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Transmitted herewith for filing under 37 CFR 1.53(b) are the specification and claims of the nonprovisional patent application of:

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Inventor(s)

TOOLS FOR RAILWAY TRAFFIC CONTROL

APPLICATION ELEMENTS ENCLOSED:

1. X Specification (total pages 36) including:
   a. 4 pages of claims (claims 1-8)
   b. 1 page(s) Abstract

2. X 11 sheets of drawings (Figs. 1-13)

3. X Oath or declaration of inventor
   a. X Newly executed
   b. ___ Unexecuted
   c. ___ Copy from a prior application *(for continuation/divisional with Item 12 completed)*

4. X Application Data Sheet (signed).

5. ___ Deletion of Inventor(s): Signed statement pursuant to 37 CFR 1.63(d)(2) and 1.33(b).

6. X Incorporation By Reference: of entire disclosure of prior application(s) indicated in item 12.

APPLICATION PARTS ENCLOSED:

7. ___ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i).

8. X This application is assigned to Railware, Inc., Hauppauge, New York.
   a. An assignment (including Form PTO-1595) _____ pages.

9. X Power of Attorney
   a. X Newly executed
   b. ___ Copy from a prior application
   c. ___ Communication Indicating Practitioners To Be Recognized As Being Of Record
   d. ___ 37 CFR 3.73(b) Statement (*when there is an assignee*).

10. _X_ Information Disclosure Statement
    - _X_ Form PTO-1449
    - _____ List of Related Cases
    - _____ Copies of IDS Citations

11. ___ A Preliminary Amendment

12. _X_ If a Continuing Application, *check the appropriate box and supply the requisite information*:
    - _X_ Continuation of prior application No.: 14/519,727 filed October 21, 2014 claiming benefit of U.S. Provisional Application No. 61/893,547 filed October 21, 2013.
    - _____ Divisional of prior application No.: _____ filed _____
    - _____ Continuation-in-part (CIP) of prior application No.: _____ filed _____

13. ___ Applicant hereby claims priority under 35 U.S.C. §119
    - ____ Certified copy of priority application No. ___ is enclosed herewith.
    - ____ Certified copy of priority application No. ___will be submitted in due course.
    - ____ Certified copy of priority application No. ___has been filed in prior appl'n no. __.
    - ____ A Request To Retrieve Electronic Priority Application is enclosed herewith.

14. ____ This is a transitional application claiming foreign priority or domestic benefit of an application filed ***before*** March 16, 2013, and includes claim to invention having effective filing date ***on or after*** March 16, 2013.

15. ____ Applicant hereby establishes small entity status under 37 C.F.R. §1.27

The filing fee for electronic filing (claims as amended) is calculated as follows:

					Rate			Fee	
	Number Filed		Number Extra*		Small Entity	Other Entity		Small Entity	Other Entity
Total Claims	8 - 20	=	0	X	$40	$80	=	$	$0
Indep. Claims	2 - 3	=	0	X	$210	$420	=	$	$0
Multiple Dependent Claims Presented: Yes____ No ___X___					$390	$780	=	$	$0
(47 pages*0.75) - 100 pages / 50pages		=	0	X	$200	$400	=	$	$0
*If the difference in column 1 is less than zero, enter "0" in column 2					Basic Fee			$140.00	$280.00
					Search Fee			$300.00	$600.00
					Examination Fee			$360.00	$720.00
					Total Fee			$	**$1,600.00**

16.___ A check in the amount of $_____ to cover the filing fee.

17._X_ The Patent Office is hereby authorized to charge the following fees in connection with the following or credit any overpayment to Deposit Account No. 03-3125.

_X_ Filing fees for electronic filing ($ 1,600.00) under 37 C.F.R. §1.16.

_X_ Patent application processing fees under 37 C.F.R. §1.17.

____ The issue fee set in 37 C.F.R. §1.18 at or before mailing of the Notice of Allowance, pursuant to 37 C.F.R. §1.311(b).

18.__ Other (identify):

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TOOLS FOR RAILWAY TRAFFIC CONTROL

CROSS-REFERENCE TO RELATED APPLICATION

This application is a Rule 1.53(b) continuation of Application No. 14/519,727 filed October 21, 2014, claiming the benefit of U.S. Provisional Application No. 61/893,547 filed October 21, 2013 and entitled "SYSTEM, APPARATUS AND METHOD FOR RAILWAY TRAFFIC CONTROL".

TECHNICAL FIELD

This disclosure relates to railway traffic control, and more specifically, a system, apparatus, and method for railway traffic control to address concerns for safety of railway workers working on or near railroad tracks.

BACKGROUND

Railway transportation is run under strict operational guidelines or rules, in order to operate safely. Most of these guidelines are standard amongst commercial railway traffic. Examples of transport standards include interlock signals, centralized traffic control (CTC), rule 251, etc.

Interlocking signals govern movement within a sector controlled by an interlock. For example, on a specific track

WABTEC EX1002

line, a track may be divided into sections of 400 to 2500m, on each of which trains move at a speed depending on an interlocking signal exhibited by an interlock at an entrance to the section. That is, the interlocking signal displays a color system which instructs the conductor of the train, or the train operating by automated response, how to move through the upcoming section of track. Interlocking systems usually incorporate a 3-color system by which the train, or train conductor, is informed to proceed at regular speed, is informed to proceed at a reduced speed or is prohibited from proceeding through the upcoming section.

While interlocking systems can be operated manually, currently most interlocking systems are controlled electronically. One method of controlling all of the interlocks within a rail system is through a centralized traffic control (CTC), or traffic control system (TCS). A CTC is used for monitoring, tracking and operating trains traversing tracks throughout a network. The CTC is controlled by a single person known as a train dispatcher.

In order for the train dispatcher to make appropriate train control decisions regarding how the train should be operated, various information and data must be obtained and presented. Information regarding track conditions, train

WABTEC EX1002

traffic, scheduling, etc., is presented on a control console which may include a map of the entire rail system controlled by the CTC. Through the control console, the dispatcher has control of each interlock signal (that is, the dispatcher controls the train traffic and flow of train traffic using the interlocks) and is constantly made aware of the positions of trains in the railway system as such positions are electronically reported by signals present throughout the railway system. In addition, in order to provide for safe traffic control and avoid accidents or collisions, signals are provided throughout the track network, or interlocks.

The interlocks may be controlled from the CTC in any of various different ways, including, e.g., direct wiring, by pulse codes sent over a wire to distant locations, etc. In addition, interlocks can also be controlled by a native mechanism detecting presence of a train on the track. That is, when a train occupies a certain section of track, the interlock prevents other trains from proceeding onto the same

Further, there are additional safety systems on the train itself, such as automatic train control (ATC). A common feature of many of such automated train control

WABTEC EX1002

systems is the need for constant or nearly constant communications between onboard train control systems and an offboard hub radio connected to control equipment located along the wayside or in a central office. In some systems, the offboard control equipment generates movement authorities which authorize the train to move in one or more sections of track. In some systems, the offboard equipment informs the onboard train control system of the presence of other trains in the vicinity. In yet other systems, the offboard equipment provides information such as temporary speed restrictions and work zone information to the onboard train control system. Such systems protect against a number of human errors on the part of the train drivers, one of the basics of the system being that the train is provided with a computer which receives traffic information, such as stop signals and speed limits, from a plurality of transmitters along the track. Thus, the computer may bring the train to a standstill regardless of what the train driver does when the train arrives at a stop signal.

Even with all these safety features present in a railway system, railway accidents occur, with many being fatal. For example, one study reported that there were 39 roadway worker accidents that occurred between January 1997

WABTEC EX1002

and the end of 2011, in which 41 roadway workers perished while attending to tasks such as inspection, construction, maintenance, or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track, operating as flagmen or watchmen/lookouts for other roadway workers, etc.

There remains a need for further safety measures to protect the lives of railway workers.

BRIEF SUMMARY

This disclosure provides tools (in the form of systems, apparatuses, methodologies, etc.) for enhancing railway traffic control, as supplemental measures directed to safety of railway workers.

For example, a centralized railway control system may be adapted (such as via computer hardware, software, or a combination) to include providing on a user terminal a user interface including a block placing part to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections, generating a removal code and transmitting the removal code to the electronic

WABTEC EX1002

contact address of the railway field worker, and permitting the block to the track sections to be removed only upon entry of the removal code in the centralized railway control system. Such process may be largely automated via programming such that upon placement, by the block placing part, of the block of railway traffic to the specified track sections, the removal code is automatically transmitted, by a code generation part, to the electronic contact address of the railway field worker, and the block of railway traffic to the specified track sections remains in place in the centralized railway control system until the entry of the removal code in the centralized railway control system to cause a block removal part to remove the block on said one or more track sections.

In another aspect, the adaptation may include a RTC user interface to permit a user (e.g., train dispatcher) to specify a track section(s) to be blocked, specify an instruction to the centralized railway control system to block the railway traffic to the specified track section(s), and specify identifying information of the railway field worker performing (or to be performing) work in the specified track section(s).

In another aspect, the adaptation includes a block

WABTEC EX1002

removal user interface to permit a user to enter the removal code to cause the block removal part to remove the block on said one or more track sections. Such block removal user interface may be provided in any of various ways. For example, the block removal user interface may be provided within a mobile application or web page through which the railway field worker can enter the removal code manually or orally (i.e. including a voice or speech interface part). As another example, the removal code may be embedded in a link in a message transmitted by email or messaging to the electronic contact address of the railway field worker, and the railway field worker can simply cause the removal code to be entered by activating the link in the message received by the railway field worker. In another example, the block removal user interface may be provided on the same user terminal on which the block placing part is disposed. Further, a voice or speech interface part may be disposed on the system-side to process a voice message (such as received via a telephone call from the railway field worker), extract the removal code from the voice message, and enter the block removal code. In each instance, the block of railway traffic to the specified track sections remains in place in the centralized railway control system until the entry of

WABTEC EX1002

the removal code through the block removal user interface. Further, entry of the removal code may also require entry of identification of the user entering the removal code, and removal of the block may also require not only the removal code but also confirmation that the user entering the removal code is authorized to remove the block. The block removal user interface may further require, in addition to entry of the removal code, the user to specify that confirmation that the track sections have been cleared has been obtained from the railway field worker associated with the block, before the block removal user interface permits the removal code to be transmitted to the block removal part.

In another aspect, the system may include a railway control database registering block identifying information, including block limits identifying the one or more blocked track sections, along with the removal code for removing the block of the track sections. Further, the railway control database may register additional information, such as identification of the user who specified the instruction to block the track sections, notes specifying reasons for the block, date and time at which the block was placed, etc. The railway control database may further register block

WABTEC EX1002

removal information identifying date and time at which the block was removed and identifying the user who entered the removal code and who specified that confirmation that the track sections have been cleared was obtained from the railway field worker associated with the block.

BRIEF DESCRIPTION OF THE DRAWINGS

The aforementioned and other aspects, features and advantages can be more readily understood from the following detailed description with reference to the accompanying drawings wherein:

Fig. 1A shows a block diagram illustrating a railway control system, in accordance with an exemplary embodiment;

Fig. 1B shows a block diagram illustrating a railway control system, in accordance with another exemplary embodiment;

Fig. 2 shows a block diagram of a railway traffic control apparatus, in accordance with an exemplary embodiment;

Fig. 3A shows a block diagram of an exemplary configuration of a terminal;

Fig. 3B shows a block diagram of an exemplary configuration of a computing device;

WABTEC EX1002

Fig. 4 shows a schematic diagram illustrating communication flow in the system shown in Fig. 1A or in the system shown in Fig. 1B;

Fig. 5 shows an example of a graphical portrayal of a railway network;

Figs. 6-9 show examples of a user interface display, in accordance with an exemplary embodiment;

Fig. 10 shows an example of a user interface display that may be provided on the field worker side for triggering block removal;

Fig. 11 shows another example of a user interface display;

Fig. 12 shows a flow chart illustrating a block placement method, in accordance with an exemplary embodiment;

Fig. 13 shows a flow chart illustrating a block removal method, in accordance with an exemplary embodiment;

DETAILED DESCRIPTION

This patent specification describes tools (in the form of methods, apparatuses and systems) that controls train traffic within a railway system using, but not limited to,

WABTEC EX1002

standardized rules or timetables described in the Background section of this specification.

In describing exemplary embodiments illustrated in the drawings, specific terminology is employed for the sake of clarity. However, the subject matter of this patent specification is not intended to be limited to the specific terminology so selected and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner.

The drawings show examples of implementations of the subject matter of this patent disclosure in several computing environments. However, it should be understood that the subject matter of this disclosure can be utilized by any computing device including but not limited to PDAs, cell phones, personal, notebook and workstation computers, kiosks, other information terminals, WIC (or another) pager etc. In addition, the subject matter of this disclosure might be provided as services in a modular fashion by other devices connected by a communication network.

Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, there are described tools (systems, apparatuses, methodologies, computer program

WABTEC EX1002

products, etc.) that can be integrated in a railway traffic control system.

Fig. 1A shows schematically an exemplary embodiment in which a system 100A includes a railway traffic control terminal 105, rail personnel data 104 and a terminal 103, each connected to the network 102. **Fig. 1B** shows schematically another exemplary embodiment, in which rail personnel contact data 104 is accessed directly by the railway traffic control apparatus 105. While only one terminal is connected to the network 102 in the example shown in **Fig. 1A** as well as in the example shown in **Fig. 1B**, it should be appreciated that the network environment can have an arbitrary number of devices (of various types).

The network 102 can be any data network, a local area network, a wide area network or any type of network such as an intranet, an extranet (for example, to provide controlled access to external users, for example through the Internet), a private or public cloud network, the Internet, etc., or a combination thereof. Further, other communications links (such as a virtual private network, a wireless link, etc.) may be used as well for the network 102. In addition, the network 102 preferably uses TCP/IP (Transmission Control Protocol/Internet Protocol), but other protocols such as

WABTEC EX1002

SNMP (Simple Network Management Protocol) and HTTP (Hypertext Transfer Protocol) can also be used. How devices can connect to and communicate over networks is well-known in the art and is discussed for example, in "How Networks Work", by Frank J. Derfler, Jr. and Les Freed (Que Corporation 2000) and "How Computers Work", by Ron White, (Que Corporation 1999), the entire contents of each of which are incorporated herein by reference.

The rail personnel 104 is a database that can be either connected to or inside the railway traffic control terminal 105. The rail personnel data 104 stores information regarding the maintenance workers used for traveling, inspecting and working on blocked rails. For example, the information stored can include name of the maintenance worker, primary contact, secondary contact, previous assignment, current assignment, etc. as shown via user interface display in **Fig. 11**.

Fig. 2 shows a terminal 100A which is configured (such as via one or more programs of instructions executable by a processor of a computer or another electronic device) with a railway traffic blocking apparatus 101 to include a block placer 101A, a code generator 101B, a block remover 101C and a user interface 101D. The terminal 100A can be any

WABTEC EX1002

electronic device including a processor, storage and display, such as shown by way of examples in **Figs. 3A** and **3B**.

The railway traffic blocking apparatus is programmed to control the traffic of an entire railway network. The block placer 101A is configured to stop traffic within a certain length of rail line. That is, once a block is placed, no train can traverse the blocked section of rail. For example, in the case of a railway controlled by multiple interlocks, the block placer 101A causes those interlocks to output a STOP signal, therefore, stopping any train traffic within the rails controlled by that interlock. By doing this, maintenance workers and railway personnel can travel, inspect and work on the rails without the danger of oncoming train traffic. Trains that are scheduled to traverse said blocked tracks either come to a complete stop, electronically or mechanically, before passing the interlock or are rerouted using tracks that are not in a blocked state. However, this disclosure is not limited to a railway traffic control system implementing interlocks. This system can be implemented on any configuration in which there is control of the traffic of a railway system.

WABTEC EX1002

The code generator 101B is configured to produce a removal code (such as a cipher which is random, pseudo-random, secret, etc., and stored on the terminal. A new random cipher may be generated for each instance of traffic blocking. This random cipher is then sent to another terminal belonging to the railway personnel who are scheduled to travel, inspect or work on the specific rails being blocked.

The block remover 101C is programmed to remove the previous block, or plurality of blocks set by the block placer 101A. The block remover 101C is dependent on the code produced by the code generator 101B. As described in detail below, a block cannot be removed without the input of the release code.

The user interface 101D is configured preferably for the ease of use for the railway traffic controller. As shown by way of examples in **Figs. 6-9** and **11**, the user interface 101D displays information and tools needed to enable/disable blocks on rail sections.

The user interface 101D may be a mobile application, a web page or some other software component, on a terminal device. Such terminal preferably is configured to communicate through a computer or data network to obtain

WABTEC EX1002

content and data from an external source. However, it should be appreciated that the inventive aspects described herein can be employed even if the mobile device is not configured to connect to a data network, and/or is not connected to a data network.

An example of a configuration of a user terminal (e.g., the terminal 103) or computer is shown schematically in **Fig. 3A**. In the example of **Fig. 3A**, terminal device 200 includes a controller (or processor) 202 that communicates with a number of other components, including storage 203, display 204, input/output (such as mouse, touchpad, stylus, microphone and/or speaker with voice/speech interface and/or recognition software, etc.) 205 and a network interface 206, by way of an internal bus 201.

The storage 203 can provide storage for program and data, and may include a combination of assorted conventional storage devices such as buffers, registers and memories [for example, read-only memory (ROM), programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), static random access memory (SRAM), dynamic random access memory (DRAM), non-volatile random access memory (NOVRAM), etc.].

WABTEC EX1002

The network interface 206 provides a connection (for example, by way of an Ethernet connection or other network connection which supports any desired network protocol such as, but not limited to TCP/IP, IPX, IPX/SPX, or NetBEUI) to a network (e.g., network 102) to enable the terminal device to communicate with another device through the network.

Fig. 3B shows an exemplary constitution of a computer 300 which can be configured by appropriate programming to operate as the railway traffic control apparatus 105 (**Fig. 1A**). The computer 300 shown in **Fig. 3B** includes a processor 302, and various elements connected to the processor 302 by an internal bus 301, such as a memory 303, display 304, keyboard 305 and network interface 306. The processor 302 processes incoming requests transmitted through the network interface 306. The network interface 306 enables the railway traffic control terminal to communicate with other network-connected devices such as a terminal (e.g., the terminal 103 of **Fig. 1A** or **Fig. 1B**) and receive data or service requests.

Each of the terminal 103, rail personnel database 104 and railway traffic control apparatus 105 can be configured to communicate with each other through the network 102. The railway traffic control terminal 105 can be configured to request data from the rail personnel contact data 104

WABTEC EX1002

through the network 102, as shown in **Fig. 4**. When the railway traffic control apparatus 105 initiates a block on a track section, the railway traffic control apparatus 105 may also designate a worker in associate with the block on the track section. With this information, the railway traffic control apparatus 105 requests the specific personnel data pertaining to the designated worker. The rail personnel contact data retrieves the requested personnel data and sends it to the railway traffic control apparatus 105. By receiving this data, the railway traffic control apparatus 105 may then generate a release code and save it to an internal storage.

The release code is then sent to the terminal 102. This terminal 102 is the contact associated with the designated worker, and the electronic address of this terminal is found within the personnel data received from the rail personnel contact data 104. By this system, only the railway traffic control apparatus 105 and terminal 102 receive the release code generated by the railway traffic control apparatus 105.

