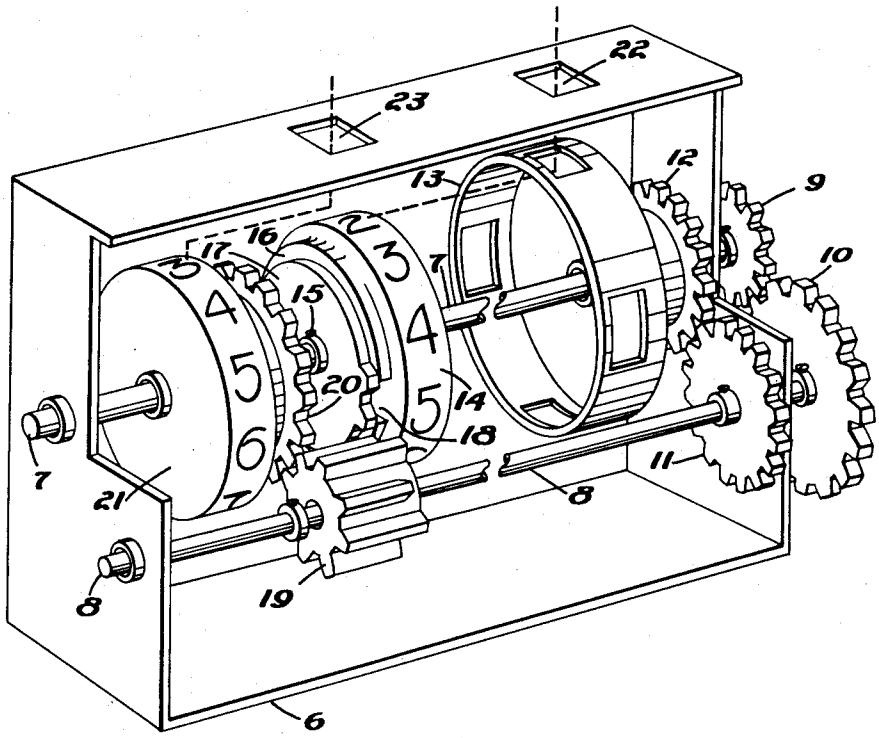
March 22, 1960 W. F. WILLIAMS 2,929,554

COUNTER DISPLAY

Filed April 28, 1958



INVENTOR.

WINSTON F. WILLIAMS

BY Marin Moody

ATTORNEY

United States Patent Office 2,929,554
Patented Mar. 22, 1960

2,929,554

COUNTER DISPLAY

Winston F. Williams, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa, a corporation of Iowa

Application April 28, 1958, Serial No. 731,401

2 Claims. (Cl. 235—117)

This invention relates to counting mechanisms and more particularly to a counting mechanism which will count by multiples of some digit other than one.

It is often desirable to have a counter mechanism which will count by digits other than one. A use to which such a counter may be put is to indicate the frequency of a transmitter or receiver which is to tune to frequencies separated by more than one unit.

It is an object of this invention to provide a counter mechanism which will count by digits other than one and which may be manufactured from standard wheels and gears. It is a further object of this invention to provide a counter mechanism which is economical to construct. A still further object of this invention is to provide a counter mechanism which can count by any digit by changing a few parts.

These and other objects of this invention will become more apparent when read in view of the single figure which is an isometric representation of one embodiment of this invention.

Referring to the drawing, a support member or case **6** supports a plurality of shafts. Shafts **7** and **8** are freely rotatable within the mountings formed in the support member **6**. Mounted on shaft **7** is an input drive gear **9**. A driving means, not shown, drives gear **9**. Gear **9** is in mesh and drives gear **10**, which is securely fastened to shaft **8** to rotate it. A gear **11** is non-rotatably attached to shaft **8** and is in mesh with a gear **12** which is rotatably attached to shaft **7**.

A drum member **13** is attached to gear **12** and has a plurality of holes cut in the periphery thereof. The number of slots which are cut in the drum **13** and the gear ratio between gears **9** and **10**, and **11** and **12** will determine the counting sequence of the mechanism of this invention.

