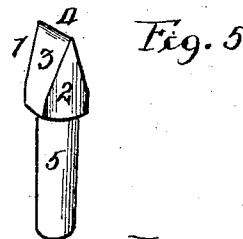
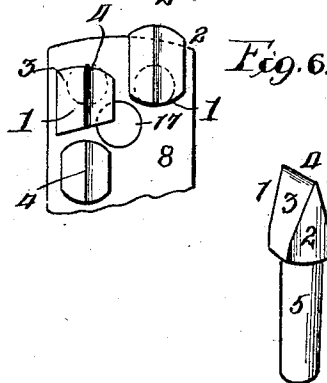
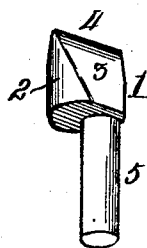
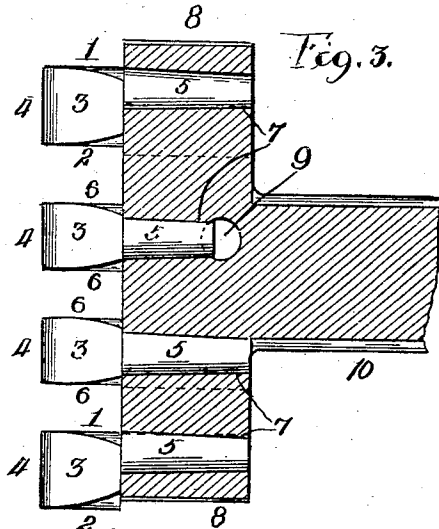
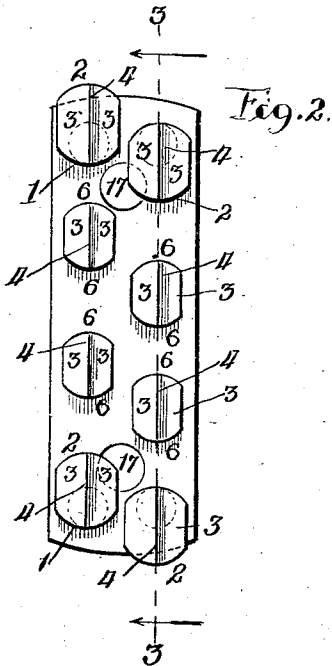
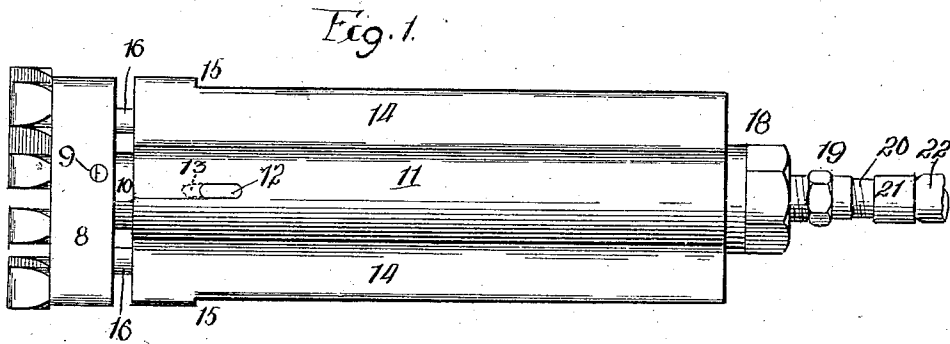


No. 884,150.

PATENTED APR. 7, 1908.

M. HARDOCG.
DRILL HEAD AND BIT OR CUTTER.
APPLICATION FILED MAR. 7, 1907.



Witnesses:
Wm. P. Bond
Carson W. Bammer

Inventor:
Martin Hardocg
by Baunig Baunig
Atty.s.

UNITED STATES PATENT OFFICE.

MARTIN HARDSOOG, OF OTTUMWA, IOWA.

DRILL-HEAD AND BIT OR CUTTER.

No. 884,150.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed March 7, 1907. Serial No. 361,053.

