

No. 735,667.

PATENTED AUG. 4, 1903.

W. HARVEY.
DRILL BIT OR OTHER TOOL.
APPLICATION FILED JULY 18, 1901.

NO MODEL.

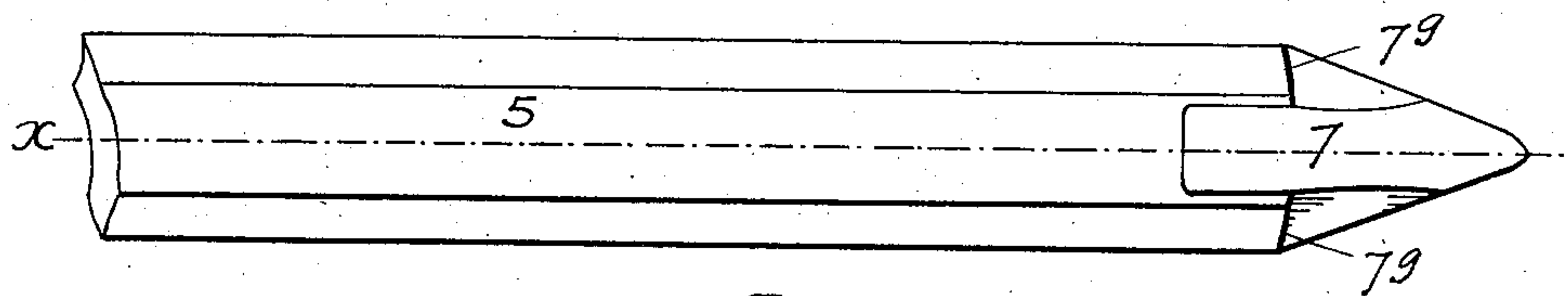


FIG. 1

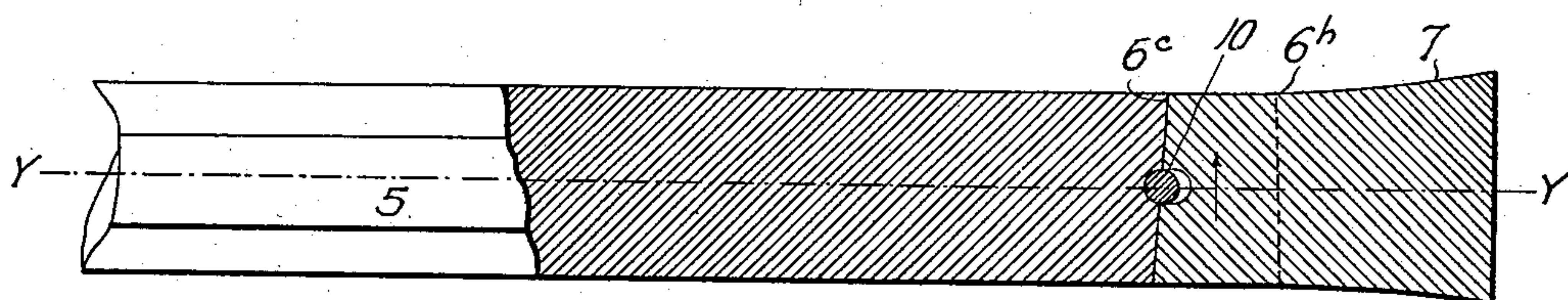


FIG. 2

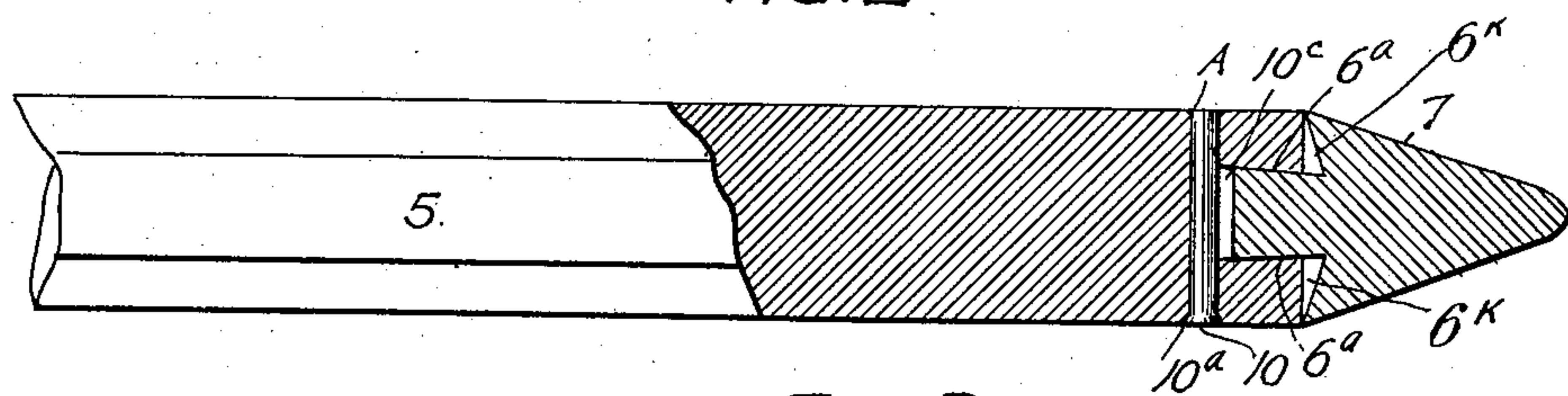


FIG. 3.

