Jan. 1, 1935. H. R. PATTERSON 1,986,777

DEVICE FOR DRAWING WIRE

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Fig. 1.

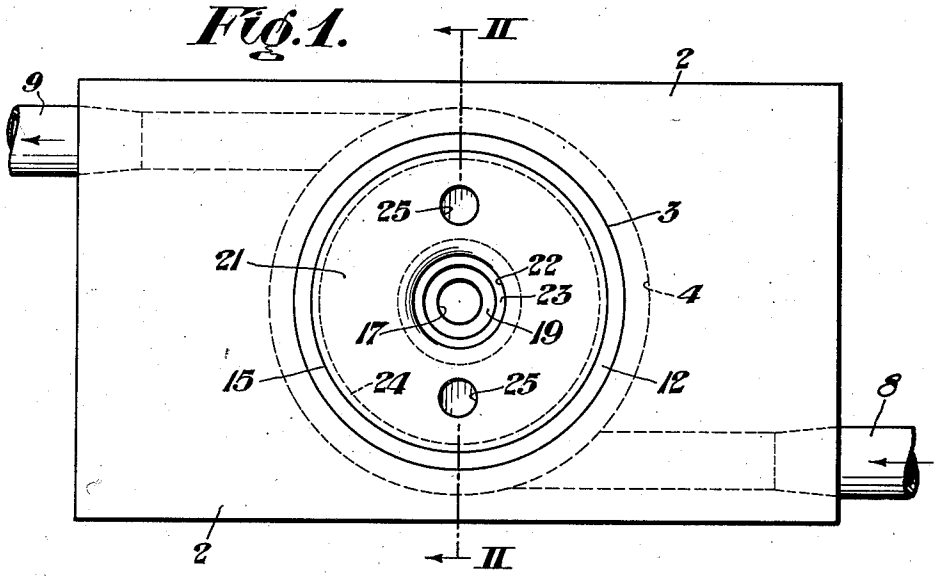
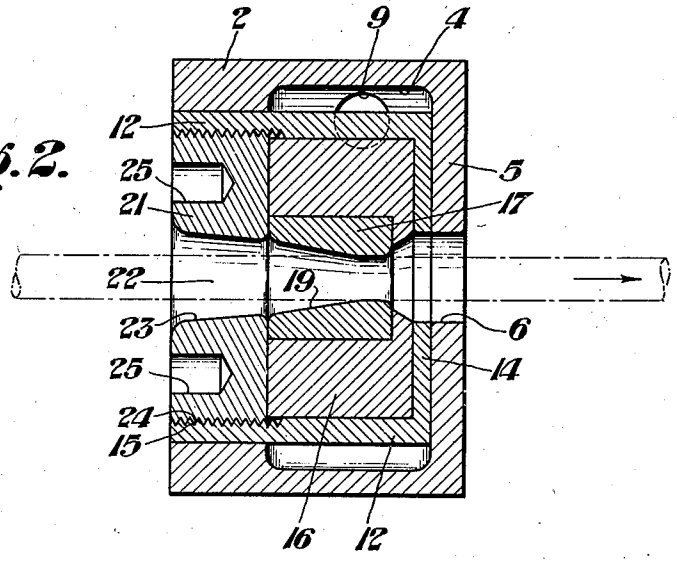


Fig. 2.



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DEVICE FOR DRAWING WIRE

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2 Claims. (Cl. 205—25)

This invention relates to devices for drawing wire, and has for one of its objects the provision of novel means for the relatively slow cooling of dies, and particularly those composed of tungsten carbide.

In using dies of this type, a great amount of heat is imparted to them by the frictional contact of the material being drawn; and it is therefore highly necessary that they be cooled. The cooling must, however, be done slowly, or the tungsten carbide will crack.

Another object of the invention is to provide novel means for holding a die in such manner as to permit of its cooling without being in contact with the coolant.

The foregoing and other objects will be apparent after referring to the drawing, in which:

Figure 1 is an elevation of the novel device of the invention; and

Figure 2 is a sectional view on the line II—II of Figure 1.

