March 6, 1951 H. J. MADER 2,543,861

PLUG INSERT BIT FOR CORE DRILLS

Filed Feb. 12, 1948

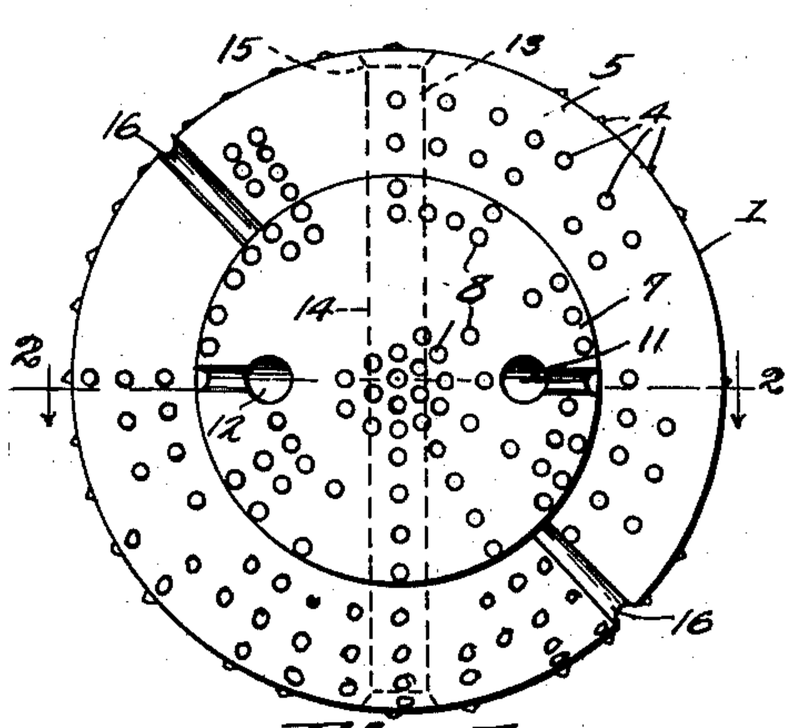

Fig. 1.

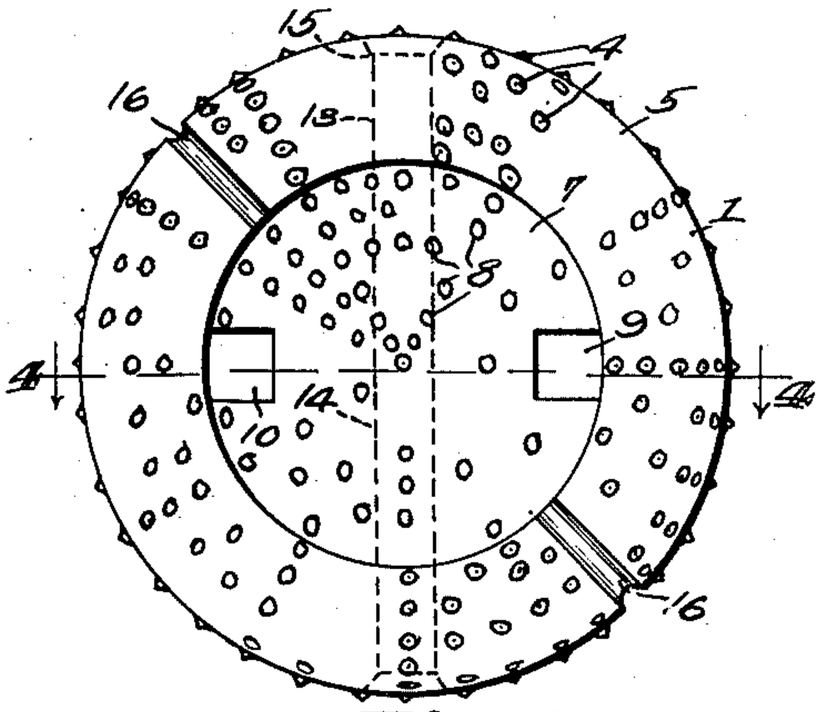

Fig. 3.

