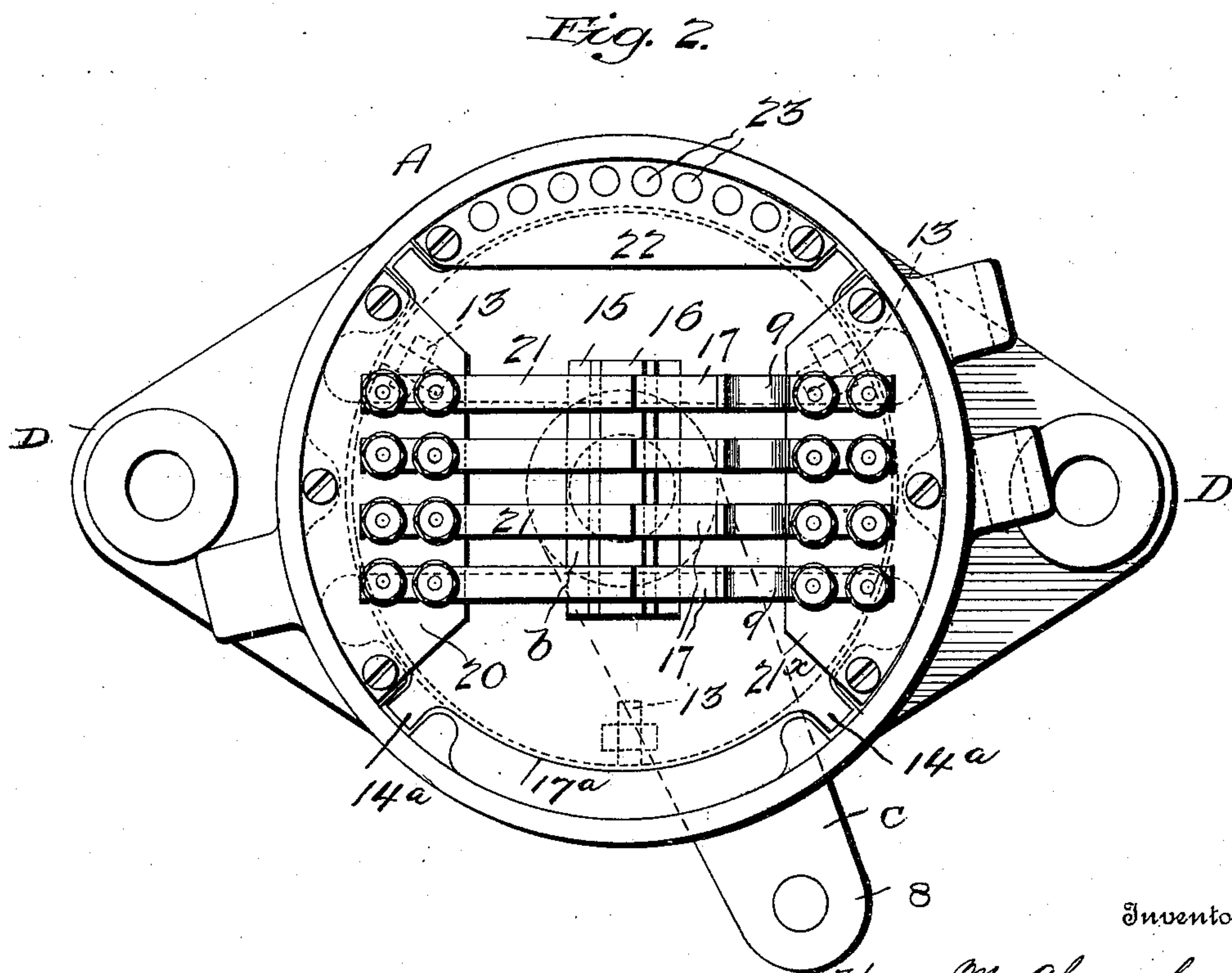
