

- 1 Bolt  $\frac{1}{2}$ " x  $\frac{3}{4}$ "
- 6 Lock washers  $\frac{1}{4}$ "
- 1 Lock washer  $\frac{1}{2}$ "
- 10 Wood screws  $\frac{3}{4}$ "
- 1 Flat washer  $\frac{1}{2}$ " x 2"

**Construction**

The cutter may be constructed from material usually found in most home workshops. Any wooden materials with sufficient weight to hold the device steady during operation may be substituted for the board and plywood. Most sizes of steel strap iron may be bent in a 90° angle to replace the corner braces. Any thin flat steel bar that will hold an edge or can be tempered may be used to make a cutting bar or knife. A machete, however, functions well and may be obtained in most places rather cheaply.

The size of the device may be changed to handle the item to be cut (branches, twigs, or grasses). Materials used in construction will vary accordingly.

The parts are assembled as shown in the expanded diagram (Fig. 1). Not more than  $\frac{1}{2}$  inch of the plastic box should rest on the edge of the oak chopping block. The steel corner braces with machete attached should be so positioned that the cutting edge slides down along the face of the box. The finished product

should resemble the assembled view (Fig. 1). A line is then etched and inked on the plastic box one inch from the cutting edge of the knife. When cutting old or extremely dry vegetation that may shatter, it is usually advisable to bevel the leading  $\frac{3}{8}$  inch of the oak chopping block within the plastic chute. Do not bevel back to the point of impact of the knife.

When placed on a desk-high table, the device is at an optimum working level for most people. A chair placed under the plastic chute will hold most paper bags over the mouth of the chute. The plant to be cut is slid along the guide to insure perpendicular cuts. When the ends of the sample coincide with the black line on the chute, the knife is brought down sharply. This severs the whole segment and at the same time seals the orifice so that all vegetation must go down the chute and into the sack.

**Discussion**

When two operators are available, one chopping and one bagging, as many as 150 plants may sectioned in one day. A single operator is limited

agement Research Project at Alexandria only by the rapidity with which he can change paper bags. There is little or no variance in size or shape of samples. There is no loss of vegetative matter. Stems up to one inch in diameter and grass plants with a field diameter of 13 inches have been handled easily with this device.

Approximately 15,000 samples were cut with this device without a single breakdown. Maintenance consists of occasionally sharpening the knife blade. The frequency of this will depend upon the density and quantity of material being severed.

**Literature Cited**

LOMMASSON, T., AND C. JENSEN. 1938. Grass volume tables for determining range utilization. *Science* 87: 444.

**FUMIDOR FOR HERBARIUM CASES**

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A convenient fumidor for herbarium cases has been devised at the U.S. Forest Service's Range Man-

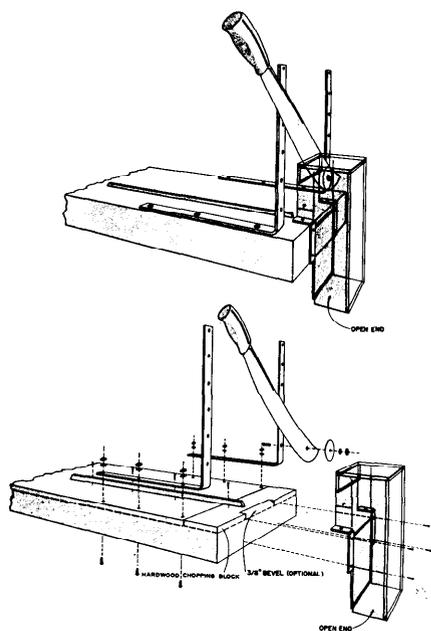


FIGURE 1. Assembled view and expanded diagram of device.

