

G. W. LORIMER.
INDICATOR FOR SIGNAL TRANSMITTERS.
APPLICATION FILED JULY 22, 1902.

Fig. 1.

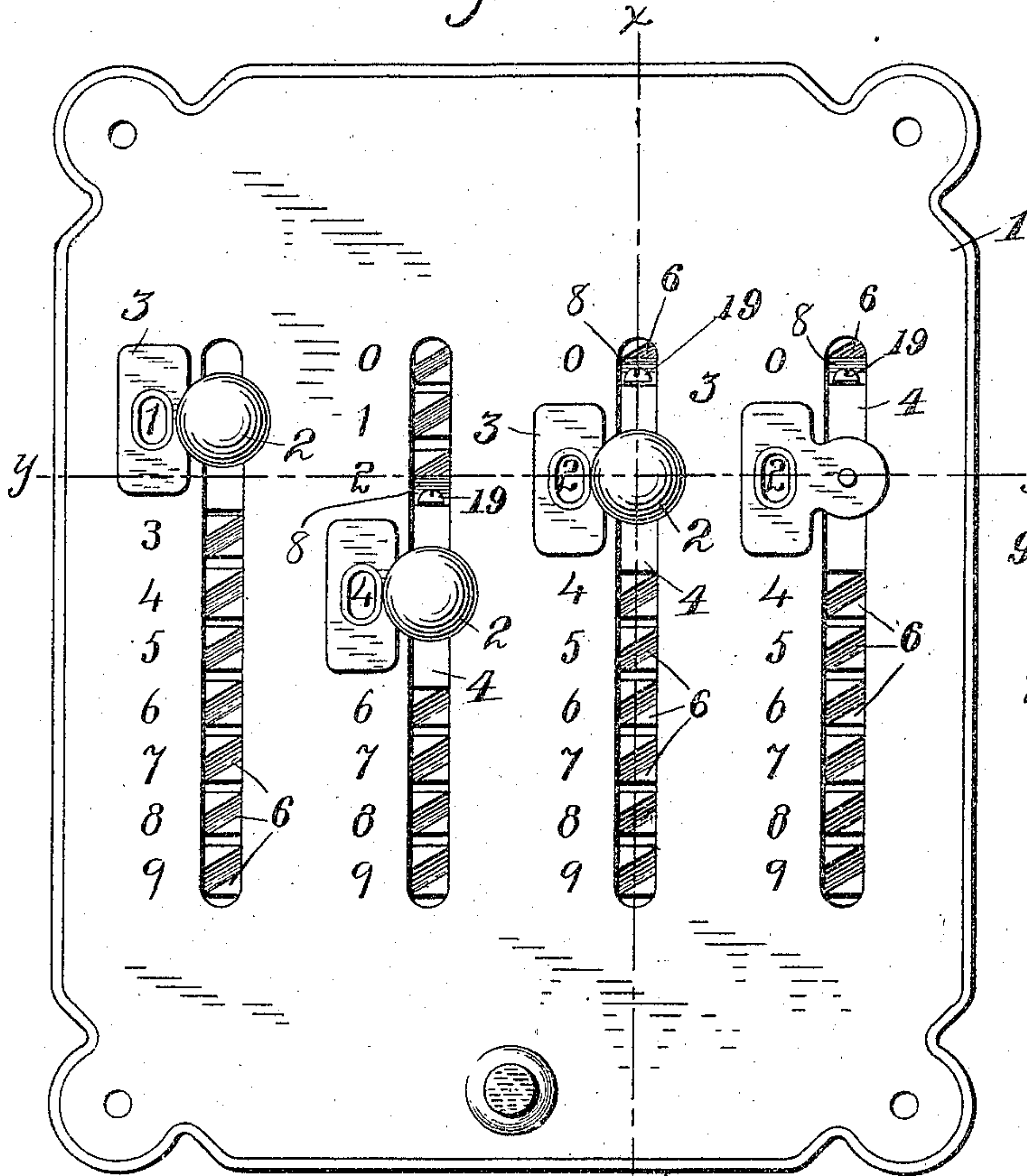


Fig. 2.