Additionally, **Fig. 4** shows the communication between the terminal 102 and the railway traffic control apparatus 105 in the event that a block on a certain track is to be lifted. In order for a block on a certain track to be

WABTEC EX1002

lifted, the release code has to be input into the railway traffic control apparatus. The terminal 102 sends the release code to the railway traffic control apparatus 105. The release code is then input into the block remover 101C. After which, the block is removed and traffic to that section of rail is then allowed.

Fig. 5 illustrates an example of a railway network 500. Labeled are interlocks A-F which control sections of railway of the railway network 500. For example, the rail traffic controller might choose to block the section of rail corresponding to the track between interlock A and interlock B. This way, train traffic between those two interlocks in prohibited. The railway network is present on screen of the railway traffic control terminal 105 at all times for the convenience of the rail traffic controller. By being on screen at all times, the rail traffic controller knows the status of certain sections of rail in real time.

As shown in the example illustrated in **Fig. 5**, the railway between interlocks A and B, and interlocks C, D and E is blocked. Train traffic is prohibited between these sections and shown to the railway traffic controller on screen. As further explained below, the railway traffic controller can lift the blocks on these sections of track if

WABTEC EX1002

the release code is input into the railway traffic control terminal 105.

Fig. 6 is an exemplary illustration of the user interface of the railway traffic control terminal 105. The railway traffic controller may place blocks on any section of traffic using this user interface. In this exemplary embodiment, the train traffic controller inputs authority, worker and block limits. This information corresponds to the train traffic controller username, maintenance worker designated to work on the specific blocked track and the sections of track being blocked, respectively. In addition, the railway traffic control terminal 105 applies a timestamp to the order once the block is placed.

Once the block is put into place, the corresponding section on the railway network 500 displays the section of track being blocked. In addition, the railway traffic control terminal 105 generates a release code, stores the release code, and sends the code to the maintenance worker designated for track work, i.e. maintenance worker 12. As shown in **Fig. 6**, the railway traffic controller may place blocks on track sections but may not remove the track blocks without the input of the release code in the allotted area labeled release code. **Fig. 6** shows that the remove action is

WABTEC EX1002

dashed out, meaning it cannot be selected (unless a release code is first entered). In the example illustrated in **Fig. 6**, it is shown that only one worker, maintenance worker 12 is designated to work on track Section A to Section B. However, as shown in later embodiments, the train traffic controller is not limited to the amount of maintenance workers designated for any track section. In addition, the train traffic controller may apply a block to any number of additional track sections.

The blocks are then tabulated by the railway traffic control apparatus 105 as depicted in **Fig. 7**. The table in **Fig. 7** lists all the blocks that are in place and in addition lists blocks that were previously set. The information that can be found in this table includes, but is not limited to, the type of work being done on the track sections, when the block was placed, who is designated to work on the sections of track, who placed the block, when was the block removed and who removed the block.

Additional information can be accessed though this table by highlighting a cell of the table and selecting info, as shown in **Fig. 7**. For example, by highlighting the cell labeled maintenance worker 12 and selecting info, the train traffic controller may access the bio of the

WABTEC EX1002

maintenance worker 12, as shown in detail below. The train traffic controller may also highlight a different cell, such as the limits cell label "Sec. A - Sec. B". By selecting this cell and selecting the info command, the past history of maintenance work and operation of the section(s) may be displayed to the train traffic controller.

Fig. 8 shows the user interface of the railway traffic control terminal 105 as the railway traffic controller inputs the release code to remove the block on certain track sections. In the exemplary embodiment of **Fig. 8**, the remove option is now able to be selected with the input of the release code provided by the designated worker assigned for track work, maintenance worker 12.

Without the input of the release code, the remove option is not available to be selected. In a different embodiment, the release code may be obtained from the storage of the railway traffic control terminal 105.

In the case where there are multiple maintenance workers assigned to a certain track section, there may be provided one release code to one, multiple or all of the maintenance workers assigned. That is, The train traffic controller may input that the release code be specified to one maintenance worker, preferably a supervisor or foreman,

WABTEC EX1002

to multiple maintenance workers or to all of the maintenance workers assigned to work on a given track section. Also, in another embodiment, in a case where there are multiple workers assigned for a certain track section, there may be provided multiple unique release codes which would then all be required to be input into the train traffic control terminal 105 by the train traffic controller in order to be able to remove blocks on certain track sections.

In another embodiment, the train traffic controller may be asked to verify that a railway section is cleared before receiving the option to remove a train block. As shown in **Fig. 9**, the user interface displayed by the railway traffic control terminal 105 does not allow a removal of a block until the option corresponding to "Railway Section Cleared" is checked. This option allows for a further protection of the maintenance workers assigned to the block track sections.

Fig. 10 shows an exemplary illustration of a message sent by the railway traffic control terminal 105 to a terminal 103 at a corresponding address of a maintenance worker assigned to work on a blocked track. The message is meant to deliver the release code to the maintenance worker assigned to work on a blocked track. In addition to relaying

WABTEC EX1002

the code, the message may include, but not limited to, information regarding the section of track that is being blocked, the date and time that the track was blocked, who initiated the track block, and links to quickly respond to the message. By selecting one of the links embedded in the message, the terminal 103 sends the release code to the railway traffic control terminal 105. The code can be transmitted through, but not limited to, text message, e-mail or voice message. In the present embodiment being illustrated, the terminal 103 is depicted as a mobile phone. The terminal 103 could be any communication device such as, but not limited to, mobile phone or smartphone, tablet, WIC (or another) pager, PDA, etc.

In another embodiment, once the rail traffic controller unblocks a section of track, the railway traffic control terminal 105 may send a message to the worker, or plurality of workers, associated with working on the previously blocked track in order to inform them that the track has been unblocked and is no longer a safe environment to work in.

Fig. 11 depicts an exemplary embodiment of a profile of a maintenance worker. This profile may be accessed directly by highlighting the corresponding maintenance worker cell in

WABTEC EX1002

the table depicted in **Fig. 7** and selecting the info tab. This command brings up the profile and the maintenance worker and displays information regarding the worker including, but not limited to, the name, age, primary contact, secondary contact, e-mail, last assignment and current assignment of the maintenance worker. Additionally in this screen, the railway traffic controller may contact the maintenance worker directly using one of the plurality of addresses provided.

Next, the method of placing a block on a track section will be described with reference to **Fig. 12**. In S1201, the rail traffic controller selects the sections to be blocked using the railway traffic control terminal 105. Once the block limits are designated and sent, the railway traffic control terminal 105 established office interlocking immediately in S1202. That is, the railway traffic control terminal 105 immediately sends a signal to the corresponding interlocks corresponding to the section of track designated to be blocked. Additionally, the railway traffic control terminal 105 generates and saves a random secret code in S1203.

After a request to block a certain section of track is sent, the railway traffic control terminal 105 checks if

WABTEC EX1002

there are sections currently having a block placed (S1204). If one or more of the designated sections does not have a block placed, then the railway traffic control terminal 105 opens a user interface for the railway traffic controller to designate a type of block to set and a maintenance worker for the blocked section in S1206. If the railway traffic control terminal sees that a block is already in effect (S1205), then the railway traffic control terminal 105 allows the railway traffic controller to change the existing block type and maintenance worker using the same interface. The interface is then opened in S1206.

The railway traffic controller then inputs the type of block and assigns a worker to work on the blocked section. The railway traffic controller also has the option to block the track for purposes of an emergency and not necessarily for maintenance work in S1207. Once the railway traffic controller assigns a block type and/or a corresponding maintenance worker, the railway traffic control terminal 105 checks the status of the selected block in S1208. If the current selected section has an existing block, the railway traffic control terminal 105 waits for a response from the interlocks of the corresponding section to send an indication that a new block can be established in S1209.

WABTEC EX1002

Once this indication is received in S1210, the railway traffic control terminal 105 enables the place button of the user interface (S1211). If the selected section has no previous active block, the railway traffic control terminal 105 immediately enables the place button on the user interface.

Once the place button is selected, the railway traffic control terminal 105 generates a place time and enables safety measures so that the block cannot be removed without the input of the secret code generated (S1212). Finally, the railway traffic control terminal 105 sends the secret removal code to the corresponding one or more maintenance workers if the railway traffic controller has selected maintenance workers for the given block.

Fig. 13 describes a method for removing a block placed on a section of track. In S1301, the railway traffic controller selects an existing block by using either the network rail map, shown in **Fig. 5**, the remove tool, shown in **Figs. 6, 8 and 9**, or the summary table, shown in **Fig. 7**. The remove button is disabled without the input of the secret code from either the maintenance worker or the railway traffic control terminal 105 (S1302). In S1304, the railway traffic control terminal 105 checks if there is a

WABTEC EX1002

maintenance worker that is eligible to transmit the random secret code. If there is an eligible maintenance worker available, the maintenance worker transmits the random secret code to the railway traffic control center 105 (S1305). If there is no maintenance worker available to transmit the random secret code, the code can be retrieved from the train traffic control terminal 105 by the train traffic controller (S1306).

Once the secret code is received, the secret code may be input to the designated field (S1308). The railway traffic control terminal 105 checks the secret code with the code saved in its memory (S1309). If the code is incorrect, the railway traffic control terminal 105 will prompt the user to input the code again. If the code is correct, the railway traffic control terminal will prompt the user to enter information into any remaining fields (S1310). In S1311, the railway traffic control terminal 105 checks that all information input into all fields is correct and that all fields are filled in. After this check is performed by the railway traffic control terminal 105, the remove button is enabled on the form (S1312) and the railway traffic controller may remove the block on the corresponding track section.

WABTEC EX1002

The aforementioned specific embodiments are illustrative, and many variations can be introduced on these embodiments without departing from the spirit of the disclosure or from the scope of the appended claims. For example, elements and/or features of different examples and illustrative embodiments may be combined with each other and/or substituted for each other within the scope of this disclosure and appended claims.

The orders in which the steps are performed in the aforementioned methods are not limited to those shown in the examples of **Figs. 12 and 13**, and may be switched as long as similar results are achieved. Also, it should be noted that the methods illustrated in the examples of **Figs. 12 and 13** may be implemented using any of the embodiments shown in **Figs. 1A-1B**.

Further, conventional systems can be modified to include the aspects described herein. As an example, a means may be added to a conventional interlock system by which the railway worker has partial control of the interlock system at the times that maintenance work is needed on a certain train block. In such modification, a system, apparatus and/or method may be provided to control the interlocks in a railway system as an interface between the railway workers

WABTEC EX1002

and the interlock control. Thus, in a case in which maintenance is to be performed on a certain rail block, which is controlled by an interlock, the interlock can be configured to send out a stop signal for all incoming trains, to block train traffic to such portion of the rail system. In addition, once the interlock is placed in a "stop traffic" state, a release code is transmitted to an electronic contact address corresponding to the railway worker.

Once a block has been placed, the interlock remains in a blocked sate, until the maintenance worker supplies the release code, which was received at the time the interlock started, and the release code is entered in the interlock control system. So long as the block is in place, the maintenance worker can perform on-track work, without interference of oncoming train traffic. After the maintenance worker finishes the assigned work and is clear of the train tracks, he/she may then supply the interlock control system with the release code, and the interlock control system in turn can release the interlock over the block.

WABTEC EX1002

Accordingly, the railway worker has more control over the traffic through the rail block in which the worker is working, and fatal on-track accidents can be reduced.

Additional variations may be apparent to one of ordinary skill in the art from reading U.S. Provisional Application No. 61/893,547, filed October 21, 2013 and entitled "SYSTEM, APPARATUS AND METHOD FOR RAILWAY TRAFFIC CONTROL", the entire contents of which are incorporated herein by reference.

WABTEC EX1002

What is claimed is:

1. A system to enhance railway control, to protect safety of railway workers on or near railway tracks, the system comprising:

a railway control apparatus comprising a processor, a non-transitory medium storing one or more programs of executable instructions, and a network interface through which the railway control apparatus communicates via a network; and

a user terminal provided to a railway field worker and configured to communicate via the network with the railway control apparatus and to provide a user interface to display information received from the railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon,

wherein the railway control apparatus, by execution of said one or more programs of executable instructions by the processor, includes:

a block placing part to place a block on one or more specified track sections to permit the railway field worker to enter the track sections while blocking railway traffic to said track sections;

a code generation part to generate a release code and

WABTEC EX1002

transmit the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and

a block removal part to remove only upon receiving the release code from the user terminal in return, the block placed by the block placing part on said one or more track sections.

2. The system of claim 1, wherein upon the railway control apparatus placing the block of railway traffic to said one or more specified track sections and transmitting the release code to the electronic contact address accessible by the railway field worker, the user interface provided on the user terminal displays a message and permits the railway field worker to respond to the message to release the block.

3. The system of claim 2, wherein upon the railway field worker responding to the message to release the block, the release code is returned to the railway control apparatus.

4. The system of claim 2, wherein the message displayed by the user interface on the user terminal includes an embedded

WABTEC EX1002

link for activating a return transmission of the release code to the railway control apparatus.

5. A method to enhance railway control, to protect safety of railway workers on or near railway tracks, said method comprising:

configuring a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon;

providing a terminal user interface on a terminal to permit a terminal user of the terminal request the railway control apparatus to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections;

generating by the railway control apparatus a release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and

permitting the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return.

WABTEC EX1002

6. The method of claim 1, further comprising:

displaying, upon the railway control apparatus placing the block of railway traffic to said one or more specified track sections and transmitting the release code to the electronic contact address accessible by the railway field worker, a message through the device user interface provided on the mobile user device and permitting the railway field worker to respond to the message to release the block.

7. The method of claim 6, further comprising:

upon the railway field worker responding to the message to release the block, returning the release code to the railway control apparatus.

8. The method of claim 2, wherein the message displayed by the device user interface on the mobile user device includes an embedded link for activating a return transmission of the release code to the railway control apparatus.

WABTEC EX1002

ABSTRACT

Tools (such as system, apparatus, methodology, etc.) may be provided to control traffic over a railway track section, when a railway worker is working on or near the track section. Move particularly, when traffic over the track section is to be blocked, a release code is generated and sent to an electronic contact address of the railway worker. Traffic through the track section is blocked until the release code is entered in the system.

WABTEC EX1002

FIGURE 1A

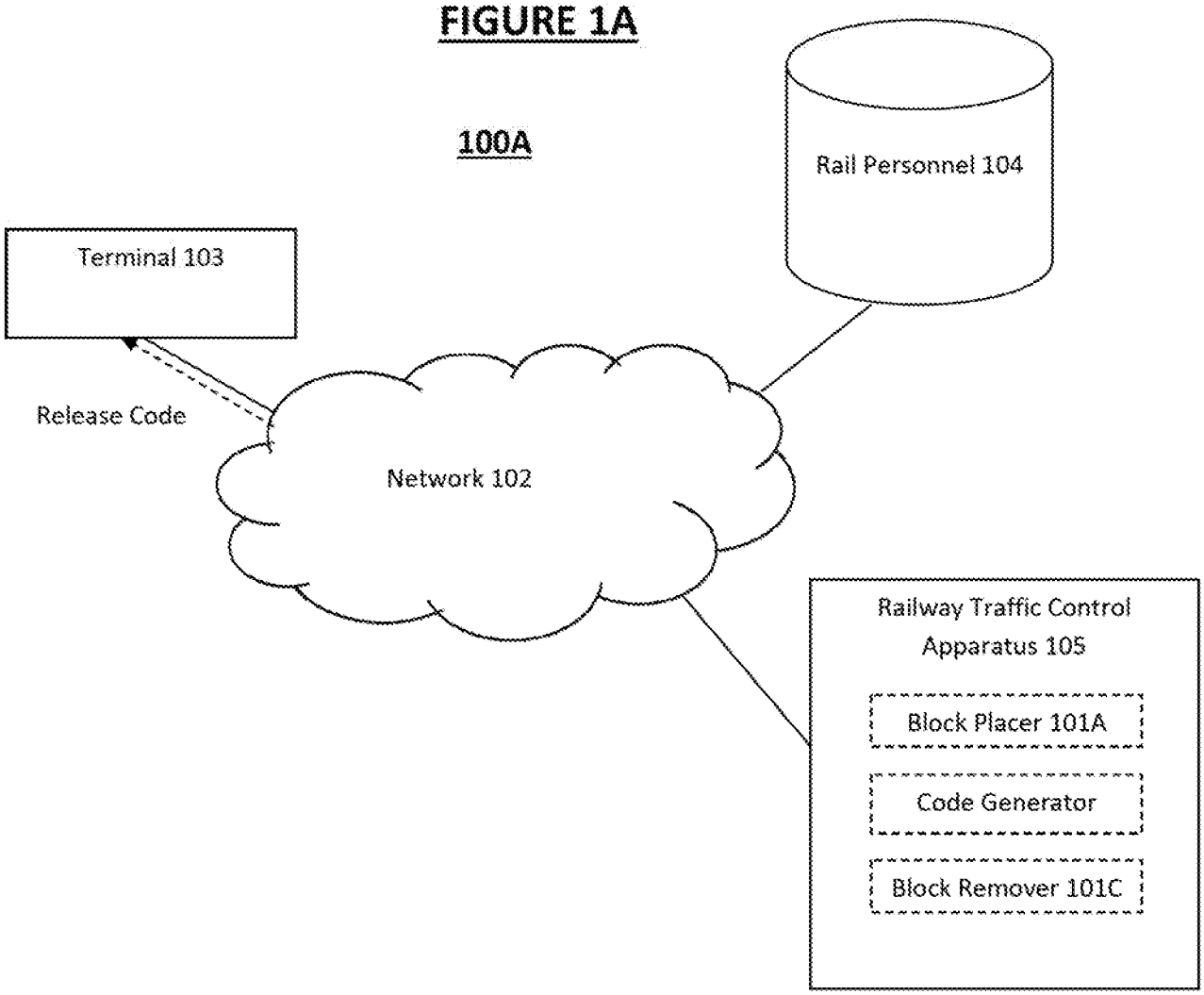

100A
Rail Personnel 104
Terminal 103
Release Code
Network 102
Railway Traffic Control Apparatus 105
Block Placer 101A
Code Generator
Block Remover 101C

