

# GARAGE ALARM SYSTEM

BART MIKA

Patent: US009251677

# The problem

- Garage gates can be easily forced open by burglars
- Homeowners typically store many valuable tools and sensitive documents in their garages
- The door between the garage and the home is typically left unlocked allowing easy entry for potential intruders
- Installing home alarm sensors in the garage is inconvenient:
  - Short alarm siren activation delay requires the homeowner to run out of the car and turn off the alarm every time they drive in to the garage
  - When leaving the homeowner may be required to drive out of the garage and walk back home to arm the alarm
  - Increasing the alarm activation time delay decreases deterrent factor of the alarm siren. 2 minutes is more than enough to steal valuables from the garage and run away before an alarm siren activates
- For this reason people chose not to install typical alarm sensors in their garage

# The solution

- If the alarm system could differentiate when the gate is opened by the home owner vs when it is not:
  - ▣ There would be no inconvenience associated with arming and disarming the alarm
  - ▣ The siren could be programmed to activate immediately the moment the gate is forced open drastically increasing the deterrent factor or an alarm siren
  - ▣ The alarm could be in an always armed state protecting homeowners day and night from intruders
- Only the homeowners and other authorized people can open the garage gate using their powered gate opener
- A surge in electrical current flowing to the garage gate opener is a great indicator of the garage opener motor activating to open a gate.

# Types of garage openers



Basic



Wall mounted



With a light

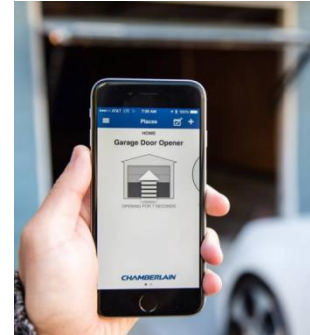


With multiple lights

# Garage opener activators:



Remote controls



Cell phone app (via WiFi)



