

EXHIBIT G-9

Summary of Invalidity Analysis of U.S. Patent No. 11,219,000 (“’000 Patent”) in view of U.S. Patent No. 10,736,085 to Yan et al. (“Yan”)

U.S. Patent No. 10,736,085 to Yan et al. (“Yan”), issued on August 4, 2020, and was filed on February 7, 2018. Yan claims priority to PCT/CN2015/086763, which was filed on August 12, 2015, and published as WO 2017/024554 (“WO2017024554A1”) on February 16, 2017. WO2017024554A1 supports at least Claim 1 of Yan. By way of example only, at least the following disclosures of WO2017024554A1 are sufficient to support Claim 1 of Yan. *See, e.g.*, WO2017024554A1 at Abstract, pp. 1, 2, 3, 5, 6, 9, 10, 11, 16, 17, 19, Figs. 1, 2, 4, 5, 6, 7, 10. Defendants reserve the right to identify additional support. Therefore, Yan qualifies as prior art to the ’000 Patent under at least 35 U.S.C. § 102(a). As described in the following claim chart, at least under Pegasus’s apparent infringement theory, the asserted claims of the ’000 Patent are invalid as expressly and/or inherently anticipated by Yan.

To the extent that Yan is found not to anticipate, expressly or inherently, one or more of the asserted claims of the ’000 Patent, at least under Pegasus’s apparent infringement theory, these claims are invalid as obvious in view of Yan in view of the background knowledge and ordinary creativity of a person having ordinary skill in the art at the time of the alleged invention, or in combination with other prior art identified in the cover pleading, herein, or as disclosed in Defendants’ Invalidity Contentions and accompanying charts and appendices. A person of ordinary skill would have been motivated to combine Yan and any other prior art references, including but not limited to the other prior art identified in the cover pleading or herein, with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.

Defendants reserve the right to amend or supplement this invalidity chart at a later date.

1. Claim 1

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Claim Language		Exemplary Citations to Yan
1[pre]	A method of transmitting uplink (UL) control information by a user equipment (UE), the method comprising:	To the extent the preamble is limiting, at least under Pegasus’s apparent infringement theory, Yan discloses “A method of transmitting uplink (UL) control information by a user equipment (UE), the method comprising.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “In the prior art, the access network device indicates, by using preconfigured information, a subframe location (which is determined by a subframe offset for feeding back CSI and a period for feeding back the CSI) at which the terminal device feeds back periodic CSI and specific content of the periodic CSI fed back at each location for feeding back the periodic CSI. Herein, the acknowledgment information and/or the CSI are all referred to as uplink control information (UCI). Therefore, UCI fed back by the terminal device to the access network device on the uplink channel in some subframes includes only acknowledgment information or includes only periodic CSI information, while UCI fed back in some subframes includes both acknowledgment information and CSI. Because a quantity of bits of CSI fed back by the terminal device in each subframe for feeding back the periodic CSI is not constant, quantities of bits of UCI fed back by the terminal device in different subframes are different. The access network device allocates multiple uplink channels to the terminal device in advance, and before the terminal device feeds back UCI, the access network device

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		sends dynamic indication information to the terminal device. The dynamic indication information specifies an uplink channel on which the terminal device feeds back the UCI.” Yan at 1:39-62; WO2017024554A1 at 1. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the

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		same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
1[a]	receiving, from a base station, UL control channel resource set configuration information for UL control information transmission;	At least under Pegasus’s apparent infringement theory, Yan discloses “receiving, from a base station, UL control channel resource set configuration information for UL control information transmission.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes:

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		determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10. “The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.”

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		Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI, and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
1[b]	determining one of UL control channel resource sets contained in the received UL control channel resource set configuration information;	At least under Pegasus’s apparent infringement theory, Yan discloses “determining one of UL control channel resource sets contained in the received UL control channel resource set configuration information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources;

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		determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10. “The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel

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		resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI, and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and

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		a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11.

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		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
1[c]	determining one of UL control channel resources contained in the determined UL control channel resource set; and	At least under Pegasus’s apparent infringement theory, Yan discloses “determining one of UL control channel resources contained in the determined UL control channel resource set.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources;

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		determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10. “The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel

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		resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI, and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and

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		a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11. “In addition, when the first channel resource set is predefined as the channel resource set A, the channel indication information 00 indicates the channel resource 1-1, the channel indication information 01 indicates the channel resource 1-2, the channel indication information 10 indicates the channel resource 1-3, and the channel indication information 11 indicates the channel resource 1-4. When the first channel resource set is predefined as the channel resource set B, the channel indication information 00 indicates the channel resource 2-1, the channel indication information 01 indicates the channel resource 2-2, the channel indication information 10 indicates the channel resource 2-3, and the channel indication information 11 indicates the channel resource 2-4. If the determined first channel resource set is the channel resource set A, and a channel resource identifier carried in the channel indication information is a binary number 01, a channel resource determined by the terminal device in the channel resource set A according to the channel indication information is the channel resource 1-2. If the determined first channel resource set is the channel resource set B, a channel resource determined by the terminal device in the channel resource set B according to the same channel indication information is the channel resource 2-2. That is, same channel indication information may be used to indicate different target channel resources at different times in a subframe.” Yan at 14:5-30; WO2017024554A1 at 11.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
1[d]	transmitting UL control information through the determined UL control channel resource,	At least under Pegasus’s apparent infringement theory, Yan discloses “determining one of UL control channel resources contained in the determined UL control channel resource set.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources;

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Claim Language		Exemplary Citations to Yan
		determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Step S104: The terminal device sends uplink control information UCI to the access network device on the channel resource. The terminal device sends the uplink control information UCI to the access network device on the channel resource determined in step S103. That is, the channel resource is used as an uplink channel to bear the uplink control information UCI, and is used to send the UCI to the access network device.” Yan at 12:25-33; WO2017024554A1 at 10. “Step S403: The access network device receives uplink control information UCI sent by the terminal device on the channel resource. The access network device receives the uplink control information UCI sent by the terminal device on the determined channel resource. That is, the channel resource is used as the uplink channel to bear the uplink control information UCI.” Yan at 20:43-50; WO2017024554A1 at 16. “Step S504: The terminal device sends uplink control information UCI to the access network device on the second channel resource.

