July 7, 1953 H. THOMASON 2,644,281

GRINDER MECHANISM FOR CLEANING BRAKE SHOES

Filed Dec. 27, 1949

Fig. 1.

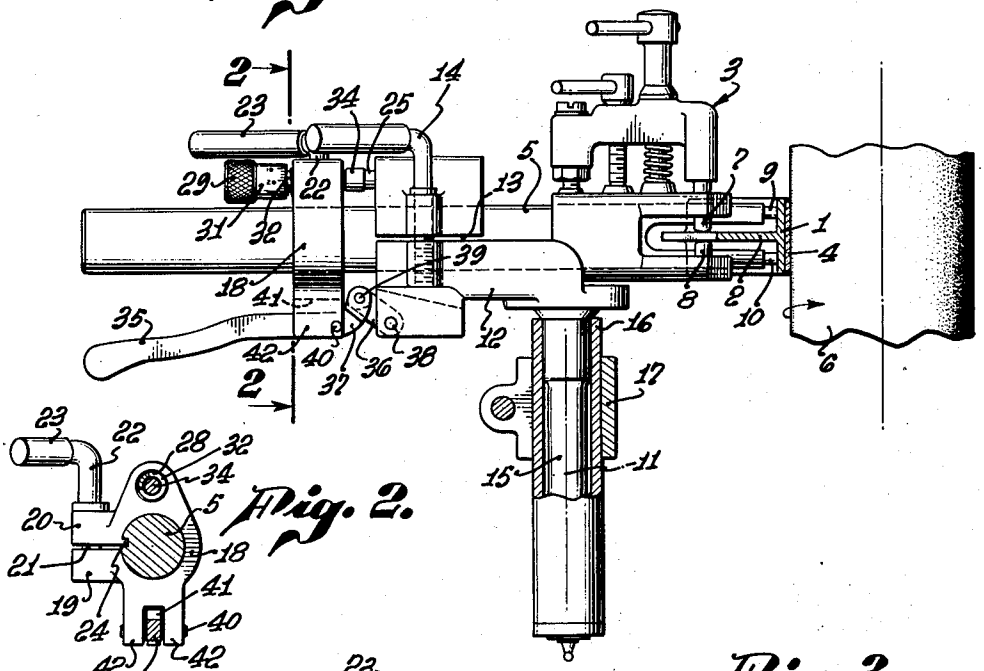
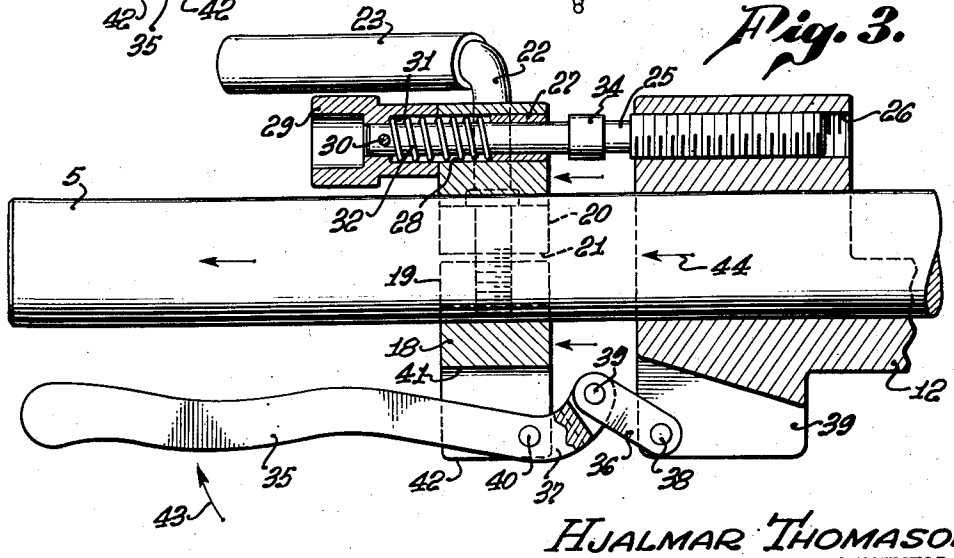


Fig. 2.

Fig. 3.



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Patented July 7, 1953 2,644,281

UNITED STATES PATENT OFFICE

2,644,281

GRINDER MECHANISM FOR CLEANING BRAKE SHOES

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Application December 27, 1949, Serial No. 135,227

2 Claims. (Cl. 51—217)

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This invention relates to the replacement of worn automobile brake shoe linings, and particularly to the removal, by grinding, of the old or worn lining preparatory to its replacement.

