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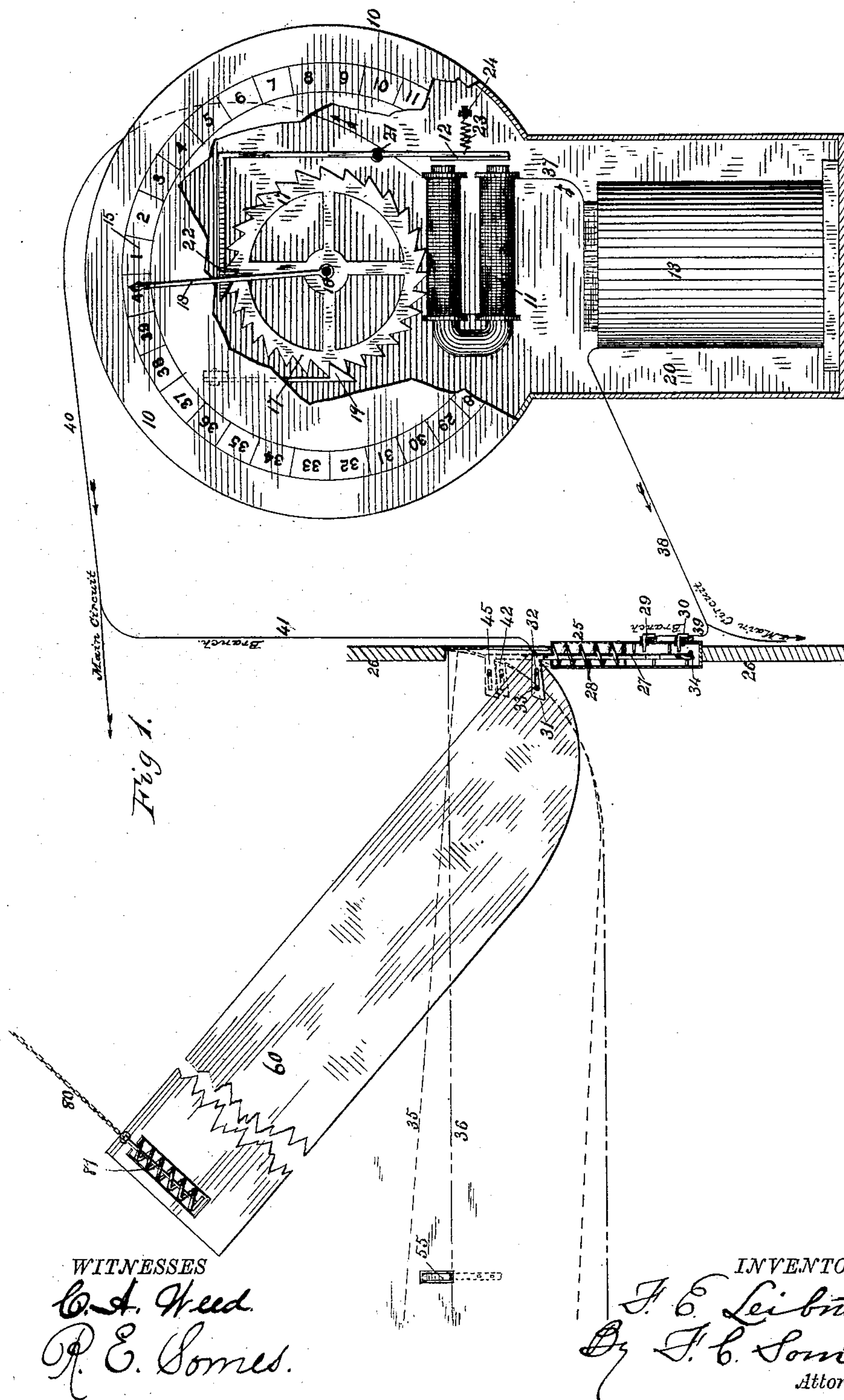
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F. E. LEIBNITZ.