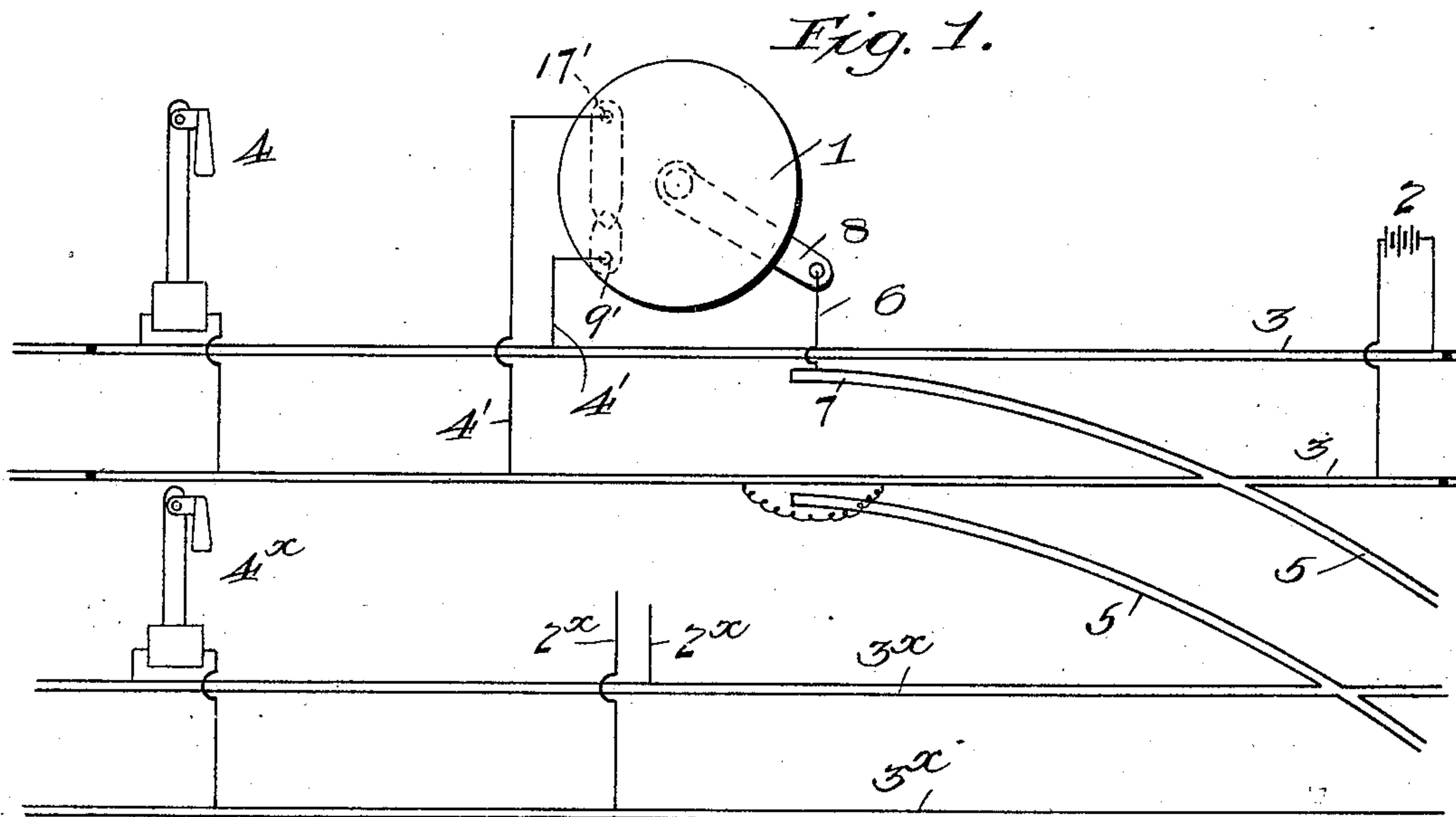


