Sept. 30, 1952 R. M. BELL 2,612,007

ABRASIVE BELT ATTACHMENT FOR ABRASIVE-WHEEL MACHINES

Filed Oct. 5, 1950 2 SHEETS—SHEET 1

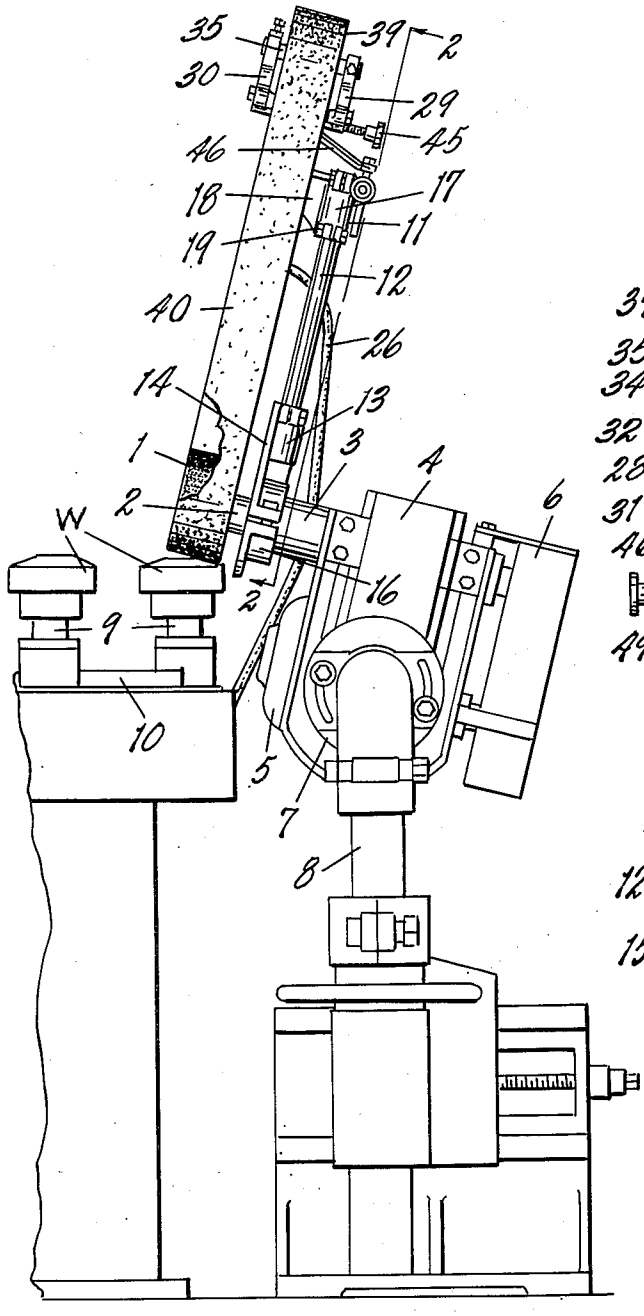


FIG. 1

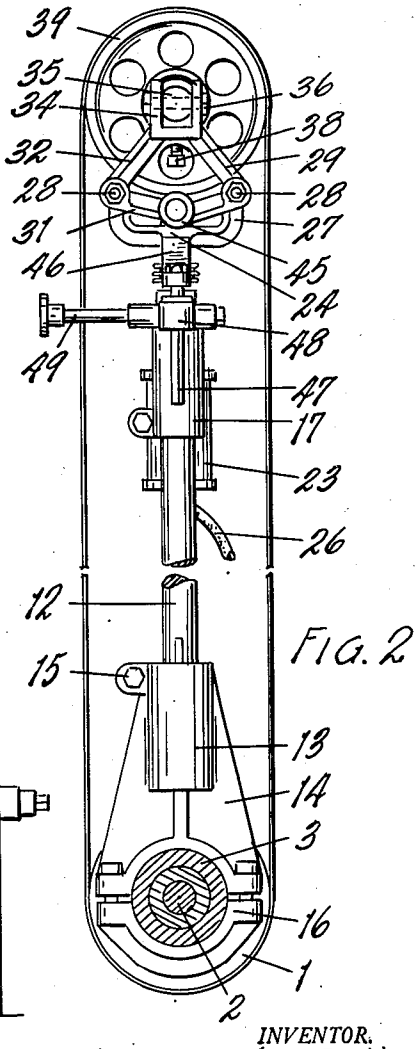


FIG. 2

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ABRASIVE BELT ATTACHMENT FOR ABRASIVE WHEEL MACHINES

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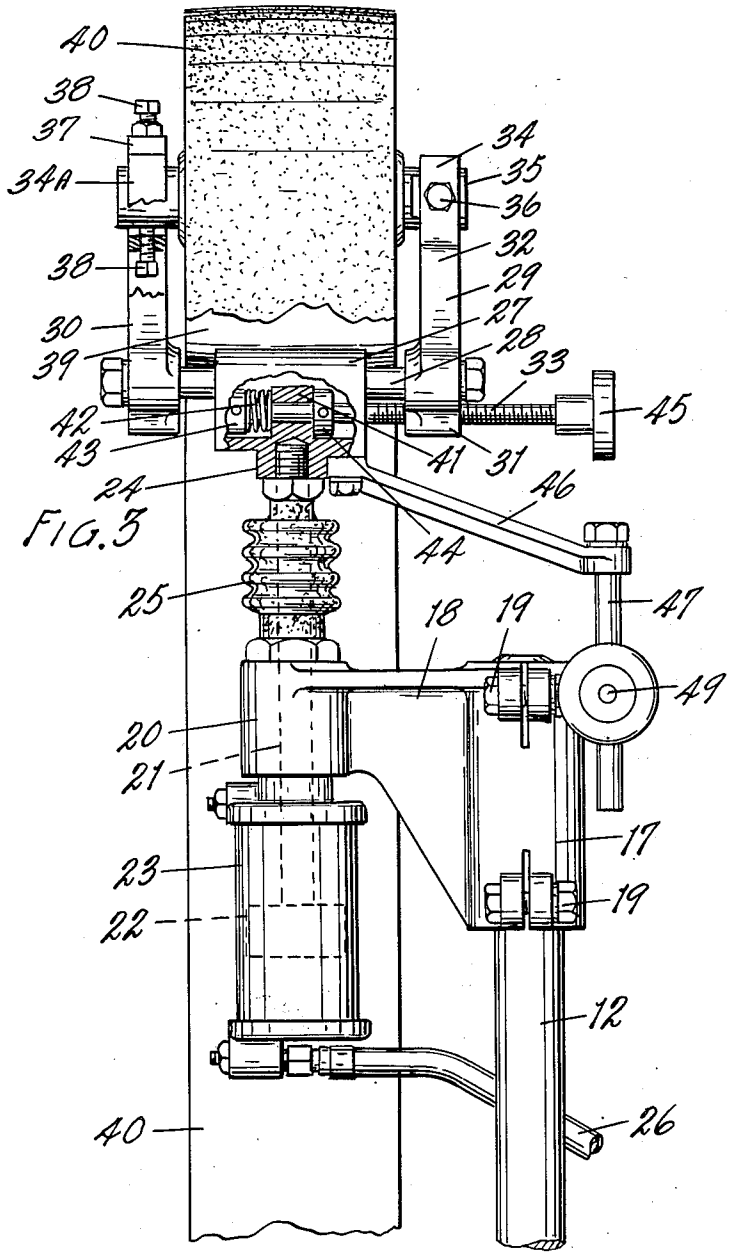


FIG. 3

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ABRASIVE BELT ATTACHMENT FOR ABRASIVE WHEEL MACHINES

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4 Claims. (Cl. 51—135)

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This invention relates to improvements in abrasive belt attachment for abrasive wheel machines.

