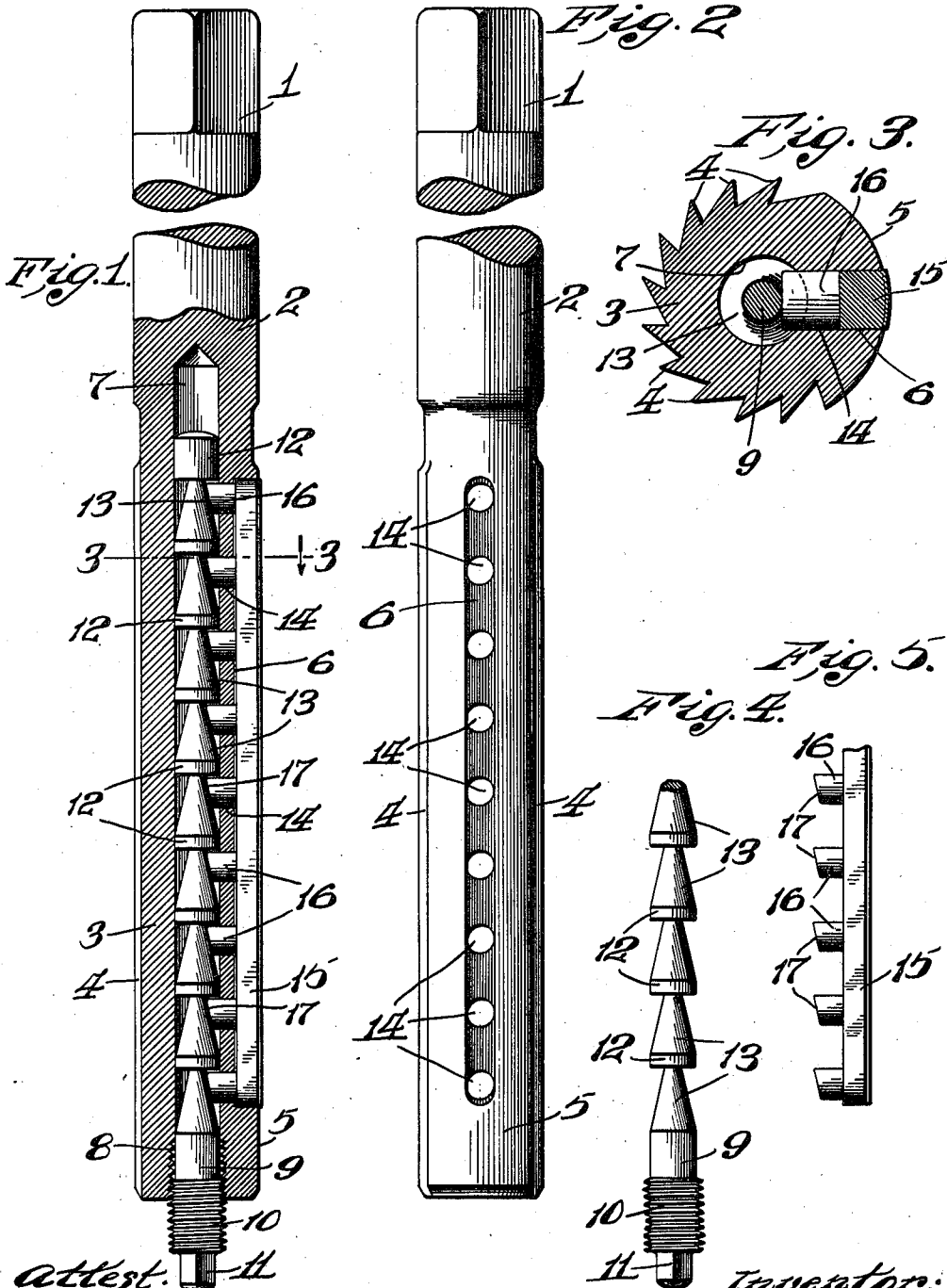


A. STUDER.
ADJUSTABLE REAMER.
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979,809.

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Attest.
H. G. Fletcher.
E. L. Wallace-

Inventor:
Alfred Studer.
By Hiden Longan
attys.

UNITED STATES PATENT OFFICE.

ALFRED STUDER, OF ST. LOUIS, MISSOURI.

ADJUSTABLE REAMER.

979,809.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALFRED STUDER, a citizen of the Republic of Switzerland, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Adjustable Reamers, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in adjustable reamers, the object of my invention being to construct a reamer of the cylindrical type, the blades of which are worked out of the solid metal of the reamer by planing or milling and are then sharpened to cutting edges, there being a portion of the periphery of the reamer left smooth.

