

- [54] **IR REMOTE CONTROL DETECTOR/DECODER**
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- [73] Assignee: **Zenith Radio Corporation**, Glenview, Ill.
- [21] Appl. No.: **340,555**
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- [51] Int. Cl.³ **H04B 9/00**
- [52] U.S. Cl. **358/194.1; 455/603; 455/619**
- [58] Field of Search **358/194.1; 455/603, 455/607, 608, 619**

- [56] **References Cited**
- U.S. PATENT DOCUMENTS**
- | | | | |
|-----------|---------|-------------------|-----------|
| 3,866,177 | 2/1975 | Kawamata et al. . | |
| 3,928,760 | 12/1975 | Isoda . | |
| 4,121,198 | 10/1978 | Tsuboi et al. . | |
| 4,231,031 | 10/1980 | Crowther | 455/603 |
| 4,246,611 | 1/1981 | Davies | 358/194.1 |
| 4,337,480 | 6/1982 | Bourassin | 358/194.1 |

OTHER PUBLICATIONS

Microcomputer-Based Remote Control System for TV

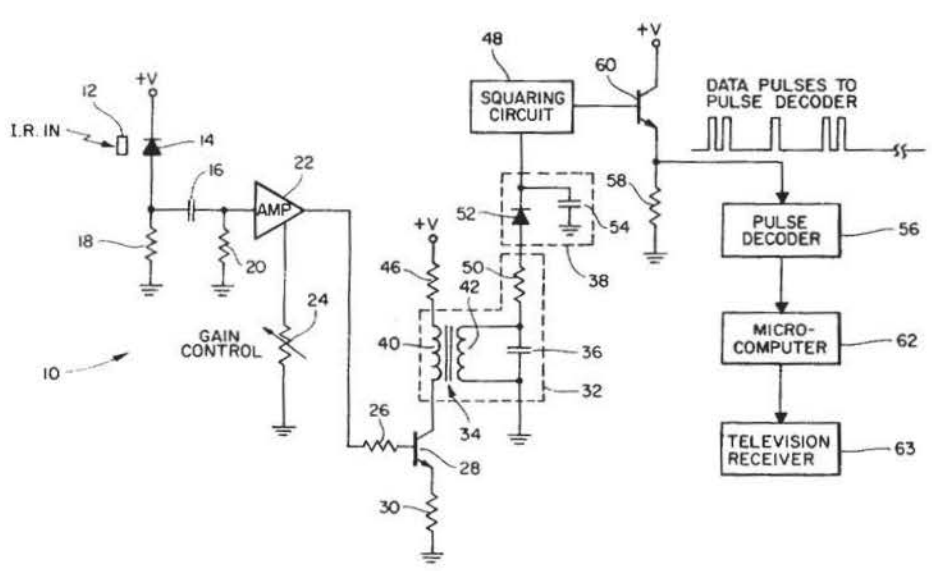
Receivers Tsuboi et al, IEEE Trans Consum Electronics vol.-CE-25 No. 5 Nov. 1979, pp. 731-740.

