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(54) **Title:** ASPECTS OF NEW RADIO PDCCH DESIGN

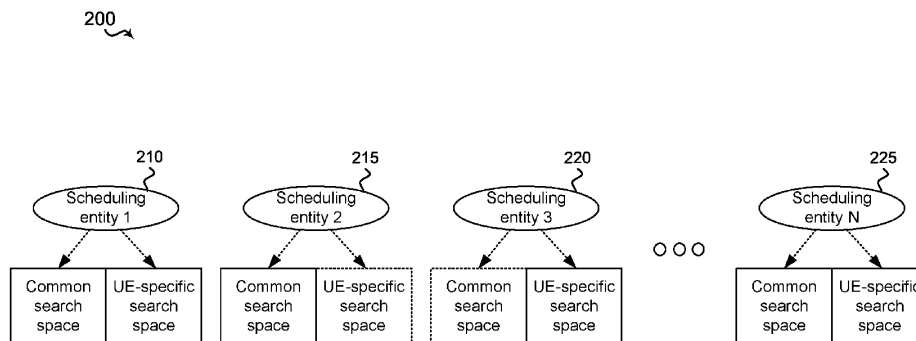


FIG. 2A

(57) **Abstract:** The present disclosure describes various aspects of the implementation and design of Physical Downlink Control Channel (PDCCH) in 5G new radio (NR) applications. Aspects include methods, apparatuses, and computer-readable medium for one or more of multiple PDCCH search spaces, control resource block (CRB), irregular multiple slots or mini-slots grants, or fast control channel signaling for grant-free uplink (UL). For example, different scheduling entities can each have one or two search spaces defined (e.g., common and/or user equipment (UE)-centric search spaces). Also, CRBs can be used as units for PDCCH transmission instead of resource element groups/control channel elements (REGs/CCEs). In addition, irregularities in time domain, frequency domain, or both can be introduced in the granting of resource blocks (RBs) over multiple slots or mini-slots. Moreover, signaling can be used to indicate to a UE configured for grant-free UL the portion of the pool of resources available for grant-free UL.

[Continued on next page]

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