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Patent application No.: 20220217
Applicant: Norphonic AS

We refer to your letter dated 11 August 2022, and enclose a set of amended claims for your kind consideration in view of our comments in the following.

D1 (US 20070279242 A1, Honeywell) describes a system comprising a plurality of so-called "directional sounders" 40 arranged in a region R (see figure 1 of D1). D1 defines the directional sounder as the "Exit Pointe" directional sounder marketed by Honeywell International, or "comparable" sounders (D1, paragraph 0019) or "[o]ther broad band directional sounders [...] available in the market place." (D1, paragraph 0017). A description of the Honeywell ExitPoint™ directional sounder is found here: https://www.honeywellbuildings.in/uploads/fire_safety/product/doc/49b0bffd51b6941b96757af92498a20pf24v.pdf. According to this reference, the Honeywell directional sounder comprises a unit having a single speaker and "an integral audio amplifier that produces a pulsating sound consisting of broadband low, mid, and high range sounds. The broadband noise makes it possible to determine the location of the sound."

Figure 1 of D1, reproduced and annotated below, shows a plurality of detectors 30 and a plurality of directional sounders 40 scattered throughout the region R.

The group (or groups) of directional sounders 40 that are activated in a given situation is defined by information provided by the detectors 30. In the figure (and referring to paragraph 0022 of D1), two paths are defined by activation of selected directional sounders 40 that are located between the fire F and the exit E2. The path is therefore not predefined, but defined on a case-by-case basis. For example, alternative paths may be defined by the directional sounders that we have identified by arrows (→) in the figure.

Therefore, while the present invention comprises a system with a plurality of nodes (2) that are arranged along an existing pathway, D1 describes a system and a method in which a set of directional sounders are selected to define a pathway.

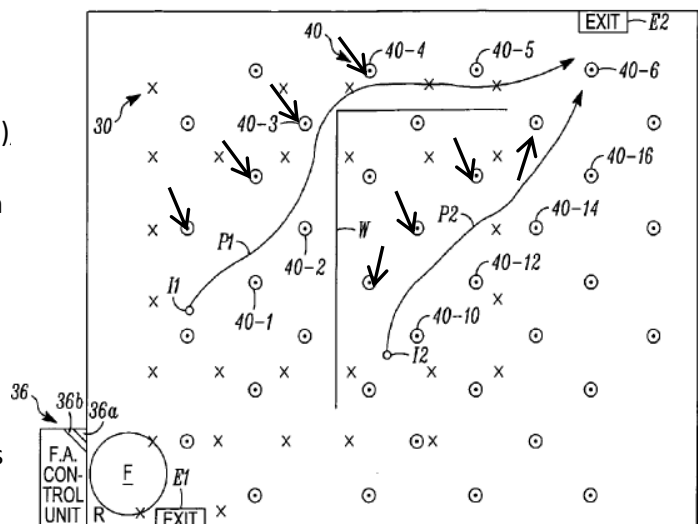


FIG. 1

D1 thus describes a planar arrangement of sounders, a scheme which generates routes for only few individuals. The scheme falls apart if individuals are outside of any the defined pathway. By contrast, the invented system and method, while limited to corridors and long tunnels, is suitable for mass evacuation of hundreds of people from any point in a long installation.

The subject-matter of the independent claims is therefore new at least in that D1 does not describe a plurality of nodes 2 arranged at intervals along a pathway.

D1 defines the directional sounder as a unit having a *single speaker*. In the system and method of the present invention, each "node" 2 comprises *two directional sound generators* 9a,b that each are configured to emit sound in a predetermined direction. In the embodiment illustrated in figure 1 of the patent application, the two directional sound generators 9a,b are pointing *along the pathway and in opposite directions*.

The subject-matter of the amended independent claims is therefore new at least in that D1 does not describe that each node comprises two directional sound generators that each are configured to emit sound in a predetermined direction.

The examination report refers to paragraph 0019 of D1 and states that the directional sounder of D1 is configured to emit a sound pulse towards the initial location ("*mot initiallokasjonen*"). However, we find no support in D1 for this assertion. Paragraph 0019 merely refers to directional sounders, and does not specify how they are oriented.

The subject-matter of the amended independent claims is therefore new at least in that D1 does not describe a directional sounder configured to emit a sound pulse towards an initial location.

The examination report refers to figure 6 and paragraph 0034 of D1 and states that the time interval is constant, quoting that "*The pause is a fixed time interval*". However, this pause is not comparable with the time interval Δt specified in the present application. While Δt is the time interval between the emission of subsequent directional sound pulses from adjacent nodes, the pause illustrated in figure 6 of D1 is a pause between sounder patterns. In fact, while the time interval Δt in the system and method according to the invention is constant, D1 describes an increasing cadence of sounders (shortening intervals) to indicate the path, because the sounders are not sufficiently directional. This is not practical in a long tunnel. Over several kilometres one would inevitably have to decrease change rate of interval to imperceptible by ear.

D2 (Wijngaarden et al.) describes the use of so-called "auditory evacuation beacons" to guide people to safe exits from a smoke-filled room. D2 is concerned with the design of auditory signal types and sequences, rather with the guidance system itself. In the introductory section (section 0) of D2, a sound beacon is defined as "*a sound source placed near an exit*." The first section 1.4 of D2 specifies that the beacon comprises a loudspeaker, and suggest the use of both omnidirectional and directional loudspeakers, depending on the circumstances.

The subject-matter of the amended independent claims is therefore new at least in that D2 does not describe that each node comprises two directional sound generators that each are configured to emit sound in a predetermined direction along a pathway.

Section 1.3 of D2 (page 47, second paragraph) states that "*the direction of the route is coded using time delays. Signals are reproduced by the beacons at different delays.*" Section 2.2 of D2 (page 49, sixth paragraph) also discusses how "[t]he delay of beacon E (the first beacon of the route) is also increased to compensate for the travel time of the signals of the other." By contrast, the time interval Δt in the system and method according to the invention is constant.

D3 (Michele) states (paragraph 0029) that the system comprises a plurality of acoustic emitters operatively connected to each other to emit a sound signal in sequence at different times from each other, in particular with a progressive signal emission delay between a loudspeaker and the next one. The present invention does not employ such progressive delay. D3 does also not disclose a system having a plurality of nodes, where each node comprises two directional sound generators that each is configured to emit sound in a predetermined direction, and the sound generators within each node are pointing in opposite directions along the pathway.

D4 (Tronstad et al.) does not disclose the characterizing features of the independent claims, in particular a system having a plurality of nodes, where each node comprises two directional sound generators that each is configured to emit sound in a predetermined direction, and the sound generators within each node are pointing in opposite directions along the pathway.

We submit that the subject-matter of the enclosed amended claims is new and inventive in view of the cited prior art. We request that further correspondence in this matter is conducted in English.

Sincerely,
Zacco Norway AS

Hans Langan

Encl.: - Amended claims (one annotated copy and one clean copy)