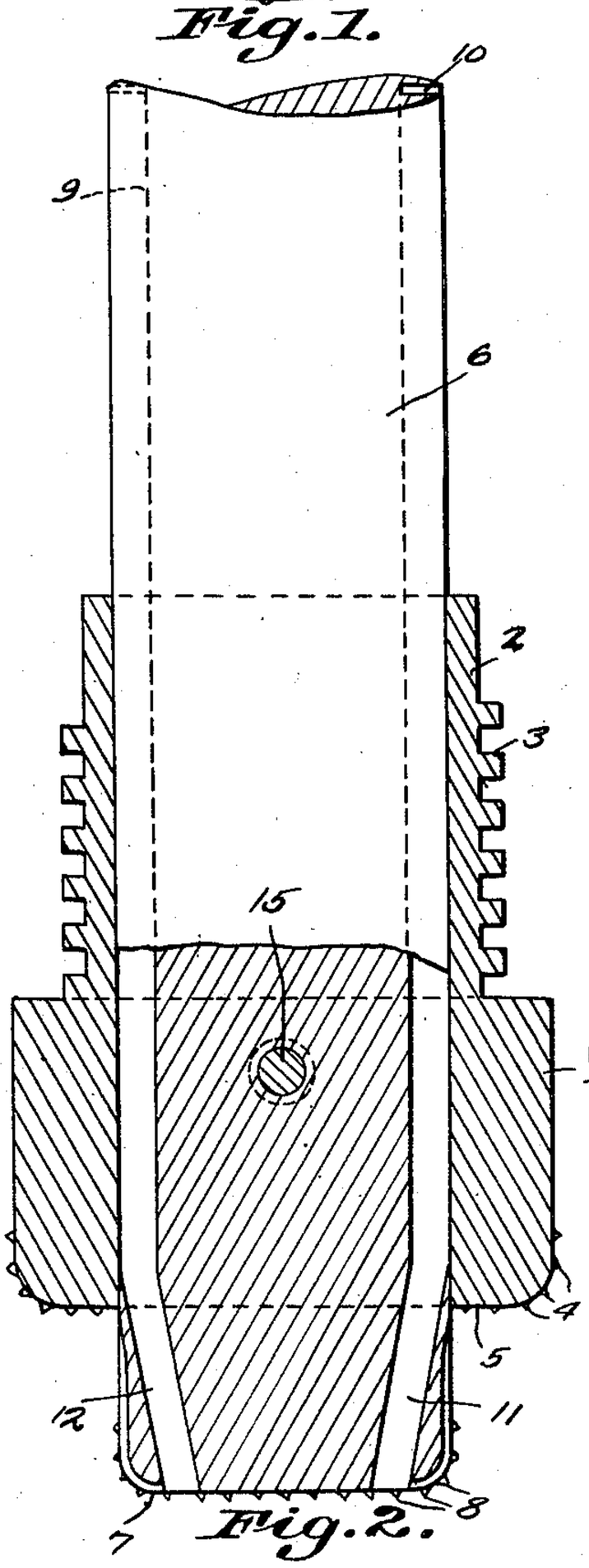

Fig. 2.

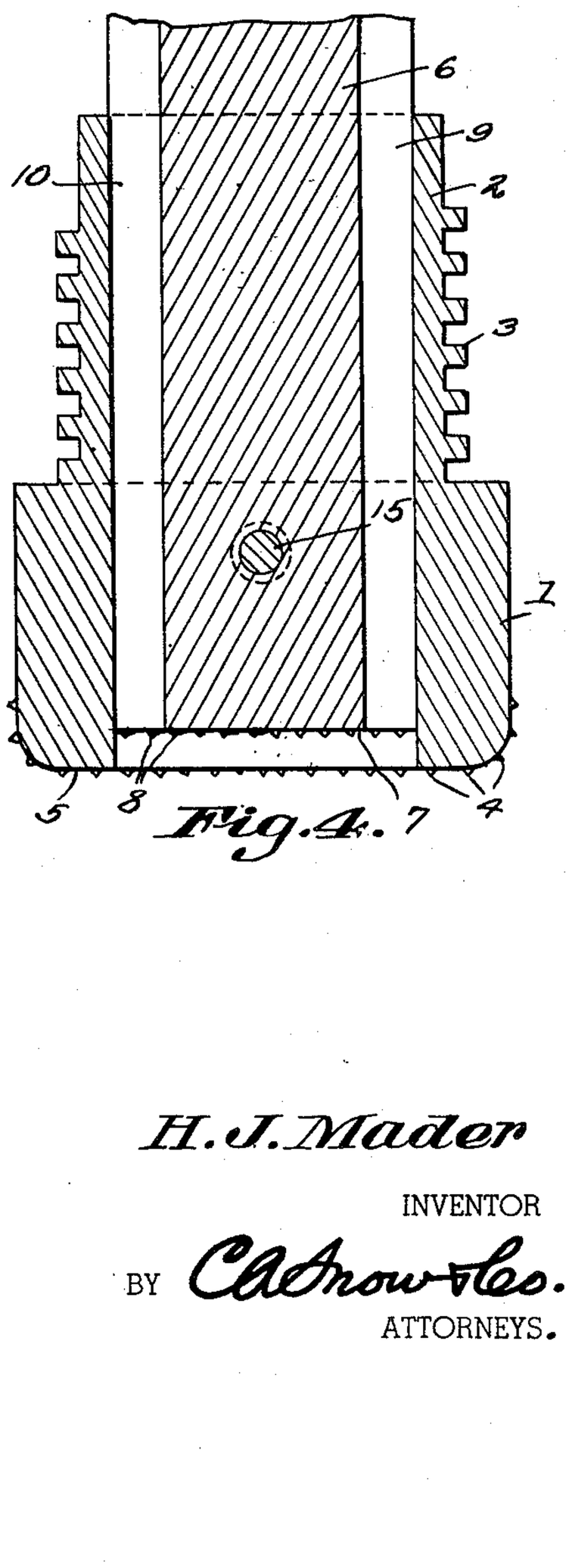

Fig. 4.

