Feb. 24, 1953 V. NEAMAND 2,629,588

TOOL FOR BREAKING CONCRETE AND THE LIKE

Filed March 25, 1948

Fig. 1.

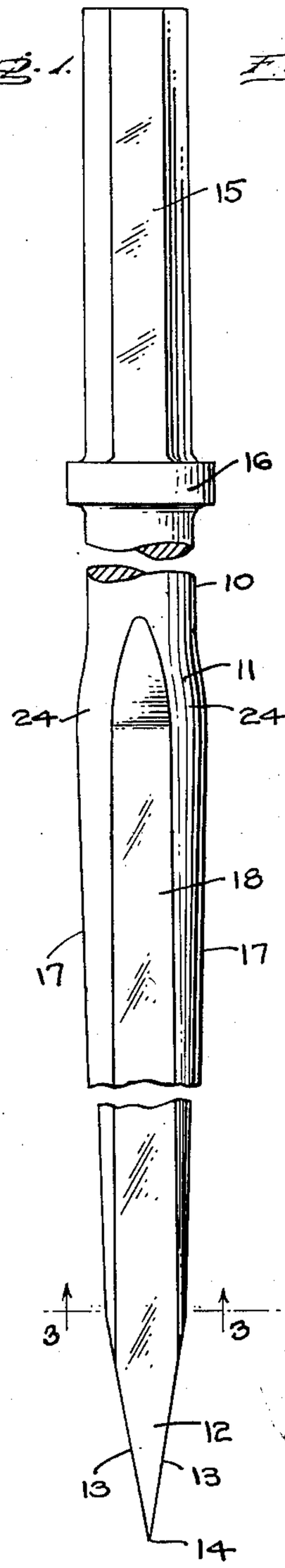


Fig. 2

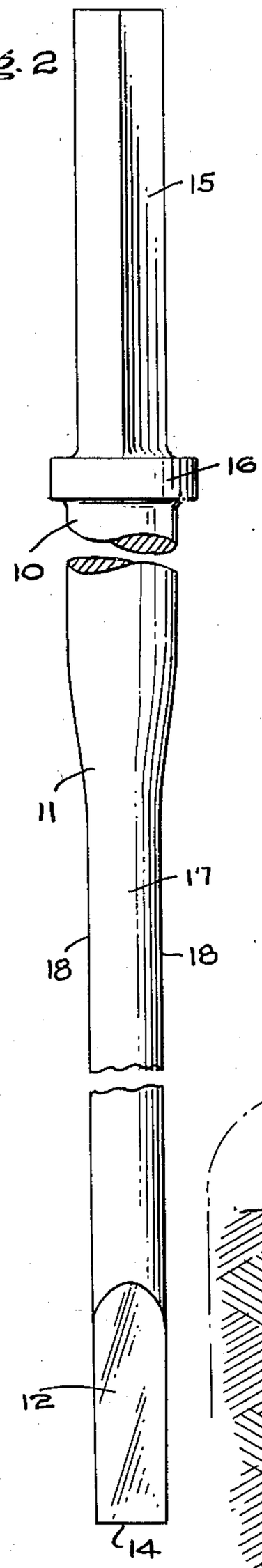


Fig. 5

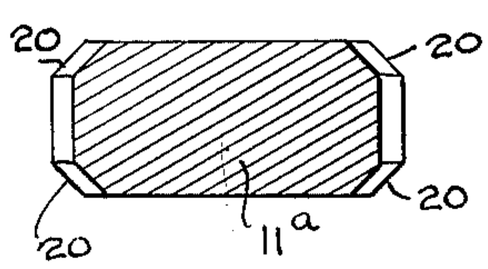


Fig. 6

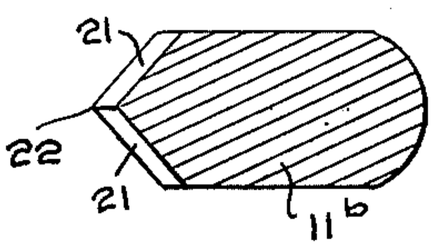


Fig. 7

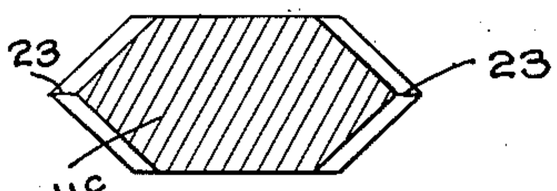


Fig. 8

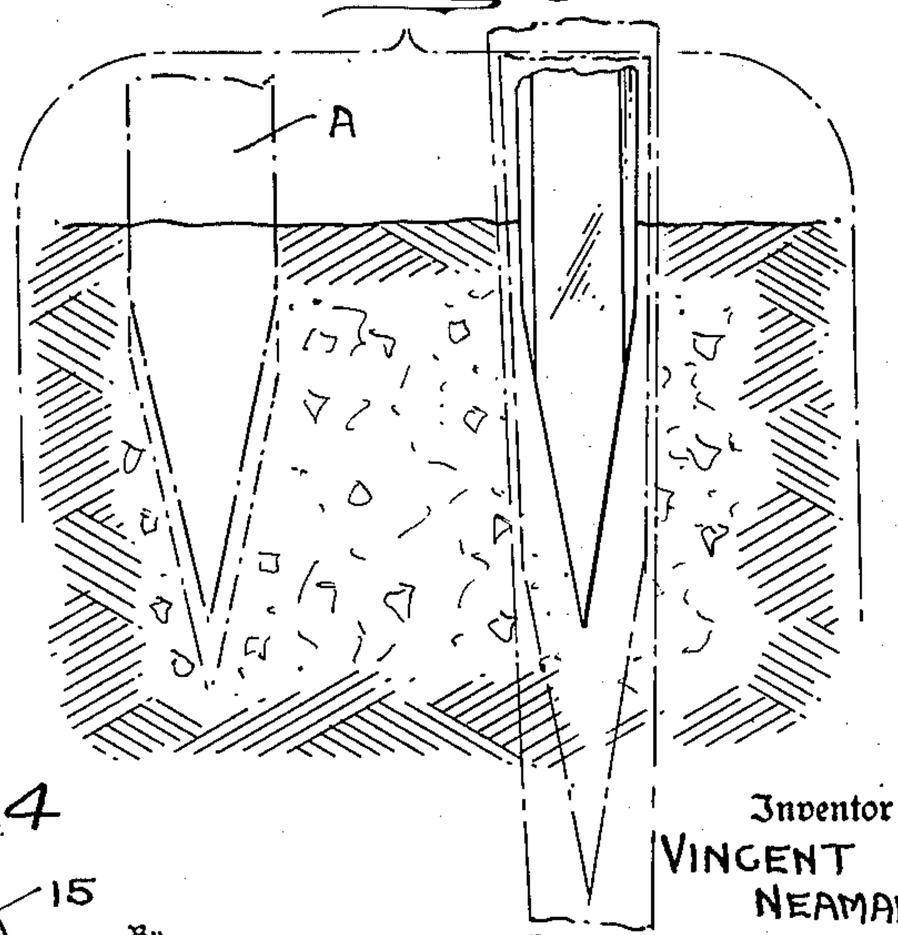


Fig. 3

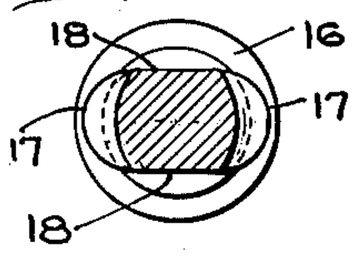
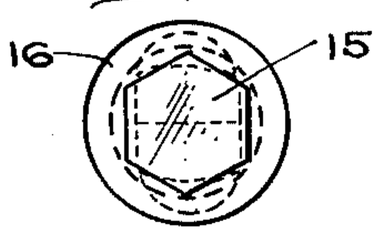


Fig. 4



Inventor
VINGENT
NEAMAND.

By

By Lear Edelson
Attorney

Patented Feb. 24, 1953

2,629,588

UNITED STATES PATENT OFFICE

2,629,588

TOOL FOR BREAKING CONCRETE AND THE LIKE

Vincent Neamand, Narberth, Pa.

Application March 25, 1948, Serial No. 17,044

1 Claim. (Cl. 262—33)

1

This invention relates generally to percussively operated tools for breaking concrete and the like and more particularly to an improved design and construction of a paving breaking tool of the type known as a moil point.

