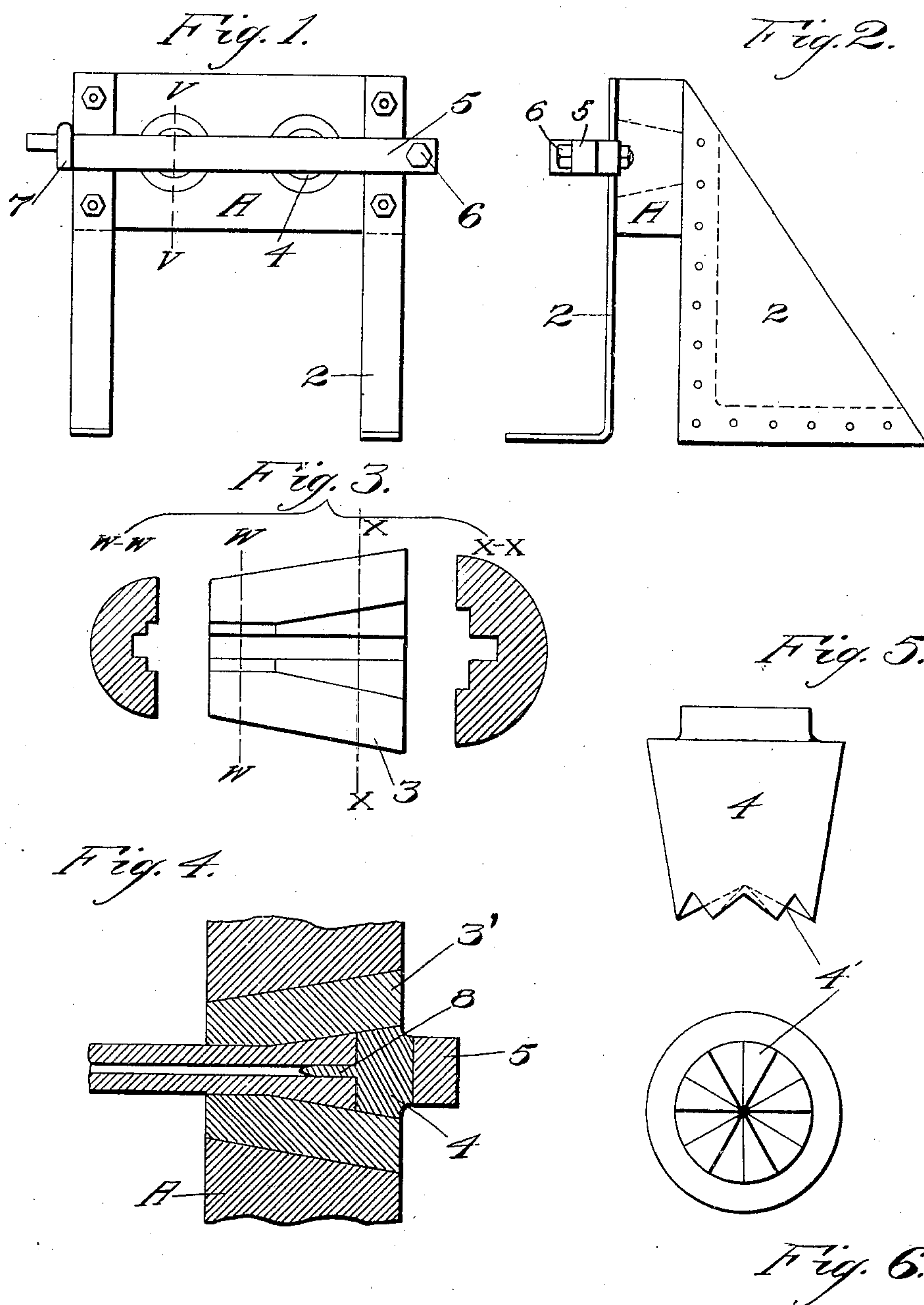


No. 808,886.

PATENTED JAN. 2, 1906.

J. T. THOMPSON.  
DRILL SHARPENER, SHAPER, AND GAGER.  
APPLICATION FILED MAY 26, 1905.



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# UNITED STATES PATENT OFFICE.

JAMES T. THOMPSON, OF TUOLUMNE, CALIFORNIA.

## DRILL SHARPENER, SHAPER, AND GAGER.

No. 808,886.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed May 26, 1905. Serial No. 262,355.

*To all whom it may concern:*

Be it known that I, JAMES T. THOMPSON, a citizen of the United States, residing at Tuolumne, in the county of Tuolumne and State of California, have invented new and useful Improvements in Drill Sharpeners, Shapers, and Gagers, of which the following is a specification.

My invention relates to machines for forming drill-bits of rock-drills.

