

Nov. 6, 1945.

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MEANS FOR THE AUTOMATIC TUNING-IN OF WIRELESS RECEIVING
SETS TO DESIRED BROADCASTING STATIONS
Filed May 18, 1938

2,388,581

2 Sheets-Sheet 1

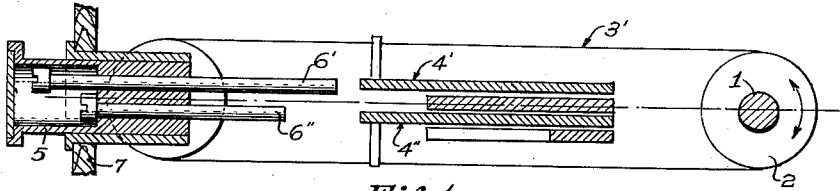


Fig. 1

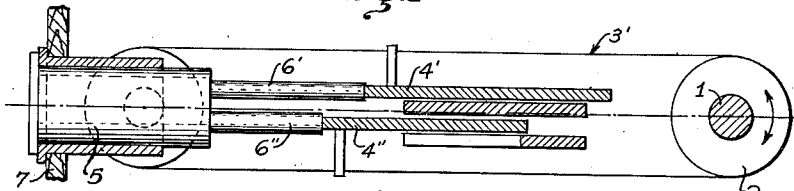


Fig. 2

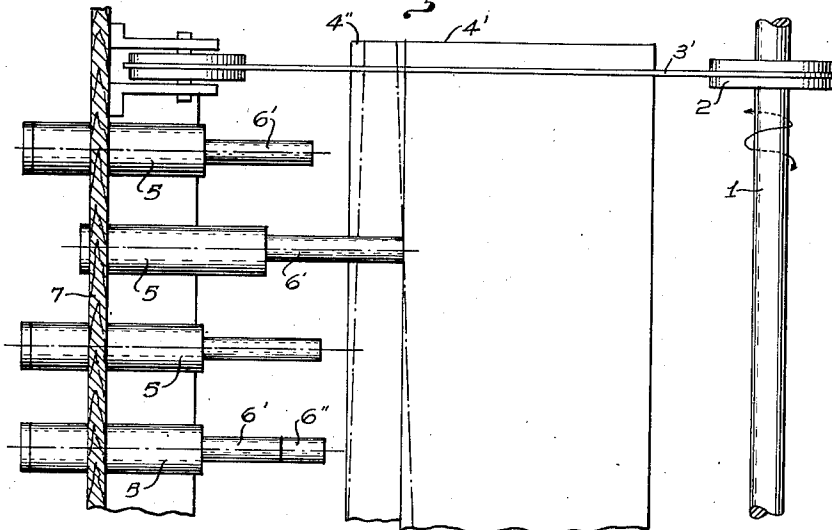


Fig. 3

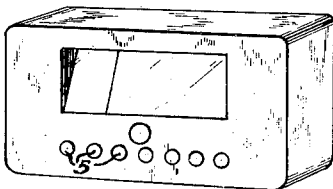


Fig. 4

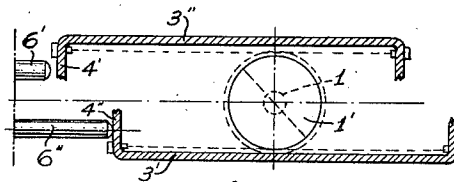


Fig. 5

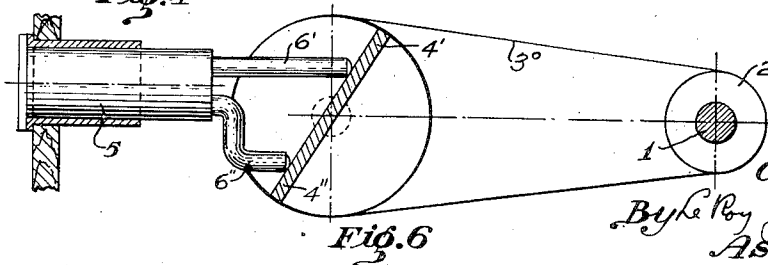


Fig. 6

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2 Sheets-Sheet 2

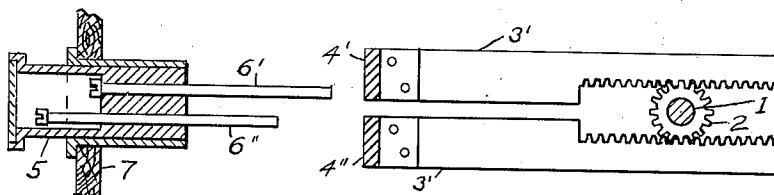


Fig. 7

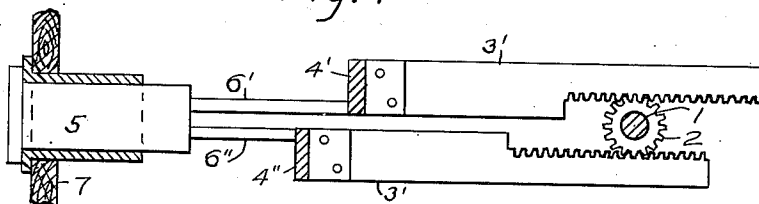


Fig. 8

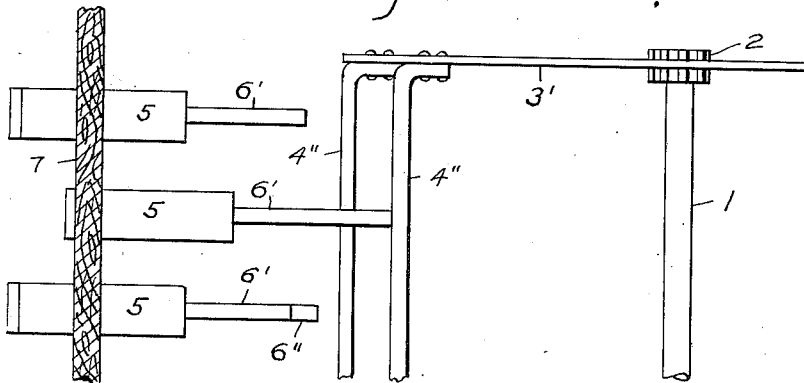


Fig. 9

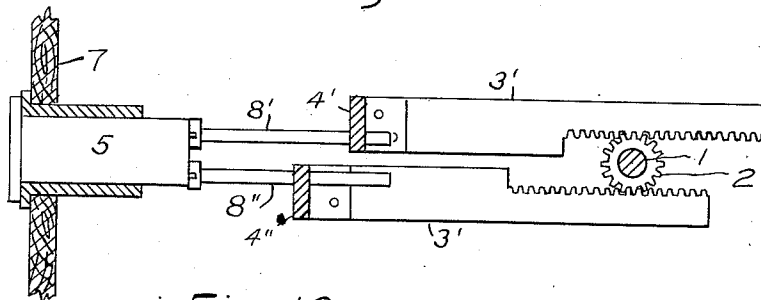


Fig. 10

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UNITED STATES PATENT OFFICE

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MEANS FOR THE AUTOMATIC TUNING-IN OF
WIRELESS RECEIVING SETS TO DESIRED
BROADCASTING STATIONS

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Application May 18, 1938, Serial No. 208,705
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8 Claims. (Cl. 74-10)

The present invention relates to means for automatic tuning-in of a wireless receiving set to given broadcasting stations.

In accordance with the present invention we provide means for automatically tuning-in wireless receiving apparatus to given broadcasting stations comprising a plurality of keys or like actuating elements each having at least one distance piece or the like, for example a tappet, thereon, which when actuated moves the tuning-in mechanism to a predetermined position corresponding to said key and to a given broadcasting station. Preferably each key or the like carries two tappets or the like whose operating ends are set at predetermined (but possibly adjustable) positions and are adapted together to govern movement of the tuning-in mechanism to the predetermined position by engagement with parts connected to said mechanism.

As a result it is only necessary to press any one of the keys in order to tune in to the required broadcasting station.

