

A. ATHERTON.
CALL BOX TRANSMITTER.
APPLICATION FILED JULY 2, 1920.

1,416,594.

Patented May 16, 1922.

2 SHEETS—SHEET 1.

Fig. 2.

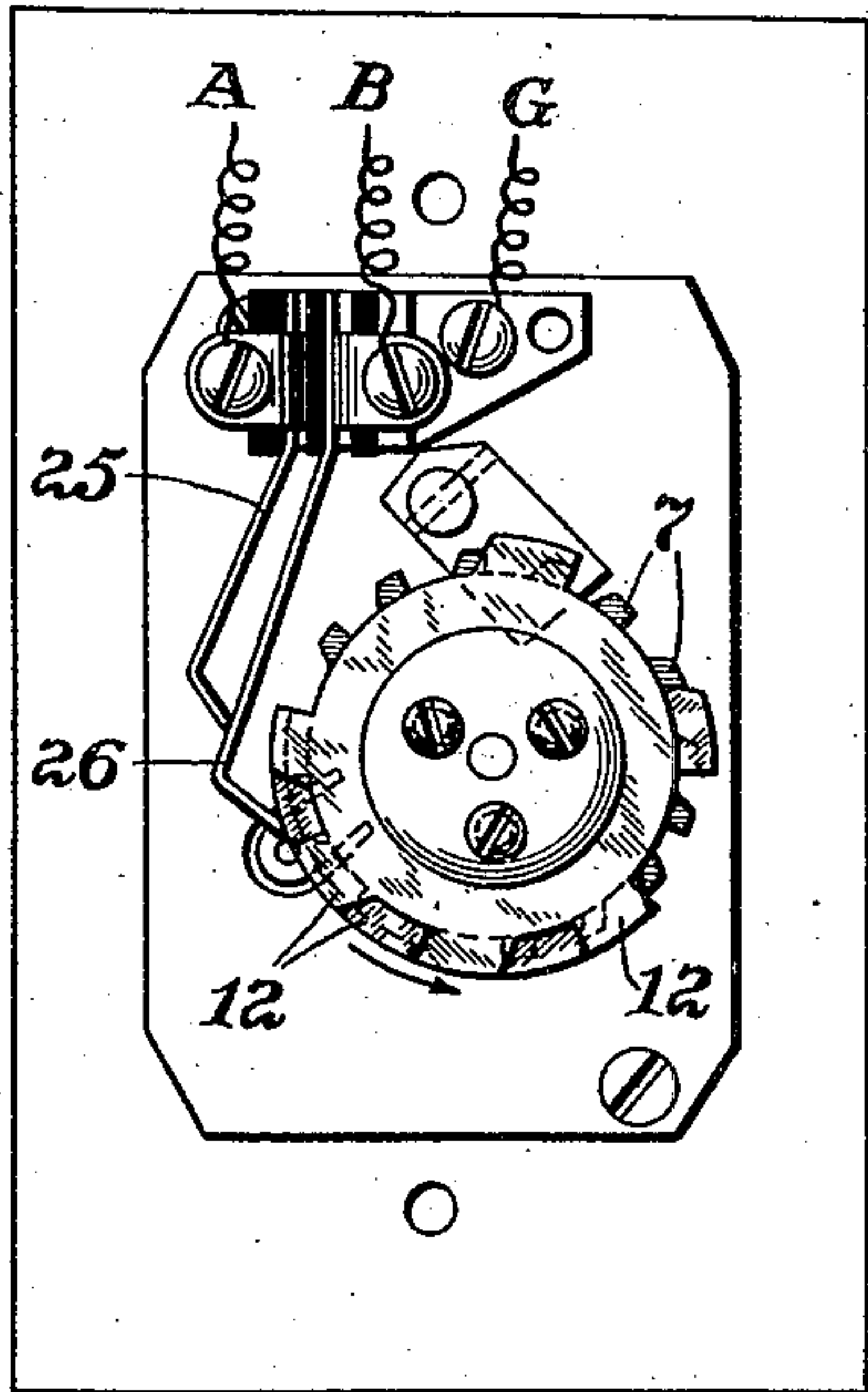


Fig. 1.

