

New Jersey Blacksmiths Newsletter

Tools: Basic forging tools only.

Material: Mild steel 1/4 inch by 1 inch and about 24 inches long (or as convenient to hold).

Exercise One- Step One

At a full yellow heat, lay one inch of the bar flat on the anvil face as in figure 5. Use a part of the front edge of the anvil that has a rounded corner when you do this. Imagine placing a square of the material on the anvil surface. Get used to making shape judgments by eye.



Fig. 5. One inch of the bar on the anvil face.

Hold the bar held horizontally and perpendicular to the front edge of the anvil. Reference figure 6.

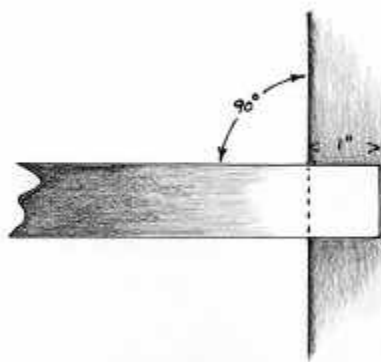


Fig. 6. Bar placed horizontally and perpendicular to the anvil edge.

Standing with your shoulders roughly perpendicular to the front edge of the anvil (see figure 7), strike with the peen in the middle of the square of material on the anvil face.

Hit with the peen parallel to the anvil



Fig. 7. Stand with shoulder of hammer hand facing the anvil.

surface but with about 75% to 80% of the peen length over the anvil face and the remainder off the face. This is a partial peen blow. (Figure 8.)

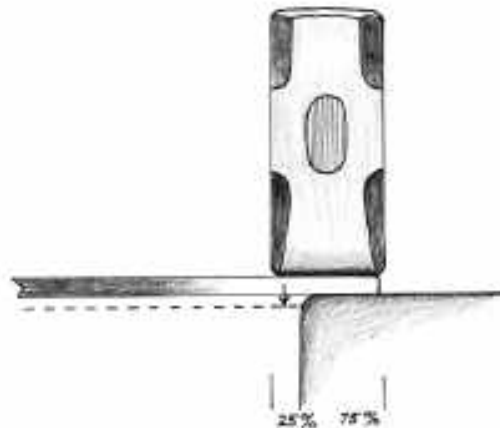


Fig. 8. Peen hits an overlapping blow—mostly on the anvil, but partially off.

Keep your bar-holding hand relaxed. Separate the action of the hand swinging the hammer from the other holding the work.

Having hit one blow in the middle of the bar, strike there repeatedly until a troughlike thin area develops, maybe 1/16 inch thick or less. When peening for width, always work the middle of the bar first, as this is the easiest

New Jersey Blacksmiths Newsletter

time to spread that center section. At the time of impact of the peen with the workpiece, the hammer handle should be horizontal. This helps insure that the blow is not inadvertently pulling or pushing the material unevenly. Figure 9 illustrates the result of a blow in which the peen hits at an angle. The spread you

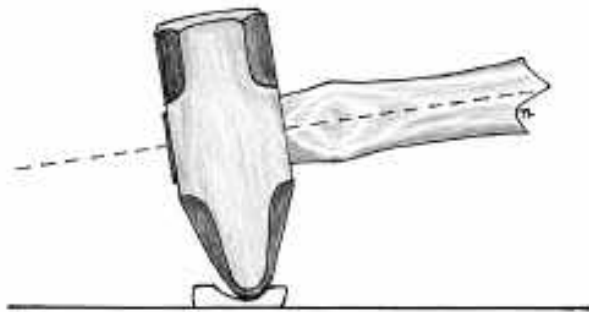


Fig. 9. Metal driven more in one direction by angled blow.

witness should be even and the shape you create symmetrical.

The end of the bar should look like figure 10 on the top side and like figure 11 underneath. Note that the rounded corner of the anvil will have begun a defined transition on the bottom of the workpiece.

Also note that all peen marks are parallel to each other and parallel to the length of the bar.

Step Two

Work each half of the peened section sequentially.

Forge the far half first as most people find peening away from themselves more awkward than peening toward themselves. It is always a good rule to do the hard or more awkward tasks first. Figure 12 illustrates the sequence of work: middle first, then the half farthest from you, finally the half nearest you.

Heat the bar on edge with the thick part you intend to work placed down in the fire and



Fig. 10. Top of the bar showing peened middle trough.



Fig. 11. Bottom of bar showing transition made by

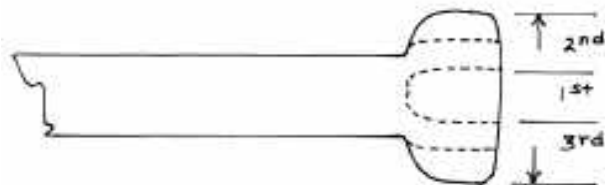


Fig. 12. Work the middle, then the side furthest from you, then the side nearest you.

