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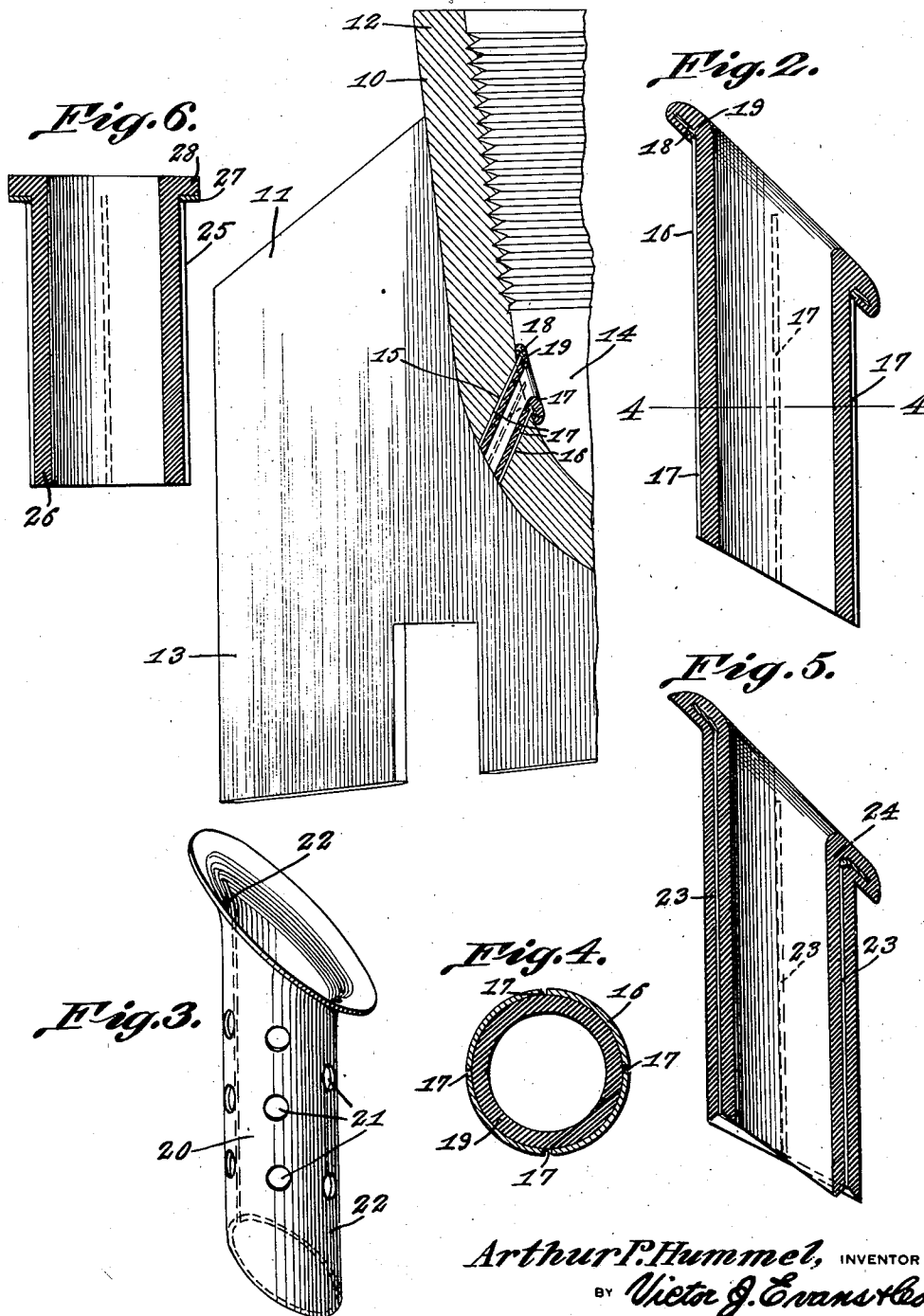
A. P. HUMMEL

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DRILL BIT

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*Fig. 1.*



Arthur I. Hummel, INVENTOR  
BY Victor J. Enns & Co.  
ATTORNEY

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## DRILL BIT

Arthur P. Hummel, Bakersfield, Calif.

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1 Claim. (Cl. 255—61)

The invention relates to well drilling tools and more especially to a drilling bit of the type wherein a continuous stream of water is injected into the hole being drilled.