The object of my invention is to provide a simple, cheap, practical machine for upsetting, sharpening, shaping, and gaging drill-bits in one operation and to protect the heated portion of the drill from oxidation and consequent flaking and waste. Usually it requires several different operations and several different machines or tools to do these things, and where the drill is more or less exposed to the air during such operations the drill tends not only to cool off rapidly, but to become oxidized on the surface and flake off.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front view of my apparatus. Fig. 2 is a side elevation of same. Fig. 3 is a plan view of a die-section with cross-sections of same on lines W W and X X. Fig. 4 is a section on line V V, Fig. 1. Fig. 5 is a plan view of a dolly. Fig. 6 is an end view of a dolly.

A represents a swage-block of any desired size and shape and mounted in suitable fashion, as on the frame 2. This block is of metal, usually quite heavy, and is so supported as to remain solid and immovable during the drill-sharpening operations. This swage-block has one or more horizontally-extending tapered sockets, each or any of which is intended to receive a sectional die, as 3. A die is preferably made in two parts, adapted to embrace a drill-rod, the interior of the die being flared and shaped in cross-section corresponding to the desired flare and cross-section of the finished drill-head.

4 is a tapered dolly conforming in shape to the flared die-recess and having its inner end provided with any desired form or number of matrices 4', depending on whether a rose bit, a cruciform bit, or any other shape of bit is wanted. The dolly is fitted stopple-fashion into the die and is held therein by suitable

means, as the bar 5, having one end hinged, as at 6, and the other adapted to be engaged in a suitable keeper 7 when the bar is dropped down into position behind a dolly or a number of dollies. The space included between the inner shaping end of a dolly and the flared walls of the die constitutes the matrix for the drill-head.

In operation a sectional die corresponding to the size and character of the drill to be sharpened is inserted into a recess in the swage-block. The drill-rod having its drilling end brought to a suitable temperature is then passed from the front of the machine through the die, a dolly of suitable design inserted into the flared end of the die, and the locking-bar closed down behind the dolly to hold the same in place and rigid against the blows which are delivered on the cold end of the drill-rod projecting out from the other side of the machine. A suitable concussive action is produced on the drill-rod to condense the heated end of the same within the matrix-chamber either by means of a steam or pneumatic hammer or by hand. The hammering on the end of the rod has the effect of upsetting the hot and consequently soft pliant end of the drill-rod until it completely fills the space inclosed by the dolly and the die. As the dolly is machined to fit in the die, this space is inclosed so as to exclude the air, thereby maintaining the temperature of the drill during the sharpening operation and protecting the heated end from oxidation and consequent flaking. Moreover, since the die and dolly can be made to inclose a matrix-chamber of precisely the right size and shape of the finished drill, the entire operation of upsetting or condensing, shaping, sharpening, and gaging can be done at one and the same time and by the same machine.

With cruciform drills the drill-shank is generally shaped correspondingly—that is, it is also in cross-section the shape of a cross. Consequently my die will be made to inclose a matrix-chamber corresponding thereto, as indicated in Fig. 3. For sharpening hollow drills I may employ the die 3', and I may provide a central tapered mandrel or spreader projection 8 on the dolly, as shown in Fig. 4, which spreader or mandrel is adapted to lie in axial alinement with the hollow drill-rod and to protect the hollow of the drill against being contracted or closed up during the condensing or shaping operations.

By using a socket or swage-block A ar-



ranged with the socket horizontal and flared in the manner shown it is a simple matter to put in place or take out the dies and the dolly even when the same are very hot.

5 The locking-bar operates to support the parts in position and takes the entire force of concussion. By having the dies removable in the swage-block the latter operates to conduct away excess heat from the dies, and so as  
10 to maintain the temper of the latter.

It is possible that various modifications in my invention may be made without departing from the principle thereof, and I do not wish to be understood as limiting myself to  
15 the specific construction as herein shown and described.

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

20 1. In a drill-sharpening apparatus, the combination of a swage-block having a tapered die-recess, a removable sectional die fitting said recess, said die inclosing a ta-

pered chamber corresponding to the drill-head to be produced, a tapered dolly fitting  
25 and closing an end of said chamber, and means for holding the dolly in position.

2. In a drill-sharpening apparatus, a suitably-supported swage-block having a horizontal tapered die-recess, a correspondingly-  
30 tapered sectional die fitting said recess, said die inclosing a space contracted at one end corresponding with the shape and size of a drill-shank and spreading out at the other  
35 end corresponding with the head of the finished drill, a tapered dolly fitting said die, and a locking-bar to hold said dolly in the die.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit-  
40 nesses.

JAMES T. THOMPSON.

Witnesses:

D. W. LYON,  
W. J. SYMONS.