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BUSHING REAMING AND DRIVING TOOL

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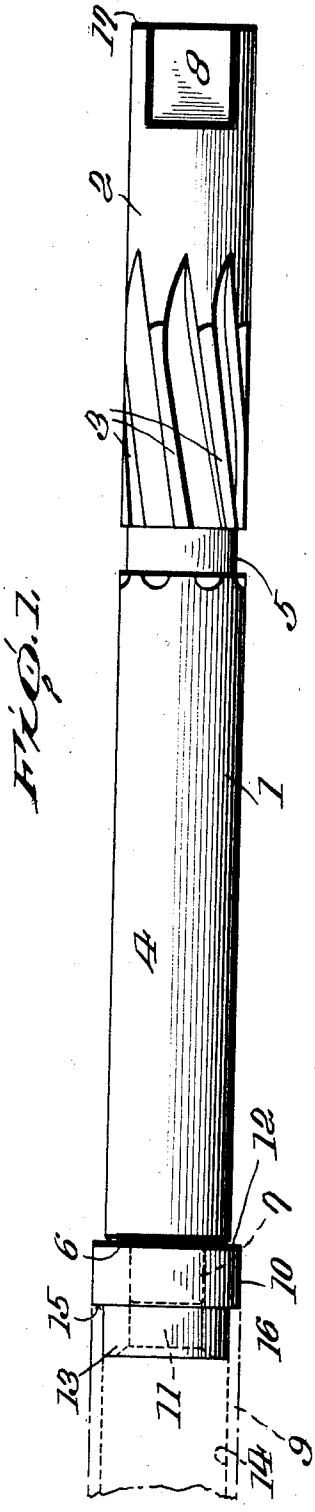


Fig. 1.

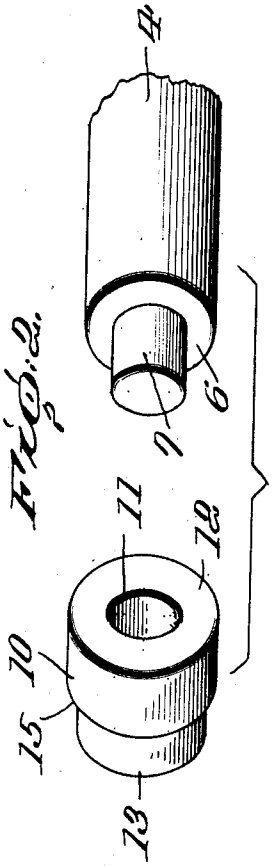


Fig. 2.

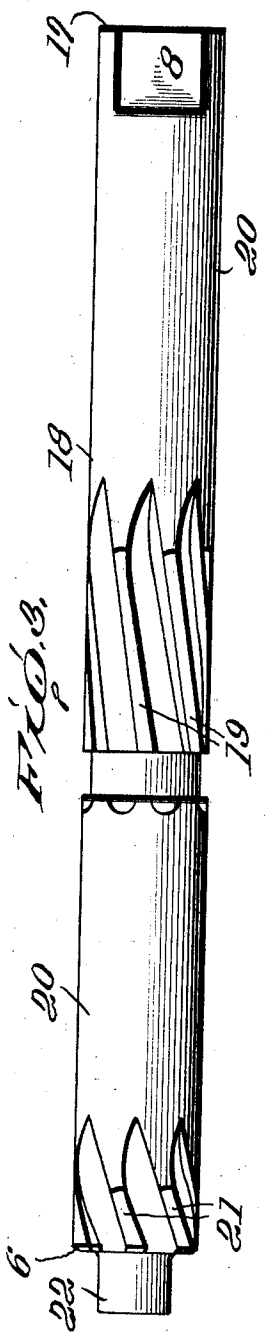


Fig. 3.

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BUSHING REAMING AND DRIVING TOOL

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2 Claims. (Cl. 77—72)

This invention relates to a combination bushing driving and reaming tool.

The principal object of the present invention is to provide a novel bushing driving and reaming tool particularly adapted for replacing and reaming king bolt bushings and the like.

Another object is the provision of a combined bushing driving and reaming tool having a removable bushing driving member mounted thereon.

A further object is to provide a combination bushing driving and reaming tool having means for accurately and uniformly removing and reaming bushings of king bolts.

A still further object is the provision of a combined bushing driving and reaming tool which is cheaper to manufacture than the separate driving and reaming tools heretofore used.

These and other objects and advantages will be apparent as the specification is considered with the accompanying drawing, wherein:

Figure 1 is a side elevation of the assembled combined bushing driving and reaming tool;

Figure 2 is a drawn out perspective of the removable bushing driving member and the reaming tool; and

Figure 3 is a side elevation of a modified form of bushing reaming tool.

Referring more particularly to the drawing, wherein similar reference characters designate like parts throughout the several views, the numeral 1 denotes generally a bushing reaming tool comprising a longitudinal cylindrical shank 2 having a series of circumferentially spaced, sharp reaming flutes or cutting edges 3 formed therein, adjacent the upper end thereof. The lower ends of the flutes are spaced slightly from the main pilot portion 4 of the longitudinal shank, as at 5, to provide clearance for the cuttings during the reaming operation. The lower end of the shank is reduced and slightly flared or tapered, as at 6, and is formed with a reduced cylindrical stem or nipple 7. Formed on the upper end of the shank is a shouldered handle portion 8 to receive a crank or other suitable operating tool, not shown, to permit of the reamer being rotated, in the usual manner, to effect the reaming of the aligned bushings 9, of a conventional king bolt, not shown. Only one bushing 9 is shown.

