June 18, 1940. S. CARELLI 2,205,343

GROOVING TOOL

Filed June 17, 1938

Fig. 1.

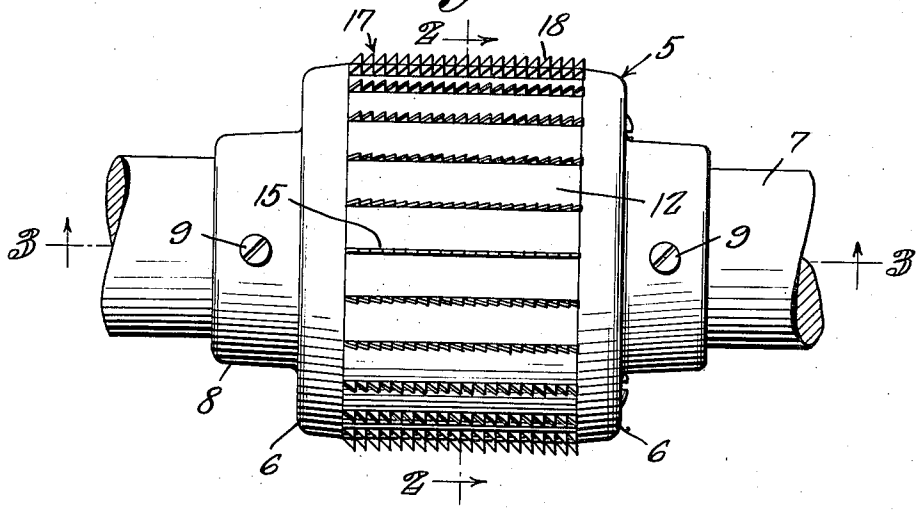


Fig. 2.

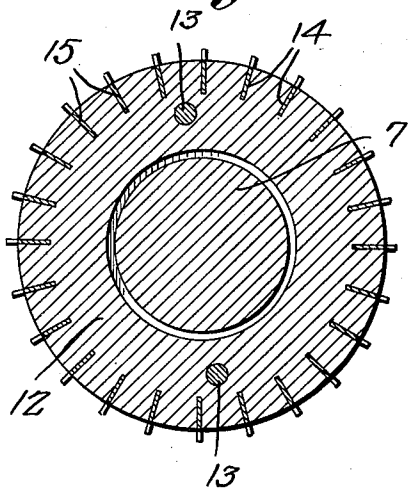
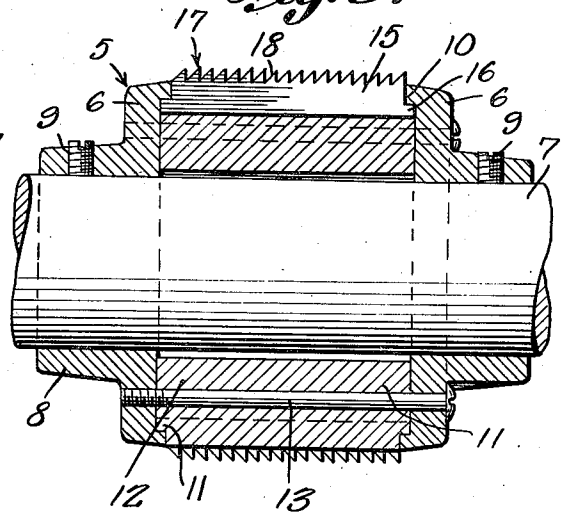


Fig. 3.



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WITNESS

Patented June 18, 1940 2,205,343

UNITED STATES PATENT OFFICE

2,205,343

GROOVING TOOL

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Application June 17, 1938, Serial No. 214,383

3 Claims. (Cl. 69—1)

This invention relates to grooving tools and more particularly to rotary grooving tools. In the manufacture and repairing of shoes, it is customary to groove the outer faces of the welts and the inner faces of the soles, apply to the respective grooved faces a suitable glue or cement, attach the soles to the welt in a manner wherein the grooves and projections of the welts interfit with the projections and grooves of the soles, and subject the assembly to a cold or heating process under pressure to affix the soles to the welts.

Ordinarily, in grooving the faces of the soles and welts a rotary grooving tool is employed formed with a plurality of tangently extending V shaped teeth, the apex ends of which are fashioned with radially extending V shaped cutting elements adapted for rotary engagement with the sole or welt for inscribing therein a plurality of grooves for the purpose heretofore set forth. These types of grooving tools employed are of a one piece construction and when the cutting or grooving elements become dull, it is necessary to remove the tool from the shaft on which it is fixed and replace the same with another having sharp teeth.

Inasmuch as the shafts on which the grooving tools are fixed usually contain other tools for other operations in the manufacture or repairing of shoes, the removing of a grooving tool oftentimes necessitates the removal of other tools thereby resulting not only in a loss of time but also a considerable monetary loss due to the inoperativeness of the other tools during the period of replacement. Furthermore, due to the tangently extending teeth of the ordinary grooving tools it is not possible to reverse the tool on the shaft and present the sharp edges on the reverse side of the cutting elements for grooving operations.

It is therefore one of the principal objects of this invention to provide a grooving tool equipped with removable blades having cutting elements formed thereon whereby to effect an economy in replacement.

Another principal object of the invention is to provide a grooving tool of the above described character equipped with means for permitting the removal of the blades without removing the tool from the shaft thereby reducing to a minimum the replacement period and resultant loss of time and expense in those instances where the tool is mounted on a shaft having a plurality of other tools mounted on the shaft and on each side of said grooving tool.

A special object of the invention is to provide a tool of the above described character equipped with blades having cutting or grooving elements both so constructed and arranged to permit the tool as a unit to be reversed on the shaft to present the sharp edges on the reverse sides of the cutting elements for grooving operations.

