02205 U.S. PTO
032315

PTO/SB/16 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

U.S. PTO
62/177683
03/23/2015

Express Mail Label No. _____

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
RICHARD	CARLSON	BULL VALLEY, IL

Additional inventors are being named on the _____ separately numbered sheets attached hereto.

TITLE OF THE INVENTION (500 characters max):

WORKER PROTECTION SYSTEM

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☐ The address corresponding to Customer Number: _____

OR

☒ Firm or Individual Name METROM RAIL

Address
244 TELSER RD.

City LAKE ZURICH	State IL	Zip 60047
Country	Telephone 224-542-9992	Email RICK.CARLSON@METROM-RAIL.COM

ENCLOSED APPLICATION PARTS (*check all that apply*)

☒ Application Data Sheet. See 37 CFR 1.76.
☐ CD(s), Number of CDs _____
☐ Drawing(s) *Number of Sheets* _____
☐ Other (specify) _____
☒ Specification (e.g., description of the invention) *Number of Pages* 5

Fees Due: Filing Fee of $260 ($130 for small entity) ($65 for micro entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant asserts small entity status. See 37 CFR 1.27.
☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Applicant must attach form PTO/SB/15A or B or equivalent.
☐ A check or money order made payable to the *Director of the United States Patent and Trademark Office* is enclosed to cover the filing fee and application size fee (if applicable).
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: _____.

$130 ok
TOTAL FEE AMOUNT ($)

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 10 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

The PTO did not receive the following listed item(s) AD 5

PTO/SB/16 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 2 of 2

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the invention was made by an agency of the U.S. Government. The U.S. Government agency name is: _____

_____

☐ Yes, the invention was made under a contract with an agency of the U.S. Government. The name of the U.S. Government agency and Government contract number are: _____

_____

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

SIGNATURE _____ DATE 3-18-15

TYPED OR PRINTED NAME RICHARD CARLSON REGISTRATION NO. _____ (*if appropriate*)

TELEPHONE 224-542-9992 DOCKET NUMBER _____

PROVISIONAL APPLICATION FOR UNITED STATES PATENT

TITLE

WORKER PROTECTION SYSTEM

SIEMENS et al. EXHIBIT 1005
Page 3 of 7

BACKGROUND

[0001] Metrom Rail's Worker Protection System is a human-wearable train proximity warning system which will alert a railroad worker that a train is approaching. A companion device will trigger alerts and is located in either an approaching vehicle (or train), or placed by the work crew along the tracks ("wayside"). The vehicle-mounted companion device will trigger an alert when it detects it is approaching a crew equipped with the devices, as well as will alert the vehicle operator that workers are in proximity and display the number of detected workers. The way-side companion device will trigger an alert when it detects a passing train. The human-wearable devices will be powered by rechargeable batteries, and may be inserted into charging stations at the end of each day to be charged for work the following day. The vehicle-mounted device is vehicle powered. The way-side device is battery powered.

COMPONENTS

[0002] There are three main components to the Worker Protection System (WPS) system:

Portable Alert Device (PAD) - This device is small, light, low profile so as not to impede normal working activities. It includes an audible warning alarm, visual LED indicator, and an acknowledgement switch to silence an alert. The housing will included various features to support multiple mounting locations. The PAD provides at least a 15 second warning in line of sight conditions, when a train approaches at 60 mph. A downloadable log file is available to allow examination of alerts and other events and activities. The PAD also contains an accelerometer which can be utilized to "power down" when the device is not being worn to save battery power, then "power up" when motion is detected. This module will be worn by either a clip, arm band or belt clip.

Vehicle Alert Module (VAM) - This device consists of either a portable or permanently mounted transceiver on a locomotive or other vehicle operating on railroad tracks which broadcasts a signal that interfaces with the Portable Alert Device (PAD). When a worker is detected, the transceiver user interface displays and sounds a warning to the vehicle operator, indicates the quantity of workers detected, and the approximate distance to the workers. A downloadable log file is available which contains alerts, acknowledgments, time, location, distances to workers and traveling speed within work zone.

Wayside Detection Unit (WDU) – This device is attached to a tripod and is temporarily placed near the track (no closer than four feet to the nearest rail) at each end of a work zone. The WDU broadcasts a signal when a train or vehicle passes. This device can be utilized in areas where trains or other vehicles may not have Vehicle Alert Modules (VAMs).

OPERATION

[0003] The system is designed to operation using three different scenarios: In scenario one, a train is equipped with a VAM and the VAM interfaces with the worker worn PAD to detect if a train is proximity where an alarm is activated. Scenario two consists of a worker worn PAD, which is then activated by a wayside WDU, which broadcasts an alarm, picked up by PAD's when a train is in proximity. The third activation scenario would be a worker worn PAD activated by a system which contained WDU's as well as train mounted VAM's for redundancy.

[0004] The system functionally operates upon a radio based time of flight system. The PAD's, VAM's and WDU's all contain a similar time of flight radio system, which when activated, broadcasts a signal which can then be decoded to discern the distance between targets, how many targets, or if the threat is moving away or towards the targets.

SIEMENS et al. EXHIBIT 1005
Page 5 of 7

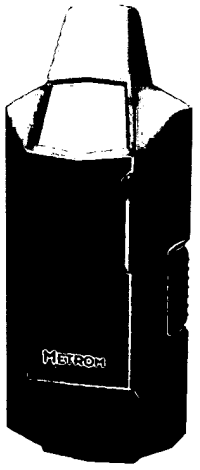
[0005] The modules also contain an integrated GPS module which is utilized for both time stamps in logging functions, as well as locational coordinates of the users.

[0006] The system also contains a logging function which can be accessed either remotely or by a wired connection. This log file will show system functionality, location, speed, alarm status, alarm acknowledgement, battery life and other parameters.

[0007] A version of this system will also be designed and utilized for other industries such as but not limited to the construction industry. This system for instance, can be used to keep workers away from heavy equipment, obstructions such as excavations, or used as a geo-fence to keep out of secure or sensitive areas.

[0008] The PAD and WDU modules will be battery powered. The PAD modules will be stored and transported in charging rack which will allow for bulk charging and if desired data downloads.

[0009] Drawings



PAD Module



System Layout

