June 7, 1932. H. W. HAYNIE 1,861,632

BORING AND DRILLING DEVICE

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Fig. 1.

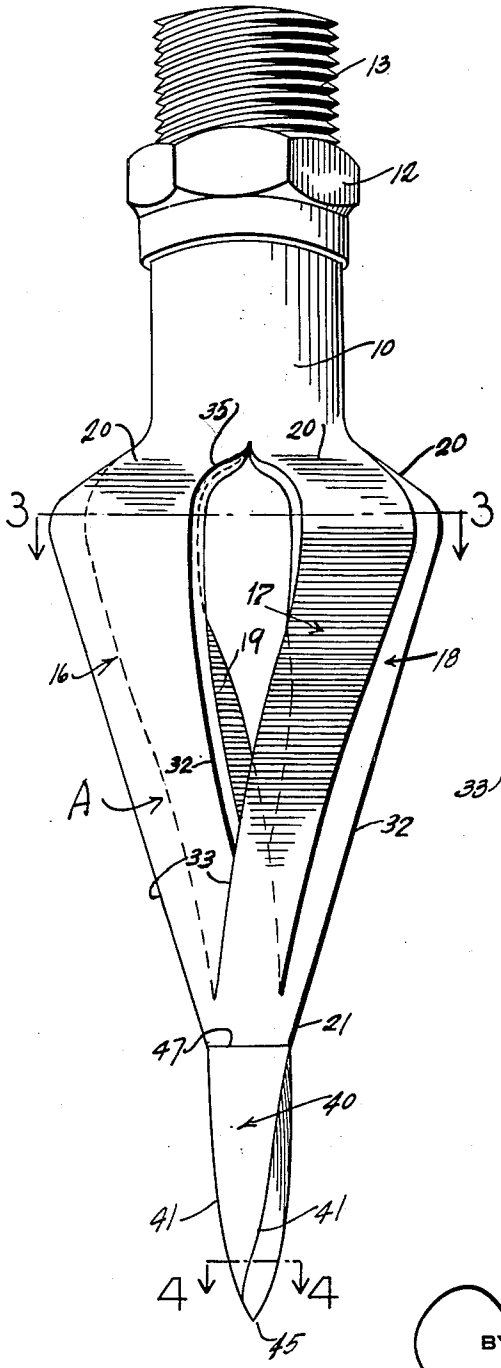


Fig. 2.

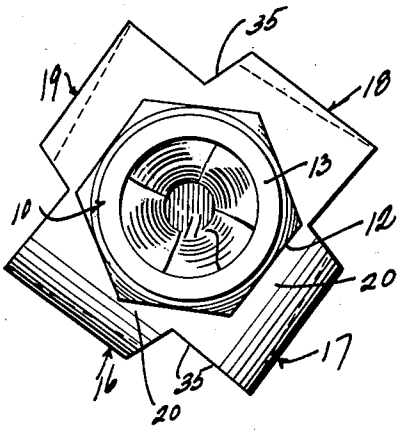


Fig. 3.

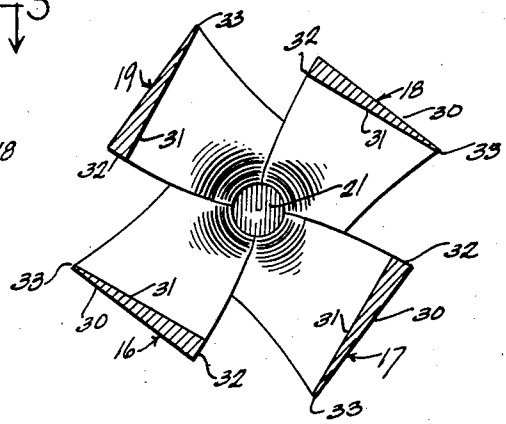
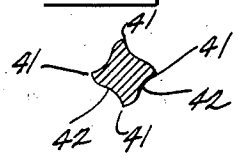


Fig. 4.



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Fig. 5.

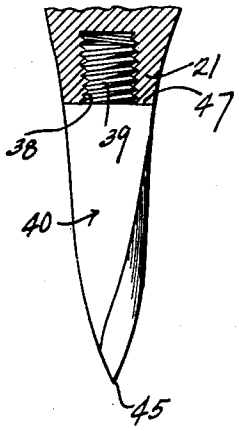


Fig. 7.