To all whom it may concern:

Be it known that I, MARTIN HARDSOOG, 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 Drill-Heads and Bits or Cutters, of which the following is a specification.

The present invention relates to the construction of a drill head and detachable bits or cutters, and has for its objects to construct a drill head adapted to receive a plurality of bits or cutters so as to enable bits or cutters, when inserted in the drill head, to be firmly held therein and at the same time allow the bits or cutters to be detached for sharpening or other purposes; to construct bits or cutters, having the acting portion offset at one side from the stem, for enabling the outermost bits or cutters to be turned so that the outer bits or cutters at each end of the head will overhang the plane of the end of the head and cut or form a hole of greater width or diameter than the length of the head; to enable the outer bits or cutters to be reversed in position, so that each outer bit or cutter can be turned to present an overhang outwardly and thereby permit two outer bits or cutters to be utilized, as the extreme outer bit or cutter on each end of the drill head; to furnish two outer bits or cutters for each end of the drill head, each outer bit or cutter overhanging from the stem on one side, for enabling both outer bits or cutters to be utilized as the extreme outer bit or cutter in the operation of the drill; to furnish a plurality of intermediate bits or cutters, each extending from its stem uniformly on both sides; to furnish a drill head with a plurality of bits or cutters, arranged to have the two outermost bits or cutters overhang on one side and the intermediate cutters uniform on each side of the stem of each individual bit or cutter; and to improve generally the construction, arrangement and operation of the head and the bits or cutters.

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

In the drawings, Figure 1 is a side elevation, showing the head and the bits or cutters in connection with the frame of a pneumatic hammer; Fig. 2 a front elevation of the head and the bits or cutters of the invention; Fig. 3 a sectional side elevation of the head, with the bits or cutters in full eleva-

tion; Fig. 4 a perspective view of an outer bit or cutter, showing the overhang on one side from the stem; Fig. 5 a perspective view of an intermediate bit or cutter, showing a uniform projection on each side of the stem; and Fig. 6 a detail showing a reverse position for the end bits or cutters.

The bits or cutters are, in the arrangement shown, located on the head in pairs, so that at each end of the head there will be a pair of outer bits or cutters, and between the outer bits or cutters there will be two pair of intermediate bits or cutters, as clearly shown in Fig. 2. This arrangement of the bits or cutters is preferred, but it will be understood that the arrangement can be varied, so long as the outer or end bits or cutters are formed so as to have each bit or cutter overhang on one side from the stem. Each outer or end bit or cutter consists of a side face 1 in line, or approximately so, with the side of the stem, and a side face 2 overhanging from the side of the stem, as shown in Fig. 4. Each outer bit or cutter has, on opposite sides, a tapered or curved face 3, which join at the apex and furnish a cutting edge 4, as shown in Figs. 2, 3 and 4; and the cutting or acting part of each bit or cutter has extending therefrom a stem 5, for connecting or attaching each outer or end cutter to the head. Each of the intermediate cutters has, on opposite sides, a tapered or curved face 3 joined at their apex, and furnishing a cutting edge 4, with a stem 5 and side faces 6, extending a uniform distance from the sides of the stem, as shown in Figs. 3 and 5. The intermediate bits or cutters have their stems 5 entered into the head, for attaching the bits or cutters to the head, and when attached by the stems all of the bits or cutters will be firmly held in position on the head.

The stems 5 of all the bits or cutters are entered into holes 7 in the head, and preferably the stems and holes are slightly tapered so as to insure a tight fit of the stems in the holes, when the stems are fully entered in the holes, and thereby insure a firm retention of the cutters on the head. The head 8, in the construction shown, is adapted to receive eight bits or cutters, and, as shown, the holes 7 for the bits or cutters extend clear through the head from front to rear, with the exception of the hole for one bit or cutter, which is in line with the shank of the head, and for this bit or cutter the hole 7 terminates in a cross hole 9, as clearly shown in Fig. 3. The

forming of the holes 7, either entirely through the head 8 from front to rear, or so as to terminate in a cross hole 9, enables all of the bits or cutters to be readily driven or forced out for sharpening the several bits or cutters, or for replacing a worn out or broken bit or cutter, so that the sharpening of, or the replacing of bits or cutters can be easily and quickly performed without any difficulty or trouble in doing the work.

