★★★ ＜第29回知的財産翻訳検定試験【第14回英文和訳】＞ ★★★

≪１級課題 -電気・電子工学-≫

【解答にあたっての注意】

１．問題の指示により和訳してください。

２．解答語数に特に制限はありません。適切な箇所で改行してください。

３．課題文に段落番号がある場合、これを訳文に記載してください。

４．課題は３題あります。それぞれの課題の指示に従い、３題すべて解答してください。

問１．次の英文は、米国特許の従来技術（BACKBROUND）の記載です。***(START)***から***(END)***までの部分を日本語に訳してください。下記の英文の全体との関係で適切な用語を選定して訳してください。

As power generation has advanced, power usage has increased. This is due to many societal factors. First, populations in practically every country of the world have increased, resulting in more power needs. Second, consumer products frequently are designed to use electrical energy in order to operate. Due to advances in technology, more electronic products are available for use today than at any time in world history. Third, manufacturing plants have realized that machine automation can increase plant productivity and decrease production costs. Such automation usually requires electrical energy. Thus, the overall result is a greater need for electrical energy than ever before.

Another common occurrence around the world related to energy consumption is that consumption is greater during certain hours of the day. In any given time zone, electrical energy usage is greatest during hours of 6 a.m. and 10 p.m., commonly referred to as the "awake hours" or waking hours. Between 10 p.m. and 6 a.m. the next day, most people are sleeping and therefore are using less electrical energy. These hours are commonly called the "sleeping hours." In order to avoid energy "brownouts" or, worse yet, "blackouts," power companies have to be able to meet "peak demand" requirements of any given 24 hour day. These peak demand requirements occur during the awake hours and historical data obtained from tracking energy usage can fairly accurately predict how much energy will be needed each hour of each day in practically any community. Therefore, peak demand is one of the main drivers of the size and number of power plants needed for any given area. Peak demand drives the sizing and number of feeders, mains, transformers, and other power distribution elements in the grid as well.

The problem with using peak demand requirements to determine power plant capacity is that it does not make for efficient use of the resulting power plant. For example, if a peak demand period in a given area is X kilowatt-hours and that demand is only required for a period of eight hours each day, and the average demand for the rest of the day is half of X, then the design capacity of that power plant for the other sixteen hours of the day is not being effectively utilized. Said another way, if the full energy production capacity of each power plant, for each day, was utilized, fewer power plants would be needed because each one would be fully utilized, all day, every day. Design and usage could then be based on total energy needs each day rather than peak demand needs. Using peak demand requirements also results in an inefficient use of the distribution and transmission systems used by the power plants to deliver the electrical energy they produce.
***(START)***
Another problem with peak demand requirements is the high environmental and financial costs of operating the plants. The power plants that respond to peak demand loads during especially high demand periods of time are frequently more pollutive and expensive to operate than non-peaking power plants. The power companies operating the power plants that wait to supply power for peak demand periods charge a high price to local utilities for their temporary power output. Local utilities then pass the costs of buying power from these peak demand plants to customers as a "demand charge" based on the highest peak draw that the customer takes from the power grid over a billing period. Demand charges are determined differently by various utility providers but tend to be based on the highest usage of electricity (in kW) over a short period of time within a monthly billing cycle. Electricity providers

justify these costs by citing the high prices of the peak demand power supply companies and by explaining that they must constantly upgrade and increase capacity of the distribution grid to manage the "spikes" in demand that arise during peak periods.
A consumer's draw on the power grid is, on average, much lower than the power level at which they are rated for demand charges. End users are often unaware of when or how demand charges are accumulated and are displeased to find out that their average electricity consumption is in fact typically much lower than these peaks, and that their power charges would be significantly reduced if their peaks in consumption could be mitigated or eliminated. Environmentally-conscious end users also seek to reduce emissions from the pollutive power plants that provide peaking energy to the grid by decreasing their reliance on them as a power source for peak energy needs.
***(END)***

Furthermore, utility providers have difficulty in estimating and confirming the amount of demand response that results when the providers broadcast a need for demand response participation from enrollees in a demand response program. Requests are traditionally sent out via telephone, and loads at the participants' sites must be manually curtailed by the customer. This can lead to actual participation rates that are much lower than enrollment logs would indicate.

問２．　次の英文は、コンピュータを用いた心電図モニタリングに関する発明の実施例の記載です。図面も参照して、***START*** と ***END*** の間の英文を訳して下さい。

***START***
ECG and physiological monitoring can be provided through a wearable ambulatory monitor that includes two components, a flexible extended wear electrode patch and a removable reusable (or single use) monitor recorder.

Both the electrode patch and the monitor recorder are optimized to capture electrical signals from the propagation of low amplitude, relatively low frequency content cardiac action potentials, particularly the P-waves generated during atrial activation. FIGS. 1 and 2 are diagrams showing, by way of examples, an extended wear electrocardiography monitor 12, including a monitor recorder 14, in accordance with one embodiment, respectively fitted to the sternal region of a female patient 10 and a male patient 11. The wearable monitor 12 sits centrally, positioned axially along the sternal midline 16, on the patient's chest along the sternum 13 and oriented top-to-bottom with the monitor recorder 14 preferably situated towards the patient's head. In a further embodiment, the orientation of the wearable monitor 12 can be corrected post-monitoring, as further described infra, for instance, if the wearable monitor 12 is inadvertently fitted upside down.

The electrode patch 15 is shaped to fit comfortably and conformal to the contours of the patient's chest approximately centered on the sternal midline 16 (or immediately to either side of the sternum 13).
***END***

The distal end of the electrode patch 15, under which a lower or inferior pole (ECG electrode) is adhered, extends towards the Xiphoid process and lower sternum and, depending upon the patient's build, may straddle the region over the Xiphoid process and lower sternum. The proximal end of the electrode patch 15, located under the monitor recorder 14, under which an upper or superior pole (ECG electrode) is adhered, is below the manubrium and, depending upon patient's build, may straddle the region over the manubrium.

