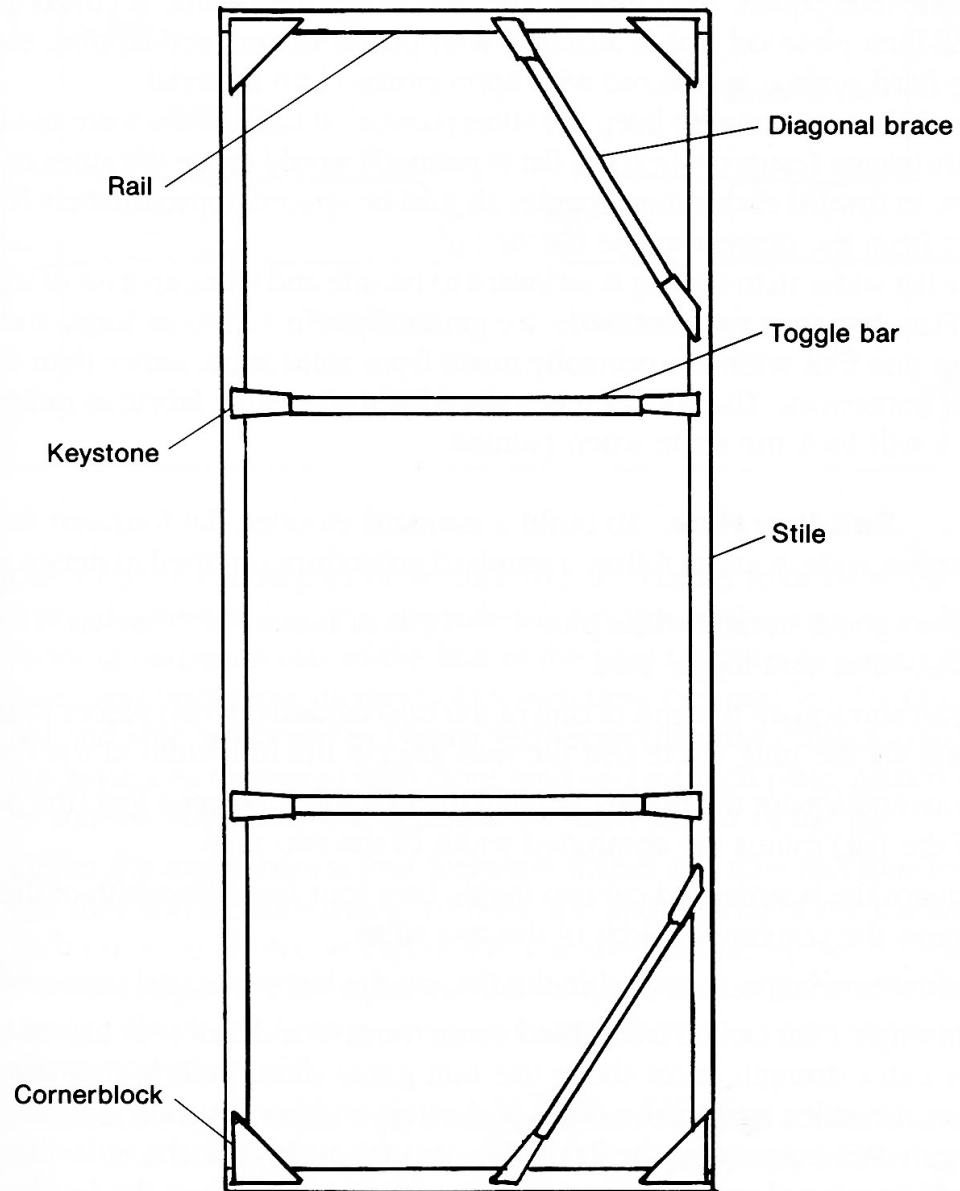


Elementary Stagecraft
Scenic Construction : Walls, Platforms & Stairs

Framed Scenery

Theatrical Flats

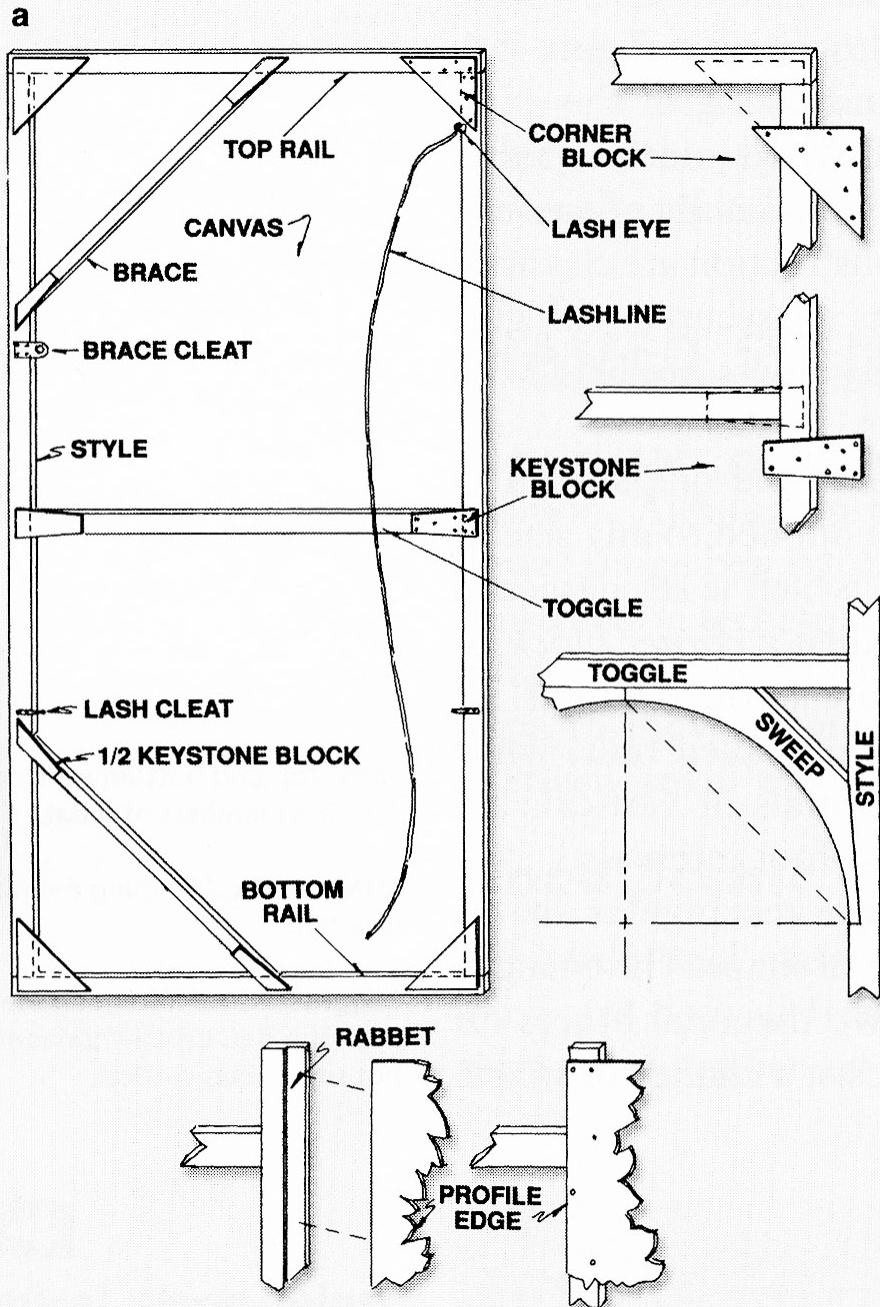
- Frame (rails, stiles and toggles) typically made from 1x3 pine
- Corner Blocks and Keystones made from $\frac{1}{4}$ " plywood



Framed Scenery

Theatrical Flats

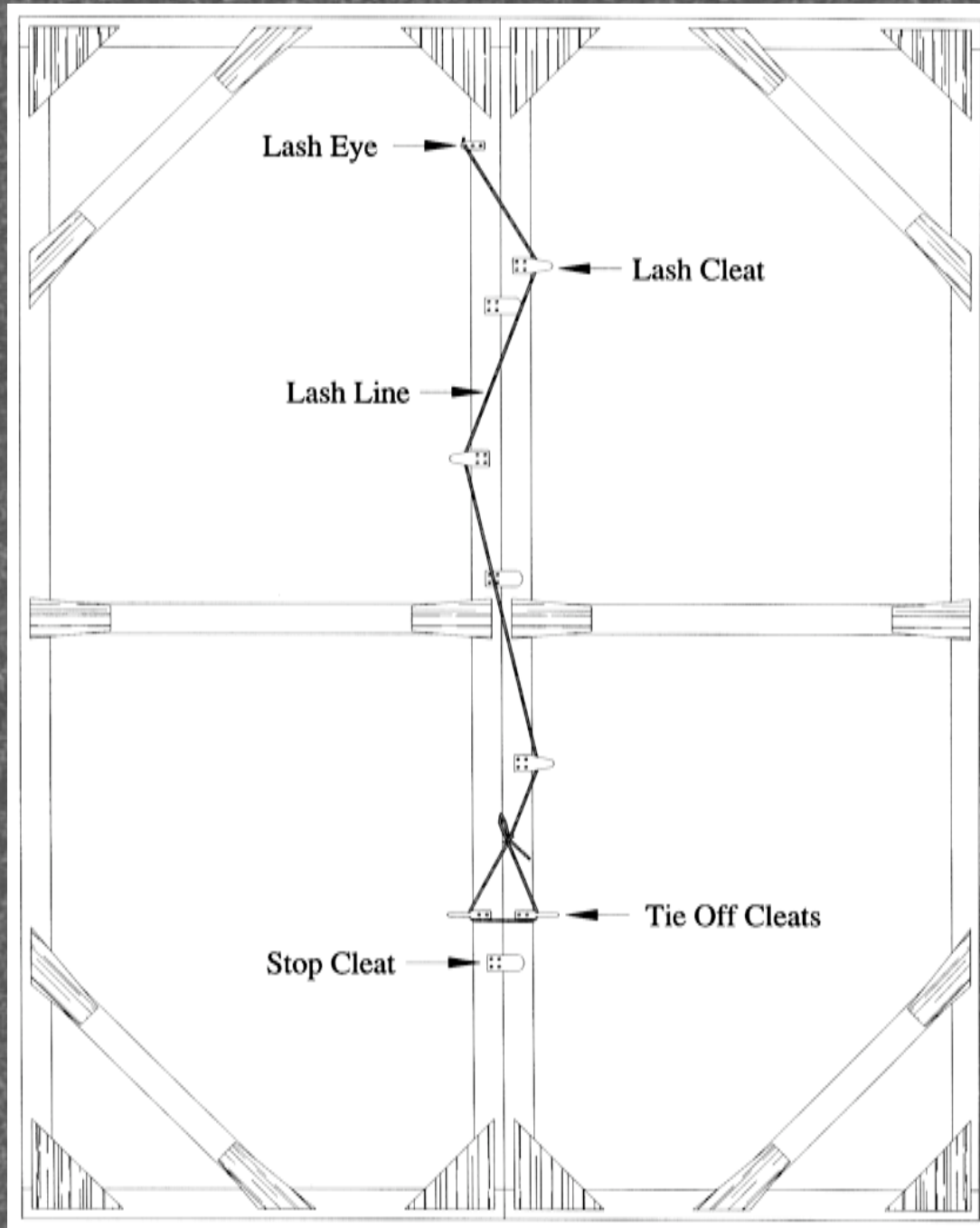
- Frame (rails, stiles and toggles) typically made from 1x3 pine
- Corner Blocks and Keystones made from 1/4" plywood
- Covered in muslin which is glued and staples to the frame
- The muslin will shrink when painted so when covering, cut fabric larger than the frame



