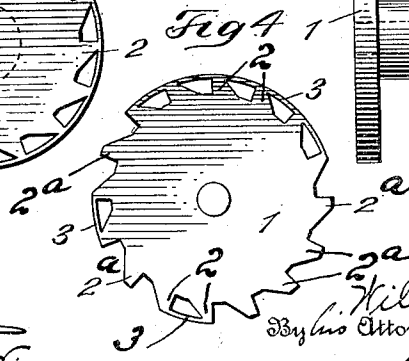
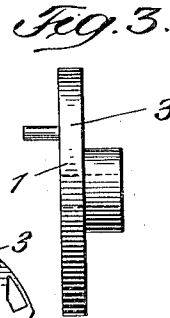
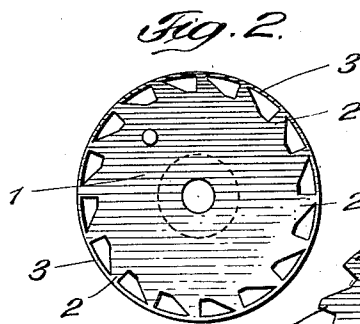
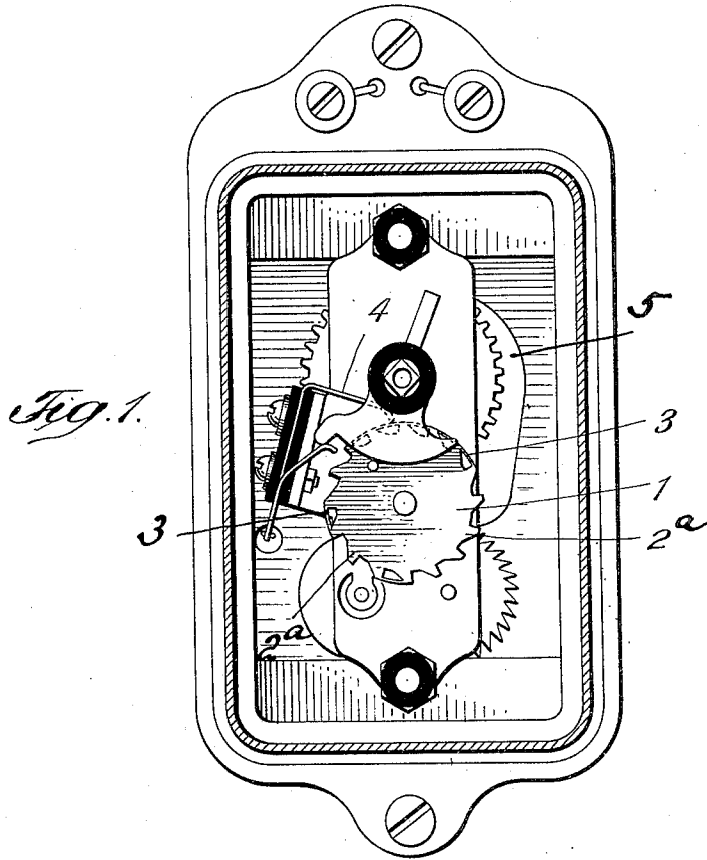


W. O. POWERS, JR.
CONTACT WHEEL FOR SIGNAL CIRCUITS.
APPLICATION FILED APR. 23, 1914.

1,111,033.

Patented Sept. 22, 1914.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CONTACT-WHEEL FOR SIGNAL-CIRCUITS.

1,111,033.

Specification of Letters Patent.

Patented Sept. 22, 1914.

Application filed April 23, 1914. Serial No. 833,874.

To all whom it may concern:

Be it known that I, WILLIAM OLIVER POWERS, Jr., a citizen of the United States, and resident of Ossining, county of Westchester, and State of New York, have invented certain new and useful Improvements in Contact-Wheels for Signal-Circuits, of which the following is a specification.

In many signal circuits contact wheels are used for the purpose of causing a series of interruptions, or makes and breaks in regular sequence. One of the most ordinary, and possibly one of the best known signal circuits of this character, is the ordinary messenger call box circuit now so largely used by telegraph companies. These contact wheels are provided with a series of teeth and the wheel forms one terminal of the signal circuit. A suitable motor mechanism is provided for rotating this wheel, usually a small spring motor operated or set in motion by the depression of a lever or the rotation of a button. Riding on this contact wheel is a spring contact which forms the other terminal of the circuit. The circuits are usually normally closed, but, of course, whether the circuit is open or closed is immaterial so far as the present invention is concerned. As the contact wheel is rotated the spring contact makes and breaks the circuit as it is engaged with and disengaged from the teeth. These teeth are arranged in groups with a portion of unbroken periphery of the wheel between the groups. The contact wheels heretofore used were made by cutting or milling the required number of teeth in each wheel. In this process of manufacture the contact wheels were made separately or individually, or possibly they might be made in groups but, of course, all the contact wheels of each group would have a like number of teeth arranged in like groups, in other words all the wheels of the group would be exactly alike. This made the manufacture of these contact wheels expensive; and whenever it was desired to change the combination of makes and breaks in the circuit a new wheel must be obtained which had been properly milled and contained the desired combination of teeth. In the ordinary call box system of signals it is the common practice to return the entire call box to the factory whenever it is desired to change the contact wheel and to secure a new combination of makes and breaks.