H. M. ABERNETHY.
RAILWAY TRACK INSTRUMENT.
APPLICATION FILED JAN. 16, 1907.

933,871.

Patented Sept. 14, 1909.
2 SHEETS—SHEET 1.



Witnesses
D. L. Woodman
James F. Brown

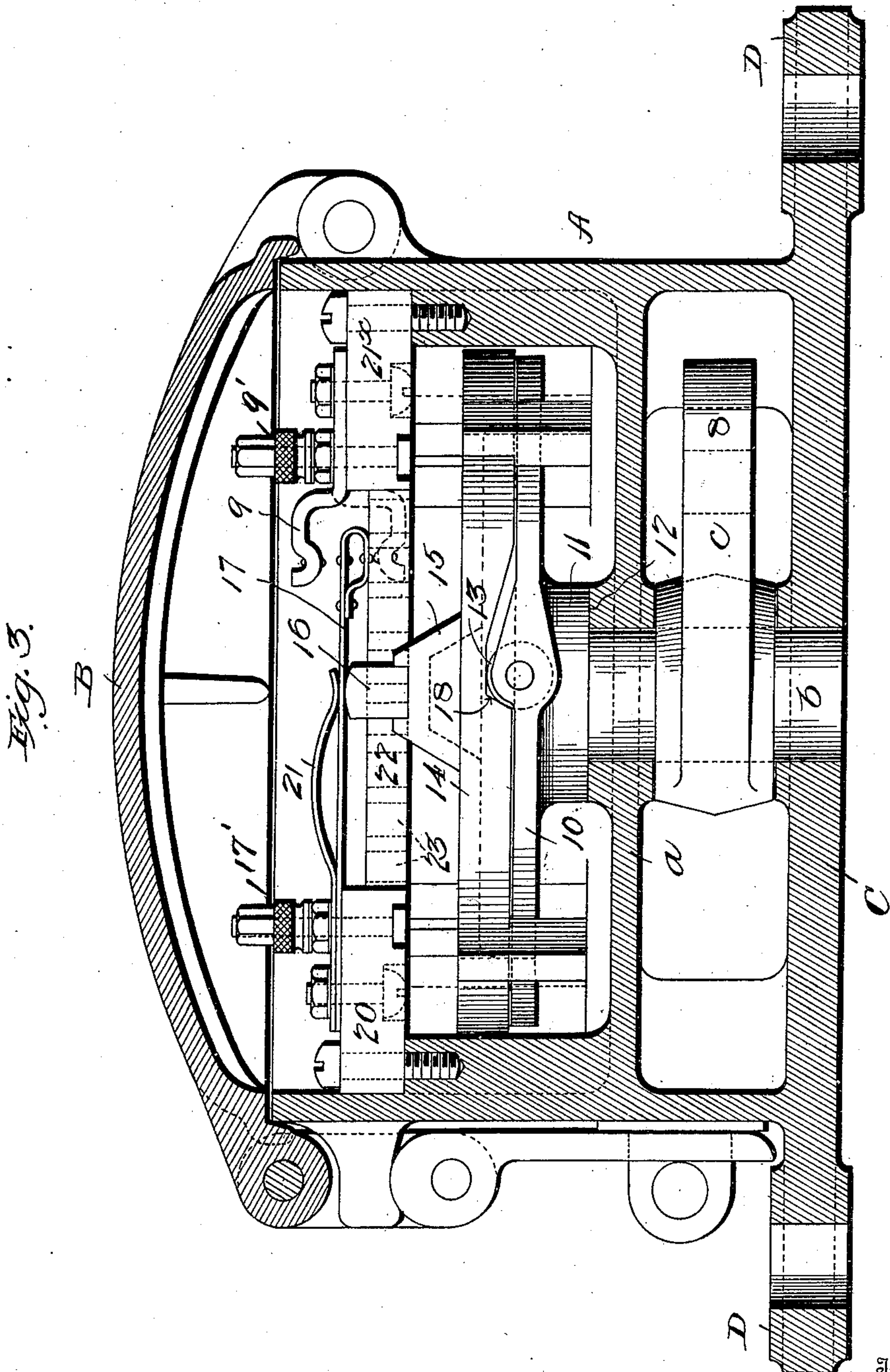
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Harry M. Abernethy
By Jas. L. Skidmore
His Attorney.

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UNITED STATES PATENT OFFICE.

HARRY M. ABERNETHY, OF CLEVELAND, OHIO.

RAILWAY-TRACK INSTRUMENT.

933,871.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed January 16, 1907. Serial No. 352,488.

To all whom it may concern:

Be it known that I, HARRY M. ABERNETHY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Railway-Track Instruments, of which the following is a specification.

My invention relates to a railway switch instrument or switch-box.

The main object of my invention is to provide a switch-box or instrument adapted to control one or a series of outside electrical circuits, the construction, arrangement and operation of the parts being such as to prevent the chattering of the electrical contacts thus insuring the durability of said contacts by preventing their destruction, since it is well known that the contacts soon burn out if they are permitted to move back and forth or have what is termed a "chattering contact or engagement".