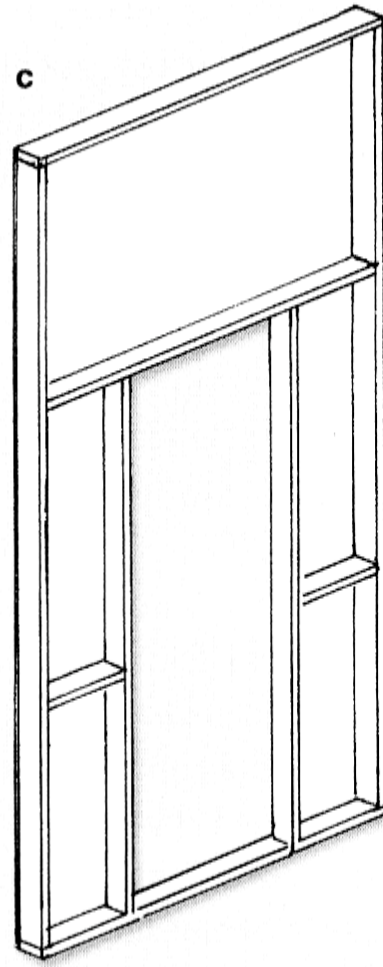
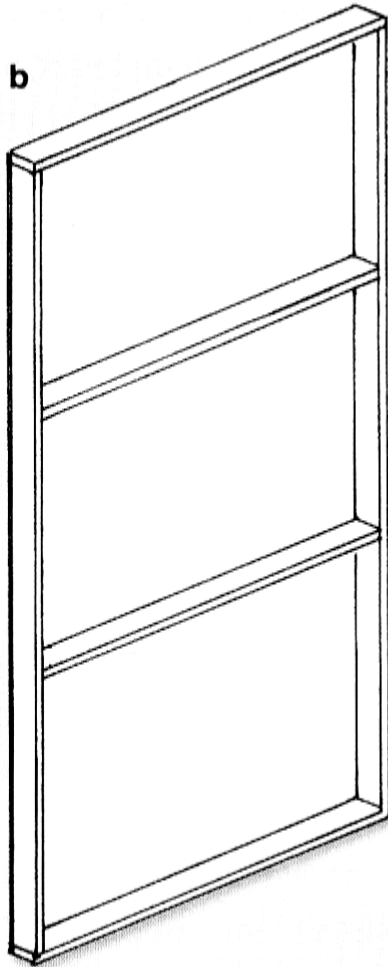
Framed Scenery

Theatrical Flats

- Two flats can be joined with additional hardware and a **lash line**
- The seam between flats is covered with a 5" piece of muslin called a **dutchman**, glued on and painted over
- Flats can be flown by a rigging system with the addition of **hanging hardware**



Framed Scenery



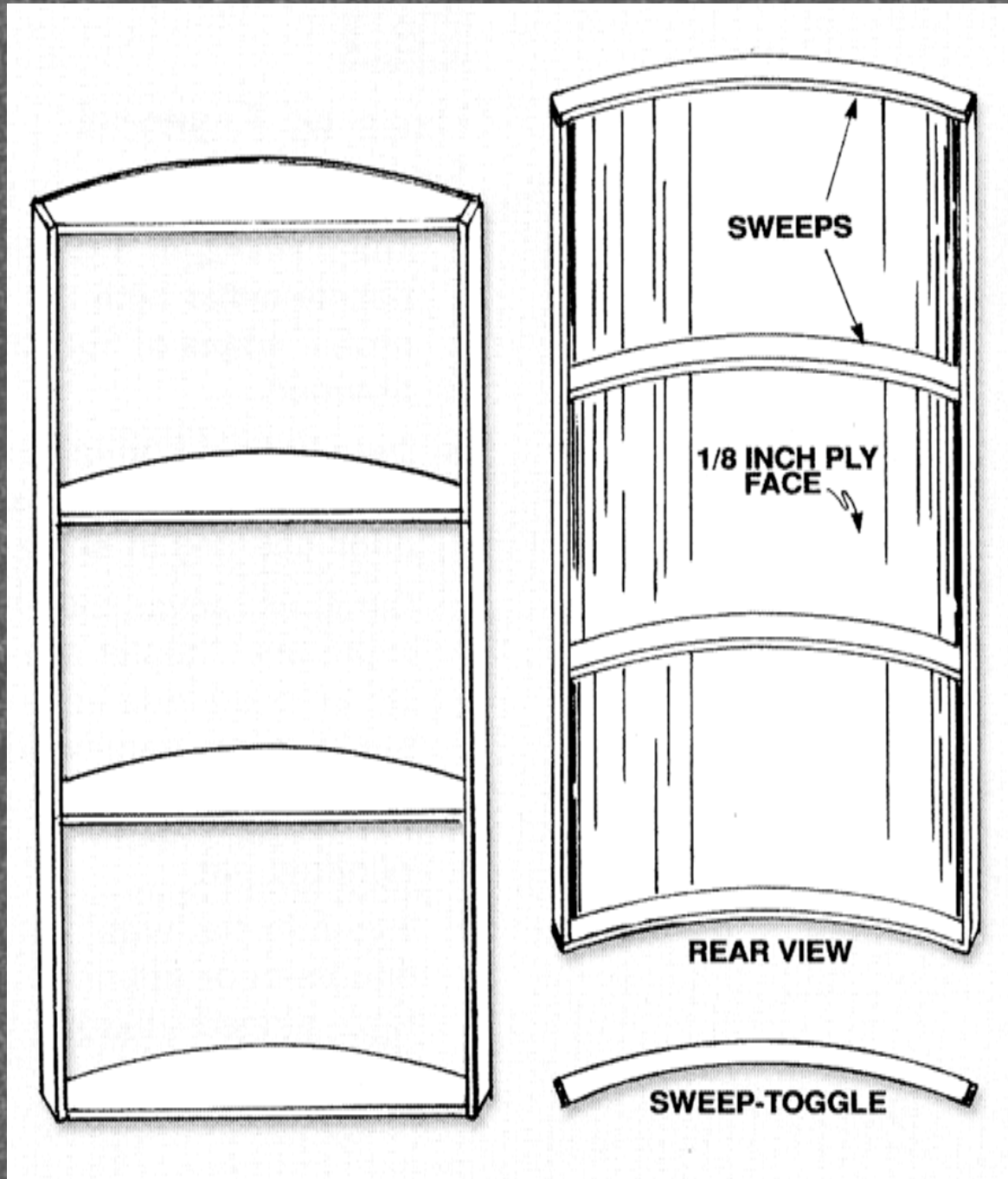
T.V. Flats

- Also called **Hollywood** flats
- Frame made from 1x3
- Covered in luan, easy to paint and add texture to
- Hard cover eliminates need for corner blocks or keystones

Framed Scenery

Curved Flats

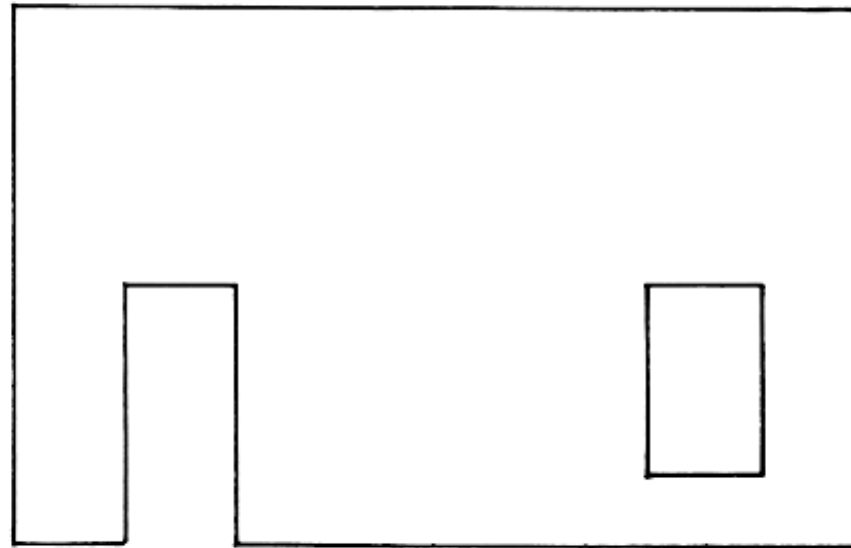
- Toggles are cut curved from plywood, called **sweeps**
- Typically covered in 1/8" luan which bends easily
- Can be muslin covered



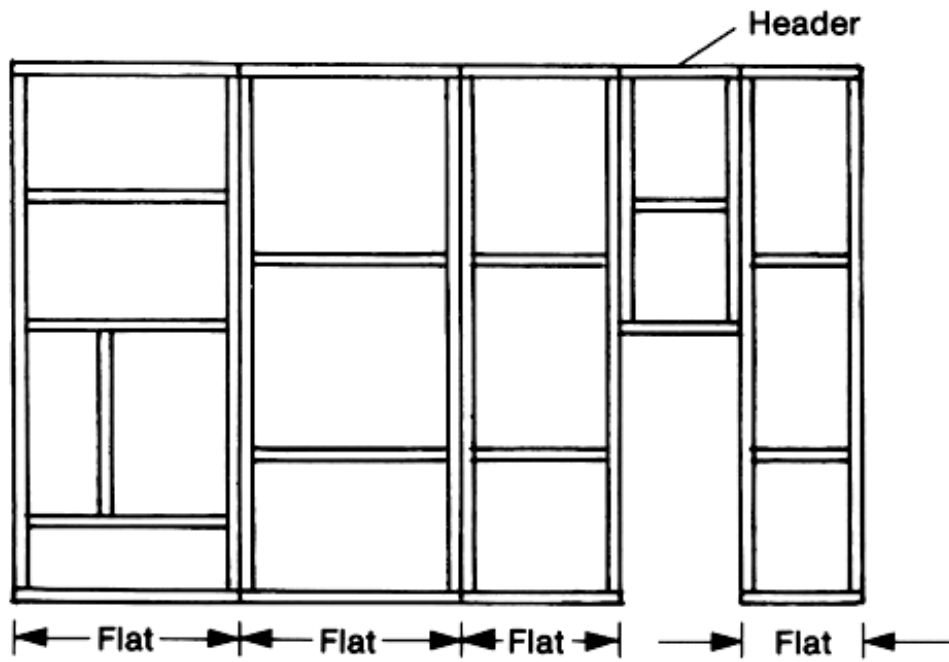
Framed Scenery

Joining Flats

- To build larger walls, flats can be joined together, either by screwing the stiles together or adding tight pin hinges to the stiles
- A 1x3 brace or **stiffening batten** is attached to the back to stabilize the flats
- Seams are filled with joint compound and painted
- Smaller flats are used to create openings for doors and windows



