

No. 829,634.

PATENTED AUG. 28, 1906.

H. R. DECKER.

DRILL.

APPLICATION FILED NOV. 13, 1905.

2 SHEETS—SHEET 1.

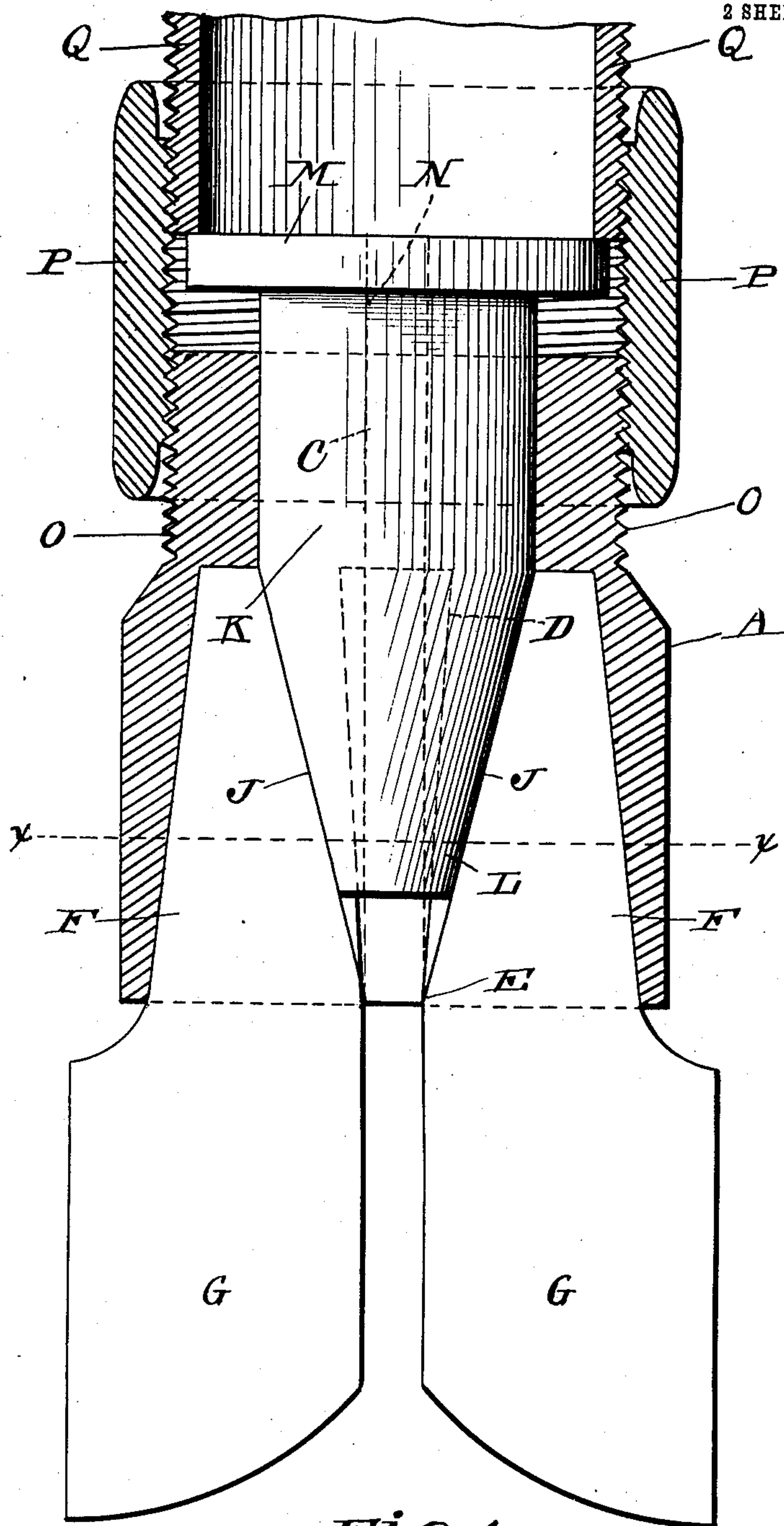


Fig. 1.