The gear **12** and the drum **13** rotate freely on shaft **7** and their movement is controlled by the rotation of shaft **8**. Firmly affixed to shaft **7** and fitting within the drum member **13** is a counter drum **14**. Counter drum **14** has ascending integral numbers from one through zero printed thereon. Counting drum **14** is held on the shaft **7** by a set screw **15**, although any other means of fastening the drum to the shaft may be utilized. Affixed to the counting drum **14** are two plates **16** and **17**. These plates have notches **18** cut in the periphery thereof with the notch on plate **16** being formed as in indentation and the notch on plate **17** being formed by the interdental space between two teeth formed thereon.

Loosely held on the shaft **7** is gear **20** and counting drum **21**. Gear **20** is fastened in any well-known manner to the counting drum **21**. A gear **19** is loosely held on shaft **8**. This gear **19** is a skip tooth pinion. Gear **19** has alternate teeth which extend the full face width of the gear and the remaining teeth extend only a portion of the face width of the gear. Notches **18** in the plates **16** and **17** provide clearance to allow gear **19** to rotate upon engagement of the teeth on plate **17** with gear **19**.

Thus for every revolution of the counter **14**, the counter **21** will be turned one-tenth of a revolution. The gear **19**, plates **16** and **17**, and counting drums **14** and **21** are conventional counter mechanism parts.

In a particular embodiment of this invention which is shown herein, a counter which counts by fours is illustrated, as for example, 0, 4, 8, 12, 16, 20, 24, etc. The gear ratio between gears **9** and **10** is such that the mask or drum **13** rotates one-quarter of a revolution for two-fifths of a revolution of the drum **14**. As shown by the dotted lines, the slots in the drum **13** are positioned under the viewing hole **22** in the case **6**. Multiples of four on the drum **14** align with the opening **22** and the slot in the drum **13** and/or the gear ratios, a counter may be conten in opening **22** than appear between ten and twenty when counting by fours, and the present invention solves this problem. By varying the number of windows in drum **13** and/or gear ratios, a counter may be constructed which counts in other increments, as for example, 3, 6, 7, 8, or 9. Thus, by adding gears **11** and **12** and drum member **13** to a standard counter mechanism, a device which counts by numbers other than one may be obtained.

Although this invention has been described with respect to a particular embodiment thereof, it is not to be so limited, as changes and modifications may be made therein which are within the full intended scope of the invention as defined by the appended claims.

What is claimed is:

1. A counter mechanism capable of counting by an integer of two or more, comprising a frame member, a pair of shafts rotatably supported by said frame member, a units order first counter drum non-rotatably mounted on said first shaft, a plurality of higher order counter drums rotatably mounted of said first shaft, transfer mechanisms mounted on the first and second shafts and connected between said counter drums, a drum member formed with four windows substantially enclosing said first counter drum such that numerals printed on the periphery of said first counter drum are visible through said windows, a gear attached to said drum member, said drum member and said first gear rotatably mounted on the first shaft, a driving gear non-rotatably mounted on said first shaft, a third gear in mesh with the driving gear and non-rotatably mounted on the second shaft, a fourth gear non-rotatably mounted on the second shaft and in mesh with the first gear and fixed viewing windows formed in the frame member adjacent the periphery of said counter drums and said drum member to expose said higher order counter drums and to expose said units order counter drum upon registration of a window in the drum member with the corresponding fixed viewing window.

2. A counter mechanism capable of counting by an integer of two or more, comprising a frame member, a pair of shafts rotatably supported by said frame member, a units order first counter drum non-rotatably mounted on said first shaft, a plurality of higher order counter drums rotatably mounted on said first shaft, transfer mechanisms mounted on the first and second shafts and connected between said counter drums, a drum member formed with a plurality of windows substantially enclosing said first counter drum such that numerals printed on the periphery of said first counter drum are visible through said windows, viewing openings formed in said frame member adjacent the periphery of said counter drums and said drum member to expose said higher order counter drums and to expose numerals on the first counter drum to view when one of the plurality of windows on said drum member and the corresponding viewing opening are aligned, a first gear attached to said drum

member, said drum member and said first gear rotatably mounted on the first shaft, a driving gear non-rotatably mounted on said first shaft, a third gear in mesh with the driving gear and non-rotatably mounted on the second shaft, and a fourth gear non-rotatably mounted on the second shaft and in mesh with the first gear.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 9,371	Hornum	Sept. 7, 1880
2,351,814	Holzner	June 20, 1944
2,420,808	Bliss	May 20, 1947