Front elevation

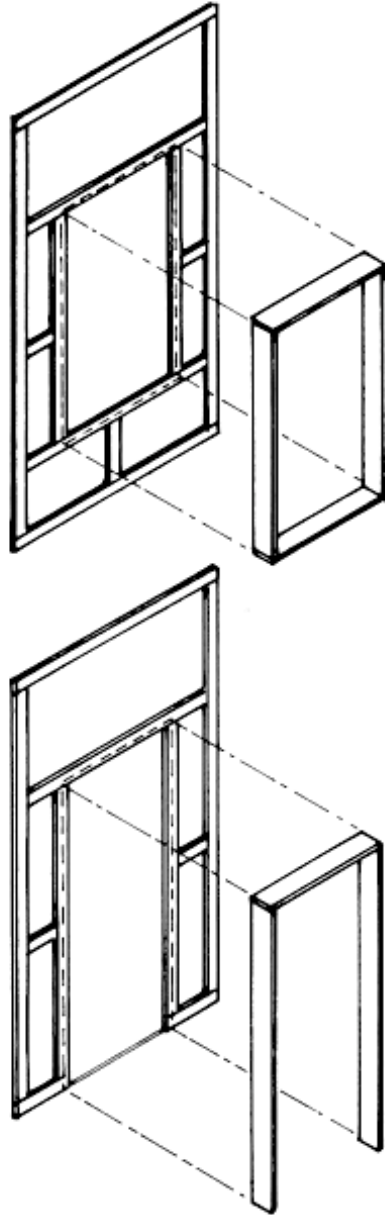


Rear elevation

Framed Scenery

Openings

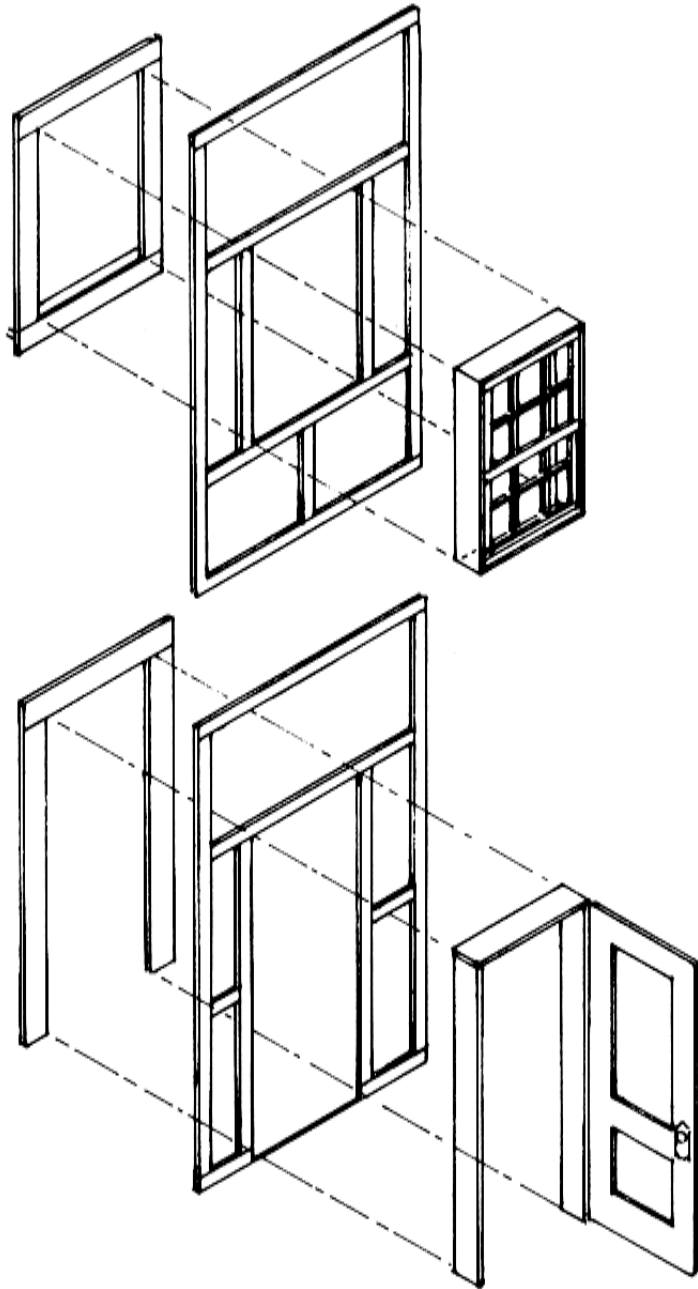
- To create the illusion of wall thickness, add a frame called a **reveal**



Framed Scenery

Dependent Doors & Windows

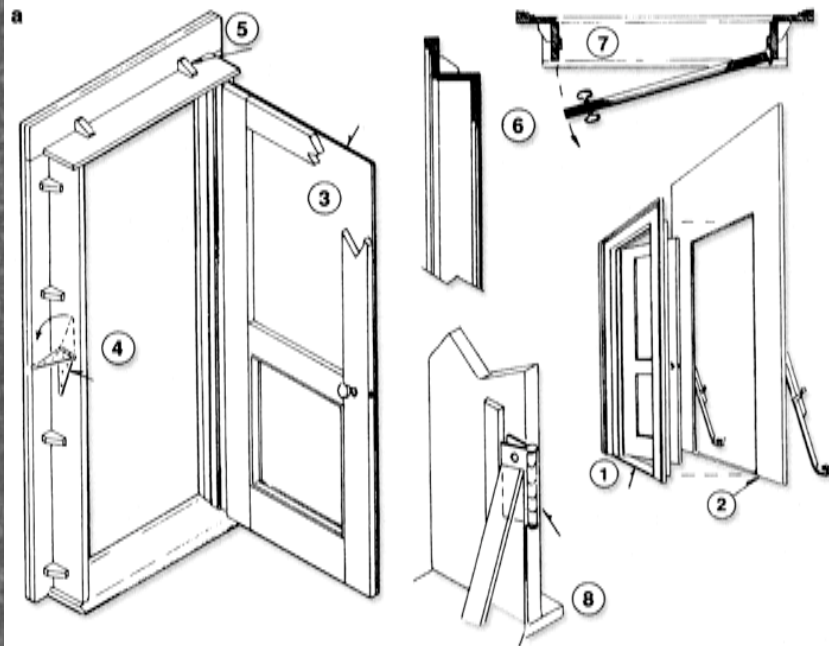
- Dependent doors and windows are attached to the host flat
- Door units will have three basic parts (1) the actual door, called a **shutter**, (2) the frame (**reveal**) comprised of the **jamb** (vertical members) and **header** (top piece) and (3) the **trim**
- Window units also have reveal and trim but the shutter is replaced with a **window sash** which can be fixed or moveable



Framed Scenery

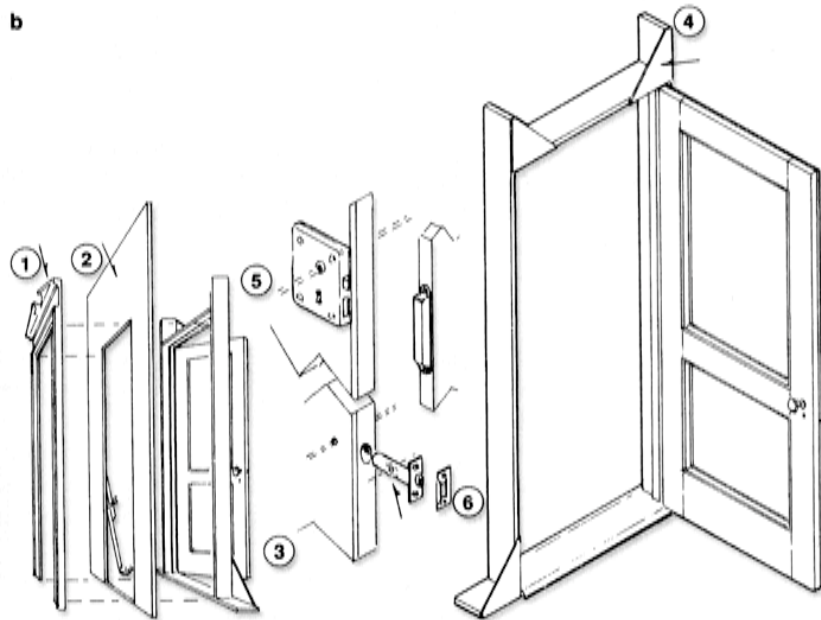
Independent Doors

- Can be easily attached and removed from a host flat



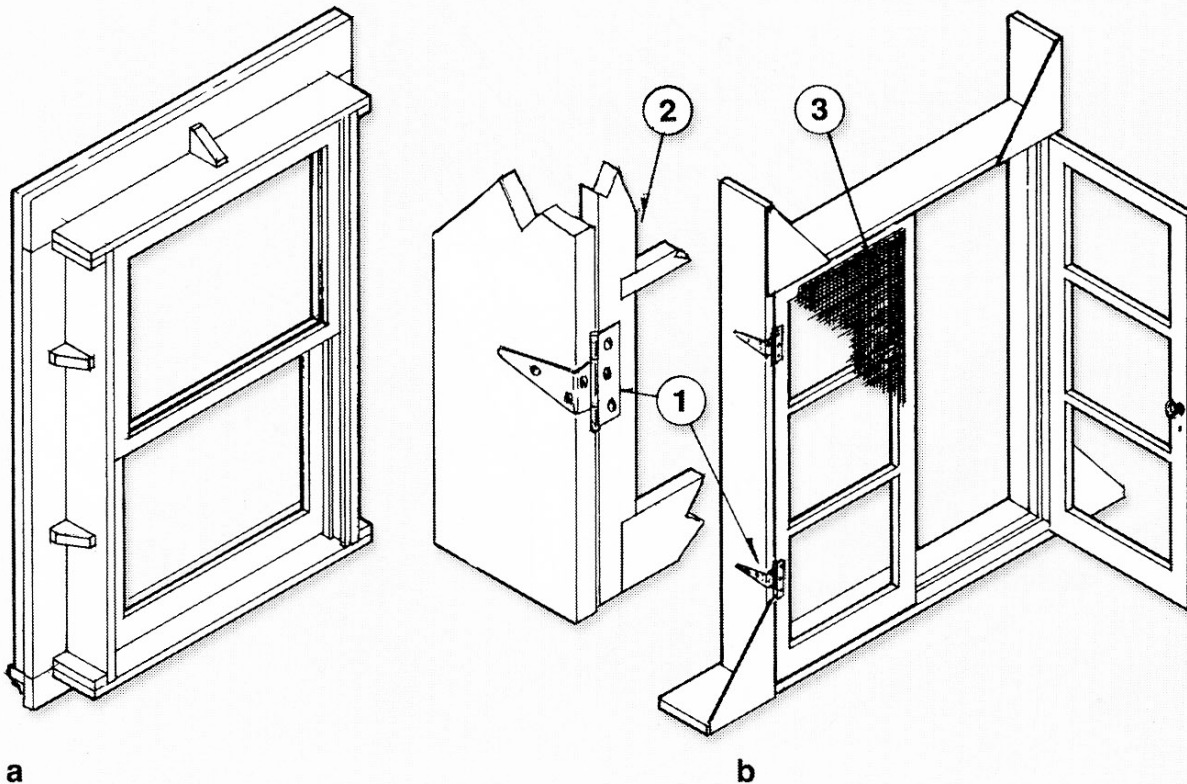
Door Construction

- a** Independent door:
- 1 Door reveal and trim built as one unit.
 - 2 Flat with standard door opening.
 - 3 Detail of door construction.
 - 4 Angled strap hinge on jamb to hold door unit in the opening.
 - 5 Blocks to hold trim in place.
 - 6 Cross section of door unit through header.
 - 7 Plan of the independent unit showing the hinging.
 - 8 Butt hinge on door.
- b** Dependent door:
- 1 Separate trim.
 - 2 Flat with a standard door opening.
 - 3 Door and reveal.
 - 4 Corner blocks to hold reveal square.
 - 5 Rim lock. Attached on back side of door.
 - 6 Tubular latch. Sets into edge of door.



