Dec. 22, 1931. G. W. CARPENTER 1,837,948

GEOGRAPHIC STATION INDICATOR

Filed March 24, 1931

Fig. 1.

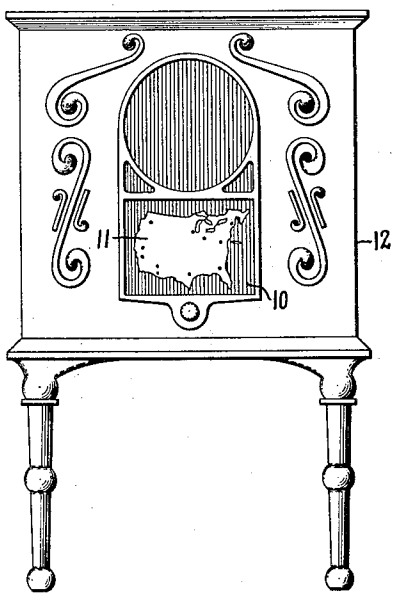


Fig. 2.

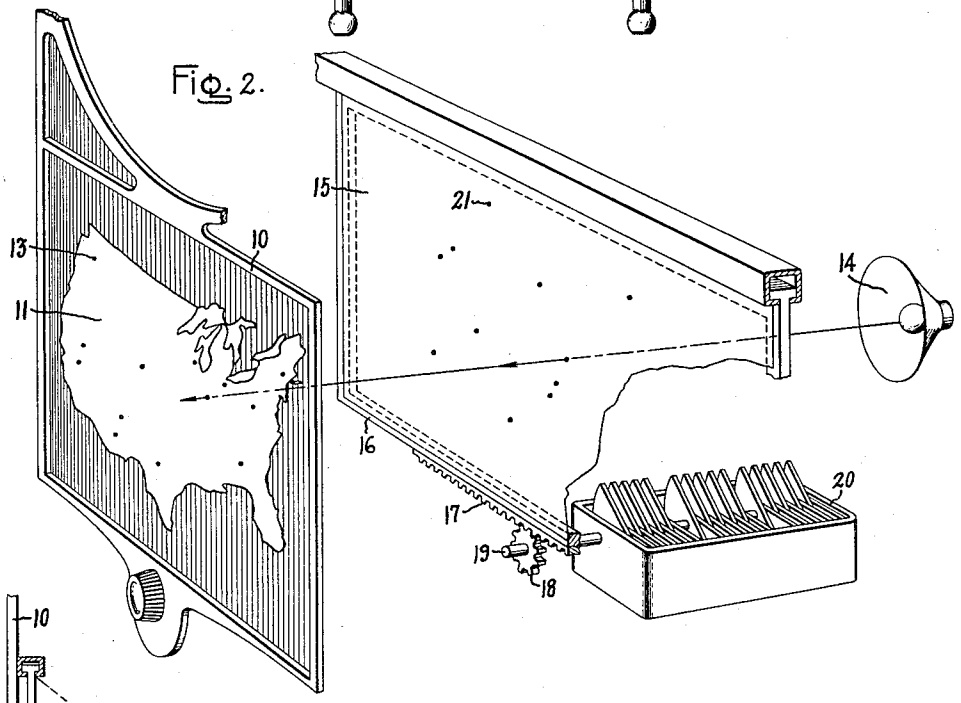
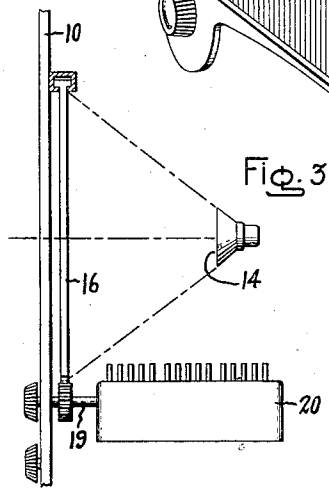


Fig. 3.



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UNITED STATES PATENT OFFICE

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GEOGRAPHIC STATION INDICATOR

Application filed March 24, 1931. Serial No. 524,924.

