

(No Model.)

2 Sheets—Sheet 1

B. & T. WESSELMANN.
DRILLING OR BORING TOOL.

No. 571,253.

Patented Nov. 10, 1896.

Fig. 1.

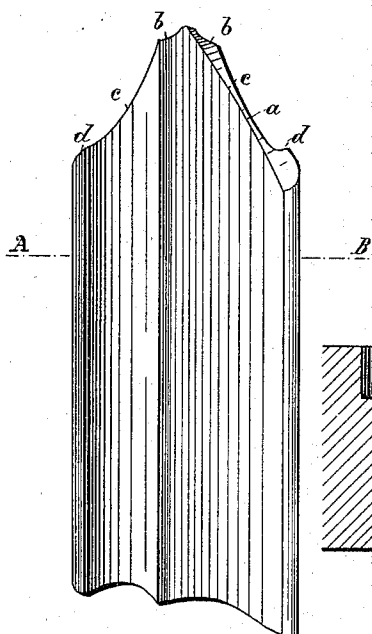


Fig. 2.



Fig. 5.

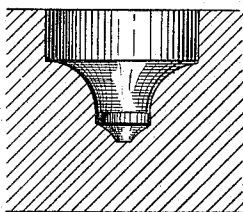


Fig. 3.

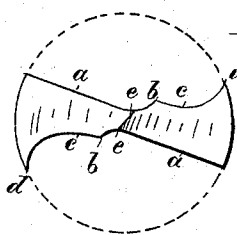
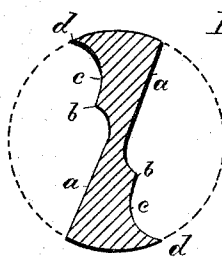


Fig. 4.



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Fig. 6.

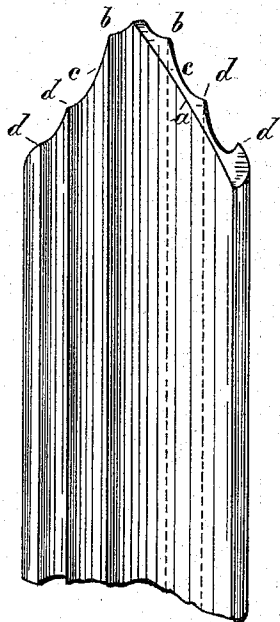


Fig. 8.

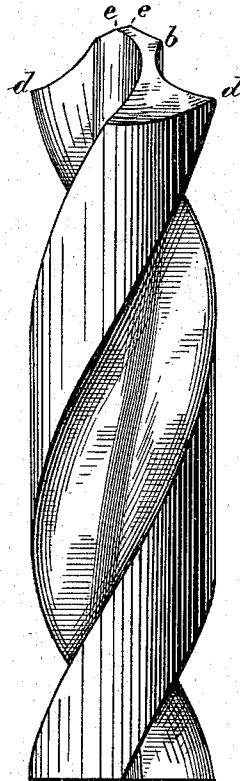


Fig. 7.

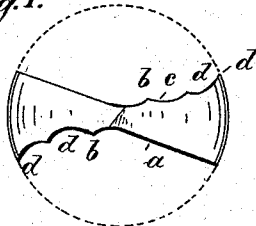
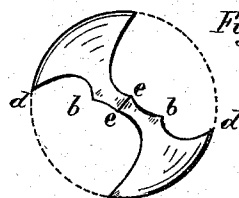


Fig. 9.



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UNITED STATES PATENT OFFICE.

BRUNO WESSELMANN AND THEODOR WESSELMANN, OF BERLIN, GERMANY.

DRILLING OR BORING TOOL.

SPECIFICATION forming part of Letters Patent No. 571,253, dated November 10, 1896.

Application filed May 7, 1895. Serial No. 548,444. (No model.) Patented in Canada July 12, 1895, No. 49,475.

To all whom it may concern:

Be it known that we, BRUNO WESSELMANN, manufacturer, residing at 11 Schwerin Street, and THEODOR WESSELMANN, engineer, residing at 11 Schwerin Street, Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in or Relating to Drilling or Boring Tools, (for which we have obtained Letters Patent in Canada, No. 49,475, dated July 12, 1895,) of which the following is a specification.

This invention has for its object a bar from which, by simply grinding one end thereof in intersecting planes, a double borer or drill may be made, the central or inner cutting edges of which act as a front borer or borer point, while the two larger outer edges act as after borers. The object of this arrangement is to allow in the boring of large holes of a small hole being first directly made and of the after boring out or reaming to a greater width being effected simultaneously by the same borer in a similar way to that of a center-bit, and also to permit of boring with great peripheral speed. By this means it is possible to attain with this double borer a very energetic and increased boring action. The central borer-point cuts without reaming a small central hole, as shown in Figure 5, while the outer edges or cutters have an increased cutting speed at all their points. By means of such double borers very thick cuttings may be obtained without causing the borer to become heated.