The principal objects of this invention are:

First, to provide an attachment which will permit the conversion of a polishing or buffing machine having an abrasive wheel to a belt type machine employing a continuous abrasive belt.

Second, to provide an attachment which will permit an abrasive belt to be adjustably trained around the abrasive wheel of a polishing machine and an idler pulley.

Third, to provide an abrasive belt attachment with an idler pulley which is laterally and angularly adjustable in two planes relative to a polishing machine on which the attachment is mounted to properly train an abrasive belt around the pulley and the wheel of the polishing machine regardless of the diameter of the wheel.

Fourth, to provide an abrasive belt attachment which is attachable to the head of a polishing machine through 360 degrees of angular adjustment relative to the axis of the work engaging wheel of the machine.

Fifth, to provide a polishing attachment having a pneumatically cushioned pulley support for quickly adjusting the tension of a belt trained around the pulley.

Sixth, to provide a pulley attachment which is entirely effective and yet inexpensive and which permits the conversion of a wheel type abrading machine to a continuous belt type abrading machine.

Other objects and advantages of my invention will be apparent from a consideration of the following description and claims. The drawings, of which there are two sheets, illustrate a preferred form of my attachment.

Fig. 1 is an elevational view of my attachment operatively installed on a polishing machine.

Fig. 2 is a side elevational view of the attachment taken along the plane of the line 2—2 in Fig. 1.

Fig. 3 is an enlarged elevational view of the upper end of the attachment with portions of the abrasive belt and belt supporting head broken away in vertical cross section.

Throughout the following description and claims, the term, polishing, as applied to the function of the belt and polishing machine and wheel is intended to cover all types of abrading operations and is not intended to be limited to a particular degree of abrading operation. Thus my polishing attachment is effective in rough grinding, polishing and buffing operations depending upon the coarseness of the abrasive belt employed.

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In the drawings, I have illustrated a familiar type of polishing machine having a polishing wheel 1 mounted on a spindle or shaft 2. The shaft 2 is rotatably mounted in a cylindrical housing 3 which projects from the head 4 of the machine. The head 4 includes an electrical driving motor 5 and suitable connecting belts or chains enclosed in the guard 6 for connecting the motor to the shaft 2. The head itself is angularly adjustably mounted on the face plate 7 carried on the top of a pedestal 8. Provision is commonly made in the pedestal for vertically and laterally adjusting the same, but this construction forms no part of the present invention. The head 4 and wheel 1 are illustrated in operative work-engaging position relative to work pieces W mounted on the spindles 9 of a work advancing turret 10.

The foregoing polishing machine construction is well known and operates to finish the work pieces W by the action of abrasive carried by the wheel 1 and rubbed over the work pieces by rotation of the wheel. The work pieces themselves are rotated about their supporting axes to completely finish annular portions of the work contacted by the wheel. In order to convert the foregoing wheel polishing machine to a belt type polishing machine, I have provided the attachment generally indicated at 11 and including the rod-like arm 12. The lower end of the arm 12 is received in a socket 13 formed in the attaching bracket 14. The socket 13 is partially split and provided with a clamping bolt at 15 for securely gripping the arm, and a split circular clamp 16 is provided at the lower end of the bracket for removably clamping the bracket and arm to the housing 3 which encloses the polishing wheel shaft 2. It should be noted that the split clamp 16 and therefore the arm 12 may be attached to the housing 3 through 360 degrees of angular adjustment around the housing 3.

The upper end of the arm 12 is received in the socket 17 of an upper bracket 18, and the socket 17 is partially split and provided with clamp bolts as at 19 for gripping the arm 12. The bracket 18 is provided with a laterally offset portion 20 which forms a longitudinally extending slideway or guide for the supporting rod 21. The lower end of the rod 21 is provided with a piston 22 received in the pneumatic cylinder 23, and the upper end of the rod 21 is threadingly received in the bottom of the belt supporting fixture 24. A corrugated bellows 25 protects the rod 21 from dust, and a conduit 26 is adapted to be supplied

with compressed air to extend the piston and rod upwardly.