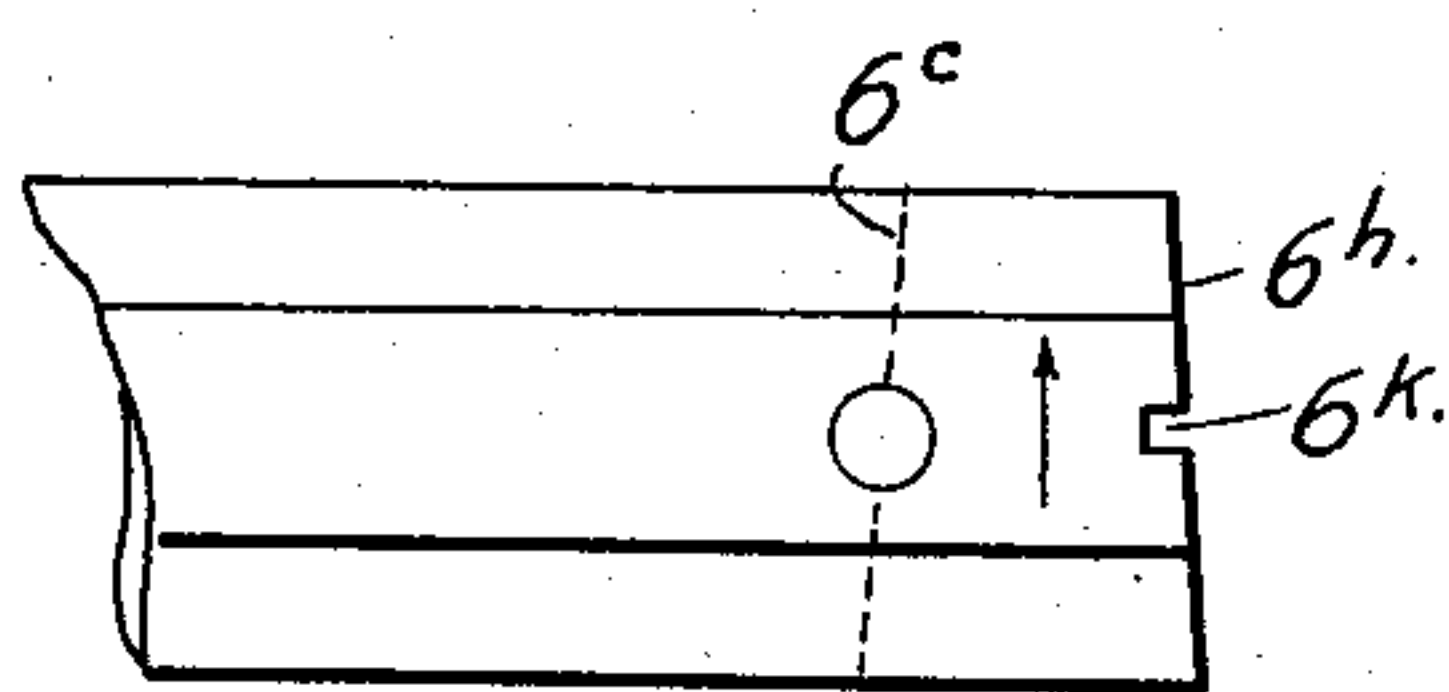


FIG. 7

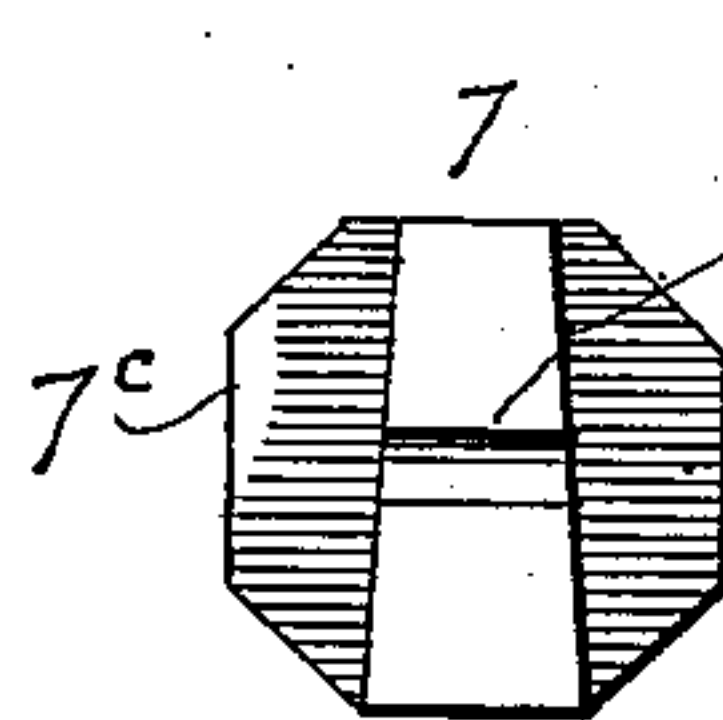