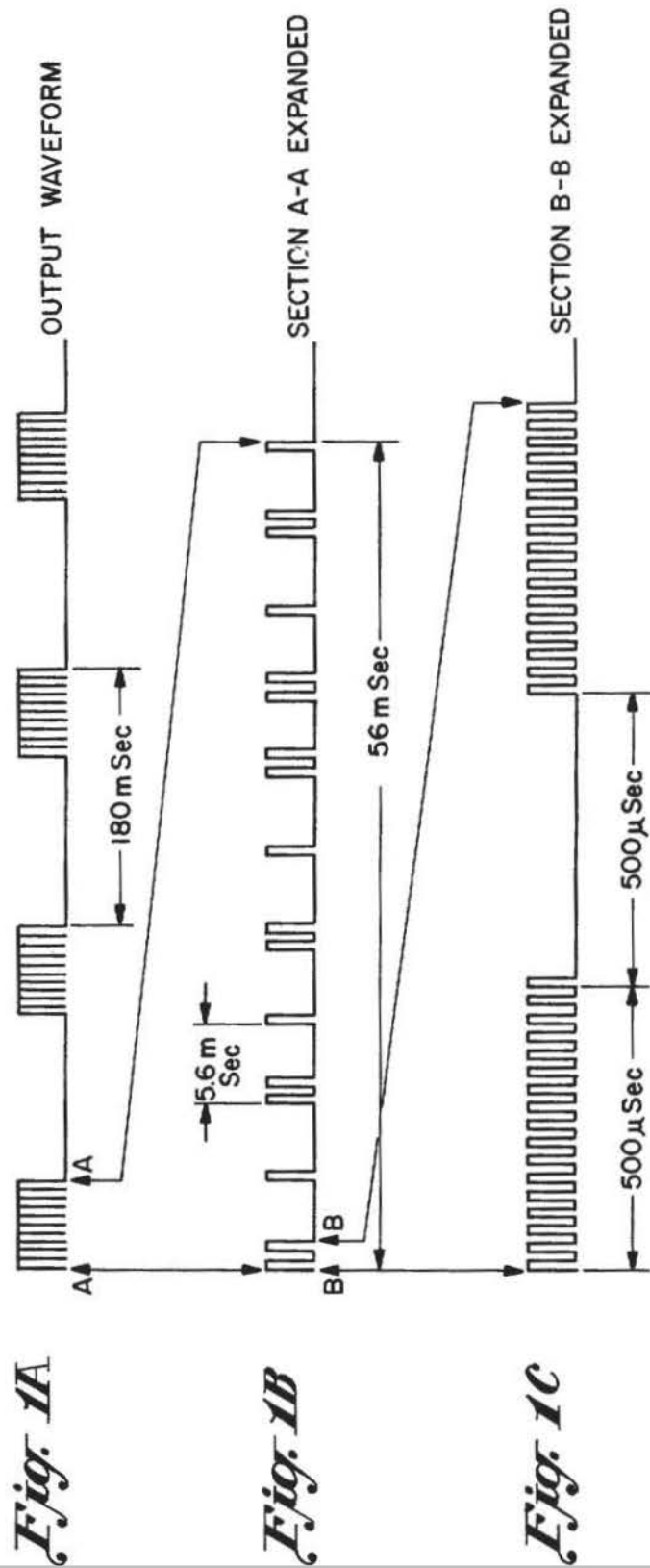
Primary Examiner—Michael A. Masinick

[57] **ABSTRACT**

A pulse code modulated (PCM) infrared (IR) remote control detector/decoder with improved noise immunity particularly adapted for use with a television receiver is disclosed. The IR pulses are modulated by means of a high frequency clock signal in translating the transmitted signal to a higher frequency, more noise immune portion of the IR spectrum. After receipt of the transmitted signal by a signal detector, the high frequency modulation is removed from the pulses which are then decoded. Under the control of a microcomputer, the decoder looks for the start data bit and, if received, the subsequent control instructions. When the data transmission has been decoded, the microcomputer activates the appropriate control outputs to the television receiver's tuner system to achieve the desired control function.