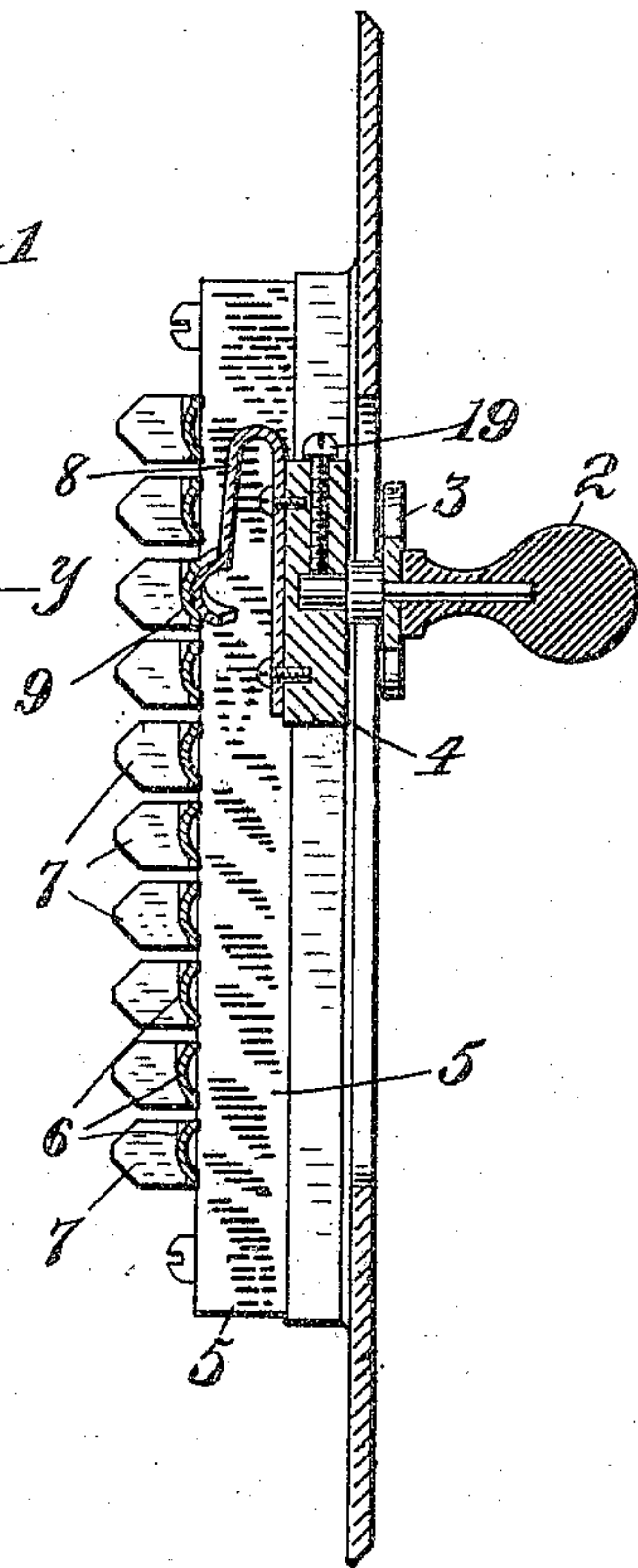


Fig. 3.

