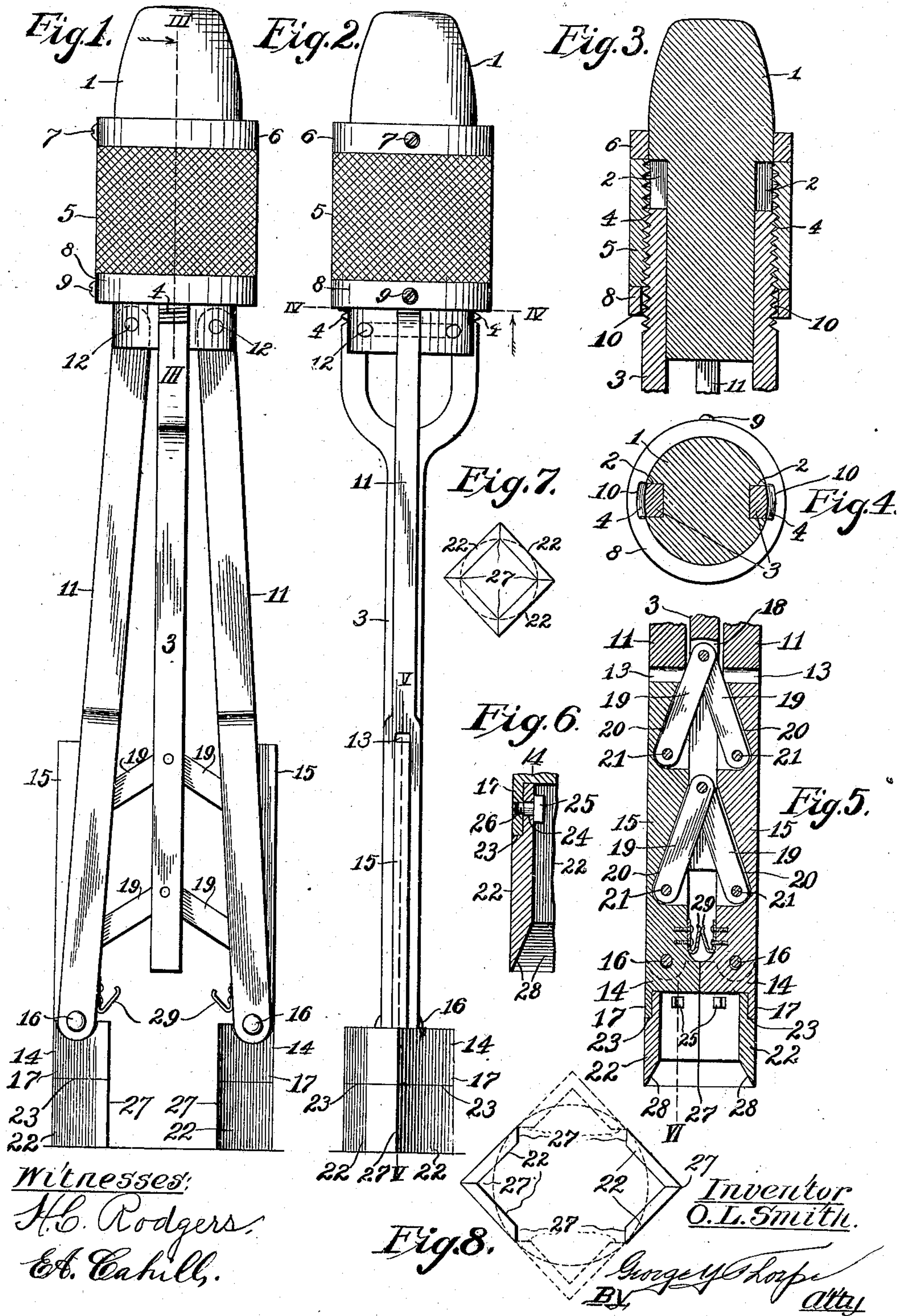


O. L. SMITH.  
MORTISING TOOL OR CHISEL.  
APPLICATION FILED SEPT. 23, 1908.

924,199.

Patented June 8, 1909.





# UNITED STATES PATENT OFFICE.

OLIVER L. SMITH, OF KANSAS CITY, MISSOURI.

## MORTISING TOOL OR CHISEL.

No. 924,199.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed September 23, 1908. Serial No. 454,462.

*To all whom it may concern:*

Be it known that I, OLIVER L. SMITH, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Mortising Tools or Chisels, of which the following is a specification.

This invention relates to mortising tools or chisels and more especially to a device of this character whereby square holes may be made in wood for the reception of the heads of bolts, nuts or other devices which it is intended shall not turn, or for the reception of rectangular projections of other objects, and my object is to produce a tool or chisel of this character by which such square holes or mortises may be easily and quickly made.

