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BRAKE LINING MACHINE

Filed Sept. 29, 1927

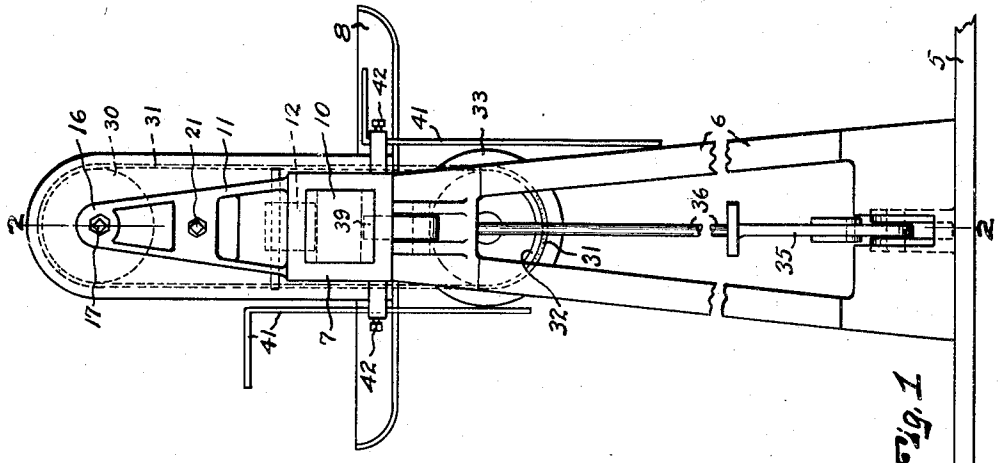


Fig. 1

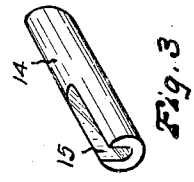


Fig. 3

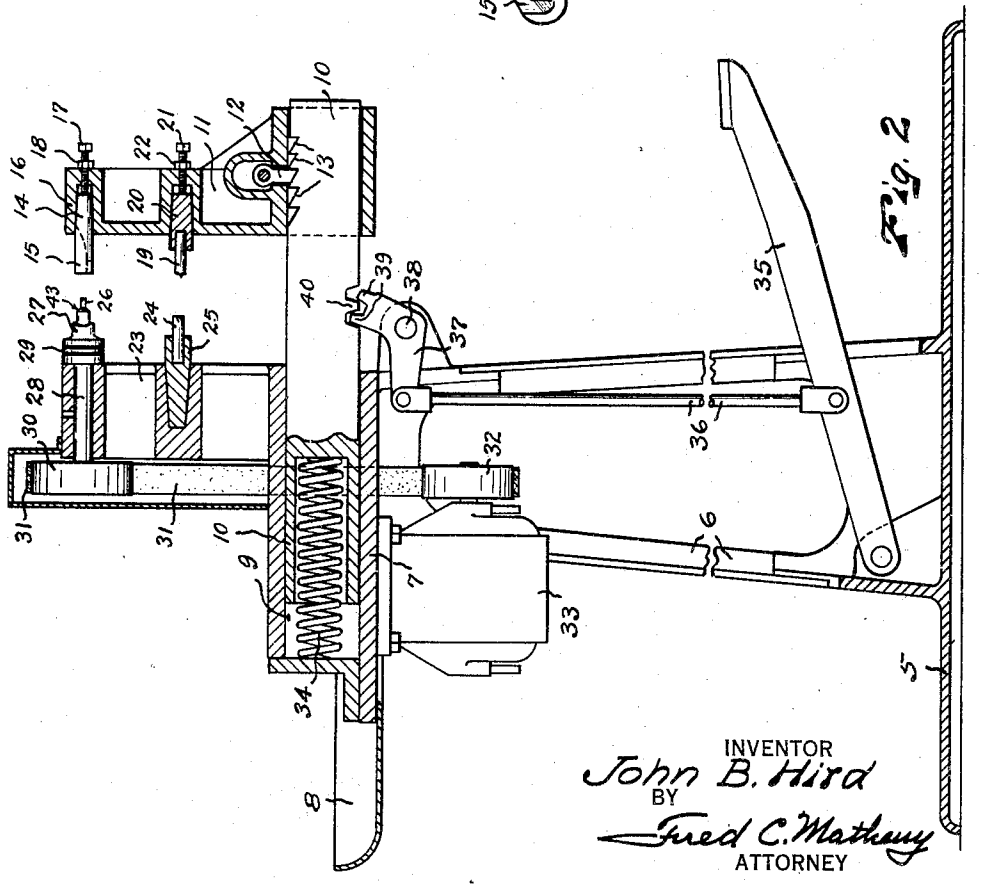


Fig. 2

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UNITED STATES PATENT OFFICE

JOHN B. HIRD, OF SEATTLE, WASHINGTON, ASSIGNOR TO LAMB MACHINE COMPANY, OF HOQUIAM, WASHINGTON, A CORPORATION

BRAKE-LINING MACHINE

Application filed September 29, 1927. Serial No. 222,732.

My invention relates to improvements in combined drilling and riveting machines of a form especially well adapted to be used in the work of removing old brake linings and applying new brake linings to brake bands, brake shoes, parts of clutches and the like.

The object of my invention is to provide a machine of simple and efficient construction in which the drilling and riveting tools are mounted horizontally, making them more convenient for use and speeding up the work of lining or re-lining brake and clutch parts.

Another object is to provide a machine having a horizontally movable carriage, slidably supported in a frame and carrying parts of both a riveter and a drill press which are both adapted to be moved by pressure on a single foot pedal into engagement with the work.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings, Fig. 1 is a view in front elevation of a brake lining machine constructed in accordance with my invention.

Fig. 2 is a vertical mid section of the same substantially on broken line 2—2 of Fig. 1.

Fig. 3 is a detached view of an anvil member against which the drilling tool operates.

