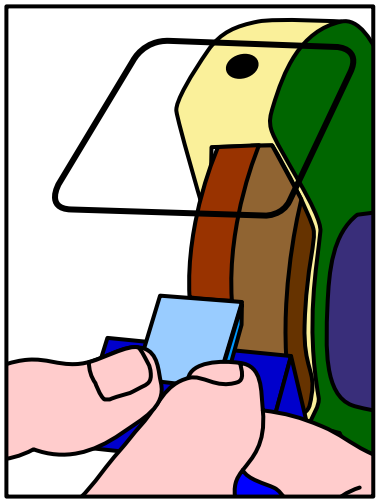
WERCSolutions
Problem - Cause - Solution - Innovation

Category: Diemaking Problem Title: Grinding Small Knives

PROBLEM



One of the challenges for the professional diemaker is grinding small rules to make a joint, when using the standard bench grinder. ***See right***. This poses two different but equally important issues. The first is pain! Not only is it difficult to hold a small rule and grind the metal away in a controlled fashion, the rapid increase in heat in the short lengths of blade, reminds us that our fingers are very sensitive to being barbecued!

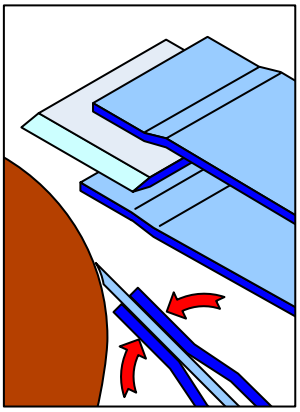
The second problem is clearly precision and accuracy. It is very difficult to control the angle or the amount of meat ground away, or the speed of grinding, when the rule is so small it is difficult to grasp and hold securely. Obviously we need a simple jig, which can hold and position the rule against the grindstone face, with safety and with consistency!

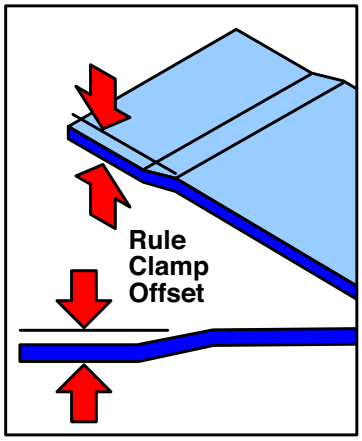
CAUSE

The cause is obviously the wide diversity of designs and layout used in steel rule diemaking and diecutting, which necessitate creating a seamless cutting edge, sometimes integrating and joining very small pieces of cutting knife. These small but important parts of the finished die, are both an opportunity to demonstrate the great skill of the diemaker, and the potential for an Achilles Heel undermining the diecutting process!

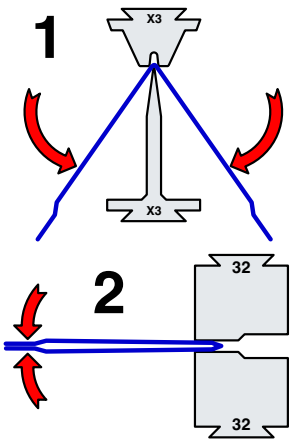
SOLUTION

The solution is to create a number of jigs and fixtures, designed to simplify and improve the task of grinding small knives. One of the more useful is the ***Sliding Blade Clamp***. This is designed to clamp small rules to a holder, which will enable great flexibility in grinding. ***See right***. The great thing about this tool is it is made using steel rule and standard diemaking equipment, and it is relatively simple to fabricate.





The first step requires bending an offset in the ends of standard creasing rule using a Helmold 32 male and female arbor, to form the jaws of the holder. ***See left***. (You will need to experiment to get the length of the rule, however, the length of the finished clamp is not critical, of course, as long as it is not too short!)



