PNEUMATIC LIFf FEET

Brian Des Pal.mes, California State University, Fullerton

For a production at California State University at Fullerton, a S'-0" x 4'-0" platform had to be easily moved on stage by a performer, and then stay in position to be danced on. Since it was desired that one performer move the piece on, dance on it, and then move it off, a self-contained, simple-to-actuate, reliable, and relatively inexpensive locking system was needed. We *used* pneumatic cylinders to lift the platform off its wheels.

The system described here was originally designed by Bill Meyer, Technical Director, CSUF, and Tony Maggi, a student at CSUF, and then adapted for this *use*. The scenery was placed on a dolly with 6 Darnell swivel casters. The lifting mechanism used 4 Speedaire compact air cylinders bolted directly to the dolly frame. Each cylinder had a shop-made foot (see figure 1) that consisted of a 1-1/2" square by 1/8" steel plate and a 1-1/2" piece of 7 /16" - 20 tpi threaded rod. A 7/16" hole was drilled in the foot and the rod placed in the hole and welded in place. A nut was put onto the threaded rod, and the whole foot threaded into the tapped end of the piston rod. The height of each foot could be adjusted by rotating it, and locked in place by jamming the nut up against the piston rod. To keep the feet from slipping, pieces of high-traction corrugated rubber from a floor mat was attached with Scotch 1099® quick-tack adhesive