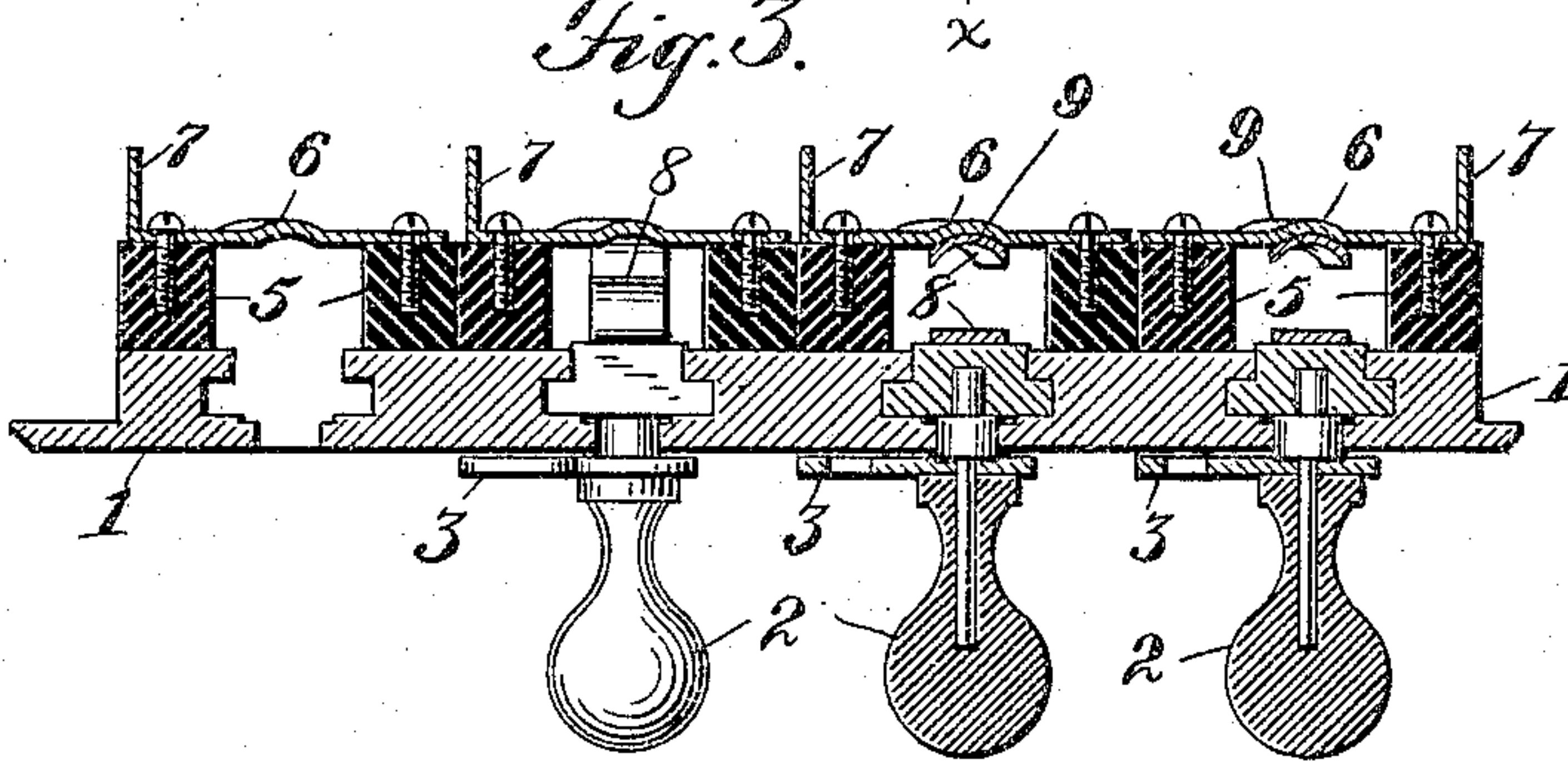


Fig. 4.