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Claim Language		Exemplary Citations to Yan
		The first channel resource is modified to obtain the second channel resource in step S503, so that a capacity corresponding to the second channel resource matches the size of the uplink control information UCI. The terminal device sends the UCI to the access network device on the second channel resource.” Yan at 22:42-50; WO2017024554A1 at 17.

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Claim Language	Exemplary Citations to Yan	
	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2	
	Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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Claim Language		Exemplary Citations to Yan
		An access network device sends channel indication information to a terminal device on a physical control channel S401 The access network device preconfigures N channel resource sets for the terminal device, so that the terminal device determines a channel resource set of the N channel resource sets as a first channel resource set, and determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources S402 The access network device receives uplink control information UCI sent by the terminal device on the channel resource S403 FIG. 4 Yan at Fig. 4; WO2017024554A1 at Fig. 4.

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Claim Language		Exemplary Citations to Yan
		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a first channel resource of N channel resources according to the channel indication information, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device The terminal device increases or decreases the first channel resource to obtain a second channel resource The terminal device sends uplink control information UCI to the access network device on the second channel resource FIG. 5 Yan at Fig. 5; WO2017024554A1 at Fig. 5. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.

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Claim Language		Exemplary Citations to Yan
1[e]	wherein the determining of the one of the UL control channel resource sets is performed based on a size of the UL control information, and	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the determining of the one of the UL control channel resource sets is performed based on a size of the UL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “As a quantity of uplink channels allocated by the access network device to the terminal device in advance increases continuously, a quantity of bits of the dynamic indication information delivered by the access network device increases continuously, leading to relatively large consumption of downlink channel resources. In addition, a capacity of the uplink channel specified by the access network device for the terminal device by using the dynamic indication information does not meet a size of the UCI. As a result, utilization of the uplink channel is relatively low or UCI bits are discarded.” Yan at 1:63-2:6; WO2017024554A1 at 1. “With reference to the first aspect, in a third possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set, the method further includes: determining, by the terminal device, a size of the UCI; and

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Claim Language		Exemplary Citations to Yan
		the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set. With reference to the third possible implementation of the first aspect, in a fourth possible implementation of the first aspect, the determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set includes: determining, by the terminal device, a capacity range corresponding to each of the N channel resource sets; and determining, by the terminal device, a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 2:59-3:19; WO2017024554A1 at 1. “With reference to the fifth aspect, in a third possible implementation of the fifth aspect, the first processing unit is further configured to determine a size of the UCI; and the first processing unit is specifically configured to determine the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set. With reference to the third possible implementation of the fifth aspect, in a fourth possible implementation of the fifth aspect, the first processing unit is specifically configured to: determine a capacity range corresponding to each of the N channel resource sets; and determine a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 6:45-62; WO2017024554A1 at 5-6.

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Claim Language		Exemplary Citations to Yan
		“In this embodiment of the present invention, step S101 may be performed first and then step S102 may be performed, or step S102 may be performed first and then step S101 may be performed. The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:55-12:4; WO2017024554A1 at 10.

Invalidity of U.S. Patent 11,219,000 in view of Yan		
Claim Language		Exemplary Citations to Yan
		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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Claim Language		Exemplary Citations to Yan
		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
1[f]	wherein the UL control channel resource set configuration information is received through UE specific radio resource control (RRC) signaling.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource set configuration information is received through UE specific radio resource control (RRC) signaling.” For example, Yan discloses this limitation based on the following exemplary citations: “With reference to any one of the first aspect or the first to the seventh possible implementations of the first aspect, in an eighth possible implementation of the first aspect, before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 3:36-46; WO2017024554A1 at 3. “With reference to any one of the second aspect or the first to the third possible implementations of the second aspect, in a fourth possible implementation of the second aspect, before the sending, by an access network device, channel indication information to a terminal device on a physical control channel, the method further includes: sending, by the access network device, configuration information of the N channel resource sets to the terminal device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.”

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Claim Language		Exemplary Citations to Yan
		Yan at 4:9-19; WO2017024554A1 at 3. “Before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 19:5-12; WO2017024554A1 at 3. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
2	The method according to claim 1, wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.” For example, Yan discloses this limitation based on the following exemplary citations: “A subcarrier whose frequency is the highest in the k basic channel elements is adjacent to a subcarrier whose frequency is the lowest in the first channel resource; or a subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to a subcarrier whose frequency is the highest in the first channel resource. As shown in FIG. 6, a frequency increases in a direction of an arrow f. Specifically, the subcarrier whose frequency is the highest in the k basic channel elements is adjacent to the subcarrier whose frequency is the lowest in the first channel resource. That is, the first channel resource may be decreased from a low frequency band of the first channel resource.

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	As shown in FIG. 7, a frequency increases in a direction of an arrow f Specifically, the subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to the subcarrier whose frequency is the highest in the first channel resource. That is, the first channel resource may be decreased from a high frequency band of the first channel resource.” Yan at 23:36-55; WO2017024554A1 at 18. Subframe n Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f ↑ Subframe m Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f ↑ FIG. 6 Yan at Fig. 6; WO2017024554A1 at Fig. 6.	

