G. M. WILLIS.

SIGNALING APPARATUS.

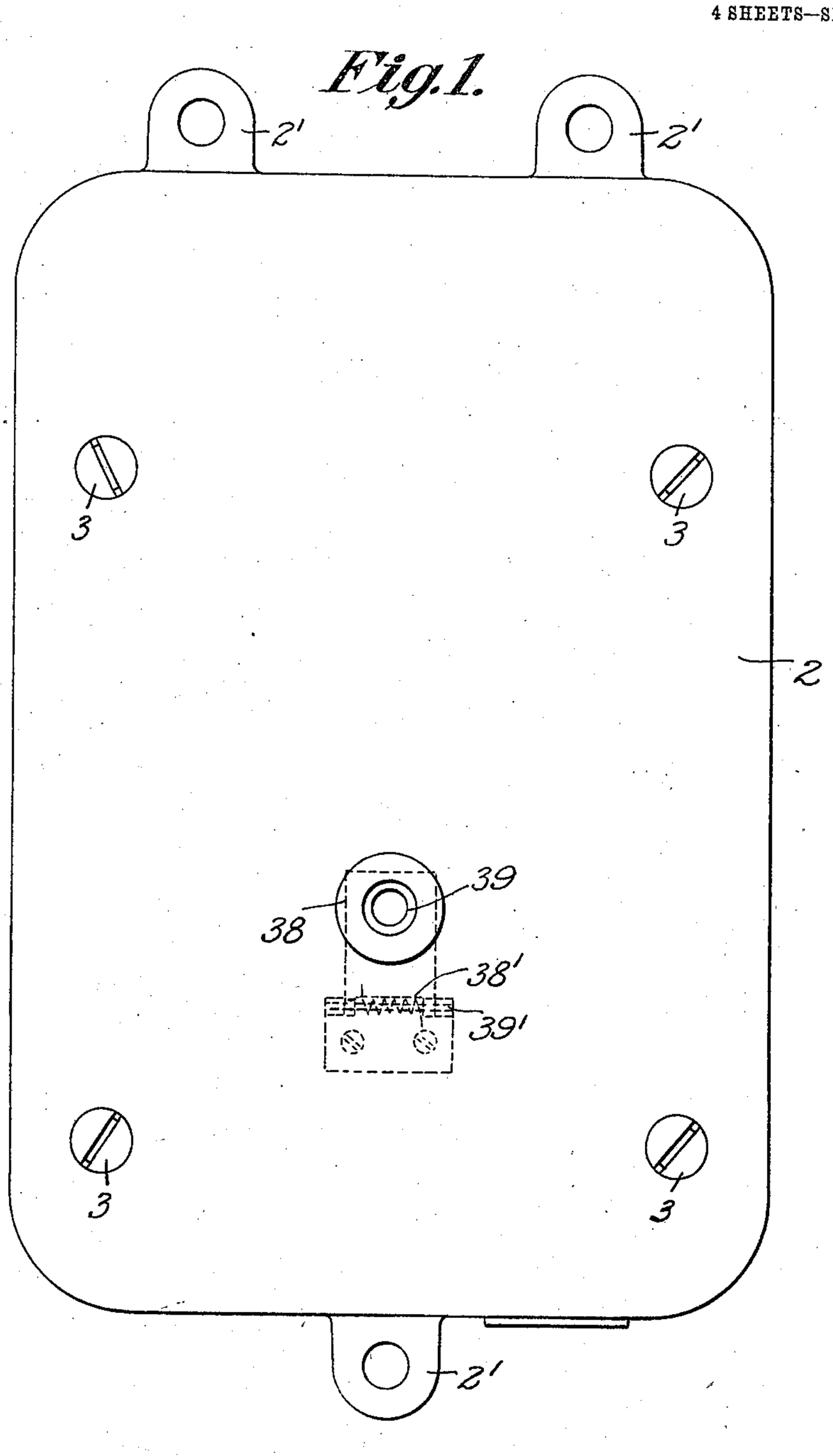
APPLICATION FILED JAN. 10, 1908.