Framed Scenery

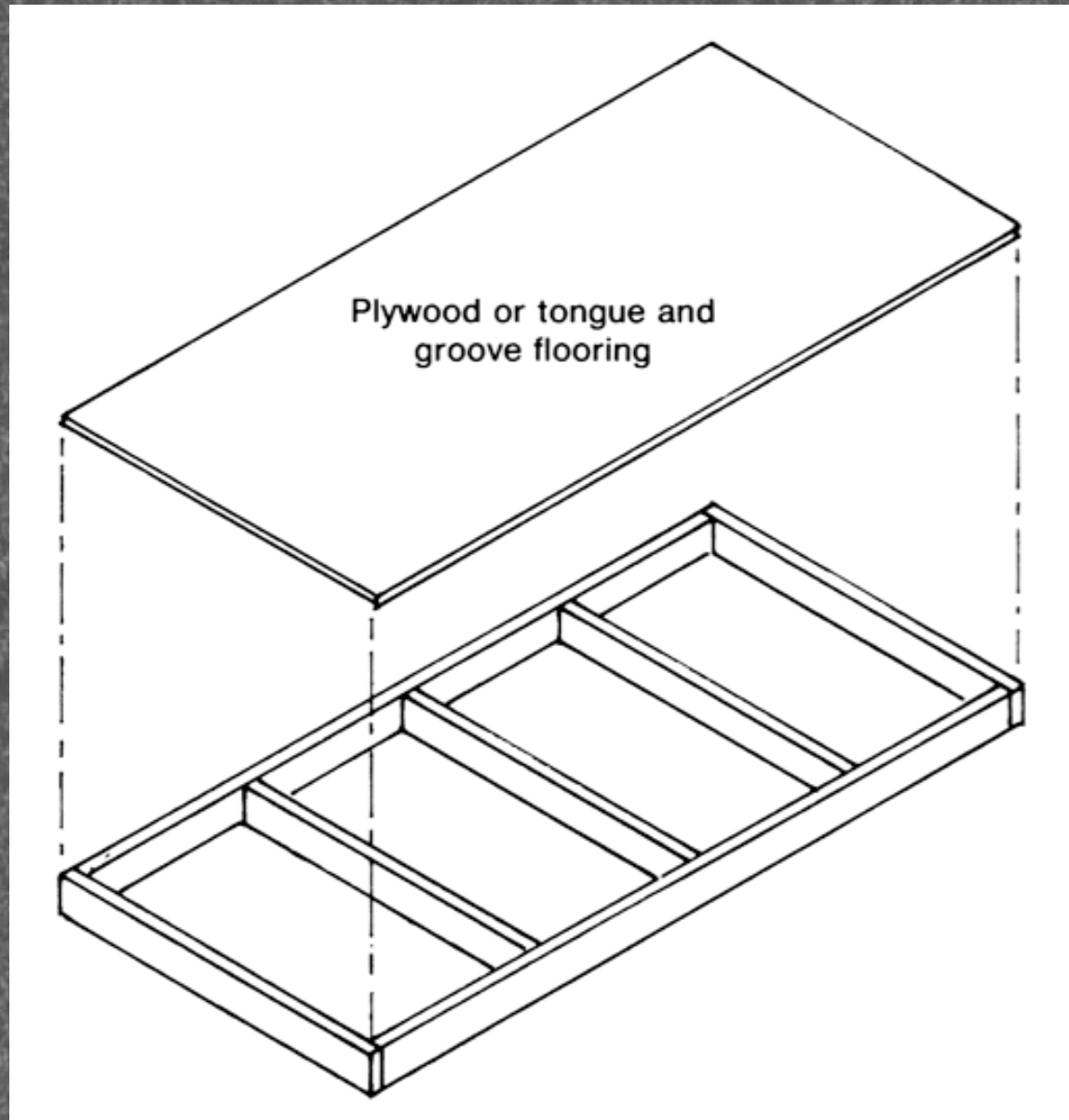
Independent Windows



Window Construction

- a** Double-hung window. Trim is attached to reveal in the same manner as the independent door's trim.
- b** Casement window. The reveal is constructed in the same way as the dependent door with hinged sashes.
 - 1** A bent T-strap hinge in place of the butt hinge.
 - 2** Notched mullions.
 - 3** Galvanized screening to strengthen the sash and simulate glass.

Weight-Bearing Scenery



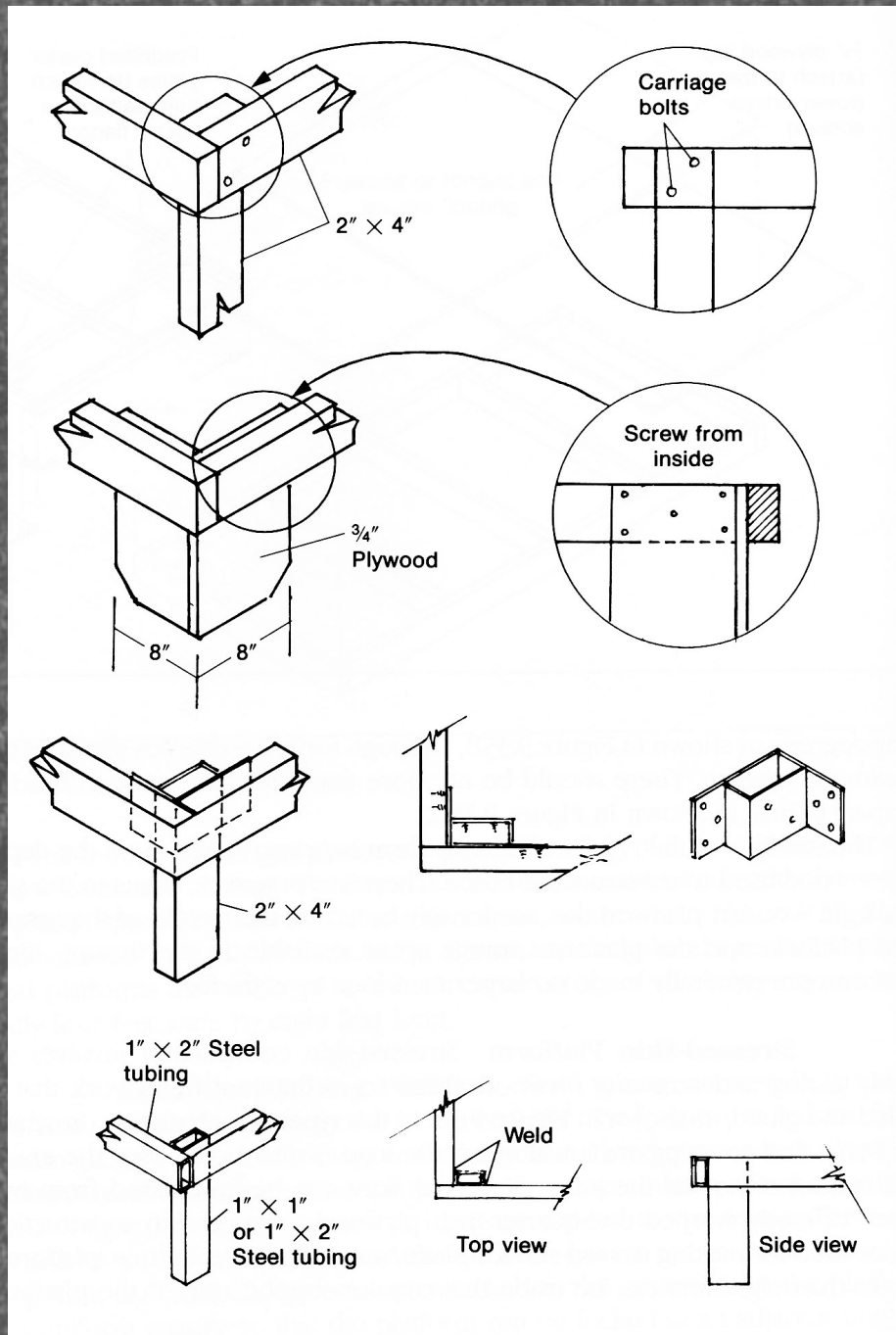
Rigid Platforms

- Comprised of a **frame** made from 2x4, 2x6 or 1x6 lumber with interior braces called **joists** spaced no more than 2'
- Covered with a **lid** or **top** made from $\frac{3}{4}$ " plywood

Weight-Bearing Scenery

Rigid Platforms

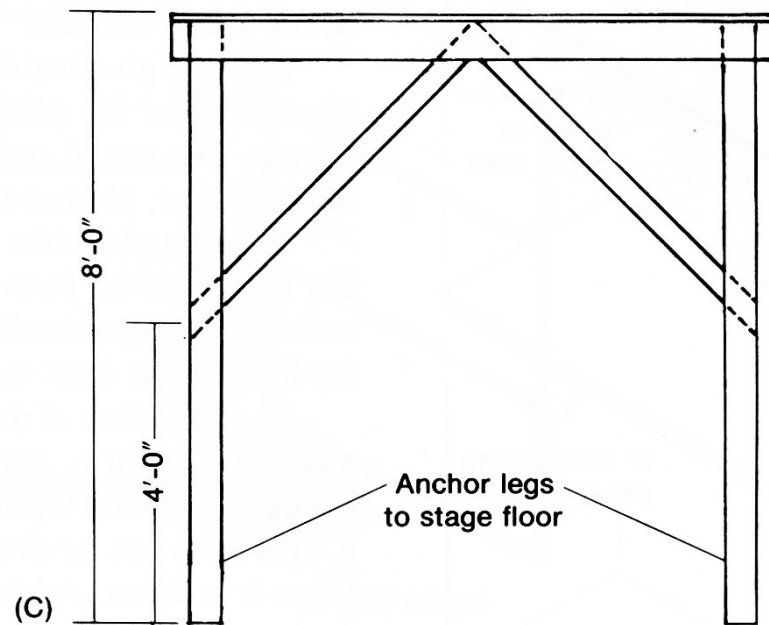
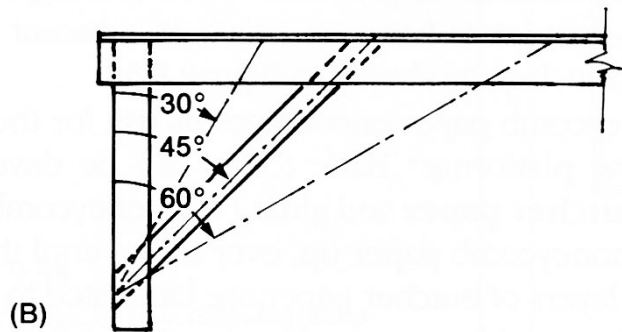
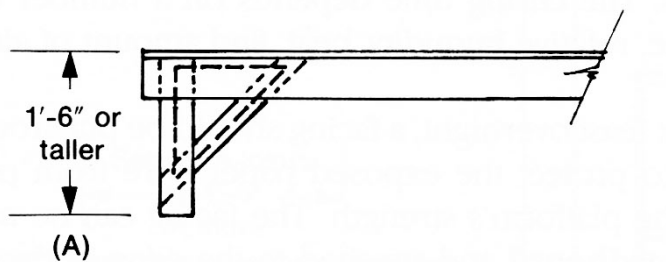
- Comprised of a **frame** made from 2x4, 2x6 or 1x6 lumber with interior braces called **joists** spaced no more than 2'
- Covered with a **lid** or **top** made from $\frac{3}{4}$ " plywood
- Platform is elevated with **legs** made from 2x4 or from $\frac{3}{4}$ " plywood braces called **hog troughs**
- Legs can be secured with a **corner bracket** which screws to the frame
- Legs on metal framed platforms are welded to the frame



Weight-Bearing Scenery

Rigid Platforms

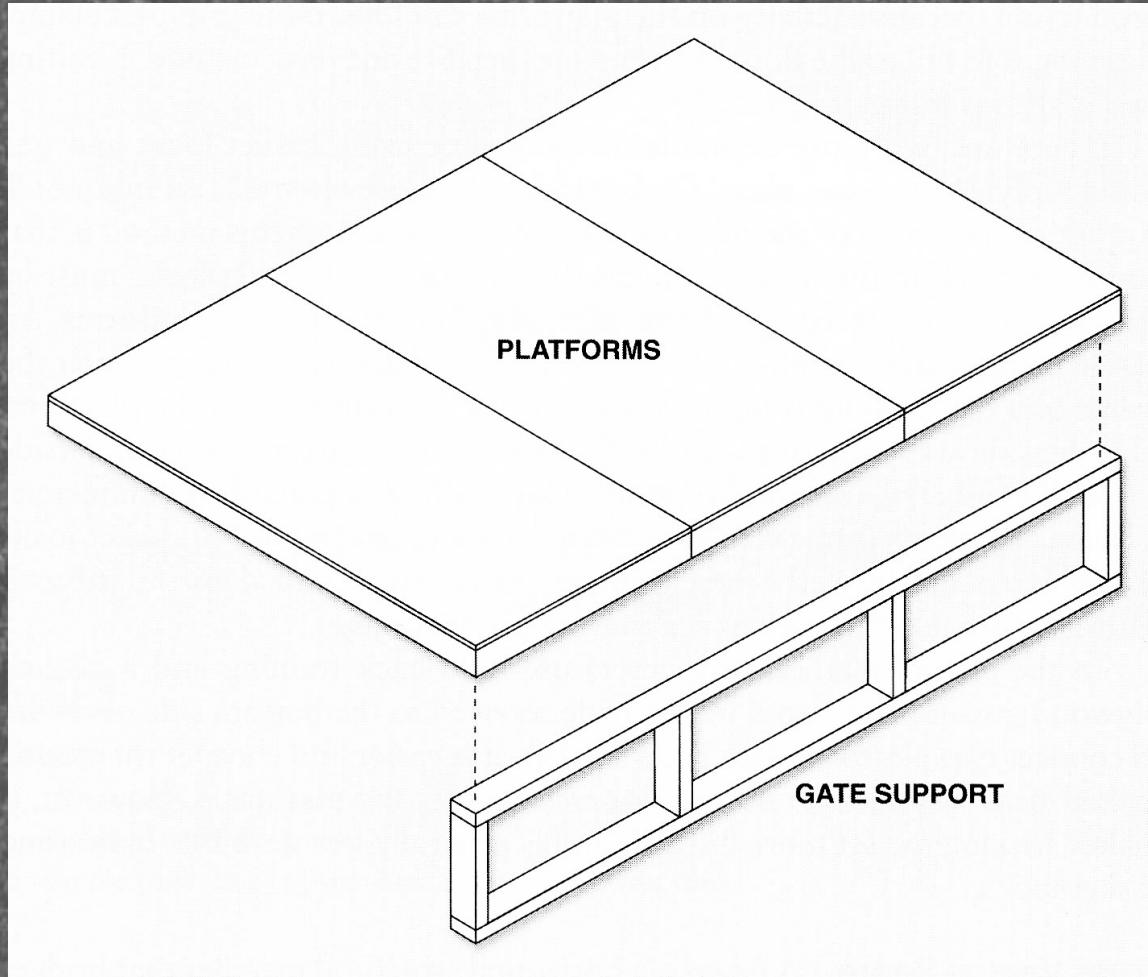
- Legs on platform over 18" tall must be braced with 1x3 or steel members



