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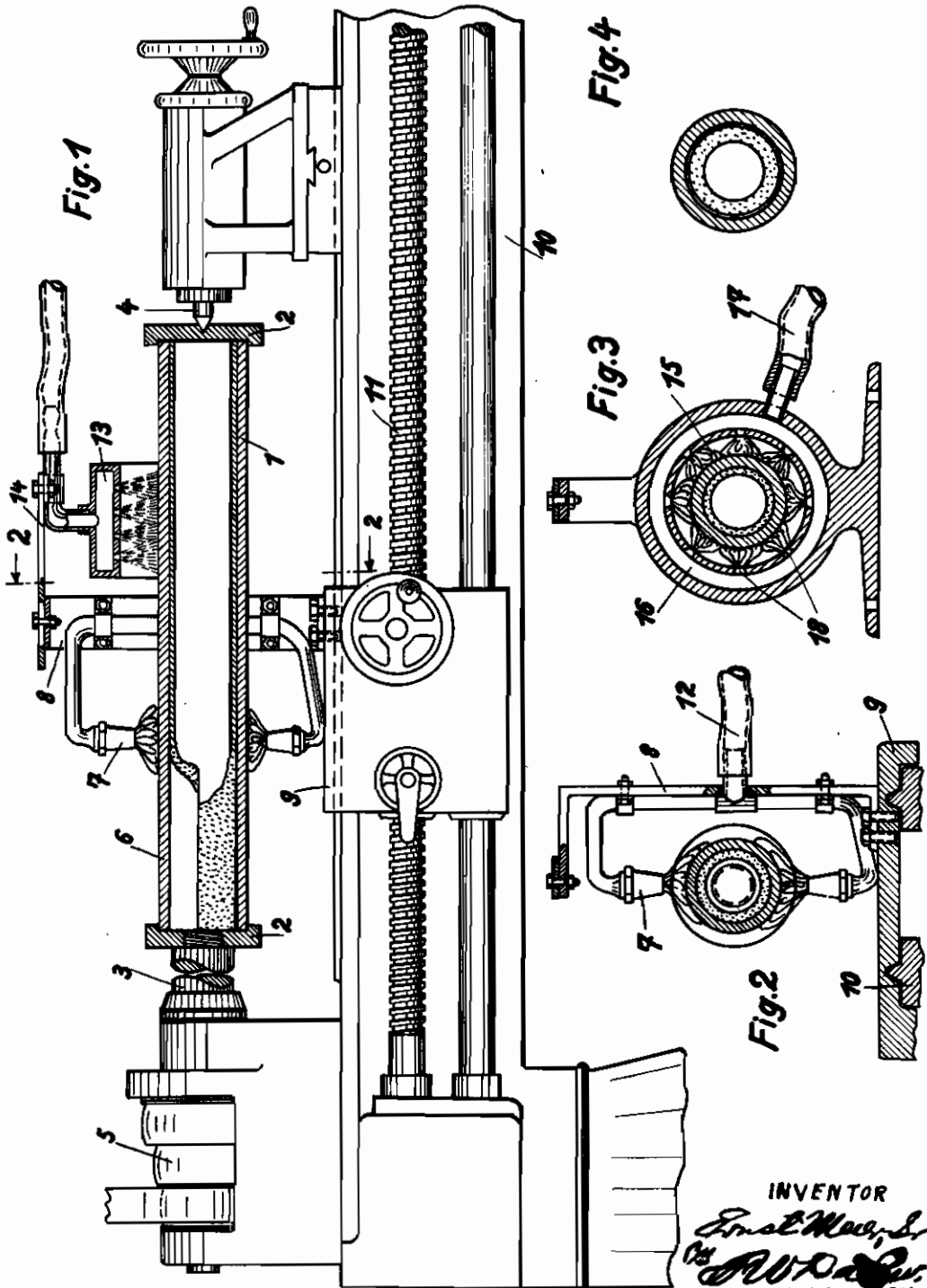
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METHOD OF APPLYING BUSH METAL TO BUSHES

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# ALIEN PROPERTY CUSTODIAN

## METHOD OF APPLYING BUSH METAL TO BUSHES

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My invention relates to improvements in the method of applying bush metal to bushes, and particularly in the method in which a solid body of bearing metal such as white metal, red brass, lead bronze and the like is placed within the bush and heated while the said bush is rapidly rotated, the metal being molten and thrown into contact with the inner surface of the bush by centrifugal action. The object of the improvements is to provide a method by means of which the bush metal is safely bound to the inner surface of the bush even if the bush has a great length, and with this object in view my invention consists in placing the said solid body of bush metal within the bush, rapidly rotating the bush, and gradually heating the same and the metal from one end of the bush to the other. Preferably the molten metal is cooled immediately after having been bound to the surface of the bush.