FIGURE 1B

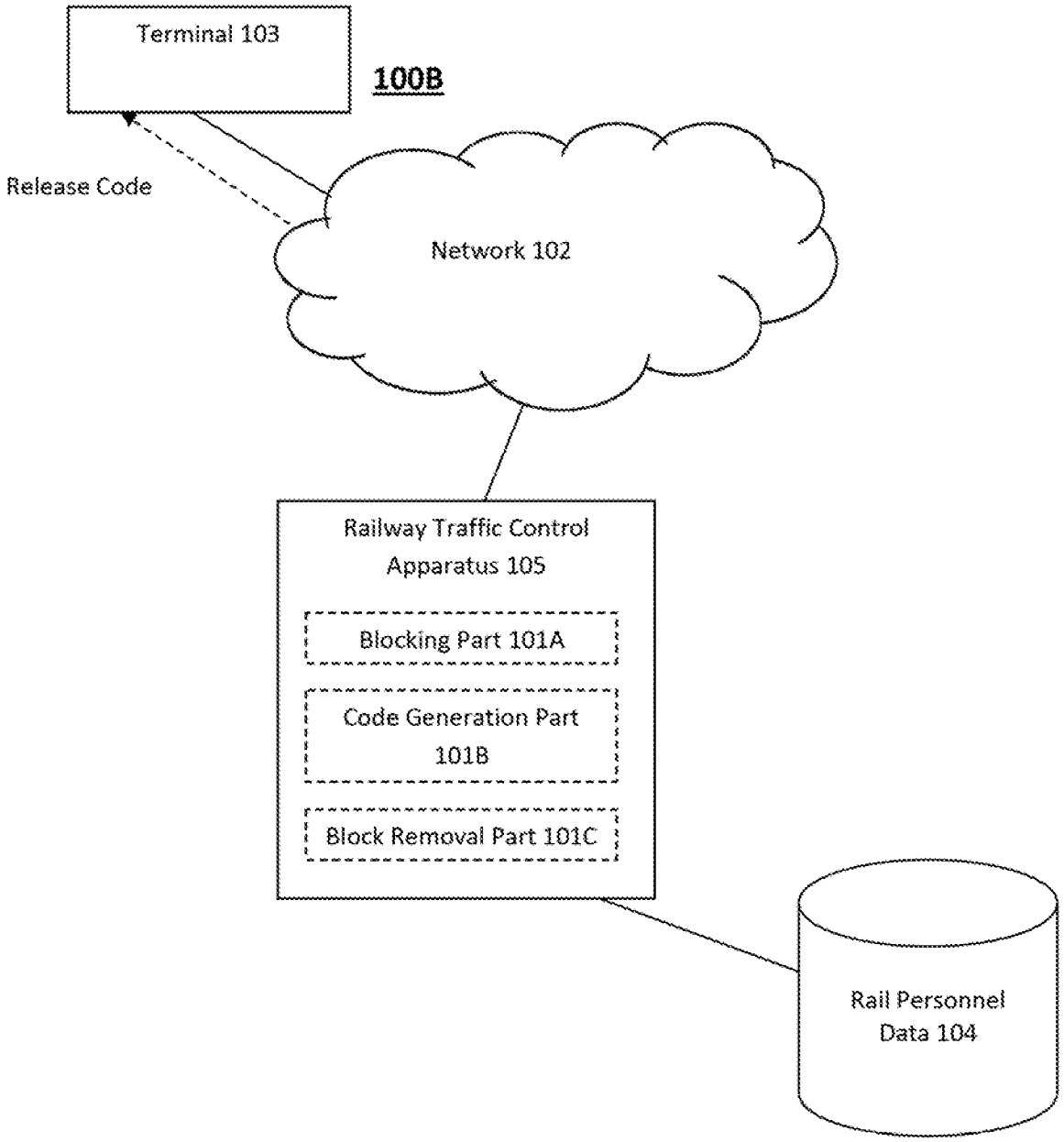

Terminal 103
100B
Release Code
Network 102
Railway Traffic Control Apparatus 105
Blocking Part 101A
Code Generation Part 101B
Block Removal Part 101C
Rail Personnel Data 104

FIGURE 2

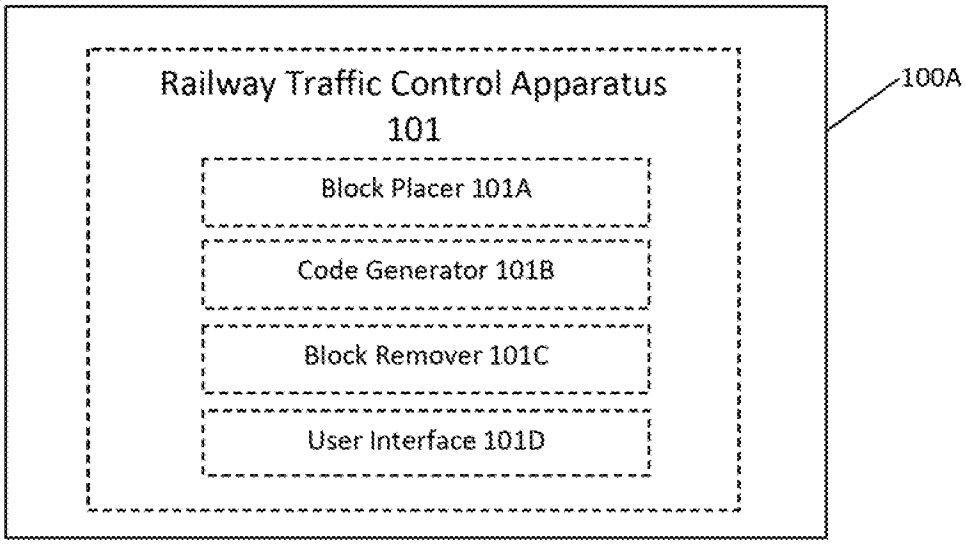


FIGURE 3A

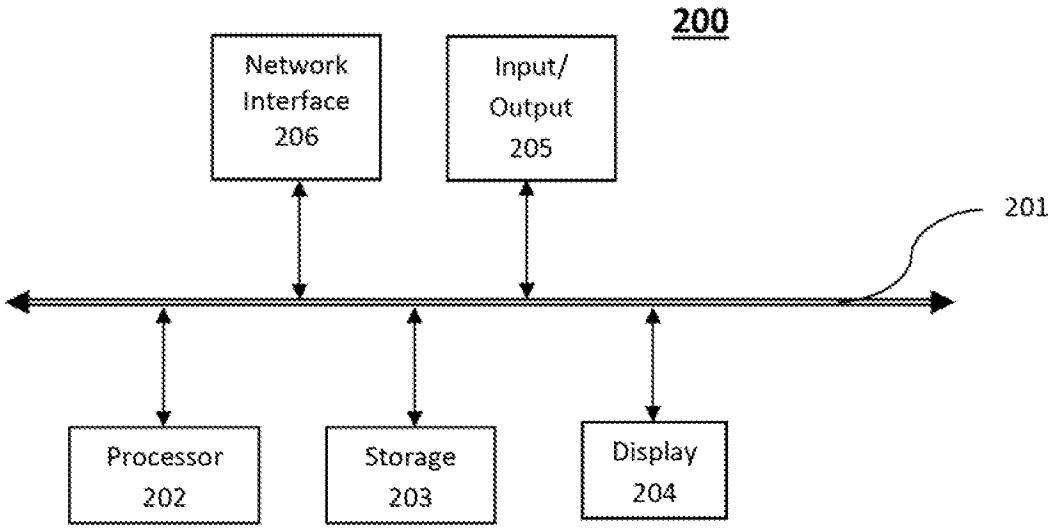


FIGURE 3B

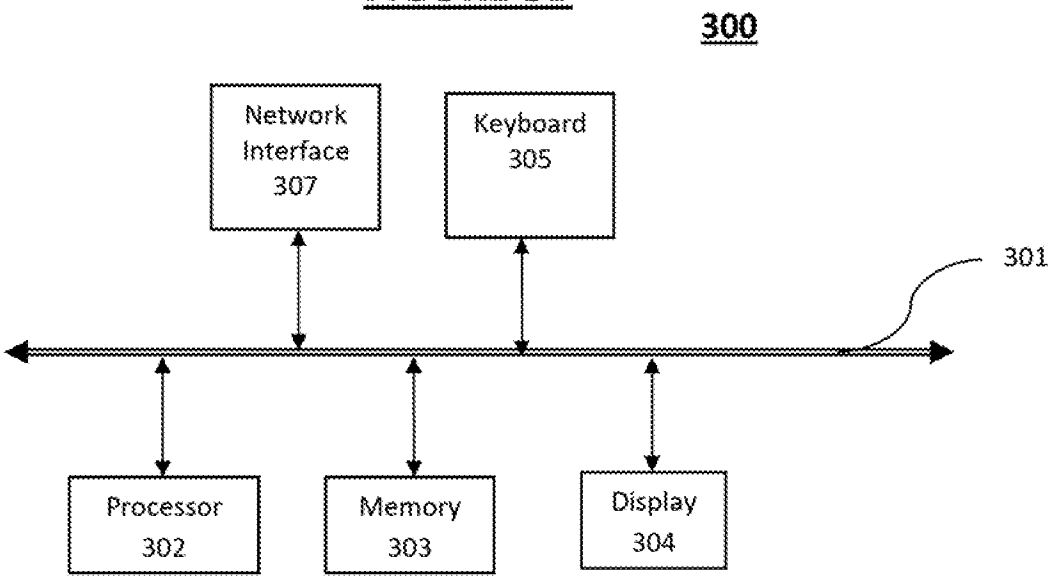

300
Network Interface 307
Keyboard 305
301
Processor 302
Memory 303
Display 304

FIGURE 4

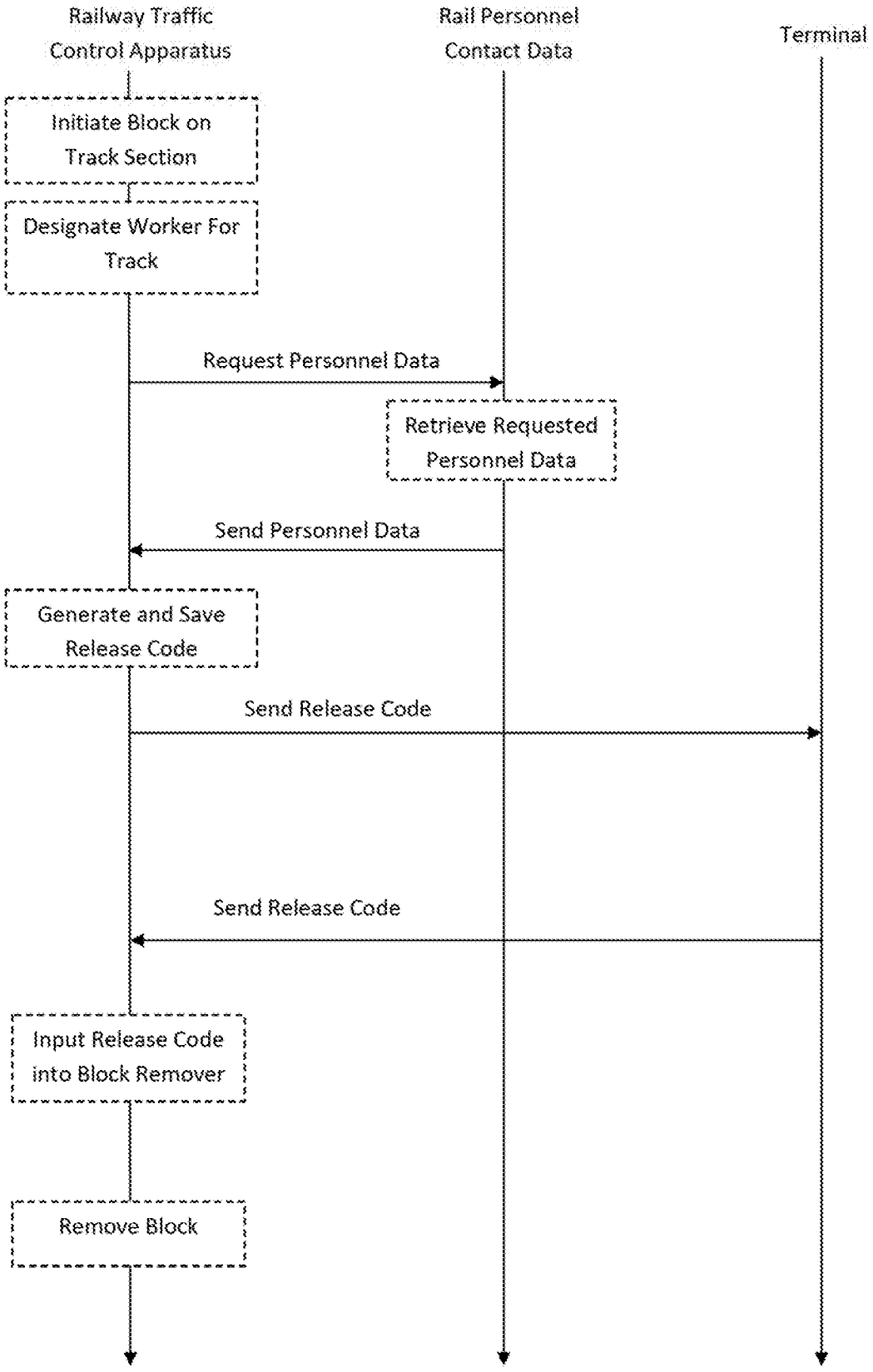

Railway Traffic Control Apparatus
Rail Personnel Contact Data
Terminal
Initiate Block on Track Section
Designate Worker For Track
Request Personnel Data
Retrieve Requested Personnel Data
Send Personnel Data
Generate and Save Release Code
Send Release Code
Send Release Code
Input Release Code into Block Remover
Remove Block

FIGURE 5

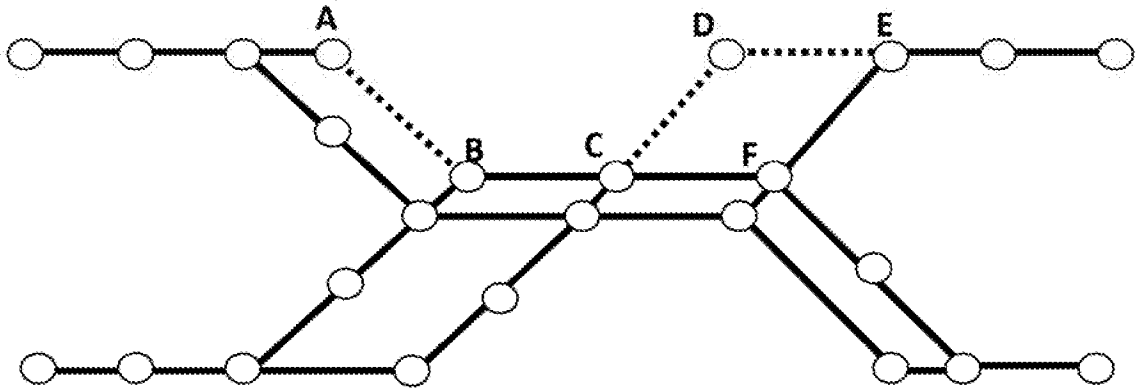


FIGURE 6

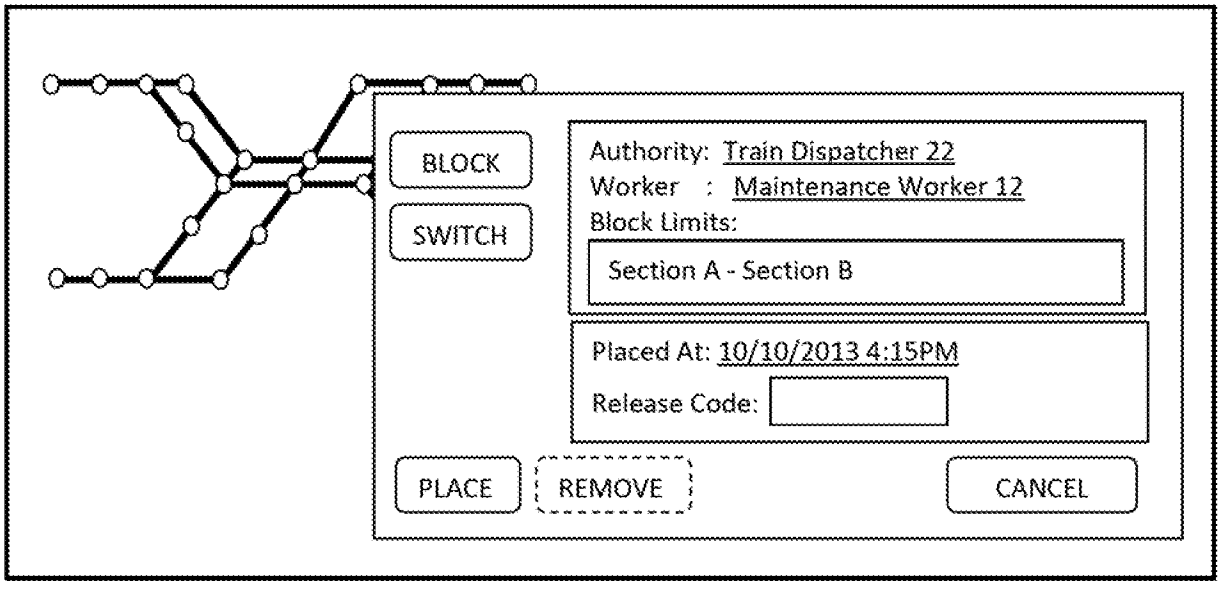


FIGURE 7

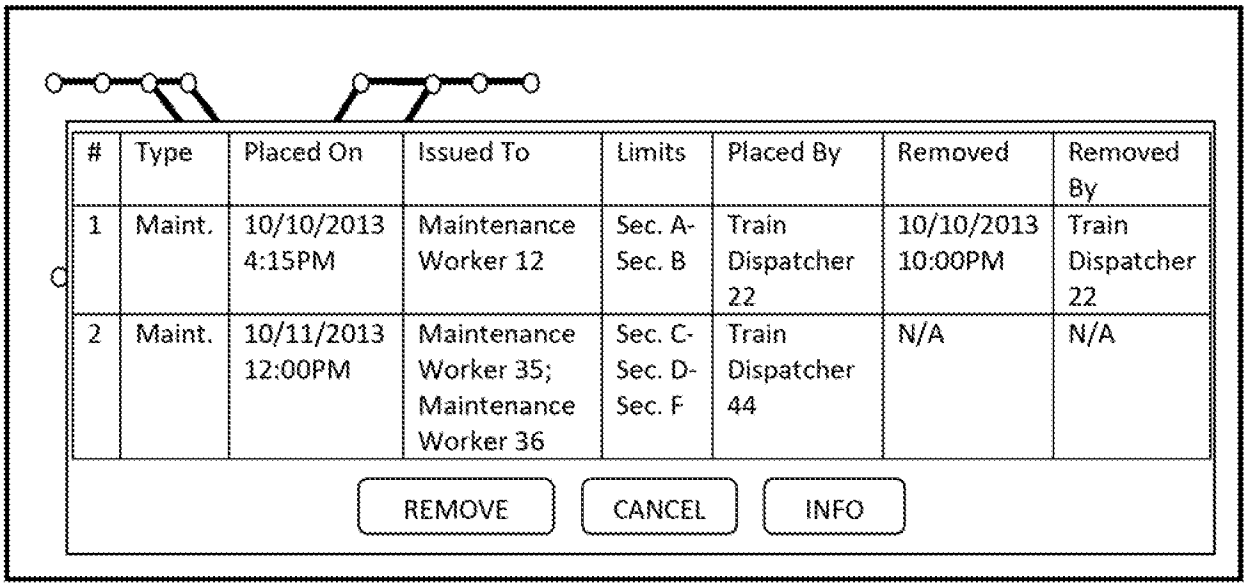
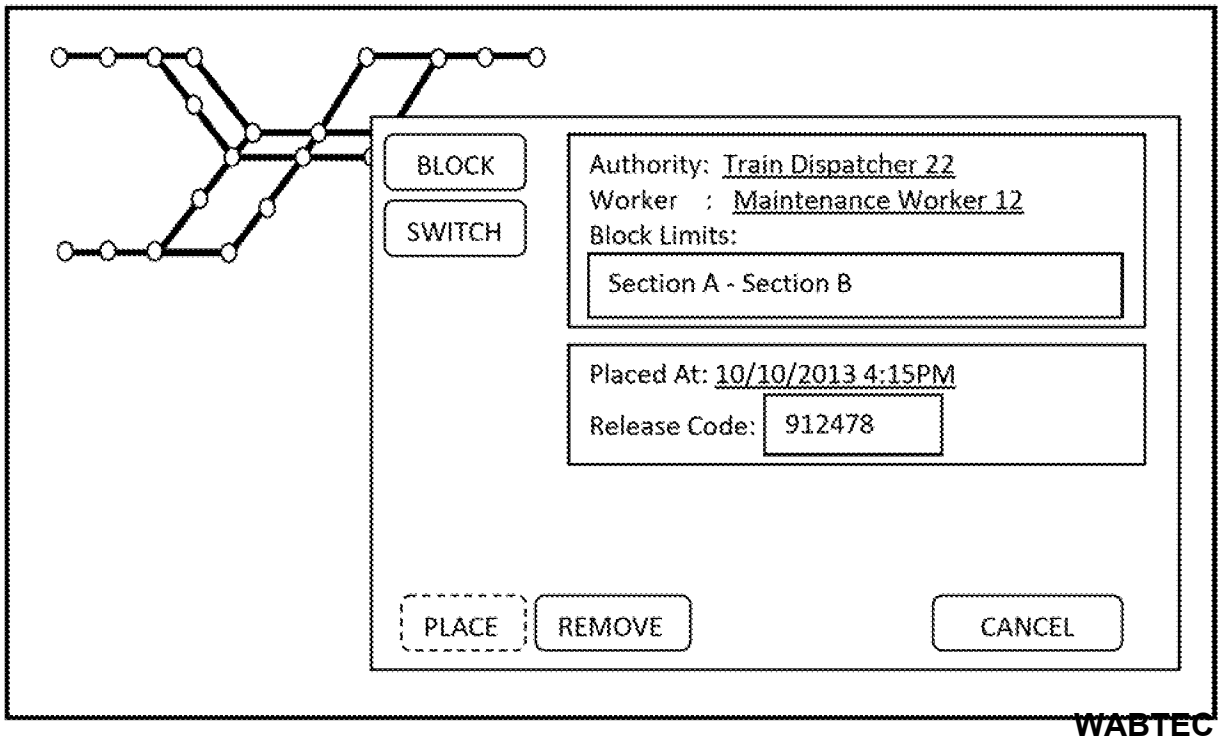