Weight-Bearing Scenery

Rigid Platforms

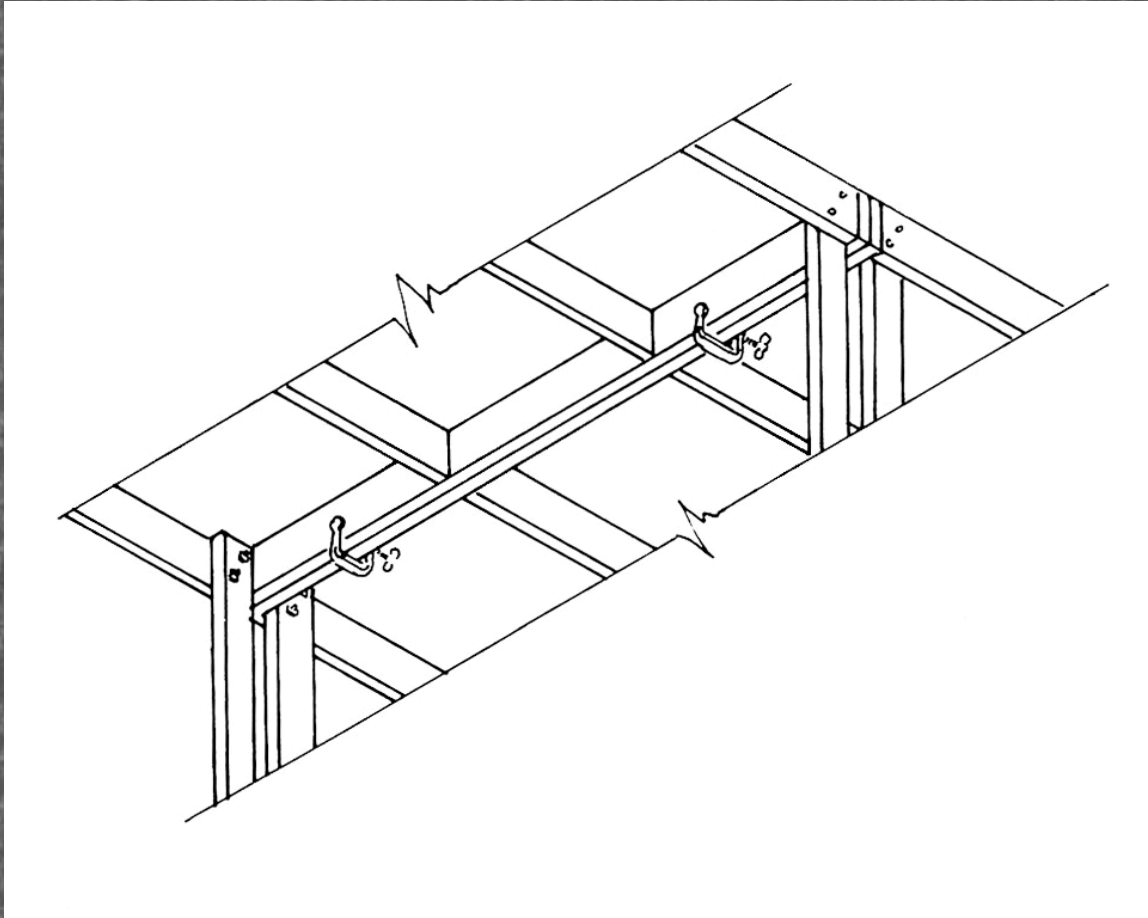
- Can also be supported with a **gate** or **knee wall**, made from 2x4 or metal
- Platforms are screwed to the knee wall which is screwed to the deck



Weight-Bearing Scenery

Rigid Platforms

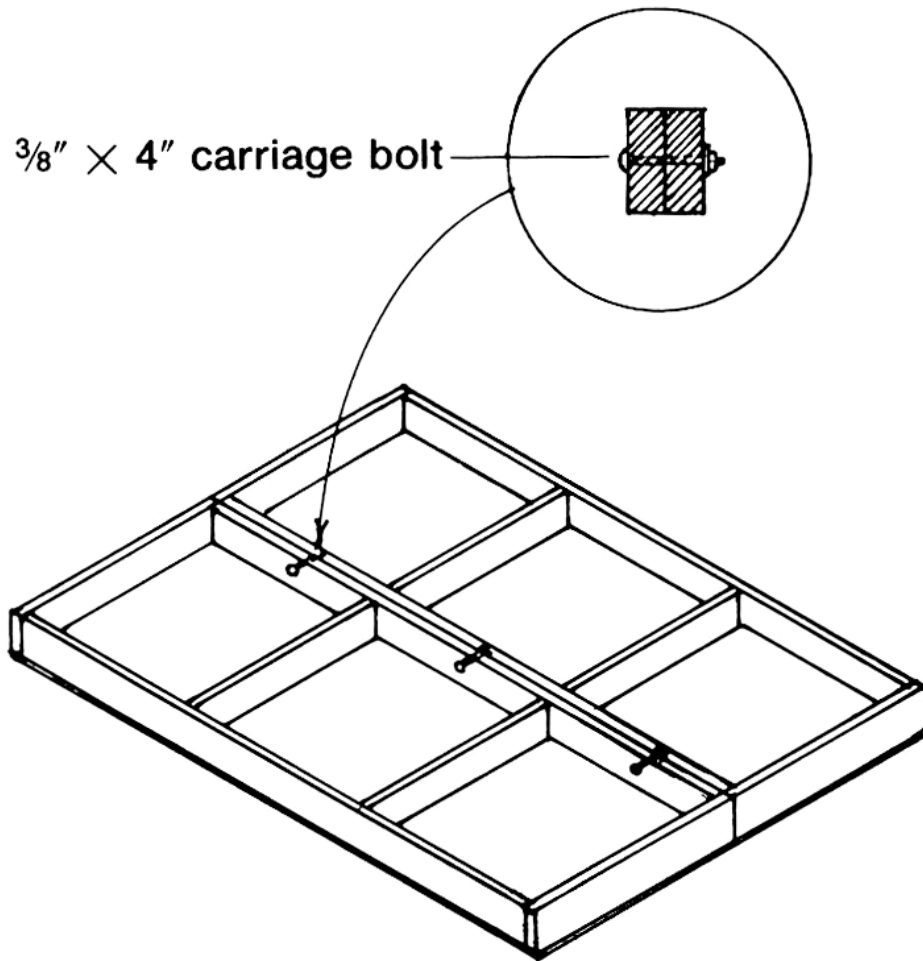
- Platforms can be joined together various ways; cheapest, fastest method is by using C-clamps to clamp the frames, must be continually tightened during the run of a show



Weight-Bearing Scenery

Rigid Platforms

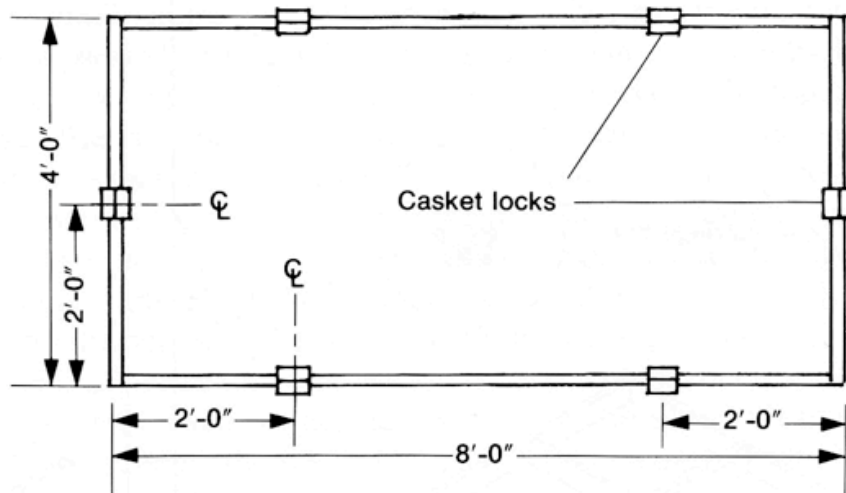
- Platforms can be joined together various ways; cheapest, fastest method is by using C-clamps to clamp the frames, must be continually tightened during the run of a show
- Can also use carriage bolts, sturdier than clamps



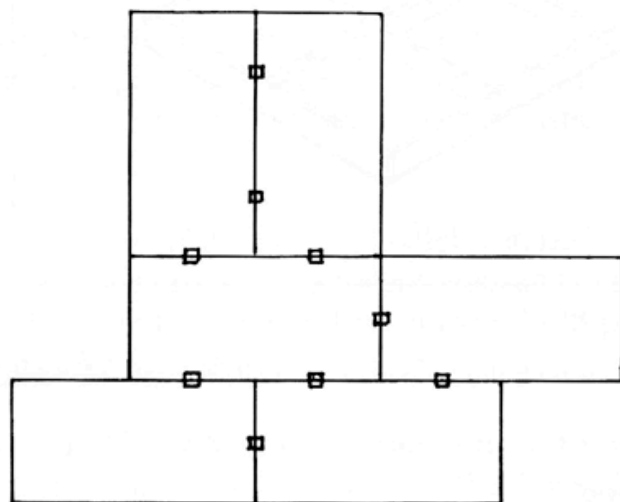
Weight-Bearing Scenery

Rigid Platforms

- Platforms can be joined together various ways; cheapest, fastest method is by using C-clamps to clamp the frames, must be continually tightened during the run of a show
- Can also use carriage bolts, sturdier than clamps
- For touring, **casket locks** (or **coffin**) are desirable. Half of each lock is installed in the frames of adjoining platforms, a hole drilled in the lid allows an Allan wrench to open and close the lock