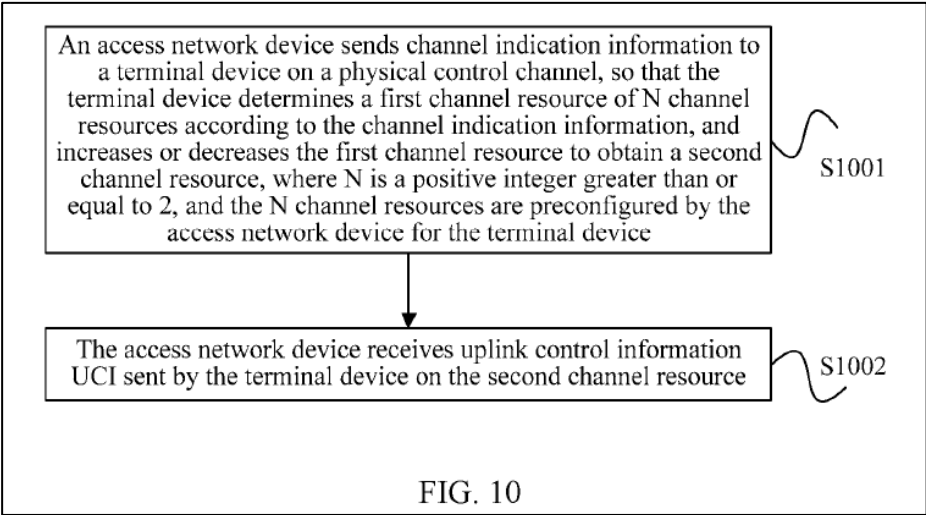
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Claim Language	Exemplary Citations to Yan	
	Subframe n Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource f Subframe m Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource f FIG. 7 Yan at Fig. 7; WO2017024554A1 at Fig. 7. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the	

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		same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
3	The method according to claim 2, wherein the each UL BWP is activated through downlink (DL) control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the each UL BWP is activated through downlink (DL) control information.” For example, Yan discloses this limitation based on the following exemplary citations: “The access network device is specifically a base station, and the access network device sends downlink data to a same terminal device by using at least one of multiple carriers. For downlink data on each carrier, the terminal device separately performs acknowledgment and generates HARQ-ACK information. In addition, the access network device sends a reference signal to the terminal device by using each carrier. The terminal device obtains channel state information CSI corresponding to each carrier by detecting the reference signal on each carrier. The access network device feeds back uplink control information UCI to the access network device on an uplink channel. The UCI includes at least one of the HARQ-ACK information or the channel state information CSI.” Yan at 11:22-35; WO2017024554A1 at 9. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
4[a]	The method according to claim 1, further comprising:	At least under Pegasus’s apparent infringement theory, Yan discloses “receiving, from the base station, downlink (DL) control information containing information indicating the one of the UL control channel resources for the UL control information transmission.” For example, Yan discloses this limitation based on the following exemplary citations:

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Claim Language		Exemplary Citations to Yan
	receiving, from the base station, downlink (DL) control information containing information indicating the one of the UL control channel resources for the UL control information transmission,	“Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information. After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates

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		the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.”

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Claim Language	Exemplary Citations to Yan	
	Yan at 25:26-64; WO2017024554A1 at 19. A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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Claim Language		Exemplary Citations to Yan
		 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
4[b]	wherein the one of the UL control channel resources is indicated from the base station through the DL control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the one of the UL control channel resources is indicated from the base station through the DL control information.” For example, Yan discloses this limitation based on the following exemplary citations:

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Claim Language		Exemplary Citations to Yan
		“Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information. After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates

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Claim Language		Exemplary Citations to Yan
		the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.”

Invalidity of U.S. Patent 11,219,000 in view of Yan		
Claim Language	Exemplary Citations to Yan	
	Yan at 25:26-64; WO2017024554A1 at 19. A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2	
	Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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Claim Language		Exemplary Citations to Yan
		An access network device sends channel indication information to a terminal device on a physical control channel, so that the terminal device determines a first channel resource of N channel resources according to the channel indication information, and increases or decreases the first channel resource to obtain a second channel resource, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device S1001 The access network device receives uplink control information UCI sent by the terminal device on the second channel resource S1002 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.

2. Claim 5

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Claim Language		Exemplary Citations to Yan
5[pre]	A method of receiving uplink (UL) control information by a base station, the method comprising:	To the extent the preamble is limiting, at least under Pegasus’s apparent infringement theory, Yan discloses “A method of receiving uplink (UL) control information by a base station, the method comprising.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “In the prior art, the access network device indicates, by using preconfigured information, a subframe location (which is determined by a subframe offset for feeding back CSI and a period for feeding back the CSI) at which the terminal device feeds back periodic CSI and specific content of the periodic CSI fed back at each location for feeding back the periodic CSI. Herein, the acknowledgment information and/or the CSI are all referred to as uplink control information (UCI). Therefore, UCI fed back by the terminal device to the access network device on the uplink channel in some subframes includes only acknowledgment information or includes only periodic CSI information, while UCI fed back in some subframes includes both acknowledgment information and CSI. Because a quantity of bits of CSI fed back by the terminal device in each subframe for feeding back the periodic CSI is not constant, quantities of bits of UCI fed back by the terminal device in different subframes are different. The access network device allocates multiple uplink channels to the terminal device in advance, and before the terminal device feeds back UCI, the access network device

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		sends dynamic indication information to the terminal device. The dynamic indication information specifies an uplink channel on which the terminal device feeds back the UCI.” Yan at 1:39-62; WO2017024554A1 at 1. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the

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		same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
5[a]	transmitting, to a user equipment (UE), UL control channel resource set configuration information for UL control information; and	At least under Pegasus’s apparent infringement theory, Yan discloses “transmitting, to a user equipment (UE), UL control channel resource set configuration information for UL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes:

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		determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10. “The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.”

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		Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI, and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
5[b]	receiving the UL control information through one of UL control channel resources in one of UL control channel resource sets contained in the transmitted UL control channel resource set configuration information,	At least under Pegasus’s apparent infringement theory, Yan discloses “receiving the UL control information through one of UL control channel resources in one of UL control channel resource sets contained in the transmitted UL control channel resource set configuration information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are

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		preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10.

