Problem Statement
Most grain bin entrapments occur when a worker enters a bin to free lodged grain from the unloading auger while it is running.

Solution
Prevent grain bin entrapments by developing a safety system that disables the unloading auger at entry while still allowing grain flow to be monitored.

Deliverables
- Educational safety display model with interlock system installed
- Wiring schematic of system
- Cost Analysis: Total to install a system = $650.00

Project Application
The Indiana Rural Safety & Health Council will use the grain bin model as an educational training tool and safety display at the Indiana State Fair, National FFA Convention, National Farm Machinery Show and other safety programs.
Grain Entrapment Problem

- Over 700 entrapments recorded since 1964
- 75% of cases were fatal entrapments
- 77% of entrapments occurred in corrugated storage bins
- 76% occurred while unloading grain from bin

Entrapment Cases are Rising

- In-experienced operators
- Increased on-farm storage
- Increased farm size

Concerns with Rescue Procedures

- Time consuming
- Complex
- Dangerous
- Most are unsuccessful

Approach to Final Solution

- Literature review of grain entrapments and consultation with safety experts, grain bin engineers, and professional electricians.
- Developed ideas to create a fail-safe solution to the identified problem
- Designed, built, and tested a model interlock system

Building Process

- Constructing base frame and attaching mounting plates for casters.
- Completed 6.5' x 6.5' base with U-trough auger
- Electrical box, motor and contactor reset switch
- Installation of the limit switch to door frame
Interlock Safety System Design

**Electrical Components**

- ¾ hp Motor
- 15 amp fuse box with 120 V electrical outlet
- Start/Stop switch box
- Limit Switch (located on manhole door)

**Start/Stop switch** to reset entire system once door has been closed

Limit Switch activated to shut off auger when door opened past 45° which allows grain flow to be monitored without entering bin.

**Wiring Schematic**

**Special Thanks to...**

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