My invention relates to indicating devices for signal receiving apparatus, particularly to broadcasting station indicators for such radio receiving systems as are used for the reception of signals from a plurality of broadcast transmitting stations, and has for its principal object the provision of an improved means for the visual indication of tuning in such systems.

Various arrangements of tuning dials or similar devices have been proposed for indicating directly the tuning of a radio broadcast receiver to a large number of transmitting stations, as by the provision of spaces on the dials for writing the call letters of stations. These and similar arrangements have been found not altogether satisfactory in all cases, as it is desirable in many instances that means visible to the broadcast listener be provided representing the location of the broadcasting stations which are within range of the receiver and that the tuning in of each of the stations thus represented be made manifest by a visual indication.

In accordance with my invention this result is attained by the provision of a tuning means comprising a map representing a given locality or country, for example the United States, and broadcasting stations located at different points therein, and means comprising a screen movable in accordance with the tuning means of the radio receiver, so arranged that a visual signal, in the form of a flash of light passing from a light source through aligned perforations in the map and in the movable screen, warns the operator that the receiver is tuned to the frequency of that broadcast station at which the light flash appears on the map.

My invention will be better understood from the following description when considered in connection with the accompanying drawings and its scope will be pointed out in the appended claims.

Referring to the drawings, Fig. 1 is a front elevation of a radio receiver embodying the invention and Figs. 2 and 3 are, respectively, perspective and side-elevational views illustrating the invention.

In the drawings a fixed screen 10, having on its outside surface a map 11, which in the present embodiment is a map of the United States is mounted in any suitable manner, preferably in the front of a radio receiver cabinet 12. Preferably screen 10 is composed of a translucent material such as celluloid. Cities having broadcasting stations are represented on the map 11 in any suitable manner, and at the location of each city or broadcasting station the screen 10 is perforated as at 13 for transmitting light therethrough from a light source 14.

A screen 15 formed preferably of thin paper and movable in a horizontal direction is mounted in a suitable frame 16 adjacent screen 10 and between this latter screen and the light source 14. In Fig. 2 the movable screen is shown for clearness of illustration as remote from the inner surface of screen 10. It will be understood, however, that in practice the two screens are mounted preferably closely adjacent each other. To actuate the movable screen 15 one edge of the frame 16 is provided with a rack 17 engaging a pinion 18 mounted on the shaft 19 of a plurality of variable condensers 20 which form the variable tuning means for the radio receiver 12.

In operation, a desired broadcasting station represented on the map 11 of the outer screen 10 is tuned in by operation of the tuning condenser 20 by means of shaft 19, and the movable screen 15 is simultaneously moved to a predetermined position with reference to outer or fixed screen 10 by means of the rack and pinion 17, 18 which are also actuated by the tuning condenser control shaft 19. The desired station is then located on the movable inner screen 15 by forming a perforation, as 21, in this screen by means of a stylus passing through the perforation, as 13, corresponding to the desired station on the map 11. Thereafter a light beam will be transmitted from light source 14 through these two aligned perforations in screens 10 and 15 and will be visible to the operator whenever this station is again tuned in. This process of piercing the movable screen is continued for all the stations desired which are represented on the map 11.

Pairs of corresponding perforations, similar to the pair of corresponding perforations 13 and 21, are thus formed in screens 10 and 15, these pairs corresponding to different stations represented on map 11 and forming portions of these screens of relatively small area through which light is transmitted when the receiver is tuned to these different stations. In order to prevent a given perforation of movable screen 15 from moving into alignment with more than one perforation of outer screen 10 the perforations in the screen 10 are located each on a different horizontal line of the latter screen when the movable screen 15 is arranged to be moved horizontally, as shown in the drawings. If, however, the movable screen 15 is arranged to be moved in a vertical direction the perforations in the screen 10 are then located each on a different vertical line of the latter screen.