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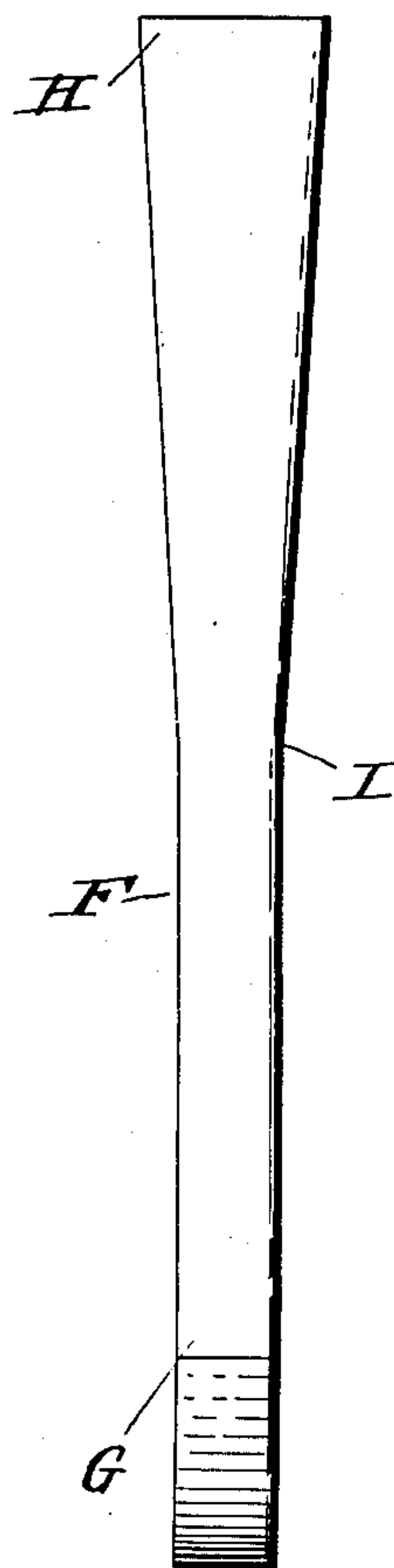
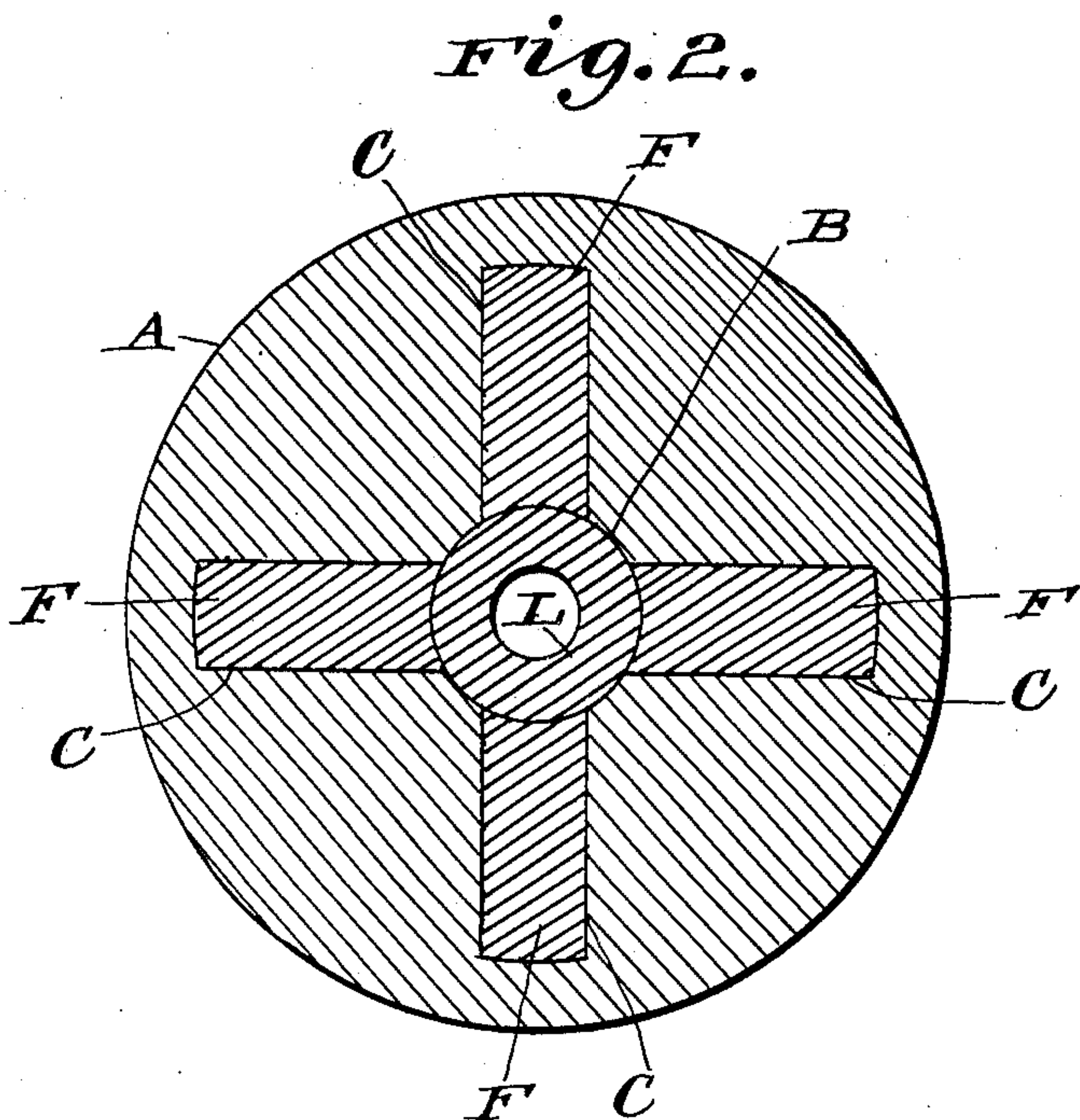
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2 SHEETS—SHEET 2.