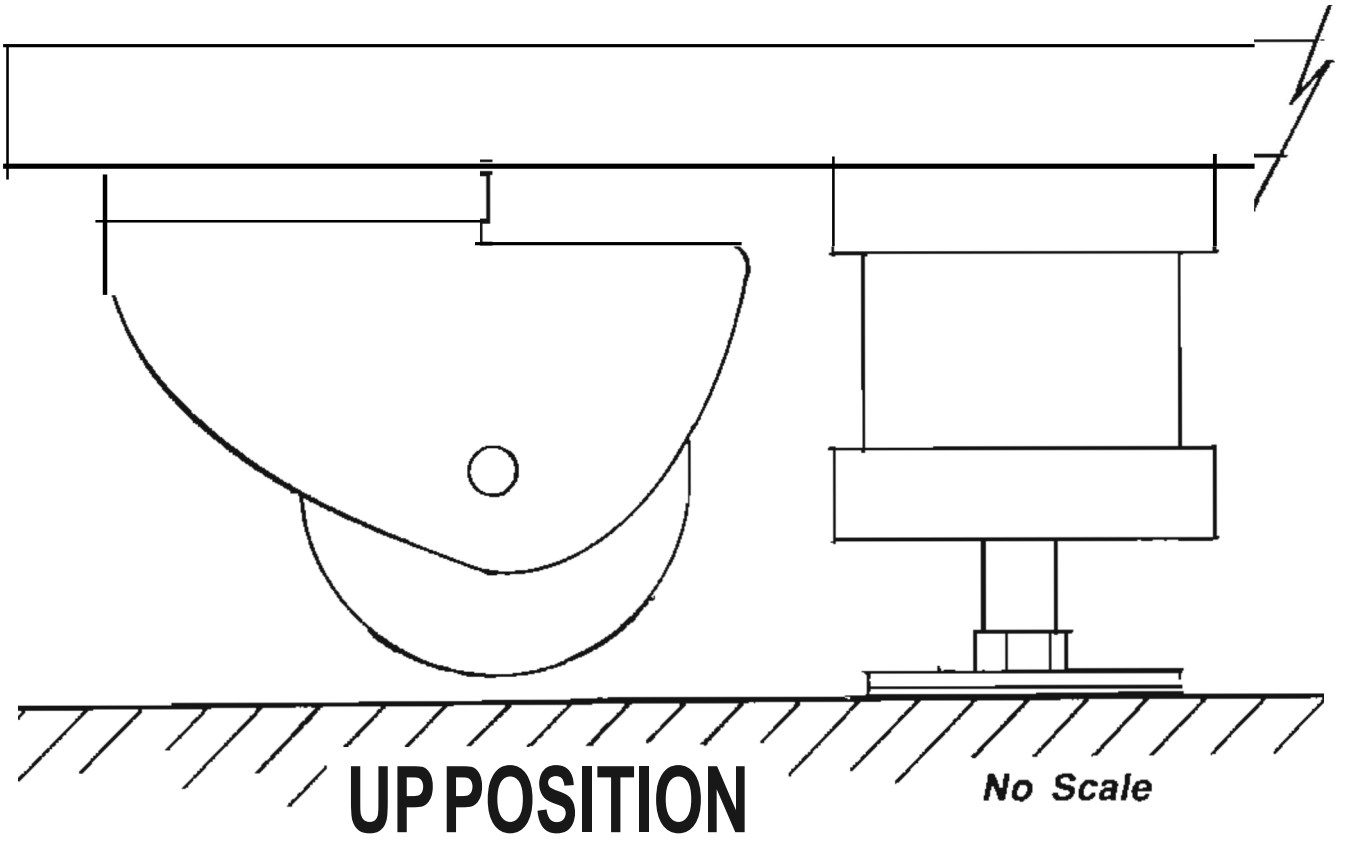

Figure 1

The pneumatic system (see figure 2) used a 6-gallon Speedaire portable air tank, model 4ZA-92, ($30.75), with a maximum pressure rating of 125 psi (W.W Grainger, the supplier of these tanks cautions that "these tanks do not have AS:ME certification. Before ordering, check local and state code requirements.")_ The tank was charged by an air compressor before each use to insure consistent operation. Air from the tank went through a Speedaire pressw-e regulator, model 2Z767C ($10.60). Between the regulator and the cylinders was a Clippard miniature 5-way control valve, with a toggle handle, model MJTV-5 (about $50.00). The two exhaust ports of the control valve had Speed.aire model 6X368-1/4" ($8.85 each) flow-control valves to regulate the speed of rise and descent. The cylinders themselves were Speedaire model 2A710 ($46.45 each), with a bore of 1-1/2" (resulting in a lifting force of 1n lb each at 100 psi), and a stroke of 1". All plumbing used 1/4" o.d. polyethylene tubing ($6.14 per 100'), with Parker Prestolok® fittings, and assorted pipe fittings. The total cost for a complete system with 4 cylinders was around $360.00.

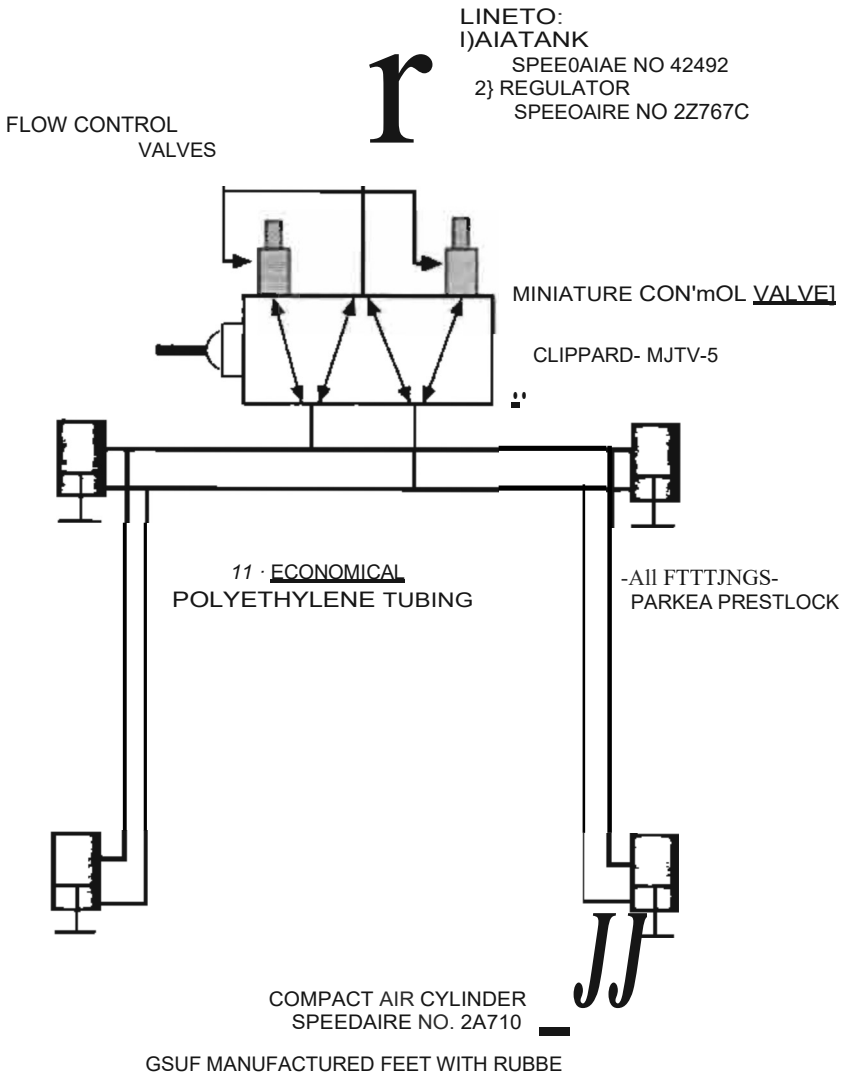

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Figure 2