Regulation of the position of the tappets is a simple matter and it is easy to change at will the station corresponding to each key.

Embodiments of the invention are illustrated in the attached drawings, purely by way of example, and thereon:

Fig. 1 is a schematic vertical section of the apparatus, in the inoperative position.

Fig. 2 is a similar view, but in the operative position.

Fig. 3 is a plan view of Fig. 2.

Fig. 4 shows a wireless receiving set fitted with the apparatus according to the invention.

Figs. 5 and 6 show two modifications.

Fig. 7 is a schematic vertical section of a variant using racks and pinions instead of belts and pulleys and shows the apparatus in the inoperative position.

Fig. 8 is a similar view to that of Fig. 7, but in the operative position.

Fig. 9 is a plan view of Fig. 8.

Fig. 10 is a schematic vertical section of a variant in which the adjustable tappets are carried by the translationally positionable instrumentalities instead of by the manually movable operating means as in the embodiments illustrated in the preceding figures.

The general electrical arrangement of the receiving set does not need alteration of any kind.

Numerals 1 indicates a spindle which actuates the tuning-in mechanism of the receiving set; this spindle may be provided with ordinarily used means of manipulation. This spindle is provided with a pair of pulleys 2, keyed-on, connected by means of cables 3', bands, or other equivalent

means, to two plates 4', 4'' in such a way that the angular movements of the spindle 1 (and consequently of the tuning-in mechanism) are identical with the movements, equal and opposite, of the edges of the plates, 4', 4''.

In the wall 7 of the receiver cabinet, or else on the chassis of the set, are situated keys 5, forming together a keyboard, each key of which is fitted with two adjustable tappet rods 6'-6''. Each of these tappet rods lies in the same plane as one of the plates 4, but their distances from the edges of the plates 4', 4'' are such that the latter can move freely without touching them. The tuning-in mechanism is therefore free to act under the action of the usual means of control (revolving knobs and the like).

When one of the keys 5 is pressed the tappets 6'-6'' approach the plates 4'-4'' until one of them (for instance the one marked 6') meets the edge of one of the plates, for example 4', and pushes it towards the pulley 2. The plate 4'' being connected to the cable 2' moves in a reverse direction until it encounters the tappet 6''. The system then comes to rest in a definite position, which is a function of the difference in the projecting length between the tappets 6'-6''. The position taken up by the apparatus manifestly produces a definite position of the tuning-in mechanism which is rigidly connected to the spindle 1, and in consequence the set is tuned-in to the broadcasting station corresponding to such position. It follows that each key, when merely pressed, gives immediate tuning-in to a given station, and that such station can be changed when desired merely by adjusting the difference in length between the two tappets of the key.

The unvarying connection between the spindle 1 and the plates 4', 4'' can be effected also through other forms of construction, for example as shown in Fig. 5 the spindle 1 is enlarged until it assumes the dimensions of a cylinder 1' above and below which move the two plates 4' and 4'', connected to the cylinder through two pairs of cables 3', 3'' wrapped around the cylinder itself and the ends of which are fastened to the plates.

In Fig. 6, there is only one plate 4 which is mounted so as to oscillate, throttle-fashion, in such a way that the tappets 6'-6'' work directly against its edges 4'-4''. The oscillation of this plate, and its more or less inclined position due to the greater or lesser difference in length between the two tappets 6'-6'', produces the movement of the tuning-in mechanism either directly or by gearing up through a cable 3' substantially similar to the cables 3', 3'' of the preceding examples.

The rotation of the spindle 1 through the

movement of the plates or plate 4, can also be realised by means of any other known kinematic system, such as, for instance, a rack. Similarly the plates 4 can be replaced by other equivalent members such as rods, or the like, capable of performing the same functions. Their edges 4'-4'', instead of being parallel in their alignment, may be divergent as indicated in Fig. 3, so as to add their varying distances from each other to the differences in length between the tappets 6'-6''. These straight or oblique edges can be fitted with adjustable tappets 8'-8'' to aid or replace the tappets 6'-6'', as illustrated in Fig. 10.

