

Commissioner's Decision

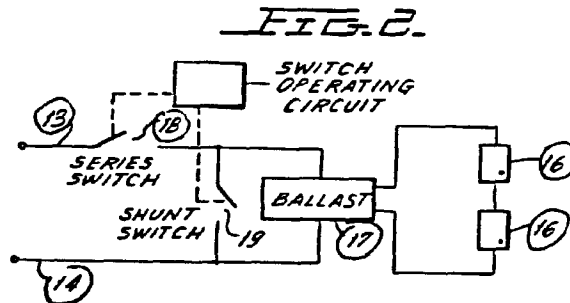
Obviousness: Dimmer for Fluorescent Lights.

An adjustment means to vary the ratio of conductive to non-conductive time in each of the half waves of the a c wave shape is found in the cited art.

Final Action: Affirmed

This decision deals with Applicant's request for review by the Commissioner of Patents of the Final Action on application 371,148 (Class 315-44) assigned to Lutron Electronics Co., Inc. entitled Gas Discharge Lamp Control. The inventors are J.S. Spira, D.G. Luchaco and D. Capewell. The Examiner in charge issued a Final Action on May 6, 1985 refusing to allow claims 1 to 3 and 6 to 10 inclusive. The response to the Final Action submitted amended claims.

The subject matter of the application relates to a circuit for controlling a gas discharge lamp to permit dimming of lamps associated with conventional non-dimming ballasts. Figure 2 shown below illustrates the schematic diagram of the circuit.



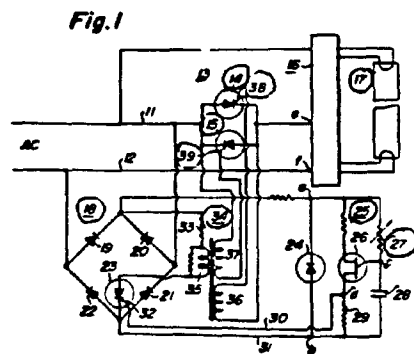
Line voltage from 13, 14 is controlled by means of a switch operating circuit to alternately open and close series switch 18 and shunt switch 19. The length of time the series switch remains open determines the energy supplied to the ballast 17 and lamp 16 thereby regulating output light intensity.

In the Final Action the Examiner rejected claims 1 to 3 and 6 to 10 inclusive in view of the following references:

United States Patents

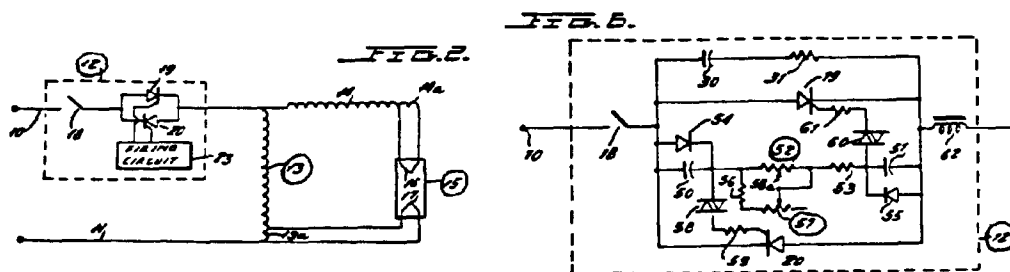
3,265,907	Aug. 9, 1966	Kurata et al
3,422,309	Jan. 14, 1969	Spira et al

Kurata et al relates to a dimmer for fluorescent lights. Figure 1 is shown below.



Gates 38 and 39 of silicon rectifiers 14 and 15 in conduction control device 13 are energized by the control circuit portion 18 via transformer 34 wherein the variable resistance 27 of the pulse oscillator 25 is adjusted to vary the phase of the pulse output to discharge lamp 17.

Spira et al shows a fluorescent light dimming system for use in a two-wire system. Figures 2 and 6 are reproduced here.



Control circuit 12 has adjustable dimming resistors 52 and 57 controlling voltage to ballast primary winding 13 and tube 15.

In the Final Action the Examiner stated (in part):

Claim 1 is readable on Kurata et al and Spira et al as follows:

Claim 1	Kurata et al	Spira et al
"An illumination... gaseous discharge lamp	figure 1 and "71"	figure 3 and "15"
an a.c. ballast... input terminals"	"16"	"13", "14"
"a control circuit having input a.c. terminals...ballast input terminals"	"13"	"12"
"characterized... circuit means for modifying a.c. wave shape"	"14", "15"	"19", "20"
"whereby the current through said circuit means...one non- conductive region... not including zero magnitude crossovers... terminals".	figure 7 shows a voltage waveform having notches not including the zero crossover in each half cycle.	column 4, lines 7 to 34 and figure 5 show that current through the lamp can be provided in a notched manner throughout the half cycle.

