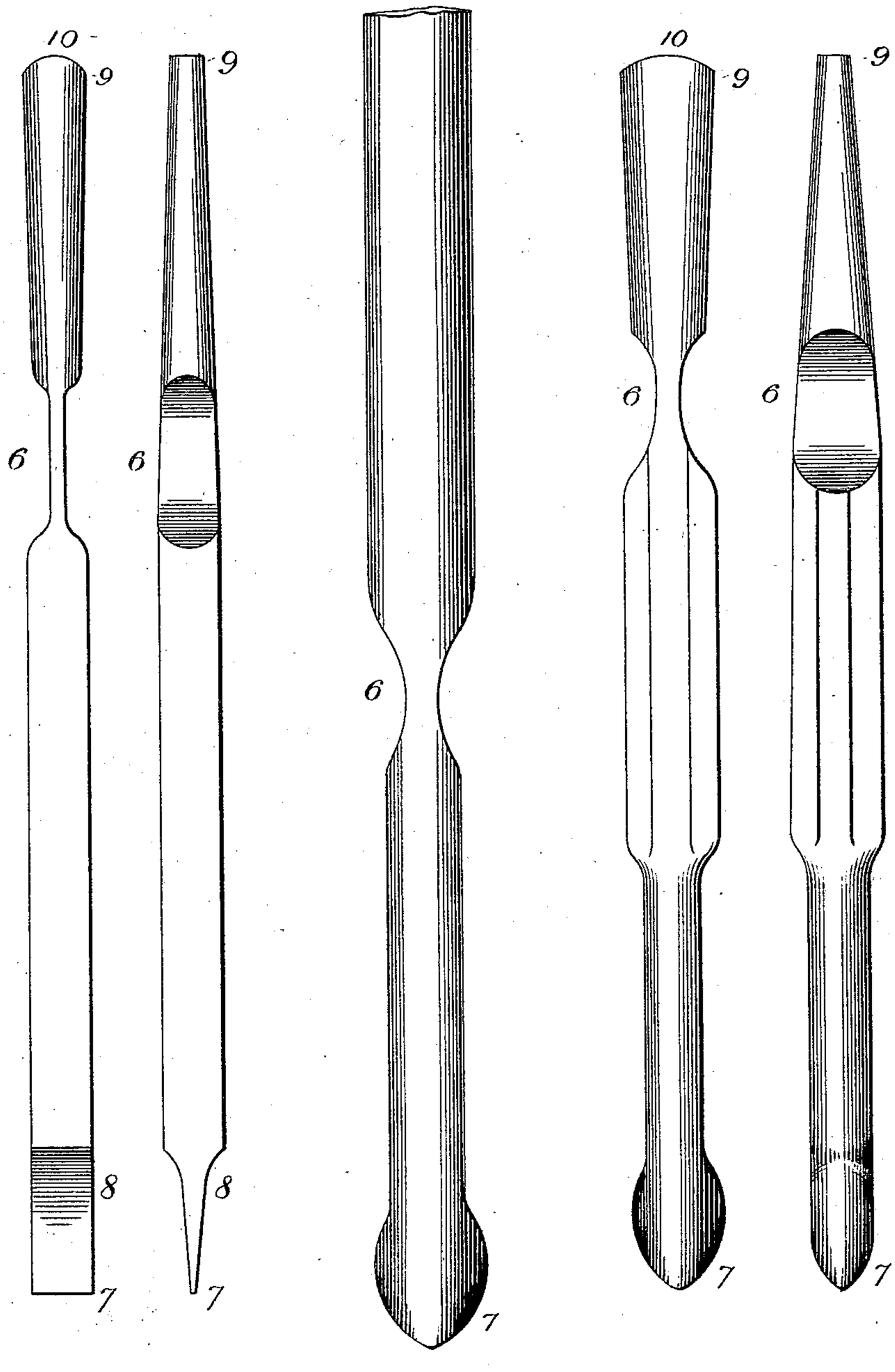
(No Model.)

W. C. YOUNG.

CUTTING TOOL FOR GRANITE, &c.

No. 523,095. Patented July 17, 1894.

Fig. 1. *Fig. 2.* *Fig. 3.* *Fig. 4.* *Fig. 5.*



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UNITED STATES PATENT OFFICE.

WILLIAM C. YOUNG, OF FORT WAYNE, INDIANA.

CUTTING-TOOL FOR GRANITE, &c.

SPECIFICATION forming part of Letters Patent No. 523,095, dated July 17, 1894.