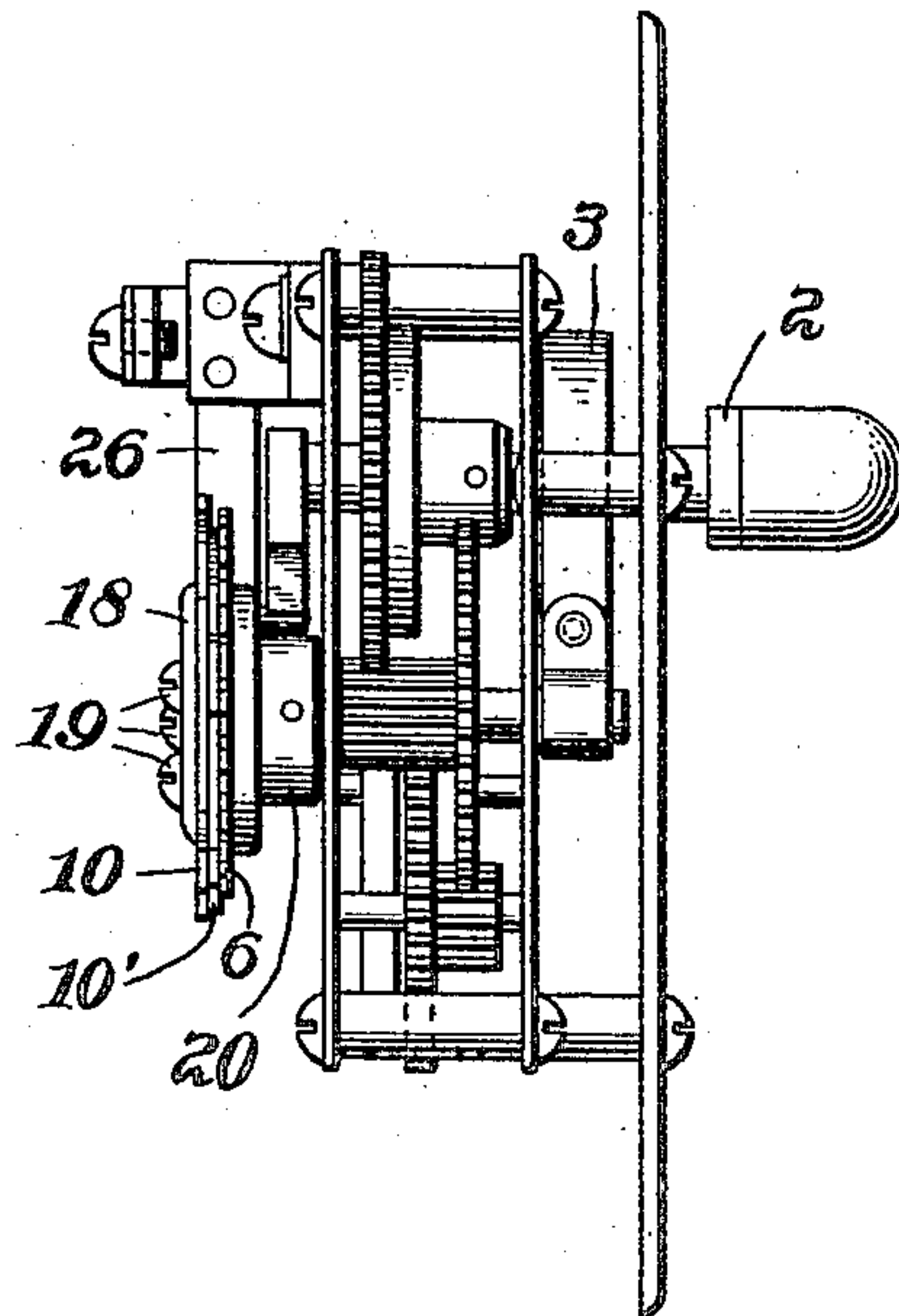


Fig. 3.

