Sept. 8, 1936. A. H. WOODWARD 2,053,358

CUTTING TOOL

Filed March 20, 1936

Fig. 1.

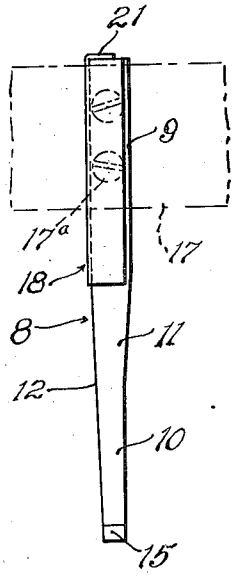


Fig. 2.

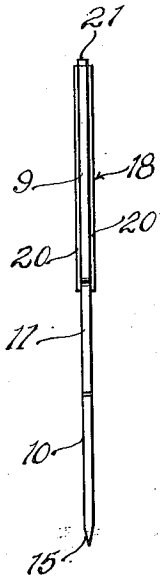


Fig. 6.

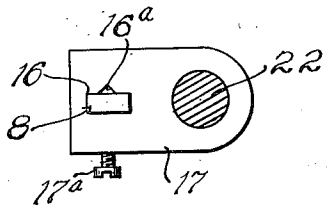


Fig. 7.

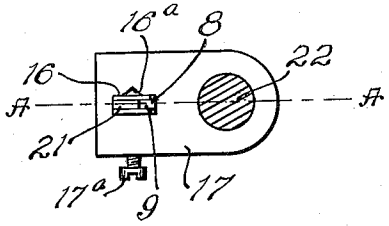


Fig. 3.

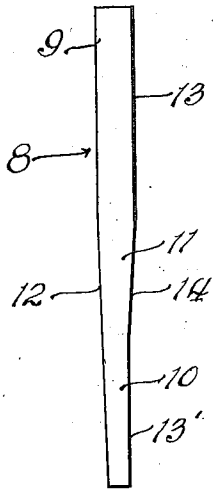


Fig. 4.

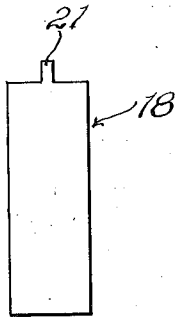
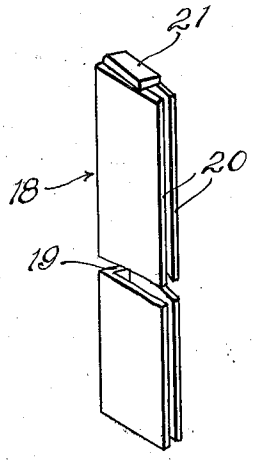


Fig. 5.



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UNITED STATES PATENT OFFICE

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CUTTING TOOL

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Application March 20, 1936, Serial No. 69,819

7 Claims. (Cl. 164—80)

The present invention relates to cutting tools, and has to do with a chisel for use in power operated machines for cutting sheet material of various sorts, such as cloth, wallboard, cardboard, felt, and the like.

In my Patent No. 1,949,509, March 6, 1934, for Cutting means, there is disclosed a cutting machine having a chisel clamped in a block swiveled upon a reciprocating plunger. During movement of the machine over the work the chisel trails the block and the plunger, the block swinging on the plunger in accordance with changes in direction of movement of the machine. The edge of the chisel toward the plunger is the leading edge, the opposite edge being the following edge.

Chisels for use in machines of the above type are commonly made from round steel wire or small rod, cut to length, drawn, flattened and ground, at one end, to a cutting edge. The other end portion of the chisel constitutes the shank, which is flattened at one side for insertion into clamping means of the block and to assure against turning of the chisel therein.

The clamping means comprises a slot of substantially rectangular cross-section in the block, one side of which slot is provided with a V-shaped groove for reception of the rounded portion of the chisel shank, and screws threaded into the block at the other side of the slot and bearing against the flattened surface of the shank. The shank is connected to the blade by an element preferably tapered to render available more metal for the blade.

