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## Patent Search

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**Abstract:**

The concept is about an electrical switchboard that has a controlled charging hub built in for USB devices. The charging hub lets you handle power for multiple USB device centralized and efficient way by allowing controlled charging, such as charging on a schedule and current rating based. Advanced overload protections are built into the system to keep connected devices and the switchboard safe from power spikes and overcurrent situations. Remote management is possible through a web interface or connected application which lets users direct and keep an eye on the charging process from anywhere. Intelligent power sharing features make sure that charging speeds are just right for each device. To make sure it works well, safety features like short-circuit protection, over-temperature protection, and voltage control are built in. The modular design makes it easy to install and maintain in standard electrical switchboards, making it perfect for use in homes, businesses, and factories. Users are notified and alerted about the status of charging it's done, and any problems. This makes it easier for users to handle their devices and makes things more convenient.

**Complete Specification**

**Description:** In terms of housing, the charging hub is enclosed in a durable enclosure that is resistant to fire and can be readily fitted within an electrical switchboard. Additionally, there are several USB ports available, each of which can supply the proper charging currents based on the device that is attached to it. Mechanisms for cooling that are integrated into the system, such as heat sinks or fans, keep the operating temperatures at their optimal levels. The hub is equipped with an intelligent power distribution system that distributes electricity by the number of connected devices and the type of devices. Built-in surge protection protects connected devices from voltage spikes by preventing them from being disconnected. Programmable timers enable users to establish specified charging periods, which in turn reduces the amount of energy that is consumed and hence extends the life of the battery. The hub can be controlled from a distance using either a smartphone application or a central control system. Monitoring includes real-time monitoring of power consumption and the status of the device, along with notifications for problems such as excessive current or excessive temperature. To protect connected devices from being damaged through overcurrent, every USB port is fitted with overcurrent protection. The hub is equipped with thermal cutoff mechanisms that, if the power supply becomes excessively hot, promptly disconnect the power supply. The utilization of fire-resistant materials in the construction industry helps to reduce the risk of fire.

**Claims:** Claim 1: A USB charging hub that is built into an electrical switchboard, providing for centralized power management and control over various devices.

Claim 2: The charging hub supports controlled charging which allows connected USB devices to be charged on a required current rating capacity basis.

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