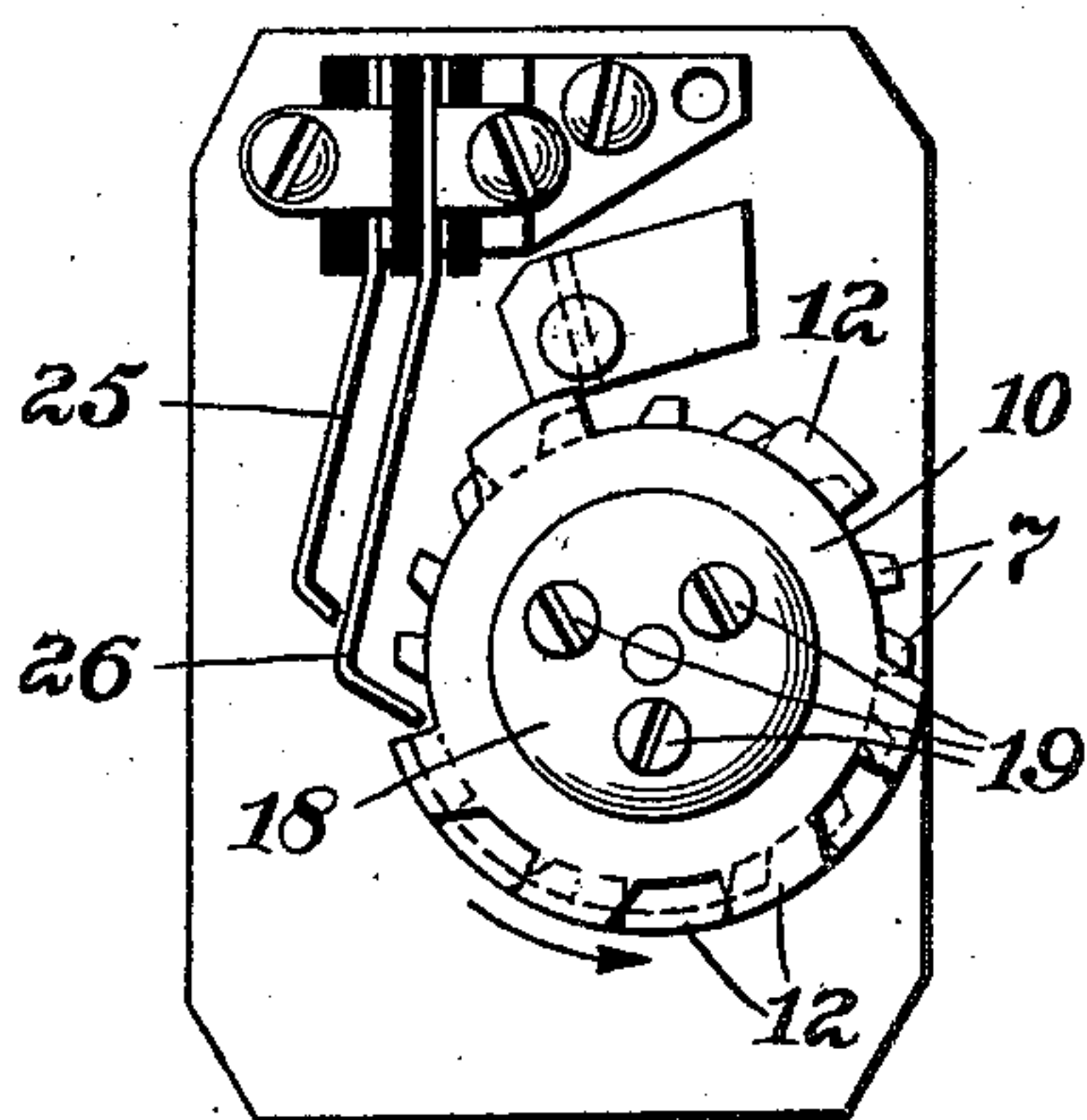
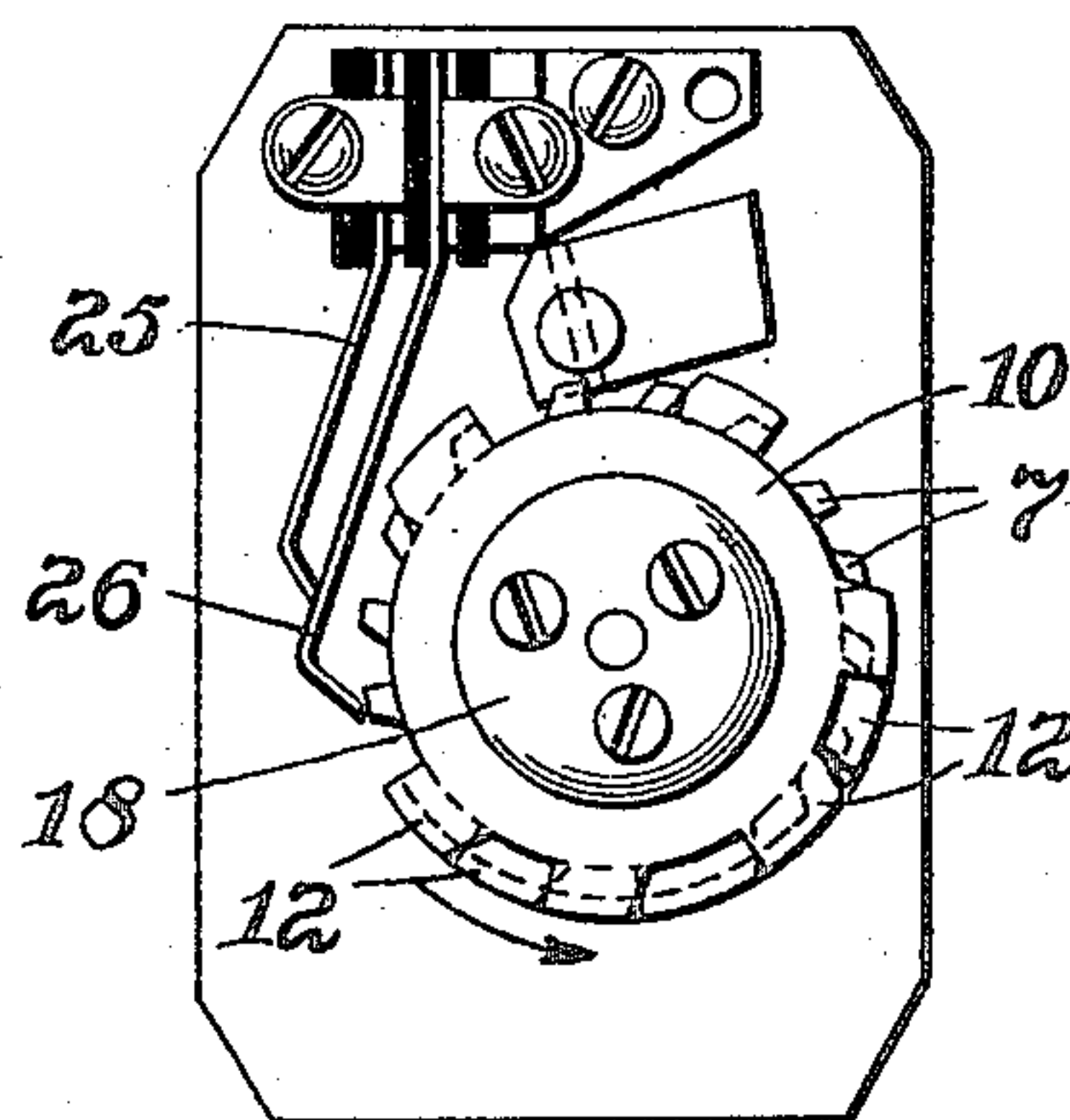