Standard casket lock pattern

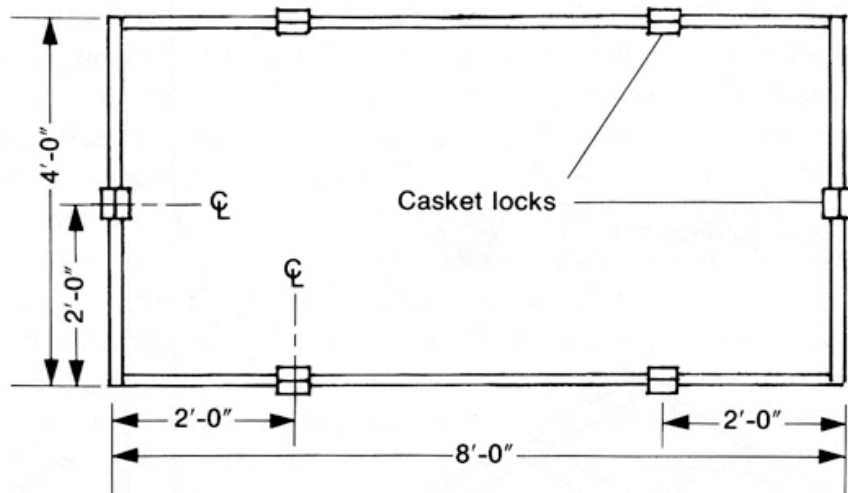


Sample layout

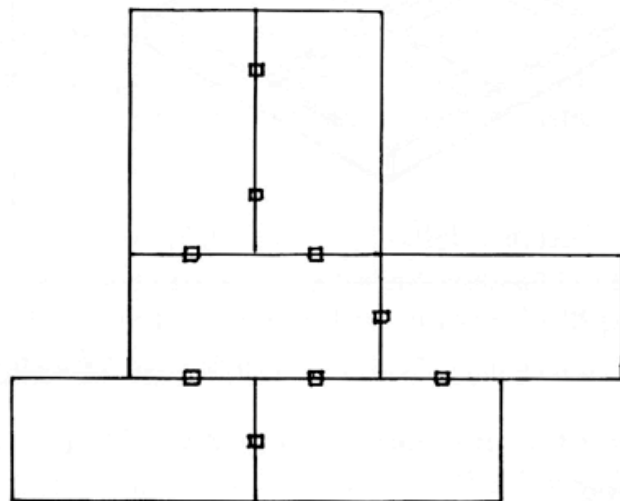
Weight-Bearing Scenery

Rigid Platforms

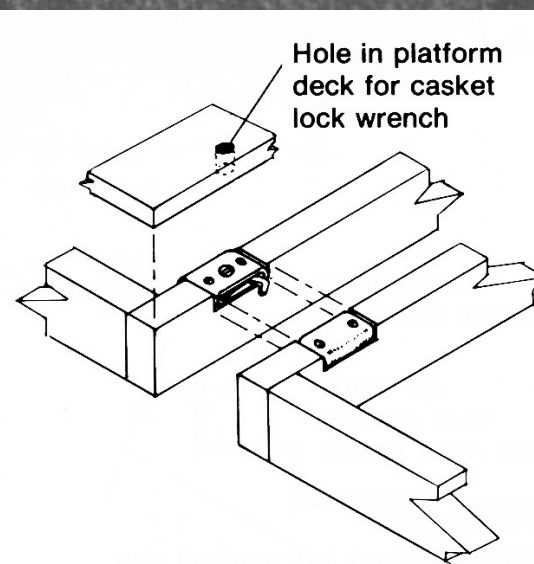
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Standard casket lock pattern



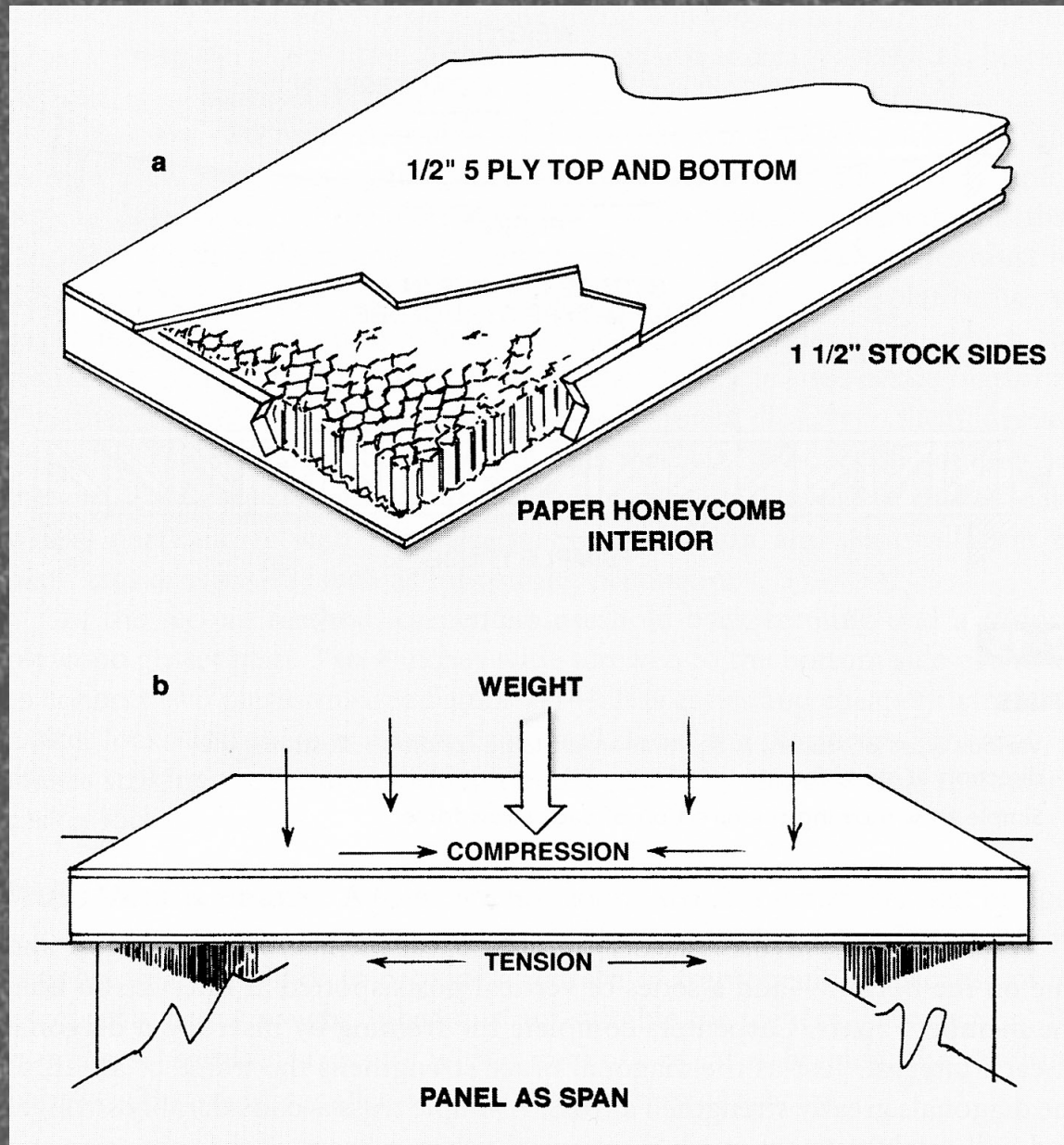
Sample layout



Weight-Bearing Scenery

Stressed-Skin Platform

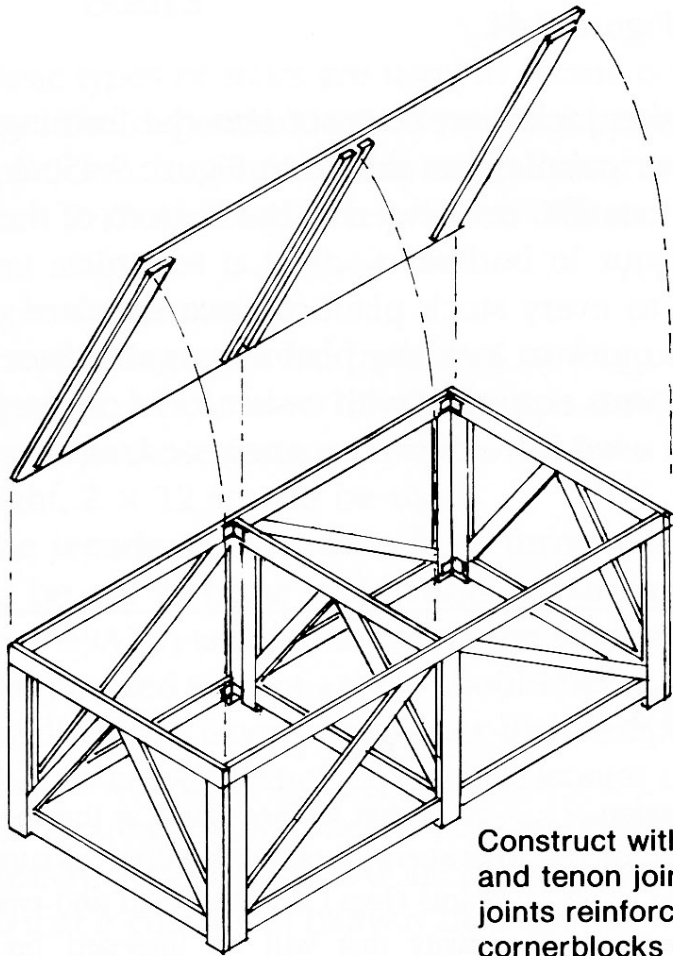
- Platforms panels made from two pieces of plywood (typically luan) glued to a wood or honeycomb paper core
- Plywood “skins” resist forces of compression and tension like an I-beam or truss
- Difficult to build however have greatly reduced weight



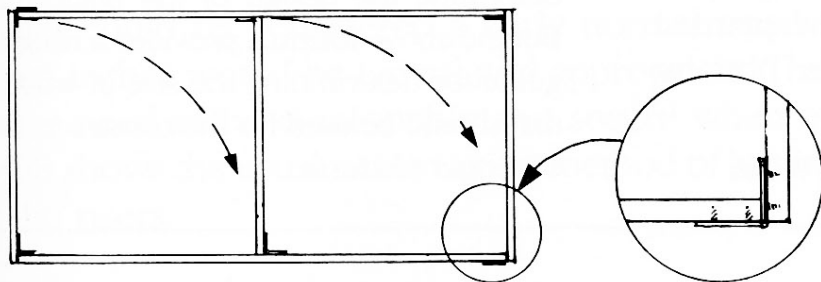
Weight-Bearing Scenery

Standard Parallel Platform

- Frame is built from 1x3 and is hinged to form a giant parallelogram
- The lid has 1x3 **cleats** that lock open the parallel
- Setup and strikes easily, but fixed height and work intensive to build



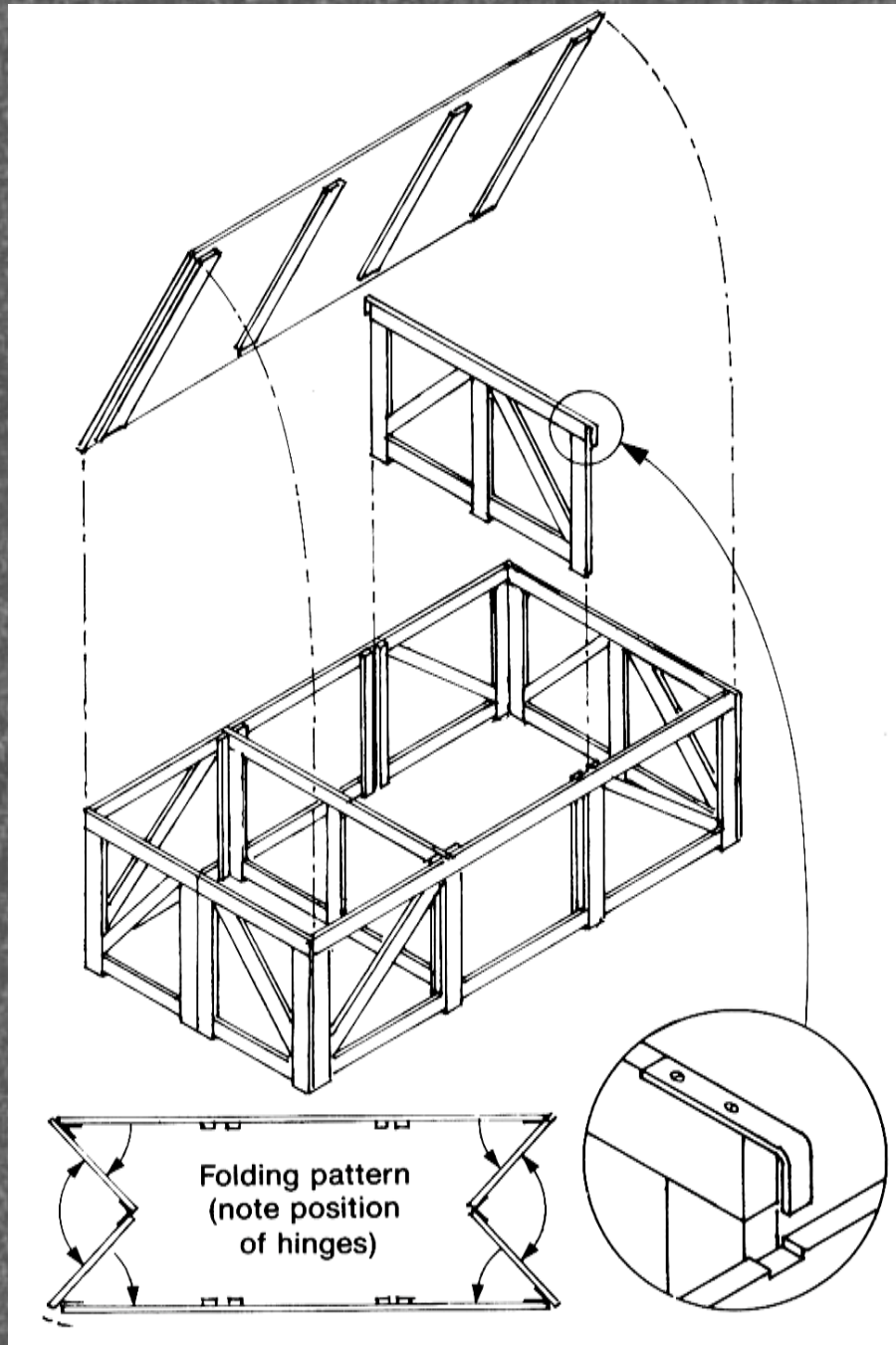
Construct with mortise and tenon joints or butt joints reinforced with cornerblocks or keystones



