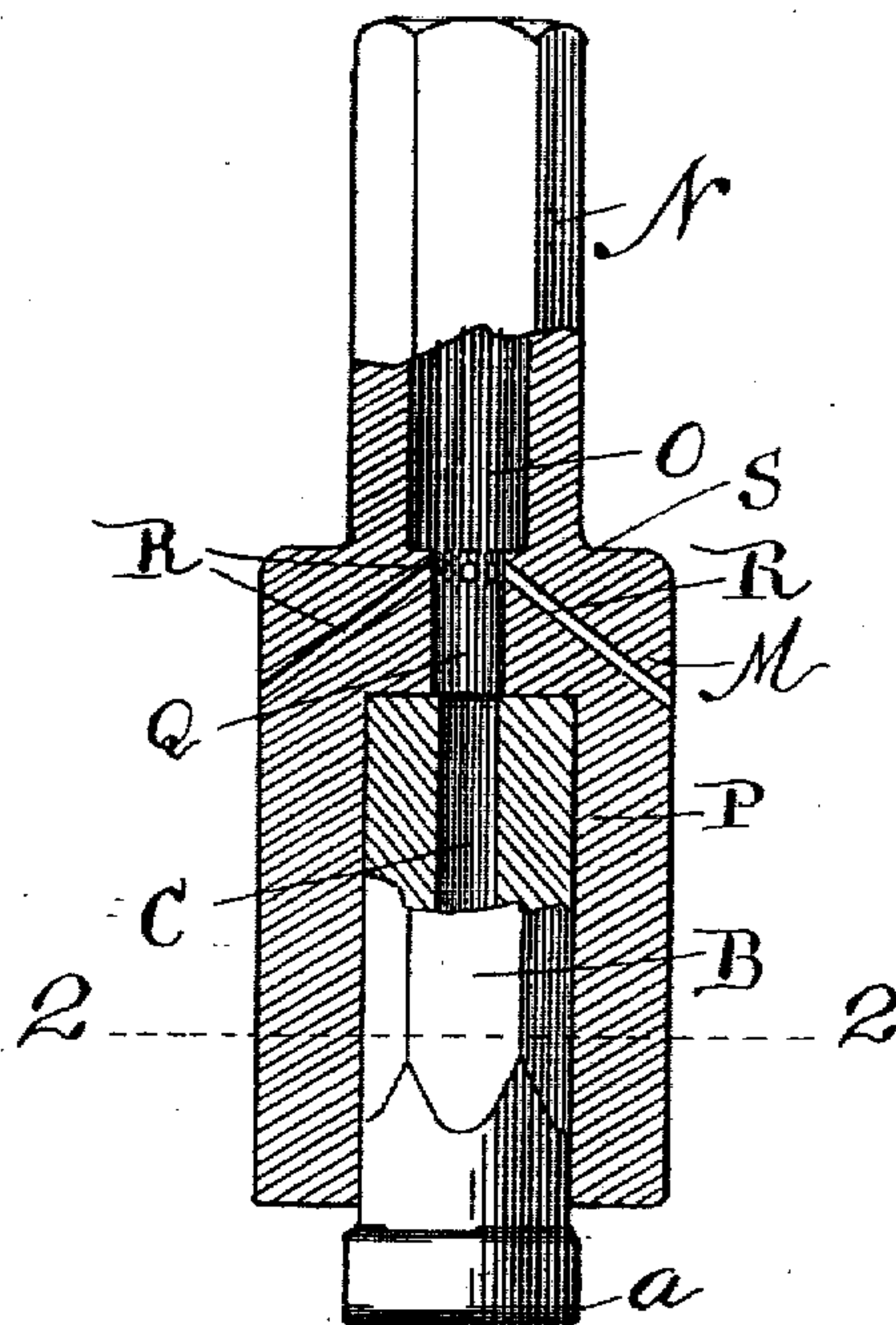


No. 791,264.