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

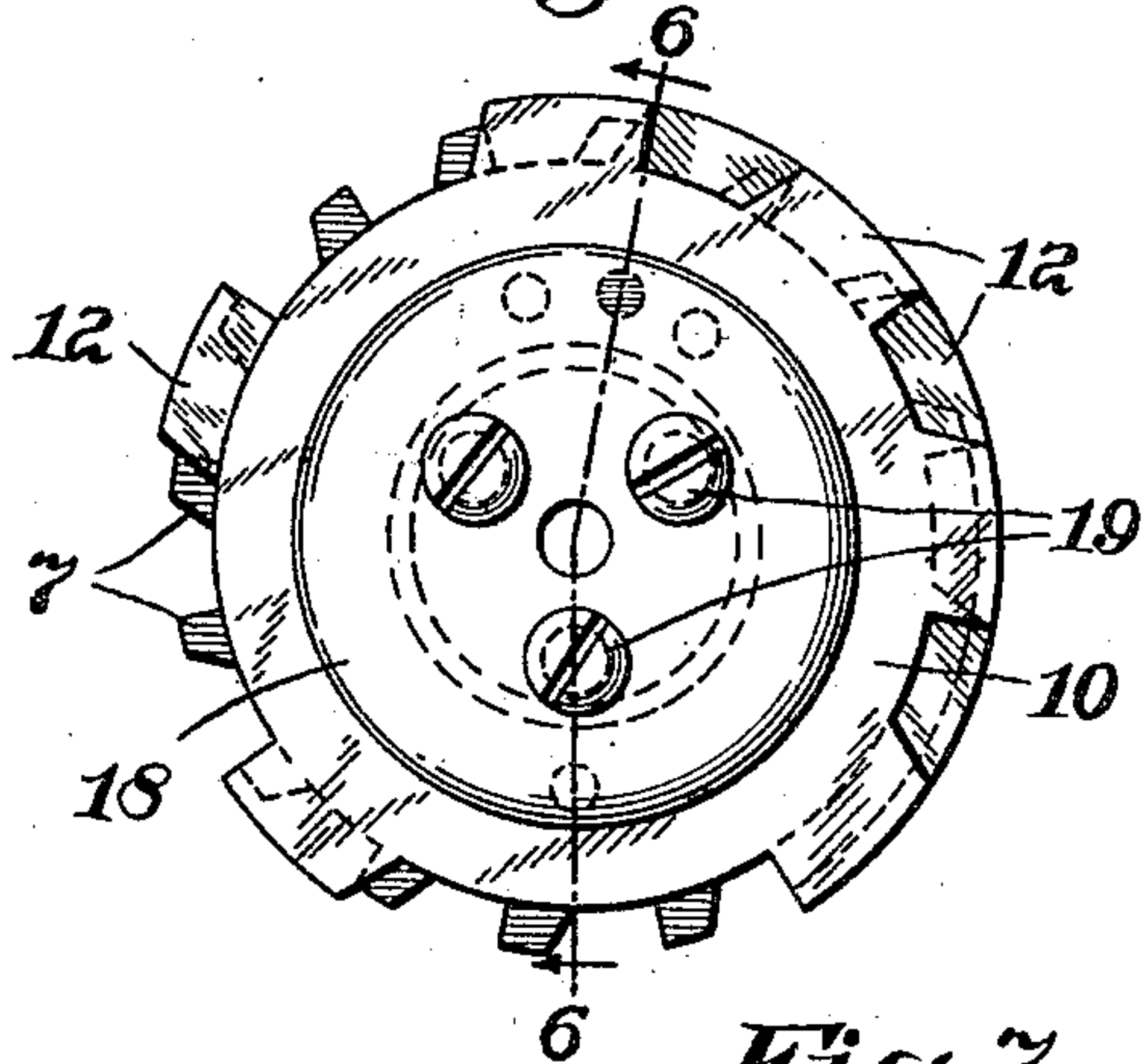


Fig. 6.

