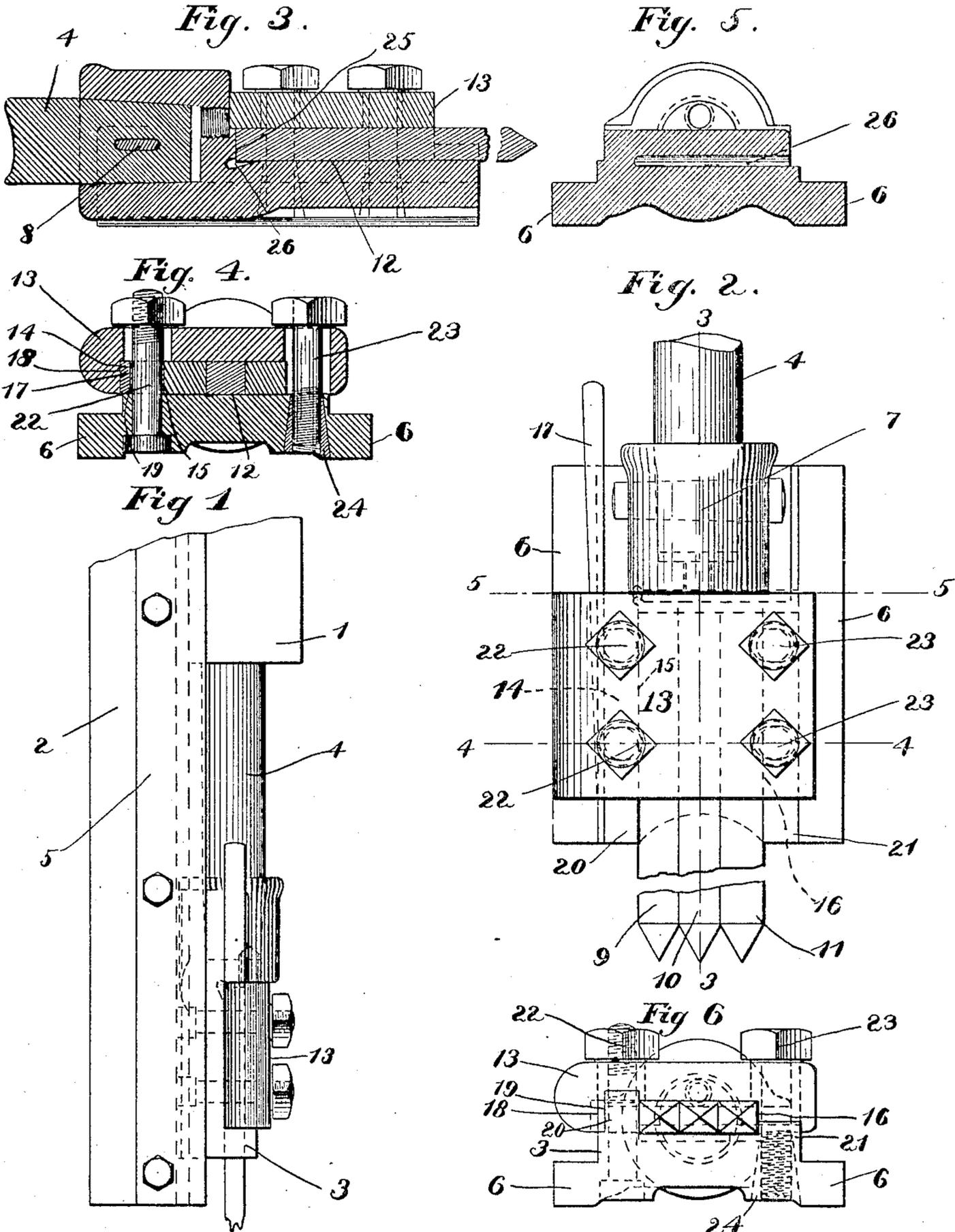


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H. H. MERCER.
TOOL HOLDER FOR STONEMWORKING MACHINES.

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UNITED STATES PATENT OFFICE.

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TOOL-HOLDER FOR STONE-WORKING MACHINES.

No. 871,944.

Specification of Letters Patent.

Patented Nov. 26, 1907.