Application filed February 23, 1894. Serial No. 501,197. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. YOUNG, a citizen of the United States, residing at the city of Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Cutting-Tools for Granite, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in cutting tools, such as chisels, drills, &c., used to cut letters, designs, &c., on hard substances, such as granite, quartz and the like. And the objects of my invention are, to provide a tool in which the concussion of the blow shall be so relieved, adjusted and distributed that the cutting edge of the tool may be made very hard and yet not be broken easily by such use, and so that the crystals of the materials shall be cut instead of being smashed or broken out. And the invention consists in the construction and novel combination of parts hereinafter described, pointed out in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a hammer chisel in perspective with the broad part of the cutting edge to the front. Fig. 2 is a view of the same chisel with the narrow part of the cutting edge to the front. Fig. 3 is a churn drill broken off at the top with the broad part of the cutting edge to the front. Fig. 4 is a hammer drill with the broad part of the cutting edge to the front; and Fig. 5 is another view of the same drill with the narrow part of the cutting edge to the front.

Similar numerals of reference refer to similar parts throughout the several views.

The essential part of the invention consists in forming a spring plate 6 in the body of the tool to receive the concussion and to act in distributing the force of the blow by means of reducing the metal of the tool to a flat spring, above the blade 7 of the tool, preferably about two-thirds the entire length of the tool. Also in forming the flat tapered blade 8 of the tool at right angles to the longest sides of the flat spring 6, so that in tools with flat tapered blades the action of the spring is always sidewise or in the line of the cutting edge.

In the old class of tools, it is very difficult to preserve the cutting edge when tempered very hard, because the tools are always held at more or less of an angle to the substance operated upon, and the force of the blow drives the cutting edge of the blade against the side of the cut, thereby tending to pry out a portion of the materials instead of cutting them. Such action breaks the cutting edge of the tool after a few strokes. Such prying action also creates a friction across the cutting edge of the tool, which dulls it rapidly. And it also frequently smashes the crystals of the materials instead of cutting them, and will sometimes shatter them instead of cutting them; all of which causes bad work, and is not compatible with the finish required. My spring plate 6 relieves the concussion, and springs the lower or cutting edge 7, of the tool sidewise in line of the cutting edge, not across it, and thereby obviates these difficulties perfectly, so that a very hard cutting edge can be used without breaking. In fact with a chisel so formed, I have cut clear, sharp lines on glass, without destroying the cutting edge of the tool.

The spring plate 6 is also adapted to relieve the concussion and preserve a cutting tool known among stone-cutters as a point, and I use it for such tools as well as for those having blades.

I also aid the better operation of a blade tool, especially in hammer chisels, by providing a short taper 8 for the blade of the cutting edge, preferably about one and one-eighth inches in length, instead of the longer taper (having more or less of spring) now in use, so that all of the spring which relieves the concussion is substantially confined to the plate spring 6 formed as aforesaid. This construction does away with the spring formed by the usual long taper of the blade, whereby the cutting edge had a tendency to spring outward from the line of the cut, which was one of the causes of frequently breaking the cutting edge, and of dulling it. I also taper or flatten the striking end 9 of the tool so as to form a narrower surface having its longest sides parallel with the cutting edge, for the

purpose of confining the blow of the hammer to the lines of the taper of the blade. I also curve the striking surface 10 of such flattened end for the purpose of controlling the movement of the cutting blade. When the blade is to be moved either to the right or left, it is so controlled by striking the opposite side of this curved surface, which tends to sheer the blade. When the blade is not to be moved either way, the blow is applied on the center of such curved surface, thereby giving a direct action to the blade in line of the center of the tool.

For a hammer chisel of the size shown in the drawings, Fig. 1, all of these improvements are preferably combined in one tool.

In a churn drill, Fig. 3, I use only the improved spring plate, the concussion being produced in such drills by the weight of the handle above the spring plate.

In hammer drills, Figs. 4 and 5, I use preferably the spring plate and the flattened striking end described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cutting tool of the class described, a flat spring formed in the body of the tool, preferably about two-thirds its length above the cutting edge of the blade, in combination with a flat tapered blade formed at right angles to the longest sides of the spring: and a striking end flattened to form a narrower surface with its longest sides parallel with the cutting edge, and with its upper or striking surface curved, substantially as described.

2. In a cutting tool of the class described, a flat spring formed in the body of the tool above the taper of the blade, in combination with a flat tapered blade formed at right angles to the longest sides of the flat spring.

3. In a cutting tool of the class described, a spring formed in the body of the tool above the blade by reducing the metal to a flat spring.

In testimony whereof I hereunto subscribe my name, in the presence of two witnesses, this 31st day of January, 1894.

WILLIAM C. YOUNG.

Witnesses:
H. C. HARTMAN,
H. C. COOLICAN.