The head and the bits or cutters are shown, in Fig. 1, in connection with the frame of a pneumatic hammer. The head has a stem 10, which enters the barrel 11 of the hammer and is held so as to have a limited end movement in the barrel by a cross key 12 passing through a slot 13 in the stem, as shown by the dotted lines and full lines in Fig. 1 of the drawing. The hammer frame, on each side of the barrel 11, has flanges 14, each flange having the requisite passages for admitting compressed air or other motive power to operate the hammer in the barrel in any usual and well known manner. Each flange 14, as shown, has a shoulder 15, and each flange is connected with the head 8 by tubes 16 entering holes 17 in the head, so as to allow the air or other medium to pass through the head to the acting end of the head and the bits or cutters. The rear end of the hammer frame has the barrel closed by a plug or head 18, which receives a coupling tube 19 into which is entered a coupling tube 20 on to which is entered a coupling ring 21 for attaching a supply pipe 22 for the compressed air or other medium supplied to the hammer frame for operating the hammer as usual. The hammer frame, and the parts connected therewith, form no part of the present invention, and are only shown for the purpose of illustrating one form of operating the drill head and the bits or cutters, the present invention pertaining to the head and the bits or cutters. The bits or cutters are connected or attached to the head by inserting the stems 5 in the holes 7 and driving or forcing the bits or cutters inwardly for their acting ends to be in contact with the front face of the head, as shown in Figs. 1 and 3, and when inserted, the cutting edges of the bits or cutters run in a parallel plane longitudinally with the head, and the bits or cutters are arranged in staggered relation, so that, in use, the drill will cut the full length of the head, with a clearance beyond the ends of the head, owing to the overhang of the outermost end bits or cutters. The bits or cutters can be removed by driving or forcing the stems from the holes therefor in the head, thus enabling the bits or cutters to be sharpened or to be replaced by new bits or cutters when worn out or broken, and this

without destroying the head, which can be used for receiving any number of bits or cutters without impairing its utility as a head. The outermost end bits or cutters are diagonally opposite to each other, as shown in Fig. 2, and when an outer bit or cutter becomes worn down so as to not present an overhang for the end of the head, the worn bit or cutter can be turned inward, as shown in Fig. 6, and its companion bit or cutter, at the same end of the head, can be turned outwardly, as shown in Fig. 6, thus enabling each end of the head to have the benefit of two bits or cutters with an overhang for cutting, so as to give a clearance around the head.

The bits or cutters present a perfect clearance between their cutting edges and body, which clearance prevents the accumulation of dust and particles that would interfere with the cutting operation of the bits or cutters.

What I claim as new and desire to secure by Letters Patent is:

1. The combination of a head and a plurality of bits carried by and arranged in straight parallel rows longitudinally of the head, the end bits of the rows at each end of the head constituting a pair of bits and each end bit having its body and cutting edge overhanging from its stem on one side for the overhung side to project beyond the end face of the head, substantially as described.

2. The combination of a head and a plurality of bits arranged in two parallel rows longitudinally of the head with the bits of the rows in staggered relation for the cutting edges of the two rows of bits to constitute a single cutting edge extending the length of the body of the head, substantially as described.

3. The combination of a head and a plurality of bits arranged in parallel rows longitudinally of the head, with an end bit of each row having its body and cutting edge on one side overhanging from its stem for the overhung side of each end bit when outwardly turned to project beyond the end face of the head, substantially as described.

4. The combination of a head and a plurality of bits arranged in parallel rows longitudinally of the head, with the end bit at both ends of each row and each end bit having its body and cutting edge on one side overhanging from its stem for the overhung side of each end bit when outwardly turned to project beyond the end face of the head, substantially as described.

MARTIN HARDSOCC.

Witnesses:

LULA MAR RYDER,
LESTER C. HARDSOCC.