FIGURE 8



WABTEC EX1002

FIGURE 9

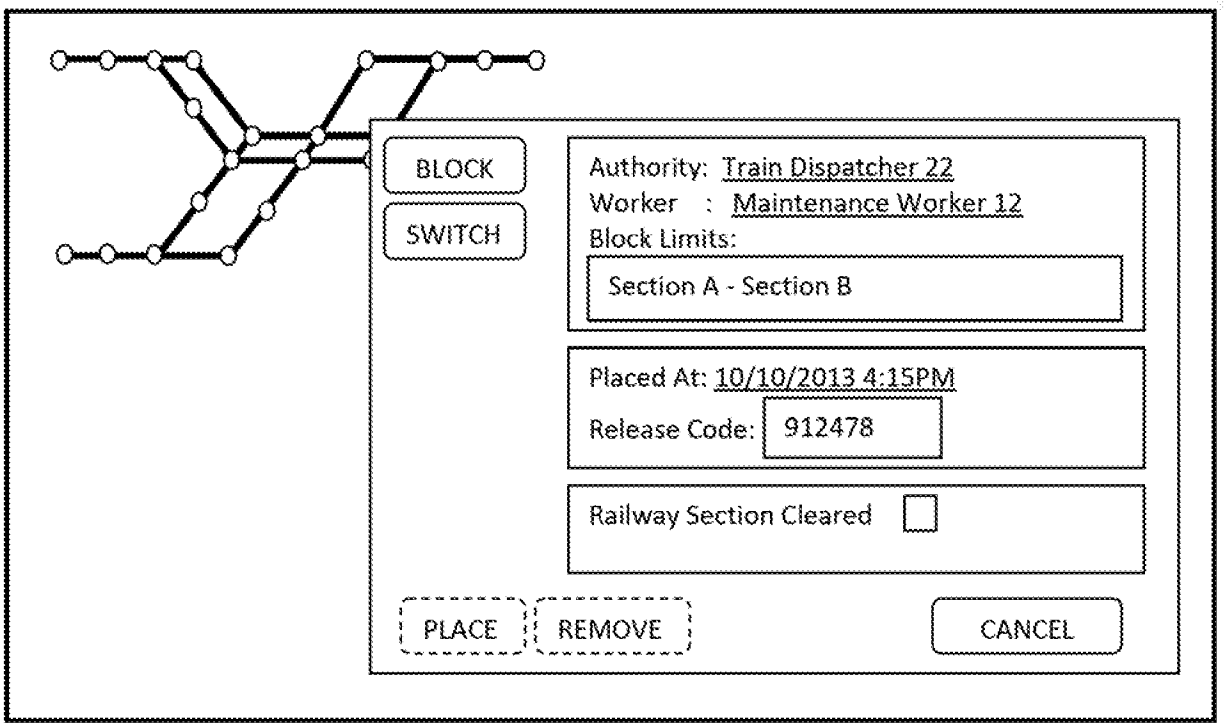


FIGURE 10

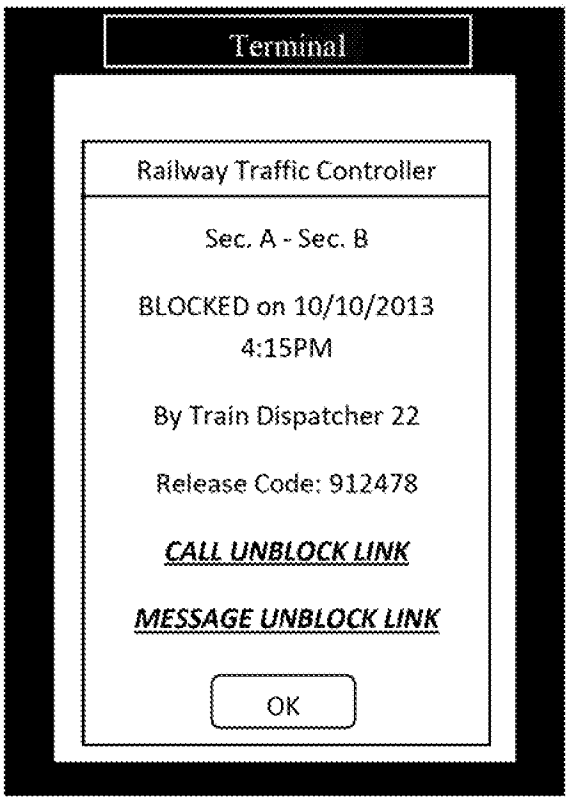


FIGURE 11

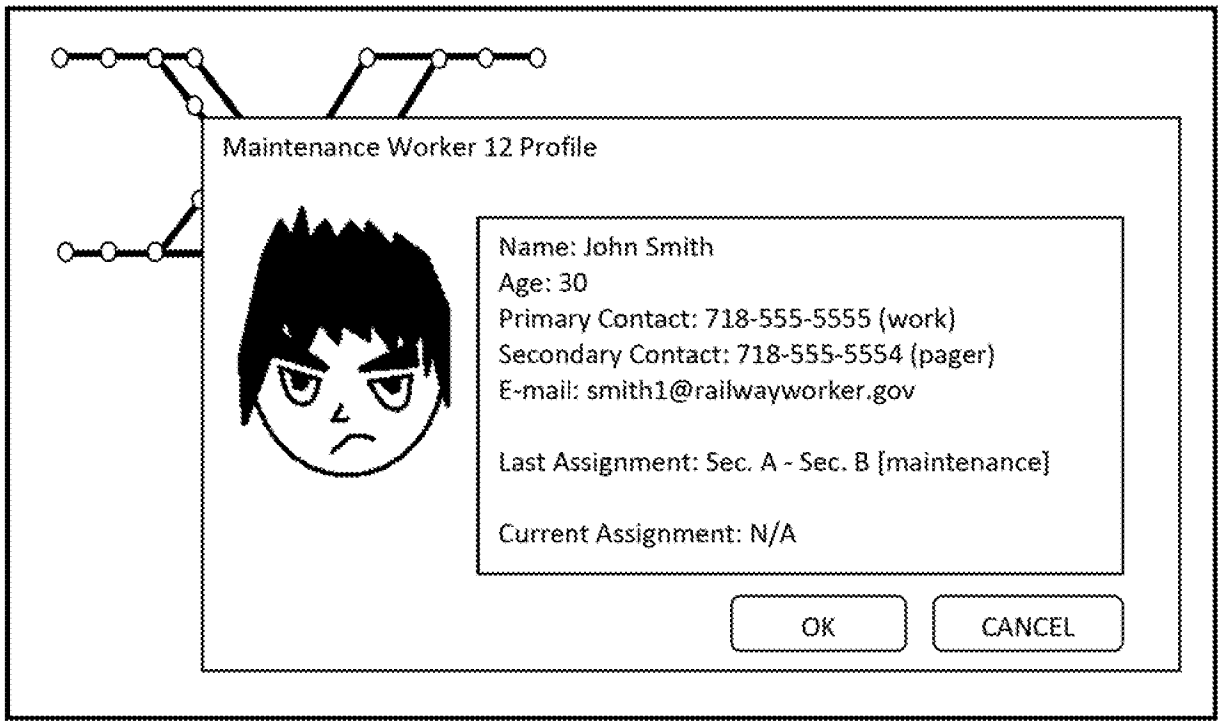
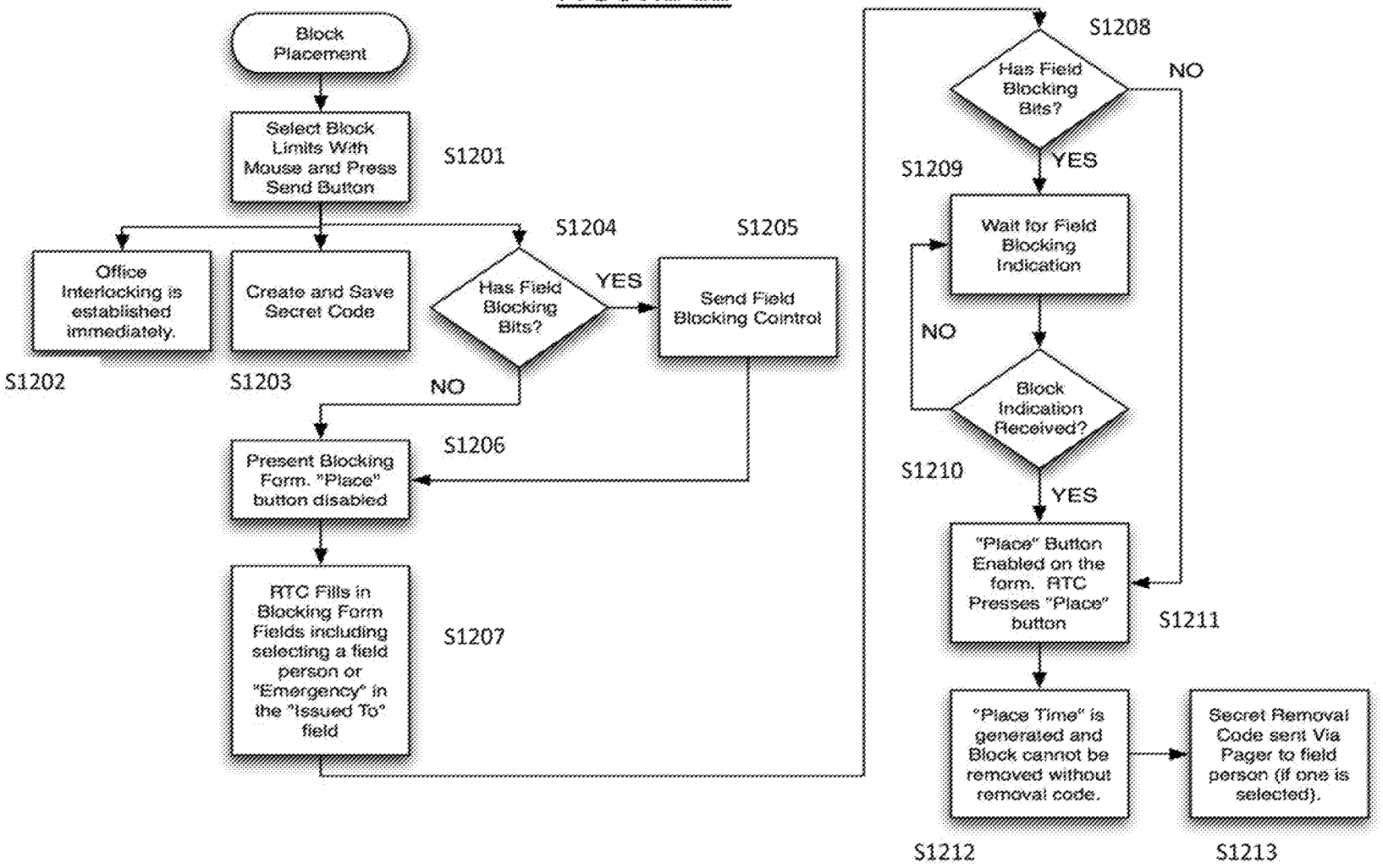
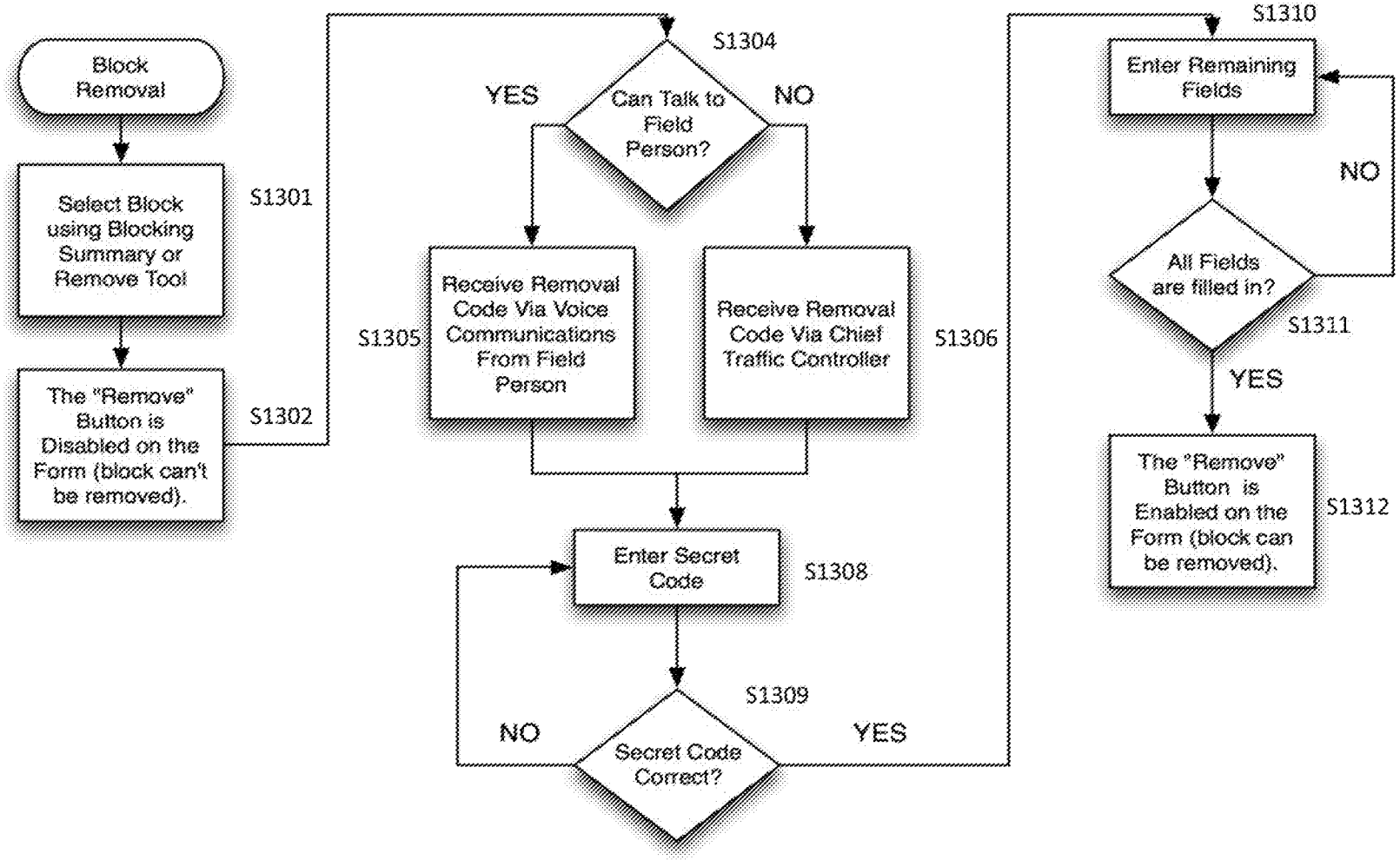

Maintenance Worker 12 Profile
Name: John Smith
Age: 30
Primary Contact: 718-555-5555 (work)
Secondary Contact: 718-555-5554 (pager)
E-mail: smith1@railwayworker.gov
Last Assignment: Sec. A - Sec. B [maintenance]
Current Assignment: N/A
OK
CANCEL

FIGURE 12



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FIGURE 13



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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

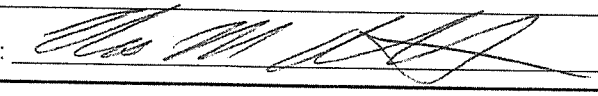
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Ross Pirtle Date (Optional) : _____

Signature: 

Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	7552/85663-A
	Application Number	
Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ross		PIRTLE	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Mailing Address of Inventor:

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Address 2	750 Veterans Memorial Hwy, Suite 200

City	Hauppauge	State/Province	NY
Postal Code	11788	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	23432		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL		
Attorney Docket Number	7552/85663-A	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	7552/85663-A
	Application Number	
Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	23432		

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	14519727	2014-10-21
Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14519727	non provisional of	61893547	2013-10-21

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	7552/85663-A
	Application Number	
Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL	

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Remove Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

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☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	7552/85663-A
	Application Number	
Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL	

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	Railware, Inc.

Mailing Address Information For Applicant:

Address 1	750 Veterans Memorial Hwy, Suite 200		
Address 2			
City	Hauppauge	**State/Province**	NY
Country	US	Postal Code	11788
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Non-Applicant Assignee Information:

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Complete this section only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest), as the patent application publication will include the name of the applicant(s).

If the Assignee is an Organization check here. ☐

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	7552/85663-A
	Application Number	
Title of Invention	TOOLS FOR RAILWAY TRAFFIC CONTROL	

Organization Name			
Mailing Address Information For Non-Applicant Assignee:			
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Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature				Date (YYYY-MM-DD)	2016-06-09
First Name	Paul	Last Name	Teng	Registration Number	40837

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Dkt. 7552/85663-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Ross Pirtle

Application No.: [Rule 1.53(b) Continuation of 14/519,727]

Date Filed: Concurrently Herewith

For: TOOLS FOR RAILWAY TRAFFIC CONTROL

This correspondence is being filed electronically with the U.S. Patent and Trademark Office via EFS-Web.

6-9-16

Eleni Ramoundos — Date

30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INFORMATION DISCLOSURE STATEMENT

This Information Disclosure Statement is being submitted concurrently with the above-identified continuation application, pursuant to the applicant's duty of disclosure, in order to bring the information listed in the attached Form PTO-1449 to the attention of the Examiner.

The subject application is a Rule 1.53(b) continuation of U.S. application No. 14/519,727, filed October 21, 2014. The references listed on the attached Form PTO-1449 have previously been submitted to, or cited by, the U.S. Patent and Trademark Office in prior application No. 14/519,727. The subject application relies upon said prior application for an earlier filing date under 35 U.S.C. §120. Accordingly, in compliance with 37 C.F.R. §1.98(d) copies of the references are not being supplied herewith. Rather, the Examiner's attention is respectfully directed to the prior application No. 14/519,727 for copies of the references.