In re-lining or renewing the linings of used brake bands, used brake shoes, used clutch parts and the like it is first necessary to remove the old or worn linings. This usually necessitates first drilling out the old rivets that fasten the old lining to the metal part. After this is done the new lining is then fitted to the metal part and must have holes drilled and countersunk therein in registration with the rivet holes already in the metal parts. The new lining is then secured to the metal parts by inserting rivets, usually of tubular or split form into the holes and clinching said rivets. My present machine provides the necessary tools, in convenient relationship, for drilling out the old rivets, drilling and countersinking the new lining and riveting the new lining to the metal part.

Referring to the drawings, throughout which like reference numerals designate like parts, 5 designates a base, having four upright convergent legs 6, that are secured to, and support a tool bed 7. A tray 8 is secured to the tool base 7 for the reception of articles that the operator is using or working on.

A horizontal guideway 9 is provided in the tool bed 7 and a tool supporting shank 10 is slidably disposed within said guideway 9. A holder 11 for the anvil parts of tools is adjustably mounted on the outer end of the shank 10 and is arranged to be held in different adjusted positions by a pawl 12 that engages with ratchet teeth 13 in the shank 10. An anvil member 14 of cylindrical shape having a longitudinal groove 15 that extends from its outer end inwardly, is supported in a suitable socket 16 in the upper end of the tool holder 11 and is adjustable longitudinally toward and away from its co-operating drilling tool by a set screw 17 locked with a lock nut 18. A riveting tool anvil 19 is supported in a horizontal chuck 20 in the tool holder 11 in spaced relation below the drilling tool anvil 14. The chuck 20 is adjustable by means of a set screw 21 adapted to be locked by lock nut 22.

A frame bracket 23 extends upwardly from the tool bed 7 directly opposite to the tool holder 11. A rivet set 24 within a chuck 25 is supported by the frame bracket 23 in horizontal and axial alignment with the riveting anvil 19.

