

Three Design Options

Mechanical Drive

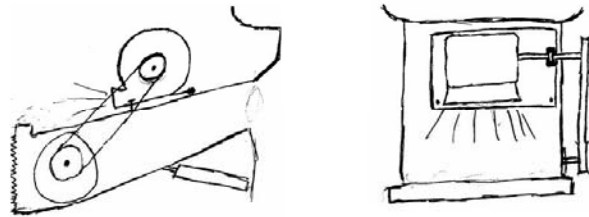
Design Criteria

- Blower fan with 400 cfm and 200 mph.
- Shaft drive, requires $\frac{3}{4}$ HP @ 3500 RPMs.

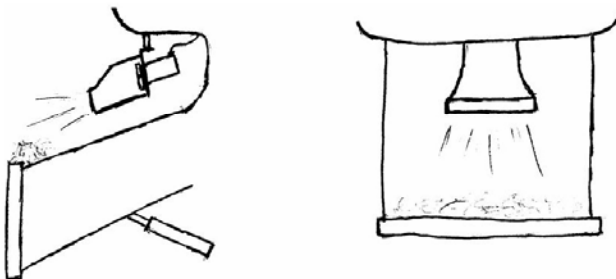
Complications

- No suitable attachment point for the drive pulley.
- The fan for this design cost \$528.

Initial Sketch of Mechanical Drive



Initial Sketch of Electric Drive



Electric Drive

Design Criteria

- Blower fan with 400 cfm and 200 mph.
- Shaft drive, requires 2.5 HP @ 7000 RPMs.
- $12V \times 22A = 264 \text{ Watts}$
- $264 \text{ Watts} / 746 \text{ Watts/HP} = 1/3 \text{ HP}$
- $8 \text{ HP} = 1 \text{ electric HP}$
- $1/3 \times 8 = 2.64 \text{ HP}$

Advantages

- Motor: \$70
- Fan & housing: \$0
- Ease of installation

Hydraulic Drive

Design Criteria

- Blower fan with 400 cfm and 200 mph.
- Shaft drive, requires $\frac{3}{4}$ HP @ 3500 RPMs.

Complications

- Dimensions of fan would not work with the clearance requirements.
- The fan for this design cost \$528.

Initial Sketch of Hydraulic Drive