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To all whom it may concern:

Be it known that I, HENRY H. MERCER, a citizen of the United States, residing at Claremont, in the county of Sullivan and State of New Hampshire, have invented an Improvement in Tool-Holders for Stone-Working Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to tool holders for stone working machines and is herein shown specifically as applied to the tool-clamping cross-head of a stone channeling machine, although not necessarily limited in its application to the particular type of apparatus.

My invention will be best understood by reference to the following description, when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a side elevation of a portion of a channeling machine embodying one form of my invention; Fig. 2 is a front elevation on an enlarged scale of the cross-head of the channeling machine shown in Fig. 1; Fig. 3 is a longitudinal section taken on the line 3—3 in Fig. 2; Fig. 4 is a transverse section taken on the line 4—4 in Fig. 2; Fig. 5 is a transverse section taken on the line 5—5 in Fig. 2, and Fig. 6 is an end view of the cross-head.

In the drawings I have shown my invention as applied to a well-known type of channeling machine of which I have deemed it necessary to show merely a portion of the operative parts comprising the engine cylinder 1, the main frame 2, the tool-carrying cross-head 3, the connecting piston-rod 4, and the side guides 5, in which latter are the engine and the cross-head vertically adjustable by the usual adjusting means (not shown).

The cross-head, as usual, is provided with the side webs 6, which engage with the cross-head guides and at its upper end with the socket portion 7 having a tapered aperture in which is seated the tapered end of the piston-rod 4, the same being held in position by the key 8.

As is usual in this class of devices the cross-head is so formed and constructed as to

hold securely clamped the ends of a series or gang of tools which are here shown as three in number 9, 10 and 11, but the number of these may obviously be increased or diminished as desired and may have any shape or construction wished. These tools which are of generally rectangular cross-section are arranged side by side upon the outer or tool-carrying face 12 of the cross-head and are there held securely clamped by the clamping cap 13. For this purpose the cross-head is formed with a longitudinal raised portion which presents a shoulder or face to the outer tool 9 and against this clamping face upon the cross-head the tools are pressed or crowded over by engagement with an inturned shoulder, 16, of the cap, engaging the other outer member 11 of the gang. The clamping cap is drawn laterally against the series of tools by a wedge 17, which is forced between the inturned and inclined shouldered portion 18 of the cap and the outer face 19 of the out-turned cross-head portion 14.

From the tool-carrying face of the cross-head near one of its lower corners projects an outturned lug 20 and near the opposite corner the lug 21 of lesser height, the said lugs engaging with the lower edge of the clamping cap and preventing downward movement of the latter. The tools are clamped in position by forcing the wedge downwardly and then clamping the cap to the cross-head by means of the two sets of clamping bolts 22, 23, the latter being provided with tapered nuts or threaded bushings 24 seated in tapered apertures in the under part of the cross-head. The clamping bolts pass through laterally elongated apertures in the cap to permit the necessary lateral adjustment of the latter.

At their upper or abutting ends the several members of the tool gang abut against a shoulder 25 upon the cross-head. In ordinary cross-head clamps with which I am familiar the end abutment upon the cross-head joins the outer tool-carrying face of the cross-head at right angles. Under these circumstances and when the hard head of the tool contacts directly with the relatively softer metal of the cross-head the continued pounding action of the tool end upon the abutment quickly upsets or peens over the metal of the

abutment, tending to force a portion of it into the corner between the abutting surface and the outer tool-carrying face. On account of the great force of the blow which is dealt
 5 by the tool of the ordinary channeling machine and the rapidity with which its blows are delivered, the continued upsetting of the metal into the confined space afforded at the corner of the abutment, very soon springs the
 10 body of the cross-head longitudinally, throwing it out of alinement. This obviously places undue resistance upon the engine, causing the reciprocating parts to bind and materially decreases the efficiency of the ma-
 15 chine. In the described embodiment of my invention I obviate this difficulty by undercutting or relieving the inner end of the abutting face at or adjacent its junction with the longitudinal tool-bearing face of the cross-
 20 head, so that the metal which would otherwise be forced into the corner is forced into the groove or recess which is cut under the abutment, thereby providing thereat means for receiving the upset metal of the abutment
 25 without injurious effect upon the alinement of the cross-head.

In the illustrated embodiment of my invention the abutting face 25 is undercut transversely by the inclined groove 26 as far
 30 as the longitudinal bearing shoulder 15 and for a sufficient distance to underlie the ends of the several tools.