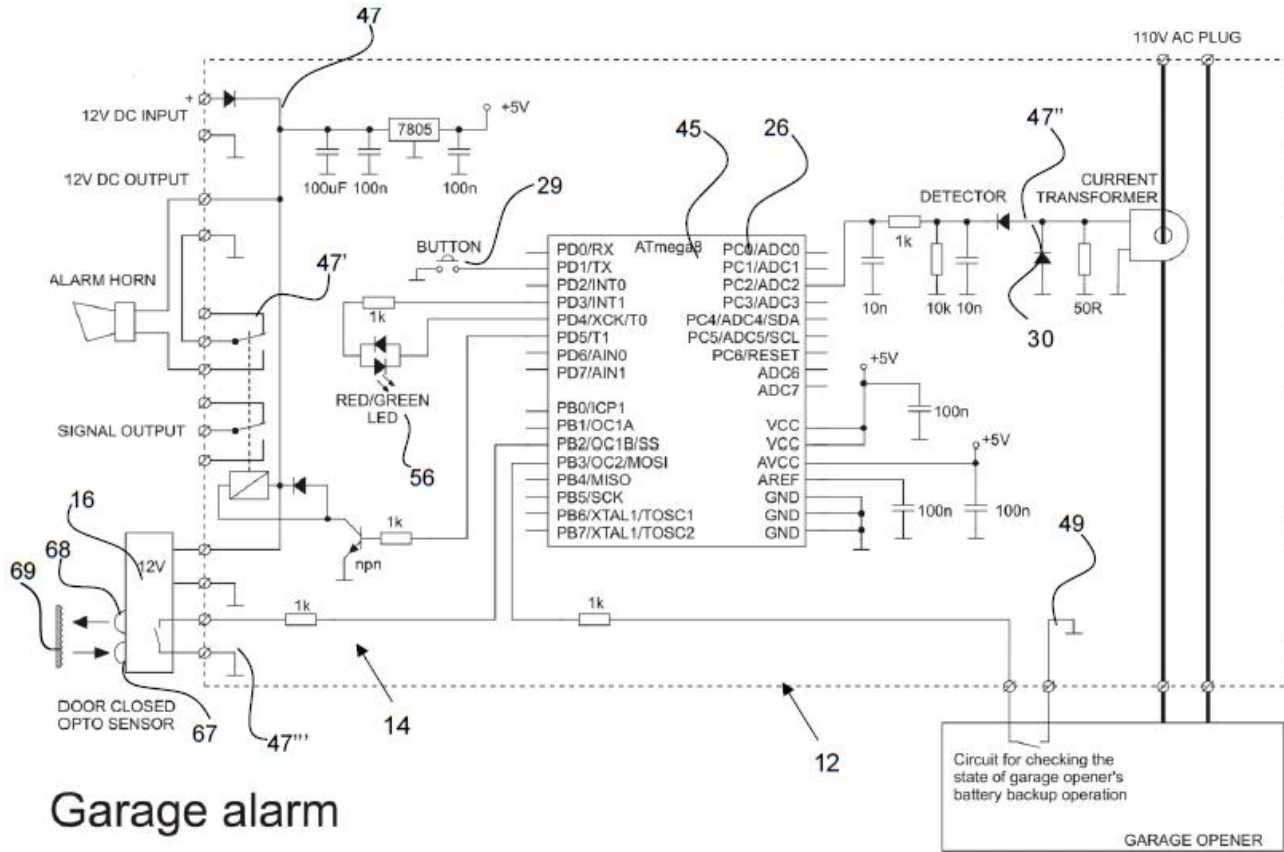
Wireless PIN pads



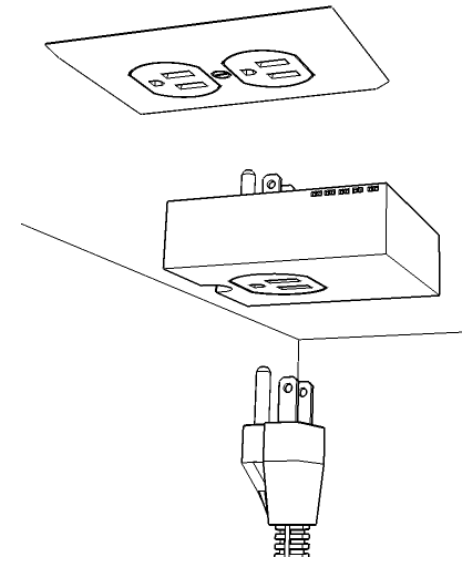
Wired buttons

**Measuring electric current spike is the only method to detect garage opener activation that covers every method used to activate it**

# Sample electronic schematics for one of the wired prototypes of the invention

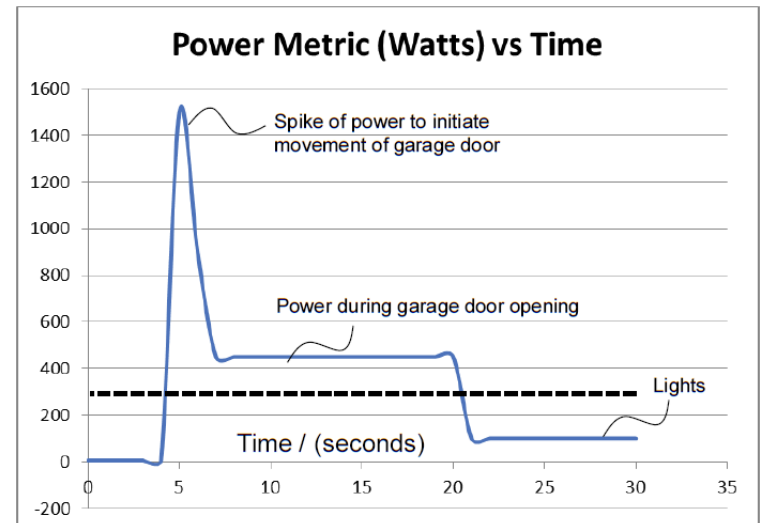


Garage alarm



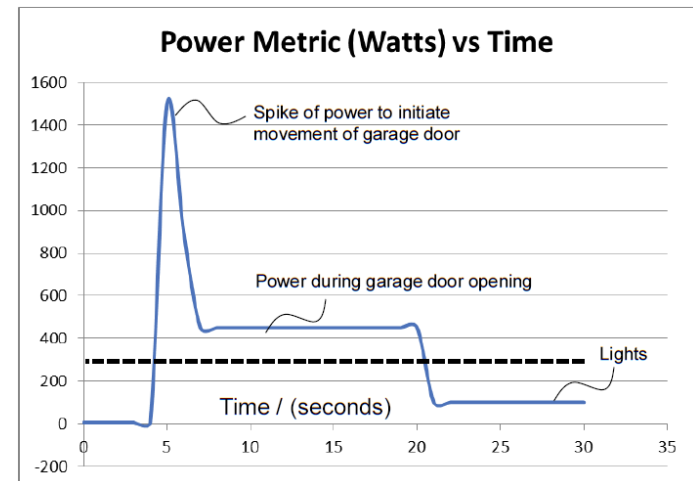
# Power consumption during operation

- Garage opener uses only a few Watts of power when in standby mode
- Power consumption spikes for a fraction of the second the moment it is activated, than stabilizes at typically above 400 Watts while the gate is being opened
- After the gate operation the light comes on for a few minutes
- The light can be activated independently from the garage opener operation
- The light typically comes on after a power outage/circuit breaker reset



# The device power measuring characteristic

- The sensor device can be configured to detect the spike in the current drawn when the gate is being activated
- There may be garage openers that don't spike when they are activated so the sensor self calibrates after every gate closing to set a current draw threshold above the current needed to power the light bulbs
  - ▣ This prevents problems when energy efficient bulbs are installed or when a light bulb burns out (dotted line)





# Types of garage position sensors



Magnetic sensor



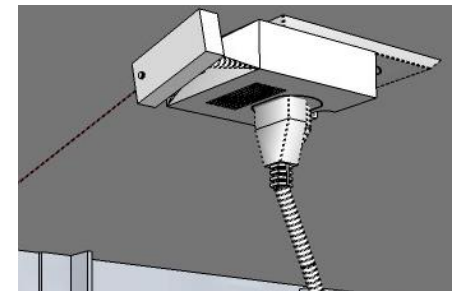
Tilt sensor



Gravity activated



Reflective beam sensor



(sensor Embodiment with  
The optical beam sensor)

# Other applications of this invention

- Same principle can be used in various other types of powered barriers:

