged with the spindle A', and the tool thereby likewise retained upon, and for rotative movement about or with, the tapering spindle A'.

The tool fulfills in every respect the objects stated, the adjustable jaw-members 22, 23, enabling the facile engagement of the tool with various types and sizes of wheel-spindles, and it is to be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the tool may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is,—

1. A brake-gauge including a yoke for rotative engagement with an interposed spindle, a scale-shaft, a shoe-engaging arm on the shaft, and shaft-supporting means mounted for shiftable movement on the yoke for radially centering the arm concentrically with respect to the axis of the engaged spindle.

2. A brake-gauge including a yoke for rotative engagement with an interposed spindle, a scale-shaft disposed at a right angle to the yoke, a shoe-engaging arm on the shaft, and shaft-supporting means mounted for shiftable movement on the yoke for shifting the shaft relatively to the engaged spindle for radially centering the arm concentrically with respect to the axis of said spindle.

3. A brake-gauge including a yoke for rotative engagement with an interposed spindle, a block adjustably shiftable on the yoke relatively to the engaged spindle, a scale-staff carried by the block at right angles to the yoke, an arm mounted on, and disposed at right angles to, the staff for shoe-engagement, and spindle-engaging means carried by the block for locating the block relatively to the spindle for radially centering the arm concentrically with respect to the axis of the spindle.

4. A brake-gauge including a yoke for rotative engagement with an interposed spindle, a block adjustably shiftable on the yoke relatively to the engaged spindle, a scale-staff carried by the block at right angles to the yoke, an arm mounted on, and disposed at right angles to, the staff for shoe-engagement, and a bar carried by said block and shiftable in parallel alignment with the staff for engagement with the spindle for locating the block relatively to the spindle for radially centering the arm concentrically with respect to the axis of the spindle.

5. A brake-gauge including a longitudinally slotted yoke having spaced arms for embracing engagement with an interposed spindle, a block adjustably shiftable in the slot of the yoke relatively to the spindle, a scale-staff carried by the block at right angles to the spindle, a shoe-engaging arm mounted for adjustment on, and disposed at right angles to, the staff, and a bar carried by the block and lengthwise disposed for adjustment in parallelism with the staff for endwise engagement with the spindle for locating the block relatively to the yoke and spindle for radially centering the arm concentrically with respect to the axis of the spindle.

6. A brake-gauge including a longitudinally slotted yoke having spaced arms for embracing an interposed spindle, one of said arms having an inner face for rotative spindle-engagement, a screw-member having threaded engagement with the other arm for endwise rotative impinging engagement with said spindle in opposed relation to the first arm, a block adjustably shiftable in the slot of the yoke relatively to the spindle, a scale-staff carried by the block at right angles to the spindle, a shoe-engaging arm mounted for adjustment on, and disposed at right angles to, the staff, and a bar carried by the block and lengthwise disposed for adjustment in parallelism with the staff for endwise engagement with the spindle for locating the block relatively to the yoke and spindle for radially centering the arm concentrically with respect to the axis of the spindle.

7. A brake-gauge including a longitudinally slotted yoke having spaced arms for embracing an interposed spindle, members carried by, and shiftable with respect to, the arms for endwise rotative impinging engagement in opposed relation with said spindle, a block adjustably shiftable in the slot of the yoke relatively to the spindle, a scale-staff carried by the block at right angles to the spindle, a shoe-engaging arm mounted for adjustment on, and disposed at right angles to, the staff, and a bar carried by the block and lengthwise disposed for adjustment in parallelism with the staff for endwise engagement with the spindle for locating the block relatively to the yoke and spindle for radially centering the arm concentrically with respect to the axis of the spindle.

8. In a brake-gauge, a yoke including a jaw for disposition about a tapering spindle, the jaw having an inner face for marginal engagement with the spindle, pins shiftable on and transversely of the jaw for endwise engaging the spindle at a point spaced from the point of engagement therewith of the face of the jaw, and a headed member adjustable on the jaw for shifting the pins for spindle-engagement.