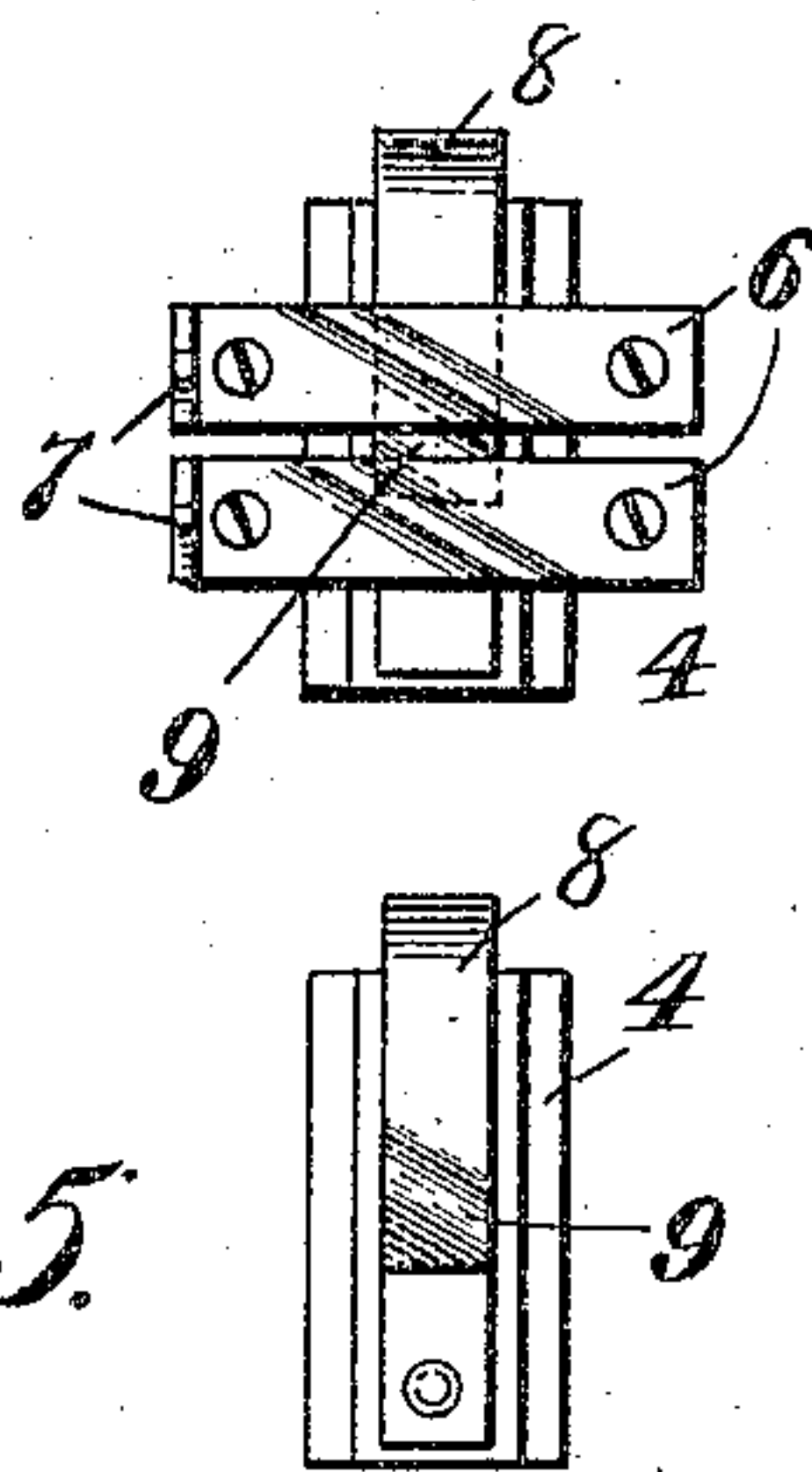
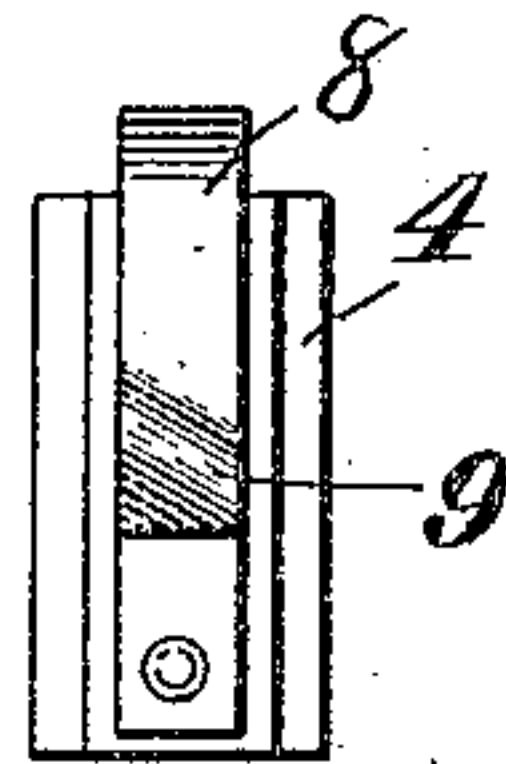


