No. 840,744. PATENTED JAN. 8, 1907.

M. BOOF.

REAMER.

APPLICATION FILED JUNE 15, 1906.

Fig. 1

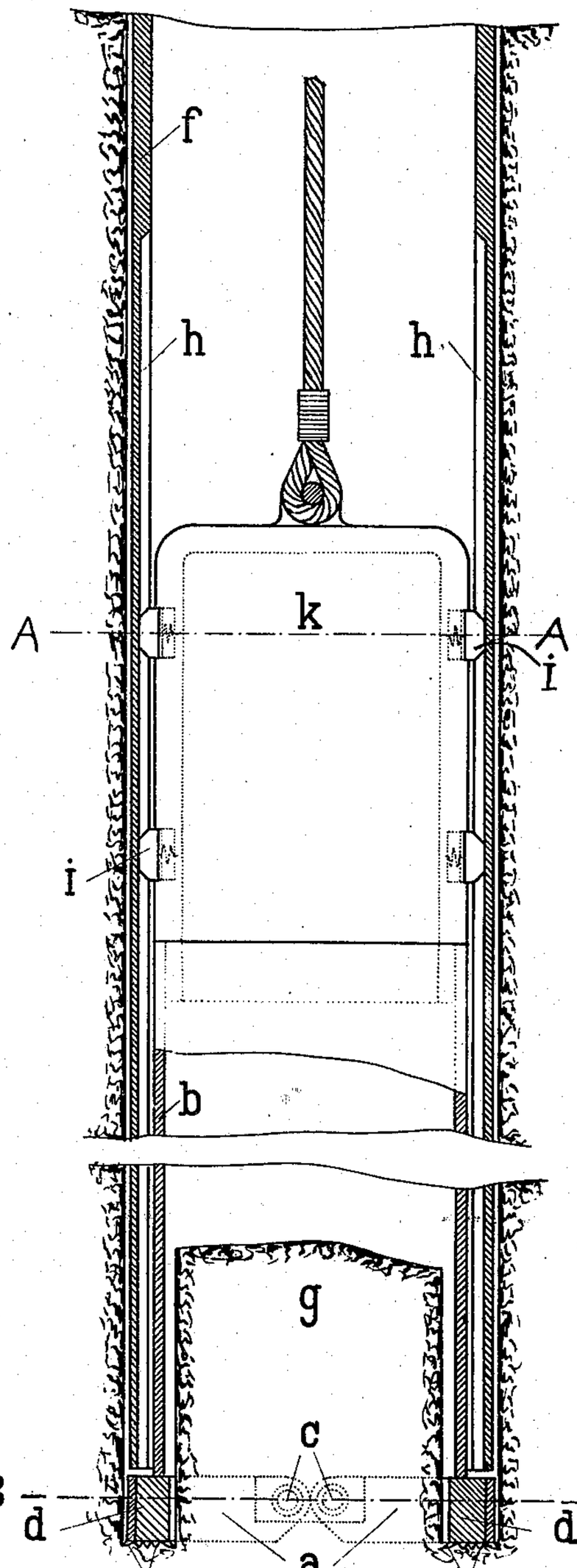



Fig. 2

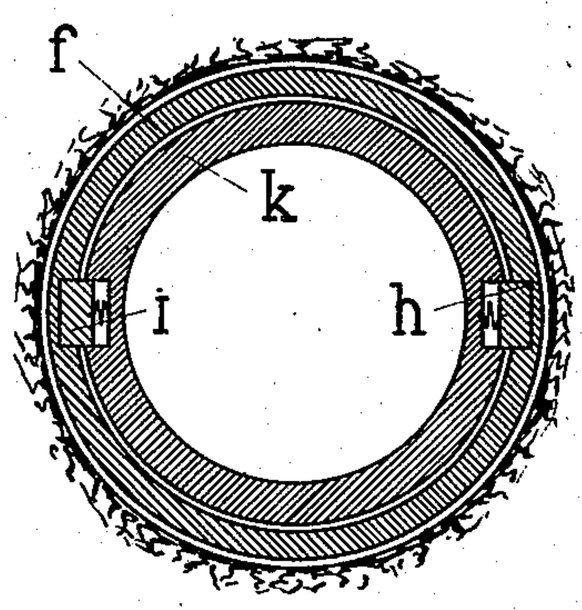



Fig. 3

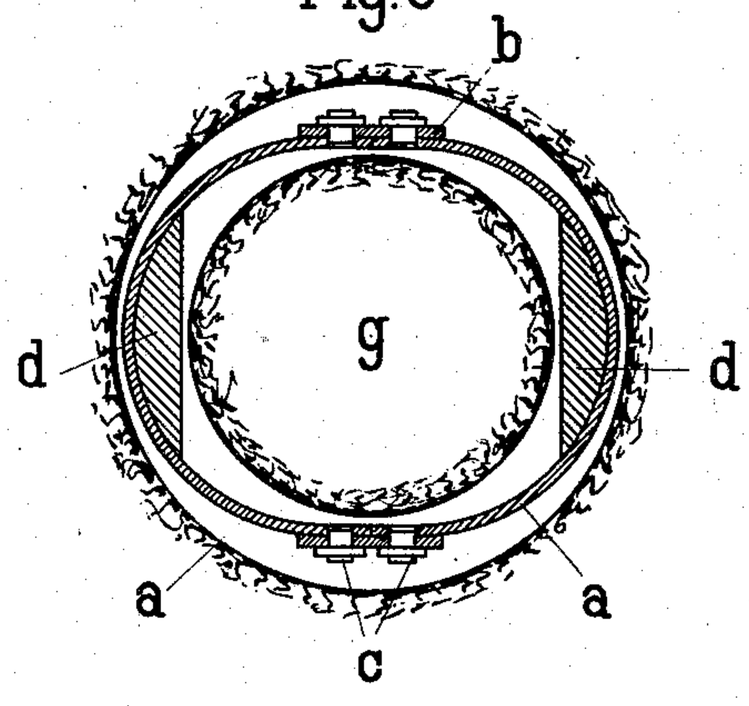
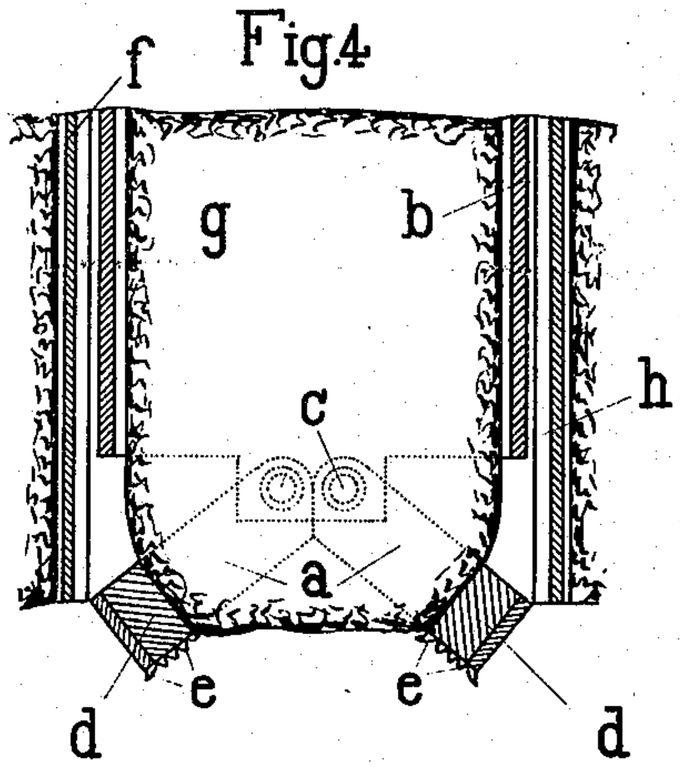



Fig. 4




Witnesses

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# UNITED STATES PATENT OFFICE.

MICHAEL BOOF, OF STRASSBURG, GERMANY.

## REAMER.

No. 840,744. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed June 15, 1906. Serial No. 321,813.

*To all whom it may concern:*

Be it known that I, MICHAEL BOOF, a subject of the German Emperor, residing at Strassburg, Alsace, Germany, have invented certain new and useful Improvements in Reamers, of which the following is a specification.

The subject of my invention is an improved reamer for deep boring of such construction that it can be raised within the working barrel.

The advantage of the new tool over prior boring-heads is that when it is necessary to remove the core the working barrel does not have to be raised, as the tool can be lifted with the core within the barrel. The construction is such that on the bit striking the bottom of the bore-hole the boring-head is automatically coupled with the rotary barrel, while on raising the head again the parts are automatically uncoupled.

One form of reamer constructed according to this invention is illustrated in the accompanying drawings.

Figure 1 is a fragmentary view showing an elevation and part section of the new reamer in working position. Fig. 2 is a section on the line A A of Fig. 1. Fig. 3 is a section on the line B B of Fig. 1. Fig. 4 is a fragmentary sectional view showing the parts at the bottom of the bore-hole when undercutting the core.

The crown-bit consists of two yoke-shaped members *a a*, pivoted to the boring-head *b* at *c c*. In the yokes *a* segmental blocks *d*, set with diamonds *e*, are secured. The outer diamonds project beyond the circumference of the working barrel and conductor *f*, while the inner diamonds protrude into the interior of the head *b*. This admits of the rotatating barrel *f* being readily