Oct. 14, 1930. E. G. BARTEL 1,778,579

BRAKE BAND DRILLING ATTACHMENT

Filed March 22, 1927

Fig. 2.

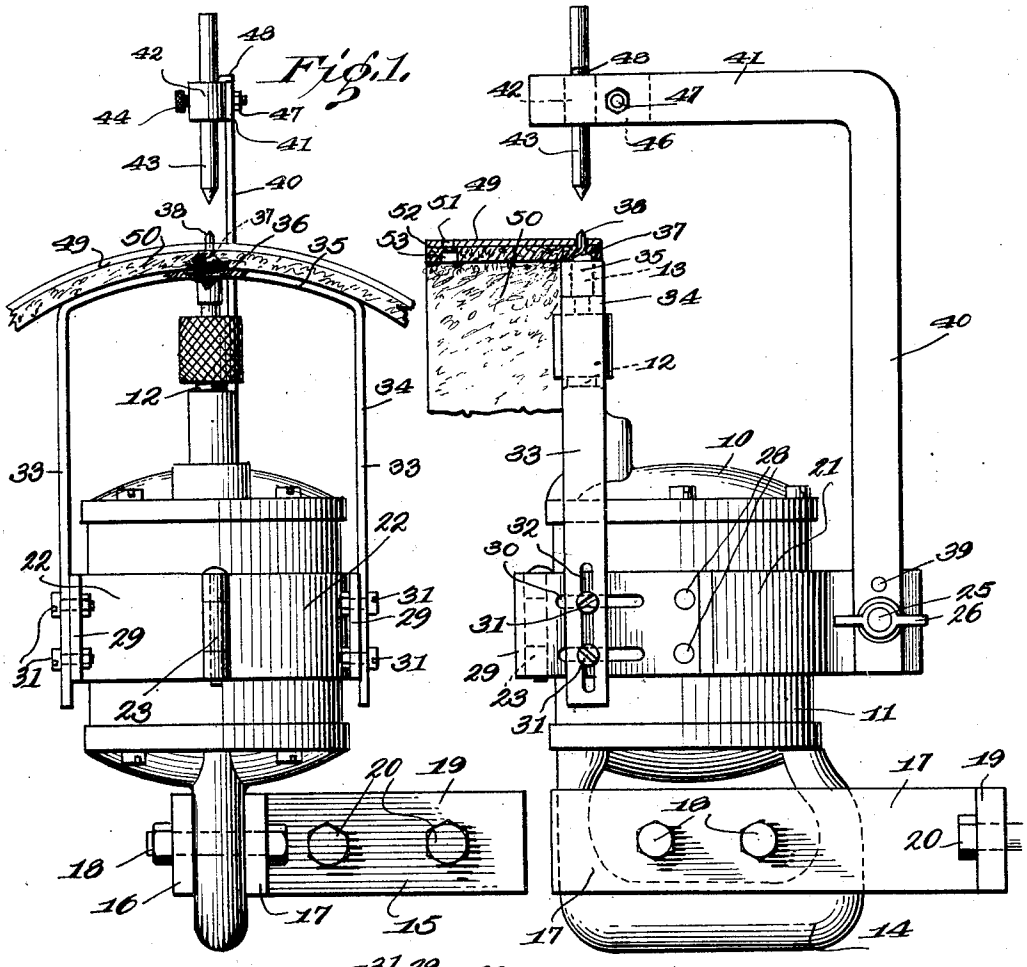


Fig. 1.

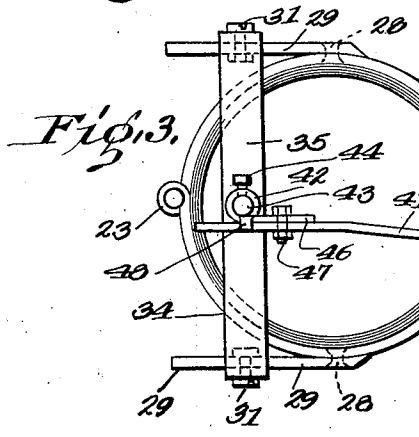


Fig. 3.