*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

HARRY R. DECKER, OF HOUSTON, TEXAS.

## DRILL.

No. 829,634.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed November 13, 1905. Serial No. 287,150.

*To all whom it may concern:*

Be it known that I, HARRY R. DECKER, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Drills, of which the following is a specification.

My invention relates to drills used in drilling Artesian and oil wells, and has especial reference to drill-heads having removable bits. In drill-heads of this description a great disadvantage arises from the loosening of the bits in the head while in use, thus impairing the successful working of the device. In my improvement the drill-bits where secured in the drill-head are provided with slanting edges, and a cone-shaped plug is inserted in the drill-head, which, bearing against the slanting edges of the bits, takes up and counteracts the effect of the loosening of the bits.

The description of my invention will be found hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a drill-head and a fragment of a tubular drill-rod, showing my invention; Fig. 2, a cross-section of the drill-head on the line *xx* of Fig. 1, and Fig. 3 an edge view of the drill-bit.

In the drawings similar reference characters indicate corresponding parts throughout the several views.

A represents the drill-head, having a bore B therethrough and any desired number of radial slots C therein, having their upper ends D wider than their lower ends E, as shown, to receive the shanks F of drill-bits G, which have their ends H wider than the portion I adjacent to the blade. In placing the bits in position the shank F is inserted into bore B and then slid into one of the slots C. The inner edge J of the shank is inclined, as shown in Fig. 1.