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE WILLIAM LORIMER, OF PIQUA, OHIO.

INDICATOR FOR SIGNAL-TRANSMITTERS.

SPECIFICATION forming part of Letters Patent No. 790,966, dated May 30, 1905.

Application filed July 22, 1902. Serial No. 116,521.

To all whom it may concern:

Be it known that I, GEORGE WILLIAM LORIMER, a citizen of the British Empire, and a resident of Piqua, in the county of Miami and State of Ohio, have invented a certain new and useful Improvement in Indicators for Signal-Transmitters, of which the following is a specification.

My invention relates to the indicator portion of variable-signal transmitters of that class wherein the number of the signal is set up upon the indicator by moving a button or buttons to the point corresponding to the signal to be transmitted, so as to cause a change in the electrical condition of the circuit to take place according to the position occupied by the indicator during the movement of the transmitting devices.

The invention is designed more particularly for the indicator portion of variable-signal transmitters organized to send signals indicating numbers—as, for instance, in the transmitting apparatus for automatic telephone-exchanges. In previous constructions of apparatus for this purpose the contact-spring connected with the indicator itself is adapted to be moved over a series of ten contacts, from “0” to “9,” inclusive, for the decimal system of numeration and to be set or left in position with any one of them, according to the signal to be transmitted. Where the fixed contacts consist of a number of plates or other forms of contact separated by spaces, the spring when of ordinary construction is liable to hang or to stop in the space between adjoining contact-plates, so that the indicator itself will be in intermediate position between two numbers on the face of the indicator instead of registering with one alone.

One of the objects of my present invention is to so construct the device as to avoid the tendency of the spring to rest in intermediate positions and to cause it to come to rest only when in full contact with one alone of the contact-points engaged by it.

To this end my invention consists in forming the contact-spring itself with a working contact-face projecting therefrom and of proper shape to have a line of contact engage-

ment which forms an angle more or less acute with the line separating adjoining contacts, whereby it may pass smoothly across the gap by bridging the same.

The invention consists, further, in forming the fixed contacts themselves with projections or depressions upon their contact-faces which correspond to projections upon the movable contact and by receiving said projections are adapted to stop the contact-spring in proper position, thus permitting the indicator to be readily set in the dark by counting the number of stop positions which it automatically assumes while moved by the user.

In the accompanying drawings I have shown my invention as applied to an indicator-plate designed for use with a variable-signal transmitter for sending signals up to ten thousand.

In the drawings, Figure 1 is a face view of the indicator-plate. Fig. 2 is a vertical section through the indicator on the line *xx*, Fig. 1. Fig. 3 is a horizontal section of the same on the line *yy*, and Fig. 4 is a rear view of two of the contact-plates and adjustable contact-spring. Fig. 5 shows in face view the movable contact-spring.