In the accompanying drawing:

Figure 1 is an enlarged side view of a chisel and associated clip embodying the principles of the present invention;

Figure 2 is a front view of the chisel and clip of Figure 1;

Figure 3 is an enlarged side elevational view of the chisel blank as it appears after being stamped from the flat sheet stock;

Figure 4 is an enlarged plan view of the clip blank, as it appears after being stamped from the flat sheet stock;

Figure 5 is a perspective view of the clip, partly broken away, on an enlarged scale;

Figure 6 is a top plan view of the chisel block showing a chisel therein of a thickness equal in width to the slot in the block, the associated plunger for reciprocating the block being shown in section; and

Figure 7 is a view similar to Figure 6, showing a relatively thin chisel, and an associated clip, mounted in the block.

In producing a chisel in accordance with my invention a blank 8, in the desired form of the chisel, is stamped from flat steel stock. The width of this blank may be equal to, or less than, the length of the slot in the clamping means.

The blank comprises a shank portion 9, a blade portion 10, and an intermediate portion 11. The width of shank portion 9 is greater than that of either the intermediate portion 11 or the blade 10. The following edge 12 of the intermediate portion and the blade tapers slightly from the shank to the cutting edge of the blade, and the leading edges of both the shank and the blade are substantially vertical, as indicated at 13 and 13', respectively, while the leading edge of the intermediate portion 11 is inclined from the shank to the blade, as indicated at 14. After stamping, the lower end of the blade is properly ground to provide a suitable cutting edge 15.

As best shown in Figure 2, stamping of the chisel blank from flat steel stock of uniform thickness provides a chisel blank that is of uniform thickness throughout its length. The gauge of the metal from which the blank is stamped will be dependent upon the desired thickness of blade. The thinner the chisel blade, within limits, the more clear and sharply defined will be the cut in the material.

In Figure 6 I have shown a chisel block 17, provided with a slot 16 having at one side a V-shaped notch 16a for receiving the rounded shank of a chisel of the present type, previously referred to. Block 17 is swiveled at one end on a reciprocating plunger 22, for reciprocation therewith, and is provided with one or more screws 17a for clamping the shank of the chisel.

For less exacting work, the gauge of the metal and the width of shank 9 may be such that the latter corresponds in width and thickness to slot 16 of block 17, as shown in Figure 6. In such case, the chisel is of uniform thickness throughout its length, with the exception of the lower end thereof, which is suitably beveled to provide the cutting edge 15 normal to the lengthwise axis of the chisel, and the blade 10 is relatively thick and will produce a rough cut in the material, but is of adequate strength to withstand the severe punishment to which it is subjected in use.

For more finished work, the blade of the chisel should be thinner, and the gauge of the metal from which the chisel blank is stamped will correspond to the desired thickness of the blade. When the shank is thinner and narrower than slot 16 of blank 17, I provide means for compensating for these differences and for accurately

centering the chisel relative to the block, while also effectively bracing the chisel. This means comprises a clip 18 which engages about the shank of the chisel and is preferably stamped from flat sheet steel stock.

In producing the clip a rectangular blank is stamped from the flat sheet steel stock, this blank being provided centrally of one end with a tab 21, as shown in Figure 4. The blank is then bent to form a substantially U-shaped clip 18, comprising the bight portion 19 and the legs 20, the tab 21 being bent down perpendicularly to bight portion 19, as shown in Figure 5. Preferably, the legs of the clip converge, so that the clip grips tightly the shank of the chisel when applied thereto. The clip is so applied that bight portion 19 thereof abuts the following edge of the chisel shank.

As shown in Figure 7, the clip is stamped from metal of such gauge that the shank 9 of the chisel, with the clip applied thereto, fits accurately in slot 16 of block 17. In addition, since the clip has its legs disposed at opposite sides of the chisel shank, it positions the chisel centrally of the slot, with respect to the transverse axis thereof, and thereby assures that the vertical axis of the chisel will be disposed in the same vertical plane as the axis of the plunger 22, indicated by the dotted line A—A.