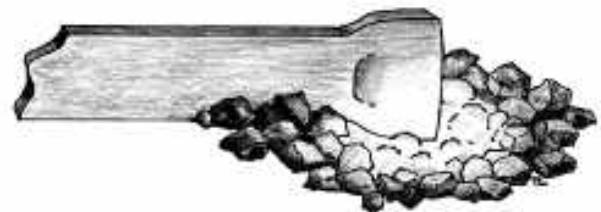


Fig. 13. Half to be worked placed edge down in the fire.

the part awaiting shaping uppermost. See figure 13. You should be able to get a full yellow heat on the edge without endangering either the thinned middle section or the thick opposite edge.

New Jersey Blacksmiths Newsletter

At a full yellow heat come back to the anvil as in Step One. Feel the slight shoulder you started rest against the rounded corner of the anvil.

Now hit just to the far edge of the central trough. The harder you hit and the higher the heat, the more smoothly the bar will move in front of your hammer blows. You want each hammer blow to be placed parallel to the one before and just slightly further into the thick bar. Keeping the hammer blows parallel to each other maximizes the sideways spread and (with practice) increases control of the final shape.

Try for a consistent pattern of parallel peen marks and a consistent average thickness in the bar. It will take time to develop the confidence and hammer control necessary to do this well, but practice will make it second nature.

Note that near the edge of the bar, as the path of resistance is lessened the metal moves more dramatically. It is, therefore, easy to get the edges much thinner than the middle. A consistent thickness is the goal.

At the end of this second heat the end of the bar should look something like figure 14.



Fig. 14. Top view of the bar with one half spread.

Step Three

The bar goes back in the fire but this time with the opposite, still-thick side down and the thinned edge uppermost. Once more you

should be able to get a good yellow heat on the thick section without endangering the already thinned areas. See figure 15.

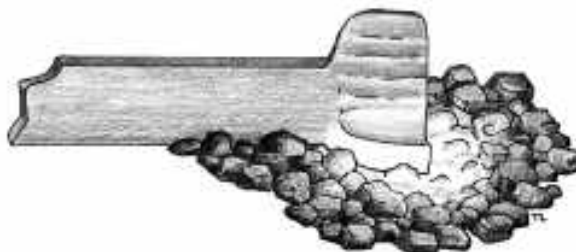


Fig. 15. Bar heating on edge with thinned area uppermost and portion to be worked down

Proceed just as in Step Two, but instead of working your peening blows away from you, bring the hammer blows slowly toward you.

Hit hard and with confidence. If the bar is hot and you hit hard the shape will bloom before your eyes. It is actually better to hit hard and sacrifice (initially) some accuracy than to hit timidly. Your result should resemble figure 16. This is an exaggerated shape designed to



Fig. 16. Finished peening.

show the potential of peen work. Observe these points:

- (1) the peen marks are parallel to each other
- (2) the peen marks are aligned along the length of the bar
- (3) the peen marks are even and the bar a consistent average thickness
- (4) the shape is symmetrical

New Jersey Blacksmiths Newsletter

(5) on the opposite side of the bar there is a clean and definite shoulder.

You started with a 1 inch by 1 inch square of material on the anvil face that was 1/4 inch thick. The bar grew a little in length, but you ended with a wide oblong form that was much thinner. The mass of material was redistributed mostly to the sides, perpendicular to the run of the bar.

As an experiment you may want to try the same exercise but hitting only with the flat face of the hammer. You will end with a very different form, perhaps like figure 17.



Fig. 17. Flattened bar using the face of the hammer

Step Four

As a final step, take an overall light orange heat on the thinned part of the bar and come back to the anvil. Place the bar as before,



Fig. 18. The smoothed shape.

feeling for the shoulder underneath against the anvil corner. Using the face of the hammer, smooth the peened part the bar, allowing the anvil face to planish the opposite side to a near

burnished finish. See figure 18.

Watch the rate at which the bar cools. Thicker areas will hold heat longer and show where more forging is needed. Areas that cool quickly are thin and you should stay away from these.

To test for how even you have forged the end of the bar, cool the bar and then use your fingers as a gauge to test for thicks and thins. Commonly, the middle is thick and the edges thin. Reheat the bar—being thin, this will be fast— and address any unevenness you find. If you have left the center heavy, it will thin with reluctance.

Exercise Two

Step One

The shape you achieve when youpeen a bar in width is a thinner and sideways stretched version of the shape you started with. Exercise One started with a thick square and ended with a thin, oblong and roughly rectangular form. Starting with a different initial shape we can create different, thinned expressions of it. These initial shapes are called “set ups.” Exercise Two introduces a different set up.

At a yellow heat, forge the end of your bar on edge to an even taper. Work at a high heat



Figs. 19 & 20. A triangle-shaped set up.

New Jersey Blacksmiths Newsletter

and hit hard to avoid or minimize the chance of a cold shut on the very tip.