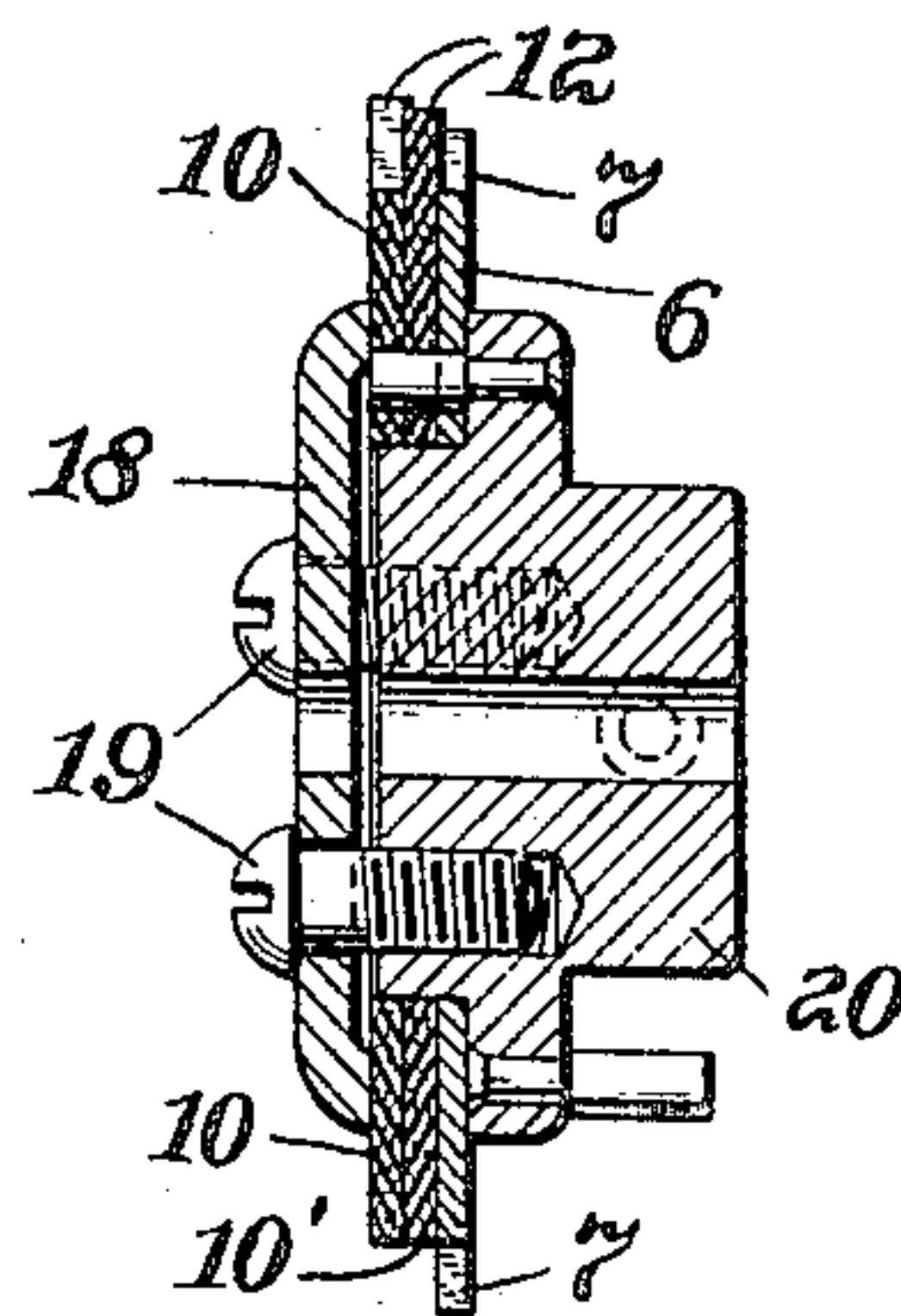


Fig. 7.

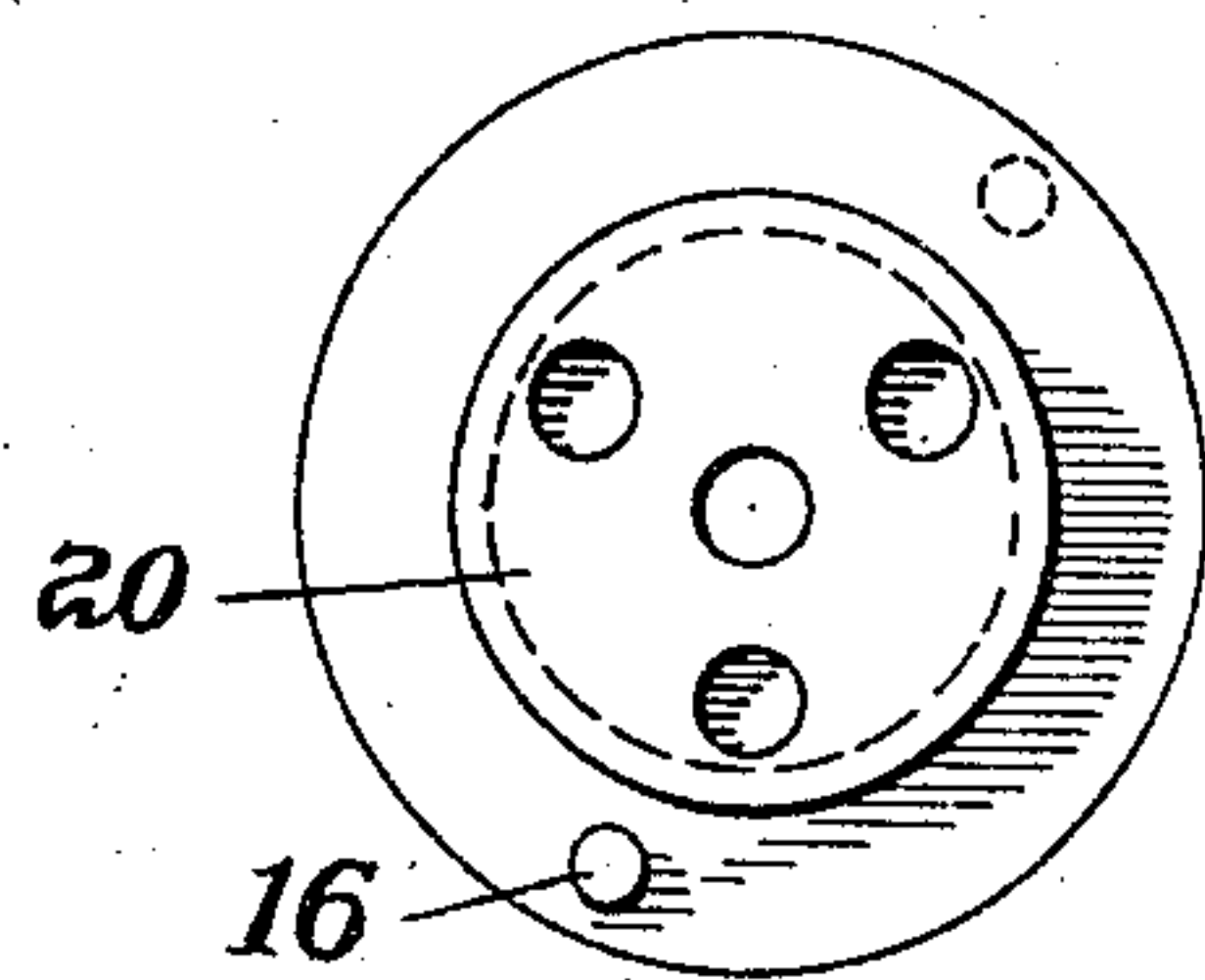


Fig. 8.