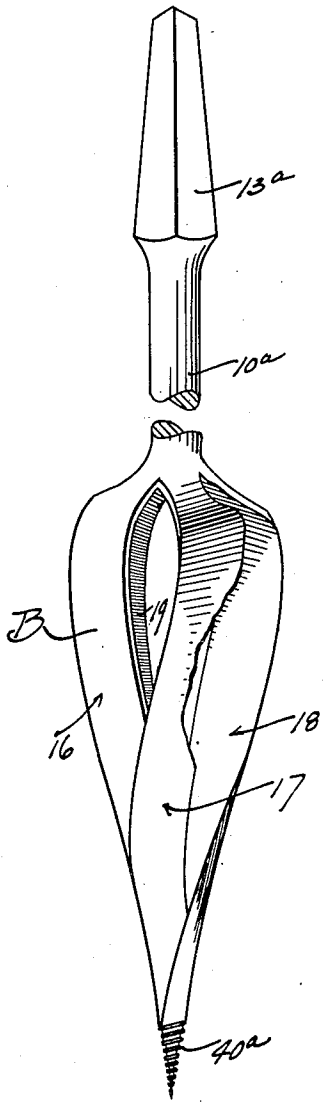
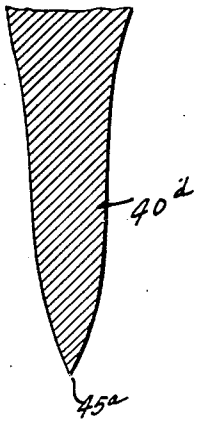


Fig. 6.



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UNITED STATES PATENT OFFICE

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BORING AND DRILLING DEVICE

Application filed November 9, 1928. Serial No. 318,267.

This invention relates to improvements in boring or drilling tools or implements.

The primary object of this invention is the provision of a boring or drilling tool, which may be put to a variety of uses, and which may serve as a bit in connection with a brace, for the purpose of boring wood, cement, and the like; the improved boring head being adaptable for use as a drilling head in earth boring of wells and the like.

A further object of this invention is the provision of an auger-like drilling head which may be used in connection with rotary drilling equipment for easily and efficiently drilling an opening; the improved device being very durably constructed to provide a conical shaped drilling head having a plurality of relatively long cutting blades tapering in a downwardly convergent relation to a drilling point axially therewith.

A further object of this invention is the provision of an improved drilling or boring head consisting of a plurality of cutting knives arranged in longitudinally spaced cutting relation, so that borings may be received therein in an out of the way relation, to permit speedy work being accomplished.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side perspective view of the improved drilling head as it will be used in connection with rotary well drilling equipment.

Figure 2 is a plan view of the details shown in Figure 1.

Figures 3 and 4 are sectional views taken substantially on their respective lines in Figure 1 of the drawings.

Figure 5 is a fragmentary view, partly in section, showing the relation in which a detachable drilling tip or point may be used upon the improved drilling head.

Figure 6 is a view showing that an inserting end of the drilling head may be formed integral with the drilling head.

Figure 7 is a perspective view of a modified form of invention, in which the blade arrangement is the same as that used for a drilling head; however, being adapted to a bit for use in connection with a wood or other type of brace.

In the drawings, wherein for the purpose of illustration are shown preferred and modified forms of the invention, the letter A may generally designate the preferred form of the improved tool, that is, in the form of a drilling head. It comprises a tubular or cylindrical shaped body 10, having a passageway 11 therethrough, unobstructed, and intermediate the ends thereof being provided with a wrench engaging enlargement 12, and thereabove being externally screw threaded at 13 for detachable connection with a rotary drilling line, such as a pipe, in a well known manner.

