

Aug. 23, 1932.

W. A. KNOOP

1,873,429

ELECTRIC CURRENT DISTRIBUTING DEVICE

Filed April 18, 1931

FIG. 1

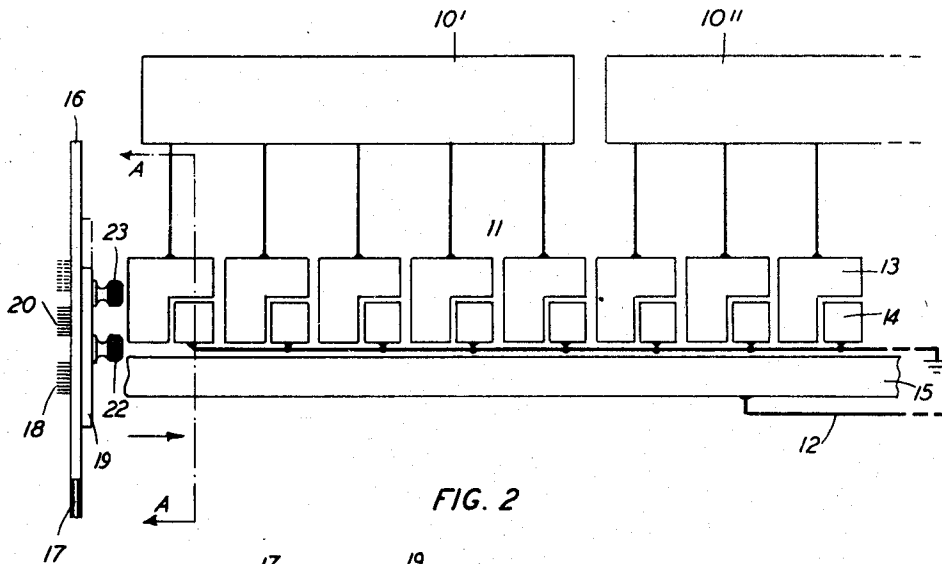


FIG. 2

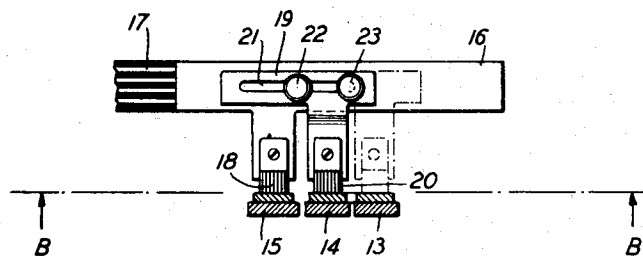
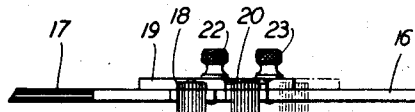


FIG. 3



INVENTOR
W.A.KNOOP
BY *J H Schmier*
ATTORNEY

UNITED STATES PATENT OFFICE

WILLIAM A. KNOOP, OF HEMPSTEAD, NEW YORK, ASSIGNOR TO BELL TELEPHONE LABORATORIES, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

ELECTRIC CURRENT DISTRIBUTING DEVICE

Application filed April 18, 1931. Serial No. 531,105.

This invention relates to impulse distributing devices and more particularly to rotary distributors employed in telegraphic signaling.

5 An object of the invention is to transmit telegraphic impulses over a rotary distributor wherein either a portion or the entire impulse interval, as desired, may be utilized for transmitting signal impulses.

10 The object more specifically stated is to facilitate a change in signal transmission whereby the duration of signal impulses impressed on a transmission line may be changed from a portion to the entire length
15 of the signal impulse interval, or vice versa, without removing or replacing any part of the distributing apparatus.

The rotary distributors are generally designed so that the sending rings thereon are divided into segments arranged for sending
20 100% or 50% marking impulses. The sending rings of the rotary distributor comprise a pair of rings interconnected by a rotary brush, and are ordinarily arranged to connect
25 an impulse transmitting device to a transmission line. One of the rings is divided into segments and the other is continuous. The segments are respectively connected to contacts in the transmitting device in such a
30 manner that impulses produced at the contacts are successively impressed on the line as the brush rotates over the segmented and the continuous rings. When the 100% marking method of transmission is employed the
35 impulses impressed on the line form a continuous marking and spacing signal wave, but when the 50% marking method is employed, the marking and spacing impulses are separated by zero intervals equal in length
40 to the marking and spacing intervals. The 100% marking method requires that all segments be connected to the contacts of the transmitting device, but the 50% method requires that only alternate segments be connected,
45 the other segments being connected to ground. In other words, the segments of a ring arranged for 50% marking are about one-half the angular length of those for a ring of the same diameter arranged for 100%
50 marking, and the active segments, that is

those connected to the transmitter contacts are detachably and insulatively mounted on the ring. Heretofore when it was desired to change the method of transmission from 100% to 50% marking, or vice versa, it was
55 necessary to change either the distributor head or connect the segments in pairs. However, in most cases distributors arranged for 50% marking were furnished, but when 100% marking was desired the segments were connected
60 in pairs, each pair being connected to a contact in the transmitting device, and when 50% marking was desired one segment of each pair was disconnected from the transmitting device and connected to ground.
65

According to the present invention a change from 100% to 50% marking, or vice versa, is expeditiously effected by providing
70 three sending rings, two of which are divided into segments and the other is continuous. The segmented rings are adjacent. The segments of one ring are integrally formed with the ring and are separated by spaces approximately equal to the length of a segment. The
75 segments of the other ring are insulatively mounted and are equal in length to a segment and a space on the ring having the integrally formed segments. Each of the insulatively mounted segments is provided with a projection which extends insulatively between
80 two adjacent segments on the ring having the integrally formed segments. The rotatable brushes are arranged to connect the continuous ring with either of the segmented rings by providing an adjustable arm which
85 may be shortened or lengthened, as desired.