963,843.

Patented July 12, 1910.

4 SHEETS—SHEET 1.

Fig. 1.



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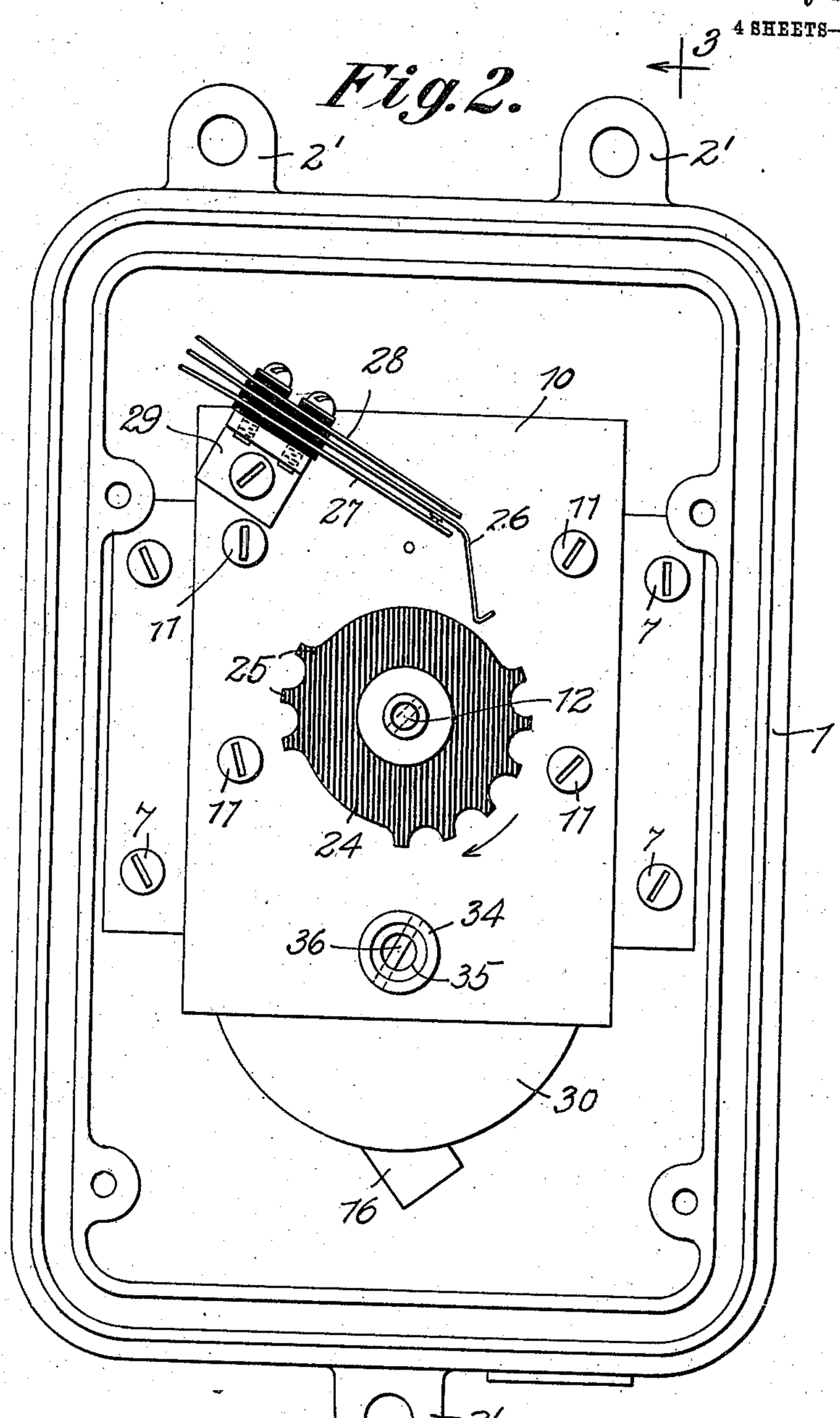
4 SHEETS—SHEET 2.

