

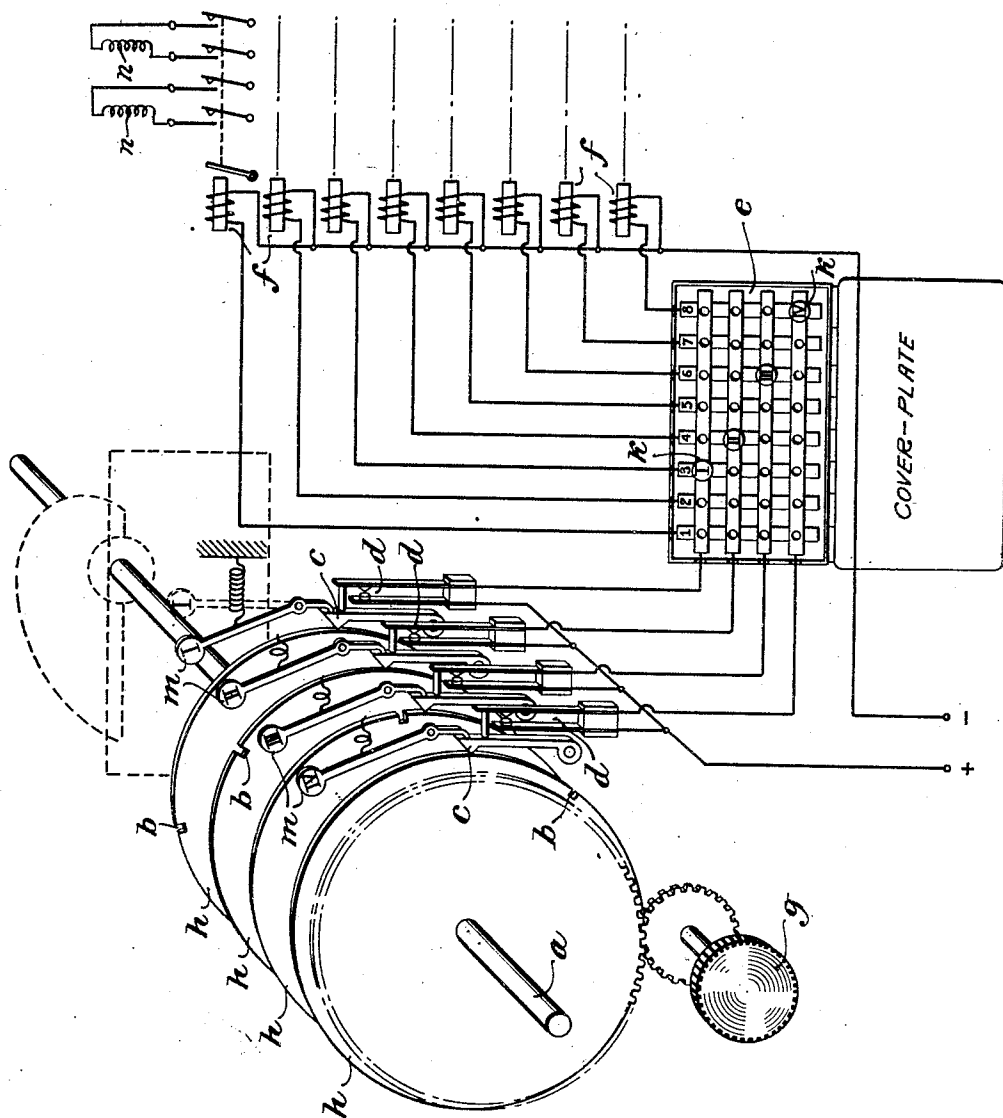
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TUNING MECHANISM FOR MULTIBAND RECEIVERS

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TUNING MECHANISM FOR MULTIBAND
RECEIVERS

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The present invention relates to a switch de-
vice with arrester or detent points adapted to an
apparatus in which an unbroken adjustment
range is subdivided into several continuous
ranges or bands being separated from one an-
other by switch steps. Although the basic idea
of the invention is generally applicable to the
said purpose, it shall here be described, with a
view to simplification of representation, to a
special instance, that is, the tuning in arrester
positions of an RF receiver apparatus comprising
several wave-bands.

Arrangements of this nature are known in the
prior art which work in such a way that inside
a single wave band of an RF receiver apparatus,
by the actuation of a single switch, it is possible
to change directly from one signal frequency to
a second or a third frequency. These systems
known in the earlier art which work with me-
chanical arrester means are useful only for a
single wave-band. When it is desired to dis-
tribute the various arrester positions over several
wave bands it is necessary to effect a change in
the wave band together with the change-over of
the various arrester points. For this purpose an
assembly adapted to arrester switching in an RF
receiver set operating with press-button control
is known in the art in which, apart from the
switching in of a circuit designed to cut in cir-
cuit the motor to drive the rotary condenser
(which works through the intermediary of a ro-
tary contact arrangement) switching over to the
wave-band in which the desired signal wave is
included to which the receiver set is to be ad-
justed automatically is effected simultaneously
with the actuation of the press-button.

However, this known arrangement no longer
satisfies practical requirements whenever the
various arrester points are to be distributed at
will and in any desired order or sequence over
the various receiving bands.

Now, the object of the invention is an arrester
switch device in which it is readily possible to
effect such exchange of the various arresters in
any desired way at all. The basic idea of the
arrangement of this invention is for switching
in the proper wave band by positive action con-
jointly with arrester adjustment, a distributor ar-
rangement consisting of two busbar systems or
equivalent means are provided, the bars of one
of these systems being connected with one of
the contact arrangements operated by the various
arrester adjusting means, while the bars of the
other systems are connected with means causative
of band changing.

