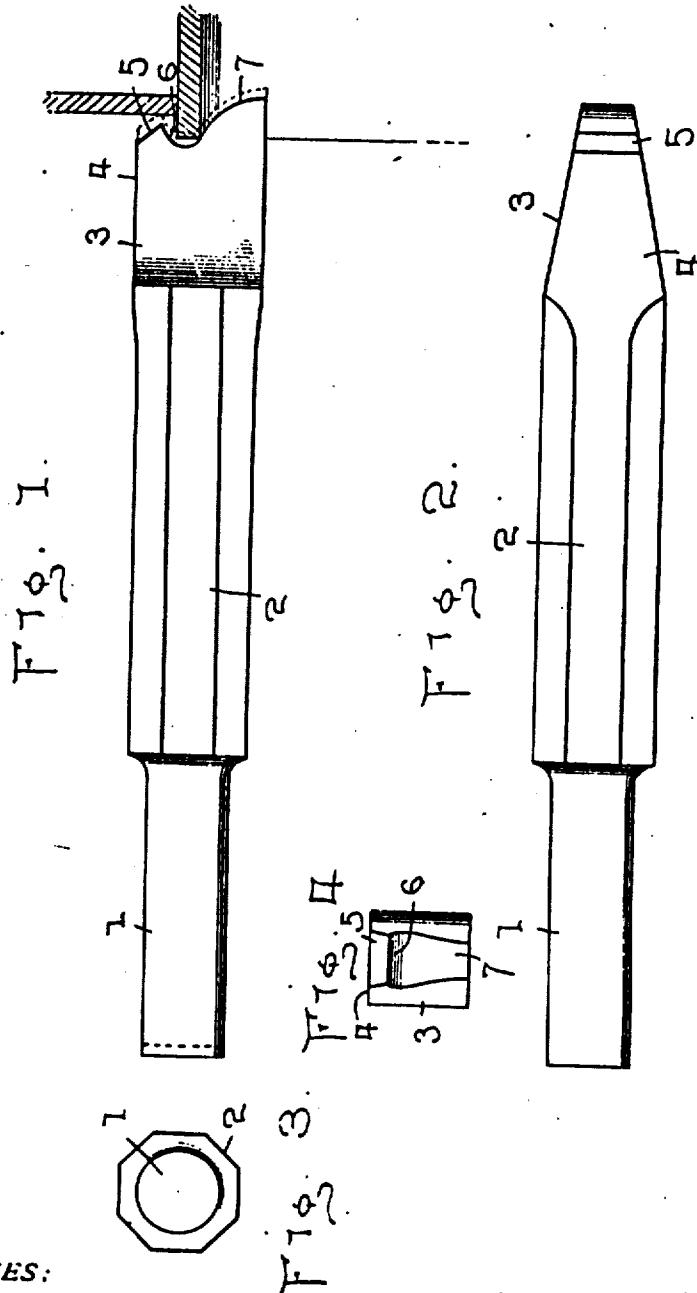


J. F. GERO.
 FLUE TURNING AND BEADING TOOL.
 APPLICATION FILED APR. 10, 1911.

1,016,559.

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FLUE TURNING AND BEADING TOOL.

1,016,559.

Specification of Letters Patent.

Patented Feb. 6, 1912.

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To all whom it may concern:

Be it known that I, JOHN F. GERO, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Flue Turning and Beading Tools; and I do hereby 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.

This invention relates to tools for operating upon flues, and more particularly to a combined turning and beading tool for flues of different diameters.

An object of the invention is to combine the turning and beading tools, making one tool for the two purposes and enabling the workman to turn and bead a flue with one operation of the single tool.

Another object is to devise a tool which will serve as both a flue turning tool and a flue beading tool and which will therefore both turn and bead the flue in one operation in about half the time now required to turn the flue with a flue turning tool and then bead the flue with a flue beading tool, making two separate operations, and.

A further object is to provide a tool of the above stated character which will be extremely simple in construction and operation and which will be easy and cheap to manufacture.

Other objects and advantages will be hereinafter set forth and pointed out in the specification and claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a view of the tool applied to one end of a flue to turn and bead the latter. Fig. 2 is a plan view at right angles to Fig. 1, the tool being removed from the end of the flue, Fig. 3 is an end view of the tool, looking at the rounded end thereof, and, Fig. 4 is an end view of the same, looking at the working end of the tool.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, the tool consists of the rounded shank portion 1 and the octagonal shaped central portion 2, from which extends the flat beveled sides 3 of the turning and beading end of the tool.

At right angles to the flat beveled sides 3

are the slightly flared sides 4, one of the sides 4 extending beyond the opposite side 4, the purpose of which will presently appear.

The beveled sides 3 converge to within about three-eighths of an inch at their outer extremities, while the sides 4 are about one inch apart at their outer extremities, thus forming a working or flue engaging end of about three-eighths of an inch thick and about one inch wide. The dimensions, however, may be varied as desired, but it is preferred to have the proportions about the same as just described.

