Feed Scoop

Name: _____
Date: _____

Description:

This project is a useful tool for scooping feed out of a container of any kind. Cold metal, woodworking, and layout skills are used to construct this project.

Materials:

1" x 5.5" hardwood dowel
#3 common pine (1" x 4" x 6")
24-26 ga. cold rolled galv. sheet metal
(15" x 6" and 1" x 1")
3d galv. box nails
#8 x 1" panhead screw
Wood glue

Tools:

Divider
Combination square
Tape measure
Scribe
Power screwdriver
Sheet metal shear
1/8" Drill bit
Coordless Drill
Cornice brake
Cross cut saw
Power miter saw
Saw horse
Drill press
Hammer
1" Forstner bit
Pencil
Snips

Procedure:

1. *Layout the feed scoop as shown in the drawing.
2. Cut out the sheet metal. NOTE: Be sure not to cut the fold lines.
3. Using the break, fold the edge folds shown in the drawing and crimp tight.
4. Fold the two middle bends to 90°.
5. Use a smooth file to dress the edges.
6. *Using the power miter saw, layout and cut the end portion used for the handle.
7. Layout the hole location on the end piece.
8. Using the cross cut saw and saw horse, measure and cut the dowel to the proper size stated in the plan.
9. Bore the hole using the drill press and 1" forstner bit.
10. Using the cordless drill make a 1/8” pilot hole in the bottom of the 1” hole. Place the dowel in the hole and drill through the pine board to make a 1/8” x ½” deep pilot hole in the dowel.
11. Cover the inside of the 1” hole with glue and place the dowel in the hole.

12. Using scrap sheet metal and shear, measure and cut a 1" x 1" piece of metal.
13. Clamp the piece of metal to a scrap piece of wood and drill a screw whole through the center.
14. Use a cordless drill to install the 1” square washer and the screw into the pilot hole.
15. Place the end piece between the two 90° folds in the sheet metal and fold over the tabs.
16. Flip the feed scoop over so the bottom is facing up and nail three nails through the sheet metal, into the bottom portion of the wood end piece. Hint: Reveal about 1/16” of wood so the sheet metal will not overhang the wood.
17. Turn the scoop so the top is facing upward and make any adjustments necessary for a tight fit.
18. Turn the feed scoop to one side and install two nails through the sheet metal, into the side of the wood end. Do the same to the other side.
19. Place scoop right side up and nail one nail through each tab.
20. Finish by removing any sharp edges with a smooth file and sanding the wood portions.

Notes:

_____
_____
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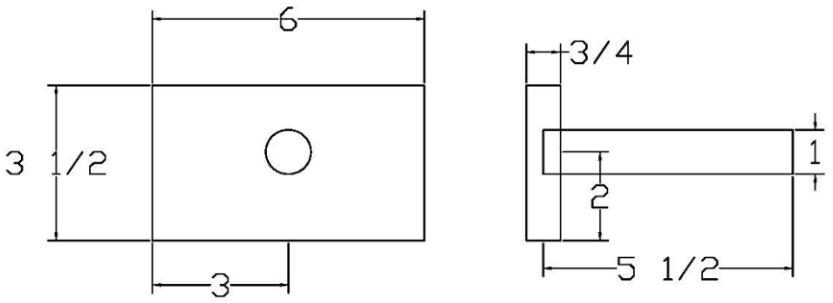
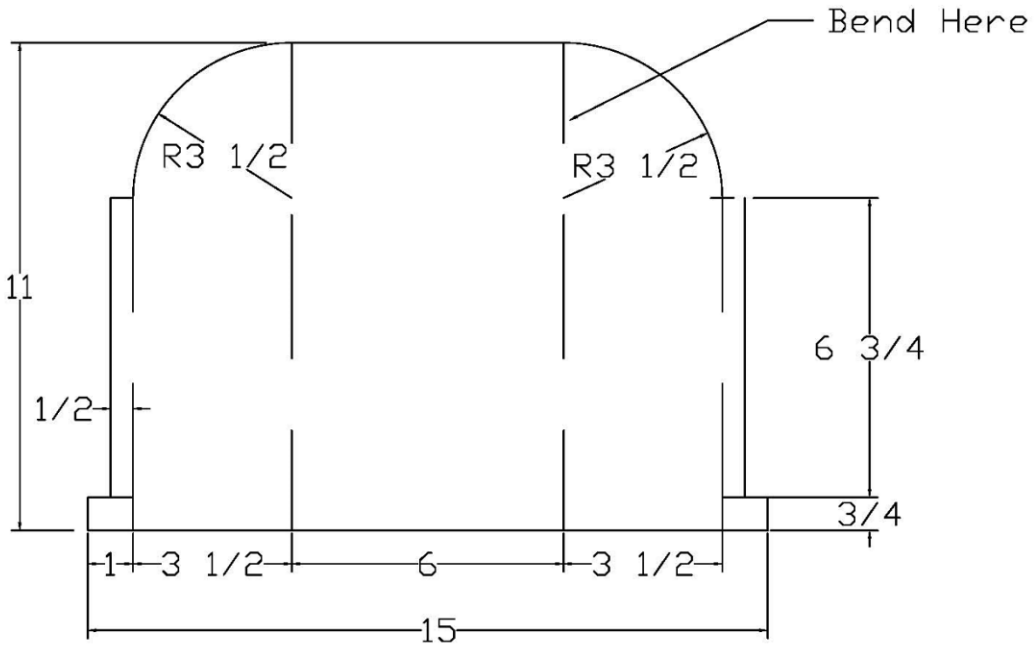
_____

Photo Drawing:



Handle Detail
Materials: 3/4" pine, 1" dowel



Feed Scoop Sheetmetal Layout
Materials: 24-26 ga. steel

Feed Scoop
Drawn by: M. Spiess
Date: 09/04/98
Materials: Sheet metal and wood.