advanced during work and provides ample space within the head *b* for the core *g*. When the boring-tool is being dropped into the barrel *f*, the yokes *a* occupy the position shown in Fig. 4. When, however, the bit strikes the bottom of the bore-hole, the yokes spread and take up the position shown in Fig. 1, the segments *d* lying close against the bottom rim of the head *b*.

When a core *g* has been bored, the head *b* is slowly raised and the barrel *f* at the same time slowly sunk, the boring motion being continued. The yokes *a* will now turn on their pivots *c*, so that the bit will undercut the core *g* to a great extent. When the yokes *a* reach the position shown in Fig. 4, they lie free of the barrel *f*, and on further lifting of the head *b* the core *g* will be readily broken off and can be drawn up with the boring-tool inside the barrel.

The rotary barrel *f* is provided with grooves *h* at the bottom, and the cap *k* of the boring-head *b* is furnished with spring-actuated catches *i*. When the crown-bit reaches the bottom of the bore-hole, the catches *i* snap into the grooves *h*, as shown in Fig. 1.

Having thus described my invention, I claim as new—

1. In a deep-boring reamer, in combination, a rotary working barrel, a boring-head sliding within the same, a crown-bit having two yokes pivoted to the head, and means for coupling the head with the barrel when rotation of the former is requisite, substantially as described.

2. In a deep-boring reamer, in combination, a rotary working barrel having internal longitudinal grooves, a boring-head sliding within the barrel and external spring-actuated catches carried by the boring-head and engaging in the said grooves, substantially as described.

3. In a deep-boring reamer, in combination, a rotary working barrel, a boring-head slidable thereon, means for coupling the head to rotate with the barrel, and a crown-bit composed of two yoke-shaped members pivoted to the lower end of the boring-head and resting under the lower end of the barrel during straight boring, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL BOOF.

Witnesses:
ALBERT NEUNINGER,
BENJAMIN F. LIEFELD.