Keep the taper short and retain the original 1/4-inch thickness of the bar. Figures 19 and 20 show what you are after. This triangular shape on the bar end is the set up for a different peened shape.

Step Two

Start peening as in Exercise One. At a yellow heat, place the base of the triangle that you created flat on the rounded edge of the anvil with the entire taper lying on the anvil surface.



Fig. 21. Place just the set-up flat on the anvil face.

See figure 21. The bar must be horizontal and perpendicular to the anvil front. Stand as you did in the first exercise: roughly perpendicular to the anvil with the shoulder of your hammer arm facing the anvil.

Begin peening in the middle as you did



Fig. 22. Central trough on triangle set-up.

before until you have a central trough like figure 22. Hit flat with the peen parallel to the anvil face and the hammer handle horizontal at the time of impact. Keep the length of the peen aligned with the length of the bar.

Step Three

Put what will be the far half of the shape down in the fire, but be careful of the tip as it is vulnerable to burning. At a yellow heat, peen the material working away from you. Keep an even average thickness and symmetrical shape. Concentrate on keeping the peening blows parallel to each other and the hammer handle horizontal at the time of impact.

Step Four

Reheat with the bar on edge in the fire. The thick part of the shape should be down while heating and the thinned area uppermost. This is



Fig. 23. Final peened triangle set-up.

just as you did in Exercise One.

From a yellow heat peen the metal toward you in this step. Figure 23 shows the final shape. See the previous exercise for points to watch.

Step Five

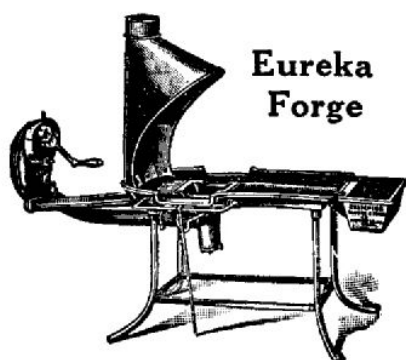
Take an overall light orange heat to smooth the



Fig. 24. The smoothed shape.

New Jersey Blacksmiths Newsletter

shape with the face of your hammer. The results should look something like figure 24. To check for even thickness, cool the bar and use your fingers as a thickness gauge. If you find heavy areas, the thin shape will reheat quickly in the fire for additional attention. Troubleshooting One of the biggest issues to overcome is inaccurate hammer blows. A misplaced blow with the broad face of the hammer is often of little consequence and easily obscured or corrected. Hammers Blow



Northeast Blacksmiths Association

Northeast Blacksmiths holds its meets twice a year at the Ashokan Field Campus in New York State.

The Ashokan campus is located in Olivebridge, N.Y., several miles west of Kingston, N.Y. The meets are held around the first weekend in May and in the first weekend in October every year. The main demonstration is in the blacksmith shop and there is a "Hands On" workshop for beginners. A different demonstrator is brought in for each meet. Food and bunkhouse style lodging are provided as part of the cost of the weekend long meet.

Contact : Tim Neu to register for hammer-ins or subscribe to the newsletter;

Tim Neu,
511 Beaverkill Rd.,
Olivebridge, N.Y. 12461

For more information check the web site;
www.northeastblacksmiths.org

NAME _____

ADDRESS _____

CITY _____

STATE/PRO V. _____

COUN-
TRY _____

ZIP (+4)/POSTAL
CODE _____

PHONE #

EMAIL



___ Regular Member	\$55.00
___ Senior Citizen (Age 65+)	\$50.00
___ Full Time Student	\$45.00
___ Foreign Member	\$65.00
___ Public Library-USA	\$45.00
___ Contributory	\$150.00

MASTERCARD OR VISA ACCOUNT NUMBER

**Order Online, Mail, Call or Fax your
 Check or Credit Card Payment to:
 ABANA Central Office**

New Jersey Blacksmith Association
90 William Avenue
Staten Island, New York, 10308
Attn: Larry Brown, Editor

=====

NJBA Membership Renewal and Ballot

Mail completed renewal form and ballot, along with check for dues, to:
NJBA Election, P.O. Box 224, Farmingdale, NJ 07727-9998

Name _____

Address _____

City, State, Zip _____

Phone Numbers: Day _____

Evening _____ Cell _____

Email address _____

Check here if you would like to help NJBA demonstrate
blacksmithing to the public.

My check is enclosed for \$20 (regular membership dues), or
 \$40 (business membership dues)

.....

Ballot

To vote for a nominee, please check the box next to his name.

Nominee

- Ryan Amos
- Billy Barrett
- Marshall Bienstock
- Larry Brown
- Dave Ennis
- Bruce Freeman
- Ron Jani

Nominee

- Tom Majewski
- Mark Morrow
- Al Mottram
- Bruce Ringier
- Ben Suhaka
- Damian Toryak
- Eric Von Arx