It is maintained that the elements "30" and "31" of Spira et al fall within the definition of the "energy divertor" given on page 23, lines 19 to 21. Resistors, capacitors, inductors and switches are included in such definition without restriction as to their size or value. It is therefore not agreed that such elements are not "energy divertors".

Claims 1, 9 and 10 are refused as anticipated by Spira et al and claim 7 is rejected as obvious in view thereof.

Claim 8 is refused as anticipated by Kurata et al.

In view of the above, claims 4 and 5 would appear to be allowable.

In response to the Final Action the Applicant cancelled claims 1-10 and replaced them with amended claims 1-16. He stated (in part):

The Examiner indicated that originally numbered claims 4 and 5 (now claims 1 and 8 respectively) appear to be allowable is noted. Using the new claim numbers, claim 8 is allowable without amendment because it was previously in independent form. Claim 1 is allowable because it incorporates the limitations of original claims 1, 2 and 4. Claims 2-7 appeared previously in the application but were amended to depend from allowable claim 1. Inasmuch as these claims set forth limitations which further distinguish them over the art of record the allowance of claims 2-7 in addition to claims 1 to 8 is respectfully solicited.

Claim 9 corresponds to original claim 1 and was amended to further include "an adjustment means for varying the duration of the non-conductive region and the ratio of the non-conductive time to conductive time in each of the half waves of set a-c wave shape", a feature which is not disclosed or suggested by the citations of record in relation to devices of the type to which the present application pertains. Claims 10-16 correspond to respective ones of the original claims which were amended to depend from claim 9. In view of the remarks given above with respect to claim 9, the allowance of claims 9-16 inclusive is respectfully solicited.

The issue before the Board is whether or not the amended claims are patentable over the cited art. Amended claim 9 reads:

"An illumination control system comprising:
a gas discharge lamp;
an a-c ballast means having a high power factor connected to said lamp and having a-c ballast input terminals;
a control circuit having input a-c terminals and output a-c terminals; said output a-c terminals connected to said a-c ballast input terminals;
characterized in that said control circuit includes circuit means for modifying the a-c wave shape of the voltage applied to said a-c ballast input terminals, whereby the current through said circuit means has at least one non-conductive region; said at least one non-conductive region disposed in each of the half waves of said a-c wave shape; said at least one region located between but not including adjacent zero magnitude crossovers of the voltage applied to said control circuit input a-c terminals; and an adjustment means for varying the duration of the non-conductive region and the ratio of the non-conductive time to conductive time in each of the half waves of said a-c wave shape to control illumination of said lamp.

The Applicant maintains that amended claim 9 containing the statement "an adjustment means for varying the duration of the non-conductive region and the ratio of the non-conductive time in each of the half waves of said a-c wave shape" is a feature not disclosed or suggested by the citations. Consequently he has amended claims 10 to 16 to depend on claim 9.

After reviewing the Spira et al citation we find circuitry description in column 5 at lines 25 to 43 to detail dimming control. We note that wiper arms vary the resistance of resistors 52 and 76 to control the rectifier firing points which establish the duration of the conductive and

non-conductive regions of the a-c waveform. This is shown in Figure 5 and the disclosure states that "dimming is thereby obtained by varying the average current through the tubes". Therefore it would appear that Spira et al obtains "an adjustment means for varying the duration of the non-conductive" as well as the ratio of non-conductive to conductive time of the half waves of the a-c wave shape.

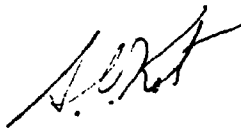
Kurata et al utilizes a variable resistance (27) to vary the phase of the pulse voltage to effect dimming of the lamps. As stated in column 3 of this patent the dimmer "is arranged so that the output of the variable phase pulse oscillator is fed to the gate of a silicon-controlled rectifier to obtain a voltage of variable wavelength which is utilized to operate a conduction controlling device to control the load current". This also is a means for varying the duration of electrical energy to dim the lamps.

In our view both Kurata et al and Spira et al have "an adjustment means" to vary the ratio of conductive to non-conductive time in each of the half waves of the a-c wave shape. Consequently we find that the limitation to the adjustment means now found in amended claim 9 and claims 11 to 16 dependent on it do not patentably distinguish over the cited references.

In summary we recommend acceptance of amended claims 1 to 8 inclusive and claim 10 which are limited to the invention of former claims 4 and 5 indicated to be allowable in the Final Action. Further we recommend refusal of amended claims 9 and 11 to 16 inclusive.



M.G. Brown
Acting Chairman
Patent Appeal Board



S.D. Kot
Member

I concur with the findings and recommendation of the Patent Appeal Board.
Accordingly, I grant permission to enter amended claims 1 to 8 and 10 and
I refuse to grant a patent containing amended claims 9 and 11 to 16
inclusive. The Applicant has six months within which to appeal this
decision under the provisions of Section 44 of the Patent Act.



J.H.A. Gariépy
Commissioner of Patents

dated at Hull, Quebec
this 2nd day of December, 1987

Marks & Clerk
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K1P 5S7