In practice, the vertical dimension or height of the chisel block is approximately ½ an inch, and the clip 18 has a length of approximately ¾ of an inch, though this may be varied considerably, within limits, but the length of the clip, preferably, should not be materially less than that stated. The shank of the chisel may project slightly above the top of the block, clip 18 extending along the chisel, below the block, for a considerable distance, approximately ¼ of an inch, more or less. This will be clear from Figure 1, where the chisel block 17 is indicated fragmentarily in dot and dash lines, for purposes of explanation. It will be seen that clip 18 extends along the chisel for a considerable distance below block 17, with the legs of the clip in contact with the faces of the chisel and bight element 19 in contact with the following edge of the chisel. Since the clip is securely clamped in block 17, it provides a rigid bracing element of channel cross-section which is highly efficient for bracing the chisel against vibration, bending or breakage.

I claim:

1. In combination, a cutting tool having a shank of uniform thickness, and a resilient U-shaped clip fitting about said shank at the sides and one edge thereof and extending a considerable distance along said shank, said clip being open for its full length along one side and the legs thereof being urged toward each other by the inherent resiliency of said clip and thereby held in gripping engagement about the shank of said tool.

2. In combination, a cutting tool having a shank of uniform thickness, and a U-shaped clip fitting about said shank at the sides and one edge thereof and extending a considerable distance along said shank, said clip being provided with a stop element limiting movement of said clip lengthwise of said shank in the positioning of the latter upon the former.

3. In combination, a chisel block having a slot therein, a chisel extending into said block, and a clip extending into said block embracing said chisel and centering the upper end thereof within said slot, said clip extending an appreciable distance below said block and reinforcing said chisel.

4. In combination, a chisel block having a slot therein, a chisel having a shank of a thickness and width less than the width and length of said slot and extending thereinto, and a U-shaped clip extending into said slot mounted upon said chisel shank and dimensioning the latter to fit said slot and center said chisel transversely of said slot, said clip extending an appreciable distance below said block and reinforcing said chisel.

5. In combination, a chisel block having a relatively wide slot therein, a chisel having a thickness less than the width of said slot, and a U-shaped clip mounted upon said chisel with its legs disposed at opposite sides thereof to thereby center said chisel transversely of said slot, said chisel and said clip extending into said slot and said clip having the proper dimensions to compensate for the difference between the thickness of said chisel and the width of said slot to thereby rigidly secure it within said slot, and said clip being of sufficient length to extend for an appreciable distance below said block and reinforce said chisel.

6. In combination, a plunger, a chisel block carried by said plunger and provided with a relatively wide slot, a chisel having a thickness less than the width of said slot and provided with a shank portion, a leading edge and a following edge, and a U-shaped clip mounted upon the shank portion of said chisel, said clip having its bight portion contacting the following edge of said chisel and its legs disposed at the opposite sides thereof to thereby center said chisel transversely of said slot, said clip having the proper dimensions to compensate for the difference between the thickness of said chisel and the width of said slot to thereby rigidly secure the shank portion of said chisel in said slot with the leading edge of said chisel facing said plunger, and said clip extending for the full length of said shank and projecting an appreciable distance below said block to reinforce said chisel.

7. In combination, a plunger, a chisel block carried by said plunger and swiveled for turning movement about the axis thereof, said block having a tool receiving slot eccentric to said plunger, a chisel having a shank portion of less cross-section than said slot and a leading edge and a following edge, and a clip mounted upon the shank portion of said chisel and fitting therewith into said slot, the leading edge of said chisel facing said plunger and said clip being dimensioned to compensate for the smaller dimensions of said shank relative to said slot to thereby rigidly secure the shank portion of said chisel in said slot, said clip projecting an appreciable distance below said block and fitting about said chisel and contacting the following edge thereof to reenforce said chisel.

ARTHUR H. WOODWARD.