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		“The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI,

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		and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11. “In addition, when the first channel resource set is predefined as the channel resource set A, the channel indication information 00 indicates the channel resource 1-1, the channel indication information 01 indicates the channel resource 1-2, the channel indication information 10 indicates the channel resource 1-3, and the channel indication information 11 indicates the channel resource 1-4. When the first channel resource set is predefined as the channel resource set B, the channel indication information 00 indicates the channel resource 2-1, the channel indication information 01 indicates the channel resource 2-2, the channel indication information 10 indicates the channel resource 2-3, and the channel indication information 11 indicates the channel resource 2-4. If the determined first channel resource set is the channel resource set A, and a channel resource identifier carried in the channel indication information is a binary number 01, a channel resource determined by the terminal device in the channel resource set A according to the channel indication information is the channel resource 1-2. If the determined first channel resource set is the channel resource set B, a channel resource determined by the terminal device in the channel resource set B according to the same channel indication information is the channel resource 2-2. That is, same channel indication information may be used to indicate different target channel resources at different times in a subframe.” Yan at 14:5-30; WO2017024554A1 at 11.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
5[c]	wherein the one of the UL control channel resource sets for the UL control information transmission is determined based on a size of the UL control information, and	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the one of the UL control channel resource sets for the UL control information transmission is determined based on a size of the UL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “As a quantity of uplink channels allocated by the access network device to the terminal device in advance increases continuously, a quantity of bits of the dynamic indication information delivered by the access network device increases continuously, leading to relatively large consumption of downlink channel resources. In addition, a capacity of the uplink channel specified by the access network device for the terminal device by using the dynamic indication

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		information does not meet a size of the UCI. As a result, utilization of the uplink channel is relatively low or UCI bits are discarded.” Yan at 1:63-2:6; WO2017024554A1 at 1. “With reference to the first aspect, in a third possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set, the method further includes: determining, by the terminal device, a size of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set. With reference to the third possible implementation of the first aspect, in a fourth possible implementation of the first aspect, the determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set includes: determining, by the terminal device, a capacity range corresponding to each of the N channel resource sets; and determining, by the terminal device, a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 2:59-3:19; WO2017024554A1 at 1. “With reference to the fifth aspect, in a third possible implementation of the fifth aspect, the first processing unit is further configured to determine a size of the UCI; and the first processing unit is specifically configured to determine the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set.

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		With reference to the third possible implementation of the fifth aspect, in a fourth possible implementation of the fifth aspect, the first processing unit is specifically configured to: determine a capacity range corresponding to each of the N channel resource sets; and determine a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 6:45-62; WO2017024554A1 at 5-6. “In this embodiment of the present invention, step S101 may be performed first and then step S102 may be performed, or step S102 may be performed first and then step S101 may be performed. The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:55-12:4; WO2017024554A1 at 10.

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		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
5[d]	wherein the UL control channel resource set configuration information is transmitted through UE specific radio resource control (RRC) signaling.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource set configuration information is transmitted through UE specific radio resource control (RRC) signaling.” For example, Yan discloses this limitation based on the following exemplary citations: “With reference to any one of the first aspect or the first to the seventh possible implementations of the first aspect, in an eighth possible implementation of the first aspect, before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 3:36-46; WO2017024554A1 at 3. “With reference to any one of the second aspect or the first to the third possible implementations of the second aspect, in a fourth possible implementation of the second aspect, before the sending, by an access network device, channel indication information to a terminal device on a physical control channel, the method further includes: sending, by the access network device, configuration information of the N channel resource sets to the terminal device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.”

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		Yan at 4:9-19; WO2017024554A1 at 3. “Before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 19:5-12; WO2017024554A1 at 3. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
6	The method according to claim 5, wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.” For example, Yan discloses this limitation based on the following exemplary citations: “A subcarrier whose frequency is the highest in the k basic channel elements is adjacent to a subcarrier whose frequency is the lowest in the first channel resource; or a subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to a subcarrier whose frequency is the highest in the first channel resource. As shown in FIG. 6, a frequency increases in a direction of an arrow f. Specifically, the subcarrier whose frequency is the highest in the k basic channel elements is adjacent to the subcarrier whose frequency is the lowest in the first channel resource. That is, the first channel resource may be decreased from a low frequency band of the first channel resource.

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	As shown in FIG. 7, a frequency increases in a direction of an arrow f Specifically, the subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to the subcarrier whose frequency is the highest in the first channel resource. That is, the first channel resource may be decreased from a high frequency band of the first channel resource.” Yan at 23:36-55; WO2017024554A1 at 18. Subframe n Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f ↑ Subframe m Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f ↑ FIG. 6 Yan at Fig. 6; WO2017024554A1 at Fig. 6.	

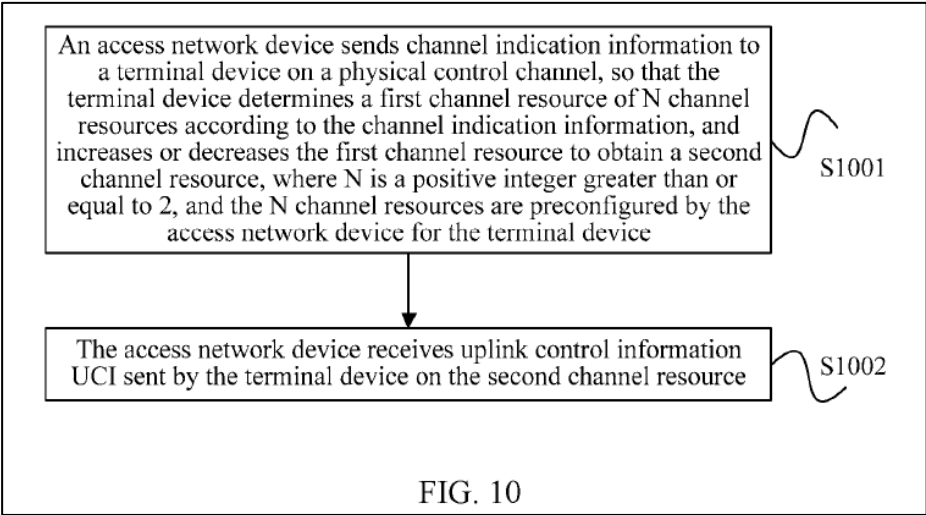
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	Subframe n Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource Subframe m Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource f f FIG. 7 Yan at Fig. 7; WO2017024554A1 at Fig. 7. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the	