FIG. 5

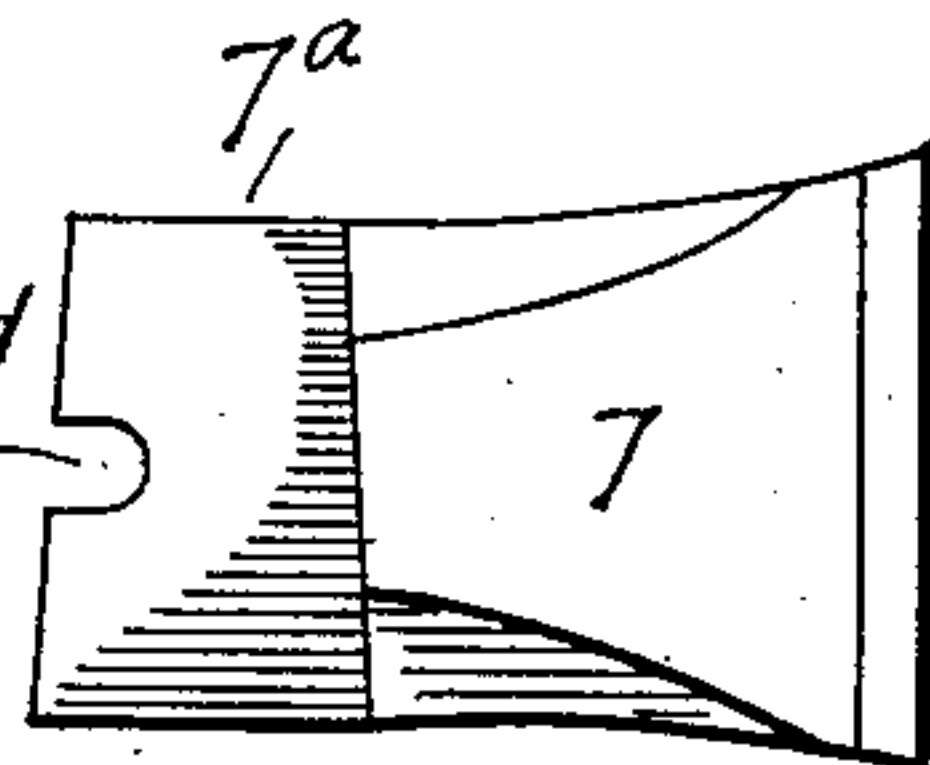


FIG. 4.

