

[54] ELECTRONIC PEDOMETER

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[52] U.S. Cl. 364/561; 364/410; 235/92 DN; 235/105; 340/323 R

[58] Field of Search 272/70, 73, 100, DIG. 6; 364/413, 560, 561, 565, 410; 367/99; 235/92 DN, 92 MT, 92 PE, 92 CP, 105; 340/323 R

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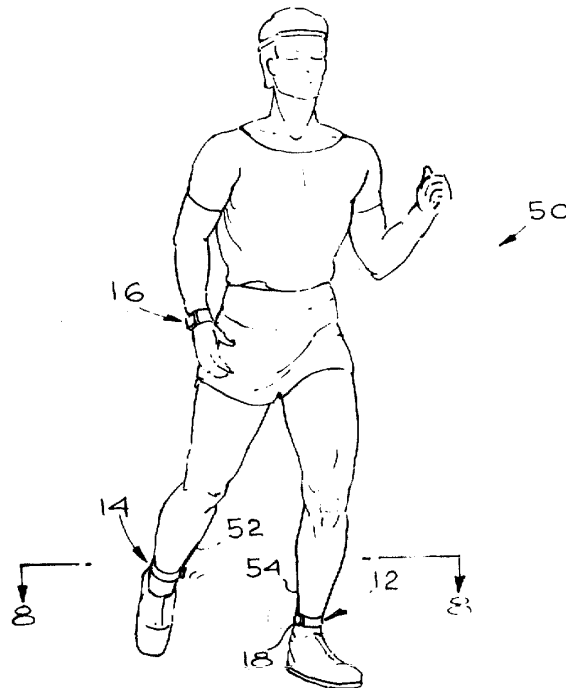
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[57]

ABSTRACT

A pedometer is disclosed which calculates the distance a user walks, jogs or runs by electronically measuring the length of each stride taken by the user. Stride length is measured using ultrasonic waves. The pedometer comprises an ultrasonic generator module which is strapped to one leg of the user. An ultrasonic detector module is strapped to the other leg of the user. The generator module emits pulses of ultrasonic energy which are detected by the detector module. A processor and display module in the form of a wristwatch is also provided. The processor module is used to calculate stride length based on the speed of sound and the time delay between pulses emitted and detected by the leg-mounted modules. The pedometer is capable of displaying on a digital display the distance traveled, time per unit distance, elapsed time and time of day. The pedometer is also programmed to compensate for a variety of measurement errors.