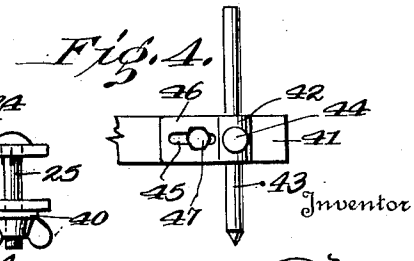


Fig. 4.

Inventor

Edwin G. Bartel

By

Attorney

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UNITED STATES PATENT OFFICE

ERWIN G. BARTEL, OF DULUTH, MINNESOTA, ASSIGNOR OF ONE-HALF TO GEORGE B. GERMAN, OF DULUTH, MINNESOTA

BRAKE-BAND-DRILLING ATTACHMENT

Application filed March 22, 1927. Serial No. 177,454.

The present invention relates to an attachment for portable drills for use when relining brake bands and similar work, and aims to provide a novel and improved device of this character which may be easily and conveniently attached to small portable drills for efficiently drilling and countersinking holes in brake linings in alignment with openings in metallic bands.

Another object of the invention is to provide a portable drill attachment having a brake band rest which may be adjusted for use in connection with different drills and thicknesses of brake linings and through which slightly protrudes the drill point and a countersinking portion below the drill point, said brake band rest having an arcuate portion at its upper end conforming to the curvature of the brake band so as to support the brake lining and band.

A further object of the invention is the provision of an arm carried by the drill clamping bands for adjustably supporting a centering pin, said pin being arranged above the drill point and in alignment therewith to aid in properly positioning the brake band so that the hole will be in alignment with the opening in the metallic band, which has been located with the centering pin.

A still further object of the invention is to provide a holder for the drill in order to rigidly support the drill, said holder being adapted to be bolted fast to an object.

It is also an object of the invention to provide a device of the above indicated character, which is simple and substantial in construction, which can be manufactured economically, and which will be thoroughly efficient and practical in use.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a front elevation of my improved device showing the same arranged on a drill,

Figure 2 is a side elevation of the same, showing a brake band in section,

Figure 3 is a top plan view of the device removed from the drill, and

Figure 4 is a fragmentary side elevation illustrating the means for adjustably supporting the centering pin.

Referring to the drawings, the numeral 10 designates a portable drill of a conventional type having a main body 11 of cylindrical shape from one end of which extends the drill shaft 12 having a chuck for rigidly connecting the drill 13 thereto, while at the opposite end of the cylindrical casing or body 11 is a handle 14.

In order to support the portable drill in position, as for instance in connection with a bench a clamp 15 is used consisting of a pair of plates 16 and 17 between which the handle 14 is firmly clamped by bolts 18, the clamping plate 17 having an angularly extending portion 19 through which bolts 20 are passed for securing the device to an object so that the portable drill will be rigidly supported. While I have shown a particular form of clamp for supporting the portable drill, it is to be understood that an ordinary vise may be used, the handle being clamped between the jaws thereof, the main object being to support a portable drill with the drill point extending upwardly.

Arranged about the cylindrical body or casing 11 of the portable drill is a clamping band 21, in two parts or sections hingedly connected together, as at 23, while the opposite ends of said sections are provided with outwardly extending spaced ears 24, through which extends a bolt 25 of the carriage bolt type with a wing nut 26 for drawing the clamping arms 22 of the clamping band 21 in tight engagement around the cylindrical body or casing 11. As different types of portable drills vary in size and construction, it may be necessary to place a piece of brake lining between the clamping band 21 and the cylindrical casing or body 11, such as indicated by the numeral 27 in Figure 3 of the drawings. Also shims may be used in order

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to rigidly attach the clamping band 21 to the casing 11.