Referring to the drawings, 1 is the face of the indicator, furnished with four vertical rows of figures corresponding, respectively, to the thousands, hundreds, tens, and units of the decimal system. In each place the characters from “0” to “9,” inclusive, are arranged in vertical rows, as shown, and over each row moves an index 3, secured to a suitable button 2 and having an opening adapted to register with the several figures of the row to which it belongs.

On the rear of the plate 1 are fastened insulating rods or blocks 5, and across the spaces between said blocks are mounted the fixed contacts 6, corresponding, respectively, to the several numbers on the face of the plate. These contacts 6 are secured to the blocks 5 by screws, as shown, and each may be furnished with an ear 7 for the attachment of a conducting-wire.

In grooves formed in the rear of the face-plate 1 move conducting-blocks 4, one for each vertical row of figures, and each said conducting-block 4 carries the contact-spring 8,

which is secured to the block and in electrical connection therewith and through said block with the frame or plate 1 of the instrument. The buttons 2 are fastened to the block by
5 screws 19, and their stems project through slots in the face-plate 1, as clearly shown.

As shown in Fig. 4, the spaces between adjoining contacts 6 form slots or openings extending at right angles to the line of movement of the contact-spring 8. With the ordinary form of contact-spring it is obvious
10 that the end thereof in passing from one plate to another would tend to rest in a space between adjoining contacts 6, and therefore in position to make connection with two of them
15 at once, as well as to also cause the index 3 to stop in position over the blank space between adjoining figures of the vertical row on the face-plate 1.

In the manipulation of such a device it would be necessary to exercise great care in order to bring the contact-spring and index to proper position. To obviate this difficulty and the liability to mistake in the operation of the apparatus, I form the contact-spring 8 at its contact-face with a working surface consisting of
25 an inclined projection 9, as shown in Fig. 5, which, as clearly shown, forms an angle to the longitudinal space between adjoining plates 6 and causes the spring to pass over said space
30 without tending to drop into it. By this means the contact-spring would in the absence of other provisions move freely and smoothly over its whole range of movement.

In order that the spring and index may readily find, automatically, as it were, their proper position, I provide each contact-plate 6 with a groove or depression corresponding in shape to the contact-face 9 of the spring,
40 so that when the spring reaches position full upon the contact-plate it will drop into the groove or depression in the face of the contact-plate and will offer a slight resistance, moreover, to movement away from such position. By this means the difficulties above
45 mentioned are overcome, and it becomes possible, moreover, to readily set the index in the dark by counting the number of stop positions which it successively automatically assumes
50 as it is moved from one extreme of adjustment

over the several successive positions which it may occupy.

It will be obvious that the movable contact and the fixed contacts may be given other forms or shapes to secure the purposes of my invention and so that the spring will pass without obstruction or tendency to stop over the spaces between adjoining contacts 6, but will automatically stop in the position where it is in full engagement with one alone of the con-
60 tacts.

What I claim as my invention is—

1. The combination in an indicator for an electrical transmitter, of a series of fixed contacts and a movable contact-spring having a
65 working face or contact portion oblique to the line dividing adjoining fixed contacts and adapted to engage in a correspondingly-formed groove or depression in the fixed contacts.

2. In an electrical indicator, the combination substantially as described, of a series of fixed contacts and a movable contact formed as described with grooves and projections which are oblique to the line of movement of
75 the movable contact and are adapted to engage and automatically stop the contact-spring in proper position while at the same time allowing it to pass freely from one fixed contact to another.

3. In an electrical indicator such as described, a series of fixed contacts each having a working face provided with a groove diagonal to or forming an angle with the line of
80 movement of the adjustable contact.

4. In an electrical indicator such as described, the combination with a series of fixed contacts of a movable or adjustable contact having a working face provided with a diagonal projection whose bearing-surface occupies
90 a line transverse to the line of adjustment of said contact over a series of fixed contacts.

Signed at Piqua, in the county of Miami and State of Ohio, this 17th day of July, A. D. 1902.

GEORGE WILLIAM LORIMER.

Witnesses:

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