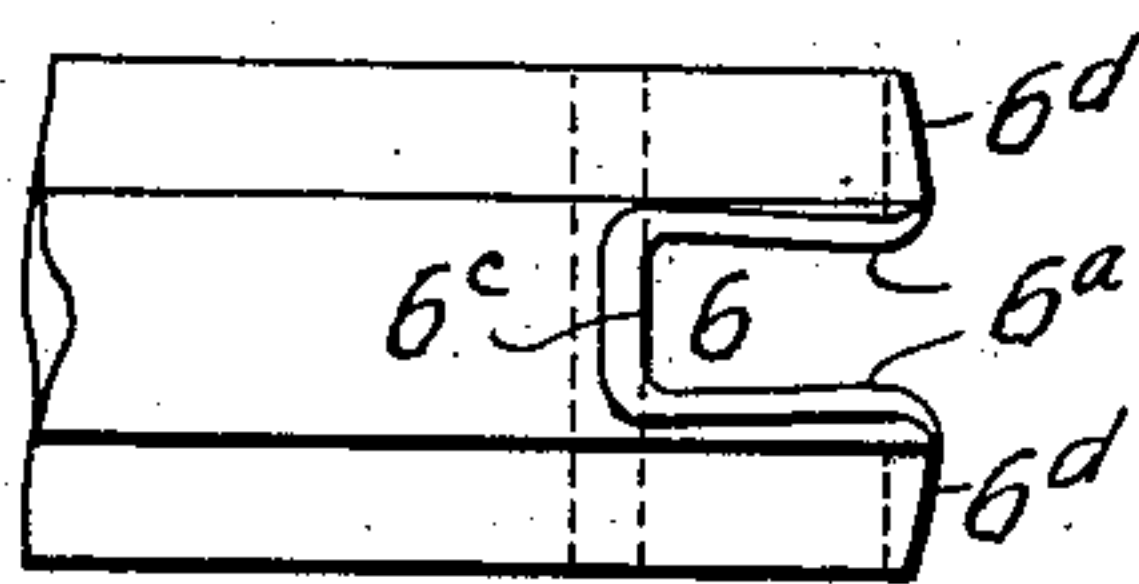


FIG. 8

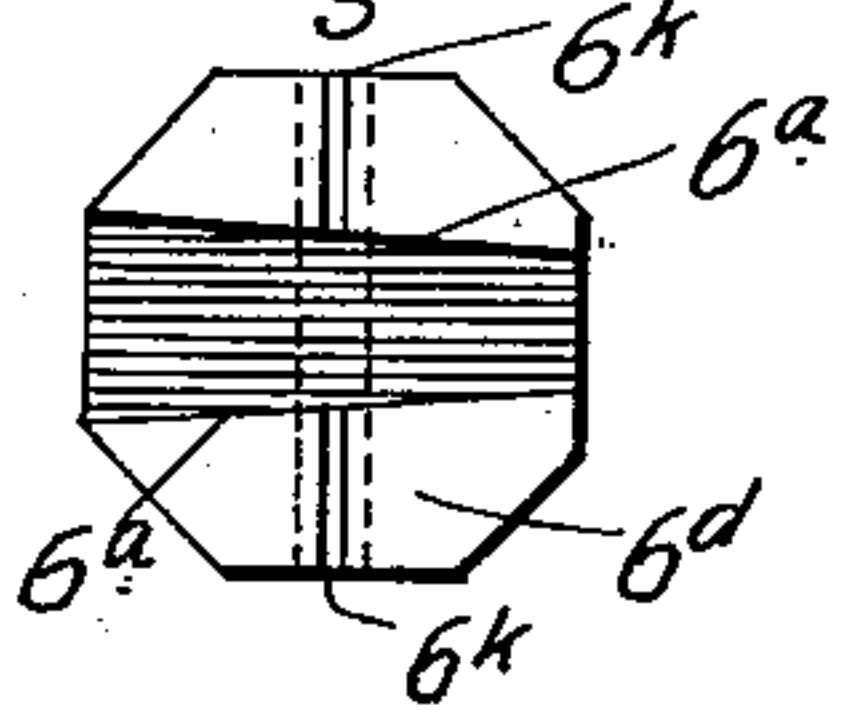


FIG. 9

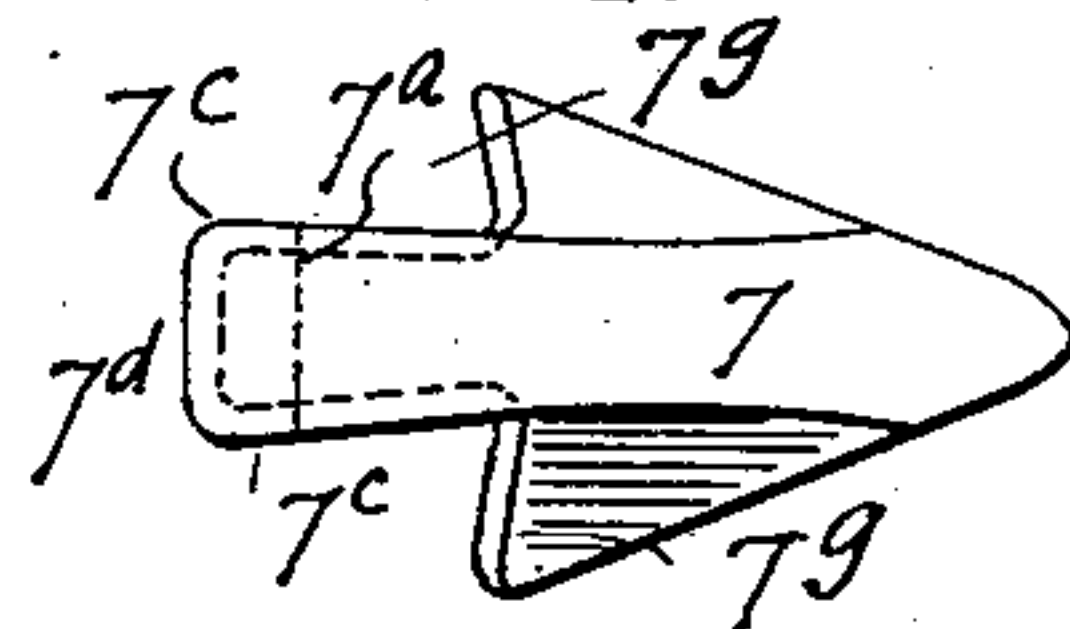


FIG. 6

WITNESSES:

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WILLIAM HARVEY, OF DENVER, COLORADO.

DRILL-BIT OR OTHER TOOL.

SPECIFICATION forming part of Letters Patent No. 735,667, dated August 4, 1903.

Application filed July 18, 1901. Serial No. 68,848. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARVEY, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Drill-Bits or other Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in drill-bits and similar tools or instruments whose points are chiefly exposed to wear during use.

My invention consists of a novel construction whereby the points of these tools may be quickly and easily detached when dulled or worn and new points substituted at small expense without changing the body of the tool. This construction will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 illustrates a drilling tool or bit provided with my improvements. Fig. 2 is a section taken on the line *xx*, Fig. 1. Fig. 3 is a section taken on the line *yy*, Fig. 2. Fig. 4 shows the bit point or head detached. Fig. 5 is an end view of the same. Fig. 6 illustrates the bit-point viewed at right angles to the position shown in Fig. 4. Figs. 7, 8, and 9 illustrate the grooved end of the tool to which the detachable point or head is applied.