The belt supporting fixture 24 is generally U-shaped as is most clearly illustrated in Fig. 2, and the upper ends of the arms 27 thereof are transversely bored to form slideways for the slide rods 28.

The two slide rods 28 form movable supports for the two end frames 29 and 30. The end frame 29 is generally diamond shaped in outline having lower diverging arms 31 joined at their outer ends with the upwardly converging arms 32. The junctions of the arms 31 and 32 are bored to be received on and clamped to the slide rods 28. The junction of the lower arms 31 is bored and tapped to receive the lateral adjustment screw 33. The junction of the upwardly converging arms 32 is transversely slotted in an upwardly opening yoke 34 which receives the flattened end of a pulley shaft 35. A bolt 36 clamps the pulley shaft in place in the yoke.

The other end frame 30 is of similar construction to the end frame 29 and may be formed from a like casting or forging. However, the yoke portion 34A is provided with a cover strip 37, and vertical adjusting screws 38 are threaded through the cover 37 and the bottom of the yoke 34A to vertically engage the top and bottom of the other end of the pulley shaft 35. The pulley shaft may thus be tilted in a vertical plane to bring it into parallelism with the shaft 2 of the polishing machine on which the attachment is mounted.

The pulley shaft 35 rotatably supports the idler pulley 39 around which the abrasive belt 40 is trained. In order to adjust the pulley 39 and belt 40 laterally with respect to the attachment arm 12 to center the belt about the polishing wheel 1, the lateral adjusting screw 33 which is threaded through the end frame 29 as previously described extends through a central boss or abutment 41 formed on the belt supporting fixture 24. A coil spring 42 compressed between the abutment and a collar 43 on the screw urges the screw and frame 29 away from the axis of the rod 12 while a second collar 44 on the adjusting screw limits the longitudinal movement of the screw 33. Rotation of the screw 33 by its hand wheel 45 will obviously shift the end frames 29 and 30, slide rods 28 and pulley 39 relative to the bracket 24.

In order to angularly adjust the bracket 24 and pulley 39 relative to the arm 12 and the polishing wheel 1 for proper tracking of the belt 40, the bracket 24 is provided with a laterally projecting arm 46. The outer end of the arm 46 carries a depending pin or bolt 47 which projects downwardly through a slot formed in the boss 48 on the upper end of the bracket 18. An angular adjusting screw 49 is threaded through the side of the boss 48 and into the slot to engage the side of the pin 47. A spring (not illustrated) is arranged to return the pin 47 against the screw 49. Adjustment of the screw 49 will clearly swing the pin 47, arm 46 and bracket 24 angularly about the axis of the rod 21.

From the foregoing description, it should be apparent that my attachment is easily attachable to any wheel type polishing machine having a stationary circular housing for its wheel shaft. If the wheel shaft housing is of proper size and shape, no modification or adjustment of the polishing machine is required, as the polishing wheel forms the driving pulley for the abrasive belt. The attachment is quickly mounted or demounted, and the belt is easily tensioned and aligned over the polishing wheel 1 and idler pulley 39 on the attachment. The operator of a polishing plant can thus quickly and inexpensively convert his wheel type polishing machines to belt type polishing machines whenever the use of a belt on a particular type of work appears most desirable.