Weight-Bearing Scenery

Continental Parallel Platform

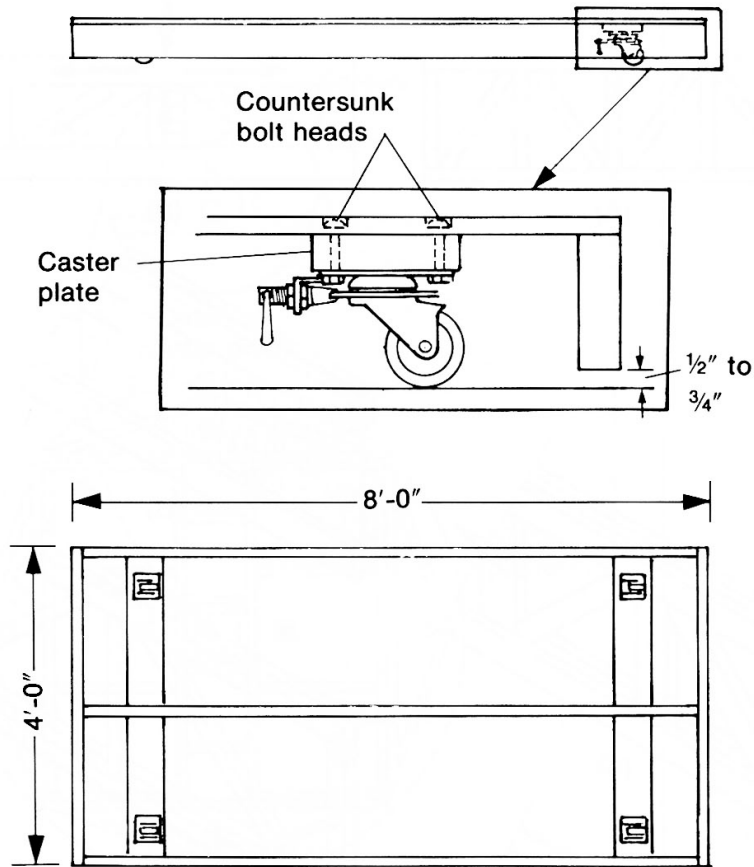
- Similar to standard parallel but folds like an accordion
- Center support frames must be removed before collapsing



Weight-Bearing Scenery

Wagons

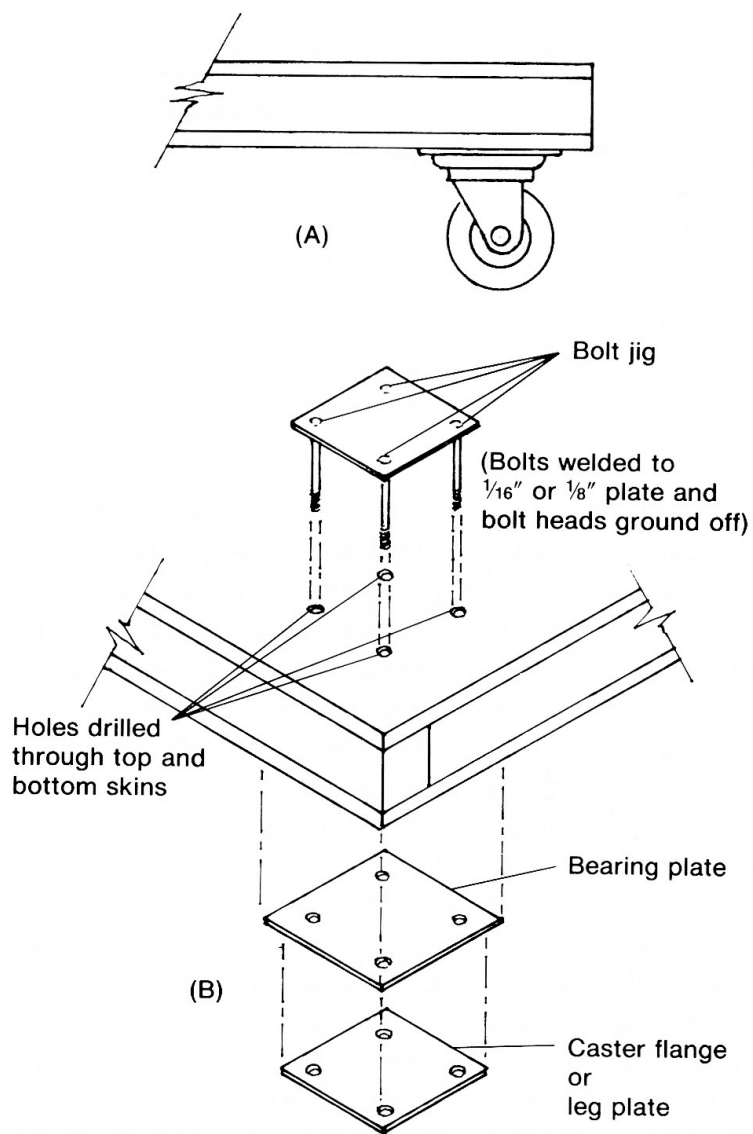
- Wagons are platforms that are supported on **casters** rather than legs
- Casters can be either fixed or swivel, bolt onto **caster plates** which then are attached to the lid
- Caster plates are sized to create a $\frac{1}{2}$ " to $\frac{3}{4}$ " clearance from the deck



Weight-Bearing Scenery

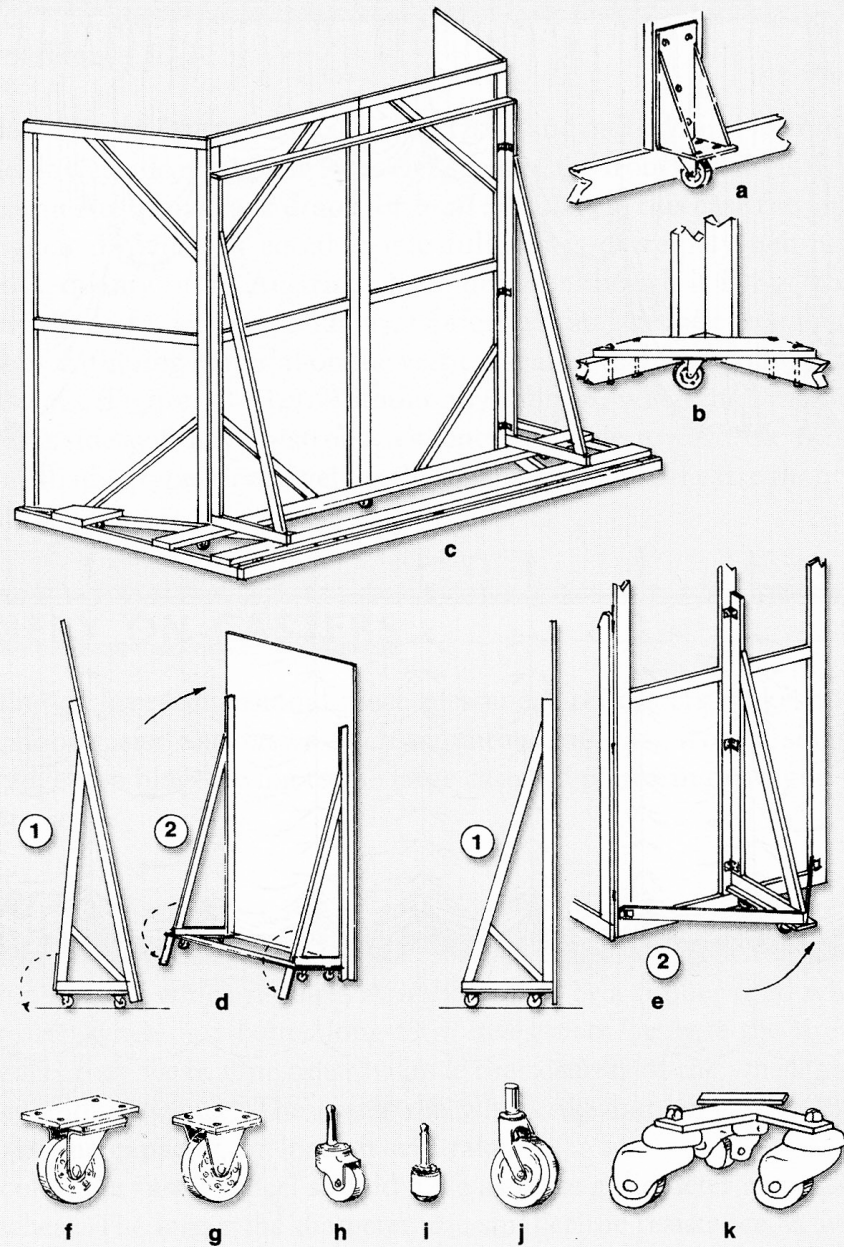
Wagons

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- Casters can be either fixed or swivel, bolt onto **caster plates** which then are attached to the lid
- Caster plates are sized to create a $\frac{1}{2}$ " to $\frac{3}{4}$ " clearance from the deck
- Casters can also be attached to stressed-skin platforms