Referring more particularly to the drawing, the numeral 2 designates a block which is adapted to fit within the usual opening in the drawing box on a wire drawing bench. This opening is ordinarily for the purpose of accommodating a plate having a plurality of drawing apertures.

According to the present invention, the block 2 is provided with an enlarged central aperture 3 extending partially therethrough. The inner face of the aperture 3 is annularly grooved along a portion of its depth, as indicated at 4, and in such manner as to provide on one side of the block 2 an annular inwardly extending flange 5 having a central aperture 6. The block 2 is drilled, as at 8 and 9, in such manner as to provide inlet and outlet conduits, respectively, for the annular groove 4, which may be used for the distribution of a coolant, such as water.

A bushing 12 is made to fit within the recess 3, in the block 2, and extend through the annularly grooved portion 4. The bushing 12 is provided on one of its ends with an annular inwardly extending flange 14 which, when the bushing is placed in the aperture, seats against the annular inwardly extending flange 5 of the block 2. The bushing 12 is provided on its other end with internal screw-threads 15.

A die 16, which is preferably composed of steel, is provided with a "nib" or insert 17 of tungsten carbide. The entrance angle 19 of the die insert 17 is sufficient to permit of the introduction of a suitable quantity of lubricant, such as, for example, soap, into its area of drawing contact.

The die 16 is held in the sleeve 12 against its annular inwardly extending flange 14 by means of a plug 21, which is provided with a central aperture 22 to permit of the introduction of the wire being drawn. The entrance angle 23 of the plug 22 is of less inclination than the entrance angle 19 of the die insert 17. This is for the reason that the lubricant used in the process of drawing may enter the aperture 22 in the plug and pack into the area provided by the greater entrance angle of the die insert, and form a hard mass, or what might be termed a "lubricating plug". Such a packing serves admirably to protect the die insert from foreign matter entering on the wire being drawn, and assures uniform lubrication of the surface of the wire.

The plug 23 is provided with external screw threads 24, which cooperate with the threads 15 on the sleeve 12, and is rotated into position by means of the usual apertures 25 which permit of the use of a special wrench.

It is to be noted that as the coolant, which is usually water, flows through the inlet 8, around the sleeve 12, and out of the outlet 9, it will not come in contact with either the steel die 16 or its tungsten carbide insert 17, and thus there is obviated the possibility of the occurrence of corrosion.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined in the following claims.

I claim:

1. A device for drawing wire comprising, in combination, a die holder having an enlarged axial aperture, the wall of said enlarged axial aperture having an annular recess of a width which is less than the depth of said axial aperture, said die holder having a central aperture communicating with said enlarged axial aperture and its annular recess, a sleeve for lining the enlarged axial aperture of said die holder and its annular recess, the inner end of said sleeve being partially closed by a centrally apertured wall, a wire drawing die disposed in said sleeve and in contact with its partially closed end, a hardened insert in said wire drawing die, and a plug which is screw-threaded into said sleeve for maintaining said wire drawing

die and said hardened insert therein, said plug having a central aperture communicating with the wire drawing bore of said die, the aperture of said plug having a lesser inclination to the axis of the wire drawing bore of said die than the inclination of the bore of its hardened insert.

2. A device for drawing wire comprising, in combination, a die holder having an enlarged axial aperture, the wall of said enlarged axial aperture having an annular recess of a width which is less than the depth of said axial aperture, said die holder having a central aperture communicating with said enlarged axial aperture and its annular recess, a sleeve for lining the enlarged axial aperture of said die holder and its annular recess, the inner end of said sleeve being partially closed by a centrally apertured wall, a wire drawing die disposed in said sleeve and in contact with its partially closed end, a hardened insert in said wire drawing die, and a plug which is screw-threaded into said sleeve for maintaining said wire drawing die and said hardened insert therein, said plug having a central aperture communicating with the wire drawing bore of said die, the aperture of said plug having a lesser inclination to the axis of the wire drawing bore of said die than the inclination of the bore of its hardened insert, said die holder having water passages in communication with the annular recess in its enlarged axial aperture.

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