ELECTRIC BERTH REGISTER FOR SLEEPING CARS.

No. 417,052.

Patented Dec. 10, 1889.



WITNESSES

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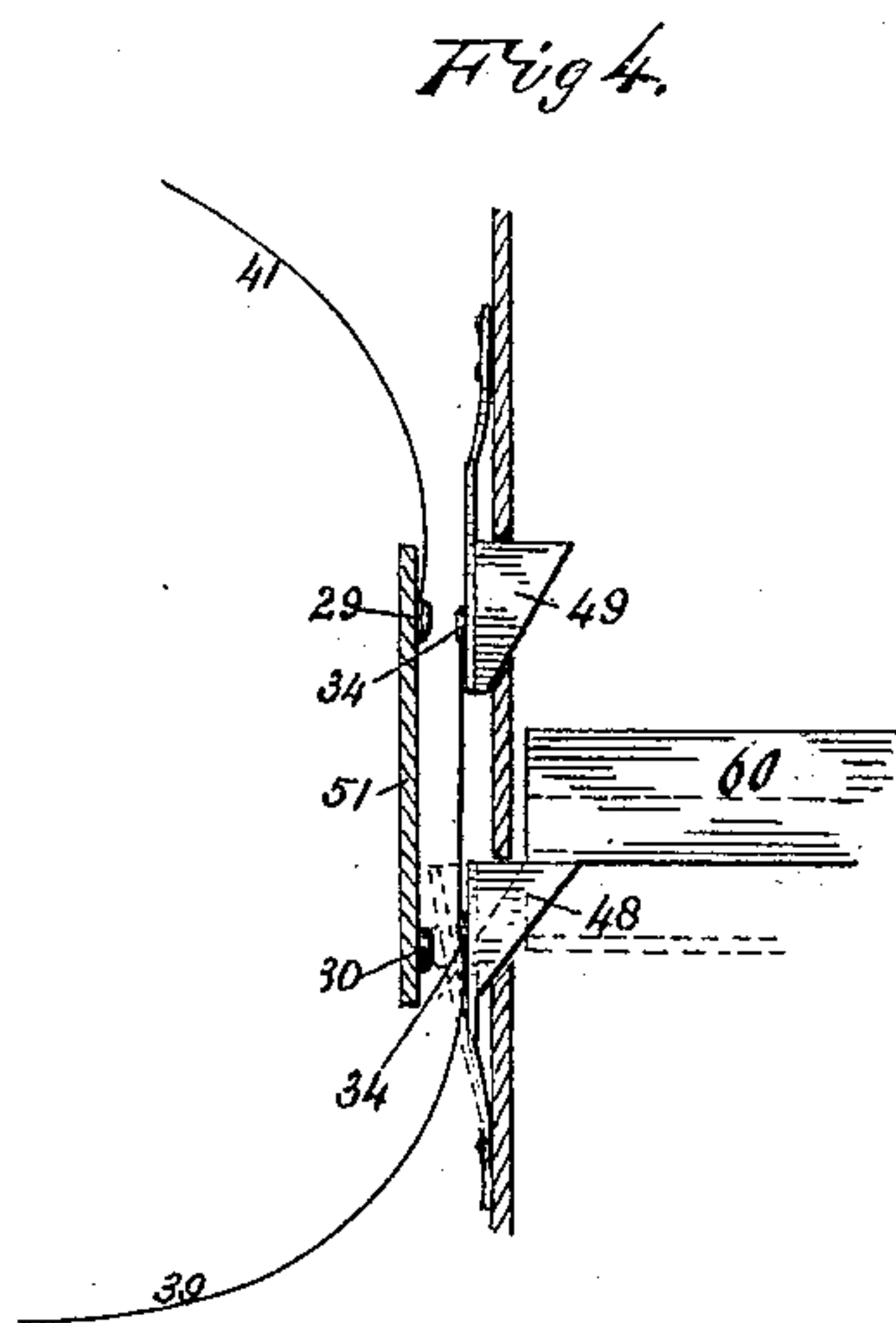
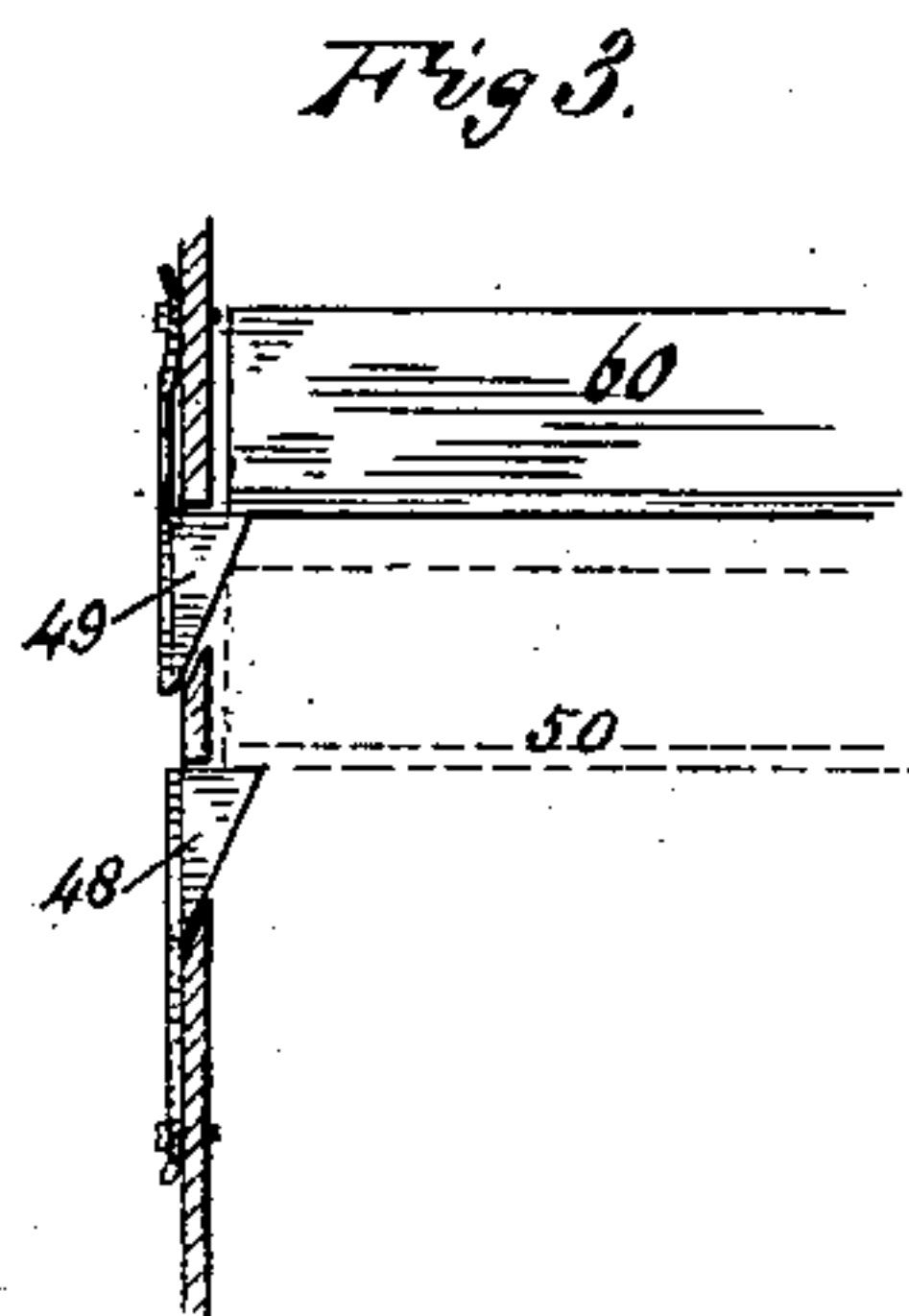