Castering Techniques

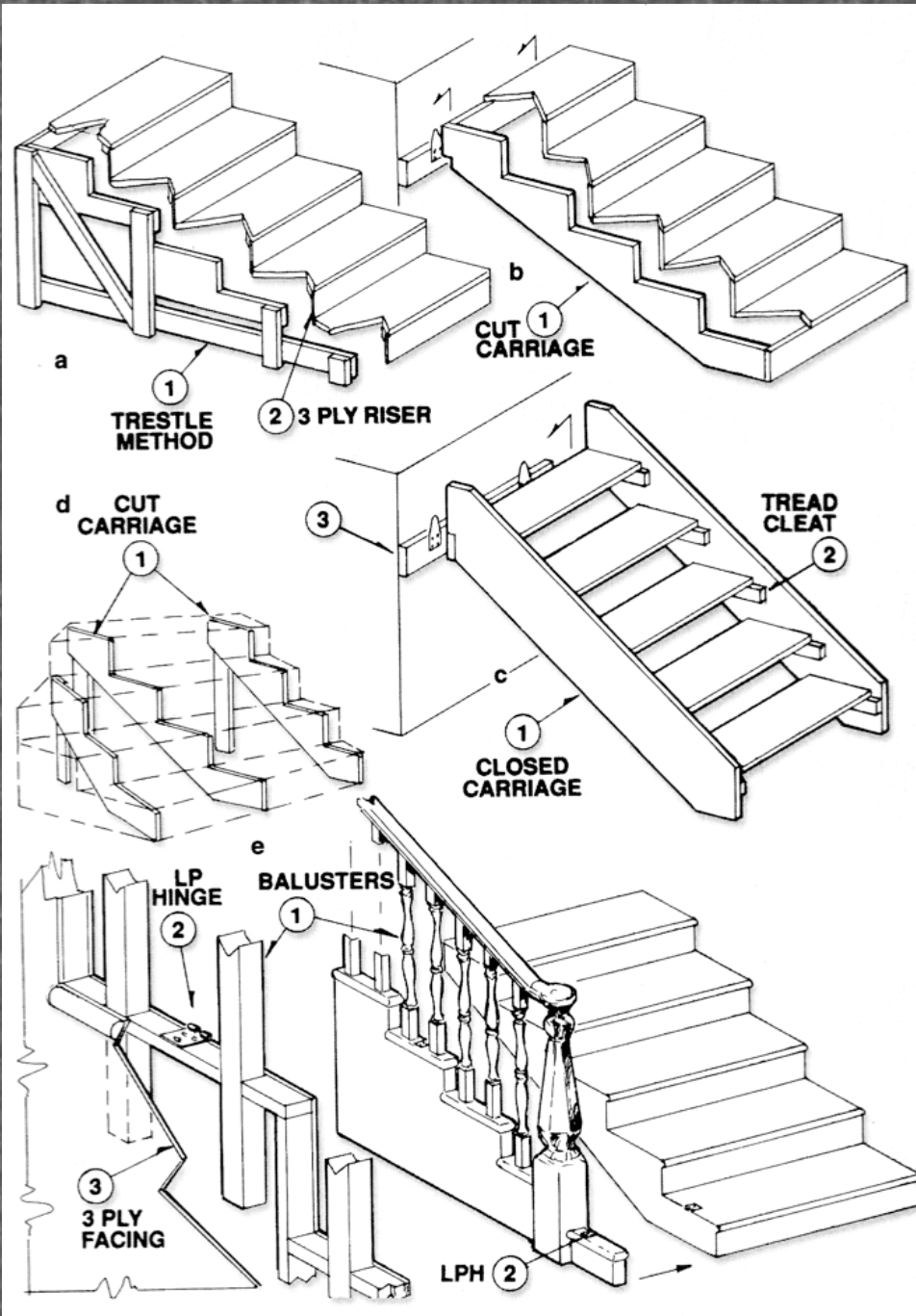
- a** Single caster mounted on rear of flat.
- b** Single caster mounted in corner.
- c** Outrigger wagon.
- d** Tip jack:
 - 1** Scenery tipped back to rest on casters.
 - 2** Scenery upright; blocked-off caster in working position.
- e** Castered jack:
 - 1** Side view showing how scenery is held clear of floor.
 - 2** Caster jack on a hinged or "wild" piece of scenery.
- f** Flat-top swivel caster.
- g** Flat-top fixed caster.
- h** Stem-type swivel caster for furniture.
- i** Small stem-type ball caster for furniture.
- j** Large stem-type swivel caster; mounts into bottom of scaffolding pipe.
- k** Triple-swivel caster (zero throw caster).



Weight-Bearing Scenery

Step Units

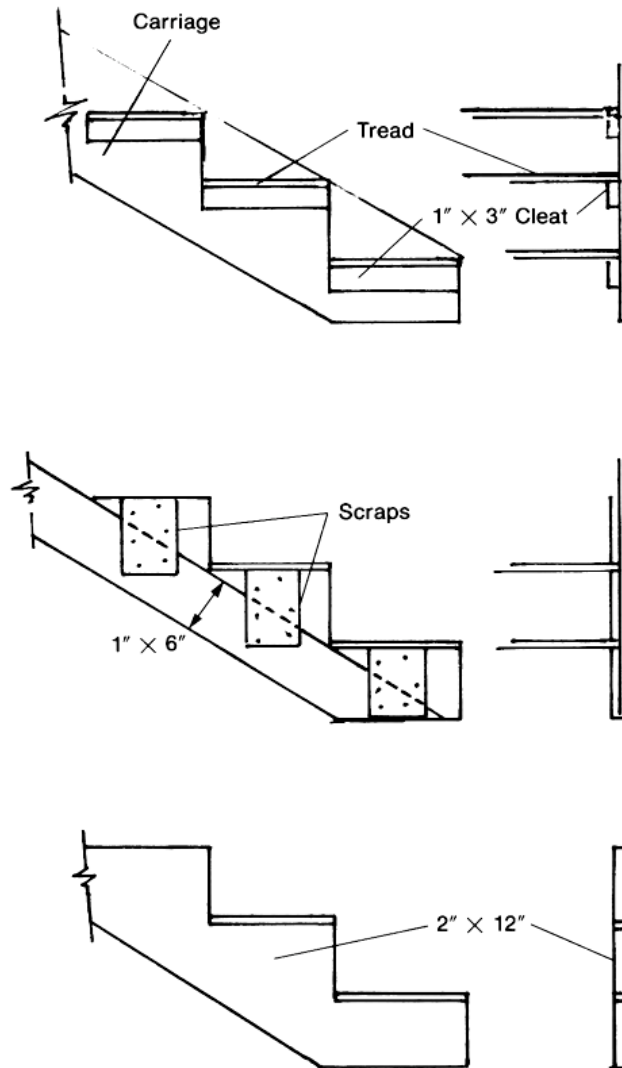
- **Trestle Method** builds stairs into existing platform structure, difficult to move
- **Cut Carriage** method, pattern for riser and tread is cut from a single board, leaving 3" below the cuts, carriages support the treads
- **Closed Carriage** method, treads supported by **tread cleats**, hides steps



Weight-Bearing Scenery

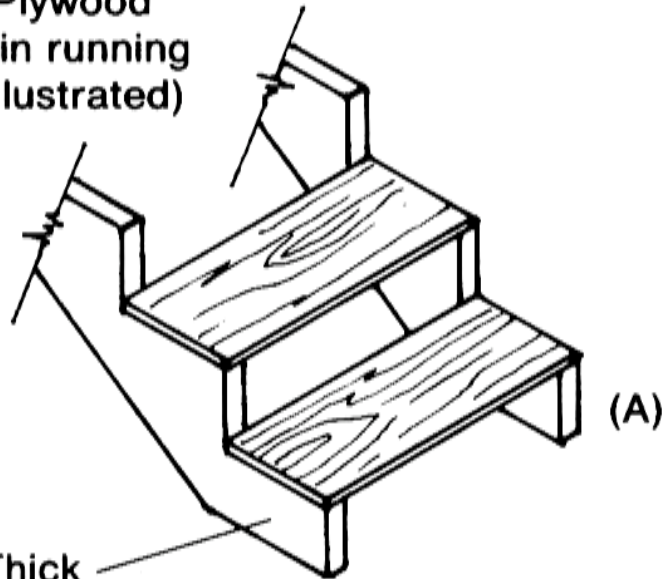
Step Units

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- **Cut Carriage** method, pattern for riser and tread is cut from a single board, leaving 3" below the cuts, carriages support the treads
- **Closed Carriage** method, treads supported by **tread cleats**, hides steps
- Carriages are cut from 1x12 or 2x12, depending on weight and strength needs, for wide steps carriages are needed every 30"

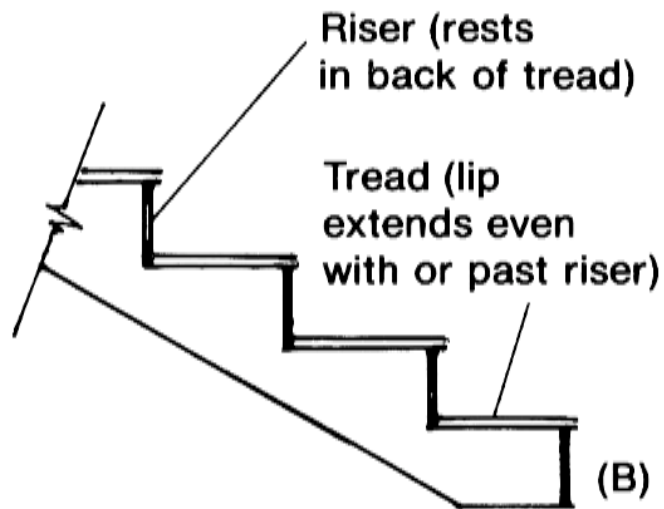


Weight-Bearing Scenery

$\frac{3}{4}$ " Plywood
(grain running
as illustrated)



2" Thick
carriages

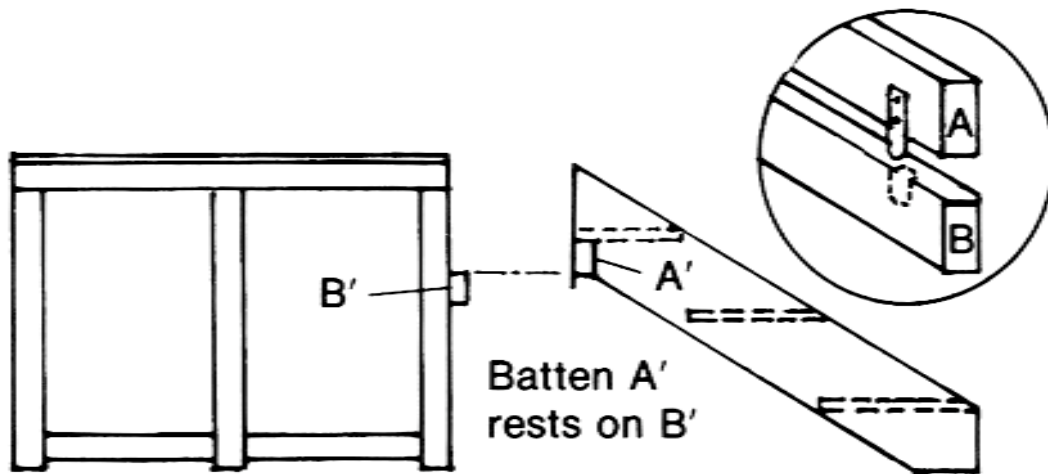


Riser (rests
in back of tread)

Tread (lip
extends even
with or past riser)

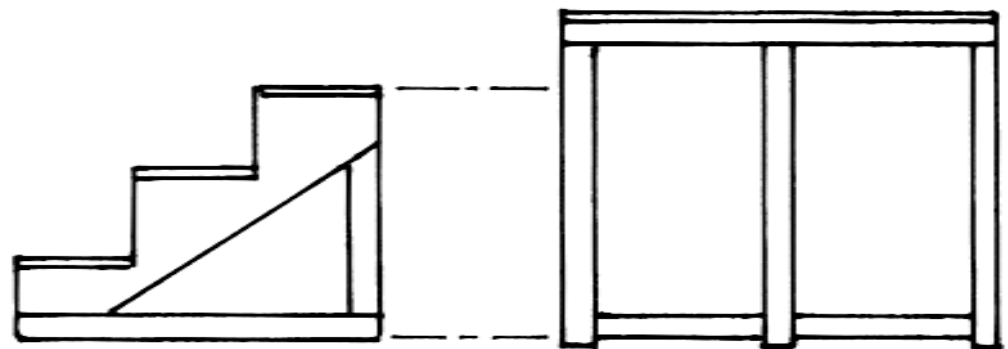
Step Units

- **Treads** support weight, made from 1" pine or $\frac{3}{4}$ " ply, cut so grain runs parallel with the long side of the tread
- **Risers** are made from thinner material, used to conceal the understructure of the step unit and platform
- For ease of movement, the sum of tread **run** and riser **rise** equals 18" (i.e. 12" run + 6" rise)
- Step units can be built as **independent** units (with legs and bracing) or as **dependent** ones that attach to existing platforms



Batten A'
rests on B'

Dependent stairs



Independent stairs

Non-Weight-Bearing Scenery

Trees and **Columns** have dimension but don't bear weight, built from a basic **silhouette frame**, numerous **contour pieces**, and a covering or finish