Secured to opposite sides of the clamping band 21 by means of rivets 28 are arms 29 which extend forwardly to points slightly in advance of the portable drill in parallel relation, and in the sides of the arms are horizontal slots 30, each arm having a pair of slots one above the other. Connected to the arms is a brake band rest 34 in the form of an inverted U-shaped frame the depending legs 33 of which are each provided with a vertical slot through which bolts 31 from the slots in the arms 22 of the clamping band pass for supporting said rest therefrom so that it can be adjusted vertically and horizontally. The bight portion 35 of the frame for supporting the brake band is curved upwardly in the arc of a circle corresponding approximately to the curvature of a brake band. In the center of the arcuate portion 35 is an opening 36 through which extends the drill carried by the chuck on the drive shaft 12 of the portable drill. The drill has a countersinking portion 37 spaced from the point and a reduced end 38 extending to the point, so as to form countersunk holes in the lining of a brake band for the rivets used in securing the lining in place.

An upright arm 40 is secured to one side of the ears of the clamp 21 by means of the clamping bolt 25 in connection with a rivet 39. The arm 40 has a forwardly extending portion 41 at its upper end which extends to a point above the drill point, as clearly illustrated in Figures 1, 2, and 3 of the drawings. Carried by the free end of the forwardly extending portion 41 of the arm 40 is a collar 42 having an integral attaching member 46 secured to the arm by bolt 47 passing through a slot 45 therein for adjustment of the sleeve longitudinally on the arm, the position of the collar with respect to the arm being maintained by a lip 43 projecting from the attaching plate over the upper edge of the arm. The collar supports a centering pin 43 slidable therein and held at any desired position by means of a set screw 44 threaded through one side of said collar, whereby said pin may be raised and lowered in a vertical line with respect to the drill, both the rest for the brake band and collar carrying the centering pin being adjustable to obtain the proper alinement.

In the application of my invention the portable drill is disposed vertically as shown in Figures 1 and 2 by clamping the handle 14 between the members of the clamp 21 secured to a work bench, and the drill 33 having the countersinking portion 37 is then rigidly secured in the chuck on the drive shaft 12 of the drill. The clamping band 21 carrying the brake band rest and support for the centering pin is now slid over the cylindrical casing or body 11 of the portable drill and the wing nut 26 tightened so as to clamp the band around the motor casing of the portable drill. By loosening the screws 31 the brake band rest may be adjusted vertically and horizontally so that the countersinking portion 37 of the drill protrudes through the opening 36 in the brake band rest beyond the same about one-eighth of an inch, and in order to obtain the required vertical adjustment it may be necessary to loosen the bolt 25 for movement of the clamping band on the casing 11, any further adjustment in this direction being accomplished by adjusting the drill in the chuck on the motor shaft. The centering pin is then adjusted so that it will be in alignment with the point of the drill, and by loosening the set screw 44, the pin may be slid in the sleeve 42 to a position spaced from the point of the drill so as not to interfere with the easy and quick removal of a brake band from the drill point.

As shown in Figures 1 and 2 of the drawings, a portion of a brake band is positioned on the brake band rest 34, the metallic band being designated by the numeral 49 and the lining by the numeral 50, and at one side of the drill is shown the shape of hole formed thereby the portion 51 thereof in the brake band as well as the inner portion 52 in the lining corresponding with the size of the drill with the inner end of said hole countersunk as at 53 to receive the head of the rivet for securing the band and lining together.

When it is desired to drill the countersunk holes in the lining and band they are placed over the point 38 of the drill and by sighting the centering pin with an opening 51 in the metallic brake band 50 the band may be moved downwardly so as to cause engagement of the drill point 38 with the lining 50. By pressing downwardly on the band and lining the countersunk hole will be drilled in the lining in alignment with the opening 51 below the centering pin. The frame or brake band rest will limit downward pressure of the band and lining so that the countersunk portion 53 in the lining is the proper depth. By then lifting the brake band from the frame and drill said brake band may be moved to a position for drilling other countersunk holes in the lining in alignment with the holes in the band.