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		same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
7	The method according to claim 6, wherein the each UL BWP is activated through downlink (DL) control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the each UL BWP is activated through downlink (DL) control information.” For example, Yan discloses this limitation based on the following exemplary citations: “The access network device is specifically a base station, and the access network device sends downlink data to a same terminal device by using at least one of multiple carriers. For downlink data on each carrier, the terminal device separately performs acknowledgment and generates HARQ-ACK information. In addition, the access network device sends a reference signal to the terminal device by using each carrier. The terminal device obtains channel state information CSI corresponding to each carrier by detecting the reference signal on each carrier. The access network device feeds back uplink control information UCI to the access network device on an uplink channel. The UCI includes at least one of the HARQ-ACK information or the channel state information CSI.” Yan at 11:22-35; WO2017024554A1 at 9. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
8[a]	The method according to claim 5, further comprising:	At least under Pegasus’s apparent infringement theory, Yan discloses “transmitting, to the user equipment, downlink (DL) control information containing information that indicates the one of the UL control channel resources for the UL control information transmission.” For example, Yan discloses this limitation based on the following exemplary citations:

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transmitting, to the user equipment, downlink (DL) control information containing information that indicates the one of the UL control channel resources for the UL control information transmission,	“Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information. After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates

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		the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.”

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	Yan at 25:26-64; WO2017024554A1 at 19. A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2	
	Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
8[b]	wherein the one of the UL control channel resources is indicated to the UE through the DL control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the one of the UL control channel resources is indicated to the UE through the DL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method

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		includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information. After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication

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		of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.” Yan at 25:26-64; WO2017024554A1 at 19.

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		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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		An access network device sends channel indication information to a terminal device on a physical control channel, so that the terminal device determines a first channel resource of N channel resources according to the channel indication information, and increases or decreases the first channel resource to obtain a second channel resource, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device S1001 The access network device receives uplink control information UCI sent by the terminal device on the second channel resource S1002 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.

3. Claim 9

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9[pre]	A user equipment (UE) for transmitting uplink (UL) control information, comprising:	To the extent the preamble is limiting, at least under Pegasus’s apparent infringement theory, Yan discloses “A user equipment (UE) for transmitting uplink (UL) control information, comprising.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “In the prior art, the access network device indicates, by using preconfigured information, a subframe location (which is determined by a subframe offset for feeding back CSI and a period for feeding back the CSI) at which the terminal device feeds back periodic CSI and specific content of the periodic CSI fed back at each location for feeding back the periodic CSI. Herein, the acknowledgment information and/or the CSI are all referred to as uplink control information (UCI). Therefore, UCI fed back by the terminal device to the access network device on the uplink channel in some subframes includes only acknowledgment information or includes only periodic CSI information, while UCI fed back in some subframes includes both acknowledgment information and CSI. Because a quantity of bits of CSI fed back by the terminal device in each subframe for feeding back the periodic CSI is not constant, quantities of bits of UCI fed back by the terminal device in different subframes are different. The access network device allocates multiple uplink channels to the terminal device in advance, and before the terminal device feeds back UCI, the access network device

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		sends dynamic indication information to the terminal device. The dynamic indication information specifies an uplink channel on which the terminal device feeds back the UCI.” Yan at 1:39-62; WO2017024554A1 at 1. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2.

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		Third receiving unit131 Third processing unit132 Third sending unit133 130 FIG. 13 Fourth sending unit141 Fourth receiving unit142 140 FIG. 14 Terminal device110 Access network device120 150 FIG. 15 Terminal device130 Access network device140 160 FIG. 16

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		Yan at Figs. 13-16; WO2017024554A1 at Figs. 13-16. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
9[a]	a receiver configured to receive, from a base station, UL control channel resource set configuration information for UL control information transmission;	At least under Pegasus’s apparent infringement theory, Yan discloses “a receiver configured to receive, from a base station, UL control channel resource set configuration information for UL control information transmission.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are

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		preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10.

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		“The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI,

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		and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11. “FIG. 15 is a structural diagram of an uplink control information sending and receiving system according to an embodiment of the present invention. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. As shown in FIG. 15, the uplink control information sending and receiving system 150 includes the terminal device 110 and the access network device 120 in the foregoing embodiments. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. FIG. 16 is a structural diagram of an uplink control information sending and receiving system according to another embodiment of the present invention. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. As shown in FIG. 16, the uplink control information sending and receiving system 160 includes the terminal device 130 and the access network device 140 in the foregoing embodiments.” Yan at 31:47-32:7; WO2017024554A1 at 26.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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	Terminal device Access network device 110 120 150 FIG. 15 Terminal device Access network device 130 140 160 FIG. 16 Yan at Figs. 15-16; WO2017024554A1 at Figs. 15-16. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains	

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		familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
9[b]	a controller configured to determine one of UL control channel resource sets contained in the received UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set; and	At least under Pegasus’s apparent infringement theory, Yan discloses “a controller configured to determine one of UL control channel resource sets contained in the received UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources; determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource.

