ERRATA FOR U.S. PATENT 6,456,994

Pat. Title: Compiler for a Quantum Computer
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Amendments B and C were mistakenly omitted from final publication. **Feel free to ask questions to Robert Tucci at 781-275-9417 or at tucci@ar-tiste.com**

1. Title of patent is incorrect. Correct title is "Compiler for a Quantum Computer"

2. Wherever it says "Barrenco", replace it by "Barenco".

3. Line 1 of Abstract: Replace "quantum hits" by "quantum bits".

4. Line 2 of Abstract: Replace "hard-ware" by "hardware"

5. Line 6 of Abstract: Replace "Computer" by "computer"

6. Column 1, line 2: Insert new section entitled "REFERENCE TO A MICROFICHE APPENDIX" Within this new section, insert the following text:

   The present application includes a microfiche appendix comprising the C++ source code of a fully functional computer program called Qubiter1.0. Qubiter1.0 is a possible embodiment of the software of the present invention. The microfiche appendix comprises 1 microfiche with a total of 52 frames. The first frame is a test pattern for focusing. The second frame, called Appendix A, is a list of files contained in a CodeWarrior^{TM} project for Qubiter1.0. Subsequent frames are labelled Appendix B, and comprise source code contained within said files.

7. Column 1, line 13: Replace "sonic" by "some".

8. Column 1, line 62: Replace period after the word "equivalently" by a comma.

9. Column 2, line 12: Delete parenthesis in front of "quantum".

10. Column 2, line 61: Delete parenthesis in front of "quantum".

11. Column 3, line 26: Replace "k where" by "where".

12. Column 4, line 55: Replace "$K_{|S|}$" by "$k_{|S|}$".

13. Column 4, line 59: Replace "$(\hat{x}.)Z_{1,N}$" by "$(\hat{x}.)_{Z_{1,N}}$".

14. Column 4, line 62: Replace "$(x.)Z_{1,4}$" by "$(x.)_{Z_{1,4}}$" and "$(\hat{x}.)Z_{1,4}$" by "$(\hat{x}.)_{Z_{1,4}}$".

15. Column 5, line 3: Replace "$(x.)Z_{int}$" by "$(x.)_{Z_{int}}$".

16. Column 5, line 4: Replace "$(x.)Z_{ext}$" by "$(x.)_{Z_{ext}}$".

17. Column 6, line 15: Replace "FIG. 9" by "FIG. 2".

18. Column 6, line 25: Replace "$(x.)\Gamma_a$" by "$(x.)_{\Gamma_a}$".

19. Column 7, line 29: Replace "Ba" by "B_a".

20. Column 8, equation 14: Replace "$a_{max}(J)$" by "$a_{max}(j)$.

21. Column 8, line 30: Replace "M_1" by "M.

22. Column 8, line 31: Replace "$(x.)Z_{ext}$" by "$(x.)_{Z_{ext}}$".

23. Column 8, lines 49 and 50: Replace ".The subscript was mistyped" by a comma.

24. Column 8, line 61: Replace "m_{a_0}" by "M_{a_0}" and "M_{a-1}" by "M_{a_0-1}".

25. Column 9, line 7: Replace "da" by "d_a".

26. Column 9, line 18: Replace "vet" by "yet".

27. Column 9, line 30: Replace "will will" by "will".

28. Column 9, line 39: Replace "one call use" by "one can use".

29. Column 10, line 15: Replace "Ve" by "We".

30. Column 12, equation 35: Replace "$(x)P_a(x)P_b$" by "$(\times)P_a(\times)P_b$".

31. Column 12, line 33: Replace "$\vec{b}$" by "$\vec{\theta}$".

32. Column 12, equation 36: Replace "A" in denominator by "4".

33. Column 12, equation 38a: Replace "((" by "(".

34. Column 12, equation 39: Replace "(x)" by "$(\times)$".

35. Column 13, equation 44: The θ at the end of the line and the $\vec{b}$ that starts the next line should not have been split. Joined they read $\theta_{\vec{b}}$.

36. Column 13, line 28: Replace "$A\vec{b}$" by "$A_{\vec{b}}$".

37. Column 14, equation 52c: Insert ")" immediately after σ_z.

38. Column 14, line 26: Replace "$\phi\vec{a}$" by "$\phi_{\vec{a}}$".

39. Column 14, line 57: Replace "$A\vec{b}$" by "$A_{\vec{b}}$".

40. Column 14, line 66: Delete comma after "but".

41. Column 15, line 6: Immediately after the sentence that ends: "...(a SEO) to a quantum computer", insert the following sentences: "By a classical computer, we mean a device that makes a desired calculation using digital circuits which implement deterministic (classical, non-quantum) logic. By a quantum computer we mean a device that makes a desired calculation using an array of quantum bits (qubits). Besides their calculational circuits, classical and quantum computers may comprise input, output and memory devices. The important difference is that an array of quantum bits may be put in an entangled quantum state, whereas a digital deterministic logic circuit cannot be put in such a state (in practice, for useful periods of time)."