The number of the bars forming one of the
said systems is suitably chosen the same as the
number of arresters to be adjusted, while the
number of the bars of the other system must be
adapted to the number of adjustment ranges or
bands that are provided. Moreover, the bars of
the two systems must be so mounted in relation
to one another that each bar pertaining to one
system is adapted to be electrically connected
with each bar of the other system, say, by plugs.

The idea underlying the invention shall now be
described in more detail by reference to the ap-
pended drawing which shows an exemplified em-
bodiment of the invention. The assumption is
made that in this embodiment the rotary con-
denser included in the signal receiving circuit
is seated upon the shaft *a* which by the aid of a
knob *g* may be driven at a suitable step-down
ratio. Moreover mounted on the said shaft *a* are
disks *h*, the number thereof corresponding to
the number of arrester points that are required.
Each of the said disks has a notch *b* in which
latches or pawls *c* may engage as the disk is ro-
tated. Posteriorly of each of these latch mem-
bers *c* is arranged a plug which controls a con-
tact device *d* in such a way that the contacts *d*
are closed as soon as the latch *c* has engaged its
corresponding notch *b* of disk *h*. Now, the vari-
ous contacts are in parallel connection to a dis-
tributor assembly *e* comprising two busbar sys-
tems. Both of the latter are disposed at right
angles to each other and they are confined inside
a lockable case. While the bars of one of the
said systems are each united with the corre-
sponding contacts *d*, the bars of the respective
other system are brought to solenoids *f*. The
number of the latter corresponds to the number
of wave bands provided in the receiver set. As
known in the art, each of the said windings when
energized cuts in circuit one or more coils *n*, de-
pending upon the number of tuned circuits pro-
vided in the receiver, each set of such coils being
designed to tune the receiver to a different wave-
band.

Now, the bars of the two busbar systems are
disposed in superposed relation such that each
bar belonging to one of the systems may be con-
ductively connected with any one of the bars of
the other system. For this purpose are provided
a number of plugs *k* adapted to be inserted in
openings corresponding thereto. With a given
arrester being operated, to ascertain which one
is involved, annunciator means *m* are provided
which are automatically actuated by the particu-
lar arrester latch which is operated.

Now, the operation of the arrangement according to the invention is as follows: By turning the knob *g* the rotary condenser is rotated together with the disks *h* mounted upon the shaft *a*. Upon a latch *c* coming to engage with a notch *b* formed in one of the disks *h* there appears the corresponding annunciator or indicator element *m* which indicates engagement of a particular arrester. However, in addition the pair of contacts *d* disposed posteriorly of the latch or pawl *c* is closed so that by way of the busbar system *e* a current is made, that is to say, this current will be caused to flow through the plug *k* which happens to be inserted and the solenoid *f* which corresponds thereto. By turning of the knob *g*, as will thus be seen, the rotary condenser seated on the shaft *a* is caused to assume an arrester position, while in addition as a result of energization of the corresponding solenoid the wave band is automatically switched in, in which the selected arrester position happens to be included.

Coordination of the arresters and the wave bands is effected solely by the introduction of plugs in corresponding holes of the distributor system *e*, the latter being closed after an adjustment has been made. It is thus feasible to coordinate to the various arrester positions waves pertaining to any desired wave band on the basis of random exchangeability.

Another advantage of the invention resides in its greater speed of adjustment or tuning of a receiver set thus operated for the reason that the distinct knob usually provided for the wave band change is dispensed with and since hunting through all of the bands is no longer required.

I claim:

1. In a multi-band receiver, a variable tuning reactor, a plurality of fixed reactors each corresponding to one of a plurality of wave bands to which the receiver is adapted to respond, means for adjusting the tuning reactor, a plurality of discs, each having a peripheral notch, movable with and under control of said adjusting means, separate means cooperating with said discs and adapted to engage the peripheral notches for arresting said tuning reactor at predetermined positions, and means including switch means actuated by the arrester means at said predetermined positions to select a predetermined one of the fixed reactors.

2. In a multi-band receiver, the invention as

defined in claim 1, wherein the tuning reactor arresting means have associated therewith mechanism for visually indicating the particular wave band in operation.

3. In a multi-band receiver, a variable tuning reactor, a plurality of fixed reactors each corresponding to one of a plurality of wave bands to which the receiver is adapted to respond, means for adjusting the tuning reactor, a plurality of members under control of said adjusting means each adapted to arrest said tuning reactor at one of a plurality of predetermined positions, a switch associated with each arresting member, a first set of bus-bars equal to the number of switches connected respectively to a contact of said switches, a second set of bus-bars equal to the number of fixed reactors connected respectively to corresponding terminals of a set of reactor relays, said sets of bus-bars being so constructed and arranged that by means of contactors selected ones of the first set and selected ones of the second set are electrically connected together, and a source of power connected between the other switch contacts and the other relay terminals, the arrangement being such that at any arrested position of adjustment of the variable tuning reactor, the associated switch is closed to complete a circuit through a pair of bus-bars, one in each set, thereby energizing the appropriate reactor relay.

4. In a multi-band receiver in accordance with the invention defined in claim 3, wherein the tuning reactor arresting members comprise a plurality of discs, each having a peripheral notch and each switch associated with an arresting member is provided with means to engage said notch whereby the tuning reactor is stopped at a predetermined position.

5. In a multi-band receiver in accordance with the invention defined in claim 3, wherein the tuning reactor arresting members comprise a plurality of discs, each having a peripheral notch and each switch associated with an arresting member is provided with means to engage said notch whereby the tuning reactor is stopped at a predetermined position, and mechanism associated with the notch engaging means for visually indicating the particular wave band in operation.

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