H. J. Mader

INVENTOR

BY C. A. Snow & Co.

ATTORNEYS.

Patented Mar. 6, 1951 2,543,861

UNITED STATES PATENT OFFICE

2,543,861

PLUG INSERT BIT FOR CORE DRILLS

Harry J. Mader, Jerome, Ariz.

Application February 12, 1948, Serial No. 7,811

1 Claim. (Cl. 255—73)

1

This invention relates to improvements in plug insert bits for core drills.

An object of the invention is to provide an improved plug insert bit for use with core drills.

Another object of the invention is to provide a detachable plug insert bit for use with core drills and having a flat face in which diamonds or other cutting stones or materials are embedded.

A further object of the invention is provide an improved replaceable plug insert bit for use with core drills, the same having a flat face in which diamonds or other cutting stones or materials are embedded, and having oppositely disposed longitudinally extending water grooves formed therein.

A still further object of the invention is to provide an improved plug insert bit for use with core drills, the same being supported by a cross pin in retracted position to produce a concave type bit or in advanced position to produce a pilot type bit.

Another object of the invention is to provide an improved plug insert bit having a flat cutting surface in which diamonds or other cutting stones or materials are embedded, said bit being highly efficient in operation and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a bottom view of a core drill bit with the improved plug insert bit supported therein in advance of the core drill bit to produce a pilot type bit.

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

Fig. 3 is a bottom view of a core drill bit with the improved plug insert bit supported therein in retracted position to produce a concave type bit.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is shown and provided a core drill bit 1 having an upwardly extending reduced portion 2 which is externally threaded as at 3 for connection with the usual drill rod (not shown). Diamonds or other cutting stones or materials 4 are embedded in the lower annular end 5 of the core drill bit 1.

2

The improved plug insert bit 6 is of a size to fit snugly within the core drill bit 1, with the lower end of the insert bit 6 extending in advance of or below the lower end of said core drill bit 1. The flat lower face 7 of the insert bit 6 will support diamonds or other cutting stones or materials 8 which also are disposed a slight way up the side of the insert bit 6.

Oppositely disposed parallel water grooves 9 and 10 are formed longitudinally in the plug insert bit 6, and are angled inwardly as at 11 and 12 adjacent their lower ends to discharge through the face 7 of the insert bit 6.

Aligned transversely extending bores 13 and 14 will be formed through the core drill bit 1 and the plug insert bit 6, and will receive the cross pin 15 for securing said plug insert bit 6 within the core drill bit 1. The ends of the pin 15 will be caulked in or otherwise secured. Diametrically opposed water grooves 16 will be formed across the cutting end 5 of the core drill bit 1.

In Figs. 3 and 4, a similar core drill bit 1 is provided, the same being reduced on the upper end 2 and externally threaded as at 3, and having diametrically opposed water grooves 16 formed across the cutting end 5 in which the diamonds 4 or other cutting stones or materials are embedded.

The plug insert bit 6 is supported in retracted position within the core drill bit 1 by means of the cross pin 15 which is inserted through the aligned bores 13 and 14 through the core drill bit 1 and the plug insert bit 6. Diamonds 8 or other cutting stones or materials are embedded in the lower face 7 of the plug insert bit 6 to provide a concave type bit.

Oppositely disposed parallel water grooves 9 and 10 are formed in the plug insert bit 6 and extend straight down to discharge through the face 7 of the plug insert bit 6.

From the foregoing description, it will be seen that in the event the plug insert bit 6 wears out before the core drill 1, a new plug insert bit 6 may replace the worn out one, and vice versa, should the core drill bit 1 wear out first, a new core drill bit may be used with the old plug insert bit 6.

While the preferred embodiment of the instant invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

A drilling tool, comprising a tubular member having a reduced threaded portion adjacent to the drilling end thereof providing an enlarged drilling end having a diamond embedded cutting surface, an insert bit fitted within the tubular member in close engagement therewith, said bit having a diamond embedded cutting end extended beyond the cutting surface of the tubular member, said tubular member and bit having aligning transversely disposed openings, a cross pin permanently secured in the aligning openings securing the bit within the tubular member, and said bit having longitudinally extended water grooves providing discharge passageways, the discharge ends of the grooves being directed inwardly towards each other.

HARRY J. MADER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
58,924	Webster	Oct. 16, 1866
1,746,455	Woodruff et al.	Feb. 11, 1930
1,878,292	Pivoto	Sept. 20, 1932
1,940,996	Carr	Dec. 26, 1933
2,053,801	Mitchell	Sept. 8, 1936
2,056,319	Harrington	Oct. 6, 1936
2,081,302	Jarvis	May 25, 1937
2,256,092	Koebel et al.	Sept. 16, 1941

FOREIGN PATENTS

Number	Country	Date
5,942	Great Britain	Sept. 1, 1910
472,587	Great Britain	Sept. 27, 1937