After each of the different stations represented on map 11 is provided as described with its pair of light transmitting means in the two screens, the tuning of the receiver throughout the broadcast band of frequencies is indicated by starlike lights which flash in succession from the different stations represented upon the map mounted at the front of the receiver.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination in a radio receiving system of a variable tuning element, and means for determining when said system is tuned to a given transmitting station of a plurality of different transmitting stations including two members having perforations therein, means movable in accordance with the movement of said tuning element to align said perforations, each of said perforations of each of said members corresponding to one only of said plurality of stations, and a source of light to project a light beam through said aligned perforations.

2. In station indicating means for a radio receiver having variable tuning means, said tuning means including an element adapted to be moved to a plurality of different predetermined positions, the combination of a fixed member and a member movable in relation thereto, said members having portions adapted to transmit a beam of light therethrough, each of said portions of said fixed member corresponding to one only of said different positions, means to operate said tuning means to tune said receiver and simultaneously to operate said movable member to align the corresponding portions of said members, and means to project a light beam through said aligned portions.

3. In a radio receiver having a variable tuning element, indicating means comprising a screen having a plurality of portions of relatively small area adapted to transmit a beam of light therethrough, each of said portions representing one only of a plurality of different radio transmitting stations, a second screen movably mounted adjacent said first screen and having a plurality of portions of relatively small area adapted to transmit a beam of light therethrough and corresponding to said portions of said first-named screen, means to operate said variable tuning element and to align each of said portions of said second screen with a different one of said portions of said first screen simultaneously, and means to project a light beam through said aligned portions.

4. In a radio receiver having a variable tuning element, means to indicate visually the tuning of said receiver to a plurality of transmitting stations comprising a screen having a plurality of perforations each corresponding to one only of a plurality of different transmitting stations, a source of light, a second screen movably mounted between said first-named screen and said light source and having a plurality of perforations each corresponding to a different one of said first-named perforations, and means to move said movable screen in accordance with the movement of said tuning element to align the corresponding perforations of said screens and to cause a beam of light from said source to be transmitted through said aligned perforations.

5. In a radio receiving system including a variable tuning element, means to indicate visually the tuning of said receiver to a plurality of transmitting stations of different frequencies comprising a screen provided with a plurality of perforations each corresponding to one only of said transmitting stations, a source of light, a second screen mounted between said first-named screen and said source of light, said movable screen being adapted to be moved in accordance with the movement of said tuning element and to be perforated at points on said movable screen in alignment with said perforations of said first-named screen to cause a light beam to be transmitted from said light source through said aligned perforations.

6. In a radio receiver having a variable tuning element, indicating means comprising a map representing a locality having a plurality of transmitting stations, said map having a plurality of portions of relatively small area adapted to transmit a beam of light therethrough, each of said portions representing a different one of said transmitting stations, a screen movably mounted adjacent said map and having a plurality of portions of relatively small area adapted to transmit a beam of light therethrough and corresponding to said map portions, means to operate said variable tuning element and to align each of said screen portions with a different one of said map portions simul-

taneously, and means to project a light beam through said aligned portions.

7. In a radio receiver having a variable tuning element, means to indicate visually the tuning of said receiver to a plurality of transmitting stations in a given locality comprising a map representing said locality and having a plurality of perforations each corresponding to a different one of said stations, a source of light, a screen movably mounted between said map and said light source and having a plurality of perforations each corresponding to a different one of said map perforations, and means to move said screen in accordance with the movement of said tuning element to align corresponding perforations of said map and said screen and to cause a beam of light from said source to be transmitted through said aligned perforations.

8. In a radio receiving system including a variable tuning element, means to indicate visually the tuning of said receiver to a plurality of transmitting stations of different frequencies and in a given locality comprising a map representing said locality and provided with a plurality of perforations each corresponding to a different one of said stations, a source of light, a screen mounted between said map and said light source, said screen being adapted to be moved in accordance with the movement of said tuning element and to be perforated at points on said screen in alignment with said map perforations to cause a light beam to be transmitted from said light source through said aligned perforations.

In witness whereof I have hereunto set my hand.

GLENN W. CARPENTER.