Fig. 2.



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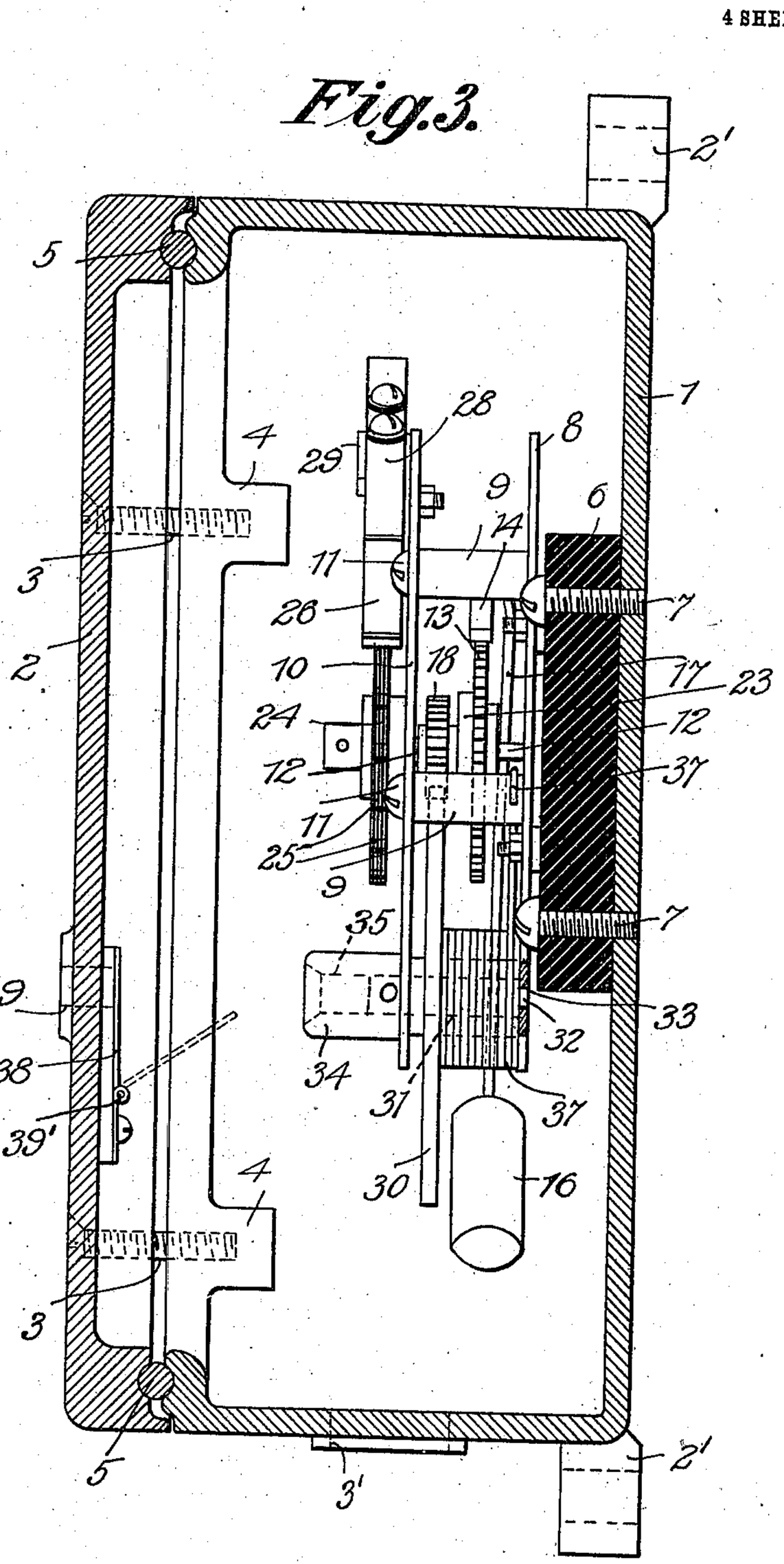
4 SHEETS—SHEET 3.