7 Claims, 16 Drawing Figures





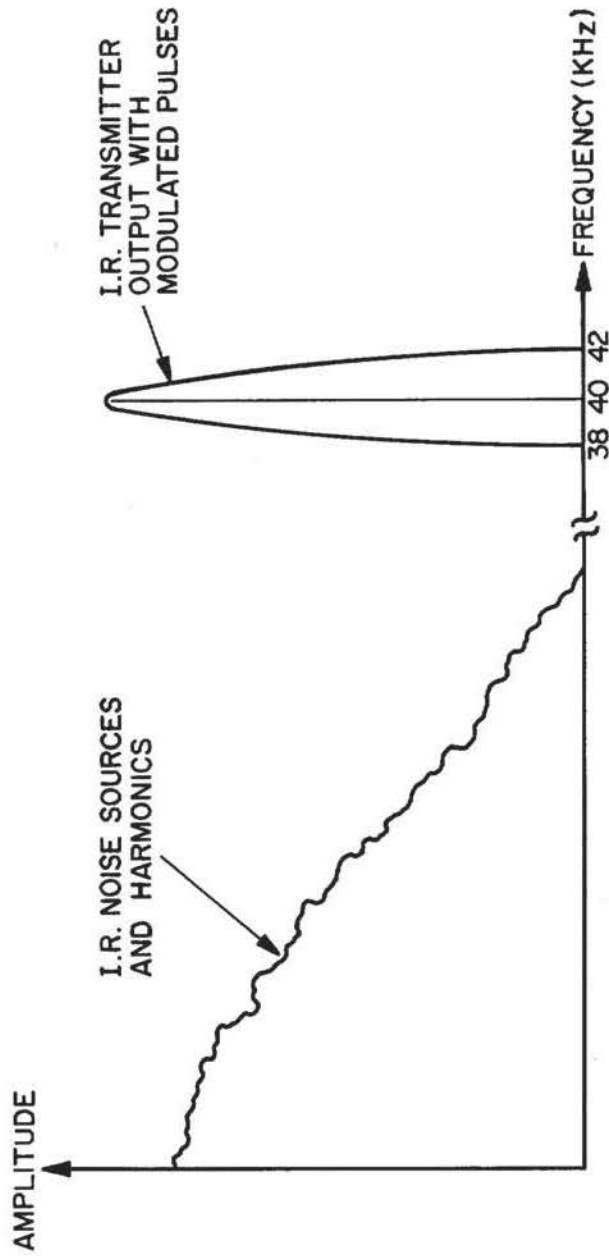


Fig. 2

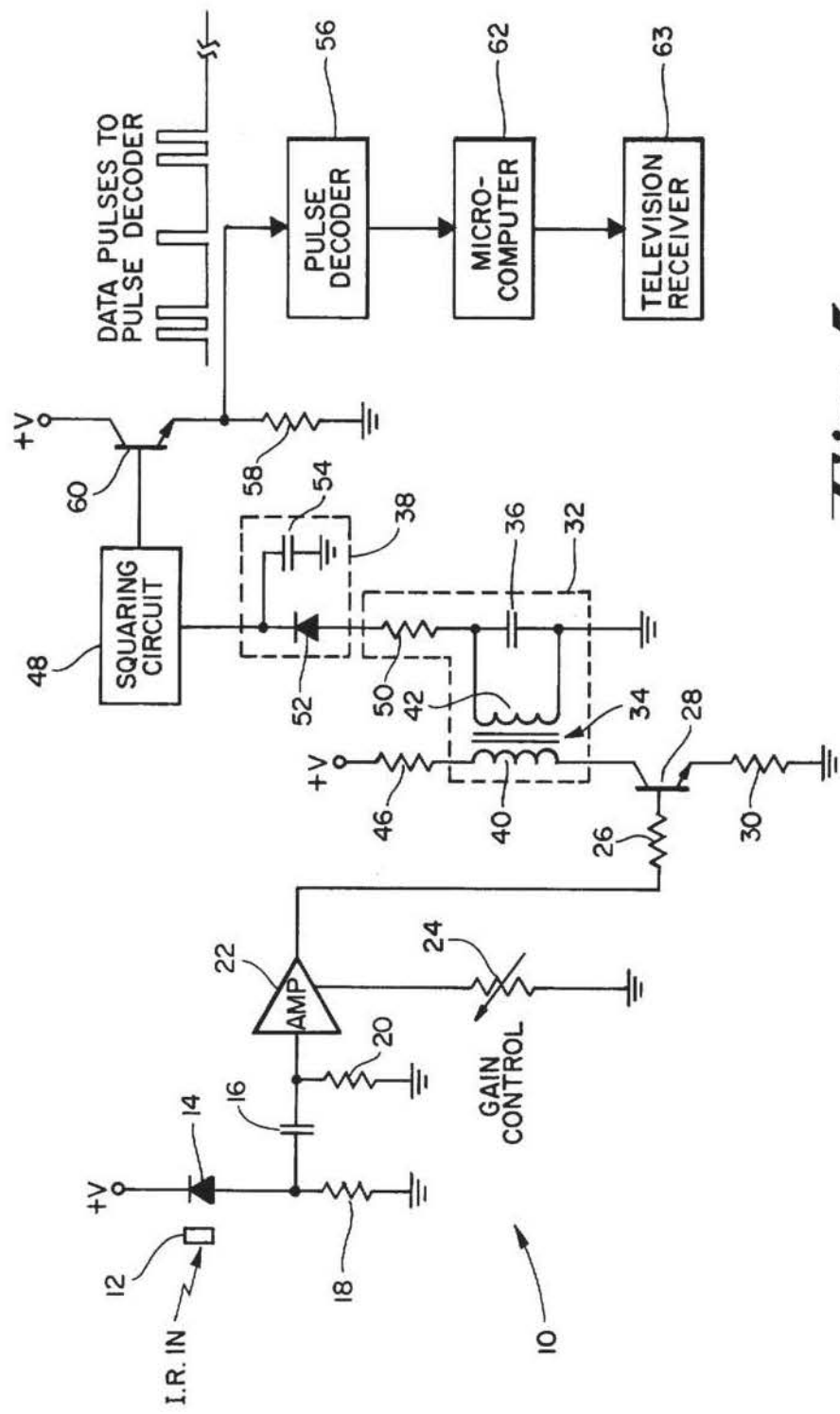


