

treating department of chemical and physical test, together with the apparatus necessary for producing standard tools of the highest quality at minimum cost. Tools are made in such quantities as to ensure economical manufacture, and are carried in stock.

**Instruction Chart**  
 For Forging Standard Straight Round Nose Roughing Tools

PRSB PRSC  
 PRBB PRBC  
 PRWB PRWC

**Left**  
PRBC  
PRBB  
PRWB

**Right**  
PRBB  
PRBC  
PRWB

	W	S	A	B	C	D	E	H	R	L	X
1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1

**First Operation - Cut to Length and Stamp**

**Preparation**

1. Place Marking and Cutting Gage on Hammer.
2. Set Stop to length of Tool as marked on Angle Iron.
3. Place Bar in Furnace (See Table - "S").
4. Heat slowly to Forging Heat (1800° F.).

**Cut-off and Stamp**

1. Withdraw Bar from Furnace.
2. Cut-off piece in Gage (See Sketch - "A").

Step placed at point designated for the size of Tool being made.

3. Put Bar back to heat for next Cut.

4. Stamp the Piece cut-off with Symbol and Lot Number.

(See Sketches - "B" & "C").

Showing Location of Symbol and Lot Number.

Class Symbol: B Top

Repeat the foregoing until all pieces are Cut to Length and Stamped.

Each time a Bar is Worked up, place a New Bar in Furnace.

**Tools Required**  
Marking and Cutting Gage  
Tongs

**Second Operation - Forging the Nose**

**Preparation**

1. Place Tools in Furnace.
2. Heat slowly to Forging Heat (1800° F.).
3. Bar to be heated "E" inches from end (See Table).
4. Have all Tools ready.

**Finishing. Drawing down End and Straightening**

1. Put Bending Die on Anvil.
2. Put Tool in Die and draw down (See Sketches - "D" & "E").

3. Remove Tool and Die.

4. Turn Bar Side at Bend. (See Sketch - "F").

5. Draw down End (See Sketches - "G" & "H").

6. Straighten Bottom (See Sketch - "J").

7. Straighten Press and spread Nose to Width "B" as given in the Table. (See Sketch - "K"). Repeat for all Tools. When One Tool is removed from Furnace replace with another.

**Tools Required**  
Bending Die  
Puller Bar  
Tongs

**Third Operation - Finishing to Gage**

**Preparation**

1. Place Tool in Furnace.
2. Heat slowly to Forging Heat (1800° F.).
3. Have all Tools ready.

**Trim and Offset Nose to Gage**

1. Withdraw Tool from Fire.
2. Mark off Height "B" with 30° Height Gage (See Sketch - "L").
3. Cut Back Slope and Side Slope roughly (about 1/4 inch higher than Finished Height) See Sketch - "M".

30° Height Gage

4. Trim Nose to Shape. Finish Cut. (See Sketch - "N").

5. Offset to suit Limit Gage (See Sketches - "P" & "R"). Keep base of Tool straight.

For Tools over 1 1/4" Shank, hold the Tool's Shank right under Hammer.

6. Test Clearance Angle, Back and Side Slope with One and Limit Gages. (See Sketches - "B" & "C"). Repeat for all Tools. When One Tool is removed from Furnace replace with another.

**Tools Required**  
Chisel (Straight) Chisel (Bevel)  
Limit Gage 1 Right Hand, PRBB-PRBB, PRWB-PRWB  
30° Gage 1 Left Hand, PRBC-PRBC, PRWC-PRWC  
30° Height Gage  
Sledge, Flatter, Tongs.

FIG. 1

The apparatus necessary and the methods of using it as followed in the forging plant, are compiled on instruction charts, one of which is shown in Fig. 1. This covers the forging of straight round-nose roughing tools, right or left hand, giving