Another object of the invention is to so construct a simple, durable and reliable switch-box or instrument, that it may be coupled with or connected to any switch, regardless of the extent of movement the switch-point may have, and at the same time avoid the necessity of using different crank-arms for the switch connection.

A further object of the invention is to provide means whereby the operation of the switch point will either make or break one or all of the electrical contacts.

The foregoing and such other objects as may occur from the ensuing description are attained by the construction and arrangement of parts such as illustrated by the drawings forming a part of this application and more particularly pointed out in the appended claims.

In the accompanying drawings:—Figure 1 represents a diagrammatic view showing my improved switch-box or instrument located at a switch, in connection with a railway block system. Fig. 2 is a plan view of the switch-box or instrument embodying my invention, the lid of the box being removed. Fig. 3 is a sectional elevation through the switch-box and its lid, showing in full lines and dotted lines the mechanism contained therein.

Referring to the drawings for a more particular description of my invention, I will first refer to the diagrammatic view, Fig. 1,

which shows a complete block in a railway block system. The numeral 1 designates the switch-box or instrument located at a switch, and designed to control one or more outside circuits, which may be led through the switch-box. A battery 2, is attached to the main line track or rails 3, 3, the electrical current flowing through the rails to a signal 4, which is located at a suitable distance in advance of the switch. The said battery is energizing a pair of magnets (not shown) in the signal box, which magnets are holding the signal in the all clear position, thus indicating that the switch is set at safety for the main line trains. The wires 4', 4', attached to each of the rails or near the switch are led to their respective binding posts 9' and 17', said posts being shown by dotted lines in Fig. 1 and in full lines in Fig. 3, the last named figure showing that the circuit is broken between the two posts 9' and 17', so that there would be no circuit or current passing through the switch-box 1. Now if the switch be shifted or thrown over for trains to pass in on the siding rails 5, 5, a connection 6, between the switch-point 7, would change the position of the crank-arm 8, which in turn would connect the metallic-contacts 9 and 17, by means hereinafter more fully described, and the current from the battery would now flow through the main rails, thence through the switch-box and back to the battery 2, thus cutting off the current which had been flowing through the magnets in the signal, thereby deenergizing these latter magnets and allowing the signal to return to the horizontal or danger position by gravity. As clearly shown in Fig. 2, it will be seen that four contacts may be utilized, so that a series of circuits may be cared for at the same time. Where a second track or rails 3^x, 3^x, cross the siding, and a signal 4^x is suitably located to indicate the condition of the crossing, the two wires 2^x, 2^x, attached to the last named rails would short-circuit the battery current flowing to this second signal in the same manner hereinbefore described. It will also be readily understood that should the switch be located within a short distance of interlocking towers, it is desirable at times to convey one of the circuits controlling the inter-locking through one of these boxes, and it is often necessary to open a circuit at one of these contacts by opening the switch instead of

closing it, hence by providing the four contacts, the said number of circuits are properly controlled.

Referring now to Figs. 2 and 3, of the drawings A represents the casing of the switch-box or instrument, provided with a suitable cover or lid B, said cover being secured and fastened to the casing in any desirable manner, and the base C is provided with integral projected flanges D, at each side thereof adapted to permit the box to be firmly secured to a railway tie or suitable foundation. The said casing A is provided with a bottom *a*, forming a bearing for the shaft *b*, and to this shaft, and beneath the bottom *a*, is keyed a crank *c*, the outer end or arms 8 of the crank being connected with the switch-point 7, by any suitable connection, shown at 6, Fig. 1, said arm 8 passing through a suitable opening in the casing or shell of the box between the bottom *a* and base C. The shaft *b* is formed integral with a large disk 10 having a hub 11 resting on the bearing surface 12 of the bottom *a*, and to this disk 10 are secured three rollers 13, as shown by dotted lines in Fig. 2, and partly in full and partly in dotted lines, Fig. 3. Numeral 14 designates a second or upper disk, having an integral upright projected portion 15, and to the latter is secured a piece of insulating material 16, which supports and engages with the four metallic contact plates 17. This second disk is provided with a flange 17^a which has been cut away so as to allow the upper surface of disk 10 and lower surface of disk 14 to contact, and integral with said disk 14 are lugs 14^a which fit in suitable grooves made on the inner surface of the shell or casing, the lugs being projected downward and resting on a bearing surface formed on the inner surface of the casing. These lugs serve to prevent the upper disk from moving other than to raise and fall.