Fig. 3.



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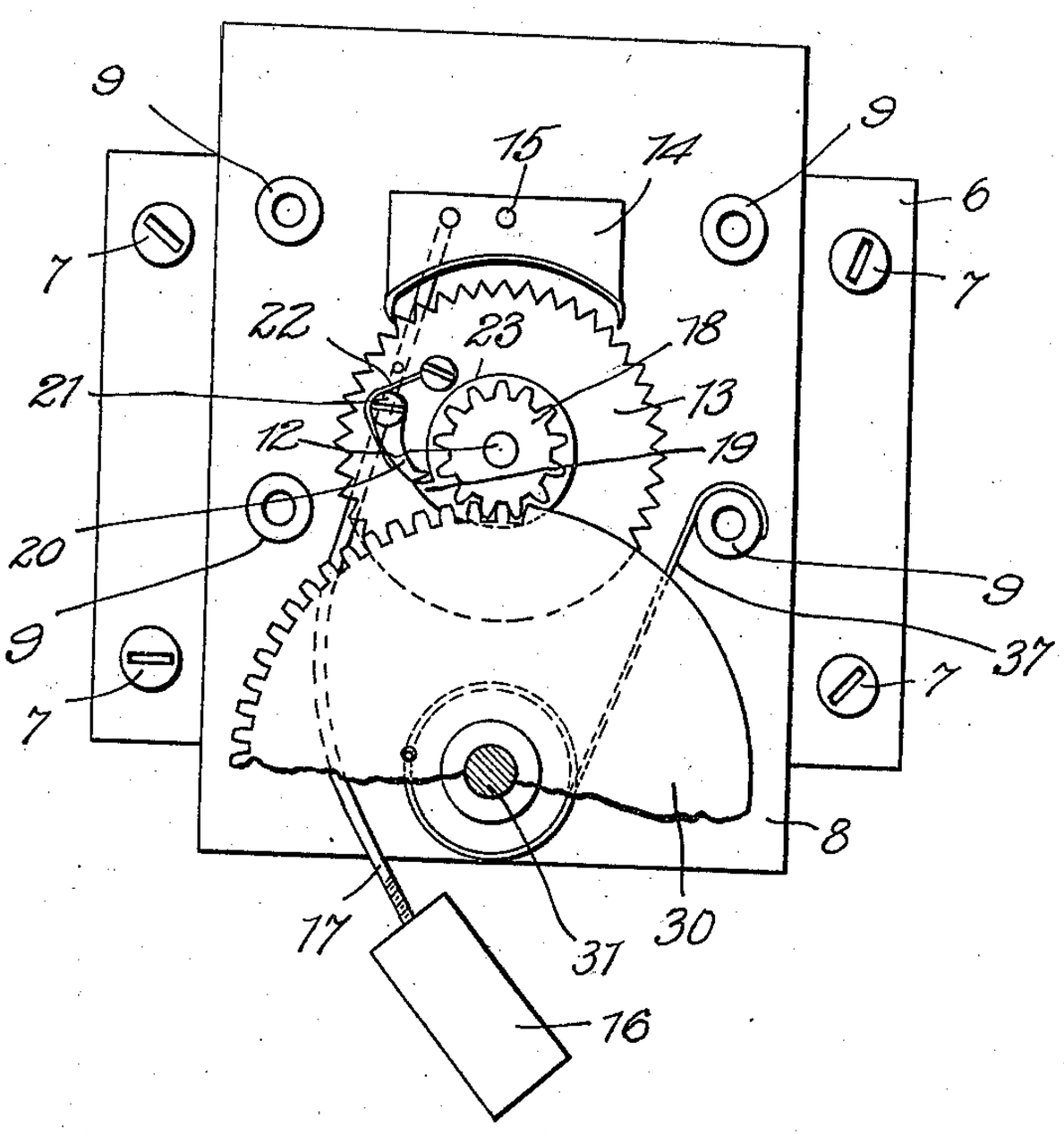
4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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SIGNALING APPARATUS.

