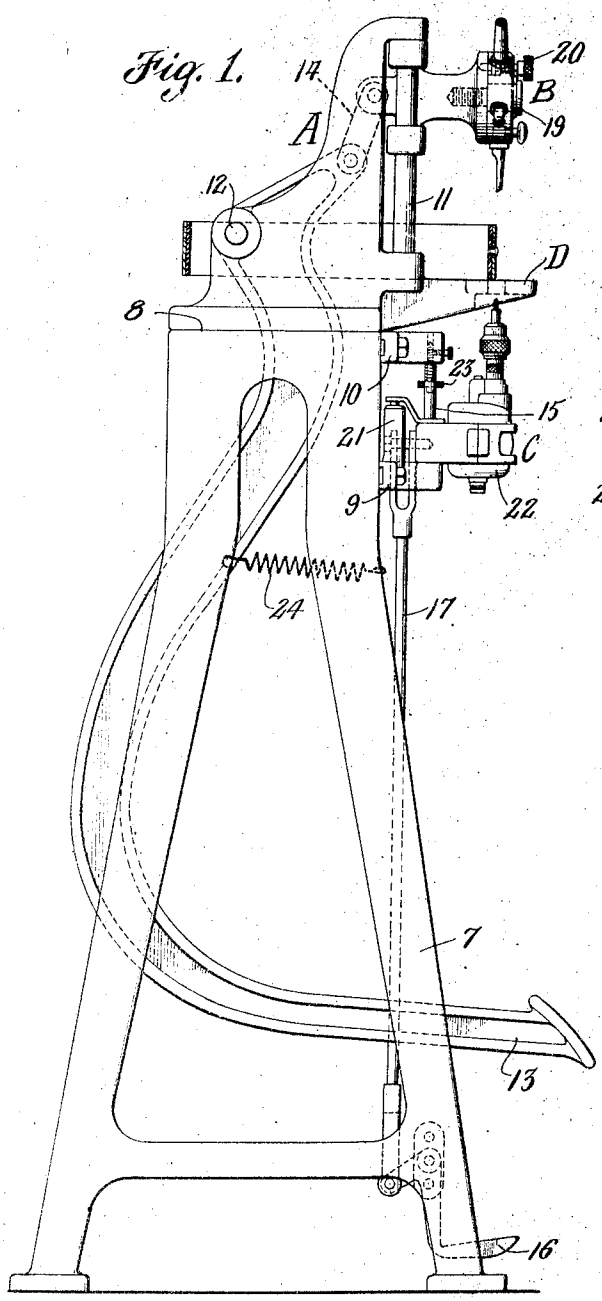
Oct. 13, 1925. 1,556,855

J. R. LEWIS

APPARATUS FOR RELINING BRAKE BANDS, CLUTCH DISKS, AND THE LIKE

Filed Aug. 31, 1923

Fig. 1.



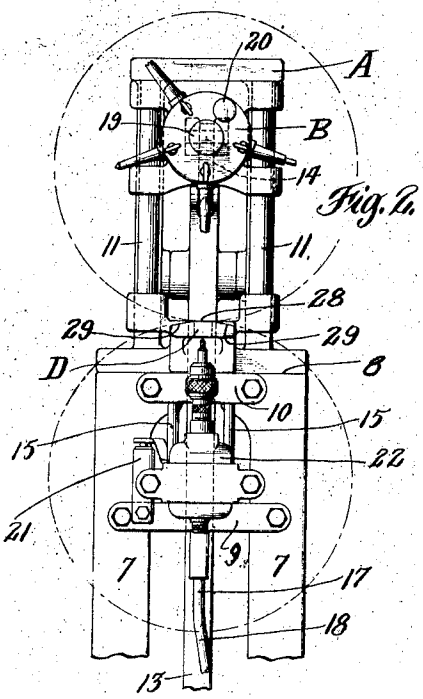


Fig. 2.

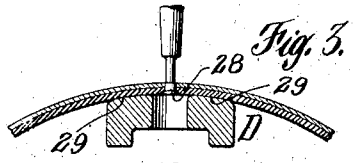


Fig. 3.

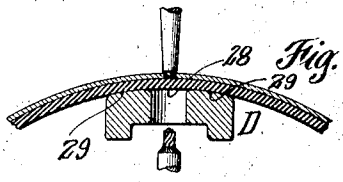


Fig. 4.

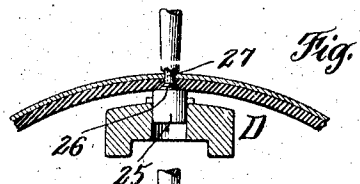


Fig. 5.

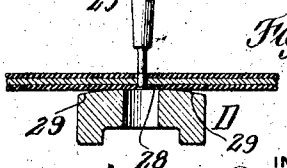


Fig. 6.