It is to be noted that after the required adjustments are once made to suit the particular portable drill used in connection with my improved attachments such adjustments will seldom have to be changed and for convenience in application of said attachments the position of the clamping band 21 may be marked on the cylindrical casing.

Having thus described my invention, what I claim as new is:

1. An attachment for a vertically mounted electric motor and drill operated thereby, comprising a band adapted to be clamped

around the body of the motor and having forwardly projecting plates secured to the sides thereof with spaced apart horizontal slots in said plates, an inverted U-shaped frame adjustably connected to the plates by bolts passing through the slots therein, the bight portion of the frame corresponding in curvature to that of the work and having an opening through which the drill is extended, an arm secured to the rear end of the band and having a member projecting forwardly over the upper end of the aforesaid frame, and a centering pin vertically adjustable in the outer end of said arm in alignment with the drill.

2. An attachment for a vertically mounted electric motor and drill operated thereby, comprising a two-part band adapted to be clamped around the body of the motor, the parts of the band being hinged together at their forward ends and having rearwardly projecting ears to receive a clamping bolt, plates secured to and projecting forwardly from the sides of the clamp and having spaced apart horizontal slots therein, an inverted U-shaped frame adjustably connected to the plates by bolts passing through the slots therein, the bight portion of the frame corresponding in curvature to that of the work and having an opening through which the drill is extended, an arm secured to the rear end of the band and having a member projecting forwardly over the upper end of the aforesaid frame, and a centering pin vertically adjustable in the outer end of said arm in alignment with the drill.

3. An attachment for a vertically mounted electric motor and drill operated thereby, comprising a band adapted to be clamped around the body of the motor and having forwardly projecting members at opposite sides thereof with spaced apart horizontal slots in said members, an inverted U-shaped frame having vertical slots at the lower ends of the side members thereof and an opening in the bight portion through which the drill passes, bolts extending through the slots in said frame and forwardly projecting members of the clamp, the bight portion of the frame having the opening through which the drill passes being of a curvature corresponding with the work to be drilled, an arm secured to and projecting upwardly from the clamp with the outer end thereof above the drill-opening in the aforesaid frame, and a vertically adjustable centering pin mounted in the outer end of the arm.

4. An attachment for a vertically mounted electric motor and drill operated thereby, comprising a band adapted to be clamped around the body of the motor and having forwardly projecting members at opposite sides thereof with spaced apart horizontal slots in said members, an inverted U-shaped frame having vertical slots at the lower ends of the side members thereof and an opening in the bight portion through which the drill passes, bolts extending through the slots in said frame and forwardly projecting members of the band, the bight portion of the frame having the opening through which the drill passes being of a curvature corresponding with the work to be drilled, an arm secured to and projecting upwardly from the clamp with the outer end thereof above the drill-opening in the aforesaid frame, a collar secured to the outer end of the arm, a centering pin slidable in the collar to and away from the drill, and a set screw for securing said centering pin in adjusted position.

5. An attachment for a vertically mounted electric motor and drill operated thereby, comprising a band and clamping bolt, the band consisting of two parts hinged together at their forward ends and having ears at their rear ends through which the clamping bolt passes, plates secured to and projecting forwardly from the sides of the band and having horizontal slots therein, an inverted U-shaped frame adjustably secured to the plates with the bight portion of said frame curved to correspond with the work to be drilled and having an opening through which the drill passes. an arm secured to the rear end of the clamping band at one side of the ears and secured thereto by the clamping bolt, the outer end of said arm projecting over the bight portion of the U-shaped frame on a line with the drill opening therein, a pin extending from the arm through a hole in the adjoining ear of the clamping band for rigidly supporting said arm therefrom, a collar adjustably secured to the outer end of the arm, a centering pin slidable in the collar, and a set screw threaded through the collar to engage the pin and hold it in vertical adjusted position.

ERWIN G. BARTEL.