

March 17, 1970

J. T. RUSSELL
ANALOG TO DIGITAL TO OPTICAL PHOTOGRAPHIC RECORDING
AND PLAYBACK SYSTEM

3,501,586

Filed Sept. 1, 1966

3 Sheets-Sheet 1

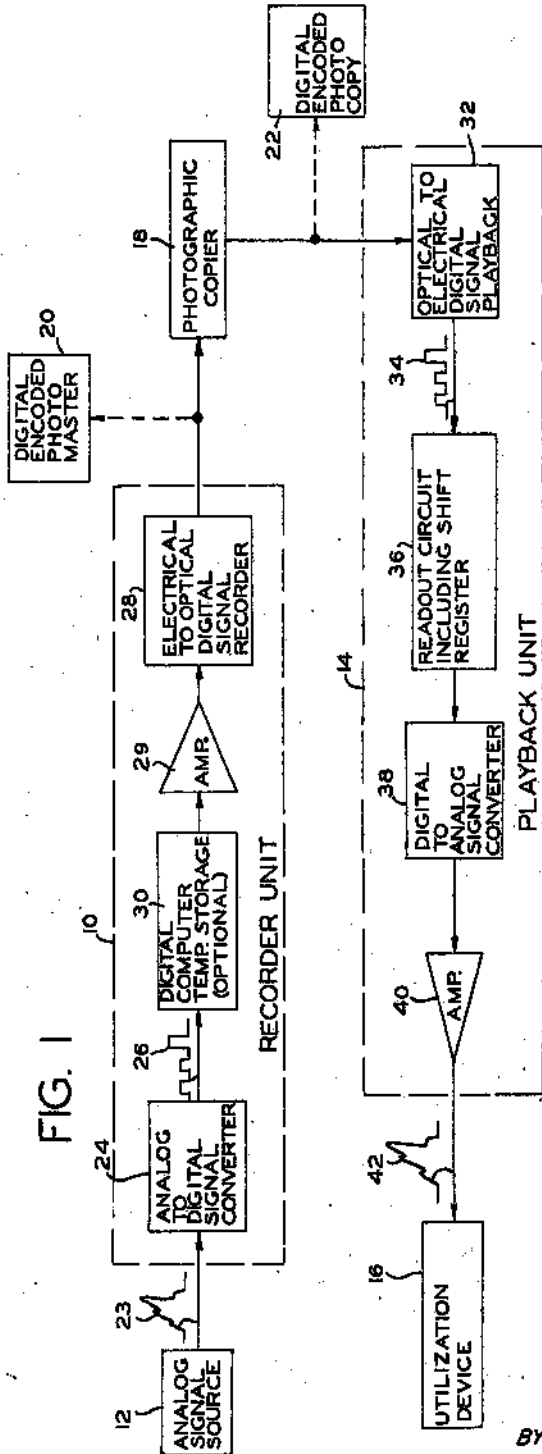


FIG. 1

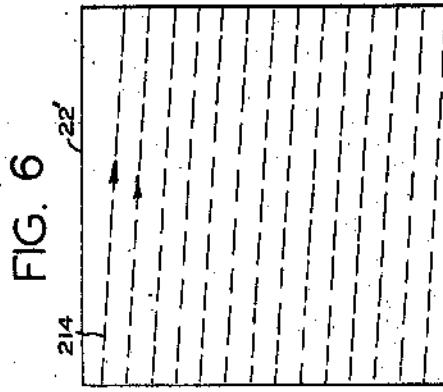


FIG. 6

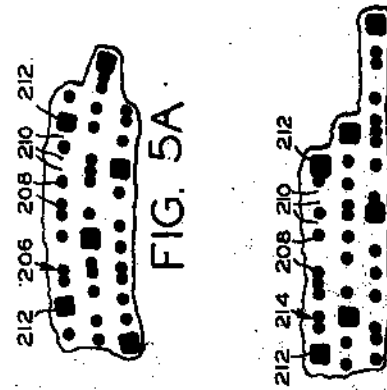


FIG. 5A

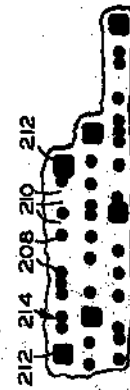


FIG. 6A

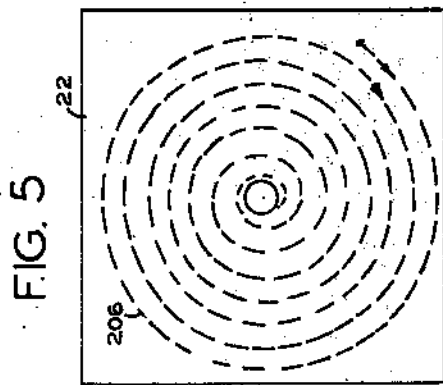


FIG. 5

JAMES T. RUSSELL
INVENTOR

BY
BUCKHORN, BLORE, KLARQUIST & SPARKMAN
ATTORNEYS

[72] Inventor **James T. Russell**
 Richland, Wash.
 [21] Appl. No. **857,474**
 [22] Filed **Sept. 12, 1969**
 [45] Patented **Nov. 30, 1971**
 [73] Assignee **The Battelle Development Corporation**
 Columbus, Ohio
 Original application Sept. 1, 1966, Ser. No. 576,580, now Patent No. 3,501,586.
 Divided and this application Sept. 12, 1969, Ser. No. 857,474

3,138,669	6/1964	Rabinow	179/100.4
3,272,918	9/1966	Koll	178/6.6
3,325,603	6/1967	Rabinow	179/100.41
3,337,718	8/1967	Harper	250/219
3,379,095	4/1968	Kaprelian	179/100.3
3,437,394	4/1969	Hatcher	178/7.6
3,437,814	4/1969	Zuckerbraun	178/7.6

OTHER REFERENCES

Optical Processing of Information, edited by D. Pollock et al. Baltimore, Spartan Books, Inc., Q327 S92 pp. 181-182

Primary Examiner—Terrell W. Fears
 Assistant Examiner—Howard W. Britton
 Attorney—Buckhorn, Blore, Klarquist and Sparkman

[54] **PHOTOGRAPHIC RECORD OF DIGITAL INFORMATION AND PLAYBACK SYSTEM INCLUDING OPTICAL SCANNER**
 18 Claims, 8 Drawing Figs.

[52] U.S. Cl. 178/6.7 A,
 178/7.6, 179/100.3 D, 235/61.11 E, 250/219 D,
 250/219 DD, 350/285, 340/173 LM
 [51] Int. Cl. G02f 2/00,
 G06k 7/016, G11b 7/00
 [50] Field of Search..... 178/6.7, 6.7
 A, 7.6; 179/100.3 D; 340/173 LM; 235/61.115;
 250/219 Q, 219 D, 219 F; 350/285

[56] **References Cited**
 UNITED STATES PATENTS
 2,971,054 2/1961 Holt ...

ABSTRACT: An electrical signal-recording and playback system is described in which an analog input signal is converted to a digital signal that pulses a light source to form a single, series-recorded track of binary coded digital information including information spots arranged in groups separated by synchronizing spots recorded on a photographic film which is played back in a similar manner. The photographic film is a compact, permanent record of long, useful lifetime which may be photographically copied to provide a plurality of inexpensive copies. A spiral track photographic record is used in one embodiment which can be employed to provide a music system of high quality.

