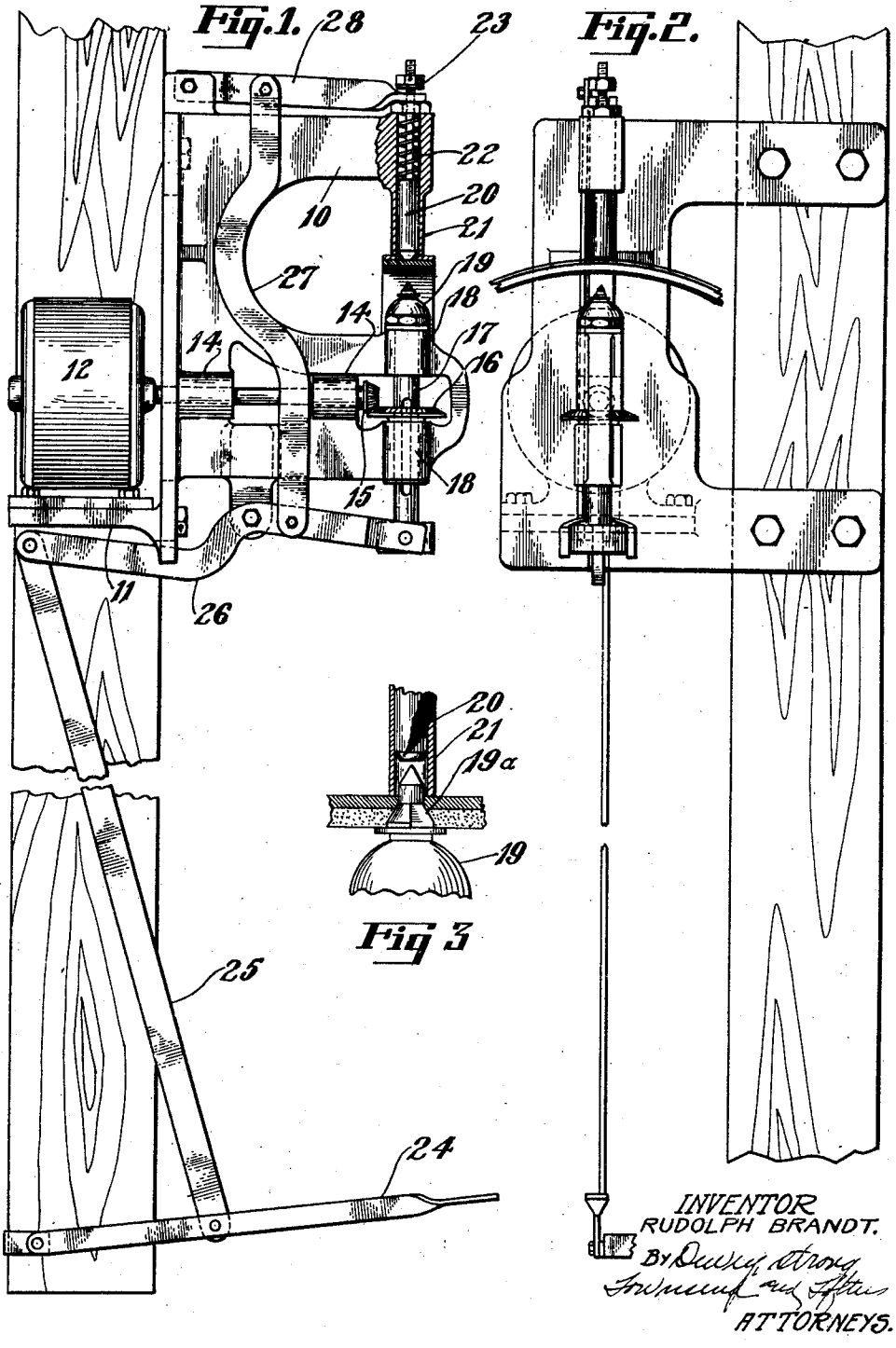
July 24, 1928. 1,678,207

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MACHINE FOR DRILLING AND COUNTERSINKING BRAKE LININGS

Filed Oct. 10, 1923



Published by AsbestosClaims.Law
asbestosclaims.law/library/22886/1

Patented July 24, 1928. 1,678,207

UNITED STATES PATENT OFFICE.

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MACHINE FOR DRILLING AND COUNTERSINKING BRAKE LININGS.

Application filed October 10, 1923. Serial No. 667,657.

This invention relates to drilling and countersinking machines.

Prior to my invention, in relining brake bands, the drilling and countersinking of the lining for the reception of the retaining rivets required two operations. The new lining was first held on the band and the latter was employed as a template for drilling the lining, the drill being centered through the rivet holes in the band from which the rivets holding the worn-out lining to the band had been removed. The lining was then faced to the drill and the holes formed therein by the first operation were countersunk. As the process just described required two operations, it was expensive and not entirely satisfactory.