WITNESS

Gustav Genzlinger.

INVENTOR.

James R. Lewis

By Symmes Watt & Lechner

Attys.

Patented Oct. 13, 1925. 1,556,855

UNITED STATES PATENT OFFICE.

JAMES R. LEWIS, OF LAURELTON, NEW JERSEY, ASSIGNOR TO PROVIDENT MACHINE COMPANY, A CORPORATION OF DELAWARE.

APPARATUS FOR RELINING BRAKE BANDS, CLUTCH DISKS, AND THE LIKE.

Application filed August 31, 1923. Serial No. 660,301.

To all whom it may concern:

Be it known that I, JAMES R. LEWIS, a citizen of the United States, residing at Laurelton, in the county of Ocean and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Relining Brake Bands, Clutch Disks, and the like, of which the following is a specification.

This invention relates to a method of and apparatus for removing worn linings such as brake linings, clutch linings and the like and securing in place thereof new linings.

Heretofore work of this character has been accomplished by hand or by machines, but in the latter case a plurality of machines have been required. Both methods are quite costly and time consuming.

I aim to carry out all the operations in a single machine which is equally effective in anyone of its operations, and which eliminates all hand operations thereby cutting down the first cost of equipment and also reducing the labor costs to a minimum.

One of the primary objects of my invention is the provision of an improved mechanism in which the operating parts are so designed as to give the operator freedom from obstructing parts when changing the position of the article to be relined for the various operations.

Still another object of my invention is to provide a mechanism in which the work table is fixed and in which the turret or tool holder is located above the work table and the drilling device below the work table.

Still another object of my invention is to provide a mechanism which will adapt itself readily for removing old linings and for securing new linings either to the inside or outside surface of bands or to flat disks.

Still another object of my invention is to provide a mechanism whereby a sharp blow may be produced as well as a squeezing effect for the purpose of spreading and properly securing the rivet.

Still another object of my invention is to provide a mechanism which may be operated by foot leaving the hands in freedom for manipulating the article being worked upon.

Various other advantages obtainable through my invention will appear from my description hereinafter of the best methods and apparatus for the purpose that are known to me.

In the drawings Fig. 1 is an elevation of my machine illustrating a brake band in position on the work table for shearing the old rivet head.

Fig. 2 is a front view of the upper portion of Fig. 1.

Figs. 3, 4 and 5 are fragmentary sectional views showing the successive steps of punching out the rivet, of centering the band for drilling and of riveting over the inserted rivet, and

Fig. 6 is a fragmentary sectional view showing a flat clutch disk in position for removing the rivet.

Referring now to the drawings it will be seen that the machine is very compact and comprises a standard 7, having mounted on its upper surface 8 the body casting A and on its front surface the brackets 9 and 10. The body casting A is provided with an extension or table D for supporting the work, which in this instance is shown as being a brake band; vertical guide rods 11, 11 for guiding the turret head indicated as a whole by the reference letter B; and the pivot pin 12 on which the foot lever 13 is fulcrumed. The foot lever 13 is connected to the turret head B by means of the link 14. It will be seen that by this arrangement a straight down pull is imparted to the turret head B so that either a squeezing effect or a sharp hammer blow may be obtained subject to the force with which the pedal 13 is actuated.

The brackets 9 and 10 are provided with the vertical guide rods 15, 15 on which the drilling mechanism indicated as a whole by the reference letter C is guided. Up and down movement is imparted to the drilling mechanism C by means of the motor lift pedal 16 connected thereto by means of the link 17, which is offset as shown at 18 (see Fig. 2) to avoid interference with the operation of the foot lever 13.

In the turret head B are mounted a number of tools in this case four, namely, a rivet shear, a rivet drift, a drill locater and a rivet header. The turret is mounted to revolve on the pin 19 and is provided with a catch 20 adapted to engage one of a series of four notches for the purpose of holding in position the tool selected for use.

The drilling mechanism C is provided with an automatic switch 21 which operates to start the drill motor 22 when the motor lift pedal 16 is depressed. As the drill nears its upper position it engages a stop 23 which may be adjusted for different classes of work.

The operation of the device is as follows: A brake band is placed on the work table as shown in Fig. 1, by straddling it over the upper body of the machine and the turret is revolved to bring the rivet shear in the position indicated. The band is held firmly by the operator and then a sharp blow or a succession of sharp blows is given to the foot lever 13 which shears off the rivet heads. The band is then placed on the work table in the position shown in Fig. 3 in which position the band is pendent on the table and straddles it and the drilling mechanism C, the turret head revolved to bring the rivet drift in position and the lever again actuated to remove the rivets, and then the worn lining is removed and the band is in condition for relining. The band together with the new lining which may be clamped to it is now placed on the work table straddling it and the drilling mechanism as in the previous operation and the drill locater is brought into position as shown in Fig. 4 for the purpose of aligning the holes with the drilling mechanism C. The drill locater is provided with a 45° angle point which is centered in the hole already provided in the steel band which insures accurate alignment with the drilling mechanism C. Then the foot is released from the lever 13 which returns to its normal position by means of the spring 24, and placed on the pedal 16 which raises the drilling mechanism until the stop 23 is engaged. The depth of the drilling may be regulated by adjusting the stop 23. It is to be observed that the drill is a combined drill and countersink so that the rivet may be set in from the surface of the lining.