Further, the Examiner's attention is directed to the file history of said prior application, including without limitation the submissions and citations of prior art by applicant and the claims

and prior art of record in said prior application. In addition, the Examiner's attention is directed to the allowance of said prior application.

It is respectfully requested that the information cited in the attached Form PTO-1449 be considered by the Examiner in connection with the above-identified patent application, and that such art be made of record in said application.

The filing of this Information Disclosure Statement is not an admission that the information cited herein is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).

The Patent Office is hereby authorized to charge any fees that are required for consideration of this Information Disclosure Statement, and to credit any overpayment during prosecution of this application, to our Deposit Account No. 03-3125.

Respectfully submitted,



PAUL TENG, Reg. No. 40,837
Attorney for Applicant
COOPER & DUNHAM LLP
30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

Submitted by: _____
Paul Teng, Reg. No. 40, 837

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		First Named Inventor: Ross PIRTLE	
		Art Unit:	
		Examiner Name:	
		Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
		5 3 9 0 8 8 0	02-21-1995	Fukawa et al.	
		5 9 2 4 6 5 3	07-20-1999	Pederson et al.	
		20 07 /0 05 57 43 A1	03-08-2007	Pirtle et al.	
		20 07 /0 17 60 54 A1	08-02-2007	Mally	
		20 11 /0 03 76 19 A1	02-17-2011	Ginsberg et al.	
		20 11 /0 23 82 42 A1	09-29-2011	NICHTER	
		20 11 /0 31 35 96 A1	12-22-2011	Ecton et al.	
		20 13 /0 13 51 09 A1	05-30-2013	Sharon	
		8 4 7 8 4 6 3	07-02-2013	Knott et al.	
		20 13 /0 16 85 03 A1	07-04-2013	Cooper et al.	
		20 13 /0 18 70 10 A1	07-25-2013	KIM	
		20 13 /0 20 13 16 A1	08-08-2013	BINDER et al.	
		20 13 /0 23 47 74 A1	09-12-2013	Huang	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation
		EP 1 0 8 3 6 3	05-16-1984	Kawasaki Jukogyo Kabushiki Kaisha		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		J.B. CALVERT, "Centralized Traffic Control", May 29, 1999
		FRANK W. BRYAN, "Railroad's traffic control systems", May 1, 2006

EXAMINER	DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		First Named Inventor: Ross PIRTLE	
		Art Unit:	
		Examiner Name:	
		Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
		5772775 8	03-17-1998	Penza et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		KYLE MCINNES, "BlackBerry-Based WIC Pager Pilot Program at Children's Hospital", July 21, 2010
		JAI C.S., "Healthcare Communication Interface: WIC Pager, Philips Emergin", October 8, 2010
		"Fatal Accidents Involving Roadway Workers-In-Charge and Lone Workers", March 9, 2012, Fatality Analysis of Maintenance-of-way Employees and Signalmen (FAMES) Committee
		"Introduction to the FAMES Committee", May 21, 2012, Fatality Analysis of Maintenance-of-way Employees and Signalmen (FAMES) Committee
		CASEYJONZ et al., "Centralized traffic control", July 13, 2013, Wikipedia
		AARON-TRIPEL et al., "Train dispatcher", August 23, 2013, Wikipedia
		MASAKI KATAHIRA et al., "Recent Train Traffic Control Systems", Hitachi, Ltd.
		"SCC Centralized traffic control system for lines and area junctions", Ansaldo STS

EXAMINER	DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Submitted by: _____ Sheet 3 of 3

Paul Teng, Reg. No. 40, 837

Form PTO-1449 U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	First Named Inventor: Ross PIRTLE	
	Art Unit:	
	Examiner Name:	
	Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
		6 1 1 3 0 3 7	09-05-2000	Pace	
		6 1 4 5 7 9 2	11-14-2000	Penza et al.	
		7 6 2 4 9 5 2	12-01-2009	Bartek	
		20 11 /0 00 69 12 A1	01-13-2011	Sheardown et al.	
		20 11 /0 22 69 10 A1	09-22-2011	Bock et al.	
		20 11 /0 27 84 01 A1	11-17-2011	Sheardown et al.	
		8 0 6 1 6 6 2	11-22-2011	Bartek	
		20 12 /0 17 62 17 A1	07-12-2012	TAMARIBUCHI et al.	
		20 13 /0 16 61 14 A1	06-27-2013	Baines et al.	
		20 13 /0 30 42 86 A1	11-14-2013	Ehrler et al.	
		20 14 /0 10 40 81 A1	04-17-2014	Cross et al.	
		20 14 /0 34 62 86 A1	11-27-2014	Tonguz et al.	
		20 15 /0 10 82 84 A1	04-23-2015	Pirtle	
		20 15 /0 36 78 73 A1	12-24-2015	IBENDORF et al.	
		20 16 /0 03 55 07 A1	02-04-2016	BRABAND et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.

EXAMINER	DATE CONSIDERED

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	TOOLS FOR RAILWAY TRAFFIC CONTROL
First Named Inventor/Applicant Name:	Ross PIRTLE
Filer:	Paul Teng/Eleni Ramoundos
Attorney Docket Number:	7552/85663-A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1600**

Electronic Acknowledgement Receipt

EFS ID:	26014049
Application Number:	15177506
International Application Number:	
Confirmation Number:	7504
Title of Invention:	TOOLS FOR RAILWAY TRAFFIC CONTROL
First Named Inventor/Applicant Name:	Ross PIRTLE
Customer Number:	23432
Filer:	Paul Teng/Eleni Ramoundos
Filer Authorized By:	Paul Teng
Attorney Docket Number:	7552/85663-A
Receipt Date:	09-JUN-2016
Filing Date:	
Time Stamp:	11:54:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1600
RAM confirmation Number	11276
Deposit Account	033125
Authorized User	TENG, PAUL

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	85663-A--Transmittal.pdf	103292 df2382ec0ef8bf62c866025e883d595ffe08b734	no	3
Warnings:					
Information:					
2		85663-A--SpecificationClaimsAbstract.pdf	9286151 ef7988695ca2807f530d9e4fa3bf7a6d8cada327	yes	36

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	31
	Claims	32	35
	Abstract	36	36

Warnings:					
Information:					
3	Drawings-only black and white line drawings	85663-A--Drawings.pdf	1201976 d01b0905f3d3d9a9b2630a66c8b53fe0a606d539	no	11
Warnings:					
Information:					
4	Oath or Declaration filed	85663-A--Declaration.pdf	70229 bb2ec35d491500408c755b96ae61a2729fb243cd	no	1
Warnings:					
Information:					
5	Application Data Sheet	85663-A--ADS.pdf	266021 e6ac4962e1240edcb6976391d1fcb67413e204a5	no	5
Warnings:					
Information:					
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6	Power of Attorney	85663-A--POA.pdf	122262 281195040100be01269b578dd4516bcc3dd44bd0	no	2
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	85663-A--IDS1449.pdf	240959 ac6b0ca0cdf4cb96e5212ab02155849d19933840	no	5
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
8	Fee Worksheet (SB06)	fee-info.pdf	34735 5b61b5c3fa89219dbab7a30a534381959f3bd3cf	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	11325625		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/82A (07-12)
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Application Number	
Filing Date	
First Named Inventor	Ross PIRTLE
Title	TOOLS FOR RAILWAY TRAFFIC CONTROL
Art Unit	
Examiner Name	
Attorney Docket Number	7552/85663-A

SIGNATURE of Applicant or Patent Practitioner

Signature	Paul Teng	Date	2016 JUNE 9
Name	Paul Teng	Telephone	(212) 278-0400
Registration Number	40,837		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

■ *Total of 1 forms are submitted.

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I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

OR

23432

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

Name	Registration Number	Name	Registration Number

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☒ The address associated with the above-mentioned Customer Number.

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☐ The address associated with Customer Number:

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Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant:

☐ Inventor or Joint Inventor

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (*e.g.*, a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature		Date	6/7/2016
Name	Ross Pirtle	Telephone	631 295 7245
Title and Company	President, Railware, Inc.		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below *.

☒ *Total of 1 forms are submitted.

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UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/177,506	06/09/2016	3617	1600	7552/85663-A	8	2

CONFIRMATION NO. 7504

23432
COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

FILING RECEIPT

OC000000083839564

Date Mailed: 06/22/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Ross PIRTLE, Commack, NY;

Applicant(s)

RAILWARE, INC., Hauppauge, NY;

Assignment For Published Patent Application

RAILWARE, INC., Hauppauge, NY

Power of Attorney: The patent practitioners associated with Customer Number 23432

Domestic Priority data as claimed by applicant

This application is a CON of 14/519,727 10/21/2014
which claims benefit of 61/893,547 10/21/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 06/21/2016

WABTEC EX1002

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/177,506**

Projected Publication Date: 09/29/2016

Non-Publication Request: No

Early Publication Request: No

Title

TOOLS FOR RAILWAY TRAFFIC CONTROL

Preliminary Class

246

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/177,506

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	8 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
			TOTAL			TOTAL	1600

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

23432 7590 08/05/2016

COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER
SMITH, JASON C

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 08/05/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A	7504

TITLE OF INVENTION: TOOLS FOR RAILWAY TRAFFIC CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/07/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

WABTEC EX1002

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23432 7590 08/05/2016
COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A	7504

TITLE OF INVENTION: TOOLS FOR RAILWAY TRAFFIC CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/07/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
SMITH, JASON C	3617	246-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

WABTEC EX1002

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A	7504

23432 7590 08/05/2016

COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER	
SMITH, JASON C	

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 08/05/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

WABTEC EX1002

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. 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 1.14. This collection is estimated to take 12 minutes 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. 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.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

WABTEC EX1002

Notice of Allowability	Application No. 15/177,506	Applicant(s) PIRTLE, ROSS	
	Examiner JASON C. SMITH	Art Unit 3617	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *06/09/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-8*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 06/09/2016
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/JASON C SMITH/
Primary Examiner, Art Unit 3617

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: the block placing part to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections; a code generation part to generate a release code, retrieve the electronic contact address of the railway field worker from the rail personnel contact database, and transmit the removal code to the electronic contact address of the railway field worker; and a block removal part to remove only upon entry of the removal code, the block placed by the block placing part on said one or more track sections, is seen as an unobvious improvement over the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON C. SMITH whose telephone number is (571)270-5225. The examiner can normally be reached on M- F, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Morano can be reached on (571) 272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JASON C SMITH/
Primary Examiner, Art Unit 3617

Notice of References Cited	Application/Control No. 15/177,506	Applicant(s)/Patent Under Reexamination PIRTLE, ROSS	
	Examiner JASON C. SMITH	Art Unit 3617	Page 1 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-5,390,880 A	02-1995	Fukawa; Tatsuya	B61L27/0027	246/167R
*	B	US-5,727,758 A	03-1998	Penza; George Gregory	B61L23/06	246/124
*	C	US-5,924,653 A	07-1999	Pedersen; Heine Ewi	B61L3/121	246/14
*	D	US-6,113,037 A	09-2000	Pace; Joseph A.	B61L23/06	246/124
*	E	US-6,145,792 A	11-2000	Penza; George Gregory	B61L23/06	246/122R
*	F	US-2007/0055743 A1	03-2007	Pirtle; Ross Murray	H04L63/08	709/217
*	G	US-2007/0176054 A1	08-2007	Mally; Alain	B61L23/06	246/15
*	H	US-7,624,952 B1	12-2009	Bartek; Peter M.	B61L23/06	246/124
*	I	US-2011/0006912 A1	01-2011	Sheardown; Keith Burton	B61L23/06	340/901
*	J	US-2011/0037619 A1	02-2011	Ginsberg; Matthew L.	G08G1/095	340/910
*	K	US-2011/0238242 A1	09-2011	NICHTER; KEVIN CHRISTOPHER	B61L27/0005	701/19
*	L	US-2011/0226910 A1	09-2011	Bock; Ulrich	B61L23/06	246/167A
*	M	US-2011/0278401 A1	11-2011	Sheardown; Keith Burton	B61L23/06	246/167A

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 15/177,506	Applicant(s)/Patent Under Reexamination PIRTLE, ROSS	
	Examiner JASON C. SMITH	Art Unit 3617	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-8,061,662 B1	11-2011	Bartek; Peter M.	B61L3/04	246/203D
*	B	US-2011/0313596 A1	12-2011	Ecton; Mark	B61L3/127	701/2
*	C	US-2012/0176217 A1	07-2012	TAMARIBUCHI; Hiroyuki	B61L23/06	340/5.7
*	D	US-2013/0135109 A1	05-2013	Sharon; Hamolsky Lee	G08B21/02	340/576
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*	G	US-2013/0187010 A1	07-2013	KIM; Jae Wook	B61L3/221	246/33
*	H	US-8,478,463 B2	07-2013	Knott; Jeffrey G.	B61L3/221	246/167R
*	I	US-2013/0201316 A1	08-2013	BINDER; Yehuda	H04L67/12	348/77
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*	K	US-2013/0304286 A1	11-2013	Ehrler; Eric	B61L23/06	701/19
*	L	US-2014/0104081 A1	04-2014	Cross; Brad	G08G9/00	340/989
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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 15/177,506	Applicant(s)/Patent Under Reexamination PIRTLE, ROSS	
	Examiner JASON C. SMITH	Art Unit 3617	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2015/0108284 A1	04-2015	Pirtle; Ross	B61L27/00	246/4
*	B	US-2015/0367873 A1	12-2015	IBENDORF; HENDRIK	F16P3/147	246/167R
*	C	US-2016/0035507 A1	02-2016	BRABAND; JENS	B61L23/06	307/326
	D	US-				
	E	US-				
	F	US-				
	G	US-				
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	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Dkt. 7552/85663-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Ross Pirtle

Application No.: [Rule 1.53(b) Continuation of 14/519,727]

Date Filed: Concurrently Herewith

For: TOOLS FOR RAILWAY TRAFFIC CONTROL

This correspondence is being filed electronically with the U.S. Patent and Trademark Office via EFS-Web.

6-9-16

Eleni Ramoundos Date

30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INFORMATION DISCLOSURE STATEMENT

This Information Disclosure Statement is being submitted concurrently with the above-identified continuation application, pursuant to the applicant's duty of disclosure, in order to bring the information listed in the attached Form PTO-1449 to the attention of the Examiner.

The subject application is a Rule 1.53(b) continuation of U.S. application No. 14/519,727, filed October 21, 2014. The references listed on the attached Form PTO-1449 have previously been submitted to, or cited by, the U.S. Patent and Trademark Office in prior application No. 14/519,727. The subject application relies upon said prior application for an earlier filing date under 35 U.S.C. §120. Accordingly, in compliance with 37 C.F.R. §1.98(d) copies of the references are not being supplied herewith. Rather, the Examiner's attention is respectfully directed to the prior application No. 14/519,727 for copies of the references.

Further, the Examiner's attention is directed to the file history of said prior application, including without limitation the submissions and citations of prior art by applicant and the claims

and prior art of record in said prior application. In addition, the Examiner's attention is directed to the allowance of said prior application.

It is respectfully requested that the information cited in the attached Form PTO-1449 be considered by the Examiner in connection with the above-identified patent application, and that such art be made of record in said application.

The filing of this Information Disclosure Statement is not an admission that the information cited herein is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).

The Patent Office is hereby authorized to charge any fees that are required for consideration of this Information Disclosure Statement, and to credit any overpayment during prosecution of this application, to our Deposit Account No. 03-3125.

Respectfully submitted,

PAUL TENG, Reg. No. 40,837
Attorney for Applicant
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30 Rockefeller Plaza, 20th Floor
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Tel.: (212) 278-0400

WABTEC EX1002

Submitted by: _____
Paul Teng, Reg. No. 40, 837

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		First Named Inventor: Ross PIRTLE	
		Art Unit:	
		Examiner Name:	
		Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
		5 3 9 0 8 8 0	02-21-1995	Fukawa et al.	
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		20 11 /0 23 82 42 A1	09-29-2011	NICHTER	
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		20 13 /0 13 51 09 A1	05-30-2013	Sharon	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation
		EP 1 0 8 3 6 3	05-16-1984	Kawasaki Jukogyo Kabushiki Kaisha		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		J.B. CALVERT, "Centralized Traffic Control", May 29, 1999
		FRANK W. BRYAN, "Railroad's traffic control systems", May 1, 2006

EXAMINER	/Jason C. Smith/	DATE CONSIDERED	07/28/2016

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Form PTO-1449 U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	First Named Inventor: Ross PIRTLE	
	Art Unit:	
	Examiner Name:	
	Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
		5772775 8	03-17-1998	Penza et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		KYLE MCINNES, "BlackBerry-Based WIC Pager Pilot Program at Children's Hospital", July 21, 2010
		JAI C.S., "Healthcare Communication Interface: WIC Pager, Philips Emergin", October 8, 2010
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		"Introduction to the FAMES Committee", May 21, 2012, Fatality Analysis of Maintenance-of-way Employees and Signalmen (FAMES) Committee
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		"SCC Centralized traffic control system for lines and area junctions", Ansaldo STS

EXAMINER /Jason C. Smith/	DATE CONSIDERED 07/28/2016

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Submitted by: _____
Paul Teng, Reg. No. 40, 837

Form PTO-1449 U.S. Department of Commerce Patent and Trademark Office	Application No.	Filing Date Concurrently Herewith
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	First Named Inventor: Ross PIRTLE	
	Art Unit:	
	Examiner Name:	
	Atty. Docket No.: 7552/85663-A	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.
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		6 1 4 5 7 9 2	11-14-2000	Penza et al.	
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		20 16 /0 03 55 07 A1	02-04-2016	BRABAND et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code, Number, Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Relevant Pages, Lines, etc.	Translation

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, symposium, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.