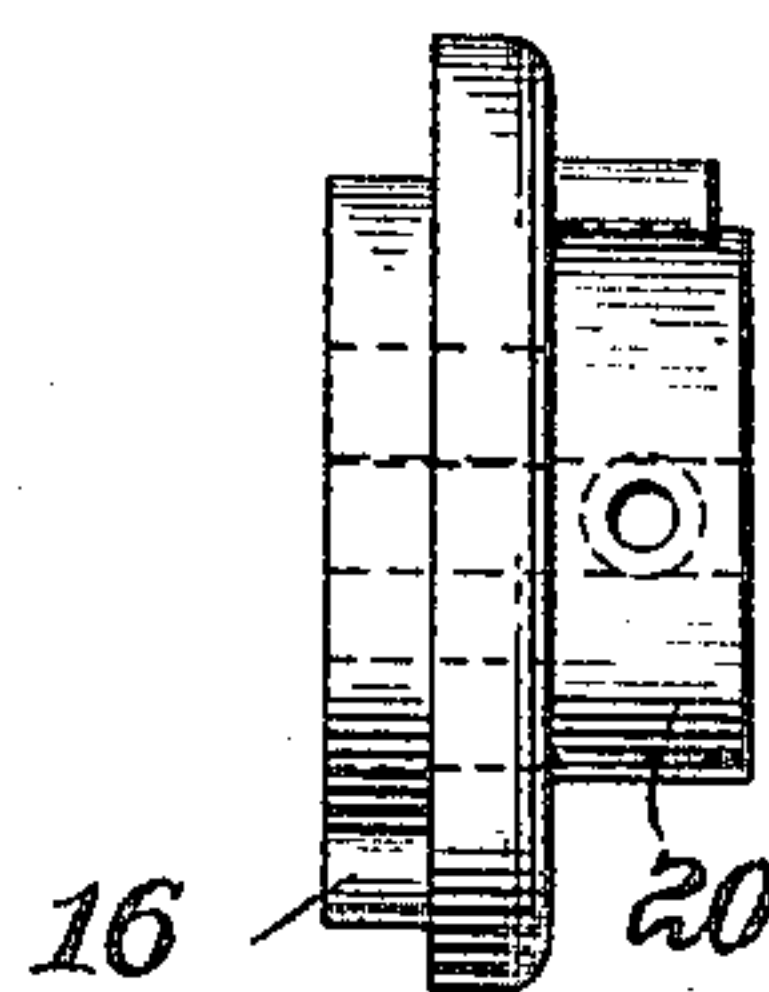


Fig. 9.

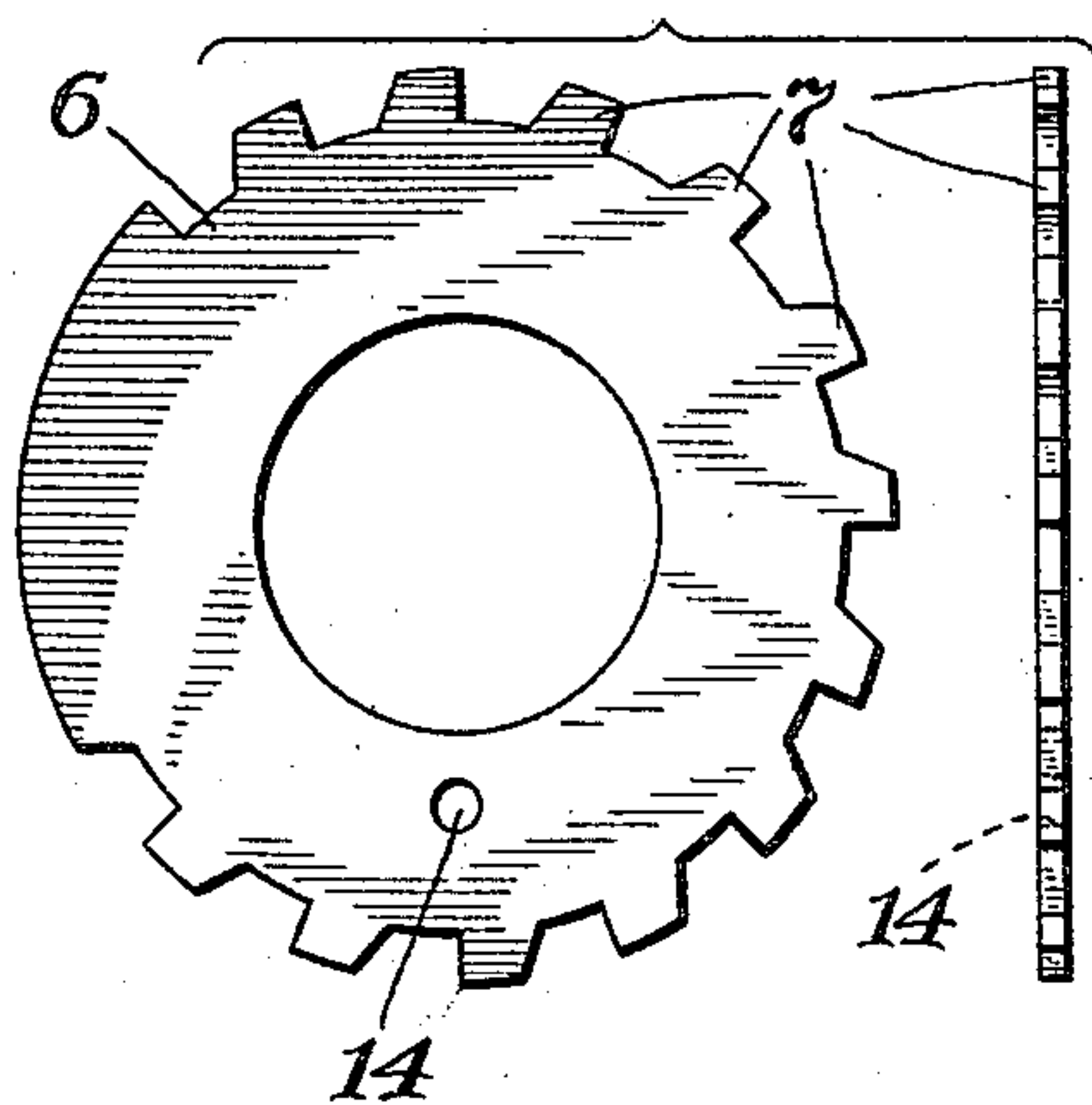
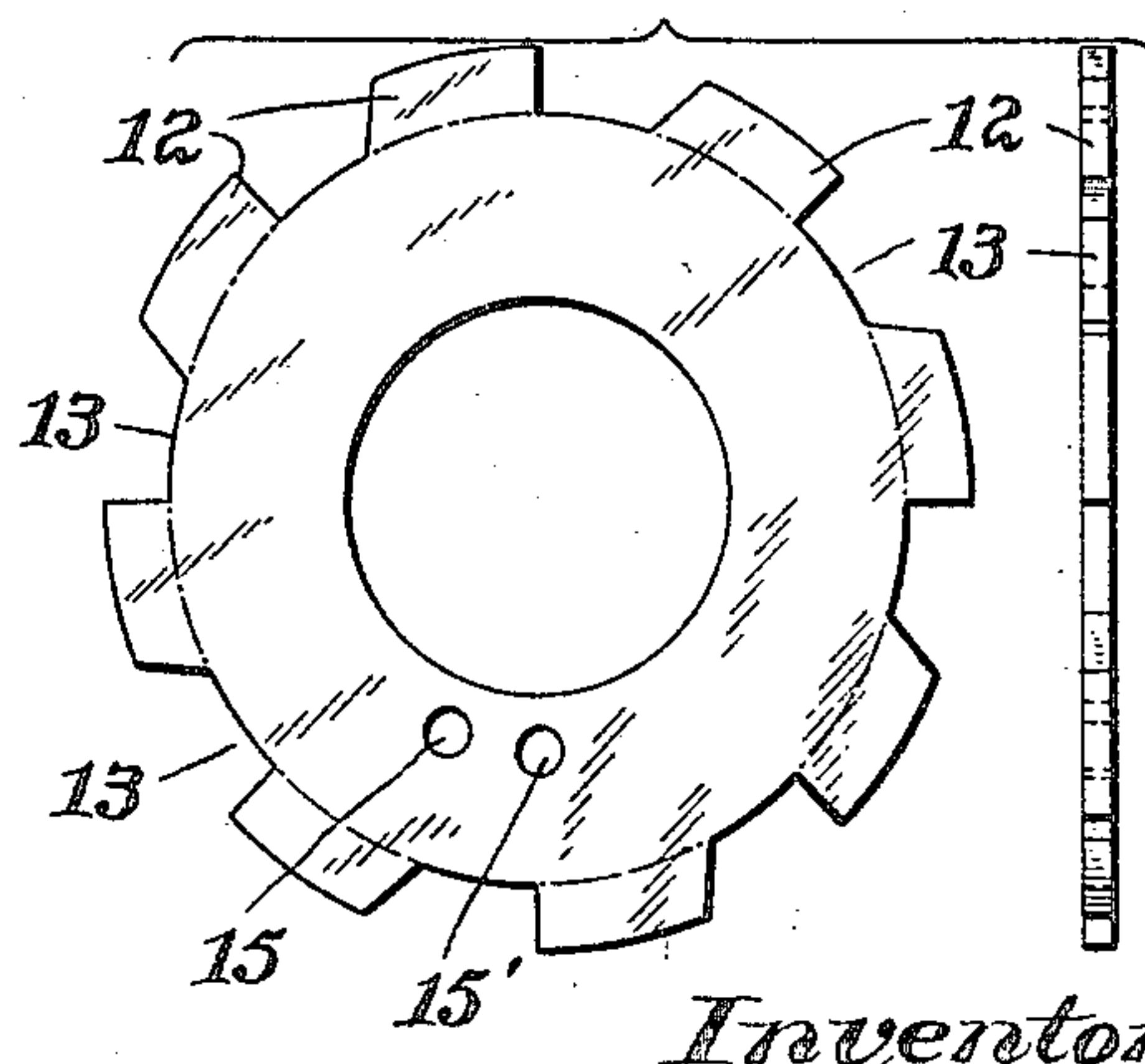


