

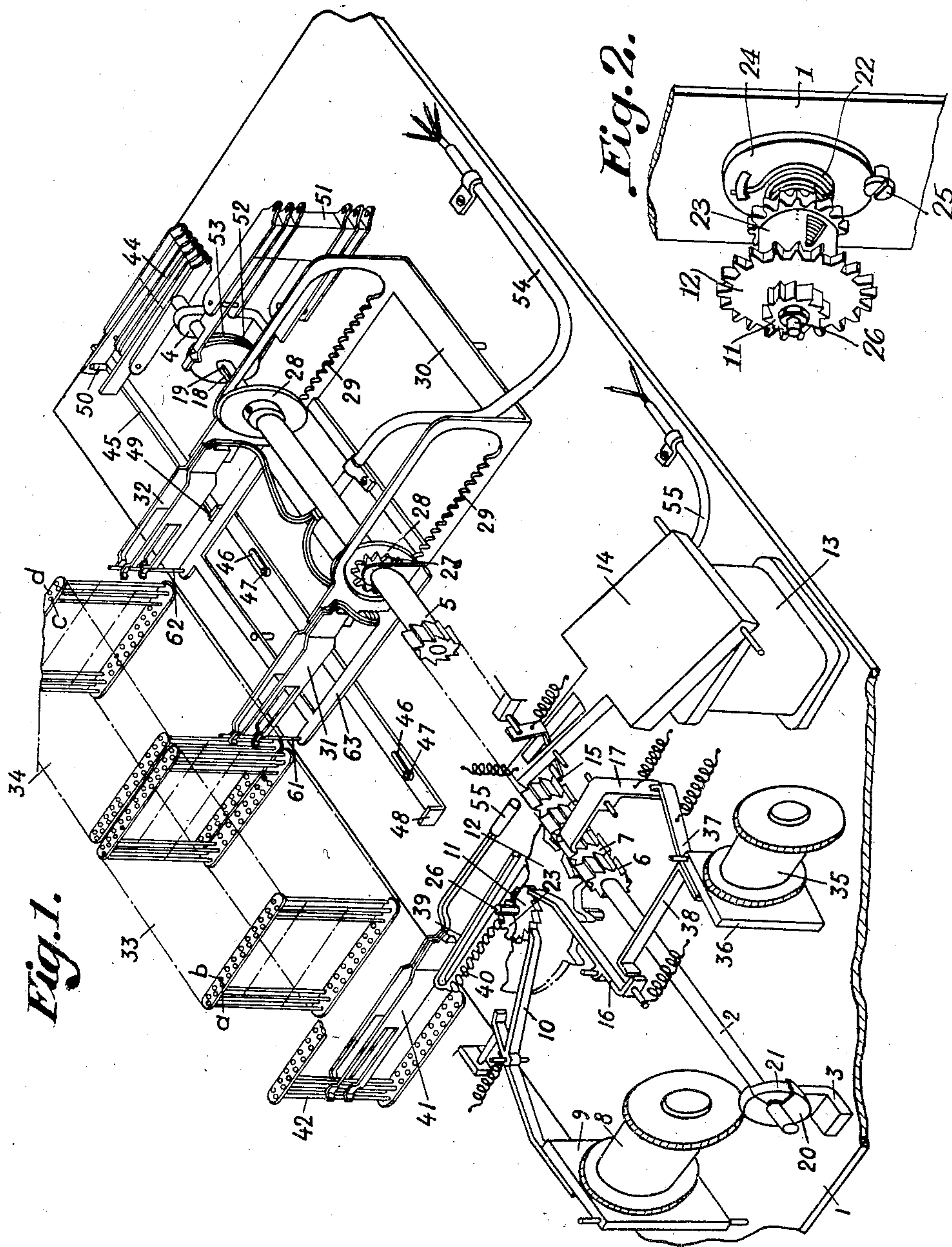
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SELECTOR

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SELECTOR

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My invention relates to selectors for automatic telephone systems or the like. In such selectors each group or frame in the selector multiple is usually provided with a separate conductor for marking the group hunted for. Said arrangement involves certain inconveniences consisting, for instance, therein that the wipers of the selector, when hunting for a certain conductor in the multiple, must be advanced an extra step before the subscriber's multiple proper can be reached. The invention has for its object to eliminate said inconveniences and consists substantially therein that the driving mechanism for effecting the first setting movement is in such a driving connection with a further set of wipers adapted to be set in one direction, that during the first setting movement of the selector the latter wiper set moves over a bank of contacts associated therewith. Since the conductors provided for hunting up the desired group are brought together to form a special group multiple, the latter can be made in the same manner as the subscriber's multiples or frames, thereby simplifying the manufacture. The wipers for the group multiple are of the same construction as the wipers for the subscriber's or line multiple.

The invention will now be described more in detail with reference to the accompanying drawing which illustrates the invention as applied in a selector having movements in two directions which are perpendicular to each other, and in which the subscriber's multiple consists of blank wires.