Brake shoes of arcuate form are arranged to carry a lining on its periphery, to cooperate with a cylindrical surface on a brake drum. The lining is customarily attached to the shoe by an adhesive.

In order to remove the worn lining, various expedients have been used. For example, the brake shoe may be heated in a furnace to cause disintegration of the adhesive. However, there is a likelihood under such circumstance, of warping the shoe to an intolerable degree. An alternative method involves mechanical removal of the lining, which usually leaves residual portions. These portions may be ground off.

For this grinding operation, a brake shoe lining grinder mechanism may be used; but since the residual portions of the lining are irregular, this grinding operation imposes a very irregular load on the grinder, and the grinding operation is quite extended.

It is one of the objects of this invention to make it possible expeditiously to grind off the worn lining.

In grinders for this purpose, the relative position of the shoe and the grinder is adjusted as by a feed screw. However, when a protuberance is encountered by the grinding wheel, a rapid adjustment is required to withdraw the shoe so that the grinder may take a cut that is permissible. The adjustment of the feed screw is too slow for this purpose. Accordingly it is another object of this invention to provide a supplemental adjustment for the grinder that can be instantaneously effective when the operator so desires.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawings accompanying and forming part of the present specification. The form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of this invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is a side elevation, mainly in section, showing an embodiment of the invention;

Fig. 2 is a sectional view, taken along a plane corresponding to line 2—2 of Fig. 1;

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Fig. 3 is an enlarged fragmentary sectional view of the device shown in Fig. 1.

The brake shoe 1 is shown, in this instance, as having a flange 2 which is adapted to be clamped by a holder 3. The face of the brake shoe 1 is indicated as carrying a worn brake shoe lining 4. The clamp 3 may be of the type illustrated in a copending application filed in the name of Hjalmar Thomason on March 13, 1948, under Serial Number 14,801, and entitled "Clamp." This holder is firmly attached to a spindle or bar 5 that is adapted to move longitudinally toward and away from the surface of a grinding wheel 6.

The clamp 3 has clamping elements 7 and 8, between which the flange 2 is firmly held. The clamp 3 also incorporates a plurality of abutment pins 9 and 10, contacting the inner concave surface of the shoe 1.

In order to clean the brake shoe, and to remove the worn brake lining 4 by a grinding operation, the bar 5 is adapted to be rotated about an axis 11 so as to move the shoe over a grinding surface. This axis 11 is parallel with the grinding surface of the wheel 6. The bar 5 is adapted to be urged toward the right into contact with the grinding surface in order that the grinding surface may disintegrate the old brake shoe lining 4.

For this purpose, a guide 12 is formed in which the bar 5 slides. This guide 12 forms a cylindrical surface for the bar 5, and is in the form of an annulus split as indicated at 13. A hand screw 14 extends across the split surface, if desired, to clamp the bar 5 into position in the guide, or the screw 14 may be loosened in order to permit the longitudinal movement of the bar 5.

The guide 12 is shown as formed integrally with a spindle 15 which is rotatable about the axis 11 by an appropriate manual operation. This spindle is journalled in a stationary sleeve 16 clamped, as by a clamp 17, to a stationary part of the grinding apparatus.

A standard 18 is firmly clamped to the bar 5 to the left of the guide 12. For this purpose, as shown most clearly in Fig. 2, the standard 18 is provided with a pair of bosses 19 and 20 separated by a split 21. A clamp screw 22 extends through the upper boss 20 and has a threaded extremity engaging in a threaded aperture in the lower boss 19. Rotation of the screw 22, by the aid of its handle 23, serves to clamp the standard 18 firmly to the bar 5. A spline or key 24 may be provided to restrict bar 5 against angular movement with respect to the standard 18.

Standard 18 is urged by a spring mechanism yieldingly toward the right to bring the lining 4 into contact with the grinding surface of wheel 6. For this purpose, a post in the form of a feed screw 25, having its axis parallel with the axis of bar 5, is adjustably threaded into the threaded aperture 26 formed in the top portion of the guide 12. This post or screw is slidably mounted in a sleeve 27 that lines a clearance aperture 28 in the standard 18.