In the face of the portion not provided with cutting blades there is a depression extending some considerable length and the body of the tool is provided with a longitudinal, central bore, there being apertures through said depression communicating with the central bore. In the central bore there is located an adjusting rod having portions which form a series of superimposed, truncated cones, which rod is designed to be threaded to the bore for a portion of its length and arranged to engage a work engaging strip so as to move it in a plane outside of the cutting blades so that the tool may be employed to ream bores having greater diameters than the diameter of the tool.

For the above purposes my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying drawing, in which:

Figure 1 is an elevation of a reamer of my improved construction, the tool proper being shown in section; Fig. 2 is an elevation of the tool with the adjusting strip removed and is taken at a right angle relative to Fig. 1; Fig. 3 is an enlarged, detail, transverse, sectional elevation taken on the line 3—3 of Fig. 1; Fig. 4 is an elevation of a portion of the adjusting rod removed from the reamer; and Fig. 5 is an elevation of a portion of the adjusting strip removed from the reamer.

Referring by numerals to the accompany-

ing drawing: 1 designates a squared portion of the tool which is designed for attachment to a socket or chuck.

2 designates the stem of the tool and 3 designates the main body portion of the tool. As shown the main body portion of the tool is provided with a number of cutting blades 4 for a portion of the circumference of the tool only, the portion 5 of the periphery of the tool being smooth and not provided with cutting blades. Arranged centrally of the smooth portion 5 of the periphery is a depression 6 extending some considerable length.

7 designates a bore arranged centrally of the body portion of the tool and preferably extending some considerable distance into the body of the tool beyond the upper ends of the blades 4. The bore adjacent its bottom is threaded at 8.

9 designates an adjusting rod which is provided with the threads 10 arranged to seat in the threads 8 of the tool proper.

11 designates a squared, integral part of the rod 9 to be engaged by a wrench for purposes of turning the rod in the reamer. The rod 9 above the threads 10 is provided with a number of annular faces 12 arranged to engage with the face of the bore 7. These faces 12 are preferably arranged an equal distance apart throughout the length of the rod. Between each pair of faces 12 the rod is reduced to form conical frustums 13.

14 designates a number of openings leading from the bottom of the depression 6 to the bore 7.

15 designates a strip, the outside face of which describes an arc substantially the same as the arc of curvature of the reamer and is arranged to be normally held in a plane outside the periphery of the reamer. The strip 15 is arranged to occupy the depression 6 and is provided with integral projections 16 having inclined faces 17, which projections 16 are arranged to extend through the openings 14 and the inclined faces 17 are arranged to engage the frustums 13. The projections 16 correspond in number with the number of frustums throughout the length of the rod 9.

In operating a tool of this class the same is applied in a bore to be enlarged and the operator, by manipulating the rod 9, by reason of its threaded connection with the

reamer, moves the rod 9 lengthwise relative the reamer. Thus, by reason of the contact of the inclined faces of the projections 16 of the strip with the frustums, it is obvious
 5 that the strip will be moved outwardly beyond the periphery of the reamer.

As the strip 15 engages a portion of the bore to be enlarged it is obvious the cutting blades 4 will be forced against the surface
 10 of the bore and when the whole tool is rotated within the bore, the bore will be increased to the size corresponding with the diametrical dimension between the point of the cutting blades and the outer face of the
 15 strip 15.

If it be desired to increase the size of the bore the operator need only extend the strip 15 by a manipulation of the rod 9.

I claim:

20 1. In a device of the class described, a cylindrical body portion having cutting blades and formed hollow for a portion of its length, a member located within the hollow portion having a number of inclined faces,
 25 a strip arranged lengthwise of the reamer provided with projections having inclined faces for engagement with the inclined faces of said member and means for moving said member longitudinally of the reamer so as
 30 to move said strip laterally relative the body of the reamer.

2. In an adjustable reamer, a body portion having integral cutting blades around a portion of its periphery, the remainder
 35 of the periphery being smooth, there being a depression in the smooth portion of the periphery of the reamer, a strip located in

said depression and means for moving the strip laterally for the purposes stated.

3. In an adjustable reamer, a body portion having cutting blades on a portion of
 40 its periphery only, the remainder of the body portion being smooth, there being a depression formed in the smooth portion of the reamer, a strip arranged in said depression,
 45 a rod having a plurality of inclined faces located within the body of the reamer, there being projections on said strip for engagement with said inclined faces and means for adjusting said rod longitudinally
 50 within the body of the reamer for the purposes stated.

4. In an adjustable reamer, a hollow body portion having cutting blades arranged on a portion of its periphery only, there being
 55 a depression in the smooth portion of the reamer and openings leading from the bottom of said depression to the interior of the reamer, a rod provided with a number of frustums located within the reamer, a
 60 portion of which rod is threaded and threads arranged adjacent the bottom of the reamer, a strip having projections with inclined faces carried by said depression and said openings leading from the depression
 65 to the interior of the reamer.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

ALFRED STUDER.

Witnesses:

E. E. LONGAN,
 E. L. WALLACE.