963,843. Specification of Letters Patent. Patented July 12, 1910.

Application filed January 10, 1908. Serial No. 410,184.

To all whom it may concern:

Be it known that I, GEORGE M. WILLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Signaling Apparatus, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to watchmen's signaling apparatus which is adapted to be associated with a central station, the actuation of this apparatus causing a code signal to be sent over the line so as to inform the operator at the central station when a watchman or patrolman actuates the mechanism when patroling his beat.

My invention embodies more simplified construction than has heretofore been attained in this line of mechanism, and my invention also contemplates an improved construction whereby the operation is made positive and certain.

The mechanism embodying the preferred features of my invention will be clearly understood, reference being had to the accompanying drawings in which—

Figure 1 illustrates an elevation view of the box or case located at various places on a patrolman's beat; Fig. 2 is an elevation view with the cover removed to show the internal mechanism; Fig. 3 is a sectional view taken on line 3—3, Fig. 2; and Fig. 4 represents an isolated view, parts being broken away to more clearly illustrate the mechanism.

At the substations or at various places on a patrolman's beat is placed a box or case 1 to which is secured a cover 2 by means of the screws 3, 3 passing through said cover and preferably into engagement with lugs 4, 4 in the case. Lugs 2′, 2′ assist to provide suitable means of attaching the case to a support. This case is also provided with an opening 3′ through which may pass the line wires connected to a circuit. In order to have the internal mechanism of the case sufficiently protected sealing material 5 is clamped between the cover 2 and the case 1. The code signal operating mechanism is secured to a piece of insulating material 6 which may be secured to the case 1 by means of screws 7, 7. To the insulating piece 6 is secured a supporting plate 8 which has secured thereto a plurality of pillars 9, 9 to which a supporting member 10 is secured by means of screws 11, 11. Journaled in the plates 8 and 10 is a shaft 12 which has secured thereto a toothed wheel 13, the teeth of which are adapted to engage escapement mechanism 14 pivoted at 15 and having an adjustable weight 16 secured thereto by means of a rod 17. Adjacent to the toothed wheel 13 and loosely mounted upon the shaft 12 is a pinion 18 which has secured thereto a detent 19, this detent being adapted for engagement with a pawl 20 pivoted at 21 on the toothed wheel 13. A spring 22 is shown as one means of holding the pawl 20 in engagement with the surface 23 of the detent 19. Secured to the shaft 12 is a break wheel 24 of insulating material or fiber, which, as clearly shown in Fig. 2, has a number of projections 25 adapted for engagement with a spring 26, said spring, as shown in the drawing, being in its normal position in contact with the spring 27, and when actuated by the projections upon the break wheel 24 making contact with the spring 28. In order to obtain the desired operation, all of the substation apparatus on the line are connected in series through the springs 26 and 27, and the spring 28 is connected to ground, the purpose of which will be later described. These springs are insulated from each other and may be mounted upon a member 29 which is secured to the plate 10. In order to actuate the break wheel 24 I have provided a gear 30 whose teeth mesh with the teeth of the pinion 18, these teeth extending partly around the periphery of said gear. This gear is secured to a shaft 31 which is loosely supported in the plates 8 and 10, this shaft having a reduced section 32 engaging in an opening 33 in the plate 8, such a construction preventing lateral movement of the shaft 31. Said shaft also has mounted thereon a sleeve 34 having an opening 35 in which is disposed a cross-piece 36 the purpose of which will be later described.