During the action of the machine any tendency to upset the relatively soft metal of the
 35 abutment cannot bend the body of the cross-head or otherwise injuriously affect the same, since the upset metal is free to enter the relief groove 26.

While I have shown and described one
 40 form of my invention, it is to be understood that I am not limited to the details of construction or form or relative arrangement of parts shown, but that extensive deviations therefrom may be made without departing
 45 from the spirit of my invention.

Claim—

1. A stone channeling machine having a cross-head, guides in which the same is slid-
 50 able, a flat outer tool-receiving face on the cross-head, a raised longitudinal abutment against which the tool is adapted to be laterally pressed, a clamping cap having an inturned abutting shoulder to press the tool or
 55 tools against the cross-head abutment, a second inturned shoulder on the cap, a wedge between the said second shoulder and the cross-head abutment to draw the clamp against the tool or tools, clamping means for fixing the clamp in position, a cross abut-
 60 ment on the cross-head for the ends of the tools, there being a shallow groove formed in the abutment at the junction thereof with its base to receive metal upset from the abutment by the action of the tool or tools there-
 65 on, the shallowness of the groove and the

thickness of the part of the cross head having the said tool receiving face being such that a firm, non-springing support is afforded for the tool or tools

2. In a stone working machine, a reciprocating tool-carrying cross-head and suitable
 70 guides in which the same is slidably mounted, said cross-head presenting a face against which the side of the tool is clamped, a clamping cap, an adjacent right-angled abut-
 75 ment for the end of the tool, there being a shallow groove formed in the abutment at the junction thereof with its base to receive metal upset from the abutment by the ac-
 80 tion of the tool or tools thereon, the shallowness of the groove and the thickness of the part of the cross head having the said tool receiving face being such that a firm, non-springing support is afforded for the
 85 tool or tools.

3. In a stone working machine, a slidable, reciprocating, tool-carrying metallic cross-head presenting an abutment for the end of
 90 the tool, cross-head guides for the same there being a shallow groove formed in the abutment at the junction thereof with its base to receive metal upset from the abutment by the action of the tool or tools thereon, the shallowness of the groove and the thickness
 95 of the part of the cross head having the said tool receiving face being such that a firm, non-springing support is afforded for the tool or tools

4. In a channeling machine, a reciprocating tool-carrying metallic cross-head, a suit-
 100 able guide in which the same is slidably mounted, means for clamping the tool or tools to said cross-head, an end abutment for the tools, there being a shallow groove formed in the abutment at the junction
 105 thereof with its base to receive metal upset from the abutment by the action of the tool or tools thereon, the shallowness of the groove and the thickness of the part of the cross head having the said tool receiving
 110 face being such that a firm, non-springing support is afforded for the tool or tools.

5. In a stone working machine, a reciprocating tool carrying cross head and suitable
 115 guides in which the same is slidably mounted, said cross head presenting a face against which the side of the tool is clamped, and a clamping cap, there being a shallow groove formed in the abutment at the junction
 120 thereof with its base to receive metal upset from the abutment by the action of the tool thereon, said groove extending only partially across the abutment from side to side thereof, the shallowness of the groove, the defined extent thereof and the thickness of
 125 the part of the cross head having the tool receiving face being such that a firm, non-springing support is afforded for the tool.

6. In a stone working machine, a slidable reciprocating tool carrying metallic cross
 130

head presenting an abutment for the end of the tools and having an extended portion affording a face against which the side of the tools is clamped, and a clamping cap adapted to be superimposed upon the tools, the said extended portion being of greater thickness from its tool receiving face to the opposite face than the corresponding dimension of the tools placed thereon, there being a shallow groove formed in the abutment at the junction thereof with said extended portion, the shallowness of the groove and the thickness of the extended portion being such as to afford a firm, rigid and non-yielding support for the tools.

7. In a stone-working machine, a reciprocating tool-carrying cross-head 3, guides 5 in which the same is mounted for reciproca-

tion, said cross-head having a tool-carrying face 12 provided upon a rigid portion of said tool-carrying cross-head, a clamping cap 13 between which and the tool-carrying face a tool or tools may be clamped, said cross-head having a shoulder 25 against which the tool or tools may be received, the face of said shoulder 25 being provided with a shallow transverse groove 26 to receive metal upset from the abutment by the action of the tool or tools thereon.

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

HENRY H. MERCER.

Witnesses:

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