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

1. A belt attachment for a wheel type polishing machine having a polishing wheel shaft projecting from a cylindrical housing comprising, an arm having a split clamp at its inner end attachable to said housing in angularly adjusted position therearound, a bracket secured to the outer end of said arm and having a laterally projecting portion, a supporting rod slidably received in said lateral portion and parallel to said arm, a pneumatic cylinder and piston associated with the inner end of said rod to urge said rod axially outwardly, a belt supporting fixture of outwardly U-shaped cross section secured to the outer end of said rod, a pair of slide rods transversely slidably mounted in the ends of the arms of said fixture, a pair of end frames carried by the ends of said slide rods and having shaft receiving yokes formed at their outer ends, a pulley shaft supported in said yokes and vertically adjustably mounted in one of said yokes, a lateral adjusting screw threadedly engaged with one of said frames and yieldably abuttingly engaged with said fixture for laterally adjusting said end frames on said fixture, an arm projecting laterally from said fixture and having a depending pin positioned alongside of said bracket, and an angular adjusting screw threadedly engaged with said bracket to bear against said pin to adjust said pin and arm angularly about the axis of said rod.

2. A belt attachment for a wheel type polishing machine having a polishing wheel shaft projecting from a cylindrical housing comprising, an arm having a clamp at its inner end attachable to said housing in angularly adjusted position therearound, a bracket secured to the outer end of said arm and having a laterally projecting portion, a supporting rod rotatably received in said lateral portion and parallel to said arm, a belt supporting fixture of outwardly U-shaped cross section secured to the outer end of said rod, a pair of slide rods transversely slidably mounted in the ends of the arms of said fixture, a pair of end frames carried by the ends of said slide rods, a pulley shaft supported in the outer ends of said frames, a lateral adjusting screw threadedly engaged with one of said frames and abuttingly engaged with said fixture for laterally adjusting said end frames on said fixture, a second arm projecting laterally from said fixture and depending alongside of said bracket, and an angular adjusting screw threadedly engaged with said bracket to bear against said second arm to adjust said fixture angularly about the axis of said rod.

3. A belt attachment for a wheel type polishing machine having a polishing wheel shaft projecting from a cylindrical housing comprising, an arm having a split clamp at its inner end attachable to said housing an angularly adjusted position therearound, a bracket secured to the outer end of said arm and having a laterally projecting portion, a supporting rod rotatably received in said lateral portion and parallel to said arm, a belt supporting fixture member secured to the outer end of said rod, a frame member slidably carried by said fixture member and having shaft

receiving openings at its outer end, a pulley shaft supported in said openings, a lateral adjusting screw threadedly engaged with said frame and abuttingly engaged with said fixture for laterally adjusting said frame member on said fixture member, a second arm projecting laterally from said fixture member and depending alongside of said bracket, and an angular adjusting screw threadedly engaged with said bracket to bear against said second arm to adjust said fixture member angularly about the axis of said rod.

4. A belt attachment for a wheel type polishing machine having a polishing wheel shaft projecting from a cylindrical housing comprising, an arm having a split clamp at its inner end attachable to said housing in angularly adjusted position therearound, a bracket secured to the outer end of said arm and having a laterally projecting portion, a supporting rod rotatably received in said lateral portion and parallel to said arm, a belt supporting fixture member secured to the outer end of said rod, a frame member slidably carried by said fixture member and having shaft receiving openings at its outer end, a pulley shaft supported in said openings, a lateral adjusting screw threadedly engaged with one of said members and abuttingly engaged with the other of

said members for laterally adjusting said frame member on said fixture member, a second arm projecting laterally from said fixture member and depending alongside of said bracket, and an angular adjusting screw threadedly engaged with said bracket to bear against said second arm to adjust said fixture member angularly about the axis of said rod.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,189,715	Mattison	July 4, 1916
1,744,807	Schulte	Jan. 28, 1930
1,974,806	Curtis et al.	Sept. 25, 1934
2,089,808	Ocenasek	Aug. 10, 1937
2,273,696	Ducker	Feb. 17, 1942
2,274,268	Hercik	Feb. 24, 1942
2,334,960	Roth et al.	Nov. 23, 1943
2,452,205	Newton	Oct. 26, 1948
2,463,287	Krueger	Mar. 1, 1949
2,479,536	Elmes	Aug. 16, 1949