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Claim Language		Exemplary Citations to Yan
		With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S102: The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources.” Yan at 11:48-54; WO2017024554A1 at 10. “The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal

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Claim Language		Exemplary Citations to Yan
		device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:58-12:4; WO2017024554A1 at 10. “In this embodiment of the present invention, the access network device sends configuration information of the at least two channel resource sets to the terminal device, where each channel resource set includes at least two channel resources. This is equivalent to that all channel resources allocated by the access network device to the terminal device are grouped, and each group is equivalent to one channel resource set. The terminal device first determines the first channel resource set of the multiple channel resource sets, and then determines the channel resource in the first channel resource set according to the channel indication information. Different channel resources may be determined at different times in a subframe according to same channel indication information, while in the prior art, only one channel resource can be determined at different times in a subframe according to same channel indication information. As a quantity of channel resources increases continuously, a quantity of bits that need to be added to the channel indication information in this embodiment of the present invention is less than that in the prior art, reducing consumption of downlink channel resources by the channel indication information in a delivery process.” Yan at 12:34-55; WO2017024554A1 at 10. “As shown in FIG. 2, the configuration information in the foregoing embodiment includes two channel resource sets: a channel resource set A and a channel resource set B. Each channel resource set matches a specific different type of UCI. In this embodiment of the present invention, it is assumed that the channel resource set A matches the first type of UCI, and the channel resource set B matches the second type of UCI. That is, each of channel resources such as a channel resource 1-1, a channel resource 1-2, a channel resource 1-3, and a channel resource 1-4 in the channel resource set A can bear the channel state information CSI and the hybrid automatic repeat request-acknowledgment HARQ-ACK information, and each of channel resources such as a channel resource 2-1, a channel resource 2-2, a channel resource 2-3, and a channel resource 2-4 in the channel resource set B can be used to bear the

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Claim Language		Exemplary Citations to Yan
		hybrid automatic repeat request-acknowledgment HARQ-ACK information but cannot be used to bear the CSI.” Yan at 13:46-63; WO2017024554A1 at 11. “In addition, when the first channel resource set is predefined as the channel resource set A, the channel indication information 00 indicates the channel resource 1-1, the channel indication information 01 indicates the channel resource 1-2, the channel indication information 10 indicates the channel resource 1-3, and the channel indication information 11 indicates the channel resource 1-4. When the first channel resource set is predefined as the channel resource set B, the channel indication information 00 indicates the channel resource 2-1, the channel indication information 01 indicates the channel resource 2-2, the channel indication information 10 indicates the channel resource 2-3, and the channel indication information 11 indicates the channel resource 2-4. If the determined first channel resource set is the channel resource set A, and a channel resource identifier carried in the channel indication information is a binary number 01, a channel resource determined by the terminal device in the channel resource set A according to the channel indication information is the channel resource 1-2. If the determined first channel resource set is the channel resource set B, a channel resource determined by the terminal device in the channel resource set B according to the same channel indication information is the channel resource 2-2. That is, same channel indication information may be used to indicate different target channel resources at different times in a subframe.” Yan at 14:5-30; WO2017024554A1 at 11.

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Claim Language		Exemplary Citations to Yan
		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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Claim Language		Exemplary Citations to Yan
		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
9[c]	a transmitter configured to transmit the UL control information through the determined UL control channel resource,	At least under Pegasus’s apparent infringement theory, Yan discloses “a transmitter configured to transmit the UL control information through the determined UL control channel resource.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource.” Yan at Abstract; WO2017024554A1 at Abstract. “A first aspect provides an uplink control information sending method, including: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining, by the terminal device, a channel resource set of N channel resource sets, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources;

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Claim Language		Exemplary Citations to Yan
		determining, by the terminal device, a channel resource that is in the channel resource set and that is indicated by the channel indication information; and sending, by the terminal device, uplink control information UCI to the access network device on the channel resource. With reference to the first aspect, in a first possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets, the method further includes: determining, by the terminal device, a type of the UCI; and the determining, by the terminal device, a channel resource set of N channel resource sets includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the type of the UCI.” Yan at 2:16-45; WO2017024554A1 at 1-2. “Step S104: The terminal device sends uplink control information UCI to the access network device on the channel resource. The terminal device sends the uplink control information UCI to the access network device on the channel resource determined in step S103. That is, the channel resource is used as an uplink channel to bear the uplink control information UCI, and is used to send the UCI to the access network device.” Yan at 12:25-33; WO2017024554A1 at 10. “Step S403: The access network device receives uplink control information UCI sent by the terminal device on the channel resource. The access network device receives the uplink control information UCI sent by the terminal device on the determined channel resource. That is, the channel resource is used as the uplink channel to bear the uplink control information UCI.” Yan at 20:43-50; WO2017024554A1 at 16. “Step S504: The terminal device sends uplink control information UCI to the access network device on the second channel resource.

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		The first channel resource is modified to obtain the second channel resource in step S503, so that a capacity corresponding to the second channel resource matches the size of the uplink control information UCI. The terminal device sends the UCI to the access network device on the second channel resource.” Yan at 22:42-50; WO2017024554A1 at 17.

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Claim Language	Exemplary Citations to Yan	
	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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Claim Language		Exemplary Citations to Yan
		An access network device sends channel indication information to a terminal device on a physical control channel S401 The access network device preconfigures N channel resource sets for the terminal device, so that the terminal device determines a channel resource set of the N channel resource sets as a first channel resource set, and determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources S402 The access network device receives uplink control information UCI sent by the terminal device on the channel resource S403 FIG. 4 Yan at Fig. 4; WO2017024554A1 at Fig. 4.

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Claim Language		Exemplary Citations to Yan
		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a first channel resource of N channel resources according to the channel indication information, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device The terminal device increases or decreases the first channel resource to obtain a second channel resource The terminal device sends uplink control information UCI to the access network device on the second channel resource FIG. 5 Yan at Fig. 5; WO2017024554A1 at Fig. 5. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.

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9[d]	wherein the determining of the one of the UL control channel resource sets is performed based on a size of the UL control information, and	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the determining of the one of the UL control channel resource sets is performed based on a size of the UL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “As a quantity of uplink channels allocated by the access network device to the terminal device in advance increases continuously, a quantity of bits of the dynamic indication information delivered by the access network device increases continuously, leading to relatively large consumption of downlink channel resources. In addition, a capacity of the uplink channel specified by the access network device for the terminal device by using the dynamic indication information does not meet a size of the UCI. As a result, utilization of the uplink channel is relatively low or UCI bits are discarded.” Yan at 1:63-2:6; WO2017024554A1 at 1. “With reference to the first aspect, in a third possible implementation of the first aspect, before the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set, the method further includes: determining, by the terminal device, a size of the UCI; and