With the object in view of minimizing the time and labor required in the process of drilling and countersinking rivet holes in liners when relining brake bands, the present invention embodies a generally improved drilling and countersinking machine, by the use of which a new lining may be formed with countersunk rivet holes in alignment with the holes in the brake band by one simple operation.

One form which the present invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a side elevation of a device embodying the present invention.

Fig. 2 is a front elevation of the same.

Fig. 3 is an enlarged fragmentary view of the operating end of the plunger and the drill on the spindle.

Referring more particularly to the accompanying drawings, 10 indicates a frame which may be connected to an upright support. This frame is formed with a shelf 11 for supporting a driving motor 12. The driving shaft of this motor extends through bearings 14 in the frame and is fitted at its end with a bevel pinion 15. This pinion is in mesh with a bevel gear 16 which is feathered on a vertical drill spindle 17. This spindle is vertically reciprocable in bearings 18 on the frame 10 and its upper end is fitted with a chuck 19 for holding a combined drilling and countersinking tool 19^a.

Supported by the frame directly above and in vertical alignment with the spindle is an aligning plunger 20. This plunger is vertically reciprocable in a bearing 21 on the frame 10 and is normally held in a lowermost position by an expansion spring 22. The upper end of the shank of the plunger is threaded to receive a collar 23. The lower end of the plunger is tapered as clearly shown in Fig. 3.

In employing the device to drill and countersink new liners, the brake band with the liner thereon is inserted between the aligning plunger 20 and the drill. A rivet hole in the band is then engaged with the tapered end of the aligning plunger to insure that when the drill is operatively engaged with the liner, the holes formed in the latter will be in alignment with the rivet holes in the brake band.

A manually operated mechanism for vertically reciprocating the spindle is provided. This mechanism comprises a pivoted foot pedal 24 which is connected by a link 25 to one end of a centrally pivoted lever 26. The other end of this lever is connected to the lower end of the spindle 17 so that when the pedal 24 is depressed, the drill spindle will be moved upwardly into engagement with a lining of a brake band interposed between the drill and the aligning plunger 20.

To prevent the drill from drilling into the aligning plunger 22 after it has gone through the lining, I provide means for upwardly moving the plunger in unison with the drill after the drill has formed a hole partly through the lining. This means comprises a link 27 which is connected at its lower end to the lever 26 between the latter's pivotal point and the end connected to the spindle. The upper end of the link 27 is connected to a pivotal lever 28, one end of which is pivoted to the frame. The other end of the lever 28 is connected to the upper end of the shank of the plunger 20 beneath the collar 23 thereon. Clearance between the collar 23 and the end of the lever 28 is provided so that lost motion will occur to permit the drill spindle 17 to be raised a predetermined amount before the plunger 20 will be retracted from engagement with the rivet hole in the band. In this manner, the drill is prevented from drilling into the end of the plunger 20 and at the same time the aligning plunger 20 will act to hold the

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brake band in alignment with the drill a length of time sufficient to insure that the rivet holes formed in the lining will be accurately aligned with those in the brake band.

In operation of the device, the motor 12 is started to rotate the drill spindle. The brake band to be relined is then fitted with a new lining and interposed between the drill and the lower end of the aligning plunger 20 with the surface of the brake band uppermost. A rivet hole in the brake band is then engaged with the tapered end of the plunger 20. As the plunger 20 is in exact vertical alignment with the drill spindle, when the drill is moved upwardly into engagement with the lining to drill the same, the hole formed thereby will be in exact alignment with the rivet hole in the brake band. The drill in this instance is of the combined drilling and countersinking type so that the hole formed in the lining will be drilled and countersunk by one operation of the drill.

As described, when the drill is partly through the lining the aligning plunger is raised in unison with the drill to prevent the latter from mutilating the end of the plunger.

It is obvious from the foregoing that a comparatively simple drilling and countersinking machine has been provided by the use of which the lines for brake bands may be quickly and accurately drilled and countersunk by one operation.

While I have shown the prefered form of my invention as now known to me, I wish it understood that various changes may be made in its construction without departing from the invention as defined in the appended claims.

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

1. In a drilling machine of the character described, a downwardly pointing stationary abutment of sleeve-like construction adapted to have a brake band placed against the underface thereof, a retractable pointer slidable within the sleeve and projecting downwardly therefrom and allowing a series of rivet holes in the brake band to be engaged therewith in quick succession while being viewed from above, a drill reciprocable below and in axial alignment with the pointer and adapted to be advanced toward the pointer, and means for advancing the drill and for retracting the pointer in timed relation.

2. In a drilling machine of the character described, a downwardly pointing stationary abutment of sleeve-like construction adapted to have a brake band placed against the underface thereof, a retractable pointer slidable within the sleeve and projecting downwardly therefrom and allowing a series of rivet holes in the brake band to be engaged therewith in quick succession while being viewed from above, a drill reciprocable below and in axial alignment with the pointer and adapted to be advanced toward the pointer, and foot-operated means for advancing the drill and for retracting the pointer in timed relation.

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