EXAMINER /Jason C. Smith/	DATE CONSIDERED 07/28/2016

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BIB DATA SHEET

CONFIRMATION NO. 7504

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/177,506	06/09/2016	246	3617	7552/85663-A

APPLICANTS
RAILWARE, INC., Hauppauge, NY;

INVENTORS
Ross PIRTLE, Commack, NY;

**** CONTINUING DATA ***************************
This application is a CON of 14/519,727 10/21/2014 PAT 9403545
which claims benefit of 61/893,547 10/21/2013

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
06/21/2016

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /JASON C SMITH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		NY	11	8	2

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UNITED STATES

TITLE
TOOLS FOR RAILWAY TRAFFIC CONTROL

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1600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15177506	PIRTLE, ROSS
	Examiner	**Art Unit**
	JASON C SMITH	3617

CPC						
Symbol					**Type**	**Version**
B61L		27	/	0038	F	2013-01-01
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NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/JASON C SMITH/ Primary Examiner.Art Unit 3617	07/28/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15177506	PIRTLE, ROSS
	Examiner	**Art Unit**
	JASON C SMITH	3617

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
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CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/JASON C SMITH/ Primary Examiner.Art Unit 3617	07/28/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15177506	PIRTLE, ROSS
	Examiner	**Art Unit**
	JASON C SMITH	3617

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

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NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 8	
/JASON C SMITH/ Primary Examiner.Art Unit 3617 (Primary Examiner)	07/28/2016 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

WABTEC EX1002

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"14519727"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:30
S2	13	("20070055743" | "20070176054" | "20110037619" | "20110238242" | "20110313596" | "20130135109" | "20130168503" | "20130187010" | "20130201316" | "20130234774" | "5390880" | "5924653" | "8478463").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:30
S3	80	b61l23/06.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:32
S4	7	("20030025589" | "20070073457" | "20090140856" | "20100013227" | "5705991" | "5942985" | "8548391").PN. OR ("9187105").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:37
S5	6	("20110006912" | "5727758" | "6113037" | "6145792" | "7624952" | "8344877").PN. OR ("8786428").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:37
S6	7	246/124.ccls. and worker$2 and block	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:38
S7	2	246/124.ccls. and worker$2 same block	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:38
S8	352	246/124.ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:40
S9	1	246/124.ccls. and worker$2 and code	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:40
S10	49	246/$.ccls. and worker$2 and code	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:40
S11	875	246/122r.ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:41
S12	508	246/167r.ccls.	US-PGPUB; USPAT;	OR	OFF	2016/02/23 21:41

			USOCR			
S13	112	b61l27/00.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:41
S14	16	b61l23/16.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:42
S15	1641	246/3.ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:42
S16	193	246/4.ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:42
S17	2	pirtle adj ross.in.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/02/23 21:42

7/28/2016 5:24:50 PM
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15177506	PIRTLE, ROSS
	Examiner	Art Unit
	JASON C SMITH	3617

CPC- SEARCHED		
Symbol	Date	Examiner
B61L 23/06, 16, 27/00	7/28/2016	jcs

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
246	3, 4, 124, 122r, 167r	7/28/2016	jcs

SEARCH NOTES		
Search Notes	Date	Examiner
east text search	7/28/2016	jcs

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
B61L	23/06, 16, 27/00	7/28/2016	jcs

	/JASON C SMITH/ Primary Examiner.Art Unit 3617

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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A

CONFIRMATION NO. 7504

23432
COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

PUBLICATION NOTICE

OC000000086141034

Title:TOOLS FOR RAILWAY TRAFFIC CONTROL

Publication No.US-2016-0280241-A1
Publication Date:09/29/2016

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

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(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A	7504

TITLE OF INVENTION: TOOLS FOR RAILWAY TRAFFIC CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/07/2016

11/09/2016 MBLANC01 00000002 033125 15177506
01 FC:1501 960.00 DA
02 FC:8001 3.00 DA

EXAMINER	ART UNIT	CLASS-SUBCLASS
SMITH, JASON C	3617	246-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 COOPER & DUNHAM LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: RAILWARE, INC.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Hauppauge, New York

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☒ Advance Order - # of Copies (1)

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 03-3125 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature [signature] Date November 7, 2016
Typed or printed name Paul Teng Registration No. 40,837

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

WABTEC EX1002

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23432 7590 08/05/2016
COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	06/09/2016	Ross PIRTLE	7552/85663-A	7504

TITLE OF INVENTION: TOOLS FOR RAILWAY TRAFFIC CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/07/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
SMITH, JASON C	3617	246-003000

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☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

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(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
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1 COOPER & DUNHAM LLP
2
3

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(A) NAME OF ASSIGNEE: RAILWARE, INC.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Hauppauge, New York

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☒ Advance Order - # of Copies (1)

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 03-3125 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
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☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature [signature] Date November 7, 2016
Typed or printed name Paul Teng Registration No. 40,837

WABTEC EX1002

Dkt. 7552/85663-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Ross Pirtle

Application No.: 15/177,506 Art Unit: 3617

Filing Date: June 9, 2016 Examiner: Jason Smith

For: TOOLS FOR RAILWAY TRAFFIC CONTROL

Confirmation No.: 7504 Class-Subclass: 246-003000

Issue Fee Due Date: November 7, 2016

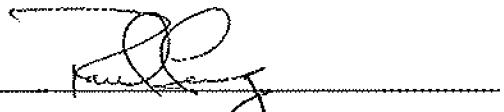
Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPLICANT'S COMMENTS ON
EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Sir:

Applicant appreciates the Examiner's Statement of the Reasons for Allowance attached to the Notice of Allowability dated August 5, 2016 and submits that the allowed claims recite subject matter which further supports patentability for reasons in addition to those identified in the Reasons for Allowance.

Respectfully submitted,



PAUL TENG, Reg.No.40,837
Attorney for Applicant
COOPER & DUNHAM LLP
30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

This correspondence is being transmitted by facsimile transmission and/or EFS-Web to the U.S. Patent and Trademark Office.



November 7, 2016

Paul Teng
Reg. No. 40,837

Date

Electronic Acknowledgement Receipt

EFS ID:	27433873
Application Number:	15177506
International Application Number:	
Confirmation Number:	7504
Title of Invention:	TOOLS FOR RAILWAY TRAFFIC CONTROL
First Named Inventor/Applicant Name:	Ross PIRTLE
Customer Number:	23432
Filer:	Paul Teng
Filer Authorized By:	
Attorney Docket Number:	7552/85663-A
Receipt Date:	07-NOV-2016
Filing Date:	09-JUN-2016
Time Stamp:	13:20:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	85663-A--IssueFee.pdf	68063 9c1e482ad0679ac53f63dd815f2d483eb7ea24b8	no	2

Warnings:

WABTEC EX1002

Information:	
Total Files Size (in bytes):	68063

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/177,506	12/13/2016	9517782	7552/85663-A	7504

23432 7590 11/22/2016

COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Ross PIRTLE, Commack, NY;
RAILWARE, INC., Hauppauge, NY;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

WABTEC EX1002

Dkt. 7552/85663-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.: 9,517,782 Issued: December 13, 2016

Application No.: 15/177,506 Filed: June 9, 2016

Applicant: RAILWARE, INC. Inventor: Ross Pirtle

For: TOOLS FOR RAILWAY TRAFFIC CONTROL

Confirmation No.: 7504

This correspondence is being transmitted by facsimile transmission and/or EFS-Web to the U.S. Patent and Trademark Office.

December 14, 2017

Paul Teng Date

30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
ATTN.: Certificate of Correction Branch

SIR:

REQUEST FOR CERTIFICATE OF CORRECTION

Please find a Form PTO-1050, attached hereto as **Exhibit A**, indicating a correction of an error in the above-identified patent.

The errors being corrected on Form PTO-1050 are as follows:

(a) [for patent claim 6] in Col. 12, line 36 replace "claim 1" with "claim 5".

(b) [for patent claim 8] in Col. 12, line 49 replace "claim 2" with "claim 7".

It is submitted that such errors are manifestly typographical errors. Each of patent claims 1 and 2 is directed to a system. On the other hand, each of patent claims 5-8 is directed to a method. Therefore, it is apparent that patent claim 6 directed to a method cannot depend from patent claim 1 directed to a system, and instead method claim 6 should depend from independent method claim 5.

Likewise, it is apparent that patent claim 8 directed to a method cannot depend from patent claim 2 directed to a system, and instead method claim 8 should depend from method claim 7 (which provides antecedent basis for patent claim 8).

Patentee respectfully requests that a Certificate of Correction be issued by the Patent Office under 37 C.F.R. §1.323.

If a Petition is required to effect the aforementioned corrections in the patent, please deem this Request to be such a Petition.

Authorization is hereby given to charge the $100.00 fee required under 37 C.F.R. §1.20(a), as well as the amount of any other required fees in connection with this Request, to Deposit Account No. 03-3125.

Respectfully submitted,

Paul Teng, Reg. No. 40,837
Attorney for Applicant
COOPER & DUNHAM LLP
30 Rockefeller Plaza, 20th Floor
New York, New York 10112
Tel.: (212) 278-0400

PTO/SB/44 (09-07)
Approved for use through 01/31/2020. OMB 0651-0033
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.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 9,517,782

APPLICATION NO.: 15/177,506

ISSUE DATE : December 13, 2016

INVENTOR(S) : Ross Pirtle

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In Col. 12, line 36 replace "claim 1" with "claim 5".

In Col. 12, line 49 replace "claim 2" with "claim 7".

MAILING ADDRESS OF SENDER (Please do not use Customer Number below):

COOPER & DUNHAM LLP
30 Rockefeller Plaza, 20th Floor
New York, New York 10112

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. 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 1.14. This collection is estimated to take 1.0 hour 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: Attention Certificate of Corrections Branch, 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.

Electronic Acknowledgement Receipt

EFS ID:	31223697
Application Number:	15177506
International Application Number:	
Confirmation Number:	7504
Title of Invention:	TOOLS FOR RAILWAY TRAFFIC CONTROL
First Named Inventor/Applicant Name:	Ross PIRTLE
Customer Number:	23432
Filer:	Paul Teng
Filer Authorized By:	
Attorney Docket Number:	7552/85663-A
Receipt Date:	14-DEC-2017
Filing Date:	09-JUN-2016
Time Stamp:	09:32:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	85663-A--RequestForCertificateOfCorrection.pdf	120367 55197f072fdf2de33d303655ebf7d21e3272bd08	no	3

Warnings:

WABTEC EX1002

Information:	
Total Files Size (in bytes):	120367

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.	: 9,517,782 B2
APPLICATION NO.	: 15/177506
DATED	: December 13, 2016
INVENTOR(S)	: Ross Pirtle

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

In Column 12, Line 36 replace “claim 1” with “claim 5”.

In Column 12, Line 49 replace “claim 2” with “claim 7”.

Signed and Sealed this
Thirtieth Day of January, 2018

Joseph Matal

Joseph Matal
Performing the Functions and Duties of the
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office

AO 120 (Rev. 08/10)

TO:	**Mail Stop 8** **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Southern District of New York on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:22-cv-5013	6/15/2022	Southern District of New York

PLAINTIFF	DEFENDANT
Railware, Inc.	National Railroad Passenger Corporation d/b/a AMTRAK

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US Pat. 9,517,782	12/13/2016	Railware, Inc.
2	US Pat. RE47,835	2/4/2020	Railware, Inc.
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Ruby J. Krajick	/s/ P. Canales	6/16/2022

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Southern District of New York on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:22-cv-5013	6/15/2022	Southern District of New York

PLAINTIFF	DEFENDANT
Railware, Inc.	National Railroad Passenger Corporation d/b/a Amtrak

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US Pat. 9,517,782	12/13/2016	Pirtle (Inventor); Railware, Inc. (Assignee)
2	US Pat. RE47,835	2/4/2020	Pirtle (Inventor); Railware, Inc. (Assignee)
3			
4			
5			

In the above---entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY
6/30/2022	☑ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US Pat. RE49,115	6/28/2022	Pirtle (Inventor); Railware, Inc. (Assignee)
2			
3			
4			
5			

In the above---entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Ruby J. Krajick	/s/ J. Gonzalez	6/30/2022

Copy 1---Upon initiation of action, mail this copy to Director Copy 3---Upon termination of action, mail this copy to Director
Copy 2---Upon filing document adding patent(s), mail this copy to Director Copy 4---Case file copy

WABTEC EX1002

Trials@uspto.gov
571-272-7822

Paper No. 8
Date: January 22, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NATIONAL RAILROAD PASSENGER CORPORATION D/B/A AMTRAK,
Petitioner,

v.

RAILWARE, INC.,
Patent Owner.

IPR2023-01179
Patent 9,517,782 B2

Before JAMES A. TARTAL, CYNTHIA L. MURPHY, and BRENT M. DOUGAL, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

National Railroad Passenger Corporation d/b/a Amtrak ("Petitioner")[1] filed a Petition pursuant to 35 U.S.C. §§ 311–319 requesting an *inter partes* review of claims 1–8 ("the Challenged Claims") of U.S. Patent No. 9,517,782 B2 (Ex. 1001, "the '782 patent"). Paper 2 ("Pet."). Railware, Inc. ("Patent Owner")[2] filed a Patent Owner Preliminary Response. Paper 7 ("Prelim. Resp.").

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2023). An *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we conclude that the information does not demonstrate a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one of the Challenged Claims. Accordingly, we do not institute an *inter partes* review.

II. BACKGROUND

A. The '782 Patent

The '782 patent, titled "Tools for Railway Traffic Control," issued on December 13, 2016, from U.S. Patent Application No. 15/177,506, filed June 9, 2016. Ex. 1001, codes (21), (22), (45), (54). The '782 patent is directed to "to railway traffic control, and more specifically, a system, apparatus, and method for railway traffic control to address concerns for

[1] Petitioner identifies no additional real parties in interest. Pet. 2.
[2] Patent Owner identifies no additional real parties in interest. Paper 5, 1.

WABTEC EX1002

safety of railway workers working on or near railroad tracks." *Id.* at 1:14–17. The '782 patent describes prior safety features present in a railway system and notes that despite these preexisting safety features, numerous "roadway worker accidents" resulted in the death of workers "while attending to tasks . . . on or near track." *Id.* at 2:27–37. The '782 patent identifies "a need for further safety measures to protect the lives of railway workers." *Id.* at 2:38–39.

As further background, according to the '782 patent, in a standard railway system, "[i]nterlocking signals govern movement within a sector controlled by an interlock." Ex. 1001 1:27–28. "[A] track may be divided into sections," and an "interlocking signal" is exhibited at the entrance to each track section. *Id.* 1:28–32. "[T]he interlocking signal displays a color system which instructs the conductor of the train, or the train operating by automated response, how to move through the upcoming section of track." *Id.* at 1:32–35.

The '782 patent further explains that a centralized traffic control system may be used "to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic." *Id.* at 2:47–57. "[O]nce a block is placed, no train can traverse the blocked section of rail," and "maintenance workers and railway personnel can travel, inspect and work on the rails without the danger of oncoming train traffic." *Id.* at 5:43–44, 5:48–50; *see also id.* at 5:44–48 (stating that an interlock can "output a STOP signal, therefore, stopping any train traffic within the rails controlled by that interlock"), 5:50–54 (stating that "[t]rains that are scheduled to traverse said blocked tracks either come to a complete stop, electronically or mechanically, before passing the interlock or are rerouted using tracks that

are not in a blocked state"). When "the block is removed," the result is that train "traffic to that section of rail is then allowed." *Id.* 7:19–20. Thus, an errant (e.g., premature) removal or release of the block could endanger a railway field worker still present in the specified track section. *See id.* at 2:27–37.

"[A]ll of the interlocks" within a railway system may be controlled electronically through "a centralized traffic control (CTC)." *Id.* at 1:40–44. "The CTC is controlled by a single person known as a train dispatcher." *Id.* at 1:46–47. "In order for the train dispatcher to make appropriate train control decisions regarding how the train should be operated," information is displayed to the train dispatcher "on a control console," and "[t]hrough the control console, the dispatcher has control of each interlock signal." *Id.* at 1:48–59. Thus, the train dispatcher (i.e., a single person) is responsible for both blocking a specified rail section (e.g., so that railway field workers can safely attend to tasks on this track section) and for removing/releasing this block (e.g., once railway field workers have presumably completed tasks and vacated this track section). *See id.* at 1:40–47, 2:47–57, 5:44–50, 7:19–20. And, as indicated above, an errant removal/release of the block would endanger a railway field worker still present in the specified section of track. *See id.* at 2:27–37.

The '782 patent identifies as an essential purpose the provision of a system and method that assures "the railway worker has more control over the traffic through the rail block in which the worker is working, and fatal on-track accidents can be reduced." *Id.* at 11:12–14. To accomplish this purpose, the '782 patent requires "generating a removal code and transmitting the removal code to the electronic contact address of the railway field worker, and permitting the block to the track sections to be removed

only upon entry of the removal code in the centralized railway control system."[3] *Id.* at 2:47–57.

The '782 patent describes the process in further detail, explaining that, first, the dispatcher places a block on a specified rail section by inputting corresponding information into the control console. *See id.* at 7:39–47. "Once the block is put into place," the railway traffic control terminal (i.e., a computer) generates a release code, saves this code to an internal storage, and "sends the code to the maintenance worker designated for track work." *Id.* 7:50–55, *see also id.* at 7:1–3 (stating "the railway traffic control apparatus . . . may then generate a release code and save it to an internal storage"). Information corresponding to the now-blocked rail section is displayed to the dispatcher on the user interface, but this displayed information does not include the computer-generated code. *See* Ex. 1001, Fig. 6. The '782 patent states that "where there are multiple maintenance workers assigned to a certain track section, there may be provided one release code to one, multiple or all of maintenance workers assigned." *Id.* at 8:32–35; *see also id.* at 8:35–39 (stating that the "train traffic controller may input that the release code be specified to one maintenance worker, preferably a supervisor or foreman, to multiple maintenance workers or to all of the maintenance workers assigned to work on a given track section"), 8:39–45 (stating "where there are multiple workers assigned for a

[3] The '782 patent refers to "the code" as the "removal code" (*see*, *e.g.*, Ex. 1001, 2:47–57), the "release code" (*see*, *e.g.*, *id.* at 7:1–3), the "random secret code" (*see*, *e.g.*, *id.* at 9:32–34), the "secret code" (*see*, *e.g.*, *id.* at 9:65–10:1), and the "secret removal code" (*see*, *e.g.*, *id.* at 10:1–5). In each instance, the '782 patent is referring to the code used to remove the block and the Parties direct us to no material difference between these terms in regard to any matter at issue in this Decision.

WABTEC EX1002

certain track section, there may be provided multiple unique release codes which would then all be required to be input into the train traffic control terminal . . . by the train traffic controller in order to be able to remove blocks on certain track sections"). Thus, the '782 patent only describes circumstance where the release code is transmitted to workers performing work on the track in the field.

The dispatcher "may not remove" the block on the specified track section "without the input of the release code." Ex. 1001, 7:55–59; *see also id.* at 11:1–5 ("Once a block has been placed, the interlock remains in a blocked s[t]ate, until the maintenance worker supplies the release code" to the dispatcher). Thus, "[s]o long as the block is in place, [the] maintenance worker can perform on-track work, without interference of oncoming train traffic." *Id.* at 11:5–7. Then, "[a]fter the maintenance worker finishes the assigned work and is clear of the train tracks, he/she may then supply the interlock control system with the release code, and the interlock control system in turn can release the interlock over the block." *Id.* at 7:7–11. In short, the '782 patent makes clear that the train dispatcher typically does not have the release code to lift the block until the release code is provided by a maintenance worker.

The '782 patent also describes instances where the code may be *obtained* by the dispatcher from the internal storage of the railway traffic control apparatus rather than from the maintenance worker. *Id.* at 10:6–22. The '782 patent explains in this regard that a block placed on a section of track may be removed by the dispatcher if an eligible maintenance worker transmits the code to the railway traffic control center, but that "[i]f there is no maintenance worker available to transmit the random secret code, the code can be retrieved from the train traffic control terminal . . . by the train

WABTEC EX1002

traffic controller [i.e., the dispatcher]." *Id.* at 10:6–22. The '782 patent does not describe any circumstance where the code is provided to the dispatcher when a maintenance worker is available to transmit the code. Similarly, concerning circumstances where the maintenance worker is unavailable, the '782 patent does not describe any circumstance where the code is transmitted to the dispatcher without the dispatcher proactively retrieving the code from storage in the control system. Thus, the operation of the system, even in the absence of an available maintenance worker, is consistent with the '782 patent's description of a system and method, as noted above, that assures "the railway worker has more control over the traffic through the rail block in which the worker is working, and fatal on-track accidents can be reduced." *Id.* at 11:12–14.

B. Illustrative Claim

Petitioner challenges claims 1–8 of the '782 patent. Pet. 1. Claims 1 and 5 are independent. Claims 2–4 depend from claim 1 and claims 6–8 depend from claim 5 (*see* Ex. 1001, Certificate of Correction). Claim 1 is illustrative of the claimed subject matter and is reproduced below:

> 1. A system to enhance railway control, to protect safety of railway workers on or near railway tracks, the system comprising:
>
> a railway control apparatus comprising a processor, a non-transitory medium storing one or more programs of executable instructions, and a network interface through which the railway control apparatus communicates via a network; and
>
> a user terminal provided to a railway field worker and configured to communicate via the network with the railway control apparatus and to provide a user interface to display information received from the railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon,

> wherein the railway control apparatus, by execution of said one or more programs of executable instructions by the processor, includes:
>
> a block placing part to place a block on one or more specified track sections to permit the railway field worker to enter the track sections while blocking railway traffic to said track sections;
>
> a code generation part to generate a release code and transmit the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and
>
> a block removal part to remove only upon receiving the release code from the user terminal in return, the block placed by the block placing part on said one or more track sections.