As the bushings 9 of a king bolt frequently become scored and otherwise worn, the reaming tool is provided with means to permit of the ready removal of and replacement of these bushings. Thus, a cylindrical bushing driving collars or sleeve 10, having an axial bore 11, is adapted to be loosely and removably sleeved over the reduced stem 7 of the reaming shank so that the flattened upper end wall 12 thereof abuts the flared lower end wall 6 of the shank. The collar 10 is formed with a reduced sleeve portion 13 which is adapted to extend into the axial bores 14 of the bushings 9, with the wall 15 thereon engaging one end 16 of the bushing.

When it is desired to remove the bushings 9 from the king bolt spindle, the driving collar 10 is assembled on the reaming shank and the reduced sleeve portion 13 of the collar 10 is inserted within the bore 14 of one of the bushings 9. The flattened upper end 17 of the reaming shank is tapped with a hammer or other suitable tool, not shown, whereby the collar 10 is forced against the bushing 9 and the latter is driven downwardly through and out of the king bolt spindle, in an obvious manner. As the reduced lower end of the shank 2 is flared, as at 6, it will be noted that the wall of the shank will not be bent or otherwise damaged during the driving of the bushing from the king bolt spindle. It is essential that the lower end of the shank be perfectly straight as this portion of the shank serves as a pilot for guiding the reamer during the reaming operation, about to be described. After the first bushing 9 has been removed from the king bolt spindle, the collar 10 is reassembled on the shank 2 and inserted in the second bushing 9 and the operation is repeated to force the latter from the spindle.

With both old bushings 9 removed, although, if desired, only one of the bushings may be removed, a new unreamed bushing is mounted on the collar 10 and arranged in one of the king bolt spindle bores. The reamer shank 2 is then tapped until the new bushing is driven into proper position within the spindle. This operation is repeated to assemble the second bushing in the spindle. It is now necessary to ream the new bushings, and the collar 10 is therefore removed from the shank and the latter is inserted through both of the bushing bores 14, until the reaming flutes 3 on the shank are disposed adjacent the upper end of one of the bushings. The shank is then rotated, in any desired manner, so that the flutes engage with and ream the axial bore in the bushing. During this reaming operation, the lower end of the shank 2 is sleeved within the bore of the other bushing and serves to pilot the reamer thus assuring that the flutes 3 will function uniformly. The tool is then re-

moved from the bushings, reversed and inserted in the remaining unreamed bushing, in an obvious manner. During this second operation, the lower end of the shank 2 will extend into the bore of the reamed bushing and serve to pilot the reamer during the reaming of the second bushing, in the manner just described. It will thus be noted that the reamer is guided during the reaming of both bushings.

In the modification, illustrated in Figure 3, a cylindrical reamer shank 18 is provided with a series of reaming flutes or cutting edges 19, substantially intermediate the ends thereof, the portions 20 of the shank, on either side of the flutes, constituting the pilot surfaces. A series of milled flutes 21 are also formed in the lower end of the shank 18, adjacent the reduced bushing driver receiving stem or nipple 22. When the new bushings have been assembled in the king bolt spindle as hereinbefore described, the lower fluted end 21 of the reamer shank is inserted and rotated within the bushings causing the flutes 21 to engage with and remove any burrs or excess metal from the axial bores of the two bushings, in advance of the pilot surfaces 20 of the shank. The pilot surfaces 20 are thereby assured of freely entering and guiding the reamer through the bushing bores. By virtue of the location of the pilot surfaces 20, on either side of the reaming flutes 19, it will be noted that the pilot surfaces 20 will engage the axial bores of both bushings and thereby assure of the bores being perfectly aligned.

While I have illustrated and described a preferred embodiment and a modification of my combination bushing reaming and driving tool, it is to be understood that various improvements and changes may be made without departing from the scope and spirit of the appended claims.

What I claim is:

1. In a tool for reaming and driving bushings from king bolts, the combination of a cylindrical fluted shank having a reduced annular extension on one end thereof, a flared shoulder on said extension, a tubular collar having an axial bore adapted to be removably sleeved on said extension and engaging with said flared shoulder, and a shoulder on said collar engaging with one end of said king bolt bushing whereby longitudinal movement of said shank forces said collar against and drives the bushing from or into the king bolt, said shank being provided with a relatively smooth pilot surface intermediate the extension and fluted portion, said pilot surface cooperating with said fluted portion for guiding the tool during the reaming of a bushing.

2. In a tool for reaming and driving bushings from king bolts, the combination of a cylindrical fluted shank having a reduced annular extension on one end thereof, a flared shoulder on said extension, a tubular collar having an axial bore adapted to be removably sleeved on said extension with the upper end thereof engaging the flared shoulder on said extension, and a shoulder on said collar engaging with one end of a king bolt bushing whereby longitudinal movement of the shank forces said collar against and drives the bushing from or into the king bolt, said shank being provided with a relatively smooth pilot surface intermediate the extension and fluted portion for guiding the tool during the reaming of a bushing.

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