**Fig. 1.**

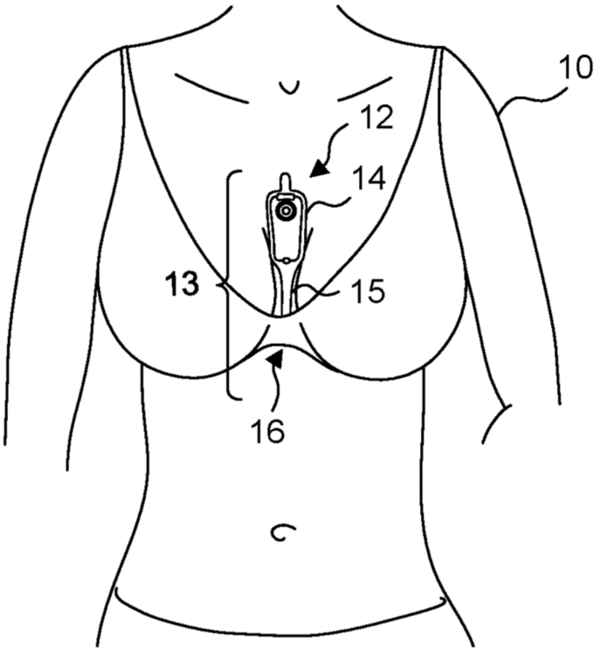
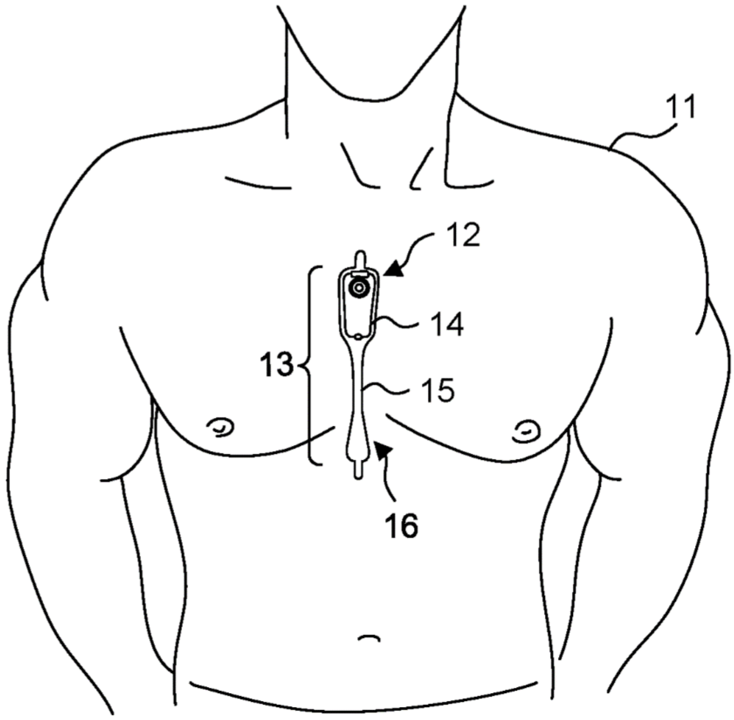



**Fig. 2.**



問３．次の英文は、銃器のコンピュータ制御に関する発明の請求項です。図面も参照して日本語に訳して下さい。

1. A firearm comprising a smart technology system that controls one or more firearm functionalities, the smart technology system comprising:

one or more input/output (I/O) devices;

a lock device that disables a component of the firearm required to discharge the firearm while in an engaged state, and enables the component of the firearm while in a disengaged state;

a cover that encloses at least one component of the smart technology system;

a tamper detection device that detects when the cover is open;

a processor; and

a non-transitory computer readable storage medium having computer program instructions stored thereon that, when executed by the processor, causes the system to:

engage the lock device;

receive an input signal from an I/O device, the input signal encoding information regarding the identity of a user;

determine from the input signal whether the user is an authorized user;

disengage the lock device, enter a maintenance mode, or disengage the lock device and enter the maintenance mode when the user is determined to be an authorized user; and

in response to the tamper detection device detecting the cover is open while the system is not in the maintenance mode, transmit an alert to a remote device indicating an attempt to tamper with the system.

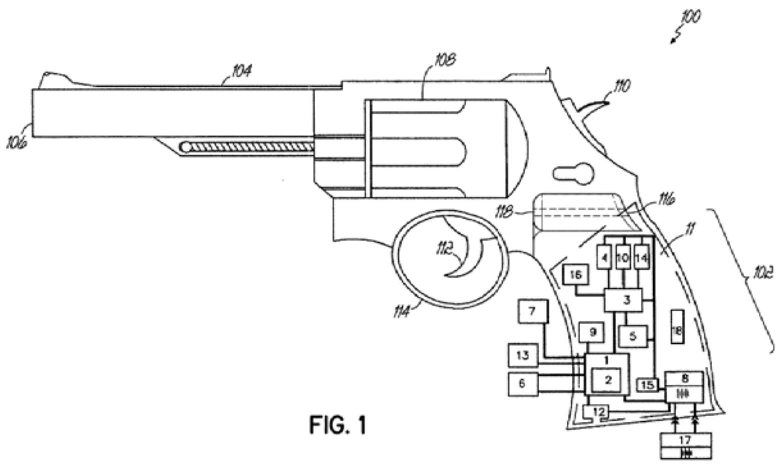



FIG. 1