

embodiments are equally applicable and additional studies are and will be directed to those other embodiments of Applicant's inventions as distinctly claimed in the appended claims.

TABLE 1

Tinnitus Phase-Shift Cancellation Treatment Clinical Single Blind Study				
Patient #	Age	Years	Subjective Tone Classification (mhz/milivolts)	Subjective Status After Treatment
1	50	17	11.7/1000	1
2	67	59	0.20/100	1
3	72	15	3.60/272	1
4	66	2.5	6.50/110	1
5	64	4	2.40/117	1
6	55	4	4.40/50	1
7	48	10	6.31/102	1
8	60	6	1.60/107	2
9	66	2	3.40/70	2
10	30	2	2.38/50	2
11	49	15	3.02/96	2
12	73	35	0.833/62	3
13	66	7	0.100/126	3
14	65	15	0.10/84	3
15	52	27	5.50/50	3
16	73	5	0.100/73	3
17	57	21	1.93/50	3
18	84	15	3.70/84	3
19	67	5.5	0.100/86	3
20	53	10	6.00/10	4
21	63	15	0.64/90	5
22	54	6	2.20/30	5
23	56	2.5	8.10/35	5

[0060] While Applicant's improved apparatus and methods for treating monofrequency tinnitus patients utilizing phase-shift cancellation principles have been described in connection with several specific embodiments thereof, it is to be understood that these embodiments are by way of illustration and not of limitation, and therefore the scope of the appended claims of Applicant's novel inventions are to be construed and interpreted as broadly as the relevant prior art will permit.

What is claimed is:

1. Apparatus for treating monofrequency tinnitus patients comprising:

- a sound generator having adjustable frequency and amplitude controls for selecting an output tone having a predetermined frequency and amplitude,
- a pair of headphones to be worn by the patient for coupling the output of said sound generator to said patient to enable the patient to subjectively match the output tone of said generator to the patient's tinnitus tone,
- a phase shift network for selectively shifting the phase of said output wave form of said sound generator through a plurality of discrete incremental phase shift steps, and

means to selectively connect the phase shifted output wave form to the tinnitus patient via said headphones to effect phase shift cancellation between the output of said sound generator and the patient's tinnitus tone in order to diminish or eliminate the tinnitus tone perceived by said patient.

2. The apparatus of claim 1 wherein said sound generator and said phase shift network are combined with individually selectable outputs.

3. The treatment apparatus of claim 1 wherein said phase shift network is integrated as an operator selectable function of said sound generator and further including a phase shift control to select phase shift increments in the order of 10 degrees to 180 degrees.

4. Apparatus for treating monofrequency, pure tone tinnitus patients comprising:

sound generator means for generating pure tone wave forms having selectively variable frequencies and amplitudes,

acoustic headset means for coupling the output of said sound generator means to be heard by said patient to enable the patient to subjectively match the frequency and amplitude of the output of said sound generator means to said patient's tinnitus tone,

phase shift means for selectively shifting the phase of said generated tone relative to a selected reference point to bring the generated tone into a reciprocal, canceling relationship with the patient's tinnitus tone, and

means for selectively coupling said phase shifted generated tone to said acoustic means for application to the tinnitus patient.

5. The apparatus of claim 4 wherein said means for coupling each increment of the phase shifted tone to said patient for a predetermined time period.

6. The apparatus of claim 5 wherein said means for coupling said phase shifted tone to said patient comprises a time period in the order of ten minutes.

7. A method for medically treating a monofrequency tinnitus patient comprising the steps of:

having the tinnitus patient sound-type his/her tinnitus tone by subjectively comparing the tone and the loudness of an independently generated tone with the patient's tinnitus tone,

effecting a phase shift of the independently generated tone relative to a pre-selected reference through 180 degree phase shift, and

coupling the phase shifted tone to be heard by said patient as the generated tone is brought into a reciprocal phase canceling relationship with said patient's tinnitus tone.

8. The method of claim 7 wherein the step of subjective patient sound-typing is repeated a plurality of times both as to the frequency and amplitude of said generated tone.

9. The method of claim 8 wherein the step of subjective patient sound-typing is repeated on a blind basis, whereby the patient is unaware of any readout which would characterize the frequency or amplitude of the generated tones.

10. The method of claim 8 wherein the step of tone sound-typing comprises a first step of matching the tone frequency and a second step comprises matching the tone loudness.

11. A method of medically treating a monofrequency tinnitus patient comprising the steps of:

having the tinnitus patient adjust the output tone of an external sound generator to subjectively sound-type the patient's tinnitus tone in terms of frequency and loudness,