Either integral, or welded to the lower end of the body 10 are a plurality of cutting blades. In the preferred instance there are four of such cutting blades, shown at 16, 17, 18 and 19 in the drawings. These cutting blades slope divergently downward at 20, for a short distance, and then are bent in substantially a right angled relation and converge downwardly; their lower ends being formed integral or otherwise connected at a solid portion 21. The blades are relatively long, from their portions or shoulders 20 to their lower connected ends 21, and form a tapered conical body, shaped somewhat like a pear or child's top. As is shown in Figure 3 of the drawings, each of the blades 16, 17, 18 and 19 is of substantially chisel-shaped cross section, having outer and inner flat surfaces 30 and 31 respectively, which converge from the relatively wide trailing edge 32 to a chisel-shaped leading or cutting edge 33. From the body 10 to the connected ends 21 the blades have the leading edges 33 thereof spaced from the trailing edges of the next adjacent blade, in the direction of rotation of the tool, but providing spaces between the trailing and leading edges of adjacent blades, thru which the dirt may be deflected by the blades into the space between the blades, axially along the drilling head, thus removing borings and

drillings from the path of the blades, so that they may perform their boring or drilling operation more efficiently. In order to properly protect the cutting edges of the blades in connection with the upper and lower connected ends of said blades, a slight twist of the blades is made, longitudinally thereof. The compartment between the cutting blades, of course, opens into the passageway 11 of the tool body 10, so that, if desired, water or other wash liquid may be fed downwardly thru the drilling line to clear the space between the blades, and form lubricant for the cutting or drilling operation.

It should be noted that the blades are spaced between their trailing and leading edges throughout the length of said blades, with the greatest width of these spaces between the facing edges of the trailing and leading edges of adjacent blades at the top ends of said blades. This enables the borings from the lower end of the tool head to be rapidly pushed upward within the auger-like drilling head, and washed from the spaces between the upper ends of said blades, at 35, between the upper shoulder portion 20 at said blades, and thus preventing packing of the material within the compartment between said blades, and enabling a very speedy and efficient drilling or boring operation to take place. Adjacent blades are preferably in a right angled relation, although not necessarily so, and indeed it may be desirable to transversely arcuate the blades, if found necessary.

As shown in Figure 5 of the drawings, the solid portion 21 where the lower ends of the tapered or downwardly divergent cutting blades meet, is provided with an axial screw threaded socket 38, facing downwardly, which detachably receives the reduced screw threaded shank 39, of a drilling or boring tip or point 40. This point 40 may be made of very hard and durable steel or other material, preferably twisted solid, and being provided with cutting edges 41, preferably spiralling longitudinally thereof, and contiguous and in alignment with the cutting edges 33 of each of the blades of the cutting head or tool. Of course, a shoulder 47 is formed at the juncture of the shank 39 with the body of the drill point or tip 40, adapted to abut the lower end of the portion 21, when in proper position, to continuously align the cutting edges 41 with the cutting edges of each of the blades 16, 17, 18 and 19. The cross section of this drill point or tip 40 is shown in Figure 4, and between the cutting edges 41 the tip 40 may be recessed at 42, to facilitate the cutting operation. Of course, the point 40 tapers downwardly to a point 45.

In lieu of a detachable point or tip 40, the blades 16, 17, 18 and 19 may be tapered to a point 45^a, as shown in Figure 6, with the cutting edges spiralling in the same longitudinal relation as above described for the detachable tip or point 40.

The above described features of the invention, especially the blades 16, 17, 18 and 19 are adaptable to a bit for a wood or stone cutting tool. In lieu of the hollow shank 10, however, a preferably solid shank 10^a is provided having a chuck receiving head 13^a of polygonal formation, and the blades 16, 17, 18 and 19 of this form of invention, designated as B, are to be understood as of the same nature and formation as the above described blades. However, at their lower ends they taper to a screw threaded point 40^a, which is believed to be more desirable than the structure above described.

Various changes in the shape, size, and arrangement of parts may be made to the forms of invention herein shown and described, without departing from the spirit of the invention or the scope of the claim.

I claim:

In a drilling head the combination of a body having a plurality of relatively spaced downwardly convergent elongated blades integrally connected at the lower ends thereof and having a downwardly facing screw threaded socket, and a detachable drilling tip having a screw threaded shank for seating in said socket, the blades being relatively spiralled about the axis of the body and each having a chisel shape cross section providing a sharp leading edge, the drilling tip when fully connected in the screw threaded socket having spirally disposed cutting edges aligning respectively with the cutting edges of the respective blades.

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