Fig. 1 is a perspective view showing an embodiment of the invention in axially set position. Fig. 2 is a detail of the arrangement according to Fig. 1.

Referring to the drawing, the reference numeral 1 designates a base plate on which a shaft 2 is journaled in bearing brackets 3 and 4. The shaft 2 serves as an axial slide for a tube 5 thread thereonto, said tube being provided at one end with axially extending teeth 6 provided with transverse slots forming peripheral teeth 7.

The tube 5 is axially displaceable under control of an electromagnet 8 having an armature 9 connected with a driving pawl 10 which upon energization of the magnet rotates a stepping wheel 11 and a gear wheel 12 coupled therewith, said latter wheel being in engagement with the transverse slots or teeth 7 of the tube 5.

The tube 5 is rotatable under control of an electromagnet 13 the armature 14 of which, on energization of the magnet, engages the teeth 6 by means of a driving pawl 15 so as to rotate the

tube. When the magnets 9 and 13 are deenergized the driving pawls 10 and 15 are in known manner drawn out of engagement with the stepping wheel 11 and the teeth 6 respectively. For retaining the tube 5 in the set axial position and in the set rotary position there are provided spring actuated holding detents 16 and 17 which engage the stepping wheel 11 and the teeth 6 respectively. Secured to the tube 5 is a coupling pin 18 which engages in an axial slot 19 on the shaft 2, so that the shaft will always follow the tube 5 during the rotary movement of the latter. On one of the bearing brackets 3 is arranged a spring housing 20 for a spiral spring 21 which at one end is secured to the spring housing and at the other end to the shaft 2. The spring 21 is tensioned when the electromagnet 13 rotates the tube 5 by means of the teeth 6.

Under the gear wheel 12 (see Figure 2) is arranged a gear wheel 23 provided with a seat for a helical spring 22. The function of the gear wheel 23 will be explained below. The stepping wheel 11 forms together with the gear wheels 12 and 23 a unit in which one end of the spring 22 is secured. The other end of the spring 22 is secured in an adjusting washer 24 which by means of a screw 25 can be locked in any desired position after the spring has been tensioned. The unit 11, 12, 23 is journaled on a pivot 26 secured to the base plate 1.

At the end remote from the teeth 6 the tube 5 is provided with gear wheels 27 fixed onto hubs 28 which are rigidly secured on the tube 5 and act as coupling members for the wiper mountings or holders causing the latter to always follow the tube 5 during the axial displacement of the latter. The gear wheels 27 are in engagement with teeth 29 on the wiper holder 30 which carries two pairs of wipers 31, 32 for making contacts with certain conductors in a multiple 33, 34. For restoring the wipers 31, 32 after displacement in an axial and in a radial direction in respect to the shaft 2 there is provided an electromagnet 35 the armature 36 of which, on energization of the electromagnet, actuates the detents 16 and 17 respectively by means of arms 37 and 38 so that said detents are moved out of engagement with the teeth 6 and the stepping wheel 11 respectively. The shaft 2 is then initially turned back by the spring 21, the tube 5 being then rotated restoring the wiper holder 30 together with the wipers 31, 32 the latter breaking the contacts with the wires of the multiple, whereupon the spring 22, see Fig. 2, turns back the gear wheel 12 which then moves the tube 5

axially on the shaft 2 back to its original position, whereby the wiper mounting and the wipers are brought back to their starting positions.

5 After they have left the multiple the wipers 31, 32 in each pair are held apart by insulated pins 61, 62 supported by a light holder 63 which is journaled on the tube 5 and follows the axial movement of the latter only.

10 On the base plate 1 there is displaceably arranged a wiper holder 39 provided with a rack 40 which is in engagement with the gear wheel 23. The wiper holder 39 carries a pair of wipers 41 which cooperate with a group of contacts 42. Evidently said wiper holder moves only when the electromagnet 8 operates for effecting an axial displacement of the wiper holder 30 and when the tube 5 is restored axially, and consequently it serves to hunt for the wire or wires in the group of contacts 42 which correspond to a certain group of lines in the multiple proper.

For controlling the starting positions and the extreme positions in both directions of selector movement there are provided a number of switches for the electrical connections. One switch 44 is actuable by a bar 45 provided with an elongated slot 46 through which a screw 47 is screwed into the base plate 1 so that the bar can move axially. Said bar is provided with a pair of turned-up portions 48, 49 positioned in the path of movement of the holder 63 and actuated by the latter during its axial movement. There is also provided on the bar 45 an insulated pin 50 which on axial movement of the bar actuates the contact springs in the switch 44 for changing the circuits.

Reference numeral 51 designates a switch which is also divided into two groups, one for the initial part of the rotary movement of the shaft 2 and one for the final movement thereof. On the shaft 2 are positioned two insulating washers 52 and 53 which are adjustable individually so that they can be adjusted to actuate the appertaining contact spring group at the right moment.