Screw 25 carries an adjusting head 29 which is knurled on its exterior surface, and which is fastened to the screw 25 by the aid of a cross pin 30. The adjusting head has a hollow projection 31. A compression spring 32 extends between the left-hand side of the guiding sleeve 27 and the shoulder formed at the left-hand end of the hollow projection 31. Accordingly, since the adjusting head 29 is stationary with respect to the guide 12, the spring 32 exerts a force in a direction toward the right upon the sleeve 27 and, therefore, upon the standard 18. This urges the bar 5 toward the right and into cooperative relation with the grinder wheel 6. A limit is imposed upon this movement toward the right by the aid of a limiting collar 34 formed on the screw 25.

Adjustment of the screw 25 by the aid of the head 29 causes the collar 34 to be correspondingly adjusted, and forms a limit to the extent of movement of the bar to the right. In the position illustrated in Fig. 1, the spring 32 has expanded slightly, but the limiting collar 34 has not yet been contacted by the standard 18. Accordingly, the grinding can progress until the bar 5 has moved sufficiently to be limited by the collar 34.

When grinding off the worn brake shoe lining 4, protuberances due to the irregularities of the lining 4 are encountered as the brake shoe holder 3 is swung about the axis 11. This may impose sudden, abrupt, heavy loads upon the wheel 6. By the aid of the mechanism now to be described, this sudden load can be avoided by quickly retracting the bar 5. This retraction can be readily performed by the operator by moving a lever handle 35. In the position shown in Fig. 1, the lever handle 35 is inactive; in the position of Fig. 3, the lever handle 35 has been moved upwardly as indicated by arrow 43, toward the bar 5; and the standard 18, with the bar 5, has been retracted slightly from the grinding wheel 6.

This result is effected by the aid of a pair of links 36 and 37 forming a toggle mechanism. The link 36 is pivoted by the aid of a pin 38 in a slot 39 formed in a downwardly extending portion of the guide 12. The link 37 is joined to the link 36 by the aid of a pin 39, and the extremity of the link 37 is formed as a clevis for the accommodation of the link 36. The link 37 is formed integrally with the lever 35 and is pivoted upon a pin 40. This pin 40 extends across the slot 41 formed in a downward extension 42 of the standard 18.

Normally, the compression spring 32 urges the standard 18 toward the guide 12, and the toggle formed by links 36 and 37 is collapsed. However, when the lever 35 is raised, as indicated by the arrow 43 in Fig. 3, the toggle links 36 and 37 approach a straightened position, and standard 18 is moved toward the left, or in a direction of arrows 44 to retract the bar 5. The right-hand surface of the hollow extension 31 forms a limit for the retraction of the bar 5.

The manner of use of the device is clear from the foregoing. The hand of the operator can grasp the bar 5 and the lever 35. When a large protuberance is encountered by the grinding wheel 6, the hand of the operator pulls the lever 35 upwardly, causing retraction to the desired extent of the standard 18.

The lever mechanism, including the toggle links 36 and 37, does not interfere with normal operation of the grinding machine for grinding a cylindrical surface upon a replaced brake lining.

The inventor claims:

1. In a mechanism of the character described: a brake shoe holder; a spindle upon which the holder is mounted; a guide member in which said spindle is longitudinally movable; a standard member secured to said spindle and movable therewith; a post extending substantially parallel to the direction of guided movement of said spindle; means mounting said post on one of said members for adjustment in a direction substantially parallel to the direction of guided movement of said spindle; said post having a pair of longitudinally spaced abutments, between which the other of said members is movable; resilient means engaging one of said abutments and said other member for urging said members in one limiting relative position; and a lever operated linkage connecting said members and pivotally adjustable for moving said members in the other limiting relative position.

2. In a mechanism of the character described: a brake shoe holder; a spindle upon which the holder is mounted; a guide member in which said spindle is longitudinally movable; means mounting said guide member for angular adjustment about an axis substantially perpendicular to the spindle; a standard secured to said spindle and movable therewith; a post carried by said guide member and extending in a direction substantially parallel to the direction of guided movement of said spindle; said post being adjustable longitudinally with respect to said guide member; said post having a head and an abutment intermediate the length of said post; said standard having an aperture accommodating that portion of said post between said head and said abutment, said standard being movable with respect to said post between limits defined by said abutment and said head respectively; a spring between said head and said standard for urging said standard toward said abutment for urging said spindle to advance in said guide member; a lever pivoted to the standard about an axis transverse to the axis of movement of said spindle, said lever having a manually manipulable portion extending substantially longitudinally of said spindle; and a link connecting said lever to said guide member; said lever being operable to move said standard toward said head for moving said spindle toward retracted position.

HJALMAR THOMASON.

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