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		the determining, by the terminal device, a channel resource set of N channel resource sets as a first channel resource set includes: determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set. With reference to the third possible implementation of the first aspect, in a fourth possible implementation of the first aspect, the determining, by the terminal device, the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set includes: determining, by the terminal device, a capacity range corresponding to each of the N channel resource sets; and determining, by the terminal device, a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 2:59-3:19; WO2017024554A1 at 1. “With reference to the fifth aspect, in a third possible implementation of the fifth aspect, the first processing unit is further configured to determine a size of the UCI; and the first processing unit is specifically configured to determine the channel resource set that is of the N channel resource sets and that matches the size K of the UCI as the first channel resource set. With reference to the third possible implementation of the fifth aspect, in a fourth possible implementation of the fifth aspect, the first processing unit is specifically configured to: determine a capacity range corresponding to each of the N channel resource sets; and determine a channel resource set of the N channel resource sets as the first channel resource set, so that the size K of the UCI meets $R_{min} \leq K \leq R_{max}$, where a capacity range of the channel resource set is $[R_{min}, R_{max}]$, R_{min} is a minimum value of a capacity of the channel resource set, and R_{max} is a maximum value of the capacity of the channel resource set.” Yan at 6:45-62; WO2017024554A1 at 5-6.

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		“In this embodiment of the present invention, step S101 may be performed first and then step S102 may be performed, or step S102 may be performed first and then step S101 may be performed. The access network device preconfigures the N channel resource sets for the terminal device, where N is a positive integer greater than or equal to 2, and each of the N channel resource sets includes at least two channel resources. The terminal device determines a channel resource set of the N channel resource sets as the first channel resource set. Specifically, determining the channel resource set of the N channel resource sets as the first channel resource set may be according to a type or size of the UCI fed back by the terminal device to the access network device. The type of the UCI may be specifically distinguished by using specific content included in the UCI, and the size of the UCI may be specifically measured by using a quantity of bits of the UCI or an amount of UCI.” Yan at 11:55-12:4; WO2017024554A1 at 10.

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Claim Language		Exemplary Citations to Yan
		A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.

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		To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
9[e]	wherein the UL control channel resource set configuration information is received through UE specific radio resource control (RRC) signaling.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource set configuration information is received through UE specific radio resource control (RRC) signaling.” For example, Yan discloses this limitation based on the following exemplary citations: “With reference to any one of the first aspect or the first to the seventh possible implementations of the first aspect, in an eighth possible implementation of the first aspect, before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 3:36-46; WO2017024554A1 at 3. “With reference to any one of the second aspect or the first to the third possible implementations of the second aspect, in a fourth possible implementation of the second aspect, before the sending, by an access network device, channel indication information to a terminal device on a physical control channel, the method further includes: sending, by the access network device, configuration information of the N channel resource sets to the terminal device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.”

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Claim Language		Exemplary Citations to Yan
		Yan at 4:9-19; WO2017024554A1 at 3. “Before the receiving, by a terminal device, channel indication information from an access network device on a physical control channel, the method further includes: receiving, by the terminal device, configuration information of the N channel resource sets from the access network device by using higher layer signaling, where configuration information of the N channel resource sets corresponding to the different terminal devices is different.” Yan at 19:5-12; WO2017024554A1 at 3. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
10	The UE according to claim 9, wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the UL control channel resource sets are configured for each UL bandwidth part (BWP) configured for the UE.” For example, Yan discloses this limitation based on the following exemplary citations: “A subcarrier whose frequency is the highest in the k basic channel elements is adjacent to a subcarrier whose frequency is the lowest in the first channel resource; or a subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to a subcarrier whose frequency is the highest in the first channel resource. As shown in FIG. 6, a frequency increases in a direction of an arrow f. Specifically, the subcarrier whose frequency is the highest in the k basic channel elements is adjacent to the subcarrier whose frequency is the lowest in the first channel resource. That is, the first channel resource may be decreased from a low frequency band of the first channel resource.

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	As shown in FIG. 7, a frequency increases in a direction of an arrow f Specifically, the subcarrier whose frequency is the lowest in the k basic channel elements is adjacent to the subcarrier whose frequency is the highest in the first channel resource. That is, the first channel resource may be decreased from a high frequency band of the first channel resource.” Yan at 23:36-55; WO2017024554A1 at 18. Subframe n Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f Subframe m Second channel resource Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element First channel resource f FIG. 6 Yan at Fig. 6; WO2017024554A1 at Fig. 6.	

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	Subframe n Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource f Subframe m Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Basic channel element Second channel resource First channel resource f FIG. 7 Yan at Fig. 7; WO2017024554A1 at Fig. 7. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains	

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		familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
11	The UE according to claim 10, wherein the each UL BWP is activated through downlink (DL) control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the each UL BWP is activated through downlink (DL) control information.” For example, Yan discloses this limitation based on the following exemplary citations: “The access network device is specifically a base station, and the access network device sends downlink data to a same terminal device by using at least one of multiple carriers. For downlink data on each carrier, the terminal device separately performs acknowledgment and generates HARQ-ACK information. In addition, the access network device sends a reference signal to the terminal device by using each carrier. The terminal device obtains channel state information CSI corresponding to each carrier by detecting the reference signal on each carrier. The access network device feeds back uplink control information UCI to the access network device on an uplink channel. The UCI includes at least one of the HARQ-ACK information or the channel state information CSI.” Yan at 11:22-35; WO2017024554A1 at 9. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
12[a]	The UE according to claim 9, wherein the receiver receives, from the base station, DL	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the receiver receives, from the base station, DL control information containing information that indicates the one of the UL control channel resources for the UL control information transmission.” For example, Yan discloses this limitation based on the following exemplary citations:

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	control information containing information that indicates the one of the UL control channel resources for the UL control information transmission,	“Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information. After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates

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		the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.”