A combined drill and countersink tool 26 is supported within a chuck 27 that is connected with a horizontal shaft 28 which is rotatably mounted in the upper end of the frame bracket 23, the tool 26 being in alignment with the drilling anvil 14. A ball thrust bearing 29 is provided for absorbing the thrust against the drilling tool 26.

A belt pulley 30 is secured on the shaft 28 and is driven by a belt 31 that passes around another belt pulley 32 on a motor 33 that is secured beneath the tool bed 7.

A compression spring 34 yieldingly urges the shank 10 outwardly. The shank 10 is adapted to be moved inwardly by a foot lever 35 which is connected by a tension link 36 with the end of a lever arm 37 that is connected with the frame by a fulcrum 38 and that

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has a gear segment including gear teeth 39 formed on its pivoted end which mesh with corresponding gear teeth 40 on the bottom side of the tool carrying shank 10. When the foot lever 35 is depressed the lever arm 37 will be moved downwardly and the gear teeth 39 will move the shank 10 to the right, as seen in Fig. 2, bringing both of the tools into operating position.

If desired, brackets 41 of inverted L shape may be provided for resting the work on during the drilling and riveting operations. These brackets are slidable vertically in the frame, are held in the elevated position by set screws 42 and are arranged to drop down out of the way when not in use.

In the operation of this brake lining machine, to remove or drill out the old rivets, the operator starts the motor 33, places the old rivet to be drilled out, against the anvil 14 in the proper position, and exerts a pressure on the foot pedal 35 thereby bringing the rivet into contact with the rapidly rotating drill and causing said old rivet to be drilled out. The groove 15 in the drilling anvil 14 is always placed uppermost and serves the double purpose of allowing the operator to see the work and adjust such work to exactly the correct position and of affording clearance for the end of the drill 26 after said drill has cut its way through the work. After the old lining has been removed a new lining is fitted to and held against the band or shoe and holes are drilled in the new lining in registration with the holes in the metal part. In this operation the drilling tool 26 preferably has a countersink bit 43 formed thereon so that the holes may be drilled and countersunk at one operation. The groove 15 in the drilling anvil 14 enables the operator to see the holes in the metal part and position the work exactly right so that the holes in the lining will register correctly with the holes in the metal parts. After the lining is drilled the rivets are inserted in place and are clinched between the anvil members 19 and 24. The anvil member 14 is easily removable and may be slipped out of its socket while the rivets are being clinched if desired.

The machine is strong and simple in construction and not expensive to manufacture. The tool carrier 11 is adjustable on the shank 10 to compensate for bands and shoes of different thickness. The movement of both the drilling and riveting tools is controlled by a single foot pedal.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that changes may be made within the scope and spirit of the following claims.

I claim:

1. In a brake lining machine a rigid upright frame having a horizontal guideway provided in its upper portion, a tool carrying shank reciprocable in said guideway, a rigid tool bracket extending upwardly above said guideway, tools carried by said tool bracket, a tool carrier mounted on the end of said shank and extending upwardly therefrom in opposed relation relative to said tool bracket, means for adjustably supporting said tool carrier on said shank, tools carried by said tool carrier in alignment with the tools in said tool bracket, means including a foot pedal for moving said shank to advance said tool carrier toward said tool bracket, and spring means for moving said tool carrier away from said tool bracket.

2. In a brake lining machine of the class described, an upright frame, a horizontal shank movable longitudinally in said frame, gear teeth formed in the lower side of said shank, a pivotally mounted gear sector meshing with said gear teeth for moving said shank, a lever arm rigid with said gear sector, a foot pedal, a link connecting said lever arm with said foot pedal, a spring urging said shank into a retracted position and tending to elevate said foot pedal, a rigid upright tool bracket on said frame above said shank, and an upright tool carrier adjustably supported on the outer end of said shank and movable therewith toward and away from said tool bracket, said tool carrier and said tool bracket having relatively aligned tool holding means.

The foregoing specification signed at Seattle, Wash., this 22nd day of Sept., 1927.

JOHN B. HIRD.