9. A brake-gauge comprising a yoke having opposed jaws for embracingly engaging an axle spindle, one of said jaws having a spindle-contacting portion rigidly mounted thereon, and a spindle-engaging member shiftable mounted thereon and spaced from the spindle-contacting portion thereof, for adjustable movement radially with respect to the spindle, and means operably mounted on the spindle for shifting the spindle-engaging member to any desired position of adjustment.

10. A device of the character described comprising a yoke having opposed jaws for disposition about a spindle, one of said jaws being provided with a spindle-contacting portion, a pair of longitudinally shiftable spindle-engaging pins

mounted in said jaw for adjustable movement with respect to the spindle, means operably mounted on said jaw for shifting said pins to any predetermined position of adjustment, and a clamping screw operably mounted in the other jaw for engagement with the spindle.

11. A device of the character described comprising a yoke having opposed jaws for disposition about a spindle, one of said jaws being provided with a spindle-contacting portion, a pair of longitudinally shiftable spindle-engaging pins mounted in said jaw for adjustable movement with respect to the spindle, a screw operably mounted on said jaw intermediate the pins and having a shoulder for endwise abutting engagement therewith for shifting said pins to any predetermined position of adjustment, and a clamping screw operably mounted in the other jaw for engagement with the spindle.

12. A device of the character described comprising a yoke having opposed jaws for disposition about a spindle, one of said jaws having a V-shaped channel formed transversely across its inwardly presented face parallel with the axial line of the spindle for embracing engagement at its one end with the spindle, a pair of longitudinally shiftable spindle-engaging pins mounted in said jaw adjacent its other end and positioned symmetrically on either side of the center-line of the channel, means operably mounted on said jaw for shifting said pins to any predetermined position of adjustment, and a clamping screw operably mounted in the other jaw for engagement with the spindle.

13. A brake-gauge including a yoke for engagement with an interposed spindle at diametrically opposed points on a selected diameter of said spindle, a movable member mounted on the yoke for shiftable movement along a line parallel to the selected diameter of the spindle, a shaft mounted rigidly on the movable member at right angles to the line of movement thereof, centering means shiftable mounted on the movable member and being engageable with the spindle for positioning the shaft in predetermined relation to the spindle, and brake-shoe engaging means shiftable mounted on the shaft.

14. In a brake-gauge, a yoke including a jaw for disposition around a tapering spindle for engagement therewith substantially along a selected diameter of the spindle, said jaw having an inner face for marginal engagement with the spindle, means adjustably mounted on the jaw for engaging the spindle at a point laterally spaced from the point of engagement between the spindle and said inner face of the jaw, and brake-shoe engaging means mounted on the yoke and operably disposed substantially within a plane at right angles to a plane passing through the axis of the spindle and the selected diameter.

15. A brake-gauge including a yoke having means for engagement with an interposed tapering spindle at substantially diametrically opposed points on a selected diameter of the spindle, a support operably mounted on the yoke at right angles to said selected diameter, and means operably mounted on and extending outwardly from said support for contacting engagement with the surface of a brake-shoe.

16. A brake-gauge including a yoke having means for engagement with an interposed tapering spindle at substantially diametrically opposed points on a selected diameter of the spindle, a shaft operably mounted on and extending outwardly from the yoke at right angles to said se-

lected diameter, and means adjustably mounted on the yoke for engagement with the spindle for swinging the yoke angularly with respect to the spindle axis whereby to rotate said shaft about its longitudinal axis while maintaining said shaft at right angles to said selected diameter.

17. A brake-gauge including a yoke having means for engagement with an interposed tapering spindle at substantially diametrically opposed points on a selected diameter of the spindle, a shaft operably mounted on the yoke at right

angles to said selected diameter, brake-shoe engaging means operatively mounted on, and extending outwardly at right angles to, said shaft, and means adjustably mounted on the yoke and engageable with the spindle whereby to swing the yoke angularly with respect to the spindle axis and accordingly swing the brake-shoe engaging means into alignment with the spindle axis while maintaining said brake-shoe engaging means in a plane parallel to said spindle axis.

HARRY B. BARRETT.