For the purpose of explaining the invention an apparatus for carrying out the method has been shown in the accompanying drawing, in which the same reference characters have been used in all the views to indicate corresponding parts. In said drawing

Fig. 1 is a diagrammatical elevation partly in section showing an elongated bush having the body of bush metal placed therein and rotatably supported on a suitable machine, heating and cooling means, and means for shifting the said heating and cooling means longitudinally of the bush,

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 1,

Fig. 3 is a sectional elevation showing a modification of the heating means, and

Fig. 4 is a detail sectional elevation showing a modified form of the body of bush metal.

Referring at first to the elevation shown in Figs. 1 and 2, the blank such as an elongated bush 1 is placed between heads 2, 2 which are mounted respectively on a spindle 3 and a center 4, suitable means being provided for rapidly rotating the heads 2, 2 and the blank 1. As shown such means consist of belt pulleys 5. Within the blank 1 there is a body of bush metal 6 which extends all over the length of the blank 1, and which may consist of a solid body made by pressing, drawing or casting, or of chips or powder of metal bound together in a suitable way for example by means of a suitable binding medium which may be readily molten or decomposed by heat. In the example shown in the figure the metal 6 is in the form of a solid rod. But I wish it to be understood that my invention is not lim-

ited to this feature, and that in some cases I provide the bush metal in tubular form, according to the diameter of the bush and the thickness of the coating to be applied thereto. This modification has been shown in Fig. 3.

Externally of the bush 1 there are burners 7 which are adapted to direct a flame all around the bush 1 for heating the same so far that the bush metal 6 is locally molten, and means are provided for gradually moving the said burner from one end of the bush to the other one, so that the bush metal 6 is molten in succession. As shown the burners are mounted on a bracket 8 rising from a slide 9 mounted on the bed 10 of the machine and engaged by a screw-threaded spindle 11. Fuel is supplied to the burners by a hose 12. By the rapid rotation of the blank 1 the molten metal is thrown on the inner wall of the bush 1. As the burner 7 is shifted longitudinally of the bush 1 the molten metal is cooled, so that it is bound to the inner surface of the blank 1. Preferably a cooling medium is applied to the bush 1 following the burner 7 so that solidification of the metal is accelerated. As shown a spraying device 13 is provided for this purpose by means of which cooling water is sprayed on the outer surface of the bush 1. The said spraying device is mounted on an arm 14 fixed to the bracket 8.

Where the body of metal 6 consists of powder or chips of metal a suitable binding medium such as waterglass or glue is preferably admixed thereto. But I wish it to be understood that my invention is not limited to the use of a binding medium and that the powder or chips of metal may be bound into a coherent body by high pressure or in another way. Further, I may provide a deoxidizing medium such as borax, which is particularly desirable where the metal powder or chips are partly oxidized. Where the body 5 is built up from powder or chips I admix the deoxidizing medium thereto, and where it is in the form of a solid rod or pipe made by casting, pressing or drawing I apply the deoxidizing medium to the outer surface of the rod. Preferably where the bush metal is in the form of a tubular body such as is shown in Fig. 3 at 15, the deoxidizing medium is also applied to the inner surface thereof. When the bush metal is being heated and molten the deoxidizing medium reacts with the oxide of the bush metal, whereby additional heat is produced which accelerates the melting of the metal.

As appears from Fig. 1, the metal 6 is gradually molten as the burner 7 advances from the right

to the left, and it is thrown into contact with the inner surface of the bush 1 and subsequently solidified so as to be bound to the bush, solidification being preferably assisted by the cooling liquid supplied by means of the sprayer 13. Fig. 2 shows the bush metal partly molten and applied to the surface while another part of the metal is still solid.

In the modification shown in Fig. 3 a burner has been shown which consists of a hollow ring 16 having a supply of fuel through a hose 17 and formed internally with nozzles or bores 18 for the delivery of the fuel therethrough.

While in the figures burners 2 have been shown for heating the blank, I wish it to be understood

that my invention is not limited to such heating means, and that other heating means may be provided, for example heating means based on the use of high frequency electric current.

While the metal is being molten the outer air is excluded by tightly fitting the blank between the heads 1, 1, so that oxidation of the metal is reduced to a minimum. Therefore the bush metal is intimately bound to the bush 4.

The velocity of the movement of the burner 2 and the sprayer 3 depends on the thickness of the wall of the blank 4 and on the time required for melting the bush metal.

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