The elements termed plates or plate edges herein can be replaced by any other device, slide, bar, rod, or the like which may be capable of performing the same function.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. A device for controlling the tuning-in mechanism of a radio-receiving set having an angularly movable element, comprising a push button arranged to move in a straight line, two tappet members secured to the push button, at least one of the tappet members being adjustable in length independently of the other, and two mobile members moving simultaneously in opposite directions and positively connected to the element the angular position of which is to be varied, the two tappet members abutting against the two mobile members respectively.

2. A device for controlling the tuning-in mechanism of a radio-receiving set having an angularly movable element, comprising a push button arranged to move in a straight line, a cylindrical element rigidly connected to the member whose angular position is to be varied and moving therewith, two plate-like members one above and the other below and movable linearly transverse to the axis of the cylindrical element, flexible belts passing around the cylindrical element and secured at their respective ends to the plate-like members, and two independently adjustable tappet members secured to the push button and each abutting respectively against the ends of the plate-like members.

3. In a mechanism for operating the control shaft of a radio tuning apparatus, a combination including: a rotatable positionable member; a translationally movable positioning device comprising adjustable position-determining means; and motion-transmitting means interposed between said adjustable position-determining means and said member for transmitting motion in either direction from the former to the latter, said motion-transmitting means comprising an effectively continuous flexible means passing around said member and at least operatively connected thereto for converting the translational movement of the positioning device into rotary motion, said motion-transmitting means also comprising means for positively transmitting motion of said adjustable position-determining means to said flexible means upon operation of said device in one direction.

4. In a mechanism for operating a control element of a resonance-varying instrument, a combination including: a rotatable shaft; a pair of spaced pinion gears attached to said shaft; a pair of reciprocally movable instrumentalities disposed on opposite sides of said shaft and each comprising an abutment disposed substantially

parallel to said shaft and a pair of racks each meshing with one of said gears; and a plurality of means each comprising a translationally movable device to operate said instrumentalities, said member being provided with adjustable means for engaging the abutment of either of said instrumentalities upon operation of said device to rotate said gears and shaft to an angular position in which the abutment of the other instrumentality engages said adjustable means; said angular position variable with the adjustment of said latter means.

5. In a mechanism for operating the control element of a radio tuning apparatus, a combination including: a rotatable shaft; a pair of rectilinearly movable instrumentalities having a positive driving connection with said shaft to assure simultaneous movement of said instrumentalities in opposite directions; and a plurality of translationally movable devices each comprising adjustable means having two contact portions each adapted to engage one of said instrumentalities upon operation of said device in one direction and thereby to move said instrumentalities and shaft to a position determined by the adjustment of said means and in which the other instrumentality engages the other contact portion of said means.

6. A mechanism for operating the control element of a radio tuning apparatus, including: positionable means comprising a pair of oppositely and simultaneously movable contact portions positively connected to said element; and a rectilinearly movable operating device carrying a pair of independently translationally adjustable tappet members for engaging said portions successively and moving said control element upon operation of said device to a position predetermined by the adjustment of said tappet members.

7. In a mechanism for operating the control element of a radio tuning apparatus, a combination including: a rotatable shaft; a pair of rectilinearly movable instrumentalities having a positive driving connection with said shaft to assure simultaneous movement of said instrumentalities in opposite directions; a plurality of translationally movable operating means; and a plurality of adjustable positioning determining means each interposed between one of said operating means and said pair of rectilinearly movable instrumentalities for determining the position to which said instrumentalities and shaft will be moved upon operation of the associated operating means in one direction.

8. In a mechanism for operating the control element of a radio tuning apparatus, a combination including: a rotatable shaft; a plurality of translationally movable operating means; and a pair of rectilinearly movable instrumentalities having a positive driving connection with said shaft to assure simultaneous movement of said instrumentalities in opposite directions, each of said instrumentalities comprising a plurality of adjustable tappet members each individual to one of said translationally movable operating means, each adjustable tappet member acting in conjunction with the associated operating means and with the corresponding tappet member of the other instrumentality to determine the position to which said instrumentalities and shaft will be moved upon operation of said associated operating means.

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