This, of course, was expensive and very inconvenient.

It is the main object of this invention to produce a wheel which may be readily converted, by any ordinary mechanic, into a contact wheel having any desired grouping of teeth. It is also the object of this invention to produce a wheel in which the teeth groups may be changed to a certain extent so that if it be desired to change the number and sequence of the makes and breaks produced by a wheel already in use it may be readily accomplished by any ordinary mechanic, thereby rendering it unnecessary to return the contact wheel to the factory or to replace it with a new one.

Contact wheels made in accordance with this invention may be kept in stock at the office where the call boxes or other signal means are installed and said wheels may be converted into contact wheels having almost any desired grouping of teeth, by any ordinary mechanic, all of which will be more fully hereinafter described, and particularly pointed out in the claims.

In the drawing Figure 1 is a face view of an ordinary signal call box provided with a contact wheel made in accordance with this invention, and showing the cover or casing in section; Fig. 2 a face view of the contact wheel; Fig. 3 an edge view thereof; and Fig. 4 a face view of the wheel showing the manner of producing the groups of teeth.

Referring to the various parts by numerals, 1 designates the contact wheel as it is originally produced and before the teeth for making and breaking the circuit are completed. This wheel is formed with the partially completed teeth 2 around its periphery. The periphery of the wheel is formed by a thin continuous web or film of metal 3 which connects the outer edges or points of the teeth 2 thus closing the space between the partially formed teeth and forming a smooth continuous periphery for the wheel. This film or web is preferably integral with the wheel, but, of course, it may be separately made and permanently secured around the wheel if desired.

When it is desired to adapt the wheel for use, the web 3 is filed out or otherwise cut from the wheel, to form the complete teeth 2^a. It is obvious that the web 3 may be filed out or otherwise removed to provide any desired grouping of teeth, the unremoved

web forming a smooth surface upon which the spring contact 4 of the circuit making and breaking device 5 may ride.

As shown in Fig. 1 the contact wheel is provided with groups of teeth 2^a which make and break the circuit in groups of two—two and five. It is obvious that this grouping may be readily changed by filing out portions of the remaining web to make the groups desired. It is obvious that this grouping may be changed to read two—three—five; or two—two—six, and so on, by removing the web to complete the teeth in the desired position. The web 3 is preferably thin so that it may be readily removed by filing or otherwise cutting it out as desired to complete the teeth.

It is manifest from the foregoing that by providing a contact wheel with partially completed teeth and with a thin, peripheral, readily removable web or film connecting the ends or edges of the teeth it will be a simple matter for an ordinary mechanic to produce contact wheels having any desired grouping of teeth. This will not only save the initial expense of forming these wheels but will also save the subsequent expense of providing wheels having new combinations of teeth where said new combinations are required by apparatus already in use. It is manifest that these wheels may be made in any suitable manner and that they may be made of any suitable material.

What I claim is:

- 35 1. A contact wheel for signal circuits provided with a series of partially completed teeth around its periphery and a thin web forming the periphery of the wheel and closing the spaces between the teeth, portions of said web being readily removable, whereby the teeth may be completed.
- 40 2. A contact wheel for signal circuits

formed with partially completed teeth around its periphery and a thin, continuous integral web forming a smooth continuous periphery of the wheel and closing the spaces between the teeth, said web being readily removable and the teeth completed.

3. A contact wheel provided with a series of apertures extending transversely through it near its periphery and a continuous periphery formed by a thin web of metal, said web forming a portion of the wall of the apertures.

4. A contact wheel for signal circuits formed with groups of completed teeth around its periphery, and groups of teeth having the tooth spaces closed by means forming a smooth continuous periphery between the groups of completed teeth and in the plane of the periphery of the wheel.

5. A contact wheel for signal circuits formed with a series of completed teeth around its periphery, and a series of teeth having the tooth spaces closed by means forming a smooth continuous periphery between the series of completed teeth and in the plane of the periphery of the wheel.

6. A contact wheel for signal circuits formed with a series of completed teeth around its periphery, and a series of teeth having the tooth spaces closed by means forming a smooth continuous periphery between the series of completed teeth, said means being readily removable to complete one or more teeth, whereby the number of completed teeth may be increased as desired.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM O. POWERS, JR.

Witnesses:

LILLIAN MCGUIRE,
F. R. MILLER.