45 For the operation of automatic switching members of the above indicated kind there are required, as is well known, a number of relays the circuits of which can be connected to the driving magnets or restoring magnets respectively of the selector in a number of different ways depending upon the particular duty of the selector in the automatic switching system.

For effecting the connections to the pair of wipers 31, 32 there is provided a cord 54 having four insulated conductors which follow the wiper holder 30 both during its axial and radial movements.

60 For connecting to the pair of wipers 41 there is provided a cord 55 having two insulated conductors which follow the wiper holder 39 during the ingoing and outgoing movements of the latter.

In the drawing the multiple 33, 34 is shown as a 4-wire multiple but it can, of course, be built both with a greater and with a smaller number of conductors. The group 33 contains 100 a-wires and 100 b-wires for talking connections, and the group 34 contains the same number of testing and call metering wires, in this specification called c- and d-wires. The wires of the multiple are held together by insulating disks, 22 wires being provided in each layer. Such a layer contains 10 a- and b-lines or 10 c- and d-lines. The two remaining wires in each layer are usually used for markings of various kinds.

It is of course also possible to displace the wiper holder 39 in the direction of the first setting movement of the rod 5. In this case, however, the distance between the wires of the group multiple must be equal to the distance between the rows of wires in the subscriber's multiples.

In case, as shown on the drawing, the wiper holder carries pairs of wipers which are to be connected simultaneously each to a blank conductor in the multiple, the wipers are so arranged that in each contact position they embrace two wires which are positioned side by side.

Except for the contact surfaces the wipers are cast into an elastic insulating mass.

In the drawing I have illustrated only one embodiment of the invention but I do not, of course, wish to be limited to the construction shown but all such changes and modifications are contemplated as come within the scope of the claims appended hereto.

I claim:

1. A selector arrangement comprising a set of stationary contacts, a movable set of wipers cooperating with said stationary contacts and capable of performing setting movements in two perpendicular directions, a driving mechanism for effecting the first setting movement, a further set of wipers arranged in driving connection with said driving mechanism, said further set of wipers being adapted during the first setting movement of the first mentioned set of wipers to be set over a further set of stationary contacts associated therewith in a direction substantially coinciding with the direction of the second setting movement of the first mentioned movable set of wipers.

2. A selector arrangement comprising a bank of contacts, a movable set of wipers cooperating with said bank of contacts and capable of performing setting movements in two perpendicular directions, a driving mechanism for effecting the first setting movement, a further set of wipers arranged in driving connection with said driving mechanism, said further set of wipers being adapted during the first setting movement of the first mentioned set of wipers to be set over a further bank of contacts associated therewith in a direction substantially coinciding with the direction of the second setting movement of the first mentioned movable set of wipers, said last mentioned bank of contacts being designed in the same manner as the first mentioned bank of contacts.

3. A selector arrangement comprising a bank of contacts, a movable set of wipers cooperating with said bank of contacts and capable of performing setting movements in two perpendicular directions, a driving mechanism for effecting the first setting movement, a further set of wipers arranged in driving connection with said driving mechanism, said further set of wipers being adapted during the first setting movement of the first mentioned set of wipers to be set over a further bank of contacts associated therewith in a direction substantially coinciding with the direction of the second setting movement of the first mentioned movable set of wipers, said last mentioned bank of contacts having a distance between its contacts equal to the distance between the contacts in the first mentioned bank of contacts.

4. A selector arrangement comprising a set of stationary contacts consisting of blank wires, a movable set of wipers cooperating with said stationary contacts and capable of performing setting movements in two perpendicular directions,

a driving mechanism for effecting the first setting movement, a further set of wipers arranged in driving connection with said driving mechanism, said further set of wipers being adapted during the first setting movement of the first mentioned set of wipers to be set over a further set of stationary contacts consisting of blank wires associated therewith in a direction substantially coinciding with the direction of the second setting movement of the first mentioned movable set of wipers.

5. A selector arrangement comprising a set of stationary contacts, a movable set of wipers cooperating with said stationary contacts and capable of performing setting movements in two perpendicular directions, a tube or rod designed as a rack and supporting a wiper holder which carries said set of wipers, said tube being capable of performing axial displacement, a driving gear wheel cooperating with said rod performing said axial displacement, a further wiper holder formed as a rack for a further set of wipers cooperating with a further set of stationary contacts, a

further gear wheel which is co-axial with and rigidly connected to the first mentioned driving gear wheel and adapted to drive said wiper holder.

6. An arrangement for step by step driven selectors comprising a bank of contacts, a movable set of wipers cooperating with said contacts and capable of performing setting movements in two perpendicular directions, a tube or rod designed as a rack and supporting a wiper holder which carries said set of wipers, said tube being capable of performing axial displacement, a stepping mechanism for effecting said axial displacement of said tube or rod, a further set of wipers being adapted during the first setting movements of the first mentioned set of wipers to be set over a bank of contacts associated therewith in a direction which substantially coincides with the direction of the second setting movement of the first mentioned movable set of wipers, said stepping mechanism also effecting the advance of said further set of wipers.

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