5 The primary object of the invention is the provision of a bit of this character, wherein the flow hole for the water has therein a resilient bushing to reduce materially the friction created by pas-  
10 sage of the water and slush under pressure through the hole in the body of the bit and thus to increase the longevity and consequent usefulness of the tool.

Another object of the invention is the provision of a bit of this character, wherein the same has  
15 the water passages therein lined with a wear resisting material of elastic kind, such as rubber, which through its use pressure from the pump will remove any accumulation of material which may become wedged in the passage and also func-  
20 tions to hold the lining material firmly in applied position in the passage in the bit.

A further object of the invention is the provision of a bit of this character, wherein the lining is interchangeable and replaceable when  
25 the same becomes worn by the contact of sand and other cutting substances passing at high velocity through the flow hole therefor and under pump pressure.

A still further object of the invention is the provision of a bit of this character, which is simple in construction, thoroughly reliable and efficient in its operation, strong, durable, and in-  
30 expensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawing, which discloses the preferred embodiment of the invention and  
40 pointed out in the claim hereunto appended.

In the accompanying drawing:

Figure 1 is a fragmentary vertical sectional view through a drill bit constructed in accordance with the invention.

45 Figure 2 is an enlarged sectional view through the lining for the flow hole in the bit.

Figure 3 is a perspective view of the bushing sleeve for said hole.

50 Figure 4 is a sectional view on the line 4—4 of Figure 2.

Figure 5 is a view similar to Figure 2 showing a slight modification.

Figure 6 is a view similar to Figure 5 showing a further modification.

55 Similar reference characters indicate corre-

sponding parts throughout the several views in the drawing.

Referring to the drawing in detail, particularly Figures 1 to 3, inclusive, there is shown in Figure 1 an improved type of bit, the body 10 being  
5 formed with a shoulder 11 set at an angle to allow for rapid circulation of water and to direct the same upward past the shank 12 without interference thereby to retard its progress. The bit is further provided with a cutting blade 13 so dis-  
10 posed as to insure maximum cutting efficiency.

It is to be understood, however, that the construction of the bit shown and specifically described does not in any way restrict the use of the invention to be presently referred to, as the in-  
15 vention is adapted for application to any type of earth boring tool employing the circulation of fluid as a lubricating medium.

The shank has provided therein a cavity 14 from which leads a hole or water course 15 which  
20 is trained downwardly and outwardly from the bottom of this cavity to a proper point for discharging fluid on the operative surface of the blade 13. When the water course 15 becomes plugged by accumulation of substances therein  
25 it is obviously necessary to withdraw the bit from the hole being bored with the added disadvantage of having to lift the column of water entrapped in the drill stem assembly and requiring that such water be released. To reduce  
30 the likelihood of plugging the water course 15 in the bit the present invention has been created and comprises a copper coated steel sleeve 16 of a cross sectional diameter corresponding to that of the water course 15 for snug fitting there-  
35 in and this sleeve is preferably longitudinally slitted at 17 which slits extend through one end and terminate short of the other end which carries an outturned rim or flange 18. The rim or flange 18 in its entirety is embedded in a rubber  
40 lining 19 which extends inside of the sleeve 16 for the full length thereof and the same is vulcanized therewith. This lining of elastic material avoids the wearing away of the water course 15 when the sleeve is fitted therein.  
45

The rim or flange end 18 of the sleeve constitutes an abutment against the wall of the cavity 14 so as to avoid the working of the sleeve 16 through the course 15 when the fluid flows through the latter, under high pressure and the  
50 slitting of the sleeve 16 permits the expanding of the sleeve by the high pressure exerted against the same so that the sleeve will firmly bind in the course 15 and be held in place.

In Figure 3 of the drawing there is shown a 55

modification of sleeve 20 having the perforations 21 in addition to the slits 22.

In Figure 5 of the drawing there is shown another modification wherein the split sleeve 23, 5 embedded in an elastic tubular body 24, affords a lining both outside and inside of said sleeve.

In Figure 6 of the drawing there is shown a still further modification of the invention wherein the sleeve 25 carrying the elastic lining 26 10 has the flanged end 27 overlapped by a rim 28 on the lining 26.

The bushing could be constructed without the use of the copper covered steel sleeve around which the rubber is fitted as it is contemplated for the use of steel spring mesh wire, either brass or copper covered as a bushing. 5

What is claimed is:

In a drill bit, having a water flow hole there-through, an elastic tubular bushing fitting said hole and including a metallic sleeve removed from the wall of the bore of said bushing. 10

ARTHUR P. HUMMEL.