Heretofore and prior to the present invention, it has been the conventional practice in the art to provide the moil point type of paving breaking tool with a shank of uniform cross-section throughout having a relatively short pointed or tapered extremity, the latter being either of pyramidal or conical form or flattened into the shape of a chisel. In all cases, regardless of the shape of the pointed or tapered extremity of the moil point, the shank of the tool has always been formed of uniform cross-section in consequence of which the only part of the tool effective for breaking paving material has been the pointed or tapered extremity thereof, the shank serving merely as a lever, when shifted laterally about its embedded extremity as a fulcrum, to push the paving material to one side or another of the hole punched into the material by the tool. Due to the fact that the shank of the conventional moil point is of uniform cross-section, once the pointed extremity thereof is forced into the material to be broken, further axial penetration of the tool into such material produces no further breaking of the material but instead often results only in causing the tool to become jammed or bound in the material, this for the simple reason that the hole punched into the material by the tool, regardless of the depth of its axial penetration into the material to be broken up, is limited to a size closely approximating the cross-sectional area of the tool shank. Where the material to be broken up is quite hard, lateral shifting of the tool for employment of its shank as a breaking lever requires considerable manual effort and frequently is altogether impossible, thus making it necessary to completely remove the tool embedded in the material for reinsertion thereof into the material at another point.

Having in mind the foregoing difficulties encountered in the use of the conventionally constructed moil point, the present invention has as its principal object the provision of a moil point wherein the shank itself is also tapered lengthwise thereof from its pointed extremity so as to provide the shank with a cross-section which gradually increases in size lengthwise of the shank, the latter thus serving as a continuation of the pointed extremity of the tool to effect a breaking action for the full distance of axial penetration of the tapered shank into the material to be broken up, the tapered shank being operative during the full extent of such axial penetration to constantly exert upon the material a lateral thrust tending to disrupt it.

2

Other objects and advantages of the present invention will appear more fully hereinafter, it being understood that said invention consists substantially in the combination, construction, location and relative arrangement of parts, all as will be described in detail hereinafter, as shown in the accompanying drawings, and as finally pointed out in the appended claim.

In the accompanying drawings, which illustrate certain preferred embodiments of a tool constructed in accordance with the principles of the present invention—

Figure 1 is a side elevational view of a moil point constructed in accordance with the present invention;

Figure 2 is an edge elevational view of the moil point shown in Figure 1;

Figure 3 is a transverse sectional view as taken on the line 3—3 of Figure 1;

Figure 4 is an end view of the tool;

Figure 5 is a transverse sectional view of a modified form of the tool shank as it would appear if taken along a line corresponding to the line 3—3 of Figure 1;

Figure 6 is a transverse sectional view of a further modified form of the tool shank;

Figure 7 is a transverse sectional view of still another modification of the tool shank; and

Figure 8 is a view illustrating the action of the tool of the present invention as compared with that of a tool of conventional construction.

Referring now to the drawings and more particularly to Figures 1 to 4 thereof, it will be observed that the moil point 10 of the present invention includes an elongated body 11 having a pointed or tapered extremity 12 which, as illustrated, is in the form of a chisel the opposite faces 13—13 of which are flattened and converge to a relatively sharp edge 14. The pointed extremity 12 may be shaped in any desired manner. Also, in accordance with conventional practice, the rear or inner end of the tool body 11 is provided with a shank 15 of square or hexagonal cross-section for non-rotatable securement within a complementally shaped socket formed in the chuck of a pneumatically operated hammer or like mechanism (not shown) for percussively actuating the moil point, this shank 15 being separated from the body of the tool by an annular collar 16 which takes the shock of the

blows imparted to the moil point by the hammer mechanism.

In accordance with the present invention, the body 11 of the tool is tapered lengthwise thereof for a substantial distance rearwardly of its pointed extremity 12 to provide a transverse cross-section which is of gradually increasing area toward the collar 16 of the tool. In its preferred form, as shown in Figures 1 to 4, the tapered portion of the tool body 11 extends about one-half the overall length of the latter, it being at least several times the overall length of the pointed extremity 12. Also, in its preferred form, the tapered portion of the body 11 of the tool is of generally oval or oblong form in transverse cross-section, the relatively narrow sides 17—17 being preferably rounded as shown, while the relatively broad sides thereof are respectively flattened to provide the tool with a pair of opposed substantially parallel flat faces 18—18. As appears clearly in the drawings, the rounded sides 17—17 of the tool are those which are relatively tapered lengthwise of the tool, the tapered sides 17—17 being in effect continuations of the relatively inclined opposite faces 13—13 of the chisel-shaped extremity 12. It will be noted, however, that the taper of the sides 17—17 of the tool body is materially less than the taper of the faces 13—13.

In use of the tool of the present invention, it is preferably held so that the flat faces 18—18 of the tapered portion of the tool are parallel to the plane of shift of the tool when the latter is rocked about its pointed extremity as a fulcrum. In order to facilitate such use of the tool, the shank 15 thereof is so formed relatively to the tapered body portion that when the tool is fitted properly in the holding chuck of the pneumatically operated hammer mechanism the major axis of the tapered body portion is automatically disposed in a vertical plane coincident with the longitudinal center line of the mechanism.