Ex. 1001, 11:22–51. Independent claim 5 is directed to a "method to enhance railway control" and, similar to claim 1, recites "generating by the railway control apparatus a release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal." *Id.* at 12:13–35.

WABTEC EX1002

C. Asserted Grounds of Unpatentability

In the Petition, Petitioner lists seven grounds under which it contends the Challenged Claims are unpatentable, as set forth in the following table:

Claims Challenged	35 U.S.C. §[4]	Reference(s)/Basis
1–8	103(a)	Oriol[5]
1–8	103(a)	Oriol, Masquelier[6]
1–8	103(a)	Oriol, Wise[7]
1–8	103(a)	Oriol, Masquelier, Wise
1–8	103(a)	Oriol, Masquelier, Pachl [8]
1–8	103(a)	Tamaribuchi,[9] Pachl
1–8	103(a)	Wise, Masquelier

Pet. 3–4. Petitioner further relies on the supporting Declaration of Dr. William R. Michalson, dated July 6, 2023. Ex. 1003.

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[4] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. We apply the post-AIA version of § 103 here, because the earliest provisional application identified in the '782 patent was filed after the effective date of the AIA. *See* Ex. 1001, code (60).

[5] Oriol, N., Sheridan, T. and Multer, J. (2004). *Supporting Railroad Roadway Worker Communications with a Wireless Handheld Computer: Volume 1: Usability for the Roadway Worker*, Report No. DOT/FRA/ORD-04/13.I. U.S. Department of Transportation, Federal Railroad Administration (Ex. 1004, "Oriol").

[6] Masquelier, T., Sheridan, T., and Multer, J. (2004). *Supporting Railroad Roadway Worker Communications with a Wireless Handheld Computer: Volume 2: Impact on Dispatcher Performance*. Report No. DOT/FRA/ORD-04/13.II. U.S. Department of Transportation, Federal Railroad Administration (Ex. 1005, "Masquelier").

[7] WO 2004/042663 (Ex. 1006, "Wise").

[8] U.S. Patent No. 7,328,090 (Ex. 1020, "Pachl").

[9] U.S. Patent Application Pub. No. 2012/0176217 (Ex. 1007, "Tamaribuchi").

D. Related Proceedings

The Parties identify the '782 patent as a subject of *Railware, Inc. v. National Railroad Passenger Corporation d/b/a Amtrak*, Case No.1-22-CV-05013-KPF (S.D.N.Y.). Pet. 2; Paper 5, 1. Petitioner also filed petitions challenging claims of two other related patents in *National Railroad Passenger Corporation d/b/a Amtrak v. Railware, Inc.*, IPR2023-01180 (U.S. Patent No. RE47,835 E) and *National Railroad Passenger Corporation d/b/a Amtrak v. Railware, Inc.*, IPR2023-01181 (U.S. Patent No. RE49,115 E).

III. ANALYSIS

A. Legal Standards for Obviousness

A patent claim is unpatentable for obviousness if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, "would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). In *Graham v. John Deere Co.*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness that requires consideration of four factors: (1) the "level of ordinary skill in the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4) "secondary considerations" of nonobviousness such as "commercial success, long felt but unsolved needs, failure of others, etc." 383 U.S. at 17–18; *KSR*, 550 U.S. at 407.

"Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). "[W]here a party argues a skilled artisan would have been motivated to

combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so.'" *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

B. Level of Ordinary Skill in the Art

The level of skill in the art is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham*, 383 U.S. at 17–18; *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)). In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted).

Petitioner contends a person of ordinary skill in the art "would have had at least a bachelor's degree in electrical, mechanical, or related engineering, and also would have had at least two (2) years of experience in railway operations or railway control systems and would have programming experience," and that "[a] higher level of education or specific skill might make up for less experience, and vice-versa." Pet. 7 (citing Ex. 1003 ¶¶ 27–28). Patent Owner does not dispute the level of ordinary skill identified by Petitioner. *See* Prelim. Resp. 9. For purposes of this Decision, we apply Petitioner's proposed level of skill because, on the current record, it is undisputed and consistent with the level of skill at the time of the claimed

invention reflected by the '782 patent and the cited prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We apply the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). Under that standard, claim terms "are generally given their ordinary and customary meaning" as would have been understood by a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317. If the specification "reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316 (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

Petitioner proposes no express construction for any claim term. Petitioner argues that "[b]ecause the prior art discloses the claim limitations, the claims require no express construction and should be given their plain and ordinary meaning." Pet. 8. As an initial matter, Patent Owner argues

WABTEC EX1002

in opposition that "[w]hether or not claim construction is necessary does not depend on whether 'the prior art discloses the claim limitations,'" because "[c]laim construction is a *prerequisite* to the validity analysis." Prelim. Resp. 10 (citing *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) ("A claim must be construed before determining its validity just as it is first construed before deciding infringement.")). Patent Owner further proposes an express construction of the claim term "release code."[10] *Id.* at 10–21. We address Patent Owner's arguments pertaining to "release code" below.

1. "release code"

The claim term "release code" appears in both independent claims 1 and 5. Claim 1 recites, in part, "a code generation part to generate a release code and transmit the release code to an electronic contact address accessible by the railway field worker." Claim 5 recites, in part, "generating . . . a release code and transmitting the release code to an electronic contact

[10] Patent Owner suggests that Petitioner fails to "satisfy its burden," because "one cannot determine whether the prior art discloses the claim elements until the claims have been properly construed." Prelim. Resp. 10. Although Patent Owner does not identify the "burden" it contends is placed on Petitioner, we recognize that a petitioner is required to identify in its petition "[h]ow the challenged claim is to be construed." 37 C.F.R. § 42.104 (b)(3). Petitioner's reliance here on the "plain and ordinary meaning" is not, alone, a sufficient basis to deny the Petition. Rather, for purposes of this Decision, we must determine whether Petitioner has made a sufficient showing to support institution of *inter partes* review by demonstrating a reasonable likelihood of prevailing in showing the unpatentability of at least one of the Challenged Claims. Accordingly, Patent Owner's reliance on *Amazon.com* under these circumstances is not decisive because this Decision is not assessing the validity of any Challenged Claim.

WABTEC EX1002

address accessible by the railway field worker." We refer to these limitations as the "code limitations."

Petitioner purports to have applied the "plain and ordinary meaning to all claim terms, including "release code," in the Petition for the purposes of institution. Pet. 8. Petitioner does not otherwise address in the Petition what it contends to be the plain and ordinary meaning of "release code." According to Petitioner, in the '782 patent "a railway control apparatus (computer) blocks a track and transmits a generated code to a worker's user terminal," and "[t]o unblock the track, the worker will transmit the code to the railway control apparatus." Pet. 1 (citing, e.g., Ex. 1001, Abstract, 2:53–57, 4:32–36, 7:1–20).

In arguing that Oriol teaches a code, as required by the '782 patent, Petitioner asserts that "Oriol's Form D number is a release code given the generated Form D number is sent to the worker 'who requested it' . . . and who cancels the same Form D number (under his authority) to release the track block." Pet. 28 (citing Ex. 1004, 36–38, Fig. A-1; Ex. 1003 ¶ 125). Petitioner applies similar reasoning in grounds that do not include Oriol. With regard to obviousness over Tamarbuchi and Pachl, Petitioner contends that Tamarbuchi teaches a "reference number" transmitted to a worker that "is a release code given the same reference number is used to later release the track block." *Id.* at 59 (citing, e.g., Ex. 1007 ¶¶ 110, 111, 118, Figs. 3, 4). With regard to obviousness over Wise and Masquelier, Petitioner contends that Wise teaches generating "an access code" that is transmitted to the worker, and that the worker transmits the same code "'previously . . . allocated to the job' to the railway control apparatus to release the work." *Id.* at 67–68 (citing, e.g., Ex. 1006, 24:19–26, Figs. 5H, 6A).

WABTEC EX1002

Thus, Petitioner's analysis suggests that a "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block. Petitioner has not supported its application of the alleged "plain and ordinary meaning" of "release code" with any supporting analysis of the Specification of the '782 patent.

Patent Owner argues that the intrinsic evidence of the '782 patent supports a narrower construction of "release code," which Petitioner fails to show was taught by the asserted art. Prelim. Resp. 10–21. According to Patent Owner, a person of ordinary skill in the art "would have understood the claimed 'release code' to mean 'a code that is not readily available to the dispatcher.'" *Id.* at 10.

Our analysis starts with the claim language. *Phillips*, 415 F.3d at 1312–14. Patent Owner argues that claims challenged require "that the 'release code' is generated and transmitted 'to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal,' and that "a track block be removed '*only* upon receiving the release code from the user terminal in return.'" Prelim. Resp. 20 (quoting Ex. 1001, Cls. 1, 5). Patent Owner reasons that "[b]y using the word 'only,' the claims require that the "release code" is not readily available to the dispatcher until the "release code" is received from the user terminal, which is in the field with the railway worker." *Id.* Patent Owner's arguments support a determination that Petitioner fails to sufficiently show how the language of the Challenged Claims shows that the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further

WABTEC EX1002

limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block.

Next, we turn to the Specification. "While we read claims in view of the specification . . . we do not read limitations from the embodiments in the specification into the claims." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (citation omitted). "We depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal." *Id.* In order for a patentee to act as its own lexicographer, the "patentee must 'clearly set forth a definition of the disputed claim term' other than its plain and ordinary meaning'" and "must 'clearly express an intent' to redefine the term." *Bradium Techs LLC v. Iancu*, 923 F.3d 1032, 1044 (Fed. Cir. 2019)). Patent Owner does not argue that it disavowed the full scope of the plain and ordinary meaning of any term in the Challenged Claims and directs us to no explicit definition of "release code" in the Specification.

We recognize that in the absence of an explicit statement of redefinition, "the specification may define claim terms 'by implication' such that the meaning may be 'found in or ascertained by a reading of the patent documents.'" *AstraZeneca AB v. Mut. Pharm. Co., Inc.*, 384 F.3d 1333, 1339–1340 (Fed. Cir. 2004) (quoting *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001)); *see AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1051–52 (Fed. Cir. 2010) ("[W]hen a patentee uses a claim term throughout the entire patent specification, in a manner consistent with only a single meaning, he has defined that term 'by implication.'" (quoting *Bell Atl.*, 262 F.3d at 1271)).

Patent Owner argues that "the '782 patent repeatedly and consistently refers to the 'release code' as 'secret.'" Prelim. Resp. 11–12 (citing

Ex. 1001, 5:58–60 ("the code generator 101B is configured to produce [a] removal code []such as a cipher which is . . . secret"); 9:65–10:1 ("the railway traffic control terminal 105 . . . enables safety measures so that the block cannot be removed without the input of the secret code generated"); 10:10–13 ("The remove button is disabled without the input of the secret code"); 10:15–22 ("the maintenance worker transmits the random secret code to the railway traffic control center 105 (S1305)")). According to Patent Owner, "[b]y repeatedly and consistently describing the code as 'secret,' a [person of ordinary skill in the art] would understand from the '782 patent that the claimed 'release code' is not readily available to the dispatcher." *Id.* at 12.

As further support that the Specification implicitly limits the "release code" to information not readily available to the dispatcher, Patent Owner argues that the '782 patent "describes the generation and transmission of the 'release code' . . . as 'largely automated' such that the 'release code' is 'automatically transmitted' by the railway control apparatus to the railway field worker." *Id.* (citing Ex. 1001, 2:53–55, 2:58–62, 5:58–64, 7:1–10, 7:32–55, 8:54–59, 10:1–5). According to Patent Owner, "these operations explicitly do not involve displaying the 'release code' to the dispatcher." *Id.*

Patent Owner also directs our attention to Figures 7 and 10 of the '782 patent and argues that Figure 7 illustrates a screen shot of a display of the railway control apparatus for the dispatcher that does not include a release code, as compared to Figure 10, which shows a screen shot of the railway field worker's terminal with a "random code" displayed corresponding to a "release code." *Id.* at 13–14 (citing Ex. 1001, Figs. 7, 10). Patent Owner further directs us to Figure 8 as showing that "only after the railway field worker transmits the 'release code,' is the

WABTEC EX1002

dispatcher able to enter the 'release code' into the railway control apparatus and remove the block." *Id.* at 15–16 (citing, e.g., Ex. 1001 8:28–29, Fig. 8).

Additionally, Patent Owner argues that a person of ordinary skill in the art would have "readily understood that the claimed 'release code' is not readily available to the dispatcher, given the problems addressed by the '782 patent." *Id.* at 16. Patent Owner argues as follows:

> The '782 patent acknowledges that "railway transportation is run under strict operational guidelines or rules," such as the Form D number. [Ex. 1001,] 1:21–22. But Form D numbers, alone, are inherently unreliable because they are known to the dispatcher at all times. Indeed, the '782 patent notes that "one study reported that there were 39 roadway worker accidents that occurred between January 1997 and the end of 2011, in which 41 roadway workers perished." *Id.* at 2:29–31. Form D numbers were in operation during this entire span of time, yet accidents and fatalities persisted. Indeed, the '782 patent notes that "even with all of the[] safety features present in a railway system, railway accidents occur, with many of them being fatal. . . . There remains a need for further safety measures to protect the lives of railway workers." [*Id.*] at 2:27–39.
>
> . . .
>
> [T]he '782 patent provides "*supplemental* measures directed to safety of railway workers." *Id.* at 2:45–46 (emphasis added). Specifically, the '782 patent states that, when embodiments of the invention are implemented, "the railway worker has more control over the traffic through the rail block in which the worker is working, and fatal on-track accidents can be reduced." [*Id.*] at 11:12–14.

Prelim. Resp. 16–18.

Lastly, according to Patent Owner, the '782 patent states that "[i]f there is no maintenance worker available to transmit the random secret code, the code can be retrieved from the train traffic control terminal 105 by the train traffic controller (S1306)." *Id.* at 19 (citing Ex. 1001, 10:19–22).

WABTEC EX1002

Patent Owner argues that "[b]y forcing the 'release code' to be 'retrieved from the train traffic control apparatus' (as opposed to simply displaying the 'release code' in full view of the dispatcher, like in the prior art), the '782 patent makes clear that the claimed 'release code' is not 'readily' available to the dispatcher." *Id.* at 19–20.

Patent Owner's arguments support a determination that Petitioner fails to sufficiently show how the Specification of the '782 patent shows that the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block. *See also* Ex. 1001, 11:40–42 (identifying the need for limitations on the accessibility of the code to give the railway worker "more control over the traffic through the rail block in which the worker is working," so that "fatal on-track accidents can be reduced"). The '782 patent makes clear that the release code is "only" received by the relevant railway field worker and an internal storage. *Id.* at 7:4–10, *see also id.* at 2:47–57 ("generating a removal code and transmitting the removal code to the electronic contact address of the *railway field worker*, and permitting the block to the track sections to be removed *only* upon entry of the removal code in the centralized railway control system") (emphases added); 8:21–27 (stating that the railway traffic controller may remove a block "with the input of the release code provided by the designated worker assigned for track work"). Although the '782 patent describes alternative means for retrieving the release code from internal storage when the field worker is unavailable, accessibility to a "release code" is limited and this alternative access is only provided where "no maintenance worker [is] available to transmit the random secret code."

See id. at 10:19–22; *see also id.* at 5:58–60, 9:32–34, 9:65–10:5, 10:10–26 (consistently describing the release code as "secret").

Our analysis in this Decision is limited to determining whether Petitioner has shown a reasonable likelihood of prevailing in showing the unpatentability of any Challenged Claim and we need not expressly construe "release code" to make that determination.[11] Petitioner's application of a purported plain and ordinary meaning of "release code" neglects to address how a person of ordinary skill in the art would have understood "release code" in light of the Specification of the '782 patent. We further address Petitioner's arguments directed to the release code limitations in the context of the asserted prior art below, informed by our determination that Petitioner fails to sufficiently show that the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block.

2. Additional Claim Terms

The Parties do not dispute the construction of any other claim terms and we find that no other claim terms require express construction for purposes of rendering this Decision. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) ("[C]laim terms need only be construed 'to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs.*, 200 F.3d at 803)).

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[11] Further, for purposes of this Decision we need not resolve whether Patent Owner's proposed express construction of "release code" is the proper meaning of the term in light of the Specification, which we note does not appear to expressly address how a person of ordinary skill in the art would have distinguished a code that is "readily available" to the dispatcher from a code that was not "readily available."

WABTEC EX1002

D. Alleged Obviousness Over Oriol

Petitioner contends that claims 1–8 of the '782 patent would have been obvious over Oriol. Pet. 18–37; *see also* Ex. 1003 ¶¶ 90–163 (Dr. Michalson providing testimony in support of Petitioner's contentions). Patent Owner disputes Petitioner's contentions. Prelim. Resp. 21–31. Because we find it determinative, we focus our discussion on whether Petitioner has sufficiently shown for purposes of institution that the code limitations would have been obvious over Oriol. For the reasons that follow, and as further explained above in our discussion of what is not encompassed by the recited "release code" (*see supra* Section III.C.1), we determine Petitioner has not shown a reasonable likelihood of prevailing.

Oriol is a report by the U.S. Department of Transportation that "documents the design and evaluation of a digital communication device intended to improve roadway worker safety and productivity." Ex. 1004, iii. According to Petitioner, "Oriol teaches that a railway worker operates a mobile device (PDA) to request work authorization over the Internet to a central control system (*e.g.*, web server, query server, and database) operated by a dispatcher;" "if the work is permitted, the dispatcher's central control system will block the track and transmit the railway worker a 'Form D number (automatically assigned by system);'" and "[a]fter completing the work, the railway worker from the PDA's interface selects 'Cancel/Fulfill' link or prompt to transmit the Form D number under his authority to the dispatcher's central control system to unblock the track." Pet. 10–12 (citing Ex. 1004, 29, 36–37, Figs. A-1, 2). Oriol states that "[a]ccording to the Amtrak operating rules (NORAC, 1999), the dispatcher issues Form Ds to restrict or authorize train movements." Ex. 1004, 8.

WABTEC EX1002

Patent Owner provides a further description of the Form D as follows:

> Other examples of inadequate safety precautions include NORAC's Operating Rules, including the "Form D" control system. *See, e.g.*, EX2002, EX2003. NORAC's Operating Rules have existed since the mid-1980's and "Form D" has been an integral part of NORAC's Operating Rules since at least the early 1990's. *See e.g.*, EX2003. A "Form D" contains "written authorization(s), restriction(s), or instruction(s) issued by the Dispatcher to specified individuals." EX2003 at 6. These instructions can include a "Form D Line 4," which is used when "removing a track from service for maintenance." *Id.* at 48. The Operating Rules require the dispatcher to determine that "controlled signals leading to the affected track are in Stop position" prior to issuing a "Form D Line 4." *Id.* Similarly, prior to releasing a "Form D," the dispatcher ostensibly must take certain actions, including "contact the addressee(s) and state his intent to cancel the Form D . . ., state the Form D number and, date, the cancellation time and date, and his initials, [and] ensure that all cancellation information is repeated [by the addressee] correctly." *Id.* at 62–63. Despite these protections, human errors and accidents continued to occur, such as those recognized in the FRA's Final Rule (EX2001) and in the '782 patent. *See* EX1001 at 2:4–39. Such errors included mistakes such as where "the train dispatchers did not maintain the required blocking devices." EX2001 at 75.