Similar reference characters indicating corresponding parts in these views, let the numeral 5 designate the body of the drill-bit, in one end of which is formed a dovetailed groove 6, whose side walls 6^a and bottom wall 6^c are wedge-shaped in the direction of their length. The end walls 6^d, located on opposite sides of the groove, are transversely inclined downwardly from the groove and also longitudinally inclined, as shown at 6^h. The drill-point 7 is provided with a dovetailed tongue 7^a, having wedge-shaped side and bottom walls 7^c and 7^d, respectively. On opposite

sides of the tongue the walls 7^g of the head 7 are transversely and longitudinally inclined to fit the inclined walls 6^d of the body of the tool. It will be observed that the tongue 7^a of the head is the counterpart of the groove 6 in the body of the tool, whereby the tongue is allowed to enter the groove in one direction only, being that indicated by the arrow in Figs. 2, 7, and 9. Hence the tongue can only leave the groove by movement in the opposite direction. In order to prevent the tongue from slipping out of the groove while the tool is in use, it is necessary that the fastening device be so located that it will not be subjected to the direct vibration incident to the force of the blows applied to the tool; otherwise the fastening device will become jammed or upset and lock the head in place, thereby completely defeating the attainment of the object sought—namely, a tool whose cutting-head may be detached and replaced at pleasure and which may be securely held in place during use.