As will be seen by reference to Fig. 3, the disk 14 is provided with a cam-surface 18 so that when the crank is moved, or the operation of the switch forces the crank arm from the position it now occupies, (the shaft and lower disk being integral) the rollers 13 will force the disk 14 upward, thereby separating the two disks and through the medium of the insulating material 16, cause the metallic strips 9 and 17 to contact, so that an electric current would flow from one binding post across to the other, or through the entire series, should all of the contacts be set and arranged in the same manner.

The numeral 20 represents a piece of insulating material secured to the casing and to which the series of metallic contacts 17 are suitably secured, and 21 designates pieces of spring material for re-inforcing the contacts 17. 21^x, is a piece of insulating material secured to the casing to which is fas-

tened in any desirable manner, the series of strips or metallic contacts 9, and 22, is also a piece of insulating material provided with perforations 23 adapted to receive the wires leading to the binding posts.

In the event that it is necessary or desirable to cause a constant current to flow from the battery through the contact strips 9 and 17, the short contact strip is reversed, that is, secured in the position shown by dotted lines in Fig. 3, so that the point of contact will be under the spring contact 17, then by operating the switch the upper disk will be raised as hereinbefore described, but instead of making a contact, the contact strip 17 will be lifted away from the contact 9, thus breaking the circuit between the strips or plates 9 and 17, hence by simply reversing the contact pieces 9 I can break any one or all of the circuits.

It will be understood that the base C of the box is of substantially the same width as the anchoring flanges D, and between the bottom and base on each side of the casing is an opening, one to receive the crank and the other to receive the wires which are led up through the perforated insulating piece and from thence to the several binding posts.

In practice it is required that the contact be made or broken by the first one-fourth inch of movement, and as all switch-points do not move the same distance away from the stock or main rail, provision must be made for switch-points that vary in their movements, hence I have provided an improved construction which requires but one crank, as it is not material where the rollers 13 stop or rest in operating the switch-point. The first one-fourth inch movement of the switch-point makes or breaks the contact and the rollers 13 simply pass around on the plain or smooth lower surface of the upper or second disk, thus it will be readily perceived that there is no further movement to the upper disk after it has once been raised or projected upward, hence is avoided all tendency of the chattering of the contacts, usually caused by trains passing over a switch which will cause a vibrating motion of the crank, and said motion being carried to the contact plates forces them back and forth all the time a train is moving over the switch, which soon burns out and destroys the contacts.

It is evident from the foregoing that my improved construction will prevent any chattering of the contacts after the switch-point has been moved one-fourth of an inch from the stock or main rail, and also that I may couple to any switch, regardless of the extent of movement the switch-point may have.

The operation of my switch-box or instrument may be briefly described, as follows:—When the switch-point 7 is operated,

the crank moves the lower disk 10 causing the rollers to make immediate contact with the cam surface 18 on the upper disk, thereby raising the latter disk to make or break
 5 any one or all of the contact points 9 and 17, dependent upon the position of the short contact pieces 9.

Slight changes in the details of the construction may be resorted to without departing from the spirit and scope of my invention.
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Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

15 1. In a railway track instrument, the combination with a box or casing, of pairs of electrical contacts supported therein, and adapted to control a plurality of electric circuits, and means for connecting and dis-
 20 connecting said contacts comprising cooperating disks within the casing, one of said disks being adapted to be partially rotated by the movement of a railway switch, and the other disk being adapted to be moved
 25 vertically.

2. In a railway track instrument, the com-

bination with a box or casing, of a pair of electrical contacts within said casing adapted to control an electric circuit, and means for connecting and disconnecting said con- 30
 tacts comprising a vertical shaft supported in bearings within the casing and adapted to be operated by the movement of a railway switch, a disk carried by said shaft and a second disk adapted to be moved vertically 35
 by the partial rotation of the disk upon said shaft.

3. In a railway track instrument, the combination with a box or casing, of electric contact points supported therein and adapted to control a plurality of electric circuits, and means for connecting and disconnecting 40
 said contacts comprising a disk adapted to be partially rotated by the movement of a railway switch, a second disk adapted to be 45
 moved vertically, and means for guiding said second disk in its vertical movement.

HARRY M. ABERNETHY.

In presence of—

JAS. L. SKIDMORE,
 MAY M. PLYER.