15 Claims, 12 Drawing Figures



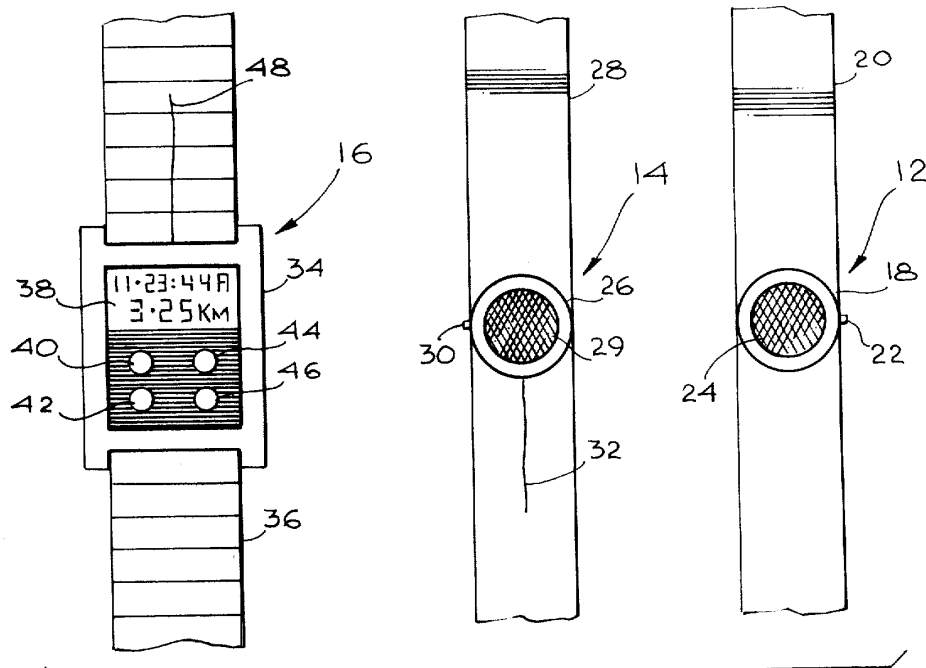


Fig. 1

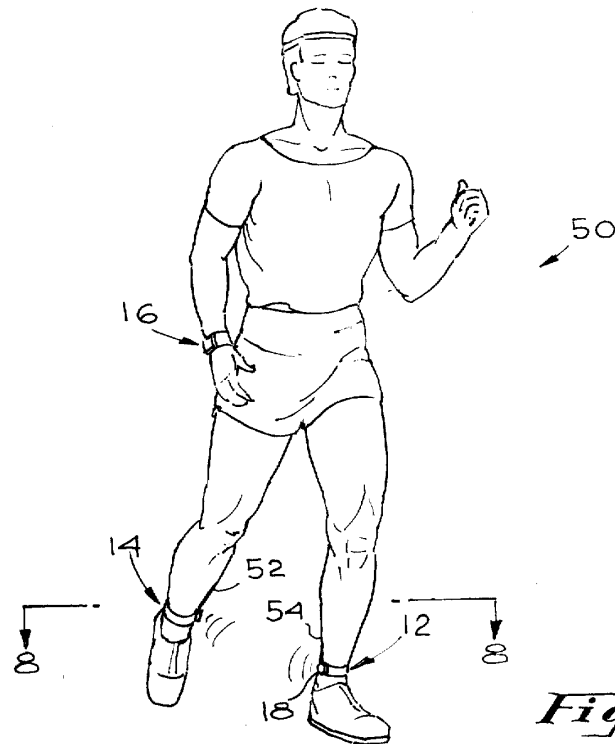


Fig. 2

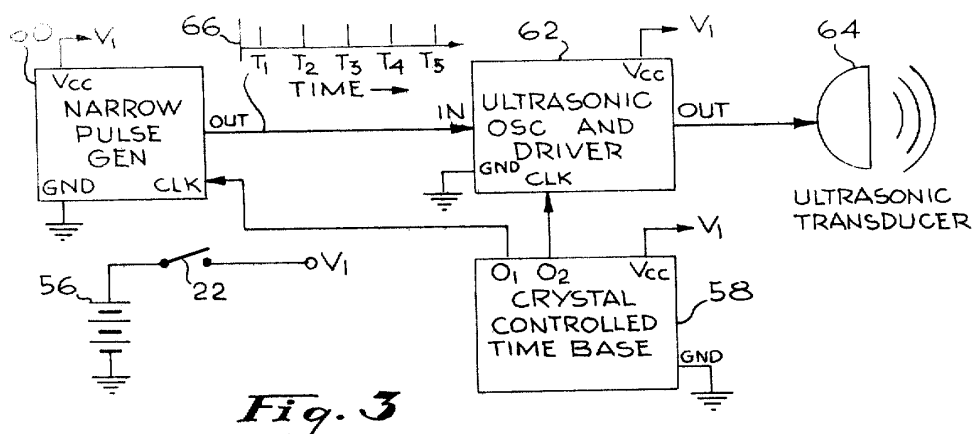


Fig. 3

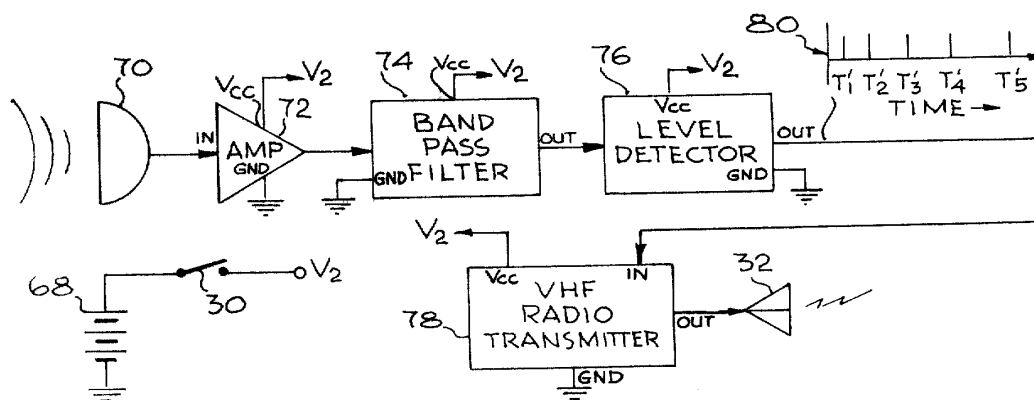


Fig. 4

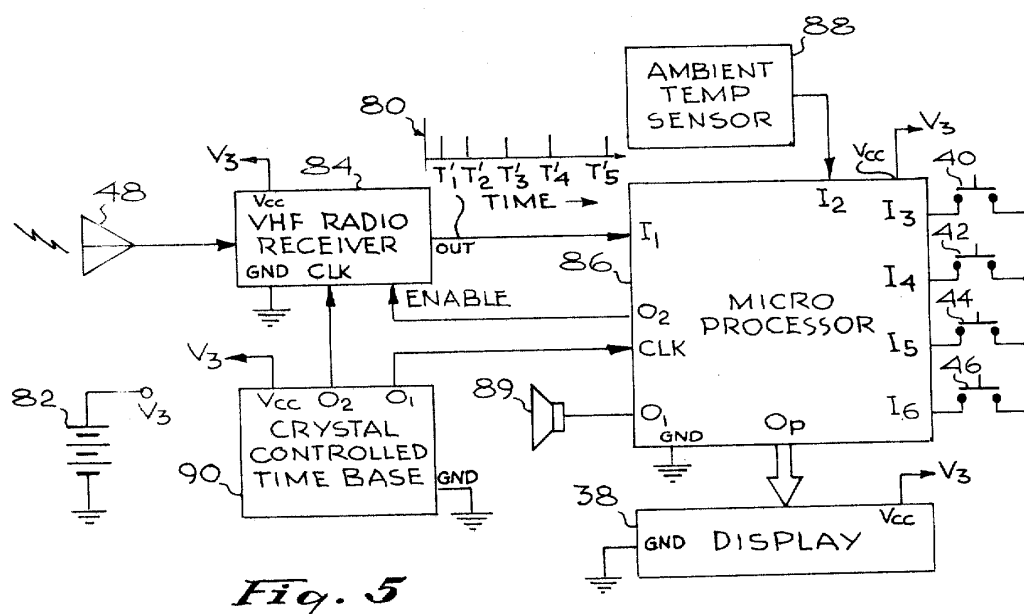
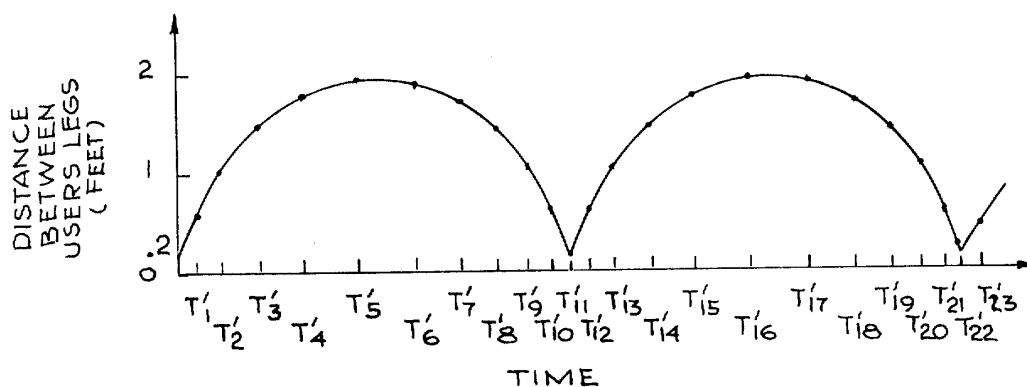