The essential features of this double borer consist in (a) the combination of a borer and reamer or preliminary and after borer in a single tool which is to be made from a straight-rolled bar which is formed with two or more projecting ridges; (b) the making of both cutting edges of the preliminary and after borer simultaneously by simply grinding the end of the bar in intersecting planes; (c) the selection of the section of the borer-bar in such a way that when the borer is ground the cutting edges of the same are made in the usual manner by the formation of two ground surfaces inclined toward one another, while in consequence of the ridges on the bar special cutting edges result both for the front as well as the after borer, but these cutting edges lie at different angles. The ground surfaces

may also, as in ordinary borers, be level or have a spiral surface by suitably turning the borer-bar when grinding.

By employing more than two ridges on the bar more than four cutting edges may be formed.

In the accompanying drawings, Fig. 1 shows in elevation a straight borer-bar with ground cutting edges and two ridges. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of Fig. 1 or Fig. 2. Fig. 4 is a cross-section of the borer-bar. Fig. 5 is a section of a hole made with one of these double borers. Fig. 6 shows in elevation a straight borer-bar with four ridges. Fig. 7 is a plan of Fig. 6. Fig. 8 shows in elevation a spirally-twisted borer-bar with two ridges. Fig. 9 is a plan of Fig. 8.

The shape of the section of the borer-bar will now be explained.

The cross-section shown in Fig. 4 of the borer-bar forms generally a rectangular figure, the two narrow sides of which are curved to correspond to the circle of the hole to be bored. The two wide sides are so formed that in the center of the section the metal bar is thinner than at the circumference of the cross-section in the circle coinciding with the periphery of the whole. By this centrally-reduced thickness of the borer-bar the cuttings resulting from boring within the bore-hole formed may be easily removed.

At the points d d of the cross-section lie the cutting edges of the borer-bar, and the end cutting edges d c b are curved sickle-shaped in order to bring the separated points of the cutting-edges to the attack when cutting and effecting a shearing cut. The parts at a lying opposite to the cutting edges d c b of the borer-bar, as seen in the cross-section, are, however, not curved, but run practically radially to the center of the section.

Two projections on the wide sides d c a thus appear with sharp beveled points in proximity to the center of the section obliquely opposite to one another, which projections form the sharp-edged ridges visible on the sides of the borer-bar. These ridges form at b the projecting and peculiarly-shaped cutting edges of the second central or inner front borer, which thereby obtains cutting surfaces entirely separated from the outer after borer.

If on the borer-bar of this particular section there be then ground in the usual manner, as shown in Figs. 1 and 2, at a given angle, two surfaces cutting one another in the final edge *e e* of the whole borer, but otherwise entirely equal, the hollow *c c* of the sides forms the cutter for the after borer, while the hollow at *b* forms the peculiarly-shaped cutter for the front borer. The cutting edges of the front borer extending from *b* to *b* have, however, a more obtuse angle to the longitudinal axis of the borer-bar than the cutters *c c* of the after borer, which is very favorable for the front borer, as with the same pressure it has an equal penetration to the after borer.

In spite of the common character of the ground surfaces, the cutters *b b* of the front borer, as shown in Fig. 3, lie in a radial direction opposed to the cutters *d d* of the after borer at a greater angle, according as the projection of the beveled longitudinal ridge at *b* from the sides of the borer is made larger or smaller. If the straight borer-rod be twisted spirally on its longitudinal axis before being ground, as shown in Fig. 8, a so-called "American" borer results, in which, by simply grinding quite in the same manner as hereinbefore described, two pairs of cutters may also be formed, one pair for the after borer and the central or inner pair for the front

borer. Thus from such American borers a double borer results at one grinding. If more than two ridge-projections or bar-ridges be selected, the cutting edges *b d* are repeated.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. A drill-blank formed with elongated cross-section and having two cutting edges on each side of its axis, formed respectively of the short curve *b e*, and the long curve *b d*, separated from each other by the sharp longitudinal edge *b* as and for the purpose explained.

2. A drill formed of the blank having an elongated cross-section, with two curved cutting edges on opposite sides of its axis and of its longest diameter, and each formed of the short curve *b e*, and the long curve *b d*, separated by the sharp longitudinal rib *b*; said blank being ground upon its end in two planes intersecting at its axis and each grinding-plane forming two cutting edges in different lines so as to produce a fore borer and an after borer as explained.

In witness whereof we hereunto set our hands in presence of two witnesses.

BRUNO WESSELMANN.

THEODOR WESSELMANN.

Witnesses:

PAUL LOEMLER,
ANTON LIPPERT.