US 20230232510A1

(19) United States

(12) Patent Application Publication

Newman, JR. et al.

(10) Pub. No.: US 2023/0232510 A1

(43) Pub. Date: Jul. 20, 2023

(54) **LOAD CONTROL DEVICE FOR HIGH-EFFICIENCY LOADS**

(71) Applicant: **Lutron Technology Company LLC**, Coopersburg, PA (US)

(72) Inventors: **Robert C. Newman, JR.**, Emmaus, PA (US); **Chris J. Salvestrini**, Allentown, PA (US); **Matthew V. Harte**, Stewartsville, NJ (US)

(73) Assignee: **Lutron Technology Company LLC**, Coopersburg, PA (US)

(21) Appl. No.: **18/184,762**

(22) Filed: **Mar. 16, 2023**

Related U.S. Application Data

(63) Continuation of application No. 17/208,578, filed on Mar. 22, 2021, now Pat. No. 11,638,334, which is a continuation of application No. 16/601,610, filed on Oct. 15, 2019, now Pat. No. 10,958,186, which is a continuation of application No. 16/186,847, filed on Nov. 12, 2018, now Pat. No. 10,447,171, which is a continuation of application No. 15/852,328, filed on Dec. 22, 2017, now Pat. No. 10,158,300, which is a continuation of application No. 15/130,288, filed on Apr. 15, 2016, now Pat. No. 9,853,561, which is a continuation of application No. 14/581,115, filed on Dec. 23, 2014, now Pat. No. 9,343,997, which is a continuation of application No. 13/458,324, filed on Apr. 27, 2012, now Pat. No. 8,957,662, which is a continuation-in-part of application No. 13/232,344, filed on Sep. 14, 2011, now Pat. No. 8,698,408, which is a continuation-in-part of application No. 12/952,920, filed on Nov. 23, 2010, now Pat. No. 8,664,881.

(60) Provisional application No. 61/333,050, filed on May 10, 2010, provisional application No. 61/264,528, filed on Nov. 25, 2009.

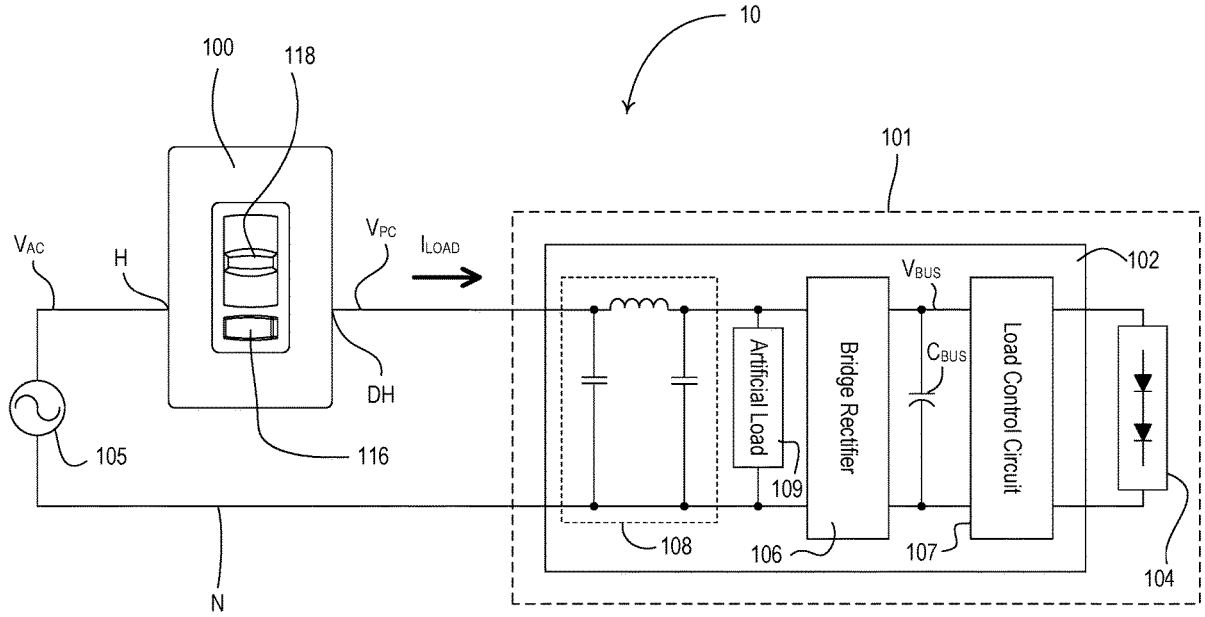
Publication Classification

(51) **Int. Cl.**

H05B 41/392	(2006.01)
H05B 47/19	(2006.01)
H05B 45/10	(2006.01)

(52) **U.S. Cl.**

CPC ***H05B 41/3924*** (2013.01); ***H05B 47/19*** (2020.01); ***H05B 45/10*** (2020.01); *H05B 45/315* (2020.01)

(57) **ABSTRACT**

A two-wire load control device (such as, a dimmer switch) for controlling the amount of power delivered from an AC power source to an electrical load (such as, a high-efficiency lighting load) includes a thyristor coupled between the source and the load, a gate coupling circuit coupled between a first main load terminal and the gate of the thyristor, and a control circuit coupled to a control input of the gate coupling circuit. The control circuit generates a drive voltage for causing the gate coupling circuit to conduct a gate current to thus render the thyristor conductive at a firing time during a half cycle of the AC power source, and to allow the gate coupling circuit to conduct the gate current at any time from the firing time through approximately the remainder of the half cycle, where the gate coupling circuit conducts approximately no net average current to render and maintain the thyristor conductive.