Prelim. Resp. 4–5. Patent Owner further describes the Form D number as follows:

> [A] Form D number is well-known in the railway industry. *See e.g.*, EX2002 at 61-67. Form D numbers were originally designated using paper forms filled out by the dispatcher. *See, e.g.*, EX1004 at 55; EX2002 at 61. The Form D number is distributed broadly, to the dispatcher, locomotive engineers, railway field workers, and managers located outside the dispatcher's location. The form D number is not secret from anyone. Oriol states "[t]he device parameters should allow the PDA user to view all work permissions in effect for each track section on screens indicating the track that is out of service. *It would also be beneficial to include work permissions under the*

WABTEC EX1002

> *authority of other roadway workers*." EX1004 at 27 (emphasis added). Fig. A-5 of Oriol shows the Dispatcher Interface, which shows that the Dispatcher is aware of the Form D number from the time that the railway worker requests Form D protection[.]

Id. at 22.

Petitioner asserts that "Oriol's Form D number is a release code given the generated Form D number is sent to the worker 'who requested it' . . . and who cancels the same Form D number (under his authority) to release the track block." Pet. 28 (citing Ex. 1004, 36–38, Fig. A-1; Ex. 1003 ¶ 125). Patent Owner argues that a Form D number is not a "release code," as that term is used in the '782 patent. Prelim. Resp. 22–28. Patent Owner argues that "[a] Form D number is not the same as the claimed 'release code' because a Form D number is simply an identifier for a given Form D, is known to the dispatcher, and is not tied to the release of a track block." *Id.* at 24.

According to Patent Owner, "Oriol shows in Figure A-5, that from the time a Form D is requested, the dispatcher Interface displays the Form D numbers to the dispatcher," and that "Oriol's system utilizes the same generic, sequential numbering convention, generated by and known to the dispatcher, that was previously used on paper forms." *Id.* at 25–26. Patent Owner argues that "Form D's were subject to human error, including prematurely released track blocks," (citing Ex. 2001, 75–76), and that "by keeping the 'release code' secret from the dispatcher," as provided by the release code of the '782 patent, "the dispatcher is unable to release the block, such as either by miscommunication or through error, until the railway worker provides the 'release code.'" *Id.* at 26–27.

We agree with Patent Owner that Petitioner has not sufficiently shown for purposes of supporting institution that a Form D number, as taught by

WABTEC EX1002

Oriol, corresponds to the recited "release code." For the reasons detailed above (*see supra* Section III.C.1), Petitioner fails to sufficiently show how the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block. Petitioner shows only that a Form D number, as taught by Oriol, "is sent to the worker 'who requested it' . . . and who cancels the same Form D number (under his authority) to release the track block." Pet. 28. Petitioner fails to sufficiently show how a Form D number, which is displayed to the dispatcher before any block is to be removed (*see*, *e.g.*, Ex. 1004, A-5), is encompassed within the meaning of a "release code," as required by the Challenged Claims. Thus, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Oriol.

E. Alleged Obviousness Over Oriol and Masquelier

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Oriol in combination with Masquelier. Pet. 37–45. Petitioner states that "Masquelier is the second volume of Oriol's publication and builds upon Oriol's work." *Id.* at 12. Petitioner argues that a person of ordinary skill in the art "would have been motivated and had a reasonable expectation of success to modify Oriol, to include Masquelier's mobile device, visual track blocking and unblocking, and text messaging." *Id.* at 38. Although Petitioner does not present an element-by-element analysis of any of the Challenged Claims, it is apparent from Petitioner's arguments that Petitioner relies on the Form D number of Oriol as corresponding to the recited "release code." *See*, *e.g.*, *id.* at 41 (stating that "[i]n Oriol, the

railway control apparatus generates a release code and transmits it to the worker's electronic contact address," and that the "previously generated Form D number or release code" is used to remove the track block). Masquelier also describes the use of Form D. *See*, *e.g.*, Ex. 1005, 6; *see also* Pet. 42 (stating that "[a]fter receiving the worker's Form D request, Masquelier teaches that the dispatcher's railway control apparatus software blocks the track") (citing Ex. 1005, 11). Accordingly, we find Petitioner's contentions based on a Form D number insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Oriol and Masquelier for the same reasons discussed above with regard to alleged obviousness over Oriol, alone. *See supra* Section III.D; *see also* Prelim. Resp. 35 (arguing that "the Petition does not appear to rely on Masquelier for the claimed 'release code' at all" and that the proposed modifications of the teaching of Oriol based on Masquelier are "irrelevant" to the code limitations).

F. Alleged Obviousness Over Oriol and Wise

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Oriol and Wise. Pet. 46–49. Although Petitioner provides a short description of Wise (*see* Pet. 14–15), the summary of Wise provided by Patent Owner more thoroughly explains the disclosure of Wise as follows:

> Wise (EX1006) is entitled "Safety Check" and generally discloses a safety system that can be used, for example, in a rail network. EX1006 at 1:1–7.
>
> According to Wise, a supervisor determines that railway work needs to be done at a work site. *Id.* at 10:28–31. A planner plans the work. *Id.* at 10:31–34. The planner may schedule blocking of railway lines at the work site. *Id.* at 11:6–13. Before

WABTEC EX1002

> any repair work begins, an assessor evaluates potential safety issues at the work site. *Id.* [at] 9:7–13; 16:3–5, Fig. 3.
>
> At the time the repair should start, a "Controller of Site Safety" or "COSS user" (who is one for the workers who will perform the repairs) conducts his own safety assessment of the work site. *Id.* at 7:6; 7:12–15. The COSS user then contacts a remote operator, who quizzes the COSS user. [*Id.* at] 3:11–13; 16:12–15; 4:7–10. The remote operator, but not the COSS user, has information supplied by the assessor (who evaluated the potential safety issues at the work site), but the operator will not help the COSS user pass the safety quiz. *Id.* at 26:23–27 ("When the COSS user calls the operator they do so in the full knowledge that no assistance will be given regarding possible answers. The COSS user must have calculated and/or established answers to all predicted questions.").
>
> If the COSS user passes the quiz, the operator verbally gives the COSS user a "Safety Check Number" (SCN), and the COSS user and the workers are permitted to enter the work site and complete the planned repairs. *Id.* at 26:12–19. Thus, because the operator verbally gives the COSS user the SCN, the operator (*e.g.*, the dispatcher) knows the SCN that is given to the COSS user. If the COSS user fails the quiz, he and the workers are not provided an SCN and are not allowed to enter the work site. *Id.* at 26:19–23.

Prelim. Resp. 40–41. Wise also states that "[a]s soon as a job is completed and workers are removed from a target location a qualified caller again calls the operator . . . and informs them that the team has withdrawn providing the operator with the SCN number which has previously been allocated to the job." Ex. 1006, 25:4–9.

Petitioner does not provide a limitation-by-limitation analysis of any Challenged Claim. Instead, Petitioner summarizes how it proposes the teachings of Wise would have been applied to the system of Oriol. Pet 48–49. Petitioner argues that "[a]fter blocking the track, Oriol would generate and transmit Wise's unique access code such as an SCN to be displayed on

WABTEC EX1002

the worker's device," "Wise teaches that the access code transmitted to the worker provides authority to enter a track for maintenance," and "[w]hen the work is completed and 'Cancel/Fulfill' is selected, Oriol would transmit the access code (and Form D number) to the railway control apparatus, which would use (or enter) the access code (rather than the Form D number for the reasons discussed above) to unblock the track." *Id.* at 48–49 (citing, e.g., Ex. 1006, 25:4–9).

According to Petitioner, a person of ordinary skill in the art "would have been motivated to modify Oriol with Wise's first blocking the track and thereafter generating a unique access code (*e.g.*, SCN), as the release code." *Id.* at 46 (citing Ex. 1003 ¶ 202). Petitioner asserts that this would enable the code to be generated "once the block has been implemented as otherwise the dispatcher and/or third-party could unsafely or incorrectly use the code before the track is blocked." *Id.* at 46–47 (citing Ex. 1003 ¶ 203). Further, according to Petitioner, "Wise's code would be separate from the Form D number" and "could provide another layer of security over the Form D number because it acts as authority to enter the track for maintenance." *Id.* (citing, e.g., Ex. 1006, Abstract, 12:6–15, 24:19–26, 26:14–23, Fig. 5H). Petitioner further reasons that Oriol's system would be modified "such that the Wise access or release code would be returned with the Form D number to the railway control apparatus." *Id.* at 47 (citing Ex. 1003 ¶ 209).

Patent Owner argues that "the SCN [of Wise] is not involved in setting or releasing any block." Prelim. Resp. 41 (citing Ex. 1005, Fig. 5G). Patent Owner further argues that Wise's SCN is "not the claimed 'release code' because it, like Oriol's Form D number, is known to the dispatcher at all times, and is therefore readily available to the dispatcher." *Id.* at 46

WABTEC EX1002

(citing Ex. 1006 at 24:19–26 ("an SCN is automatically generated and displayed on the screen to an operator. This number may then be verbally given to the caller")).

We agree with Patent Owner that Petitioner has not sufficiently shown for purposes of supporting institution that the SCN of Wise corresponds to the recited "release code." For the reasons detailed above (*see supra* Section III.C.1), Petitioner fails to sufficiently show how the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block. Petitioner shows only that the SCN of Wise is transmitted to a worker and may "provide another layer of security," because the SCN "acts as authority to enter the track for maintenance." Pet. 46–47. Petitioner fails to sufficiently show how Wise's SCN, which is displayed to an operator before any block is to be removed (*see*, *e.g.*, Ex. 1006, 24:19–26), is encompassed within the meaning of a "release code," as required by the Challenged Claims. Thus, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Oriol and Wise.

G. Alleged Obviousness Over Oriol, Masquelier, and Wise

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Oriol in combination with Masquelier and Wise. Pet. 49–51. Petitioner does not provide a limitation-by-limitation analysis of any Challenged Claim. According to Petitioner, a person of ordinary skill in the art "would have been motivated to modify Oriol and Masquelier to include central control blocking and unblocking as well as the railway control

WABTEC EX1002

apparatus to transmit and receive the release code (Form D number) over text message," and "would have been further motivated to modify this Oriol and Masquelier combination such that the railway control apparatus blocks the track and then uses Wise's access code as the release code instead of the Form D number." *Id.* at 50. For the same reasons discussed above in regard to Petitioner's allegations of obviousness over Oriol and Masquelier and over Oriol and Wise, Petitioner fails to sufficiently show how Oriol, Masquelier, or Wise teaches a code encompassed within the meaning of a "release code," as required by the Challenged Claims. *See supra* Sections III.C.1, III.D–F. Thus, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Oriol, Masquelier, and Wise.

H. Alleged Obviousness Over Oriol, Masquelier, and Pachl

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Oriol in combination with Masquelier and Pachl. Pet. 51–53. Pachl's disclosure relates "to a method for controlling the sequence of trains during traffic control, whereby a telephone communication between a traffic controller in a traffic control centre and a driver is carried out." Ex. 1020, code (57). Pachl calls the communications between the dispatchers and the locomotive engineers "running messages." *Id.* at 1:14.

According to Petitioner, Pachl "teaches a control center with a computer interface and storage to first control the track safety measure and then generate a 'checking code[,]' . . . [and] further teaches that the control center will only release the track upon entry of a received code." Pet. 17 (citing, e.g., Ex. 1020, 1:11–20, 1:33–36, 1:54–58, 1:63–66, 2:47–60, 3:35–45, 4:9–19, 4:50–59; Ex. 1003 ¶¶ 83–86). Patent Owner provides a more thorough explanation of the disclosure of Pachl as follows:

WABTEC EX1002

> The mechanism for improving the security of running messages envisioned by Pachl entails "checking codes." [Ex. 1020,] at 1:37–42. In Pachl, the dispatchers/train controllers and locomotive engineers communicate by telephone. *Id.* at 1:16–17. During these telephone calls, the dispatcher provides two pieces of information: a proposed movement permission for the train and a "checking code," which is a number that the dispatcher calculates on his computer based on the current state of the railway system and the proposed movement permission. *Id.* at 1:38–49. Specifically, Pachl teaches:
>
> > Once a train controller in the control center has received a movement request . . . the train controller enters an appropriate movement permission in a train computer. This uses the occupancy status of the requested track section to check the permissibility of the movement permission, and calculates a checking code which is specific for that movement permission. *The movement permission is . . . quasi-granted, together with the checking code, on a train control computer screen display. This movement permission is transmitted by the train controller together with the checking code by telephone.*
>
> [*Id.*] at 4:8–20.
>
> The locomotive engineer then enters the checking code and movement permission into a separate computer on the train. *Id.* at 2:2–5; 2:20–23. The locomotive engineer's computer uses the same algorithm that the train controller's computer used to generate his own version of the checking code. *Id.* at 2:24–26.
>
> If the version of the checking code computed by the locomotive's computer does not match the checking code the locomotive engineer received over the telephone, then he knows that the communication is in error. *Id.* at 2:28–31.

Prelim. Resp. 53–54.

Petitioner does not provide a limitation-by-limitation analysis of any Challenged Claim. Petitioner relies on a Form D number as the recited

"release code." Pet. 51 (stating "Oriol and Masquelier could generate a temporary number or other placeholder and then once the safety measure is made effective, generate the Form D number to provide greater security and safety as that release code would not be known until the track is blocked"), 53 (stating "Oriol and Masquelier could block the track and then generate the code (Form D number)"). Petitioner also refers to the "checking code" of Pachl, but does not argue it is a "release code." *Id.* at 51–53; *see also* Prelim. Resp. 59 (arguing that Pachl's checking code is not a "release code," because "the checking code is shown to the dispatcher on a display and then transmitted by the dispatcher to the train operator by telephone") (citing Ex. 1020, 4:8–20).

Petitioner fails to sufficiently show how a Form D number of Oriol, which is displayed to the dispatcher before any block is to be removed (*see*, *e.g.*, Ex. 1004, A-5), is encompassed within the meaning of a "release code," as required by the Challenged Claims.

To the extent Petitioner's arguments may be interpreted as relying on Pachl's checking code as corresponding to the recited "release code," Petitioner fails to sufficiently show how the checking code of Pachl, which is known to the dispatcher at all times (*see*, *e.g.*, Ex. 1020, 4:8–20), is encompassed within the meaning of "release code," as required by the Challenged Claims. *See* Prelim. Resp. 58–62 (detailing how Pachl's checking code is displayed to the dispatcher and telephoned to a train operator, not to an electronic address accessible by a railway field worker). Accordingly, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Oriol, Masquelier, and Pachl.

WABTEC EX1002

I. Alleged Obviousness Over Tamaribuchi and Pachl

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Tamaribuchi in combination with Pachl. Pet. 54–63. According to Petitioner, "Tamaribuchi describes a central control system that communicates with a maintenance worker's terminal device (e.g., PDA) over a network (e.g., Internet), and the central control system communicates with a power and signaling system to block and unblock tracks." *Id.* at 16 (citing Ex. 1007, Fig 1). Petitioner contends that Tamaribuchi teaches a control unit that produces a work order and adds a "reference number" as an "identification number," such as a "serial number." Pet. 58–59 (citing Ex. 1007 ¶¶ 110, 118, 214, Figs, 3, 4). In regard to Tamaribuchi, Patent Owner explains as follows:

> Tamaribuchi teaches a "PIN lock" system, whereby a user can request that a "central control device 100 control[a] target device 900 to maintain a first state in which the maintenance work can be safely performed." EX1007 at ¶[0087]. Tamaribuchi employs two numbers to effect this teaching. The "PIN" ("Personal Identification Number") identifies a user. *Id.* at ¶[0087]. The second number Tamaribuchi employs is a "reference number" that identifies work orders—it is a work order identification number. *Id.* at ¶[0090].
>
> When a worker wishes to lock a given safety condition, then the roadway worker can select an icon to request that the "PIN lock" be enabled. *Id.* at ¶ [0091]. Similarly, when the roadway worker wishes to unlock the safety condition, they can select another icon that removes the "PIN lock" state. *Id.* at ¶ [0097]–[0098].

Prelim. Resp. 66–67.

Petitioner relies on the reference number of Tamaribuchi as corresponding to the recited "release code." Pet. 58. According to Petitioner, "Tamaribuchi's reference number . . . is a release code given the same reference number is used to later release the track block." *Id.* at 59

WABTEC EX1002

(citing Ex. 1003 ¶ 265). Petitioner contends that to remove a track block in Tamaribuchi, a worker transmits an unlock request with the reference number to the railway control apparatus. *Id.* at 60. The control has "a block removal part" that "confirms the worker associated with this reference number has authority to remove the track block," and then updates the safety measures state associated with the reference number to remove the track block. *Id.* at 60–61. Petitioner further argues that "[t]o the extent the reference number must be entered, it would have been obvious with a reasonable expectation of success to modify Tamaribuchi with Pachl's code entry to provide confirmation before the track is unblocked and given Tamaribuchi's existing centralized control system and related software" and that [e]ntering the code" was known to a person of ordinary skill. *Id.* at 61–62.

Patent Owner argues that "Tamaribuchi's 'reference number' is not the claimed 'release code' because . . . the dispatcher is aware of the reference number at all times." Prelim. Resp. 69 (citing Ex. 1007, ¶ 32, Fig. 5 (illustrating "a screen displayed by a display unit of a central control device" with the reference number displayed to the dispatcher).

We agree with Patent Owner that Petitioner has not sufficiently shown for purposes of supporting institution that the reference number of Tamaribuchi corresponds to the recited "release code." For the reasons detailed above (*see supra* Section III.C.1) Petitioner fails to sufficiently show how the claim term "release code" encompasses a non-public code that is received by any railway personnel that may be used to release a track block without further limitations on the accessibility to the code by, for example, a dispatcher prior to a release of a track block. Petitioner fails to sufficiently show how Tamaribuchi's reference number, which is displayed

WABTEC EX1002

to the dispatcher before any block is to be removed (*see*, *e.g.*, Ex. 1007, Fig. 5), is encompassed within the meaning of a "release code," as required by the Challenged Claims. Thus, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Tamaribuchi and Pachl.

J. Alleged Obviousness Over Wise and Masquelier

Petitioner contends claims 1–8 of the '782 patent would have been obvious over Wise in combination with Masquelier. Pet. 63–70. Petitioner relies on the SCN described in Wise as corresponding to the recited "release code." *Id.* at 67–68. Petitioner asserts that "Wise teaches when the work is completed, the worker transmits the same SCN 'previously . . . allocated to the job' to the railway control apparatus to release the work." *Id.* at 68 (citing Ex. 1006, 25:4–9, Fig. 5H). For the same reasons discussed above (*see supra* Section III.F) Petitioner fails to sufficiently show how Wise's SCN, which is displayed to an operator before any block is to be removed (*see*, *e.g.*, Ex. 1006 at 24:19–26), is encompassed within the meaning of a "release code," as required by the Challenged Claims. Thus, we find Petitioner's contentions insufficient to establish a reasonable likelihood of prevailing in showing any Challenged Claim would have been obvious over Wise and Masquelier.

IV. CONCLUSION

We deny institution of *inter partes* review of any of the Challenged Claims.

IV. ORDER

Upon consideration of the record before us, it is:

ORDERED that the Petition is denied and no *inter partes* review is instituted.

WABTEC EX1002

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