April 14, 1925. 1,533,188

A. D. HARGAN

AUTOMATIC SWITCHING DEVICE

Filed Oct. 8, 1921

Fig. 1.

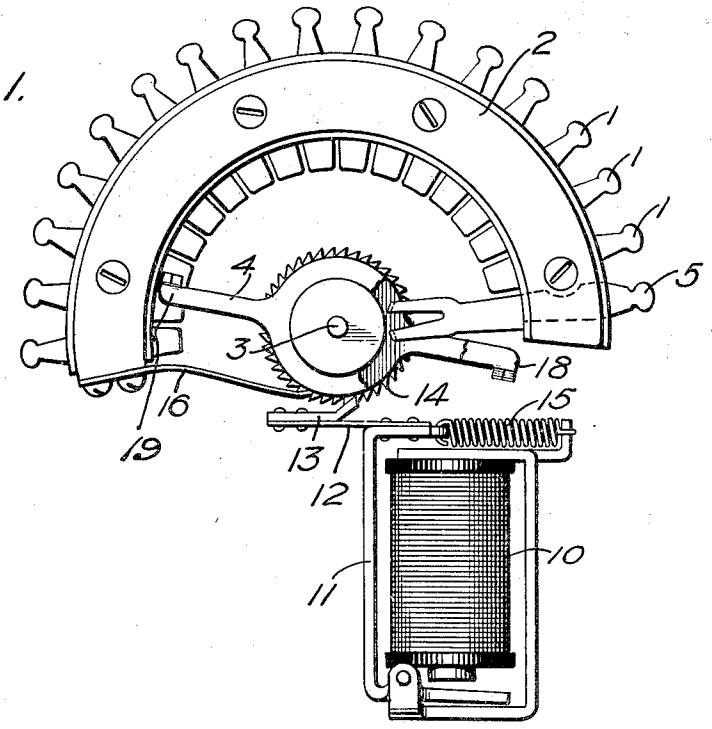
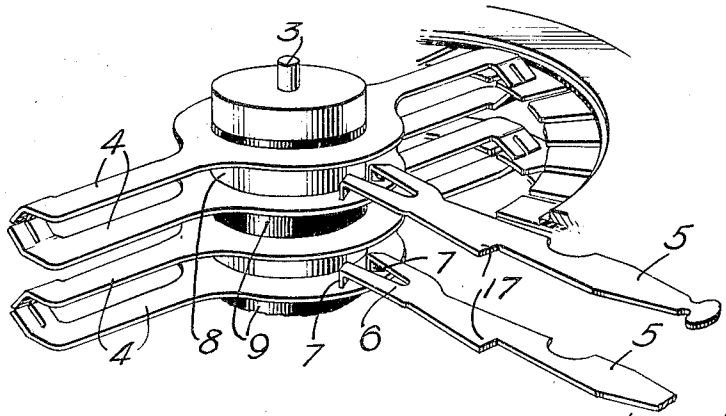


Fig. 2.



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UNITED STATES PATENT OFFICE.

AUGUSTUS D. HARGAN, OF BAYONNE, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

AUTOMATIC SWITCHING DEVICE.

Application filed October 8, 1921. Serial No. 506,315.

To all whom it may concern:

Be it known that I, AUGUSTUS D. HARGAN, a citizen of the United States, residing at Bayonne, in the county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Automatic Switching Devices, of which the following is a full, clear, concise, and exact description.

This invention relates to telephony, and particularly to automatic switching devices, for example rotary stepping switches having feeder brushes, the objects being to improve the form of the feeder brushes whereby a positive connection is established and maintained therethrough, wear is reduced to a minimum, and the operating load on the motor magnet is rendered continuously uniform.

A feature of the invention is a bifurcated feeder brush having turned down end portions whereby a positive connection is established and maintained, this brush being so designed at the point where it emerges from the contact bank that the associated switch brush will mount it at a different point in its travel than where it mounts the oppositely positioned switch contact.

In the drawings Fig. 1 shows a top view of a switch bank with one of the rotor brushes cut away to illustrate the manner in which the feeder brush makes contact with the hub of the rotor brushes. A stepping magnet with its pawl and cooperating ratchet associated with the brushes are shown. Fig. 2 is a perspective view showing the assembly of the rotor brush spindle and the manner in which the feeder brushes are mounted.

The organization of the stepping switch comprises a bank of contacts 1 secured in a frame 2. Centrally disposed to the bank of contacts is a spindle 3 having mounted on it a number of sets of brushes 4. Mounted in the frame 2 is a feeder brush 5 extending into the field of the rotor brushes. This feeder brush has a bifurcated end 6 with turned down contacting portions 7 at the end of each prong formed at an angle to center line of the brush for the purpose of presenting as wide a contacting surface to the rotor brush as possible and thus avoid cutting a ring in the hub of the rotor brush. These turned down contacting portions rest on the hub of the lower one of the two brushes 4 forming a set. The upper brush 4 is connected to the lower brush 4 by means of a conducting spacer 8 and the first set of brushes 4 is insulated from the second set of brushes 4 by an insulating spacer 9.

The means for rotating the brush comprise a magnet 10 having an armature 11 on which is mounted a spring 12 having a pawl 13 secured thereto. When the magnet 10 is energized, the pawl 13 is propelled to the left and drops into the next tooth of the ratchet 14. Upon the deenergization of the magnet the spring 15 moves the armature 11 back to its normal position and causes the brushes 4 to rotate from one contact to the next. A spring 16 is used as a holding pawl to prevent any backward motion of the brushes 4.

The feeder brush 5 at the point 17 where it emerges from the contact bank is somewhat wider than a contact so that the end 18 of the brush will ride up on the feeder brush before the end 19 rides up on the contact at the opposite end of the bank, thus preventing the spring 15 from being required to overcome a double amount of work at this particular time.

What is claimed is:

1. A stepping switch comprising a bank of passive contacts, a plurality of cooperating brushes, a corresponding plurality of feeder brushes secured in said bank for making continuous contact with said brushes throughout their travel, each said feeder brush being wider than said contacts at the point where it emerges from the said bank, whereby said brushes mount said feeder brushes at a different point in their travel than where they mount said contacts.

2. A stepping switch comprising a bank of contacts disposed over half a circle, a plurality of cooperating brushes, each said brush having two opposed contacting points whereby as one point leaves the last contact of said bank the opposed point mounts the

first contact of said bank, a corresponding plurality of feeder brushes secured in said bank for making continuous contact with said brushes throughout their travel, each said feeder brush being wider than said contacts at the point where it emerges from said bank whereby one contacting point of said brushes mounts said feeder brushes before the opposed contacting point mounts said contacts.

In witness whereof, I hereunto subscribe my name this 6th day of October A. D., 1921.

AUGUSTUS D. HARGAN.