Another special object of the invention is to provide removable blades equipped with cutting elements so constructed and arranged whereby said blades may be reversed relative to the tool.

Another object of the invention is to provide a tool of the above described character wherein selected blades may be removed for replacement without the necessity of removing the other blades thereon.

A further object of my invention is to provide a grooving tool of the above described character equipped with means for reliably securing the blades on the tool in a manner whereby the cutting elements of the blades are presented in circumferential alignment at all times for inscribing substantially uniform grooves.

A still further object of the invention is to provide a tool of the above described character wherein the blades are maintained in a removable holder and also extend radially relative to the shaft, thereby permitting reversal of the tool on the shaft.

An important object of the invention is to provide the detachable blades with cutting or grooving elements so constructed and arranged that when the blades are removed for repositioning in reverse order, the shape of the cutting elements will denote the reverse position thereby permitting the blades to be quickly and efficiently reversed.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawing.

Referring to the drawing wherein like reference characters designate like parts throughout the several views:

Figure 1 is a side elevation of the invention illustrating the same attached to a section of a drive shaft.

Figures 2 and 3 are sectional views taken on the lines 2—2 and 3—3 of Figure 1 respectively.

In practicing the invention there is provided a rotary grooving tool 5 comprising a pair of spaced coupling members 6 provided with bores for receiving therethrough a section of a drive shaft 7, the outer faces of said coupling members being fashioned with circumferentially extending flanges 8 each carrying a set screw 9 engaging

the shaft whereby to secure said coupling members fixed thereto.

The inner opposed faces of the coupling members 6 are fashioned with recesses forming circumferentially extending ribs 10 adjacent the outer peripheral faces of the members. The ribs 10 extend towards each other and engage the peripheral faces of circumferentially extending bosses 11 formed on the sides of a cylindrical shaped holder 12. Suitable bolts 13 extend through the members 6 and holder 12 and clamp the holder between the members 6. The holder 12 is provided with a bore through which the shaft 7 extends, and said bore is of a slightly larger diameter than the shaft whereby to permit longitudinal adjustment of the holder between the members 6 and the shaft.

The outer peripheral face of the holder 12 is fashioned with a plurality of inwardly and longitudinally extending spaced slots 14 for accommodating detachable blades 15. The blades 15 are provided with longitudinally extending end sections 16 for engagement with the inner faces of the ribs 10 and the inner walls of the slots 14 are arranged a sufficient distance inwardly of the peripheral face of the holder to serve as seats for the blades and dispose the sections 16 in engagement with the ribs as clearly illustrated in Figure 3.

From the foregoing it will be apparent that when the blades 15 are inserted in the slots 14 the sections underlie and engage the inner circumferentially extending faces of the ribs 10 whereby removal or dislodgement is precluded when the members 6 and holder 12 are clamped or fixed together by the bolts 13. The outer ends of the blades 15 are fashioned with cutting or grooving elements or teeth 17 each having an inclined face 18. Obviously, rotation of the shaft 7 serves to rotate the holder 12 and when a work piece, for instance a sole or welt, is presented against the cutting elements 17 and moved transversely relative to the shafts the cutting elements will inscribe a plurality of spaced grooves in the face of the work piece. When the cutting elements become dull one of the set screws 9 is loosened and likewise the bolts 13, thereby permitting one of the members 6 to be moved a sufficient distance longitudinally of the shaft 7 to disengage and space the holder from the other member 6.

When the holder is thus spaced from the members 6, the blades 15 may be removed and replaced by others or said blades may be reversed end for end, the inclined faces 18 of the cutting elements being reversed and thereby serving as a guide for other blades to be positioned in the same manner. The parts are then clamped together by the bolts 13 and fixed to the shaft for rotation through the medium of the set screws 9, thereby presenting the opposite or reverse sides of the cutting element for grooving operations.

In instances where it is desired to reverse the tool as a unit on the shaft, the same may be readily accomplished through the manipulation of the set screws 9 without loosening the bolts 13.

What I claim is:

1. A tool of the class described, comprising, a pair of coupling members, a holder between said members, blades detachably carried by said holder, and means connecting said members together for securing said blades in said holder and operable to permit separation of said members, said members and holder formed with bores adapted to receive a shaft with the bore of said holder of a larger diameter than the bores of said members to permit abaxial positioning of said holder relative to said members upon separation of the latter to effect progressive removal and replacement of said blades upon rotation of said holder relative to said members.

2. A tool of the class described, comprising, a pair of coupling members having a bore and adapted to be secured to a shaft for rotation therewith, a holder interposed between said members and having a bore of a larger diameter than the bores of said coupling members, blades detachably mounted in said holder for movement therewith, and fastening devices extending entirely through said holder and connected to each of said members for clamping said holder therebetween for maintaining said blades in said holder, said devices removable with respect to said holder and one of said members to effect separation of said members and abaxial positioning of said holder with respect to said members to permit progressive removal and replacement of said blades upon rotation of said holder relative to said members.

3. A tool of the class described, comprising, a pair of coupling members having a bore and adapted to be secured to a shaft for rotation therewith, a holder having a bore of a larger diameter than the bores of said coupling members and adapted to receive said shaft, radially extending blades detachably mounted in said holder, means on said coupling members circumjacent to the ends of the holder and said blades for securing said blades in said holder, and fastening devices connected to each of said members and extending entirely through the holder and clamping the latter to said members and coacting with said means to maintain said blades in said holder against removal and to effect movement of the holder with the members, all of said devices accessible and adjustable from one end of said tool for removal from one of said members and said holder to permit separation of said members and abaxial positioning of said holder with respect to said members to effect progressive removal and replacement of said blades upon rotation of said holder relative to said members.

SAM CARELLI.