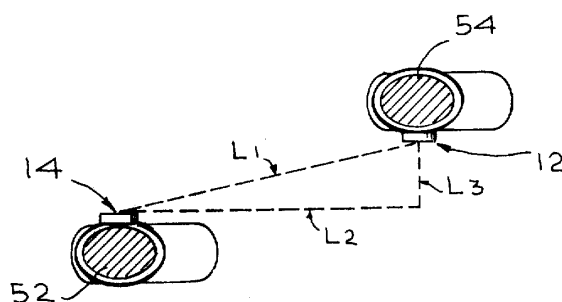
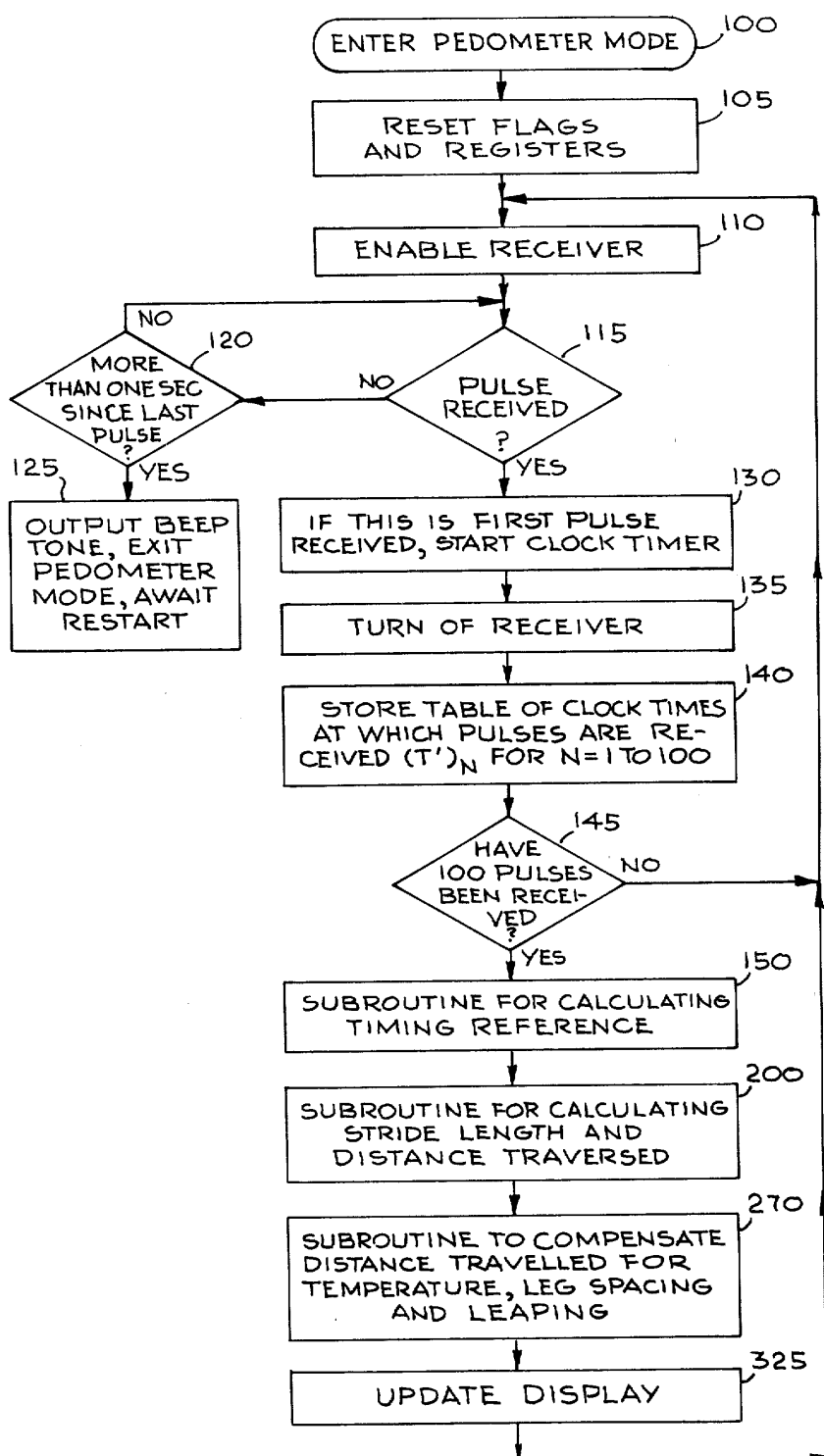


Fig. 5

*Fig. 6*

PULSE	TIME (SEC)	PULSE	TIME (SEC)	PULSE	TIME (SEC)
$T'_1 = .03045$		$T'_9 = .27090$		$T'_{17} = .51168$	
$T'_2 = .06090$		$T'_{10} = .30045$		$T'_{18} = .54144$	
$T'_3 = .09126$		$T'_{11} = .33000$		$T'_{19} = .57117$	
$T'_4 = .12153$		$T'_{12} = .36045$		$T'_{20} = .60090$	
$T'_5 = .15182$		$T'_{13} = .39090$		$T'_{21} = .63054$	
$T'_6 = .18171$		$T'_{14} = .42126$		$T'_{22} = .66009$	
$T'_7 = .21144$		$T'_{15} = .45153$		$T'_{23} = .69045$	
$T'_8 = .24126$		$T'_{16} = .48171$			

Fig. 7*Fig. 8*

*Fig. 9*

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