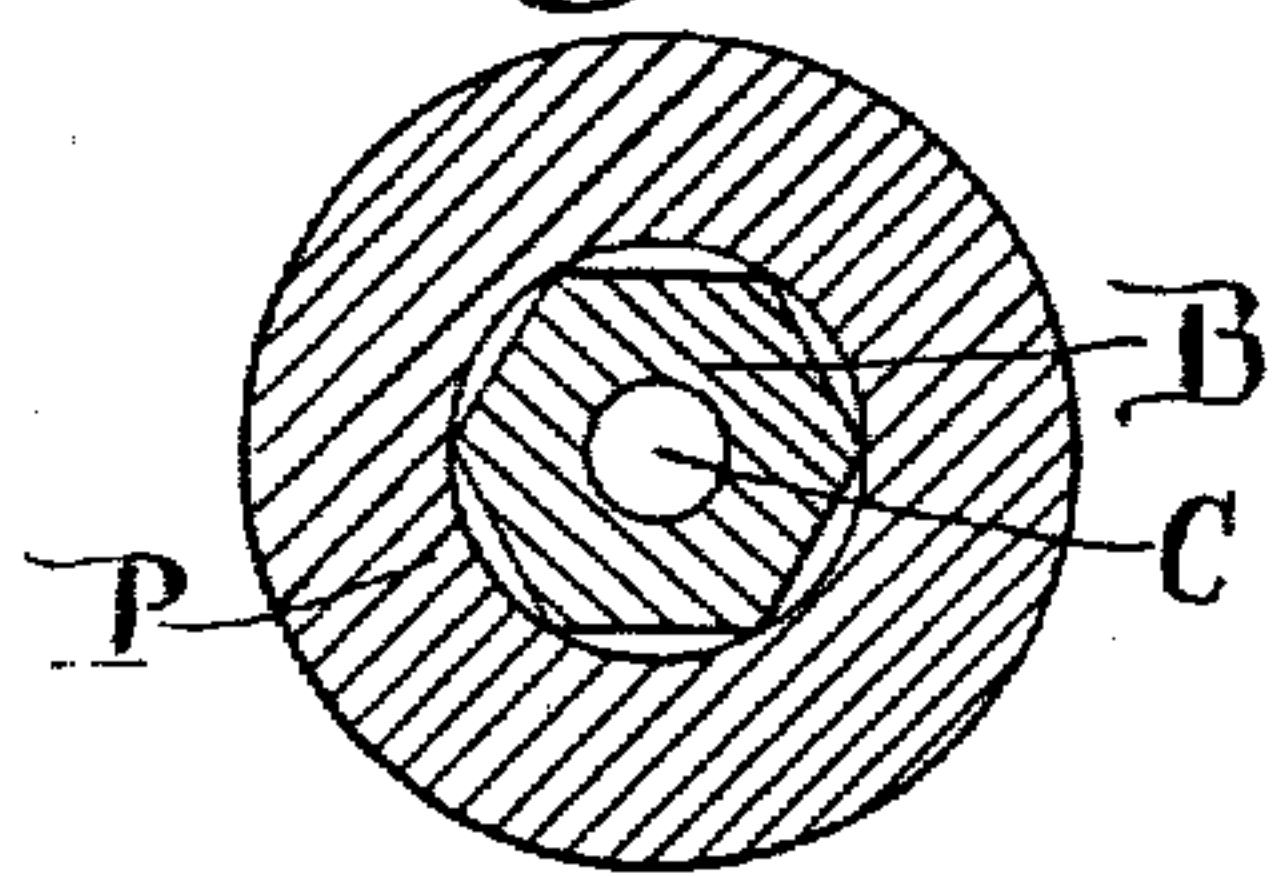
PATENTED MAY 30, 1905.

M. HARDSOCC.  
BIT FOR ROCK DRILLS.  
APPLICATION FILED MAY 23, 1904.

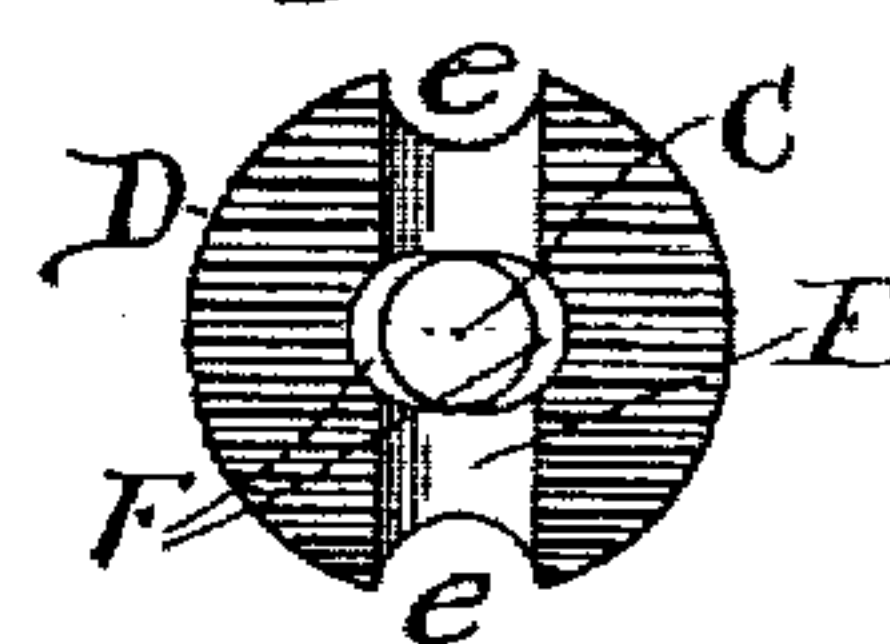
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
Wm. P. Bond  
Walker Banning.



Inventor  
Martin Hardsocg  
By Banning & Banning  
Attys.