Fig. 10.



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UNITED STATES PATENT OFFICE.

ALBERT ATHERTON, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO THE WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CALL-BOX TRANSMITTER.

1,416,594.

Specification of Letters Patent.

Patented May 16, 1922.

Application filed July 2, 1920. Serial No. 393,588.

To all whom it may concern:

Be it known that I, ALBERT ATHERTON, a citizen of the United States, residing at New Brunswick, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Call-Box Transmitters, of which the following is a specification.

My invention relates to signal transmitters such as are employed in the ordinary messenger call box circuits now commonly used by the telegraph companies.

The signal transmitting mechanism employed in call boxes of the usual type embodies a toothed break wheel actuated by a small spring motor which is set in motion by the depression of a lever or the rotation of a button, the teeth contacting with a plurality of brushes or "pens" to cause a series of interruptions or makes and breaks in regular sequence in the signal circuit. The teeth on the break wheel are arranged in groups with a portion of unbroken periphery of the wheel between the groups to produce the desired code signal. Various means have been employed for changing at will the code signals of the individual boxes. Thus in Patents 1,164,069 and 1,224,359 blanks sectors coact with the teeth of the break wheel to form the code signal, the sectors being adjusted to various positions to change the code. In the device illustrated in Patent 1,111,033, the teeth of the break wheel are connected by a thin web which may be broken away to form the desired grouping, but another break wheel must be employed if it desired to make a change in the code signal.

One of the objects of my invention is to provide means for readily changing the code signal of any call box by means of a plurality of blanking disks which cooperate with the toothed break wheel and are provided with frangible sections. These frangible disks may be supplied in quantity to the mechanics or electricians who can make the desired change in the code signal of any call box by merely breaking out the proper sections of one of the blanking disks and placing it in proper relation to the break wheel in the box.

A further object is to simplify the arrangement of contact brushes and make them more reliable in operation.