Referring now to Figure 8 which illustrates the principle of operation of the tool of the present invention, it will be observed that when the pointed extremity of a conventional tool, such as is designated A, is axially driven into the material to be broken it produces a hole of a maximum size not exceeding that of the tool body, the size of this hole remaining more or less constant regardless of the extent of axial penetration of the tool into the material to be broken. To really break up and dislodge the material, the tool must be operated as a lever, requiring considerable manual effort and it all too frequently becomes so firmly lodged in its hole that it becomes difficult to properly work the tool further or even remove it from the material into which it has been tightly forced. Also, inasmuch as the tool body above the pointed extremity thereof is of uniform cross-section throughout its full length, penetration of the extremity further and further into the paving or the like does not increase the size of the hole punched in the material, but instead only results in excessive heating and premature wear of the point.

In use of the tool of the present invention, materially different results are obtained. Thus, as the present tool axially penetrates the material to be broken up, the material is constantly subjected to lateral pressure tending to split the material open along lines coincident with the vertical plane of the major axis of the tapered portion of the tool body. The greater the axial penetration of the tool into the material, the greater is the force tending to split said material apart,

in consequence of which the hole formed by the pointed extremity 12 of the tool is constantly enlarged in the region of said extremity so as to relieve it of pressures tending to bind or wedge it in place. By so relieving the pointed extremity of the tool of these pressures, it does not become excessively hot nor is it subject to premature wear due to excessive friction. Finally, the splitting action obtained by the tapered body portion of the tool, following penetration of the pointed extremity 12 into the material, very measurably increases the general effectiveness of the tool to split and break up paving material and the like even when the tool is axially directed into the material and not employed as a lever, a result not at all obtainable with moil points of conventional construction. When, in addition to this, the tool is employed as a lever following substantial penetration thereof into the paving material, the latter is very readily broken up and dislodged, because of the breaking strains set up therein by the wedging action of the tapered body portion of the tool.

It will be apparent, of course, that the tool may be varied in cross-sectional form without involving any departures from the principles of the present invention, several of such possible variations being shown, for example, in Figures 5, 6 and 7. In the form of tool shown in Figure 5, the tapered body portion 11^a is generally of rectangular form with its longitudinally extending corner edges chamfered, as at 20.

In the form shown in Figure 6, the taper extends only along one longitudinal edge of the tool body portion 11^b, this longitudinally tapered edge being oppositely beveled, as at 21—21, to provide a relatively sharp splitting edge 22 extending lengthwise of the tool above its pointed extremity 12, the opposite longitudinally extending edge 22 being without any taper but instead being rounded to a surface extending substantially parallel to the tool axis.

Figure 7 shows a tool cross-section generally similar to that of Figure 6 except that the tapered relatively sharp edges 23—23 extend longitudinally along both sides of the tool body 11^c.

It will be noted that the shaping of the tapered side faces is such that transverse chordal distances between these faces is a maximum measured through the central longitudinal axis and a minimum at the junction of these faces with the parallel faces.

In all forms of the tool of the present invention, it is preferable to initially form the same so that the tapered portion thereof in the region of its maximum dimension, as at 24 is of a transverse size somewhat exceeding the diameter of the tool body extending between the tapered portion and its collar 16. Thus, as the tool wears in use, requiring re-grinding of its pointed extremity with consequent reduction in length of the tapered body portion of the tool, sufficient stock is provided at opposite sides of the tapered portion of the tool body to provide for wear along its tapered edges, this wear being uniform so that the degree of taper remains relatively constant throughout the life of the tool.

It will be understood, of course, that the present tool is susceptible of various other changes and modifications which may be made from time to time without departing from the general principles or real spirit thereof, and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claim.

What is claimed as new and useful is:

In a percussively operated tool for breaking concrete and the like, an elongated body portion having an actuating shank at one end and a pair of converging terminal faces at the other end thereof, said body from said other end thereof and from the outer ends of the terminal faces being bounded by a pair of flat parallel side faces, said parallel faces being connected by side faces transversely arcuate and diverging from the inner ends of the terminal faces.

VINCENT NEAMAND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,302,069	Stephens	Nov. 17, 1942

FOREIGN PATENTS

Number	Country	Date
8,325	Great Britain	of 1910
13,511	Great Britain	July 12, 1893
442,912	Great Britain	Feb. 18, 1936
705,809	France	Mar. 17, 1931