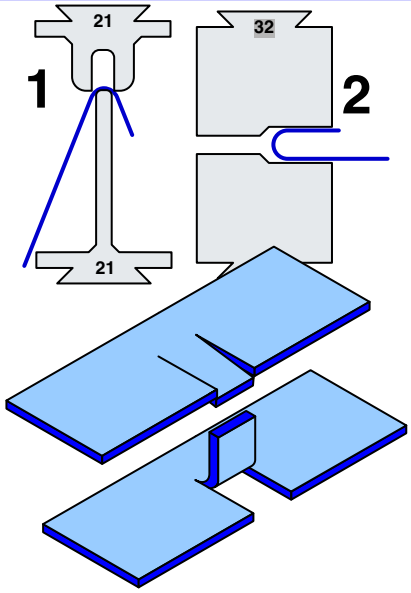
The rule holder is now bent as far round as possible using a Helmold X3 or similar arbor, and then close up using a Helmold 32 male and female arbor set. ***See right***. The choice of arbors is not that critical, other than as you will see from the addition of the rule clamp, the sliding clamp dimensions will have to be adjusted for the overall thickness of the bent rule holder.

The next step requires fabricating the sliding clamp.

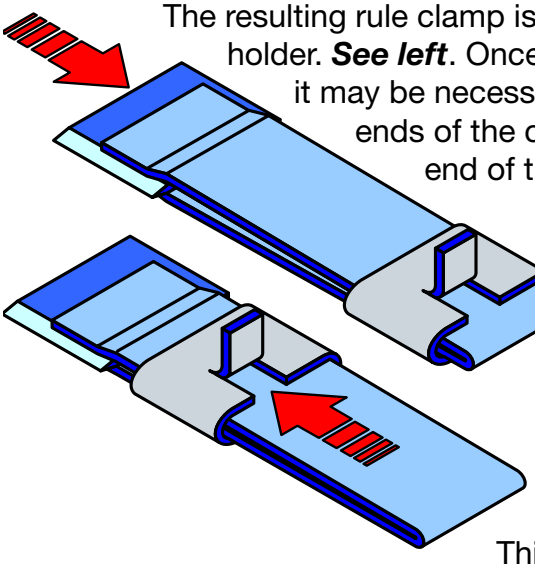
Wagner Education & Resource Center

SOLUTION

The ***Rule Clamp***, which must fit and slide over the ***Rule Holder*** is also fabricated from a length of standard creasing rule. The first step is to cut a partial bridge into the rule using a 1/4" or a 3/8 inch bridger. ***See right***. The resulting tab of steel is bent-up to a right angle, using a pair of pliers.



This is followed by bending the rule as far round as possible, using a Helmold 21 male and female arbor, and then the shape is closed using the Helmold 32 male and female arbor.



The resulting rule clamp is them slid over the bent rule holder. ***See left***. Once the clamp is slid onto the holder it may be necessary to slightly squeeze the bent ends of the clamp to prevent it slipping of the end of the rule holder.

The short length of rule to be ground is inserted between the offset jaws of the rule holder, and the clamp is slid along the holder to squeeze the upper and lower jaws together, firmly clamping the short length of blade. Because of the shape of the rule holder, and the offset jaws combined with the insertion of the rule, sliding the clamp along the rule holder locks everything together.

This simple jig is highly effective as it converts a short length of knife into a long length of knife to greatly simplify grinding. The rule is loosened and removed by using the thumb to push the rule clamp back toward the end of the holder, thereby removing the clamping pressure.

INNOVATION

One method of minimizing some of the pain of grinding small pieces of knife is to grind the knife first and then cut it or miter it from the long length of blade. This is only effective if the knife has to be ground on one edge, however, even when it has to be ground at both ends, it reduces the potential hazard by 50%.

My other recommendation, which experience has taught me, is to give the job to someone else!

nsai ISO 9001: 2000 QUALITY

Wagner Die Supply®
Diemaking & Diecutting Source & Resource

Members of: TAPPI PPA IADD GFA

West
2041 Elm Court • Ontario, CA 91761
Toll-Free:
(800) 423-4478 • Fax: (866) 786-2437

Southwest
2532 Converse Street • Dallas, TX 75207
Toll-Free:
(800) 262-4695 • Fax: (800) 446-6651

Midwest
960 Industrial Drive • Elmhurst, IL 60126
Toll-Free:
(800) 334-7914 • Fax: (800) 554-9124

Contact us at: WERC@wagnerdiesupply.com