In the following description of my inven-

tion, I shall refer to the accompanying drawings, in which—Figure 1 is a side elevation of a call box signal mechanism embodying my invention; Figs. 2, 3 and 4 are elevations of the break wheel and blanking disks with the coacting contact brushes or pens, the different figures showing the contact pens in the several successive positions occupied during rotation of the break wheel; Fig. 5 is a side elevation of a break wheel and cooperating blanking disks with certain sections or teeth broken out to form a code signal; Fig. 6, is a sectional view on the line 6—6 of Fig. 5; Figs. 7 and 8 are front and side elevations respectively, of the hub to which the break wheel and blanking disks are attached; Figs. 9 and 10 illustrate respectively the break wheel and a blanking disk in side and edge elevation.

The actuating mechanism for rotating the break or contact wheel of the ordinary signal call box, such as illustrated in Fig. 1, is well known and need not be explained in detail. The crank lever 2 which projects in front of the cover of the call box is turned to wind the spring 3, which sets in motion the gearing to cause one revolution of the code break wheel.

The break or contact wheel 6 is formed with a number of symmetrically arranged teeth 7 and this is associated with an insulating element comprising a pair of blanking disks 10, 10' having their peripheries broken away at the proper places to expose the desired teeth of the break or contact wheel to thereby arrange the teeth in predetermined groups separated by continuous insulation formed by the unbroken teeth 12 of the two disks 10, 10'. The break or contact wheel is of brass or other suitable metal.

The break wheel or contact wheel 6 is grounded through the gearing and other metal parts of the call box. The line circuit is normally maintained closed through two spring contact brushes or "pens." In prior devices in which one or more metal blanking disks are employed, a third brush forces said two brushes apart to open the line circuit when it is opposite a space between the teeth and serves to ground the line when passing over a tooth. I have simplified the construction and rendered the operation more certain by employing only two brushes, which separate automatically to open the line circuit when opposite a space between

teeth, while the inner pen or brush is forced into engagement with the other pen when passing over a tooth, thereby grounding the line through the call box and likewise maintaining the line closed when the inner pen or brush rides upon the periphery of the unbroken segments of the insulating blanking disks.

The contact brushes or "pens" 25, 26 are connected to the line conductors A, B, while the break wheel 6 is connected through the call box mechanism to the ground wire G. When the parts are at rest, as indicated in Fig. 1, the spring 26 rides upon the periphery of the unbroken segments or teeth of the insulating disks 10, 10' and is pressed against the spring 25, thus maintaining the line circuit A, B, closed. As soon as the pen 26 drops from the insulating segment into a space, as indicated in Fig. 3, permitting the spring pens to separate and thus opening the line circuit. In the next instant the brush 26 rides upon a tooth 7 of the break wheel, pressing the pens together to establish the line circuit and simultaneously grounding it through the break wheel, as indicated in Fig. 4. These steps are repeated for every tooth of the break wheel engaged by the pen 26, resulting in the transmission of the desired code signal over the line circuit. My invention enables a standard uniform metal contact or break wheel to be employed in all boxes by combining with it a pair of blanking disks of standard construction, which may be altered by the mechanic at the place of installation to suit the desired code signal and which may be molded from inexpensive insulating material so that the cost is practically negligible.

The metal contact of break wheel is shown in plan and edge views in Fig. 9 and is of the well known form. One of the blanking disks is illustrated in plan and edge views in Fig. 10 and may be stamped or otherwise constructed of any suitable insulating material. The margin of each insulating disk is formed of teeth 12 alternating with notches 13, the base of each tooth being preferably scored so that the teeth may be readily broken off as desired. As indicated in Fig. 5, each blanking disk is of slightly greater diameter than the break wheel and each tooth or segment 12 and each notch is equal in angular length to the added length of a tooth and a space of the break wheel. The break wheel is provided with a hole 14 and the blanking disks with holes 15, 15' which fit over the pin 16 on the hub 20 when they are assembled in the signal box. When the

two blanking disks are assembled to form the insulating element on the hub which carries the break wheel as indicated at 10, 10' in Figs. 1 and 6, they are positioned with the pin 16 passing through the aperture 15 of one disk and the aperture 15' of the other disk, thus causing the teeth 12 of the two disks to be staggered so that the teeth of one are opposite the notches in the other, the combined disks thereby presenting an unbroken periphery. The assembled disks and wheel may be secured by a clamping washer 18 and screws 19. It will be evident that any desired grouping of the exposed teeth of the break wheel may be arranged at once by breaking out the corresponding segments of the blanking disks.

By employing an insulating element comprising two blanking disks having peripheral teeth or segments separated by notches of the same width, and arranging the disks side by side with their teeth in staggered relation an unbroken circumference is formed for the engagement of the contact pens while permitting the opposite edges of the teeth to be formed with different inclinations, the trailing edge being preferably radial or even undercut while the leading edge is inclined slightly in the direction of rotation to permit the pen to more easily ride thereover. By constructing the disks with teeth separated by notches, the teeth can be formed more perfectly and the manufacture is greatly facilitated. Moreover there is less danger of injuring adjacent teeth in breaking off those which are necessary to form the desired code combination when the teeth are spaced apart.

I claim:—

1. In a signal transmitter having a toothed break wheel and contact pens adapted to engage the periphery of the exposed teeth of said wheel as it is rotated, an insulating element comprising a plurality of like disks of greater diameter than said wheel, each provided with a series of frangible peripheral teeth alternating with like spaces or notches, the disks being positioned so that the teeth of one are opposite the notches of the other, whereby any desired code grouping of break wheel teeth may be exposed by removing the corresponding teeth of the insulating element.

2. A signal transmitter as set forth in claim 1, wherein the frangible teeth of the disks of the insulating element are each equal to the combined width of a tooth and a notch of the break wheel.

In testimony whereof I affix my signature.

ALBERT ATHERTON.