42. Column 15, line 7: Replace: "The classical computer is a Mac computer" by "The classical computer of our preferred embodiment is a Mac computer".

43. Column 15, line 22: Replace: "A preferred embodiment of the invention was written" by "Software for a preferred embodiment of the invention was written"

44. Column 15, line 23: Insert period immediately after "CodeWarrior^{TM}".

45. Column 15, line 25, immediately after "...Austin, Texas." Insert the following explanatory sentences: "C++ source code for a computer program called "Qubiter1.0" is included as a Microfiche Appendix to this document. The Microfiche Appendix has two parts: Appendix A and Appendix B."

46. Column 15, line 35: Replace "many hits" by "many bits".

47. Column 15, line 58: Replace "CNOT a" by "CNOT α".

48. Column 15, line 61: Replace "Read if" by "Read it as".

49. Column 15, line 62: Replace "$\sigma_x(\beta)^{\bar{n}}(\alpha)$" by "$\sigma_x(\beta)^{\bar{n}(\alpha)}$".

50. Column 17, line 21: Delete the word "speed".

51. Column 17, line 27: Replace "Operators" by "operators".

52. In Claim 1, replace: "A product of manufacture comprised of a computer readable medium and thereon stored a method of operating a classical computer to calculate" by "A method of operating a classical computer, wherein said method must be stored in a computer readable medium which said classical computer can read, to calculate"

53. In Claim 1, column 17, line 50, replace: "a label for each node" by "a node label for each node"

54. In Claim 1, column 17, line 54, replace: "said label pair" by "the label pair"

55. In Claim 5, column 18, line 39, replace: "said sequences of operations" by "said sequence of operations"

56. In Claim 6, column 18, line 47, replace: "said sequences of operations" by "said sequence of operations"

57. In Claim 8, replace: "A product of manufacture comprised of a computer readable medium and thereon stored a method of operating a classical computer having display, storage and calculation means, to analyze" by "A method of operating a classical computer having display, storage and calculation means , wherein said method must be stored in a computer readable medium which said classical computer can read, to analyze"

58. In Claim 8, column 19, line 6, replace: "a label for each" by "a node label for each"

59. In Claims 9 to 14, replace: "The product of manufacture of" by "The method of"

60. In Claim 12, column 19, line 60, replace: "said sequences of operations" by "said sequence of operations"

61. In Claim 13, column 20, line 8: Replace "$U_{ij}\mathbf{32}$" by "$U_{ij} =$".

62. In Claim 15, replace: "A product of manufacture comprised of a computer readable medium and thereon stored a method of operating a classical computer to calculate" by "A method of operating a classical computer, wherein said method must be stored in a computer readable medium which said classical computer can read, to calculate"

63. In Claim 15, column 20, line 25, replace: "a unitary matrix U" by "a unitary matrix U of dimension greater than 2"

64. In Claim 15, column 20, line 28, replace: "$U = LDR$" by "$U = LDR$, wherein L and R each yields unitary matrices whose dimension is smaller than that of U"

65. In Claim 15, column 20, line 36, replace: "a sequence of operations" by "said sequence of operations"

66. In Claim 16, column 20, line 43, replace: "a unitary matrix U" by "a unitary matrix U of dimension greater than 2"

67. In Claim 16, column 20, line 44: Replace "specifics" by "specifies".

68. In Claims 16 to 20, replace: "The product of manufacture of" by "The method of"

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69. In Claim 21, replace: "A product of manufacture comprised of a computer readable medium and thereon stored a method of operating a classical computer to calculate" by "A method of operating a classical computer, wherein said method must be stored in a computer readable medium which said classical computer can read, to calculate"

70. In Claim 21, column 21, line 8, replace: "can he represented" by "can be represented"

71. In Claim 21, column 21, lines 14 and 15, replace: "sequence of operations" by "string of operations" at the two places in lines 14 and 15 where it occurs.

72. In Claims 22 to 37, replace: "The product of manufacture of" by "The method of"

73. In Claim 29, column 22, line 4: Insert a comma immediately before the phrase: "for large N".

74. In Claim 32, column 22, line 21: Replace "$R_0 R_1$" by "R_0, R_1"