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(54) **SYSTEMS AND METHODS FOR ANALOG
FINITE IMPULSE RESPONSE FILTERS**

(58) **Field of Classification Search**

CPC .. H03H 15/00; H03M 1/0629; H03M 1/0631;
H03M 1/0626

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See application file for complete search history.

(56) **References Cited**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
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(57) **ABSTRACT**

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Systems and methods for analog finite impulse response
(FIR) filters are provided. In certain embodiments, a receiver
includes a cascade of a mixer, an analog FIR filter, and an
analog-to-digital converter (ADC). By including the analog
FIR filter along the signal path between the mixer and the
ADC, design constraints of the ADC are relaxed. For
example, the ADC can operate with relaxed specifications
with respect to resolution and/or dynamic range when the
analog FIR filter is included. The analog FIR filter can
include a controllable transconductance circuit that delivers
an integration current to a capacitor over an integration
period, with the analog FIR filter's coefficients used to
change the transconductance setting of the controllable
transconductance circuit to different values over the inte-
gration period.

(65) **Prior Publication Data**

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on Sep. 6, 2019.

(51) **Int. Cl.**
H03M 1/06 (2006.01)
H03H 15/00 (2006.01)

(52) **U.S. Cl.**
CPC **H03H 15/00** (2013.01); **H03M 1/0629**
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20 Claims, 12 Drawing Sheets

