A FIRE ALARM SYSTEM FOR DEAF AND HEARING IMPAIRED PERSONS USING REMOTE AND MULTIPLE SENSING DEVICES

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ABSTRACT

The design of a fire alarm system for deaf and hearing impaired persons using remote and multiple sensing devices is presented in this thesis. The function of this device is to inform the hearing impaired persons to the occurrence of a fire especially while they are in deep sleep. It is designed to be effective, reliable, relatively inexpensive and to avoid any necessity for direct connection to the user. The system consists of a transmitter unit which may be connected to almost every existing fire alarm system and transmits an on/off signal by radio frequency to a portable receiver(vibrating unit) which will trigger a vibrating device and flashing light indicator used by the deaf person. In addition a sleeping cot vibration or heating element will be incorporated to the device. With suitable modification, this device can also be used as a burglar alarm and to monitor door bell, telephone ringing, alarm clock, etc., thus making it a versatile system.

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CHAPTER 1

1. INTRODUCTION

Fire-damaged buildings and plants can be replaced but human being cannot. This is why most of the legislation associated with fire are concerned with the protection of human being against its effects. The main concern is that every person should be able to escape safely from a building in which a fire has just started. If this objective is to be achieved, the following factors should be considered:

- fire detection must be rapid and reliable;
- warning of the fire must be given immediately;
- the warning must be understood;
- the people must know how to escape;
- the escape route must lead to the open air;
- the escape route must be unaffected by the fire.

Every year, more than 80,000 North Americans are killed or injured in fires (Nova Scotians Deaf Society,1996). Most fatal fires occur at night when the victims are asleep. Many people are saved each year when they are awakened by the alarm from a smoke detector. Most smoke detectors provide an acoustic alarm signal, but hard-of-hearing and deaf persons could not hear such acoustic alarms. This situation puts them at a significant risk in a night fire, this is therefore a significant safety concern. Alarms for such persons normally rely on devices, which substitute