A further object is to produce a tool of this character capable of adjustment to produce square holes or mortises of varying sizes.

A still further object is to produce a tool of this character having adjustable cutting points or blades so that a broken point of blade can be cheaply and easily replaced.

With these general objects in view the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which:—

Figure 1 is a side elevation of the tool opened to its maximum extent. Fig. 2 is an edge view of the tool. Fig. 3 is a central vertical section on the line III—III of Fig. 1. Fig. 4 is a cross section on the line IV—IV of Fig. 2. Fig. 5 is a section on the line V—V of Fig. 2 with the tool fully contracted. Fig. 6 is an enlarged vertical section on the dotted line VI of Fig. 5. Fig. 7 is an inverted plan view of the blades in closed position and in tangential relation to a circular hole shown by dotted lines. Fig. 8 is an inverted plan view of the blades fully opened and also indicates in dotted lines a circular hole of the greatest size which can be transformed into a square hole by the tool, the blades being also shown by dotted lines in a different position with respect to said hole.

In the said drawings 1 indicates the head of the tool, the same being of cylindrical form by preference and provided at diametrically opposite points with longitudinal grooves 2 receiving the forked upper end of a

central bar 3. The tines of the fork are provided at their outer sides with threads 4 which stand beyond the plane of the periphery of the head, and loosely surrounding the latter is an internally-threaded collar 5, engaging the threads 4 of the fork tines. Above said collar the head is provided with a collar 6 secured rigidly in place by a set screw 7 and preventing upward movement of the threaded collar.

A collar 8 is also secured on the head at the lower end of the threaded collar, preferably by a screw 9, and said collar 8 is provided at diametrically opposite points with grooves 10 to accommodate the tines of the fork in the reciprocatory movement imparted to the same by the threaded collar when rotated.

At diametrically opposite points and at right angles to the plane of the tines of the fork, the upper ends of a pair of bars 11 are pivoted at 12 to the lower end of the head, and the lower ends of said bars 11 are bifurcated at 13 to receive between them the upwardly projecting stems 15 of a pair of isosceles-triangle-shaped plates 14, pivot pins 16 extending through the lower ends of bars 11 and the stems 15 to connect said parts pivotally together, it being noticed that the bases of the triangles are juxtaposed so that when they are arranged squarely together, the two triangular plates form a perfect square, and each of said triangular plates is provided with a pair of depending flanges 17 which converge together at right angles to each other.

Vertically between the stems 15 the lower end of the bar 3 is provided with a longitudinal slot 18, said slot being in the same vertical plane as bifurcations 13 of bars 11, and pivotally connected at their inner ends to bar 3 and fitting in slot 18 thereof, are two pairs of toggle links 19, the outer ends of said links fitting in recesses 20 in the inner edges of stems 15, to which stems they are pivotally secured by pins 21. By connecting the stems 15 with the interposed and parallel bar 3 through the medium of parallel toggle links of equal length, it is obvious that the parallelism existing between said bar 3 and stems 15 will be maintained although the distance between the former and the latter may be varied, the distance being increased by downward movement of bar 3 and diminished by opposite movement of said bar. It will therefore be seen that if the operator desires to cause the bases of the triangular plates to



come squarely together so as to form a perfect square as explained, he will turn the threaded collar and thereby move the bar 3 endwise toward the top of the head, the piv-  
 5 oted thrust-bars 11 swinging inward as the toggles are contracted to move said plates together. If it is desired to move said plates apart the operation of the threaded collar is reversed.

10 22 indicates blades rabbeted in their outer sides at 23 to snugly receive the depending flanges 17, and provided with holes 24 carrying screw-bolts 25 for engagement with registering holes 26 in said flanges, so that the  
 15 blades may be secured reliably to plates 14, it being noticed that the ends of the blades are beveled or mitered as at 27 so as to come squarely together, the blades being also by  
 20 preference of the ordinary wood-chisel type, that is to say beveled outwardly and downwardly as at 28 so that their cutting edges shall lie in the vertical plane of the outer sides of flanges 16.

Assuming that the tool is closed and that  
 25 the square formed by the two plates 14 is a half-inch wide and it is desired to produce a square mortise or hole of the same size, the operator by preference first bores a hole one-half inch in diameter. He then positions  
 30 the tool so that the four cutting edges of the blades shall extend tangentially of the hole which is shown in dotted lines, Fig. 7. He then taps the head of the tool with a mallet or hammer and produces a square hole, which  
 35 if not very deep, can be produced with one blow, the material in the four corners of the square opening made by the blades being forced radially inward by the beveled inner surfaces 28 of the latter, as will be readily  
 40 understood.