Fig. 3

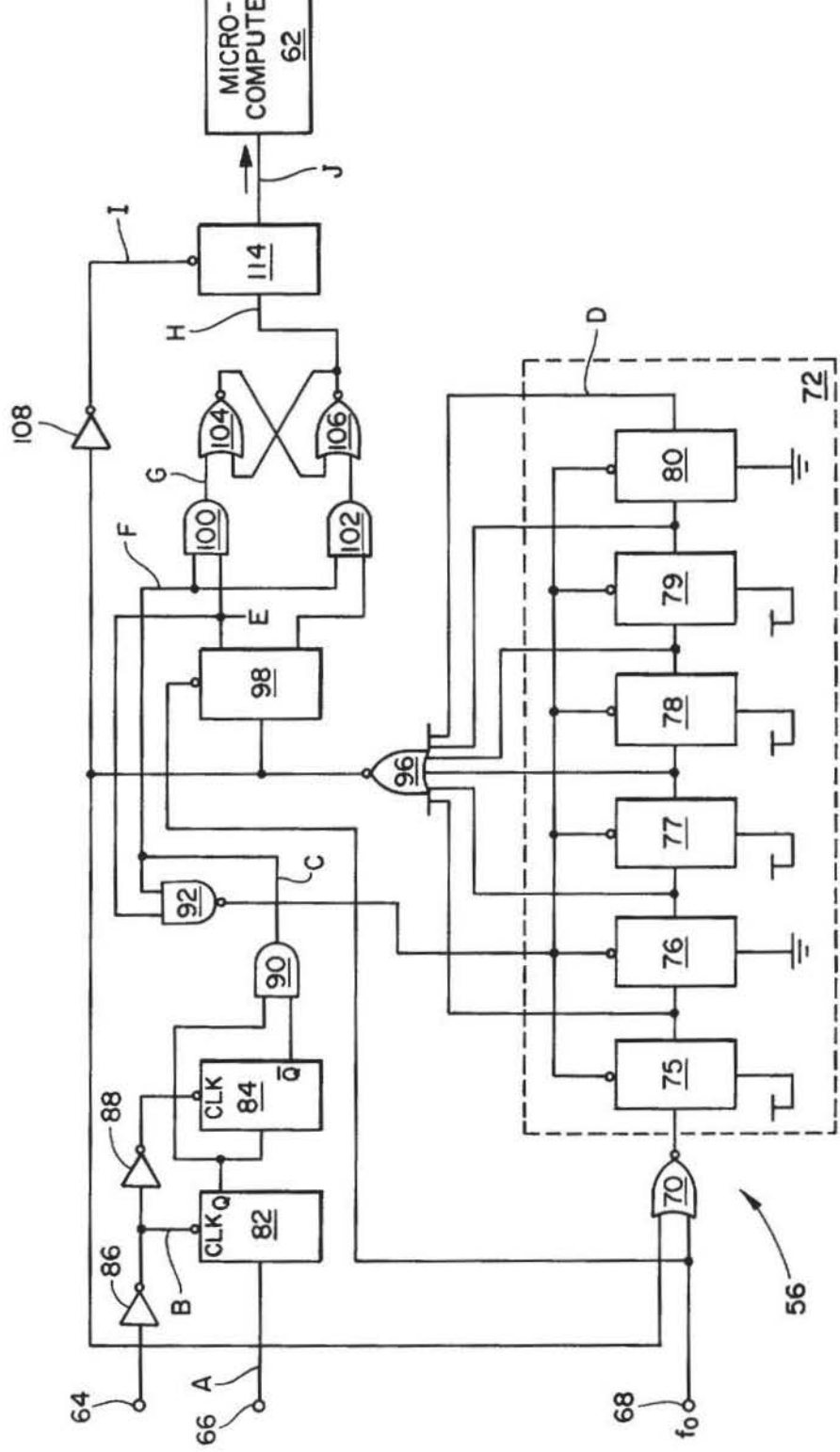


Fig. 4

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