# UNITED STATES PATENT OFFICE.

MARTIN HARDSOEG, OF OTTUMWA, IOWA.

## BIT FOR ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 791,264, dated May 30, 1905.

Application filed May 23, 1904. Serial No. 209,331.

*To all whom it may concern:*

Be it known that I, MARTIN HARDSOEG, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Bits for Rock-Drills, of which the following is a specification.

In the art to which the present invention relates it is necessary to keep the bit cool and the hole drilled by the bit as free from chips or cuttings as possible, and it has hitherto been the practice to use air or water discharged directly into the hole for this purpose, admitting it into the hole as the same is being drilled.

The present invention is intended to utilize the exhaust-air from a pneumatic drill or hammer for the purpose of cooling the bit and cleansing the hole of waste material, and this is accomplished by constructing the bit in such a way as to allow the exhaust-air to pass through the bit and be vented therefrom at the cutting end, thereby cooling the bit throughout its entire extent and directing a volume of air immediately upon that portion of the rock which is being drilled.

Another object is to so construct the drill-holder socket that the air may pass through and be vented therefrom by means of radially-arranged passages communicating with the longitudinally-extending passage.

A further object of the invention is to so arrange the cutting-head that it will allow for the discharge of waste material without clogging or impeding the passage of air directed through the bit.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is a side elevation of a bit for drilling rock inserted into a drill-holder socket; Fig. 2, a cross-section taken on line 2 2 of Fig. 1; and Fig. 3, an end view of the cutting-face of the bit.

The bit of the present invention is intended to be used with pneumatic tools of any style which exhaust the air in the end of the tool, and consists of a shank A of suitable length and size, which shank is provided with a shoul-

der *a*, above which the bit has its faces suitably beveled to provide an end B for insertion into a drill-holder socket. The bit is provided throughout its entire extent with a hole or passage C, which extends down to and opens 55 through an enlarged cutting-head D, provided with a series of parallel rows of cutting-teeth *d* on its cutting-face, and the cutting-head is further provided with a groove or channel E, which extends transversely from side to side 60 of the cutting-face through the rows of teeth, with which channel the longitudinally-extending passage communicates. Communicating with the ends of the transversely-extending channel are exterior channels *e*, cut in the side 65 of the head. The longitudinal passage is preferably of oval shape at its discharge end F, at which point it communicates with the transversely-extending channel, and the greatest diameter of the enlarged portion of the 70 passage is transverse to the channel E, as shown in Fig. 3.

In Fig. 1 is shown a bit-holder socket M, provided with a shank N, having on its interior a longitudinally-extending opening O, 75 and the shank is formed integrally with a socket portion P, which is adapted to have a bit inserted therein. The socket portion is recessed on its interior and communicates with the passage O through a passage Q, from 80 which extend a series of radially-arranged air-passage vents R. The lower end of the socket is enlarged as compared with the shank, leaving a shoulder S at the point of juncture there- 85 with.

In use the bit will often strike as many as two thousand blows per minute, causing the stone to chip very rapidly as the bit is twisted back and forth by the movement of the pneumatic tool. This movement and vibration 90 would tend to heat the bit very rapidly were it not for the passage of the exhaust-air through the bit, which is blown out at the cutting end and serves to drive away the chips and dust broken off by the cutting-teeth and 95 allow the same to be carried up the side grooves or channels as the bit is forced through the rock.

It will be seen that the invention is simple in construction and especially adapted for use 100



with pneumatic tools of ordinary construction, and that it affords a great saving, and that it simplifies the cutting operation and obviates the necessity of cooling the tool by ordinary means. The provision of the socket enables the use of a bit having a small discharge-passage and also provides for the discharge of all the air from the hammer.

What I regard as new, and desire to secure by Letters Patent, is—

1. In combination with a bit provided with a longitudinally-extending passage on its interior opening through the cutting-face, a socket provided with a shank adapted for insertion into a pneumatic tool, said shank being provided with a longitudinally-extending passage adapted to communicate with the passage in the bit, and a series of radially-arranged vent-openings for discharging the excess of exhaust-air, substantially as described.

2. In combination with a bit provided with a longitudinally-extending passage on its interior opening through the cutting-face, a

socket provided with a shank adapted for insertion into a pneumatic tool, said shank being provided with a longitudinally-extending passage adapted to communicate with the passage in the bit, and a series of radially-arranged diverged vent-openings leading from the longitudinal passage and adapted to discharge the excess of exhaust-air, substantially as described.

3. In combination with the bit provided with a longitudinally-extending passage on its interior, opening through the cutting-face, a socket provided with a shoulder adapted to position the socket, and having on its interior a longitudinally-extending bore adapted to connect with the passage in the bit, and further provided with a vent-opening through the wall of the socket for discharging the excess of exhaust-air, substantially as described.

MARTIN HARDSOUG.

Witnesses:

EMMET A. WORK,  
ELMER JOHN LAMBERT.