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Claim Language		Exemplary Citations to Yan
		Yan at 25:26-64; WO2017024554A1 at 19. “FIG. 15 is a structural diagram of an uplink control information sending and receiving system according to an embodiment of the present invention. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. As shown in FIG. 15, the uplink control information sending and receiving system 150 includes the terminal device 110 and the access network device 120 in the foregoing embodiments. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. FIG. 16 is a structural diagram of an uplink control information sending and receiving system according to another embodiment of the present invention. The uplink control information sending and receiving system provided in this embodiment of the present invention may perform the processing procedures provided in the embodiments of the uplink control information sending method and the uplink control information receiving method. As shown in FIG. 16, the uplink control information sending and receiving system 160 includes the terminal device 130 and the access network device 140 in the foregoing embodiments.” Yan at 31:47-32:7; WO2017024554A1 at 26.

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	A terminal device receives channel indication information from an access network device on a physical control channel The terminal device determines a channel resource set of N channel resource sets as a first channel resource set, where N is a positive integer greater than or equal to 2, the N channel resource sets are preconfigured by the access network device for the terminal device, and each of the N channel resource sets includes at least two channel resources The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information The terminal device sends uplink control information UCI to the access network device on the channel resource FIG. 1 Channel resource set A (first channel resource set) Channel resource 1-1 Channel resource 1-2 Channel resource 1-3 Channel resource 1-4 Channel resource set B Channel resource 2-1 Channel resource 2-2 Channel resource 2-3 Channel resource 2-4 FIG. 2 Yan at Figs. 1-2; WO2017024554A1 at Figs. 1-2.	

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		An access network device sends channel indication information to a terminal device on a physical control channel, so that the terminal device determines a first channel resource of N channel resources according to the channel indication information, and increases or decreases the first channel resource to obtain a second channel resource, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device S1001 The access network device receives uplink control information UCI sent by the terminal device on the second channel resource S1002 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10.

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	Terminal device Access network device 110 120 150 FIG. 15 Terminal device Access network device 130 140 160 FIG. 16 Yan at Figs. 15-16; WO2017024554A1 at Figs. 15-16. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the	

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		same field of endeavor to address the same known problems, according to known methods which would yield predictable results.
12[b]	wherein the one of the UL control channel resources is indicated from the base station through the DL control information.	At least under Pegasus’s apparent infringement theory, Yan discloses “wherein the one of the UL control channel resources is indicated from the base station through the DL control information.” For example, Yan discloses this limitation based on the following exemplary citations: “Embodiments of the present invention provide an uplink control information sending method, an uplink control information receiving method, an apparatus, and a system. The method includes: receiving, by a terminal device, channel indication information from an access network device on a physical control channel; determining the channel resource set that is of N channel resource sets and that matches a type or a size of the UCI as a first channel resource set; determining a channel resource that is in the first channel resource set and that is indicated by the channel indication information; and sending uplink control information UCI to the access network device on the channel resource. A quantity of bits that need to be added to the channel indication information in the embodiments of the present invention is less than that in the prior art.” Yan at Abstract; WO2017024554A1 at Abstract. “Before the access network device feeds back the uplink control information UCI to the access network device on the uplink channel, the terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device.” Yan at 11:36-47; WO2017024554A1 at 9-10. “Step S103: The terminal device determines a channel resource that is in the first channel resource set and that is indicated by the channel indication information.

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		After the first channel resource set is determined in step S102, the terminal device determines the channel resource that is in the first channel resource set and that is indicated by the channel indication information. Specifically, the channel resource indicated by the channel indication information is a channel resource in the first channel resource set. For example, the first channel resource set includes four channel resources: a channel resource a, a channel resource b, a channel resource c, and a channel resource d. It is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d. According to an indication of the channel indication information, the channel resource may be determined in the first channel resource set.” Yan at 12:5-24; WO2017024554A1 at 10. “The terminal device receives, on the physical control channel, the channel indication information sent by the access network device. The physical control channel is specifically a physical downlink control channel (PDCCH) and an enhanced physical downlink control channel (EPDCCH). Information borne on the physical control channel is dynamically configured information. That is, the channel indication information is borne on the physical control channel as dynamically configured information, and is sent by the access network device to the terminal device. The channel indication information is specifically channel indication information. If the access network device allocates four channel resources to the terminal device, which are specifically a channel resource a, a channel resource b, a channel resource c, and a channel resource d, and it is predefined that channel indication information 00 indicates the channel resource a, channel indication information 01 indicates the channel resource b, channel indication information 10 indicates the channel resource c, and channel indication information 11 indicates the channel resource d, the first channel resource may be determined in the four channel resources according to an indication of the channel indication information. For example, it is determined, according to the indication of the channel indication information, that the first channel resource is the channel resource b. The N channel resources correspond to different channel capacities. Before the increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource, the method

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		further includes: determining, by the terminal device, a size of the UCI. The increasing or decreasing, by the terminal device, the first channel resource to obtain a second channel resource includes: if a channel capacity corresponding to the first channel resource is greater than the size of the UCI, decreasing, by the terminal device, the first channel resource to obtain the second channel resource; or if a channel capacity corresponding to the first channel resource is less than the size of the UCI, increasing, by the terminal device, the first channel resource to obtain the second channel resource.” Yan at 25:26-64; WO2017024554A1 at 19.

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		An access network device sends channel indication information to a terminal device on a physical control channel, so that the terminal device determines a first channel resource of N channel resources according to the channel indication information, and increases or decreases the first channel resource to obtain a second channel resource, where N is a positive integer greater than or equal to 2, and the N channel resources are preconfigured by the access network device for the terminal device S1001 The access network device receives uplink control information UCI sent by the terminal device on the second channel resource S1002 FIG. 10 Yan at Fig. 10; WO2017024554A1 at Fig. 10. To the extent it is found that Yan does not expressly disclose this limitation, the limitation is inherent. Moreover, to the extent it is found that Yan does not anticipate this claim, Yan renders it obvious, either alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with other prior art references identified in the cover pleading or herein. A person of ordinary skill in the art would have been motivated to combine Yan with any of the other prior art references identified in the cover pleading or herein with a reasonable expectation of success because each of these references contains familiar elements within the same field of endeavor to address the same known problems, according to known methods which would yield predictable results.