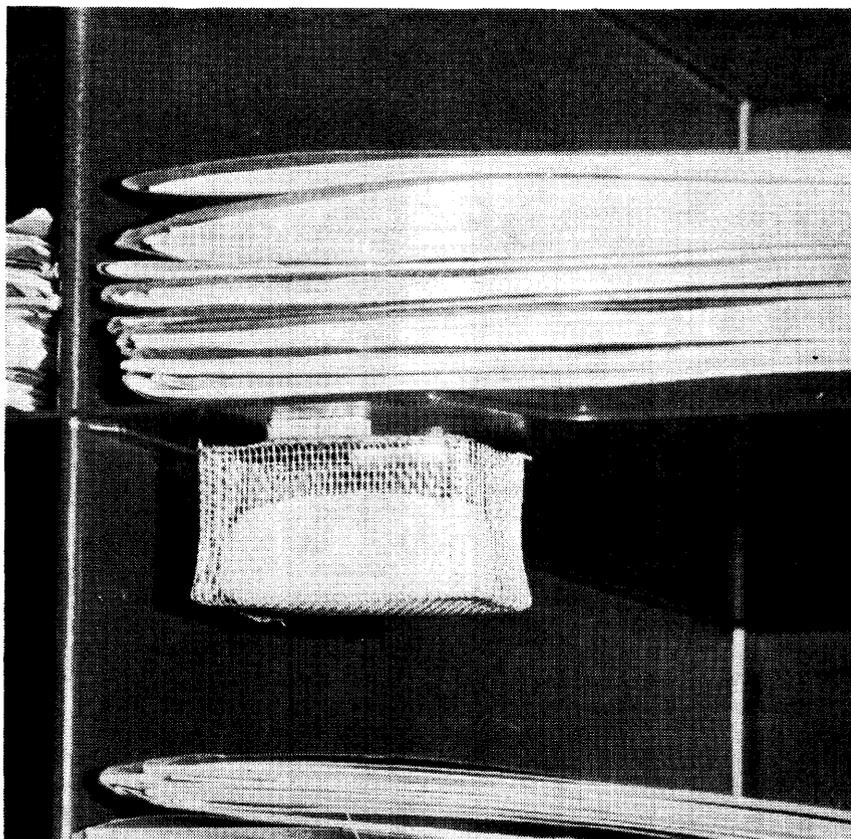


FIGURE 1. Fumidor under herbarium shelf.

agement Research Project at Alexandria, La. Easy and cheap to make, it is held under a shelf by two 15-cent magnets (figure 1) and can be readily checked and refilled. The aluminum-screen box,  $2\frac{1}{2}$  by  $1\frac{1}{4}$  by  $1\frac{1}{4}$  inches, holds about 2 ounces of paradichlorobenzene crystals (PDB). At Alexandria, two are kept in each case.

Fumigating to protect against insects is a vital step in preserving plant specimens. PDB crystals strewn loosely over folders evaporate quickly and are usually spilled when specimens are removed for study. These problems are prevented by placing crystals in cloth bags, but bags are inconvenient to fill and

their contents cannot be easily checked.

To make the fumidor, mark a  $4\frac{1}{2}$ - by 5-inch piece of screen with wax pencil or felt marker, following the pattern (figure 2). Then bend the sides and ends. (A straight-edge helps to make neat bends.) Next fasten the corners by forcing the ends of the side wall wires through the end walls and bending them toward the corners. Bend the tabs on the end walls around the corners to prevent leaks. Bend down the tabs on the side walls  $90^\circ$  and attach bar magnets with plastic cement. The type used for mounting plant specimens is ideal.

This fumidor can be used in a

wooden case if small pieces of sheet metal to hold the magnets are tacked where desired.

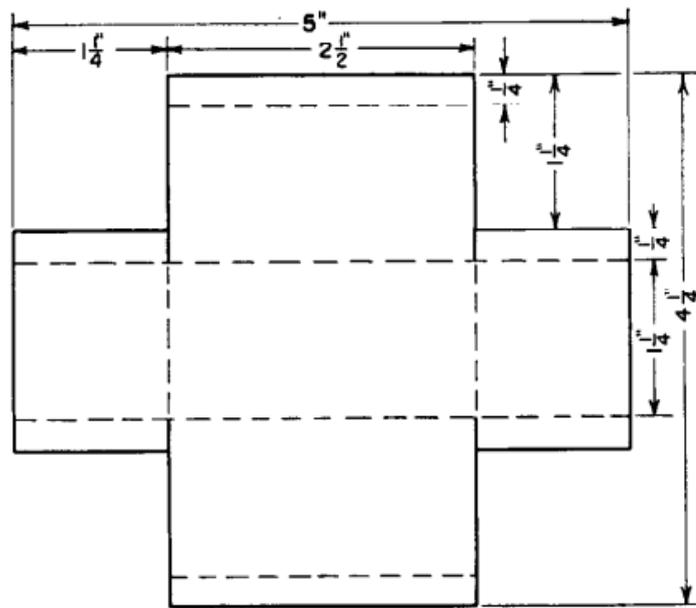


FIGURE 2. Pattern for aluminum screen. Cut on solid lines, fold on dash lines.