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By order of

**E. B. MERITT,**

*Asst. Commissioner.*

—au

12799-  
1916.

CARLISLE

File No.

810



OSCAR H. LIPPS

SUPERINTENDENT  
UNITED STATES INDIAN SCHOOL  
CARLISLE, PA.

Mr. Sells: Here is a sample  
of the lessons we are getting  
out at Carlisle for the  
shops. We have installed  
the New Course of Study  
and it is working.

O. H. Lipps

Ed-Schools  
12799-16  
C B M

FEB 12 1916

Mr. O. H. Lipps,  
Supt. Carlisle School.

My dear Mr. Lipps:

This will acknowledge the receipt of a sample page issued by your Mechanic Arts department containing instruction and illustration for a lesson in blacksmithing.

The Office is pleased to note that you have already introduced and are getting your work shaped into compliance with the new course of study.

Very truly yours,

*(Signed E. B. Meritt*

Assistant Commissioner.

2-11-EMR

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BLACKSMITHING - Lesson 1

RECEIVED  
FEB 7 1916  
EDUCATION SCHOOLS,  
OFFICE OF INDIAN AFFAIRS  
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12799



Stock:  
1 piece iron 1/4" round, 4" long

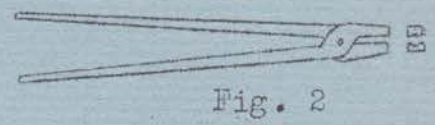
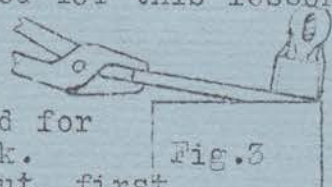
Tools:  
Hammer & tongs

Operations:  
Drawing out, Bending

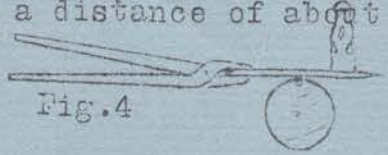
Drawing out:—Whenever iron is reduced in thickness, or lengthened, it is said to be drawn out. This piece of iron is to be drawn out to a point at both ends. The drawn part to be left square. The piece when drawn out will be about 5" long. The only tools required are the hammer & tongs for this operation.

The blacksmith will have use for several kinds and weights of hammers, but the one most commonly used is called the ball peen hammer (Fig.-1) This form of hammer may be had in various weights but one weighing two pounds is right for most work.

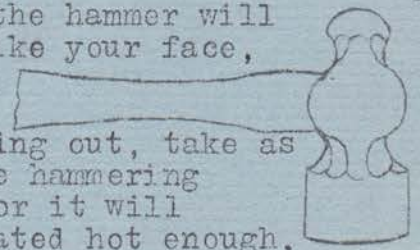
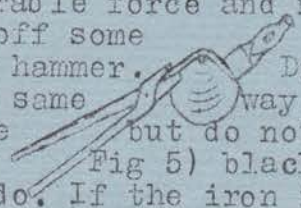
The tongs used for this lesson will be more commonly used than any other form. They are shown in Fig. 2, which gives a side view and an end view of the jaws grooved for holding round stock.



In drawing out, first heat one end of the iron, holding it with the tongs in the centre of the fire, and turn on the blast. Take it out from time to time for examination. It should be heated brighter than a red, but not so hot as to burn or sparkle. When sufficiently hot withdraw and hammer for a distance of about one inch from the end, forcing the metal to flow toward the end. Turn the piece quarter round and hammer toward the end in the same way, hammering more at the end than farther so as to make it smaller there. This will make it square and smaller than the original diameter. Continue the hammering toward the end until it becomes pointed.



When drawing the end down to a fine point, it is necessary to hold the end at the edge of the anvil so as not to strike the anvil. (Fig 3) If you strike the anvil instead of the iron, the hammer will rebound with considerable force and might strike your face, besides splintering off some chips from the edge of the hammer. Draw out the other end in the same way. In drawing out, take as few heats as possible but do not continue hammering after the iron has black cold, for it will surely split if you do. If the iron is not heated hot enough, it will also split.



Bending: When both ends have been drawn out, heat the iron and bend it at the middle point, holding it as in Fig. 4, and striking not above the horn of the anvil but just beyond it. As the iron bends, continue striking it, holding as in Fig.5,

*E. R.*