My improved fastening device consists of a pin 10, which enters an opening formed in the body of the tool at right angles to the direction of the dovetailed groove and enters a recess formed partly in the body of the tool at the bottom of the groove and partly in the tongue, the recess in the tongue being of such depth that its upper wall, as shown at A, will not engage the extremity of the pin, which, however, will prevent the lateral displacement of the head. The pin 10 is formed with a head 10^a at one extremity, while its opposite extremity 10^c, which is plain when inserted, is subsequently riveted slightly to retain the pin in place. When it is desired to remove the head 7, a punch or other suitable tool is applied to the extremity 10^c of the pin, which is easily forced out, since the slight upsetting of the extremity 10^c will readily yield, the pin being composed of soft iron. Hence the pin performs the required function without being subjected to the direct vibrations incident to the force of the blows applied to the tool. It is also evident that the riveted pin, unlike a screw, will not become loosened by the vibrations incident to the use of the tool.

The purpose of the transversely-inclined walls 6^d, the end of the body of the tool, and

the counterpart engaging walls of the detachable point or head is to overcome the tendency of the body of the tool to split or open longitudinally by virtue of the force acting
 5 on the tongue located in its groove. It is evident that the construction described will completely overcome the tendency of the tongue to open the groove and split the body of the tool. The longitudinal inclination of the
 10 side and bottom walls of the groove, as well as the corresponding shape of the engaging walls of the detachable head or point, is to prevent the tongue of the head from slipping out of the groove in more than one direction
 15 and also to make the said head easily removable.

A small groove 6^k is formed in the top of the tool-body directly above the pin 10. This groove is intended to relieve the said pin from
 20 the force of the vibrations incident to the use of the tool.

Having thus described my invention, what I claim is—

1. A drill for the purpose described, comprising a shank having a dovetailed recess,
 25 and the lower ends of its sides beveled downwardly and outwardly, the beveled portions terminating at the said recess, a bit having a dovetailed tongue to engage said recess, and
 30 having its sides beveled upwardly and inwardly to oppose the beveled ends of the shank, the beveled surfaces of the opposing faces of the bit and the sides of the dovetailed recess being at the same angles where-
 35 by the said faces normally engage over their entire surface, substantially as shown and described.

2. A drill for the purpose described comprising a shank having a dovetailed recess tapering longitudinally as described, and having the lower ends of its sides beveled downwardly and outwardly, the beveled portions
 40 terminating at the said recess, a bit having a dovetailed tongue, tapering to fit said recess, and having its sides beveled upwardly and
 45 inwardly to oppose the beveled ends of the shank, the beveled surfaces of the faces of the bit and the sides of the dovetailed recess

being at the same angles, substantially as described. 50

3. A drill for the purpose described, comprising a shank having a dovetailed recess, and the lower ends of its sides beveled downwardly and outwardly, the beveled portions terminating at the said recess, a bit having a
 55 dovetailed tongue to engage said recess, and having its sides beveled upwardly and inwardly to oppose the beveled ends of the shank, the beveled surfaces of the opposing faces of the bit and the sides of the dovetailed
 60 recess being at the same angles, the shank being provided with an opening intersecting the dovetailed recess, the tongue having a recess in line with said opening, and a pin
 65 passed through the opening in the shank and engaging the recess of the tongue, whereby the bit is prevented from slipping out of the shank.

4. A drill for the purpose described, comprising a shank having a dovetailed recess,
 70 and the lower ends of its sides beveled downwardly and outwardly, the beveled portions terminating at the said recess, a bit having a dovetailed tongue to engage said recess, and
 75 having its sides beveled upwardly and inwardly to oppose the beveled ends of the shank, the beveled surfaces of the opposing faces of the bit and the sides of the dovetailed
 80 recess being at the same angles, the shank being provided with an opening intersecting the dovetailed recess and forming a recess in the bottom of the latter, the adjacent part of
 85 the tongue having a recess, and a fastening-pin passed through the opening in the shank and engaging the recesses in the adjacent parts of the shank and tongue, the recess in the latter being of such depth that there is a space below the pin, substantially as described and for the purpose set forth.

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

WILLIAM HARVEY.

Witnesses:

DORA C. SHICK,
 MILLIE YOUNG.