K represents a plug inserted in bore B downwardly and has its lower end L made conical-shaped to fit the inclined edges J of the shanks F, while its upper end has a lateral flange M for the purpose hereinafter explained, the diameter of the plug at its upper end being slightly shorter than the diameter of the top face of the drill-head A.

N represents a bore through plug K for the passage of water to the drill-bits to purge the well-bore of the borings.

O represents screw-heads on the upper portion of drill-head A, on which is mounted an interiorly-threaded coupling-ring P, while Q

represents the tubular drill-rod having its end threaded to fit the threads in coupling-ring P.

In using drills the rod is given a partial turn after each cutting stroke. As the drill-head by contacting with the sides of the drill-bore resists this turning movement the tendency is for the drill-rod Q to be driven into the coupling-ring P and the drill-head A to creep up into the coupling-ring. It will be understood that this tendency of the drill-rod and drill-head serves to keep the lower end L of plug K in close engagement with the inclined edges J of drill-bit shanks F, and it is this tendency that serves to keep the drill-bits G tight on the drill-head A.

Having thus described my invention, what I claim is—

1. In a drill, a drill-head having a bore therethrough and its outer surface threaded, a drill-rod having its lower end threaded and secured to the head by a threaded coupling, drill-bits mounted in said head, a plug mounted in the bore in the drill-head and shaped to engage the drill-bits and hold them in the drill-head, the top of said plug being engaged by the lower end of the drill-rod to depress it, substantially as shown and described.

2. In a drill, a drill-head having a smooth bore therethrough, radial slots in the lower end of said drill-head opening into said bore and having their upper ends wider than their lower ends, drill-bits having shanks to fit said slots and having their inner edges slanting and extending into the bore in the head, a plug loosely mounted in said bore and having its lower end tapered to fit the slanting edges of the bit-shanks, and means to depress said plug to tighten the bit-shanks in said slots, substantially as shown and described.

3. In a drill, a drill-head having a smooth bore therethrough, radial slots in the lower end of said drill-head opening into said bore and having their upper ends wider than their lower ends, drill-bits having shanks to fit said slots and having their inner edges slanting, and extending into the bore in the head, a plug loosely mounted in said bore and having its lower end tapered to fit the slanting edges of the bit-shanks, the outer surface of the drill-head formed with screw-threads, a coupling-ring secured on said threads, and the drill-rod secured in said coupling-ring and engaging the upper end of said plug, substantially as shown and described.

4. In a drill, a drill-head having a bore



therethrough, radial slots extending from  
said bore into the drill-head, drill-bits having  
shanks to fit said slots and having their inner  
edges slanting, a plug to fit said bore and  
5 formed with a tapered lower end to fit the  
slanting edges of the bit-shanks the upper  
end of said plug formed with a lateral flange,  
the outer surface of the drill-head screw-  
threaded, a coupling-ring secured on said  
10 threads, and a tubular drill-rod secured in  
said coupling-ring and engaging the flange on  
said plug, substantially as shown and de-  
scribed.

5. In a drill, a drill-head having a smooth  
15 bore therethrough, radial slots in the lower  
end of said drill-head opening into said bore  
and having their upper ends wider than their  
lower ends, drill-bits having shanks to fit said

slots and having their inner edges slanting,  
and extending into the bore in the head, a 20  
plug loosely mounted in said bore and having  
its lower end tapered to fit the slanting edges  
of the bit-shanks, the upper end of said plug  
formed with a lateral flange, the outer surface  
of the drill-head screw-threaded, a coupling- 25  
ring secured on said threads, and a tubular  
drill-rod secured in said coupling-ring and en-  
gaging the flange on said plug, substantially  
as shown and described.

In testimony whereof I hereto affix my sig- 30  
nature in the presence of two witnesses.

HARRY R. DECKER.

Witnesses:

J. R. MORSE,  
WM. CLARK.