In order to hold the mechanism in the normal position, as shown in Fig. 4, the gear 30 has secured thereto a helical spring 37, one end of which engages about one of the pillars 9, as shown in Fig. 4. On the inside of the cover 2 is pivoted a shutter 38 which, as shown, closes the opening 39, this shutter being held in this position through the action of a spring 38′ coiled about the pivot 39′. This opening 39 registers with the opening 35 in the hub 34.

The watchman or patrolman is provided with a key by means of which he actuates this mechanism by inserting it into the opening 35 thus engaging the cross-piece 36. In order to properly actuate the mechanism the key is given a clockwise rotation, thus causing the gear 30 to be rotated in a similar direction, and the adjustment is such that the detent 19 will make one complete revolution and engage the pawl 20, after which the key is withdrawn and the mechanism is allowed to operate under the action of the spring 37. It may be stated that when the gear 30 is actuated the helical spring is wound and given a greater tension, and when the key is withdrawn the spring will cause the gear to slowly rotate and return to its normal position, as shown in Fig. 4, such slow movement being caused by the operation of the escapement mechanism which permits a slow rotation of the toothed wheel 13 which is driven in one direction by the gear 30 by means of the pinion 18, detent 19 and pawl 20. The adjustment of the associated mechanism is such that the actuation of this gear is sufficient to cause one complete revolution of the break wheel 24. This, it will be apparent, brings the projections 25 thereon into engagement with the spring 26, and as heretofore stated, this spring will thereupon alternately make and break contact with the springs 27 and 28. The springs 26 and 27 are connected in circuit with a recording instrument at the central station, the operation of which informs the central operator of the number of the station from which a signal has been sent in, this number being determined by the number and disposition of projections upon the break wheel 24.

As stated heretofore, the spring 28 is connected to ground, so that if the line accidentally opens, ground relays at the central station may be used to obtain signals from all the boxes on the circuit and in this manner produce the necessary operation of the recording instrument to indicate to the attendant the number of the substation from which a signal has been sent in. It is apparent that such mechanism as herein disclosed embodies features which are very simple in construction and of direct and positive operation, there being no complicated mechanism to get out of repair or that needs delicate adjustment.

While I have herein shown and described a particular and preferred embodiment of my invention, I do not wish to be limited to the exact construction as shown, but desire to secure by Letters Patent—

1. In a signaling device, the combination of a break wheel secured upon a shaft, said shaft being mounted in supporting plates, an escapement wheel secured to said shaft, a pawl secured to said escapement wheel, a pinion loosely mounted upon said shaft, a detent secured to said pinion and adapted to engage said pawl once for every revolution of said pinion relative to said escapement wheel, a gear meshing with said pinion, a helical spring, one end of which is fastened to one of said supporting plates, actuation of said gear wheel causing a greater tension to be given said spring, release of said gear wheel causing said gear wheel to be operated under the action of said spring, thereby producing one complete revolution of the break wheel, and contact springs adapted to be operated by said break wheel whereby a circuit may be opened and closed.

2. In a signaling device, in combination, a shaft, a break wheel and an escapement wheel secured upon said shaft, a pawl pivoted upon said escapement wheel, a pinion rotatably mounted on said shaft, a detent carried by said pinion and arranged to engage said pawl once for each revolution of the pinion in one direction, said escapement wheel and pinion being thereby locked together for rotation in the opposite direction, a gear meshing with said pinion, a spring for operating said gear, and contact members operated by said break wheel.

3. In a signaling device, in combination, a casing, make-and-break mechanism mounted in said casing, mechanism for operating the same, said operating mechanism having a main shaft formed for coaction with a key, said casing having an opening in alinement with said main shaft, and a spring pressed shutter hinged on the inside of said casing and normally closed over said opening.

In witness whereof, I hereunto subscribe my name this 6th day of January A. D., 1908.

GEORGE M. WILLIS.

Witnesses:
CHARLES J. SCHMIDT,
LEONARD W. NOVANDER.