From the short side 4 the flue engaging end is straight and directed at an angle to the side 4 for a short distance, as shown at 5. From the inner edge of the portion 5 the flue engaging end is directed inwardly and curved in semicircular form, to provide the flue end receiving recess 6, and from the portion 6 the engaging edge is curved outwardly to present the curved flue entering portion 7, which connects with the long side 4 of the working end of the tool. Thus, it will be seen that the working end of the tool is provided with a straight portion 5 connected with the short end 4 and directed at an angle thereto, a central semicircular nick or flue end receiving recess 6 connected with the straight portion 5, and, beginning at this point and also connected with the outwardly curved flue entering or convex portion 7, which connects with the long straight edge 4. The shank 1 is adapted to be engaged with a pneumatic hammer, as will be understood.

The operation of the tool is as follows: The working end of the tool is placed against the end of the flue to be turned and beaded, in such position that the edge of the flue rests within the semicircular nick 6, the straight portion 5 being outside of the flue, while the long curved portion 7 is within the flue. The tool, as will be understood, is held by the operator, in the proper position and, while held in this position, is caused by the pneumatic hammer, to pound upon the end of the flue to turn and bead the same. As the tool is held in this position and forced against the beaded end of the flue, the working end of the tool will, by being held properly, curve the edge of the flue outwardly and, the sharp edge, at the

junction of the straight portion 5 and semi-circular portion 6, will force the edge of the flue, as it is turned or curved against the boiler head and form the end into a bead, making a water tight connection between the boiler head and the turned and beaded end of the flue.

It will be understood that the tool is moved around the edge of the flue end, turning and beading the end gradually. On account of the straight portion 5 of the working end of the tool being directed at an angle of more than 90°, the end of the flue, as it is forced by the tool to turn outwardly, will be pressed tightly against the boiler head and, thus, the bead will be formed out of the end of the flue, as the latter is turned, accomplishing two results with one operation of one tool. This, it will be seen, eliminates the necessity of first turning the end of the flue with one tool and then beading the flue with a second tool, requiring two separate operations and a double amount of time as well as labor.

Thus, it will be seen that my combined flue turning and beading tool eliminates the necessity of having separate tools for these two operations, and also saves the double labor and makes it possible to perform this work in one-half the time heretofore required, cutting the expense of such work in half as well as the price of the implements necessary.

This tool may be effectively used for turning and beading the ends of either cold or heated flues of various diameters.

It will be readily seen that as the working end of the tool is of substantially rectangular form in cross section and only about three-eighths as wide across the flue end receiving recess, or nick, as the width at right angles thereto, or from one straight edge 4 to the other straight edge 4, there will only be an extremely small portion of the edge of the flue engaged at one time. Thus, the force or power will be concentrated and applied directly to only an extremely small portion at one time, the tool being moved around the edge of the flue as the latter is turned and beaded in the one operation. Owing to the peculiar construction of the working end of this tool, the same may be effectively used for turning and beading the ends of flues of various diameters, eliminating the necessity of duplicating the different sizes for the flues of different diameters, as is now necessary with the separate flue turning tools and flue beading tools in general use.

In operation the tool is preferably held in the position shown in Fig. 1 (in direct alignment with the flue) and driven straight forward, the curvature of the working end of the tool properly turning and beading the edge of the flue as the tool is moved around said edge. It will be evident, however, that if desired, the tool may be held at various

angles during the operation, the same as the tools now in use, but this is not at all necessary.

It will be evident that with this tool, which enables the concentration of the power and force to only a small portion of the edge of the flue at one time, the work will be much more effective and more readily accomplished than is now possible with the present form of flue turning tools and flue beading tools which engage the entire end of the flue at one time.

What I claim is:

1. A tool for turning and beading a flue, comprising a shank portion, a central portion integral with said shank portion, a working end integral with said central portion opposite said shank portion, said working portion having opposite converging beveled sides and opposite parallel straight sides at right angles to said beveled sides, one of said straight sides being shorter than the opposite straight side, said working portion having a flue-engaging end with which said sides connect, said flue-engaging end having a semicircular flue-receiving recess, an outwardly curved flue entering portion connecting with said semicircular recess and the long straight side of said working end, and a short straight portion for said engaging end connecting with the semicircular recess and with the short straight side, said straight portion being at an angle to said short straight side.

2. A tool for turning and beading a flue, comprising a shank portion, a central portion integral with said shank portion, a working end integral with said central portion opposite said shank portion, said working portion having opposite converging beveled sides and opposite parallel straight sides at right angles to said beveled sides, one of said straight sides being shorter than the opposite straight side, said working portion having a flue-engaging end with which said sides connect, said flue-engaging end having a semicircular flue receiving recess, and an outwardly curved flue entering portion connecting with said semicircular recess and the long straight side of the working end, said short straight edge being at a great angle to the said short side.

3. A flue turning and beading tool having a flue engaging end of rectangular form in cross section, the end having a nick thereacross the narrow way to receive a small portion of the end of a flue, said nick being adapted to receive therein a portion of the end of a flue of any diameter for swaging or turning and beading the end of the flue, the tool being adapted to be moved around the edge of the flue during the operation of turning and beading the end thereof, and a central portion integral with the end of the tool and having a shank projecting therefrom for

connection with suitable power for driving
the end of the tool against the edge of the
flue, the power being concentrated and ap-
plied to a small portion of the end of the flue
5 resting within the nick in the end of the
tool.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

JOHN FRANCIS GERO.

Witnesses:

FRANK H. TAYLOR,
JOHN EATON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."