An embodiment of the invention will now be described in detail and with reference to the drawing, of which:

Fig. 1 illustrates a fragmentary view of the face of the sending rings of a rotary distributor designed in accordance with the present invention;

Fig. 2 shows a front view of the adjustable brush arm adapted for the distributor
95 shown in Fig. 1; and

Fig. 3 shows a bottom view of the brush arm of Fig. 2.

Referring to Fig. 1, transmitting devices 10', 10'', etc. are shown connected over rotary 100

distributor 11 to transmission line 12. The transmitting devices shown are of the type adapted to operate with the five-unit code, although it is to be understood that the invention is not restricted to this particular type. Rotary distributor 11 comprises segmented rings 13 and 14, continuous ring 15 and the brush supporting arm 16. The distributor rings are concentrically arranged with respect to each other on the distributor head and are shown developed, in part only, for the purpose of illustration. Ring 14 is divided into segments of equal angular length integrally formed with the ring, which are separated by spaces of the same length, the segments being connected to ground.

Ring 13 is also divided into segments of equal length, but separated by spaces of just sufficient length to provide the necessary insulation, the segments of ring 13 being approximately double the length of those of ring 14. Each of the segments of ring 13 is provided with a projection which extends insulatively between the segments of ring 14, as shown. The segments of ring 13 are arranged in groups of five each and the segments of each group are respectively connected to the five contacts of a transmitter, there being as many groups of segments as there are transmitters 10', 10'', etc. The brush shown in line with ring 14 is adjustable with respect to brush arm 16 so that it may be made to engage ring 13 as shown in the dotted lines. The brush shown in line with continuous ring 15 is fixed on the rotatable arm 16 so that ring 15 may be connected to either the long or short segments of rings 13 and 14 respectively.

When the distributor is arranged for 100% marking and spacing signal impulses, the support of the brush shown in line with ring 14, is adjusted so that the brushes are in engageable relation with rings 13 and 15. When it is desired to change to 50% marking and spacing, the support of the brush shown in line with ring 14 is adjusted so that the brushes engage rings 14 and 15. Therefore, when the brushes interconnect rings 13 and 15, the distributor is arranged to send signals to line 12 over the whole impulse interval and when they interconnect rings 14 and 15, the signals transmitted to line 12 are respective over only one-half of each of the impulse intervals.

Fig. 2 shows the rotatable brush arm 16 arranged in position for sending 50% marking and spacing signals. The arm is fixedly mounted on an insulating member 17 which is arranged to rotate in the direction indicated by the arrow shown in Fig. 1. Brush arm 16 has a member integrally formed therewith for supporting the brush 18 in permanent engagement with continuous ring 15. Detachably mounted on the front of arm 16,

is another conducting arm 19 having a supporting member for the brush 20 which may be moved into engagement with either of rings 13 and 14. The brush support on arm 19 is bent sufficiently to have its brush 20 in radial alignment with brush 18. Arm 19 is provided with a slot extending almost its entire length in order that thumb-screws 22 and 23, fixedly positioned in arm 16, may hold it in either of its positions which are shown in full and dot and dash lines. When the arm 19 is in the position shown, that is, as indicated by the full line, the brushes are arranged to transmit 50% marking and spacing signals, but when it is in the position indicated by the dot and dash line, the brushes are arranged to transmit 100% marking and spacing signals.

Fig. 3 shows in a bottom view of Fig. 2, the relative positions of brush arms 16 and 19 and when the brushes are arranged for transmitting 50% marking and spacing signal impulses as indicated in full line and for transmitting 100% marking and spacing signal impulses as indicated in the dash and dotted line.

It is understood that this invention may be employed to send signals over any desired portion of the impulse interval by changing the angular length of the integrally formed segments and the projection of the insulatively formed segments. This will change the percentage of marking and spacing impulses.

What is claimed is:

1. An impulse repeating device comprising segmented rings, the segments of one ring having a projection which extends insulatively between adjacent segments of the other ring, a transmitting device electrically connected to the segments of said segmented rings, a line circuit and a rotatable contacting element adjustably arranged to connect at will either of said segmented rings with said line circuit.

2. An impulse repeating device comprising an input and an output circuit, concentric segmented rings, adjustable means for connecting either of said segmented rings between said input and said output circuits for transmitting impulses of full or partial length from said input circuit to said output circuit.

3. In an impulse distributing device, an input and an output circuit, a ring comprising widely spaced short segments, a ring comprising narrowly spaced long segments, each of said long segments having a projection insulatively extending between adjacent short segments, and an adjustable contacting element for interconnecting said input circuit and said output circuit over either of the segmented rings.

4. In an impulse distributing device, according to claim 3, wherein the first men-

tioned ring is electrically connected to ground.

5 5. In an impulse distributing device, according to claim 3, wherein the widely spaced short segments are integrally formed on the first mentioned ring and the narrowly spaced long segments are insulatively mounted on the second mentioned ring.

10 6. A rotary distributor comprising a continuous ring and a pair of segmented rings concentrically arranged, one of said segmented rings being divided into widely spaced short segments and the other into narrowly spaced long segments, each of said long segments having a projection insula-
15 tively extending between adjacent short segments, and a rotatable brush having an adjustable arm whereby either of said segmented rings may be connected at will to said continuous ring.

20 In witness whereof, I hereunto subscribe my name this 15th day of April, 1931.

WILLIAM A. KNOOP.

25

30

35

40

45

50

55

60

65