In the event that it is desired to produce a square hole which is double the width of the square made by the two triangular plates when fitted together, the operator turns the  
 45 threaded collar so as to move said plates and consequently the cutting blades apart their full distance—assuming that when thus adjusted, the parallel blades 22 will be twice as far apart as originally. When the tool is  
 50 thus adjusted it is arranged with its blades or chisels at diametrically opposite sides of the hole as shown in Fig. 8. The head of the tool is then struck as before explained to produce angular corners in the opening at diametrically opposite points. The tool is then removed from the hole and turned quarter-way around as indicated by dotted lines in the last-named figure, and is then struck as before and as a result a square hole is produced.

60 It will be understood, of course, that the tool is not only capable of making square holes of the same superficial area as the two plates 14 or a hole of four times such area, but can also be employed for making square holes of  
 65 any intermediate size, it being also under-

stood that the pivotal connections between the parts will be sufficiently loose to insure that the thrust imparted to the head by the stroke of the hammer or mallet shall be transmitted through the thrust-bars 11 onto the  
 70 plates 14 and thus avoid any undue strain or wear and tear on any of the pivot pins, the toggle links, bar 3 or the threaded collar.

For the purpose of positively insuring outward movement of the blade-carrying plates  
 75 and the turning of the threaded collar with a minimum of friction, each stem 15 is preferably provided at its lower end with a substantially V-shaped spring 29, which springs when the tool is closed press one against  
 80 the other and thus tend to move the plates 14 apart.

From the above description it will be apparent that I have produced a mortising tool or chisel embodying the features of advantage enumerated as desirable in the statement of the object of the invention and I wish it to be understood that I reserve the right to make such changes in the form, proportion, detail construction and arrangement  
 85 of the parts as shall not be a departure from the spirit and scope of the appended claims.

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

1. A mortising tool, comprising a head, a pair of opposite bars pivoted to the head, a pair of plates pivoted to the lower ends of said bars, a bar longitudinally adjustable on said head and arranged between the pivoted  
 95 bars, means for causing endwise movement of said adjustable bar to impart lateral movement to said plates, and cutting blades carried by and depending from said plates.

2. A mortising tool, comprising a head, a pair of opposite bars pivoted to the head, a pair of plates pivoted to the lower ends of said bars, a bar longitudinally adjustable on said head and arranged between the pivoted  
 100 bars, means for causing endwise movement of said adjustable bar to impart lateral movement to said plates, and cutting blades carried by and depending from said plates, the blades of each plate forming a right angle with their apices in the same vertical plane as the pivoted bars and the adjustable bar.

3. A mortising tool, comprising a head, a pair of opposite bars pivoted to the head, a pair of plates pivoted to the lower ends of said bars, a bar longitudinally adjustable on said head and arranged between the pivoted  
 105 bars, means for causing endwise movement of said adjustable bar to impart lateral movement to said plates, cutting blades carried by and depending from said plates, and yielding means for engagement when the blade-carrying plates are together and tending to push said plates apart.

4. A mortising tool, comprising a head, a pair of opposite bars pivoted at their upper  
 110



ends to said head, a pair of plates pivoted to the lower ends of said bars and provided with upwardly projecting stems, cutting blades secured to said plates, a bar longitudinally adjustable on the head and toggle links connecting said bar with said stem.

5 5. A mortising tool, comprising a head, a pair of opposite bars pivoted at their upper ends to said head, a pair of plates pivoted to the lower ends of said bars, cutting blades secured to said plates, a bar slidable on the head and arranged between the said pivoted bars, means rotatable on the head for imparting endwise movement to said slidable bar in either direction, and means whereby endwise movement of the slide bar shall impart opposite simultaneous lateral movement to said plates.

10 6. A tool of the character described, comprising a head provided at opposite sides with longitudinal grooves, a longitudinal bar having its upper end forked and the tines of the fork fitting slidably in said grooves and provided at their outer sides with screw

threads disposed outward of the head, a pair 25 of collars secured upon the head, one of them provided with longitudinal grooves to accommodate the threads of the fork, an internally threaded collar loosely surrounding the head and fitting between the first-named collars 30 and engaging the threads of the fork, a pair of opposite bars pivoted at their upper ends to the lower end of the head to swing at right angles to the plane of the tines of the fork, a pair of plates pivoted to the lower ends of 35 said pivoted bars, cutting blades secured to said plates, and means whereby endwise movement of the fork-equipped bar in one direction or the other shall cause said plates and said pivoted bars to swing toward or 40 from each other.

In testimony whereof I affix my signature, in the presence of two witnesses.

OLIVER L. SMITH.

Witnesses:

H. C. RODGERS,  
G. Y. THORPE.