Feed Scoop Worksheet

Name: _____
Date: _____

1. What tool is used to mark the curves on the scoop? _____
2. What is the radius of the curve? _____
3. What order are the bends made? _____
4. How deep will the hole be drilled for the handle? _____
5. What type of drill is used to drill the handle hole? _____

Grading Rubric:

CRITERIA	POSSIBLE	SCORE
Feed Scoop Length (1/16" tolerance)	5	
Feed Scoop Width (1/8" tolerance)	5	
Feed Scoop Height (1/16"tolerance)	5	
End Piece Fit	5	
Handle Location and Fit	5	
Quality of Bends	5	
Workmanship	5	
TOTAL	35	

Sheet Metal Feed Scoop Teachers Notes:

Agricultural Standards Met:

4.0 Technology. Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments:
- 4.6 Differentiate among, select, and apply appropriate tools and technology.

5.0 Problem Solving and Critical Thinking. Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques:
- 5.1 Apply appropriate problem-solving strategies and critical thinking skills to work-related issues and tasks.
- 5.3 Use critical thinking skills to make informed decisions and solve problems.

6.0 Health and Safety. Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials:
- 6.1 Know policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities.
- 6.2 Understand critical elements of health and safety practices related to storing, cleaning, and maintaining tools, equipment, and supplies.
- 6.4 Maintain safe and healthful working conditions.
- 6.5 Use tools and machines safely and appropriately.
- 6.6 Know how to both prevent and respond to accidents in the agricultural industry.

B1.0 Students understand personal and group safety:
- B1.1 Practice the rules for personal and group safety while working in an agricultural mechanics environment.
- B1.2 Know the relationship between accepted shop management procedures and a safe working environment.

B2.0 Students understand the principles of basic woodworking:
- B2.1 Know how to identify common wood products, lumber types, and sizes.
- B2.3 Know how to identify, select, and implement basic fastening systems.
- B2.4 Complete a woodworking project, including interpreting a plan, developing a bill of materials and cutting list, selecting materials, shaping, joining, and finishing.

B5.0 Students understand agricultural cold metal processes:
- B5.1 Know how to identify common metals, sizes, and shapes.
- B5.3 Know layout skills.
- B5.4 Know basic cold metal processes (e.g., shearing, cutting, drilling, threading, bending.).
- B5.5 Complete a cold metal project, including interpreting a plan, developing a bill of materials, selecting materials, shaping, fastening, and finishing.

Objectives:

By properly completing this project, students will be able to:

- Read a plan to and layout dimensions.
- Measure and layout a project on metal.
- Identify cold metal and woodworking tools.
- Properly use common cold metal and woodworking tools.

- Identify metal and wood fasteners.
- Properly assemble and finish a cold metal project.

Alternative Tools/Methods/Materials:

A cross cut saw could be used instead of the power miter saw. This project can be easily converted to a dust pan by making the scoop wider.

Safety Review:

- Power miter saw
- Drill press
- Sheet metal

Project Time:

Demonstration:	20-30 minutes
Build:	2 – 3 hours

Demonstration Notes

1. Project can be started with sheet metal or wood parts.
2. Layout the sheet metal with combination square and divider.
3. Note the difference between a cut line and bending line.
4. Cut out the sheet metal with straight or duckbill snips.
5. Cut the 1 x 4 to 6” on the power miter say Note that you mark/cut, mark/cut and make an X on the side of the like to cut on.
6. Layout the hole center with the combination square. Note: hole is not centered.
7. Drill the 1” hole. Hint: Set the depth gauge on the drill press
8. Drill the 1/8” hole with cordless drill.
9. Cut 1” “washer” from a scrap and carefully drill 1/8” hole in a vise or clamped to a board.
10. Assemble the handle with glue.
11. Attach the handle to the sheet metal.
12. Sand and file project so no sharp edges. Use a smooth file.

Bill of Materials:

Projects:	18					
Size	Description	Units	Qty/Project	Cost/Unit	Order	Amount
24-26 ga	Cold Rolled galvanized sheet metal	3'x8' sheets	0.0625	$20.00	2	$ 40.00
1x4	#3 Pine	8' board	0.07	$4.00	2	$ 8.00
1"x4'	Hardwood dowel	each	0.125	$3.50	3	$ 10.50
3d	Galv common nails	Pound	0.0025	$ 2.00	1	$ 2.00
#8 X 1"	Pan head screws	100/box	0.01	$ 3.00	1	$ 3.00
					0	$ -
					0	$ -
					TOTAL	$ 63.50

Project from: Mike Spiess