After as many holes have been drilled as are deemed necessary the operator proceeds to insert the riveting anvil 25 in the hole provided for it in the work table. This anvil is provided with a boss 26 which projects into the countersunk portion of the holes in the lining. The band is now lifted clear of the anvil (still straddling the work table and drilling mechanism), a rivet inserted and then positioned on the anvil, the boss finding itself in the countersunk hole and insuring even contact with the rivet head, at the same time aligning the band with respect to the turret head. The rivet header is now brought into position (see Fig. 5) and the lever 13 actuated, this time with a sharp kick which forms a head on the rivet. In this connection it is to be observed that the lever 13 is pivoted well at the top of the machine so that the momentum of the lever when kicked is such as to secure the necessary sharpness of blow together with the "following through" necessary to get effective riveting. I have shown a tubular rivet in the drawing but with my improved machine I am enabled to use solid rivets which is not the case with the machines heretofore used for this purpose.

While I have described my device in connection with brake bands having the lining on the inside it is to be understood that it is also applicable to bands having the lining on the outside as well as to flat disks, such as clutch disks. As shown by the dot and dash lines in Fig. 2 the bands may be just as readily placed in the machine either in pendent or upright position as would be the case where the lining is on the outside of the band, the turret head being so disposed so that the band straddles it when supported on the table in upright position.

When relining the facings of clutch disks as shown in Fig. 6, the mode of operation is slightly different. The work table D projects in such a manner that the clutch disk may be placed over it on edge for the purpose of shearing the rivet, which operation and the rivet dislodging operation are exactly as described for brake bands. After all the rivets have been punched out and the worn facings removed, a new lining is placed on the under side of the metal disk and one hole is drilled and a rivet inserted without forming a head to act as a dowel to hold the facing in place while drilling the balance of the holes, which is accomplished in the same manner as described in connection with brake bands. The facing is now placed on the other side of the metal disk, turned over and drilled, the 45° drill locater being brought into engagement with the holes previously drilled in the first facing. The rivets are now inserted and secured in place. So that the work table may present adquate surfaces for various classes of work it has been provided with a flat portion 28 for flat work and with the curved portions 29, 29 for curved work.

It will be seen that by having a specially designed fixed work table located between a turret tool holder and a drilling mechanism the former being above the table and the latter below, it is possible to perform all of the necessary operations for relining brake bands, clutch disks and the like in a single machine. Such arrangement has enabled me to provide an effective riveting action for various types of rivets.

I claim:

1. Apparatus for relining brake bands, clutch disks and the like comprising a standard, a body portion mounted on the standard, a work table carried rigidly by the body portion, a sliding turret head carried

in vertical guide means on the body portion, a foot lever fulcrumed well up in the body portion, and a drilling mechanism carried in vertical guide means on the standard, said last mentioned guide means positioned to maintain the drilling mechanism in line with the tools in the turret head.

2. Apparatus of the character described comprising a work table rigidly secured to the body thereof, a turret tool holder mounted on the body and above the work table to move in a vertical plane, lever means fulcrumed well up on the body, a link connecting the lever to the turret so that a straight down pull is exerted on the turret, and a drilling mechanism mounted below the work table to move in a vertical plane, the axis of the drill being in line with the axis of the tools in the tool holder.

3. Relining apparatus for relining brake bands comprising a work table rigidly secured to the body of the apparatus, a sliding turret head and a sliding drilling mechanism, the table, turret head and drilling mechanism arranged with respect to one another so that the band to be relined may be placed on the table straddling either the turret head or the drilling mechanism.

4. Apparatus of the character described comprising a work table, a turret tool holder slidably mounted above the work, a drilling mechanism slidably mounted below the work table and lever means for moving the turret head up and down, said lever pivoted well up on the machine and having the bulk thereof below the machine, a link connecting the lever to the turret so that a straight down pull is exerted on the head, for the purpose of causing effective riveting.

5. An apparatus for relining brake bands comprising a standard, a body or head portion supported thereon, a work table, a drilling mechanism below the table, a tool carrying turret movably mounted on the said body portion over the work table, a foot lever pivoted to said body portion and means connecting the upper end of said lever to the turret.

In testimony whereof, I have hereunto signed my name.

JAMES R. LEWIS.