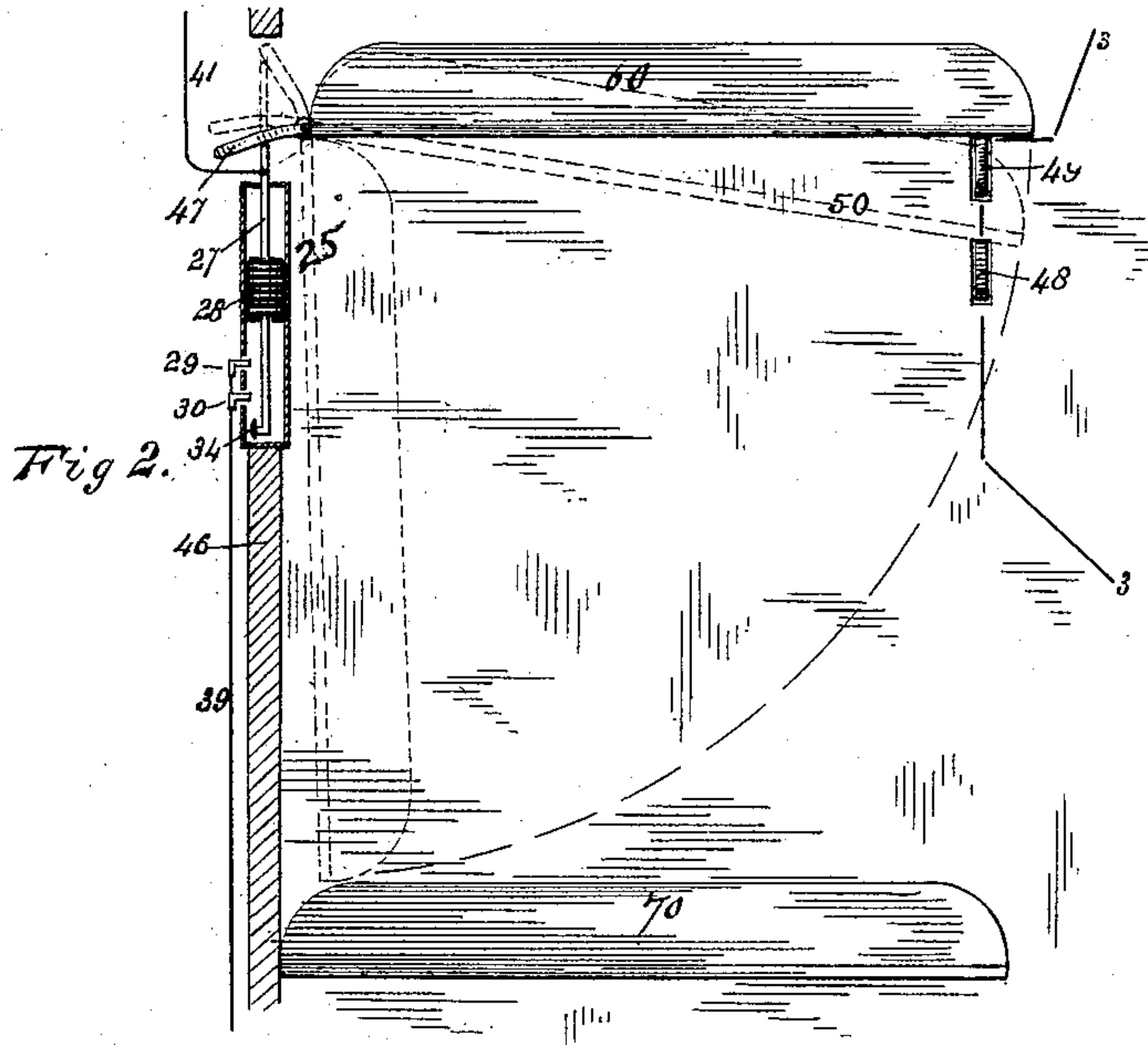
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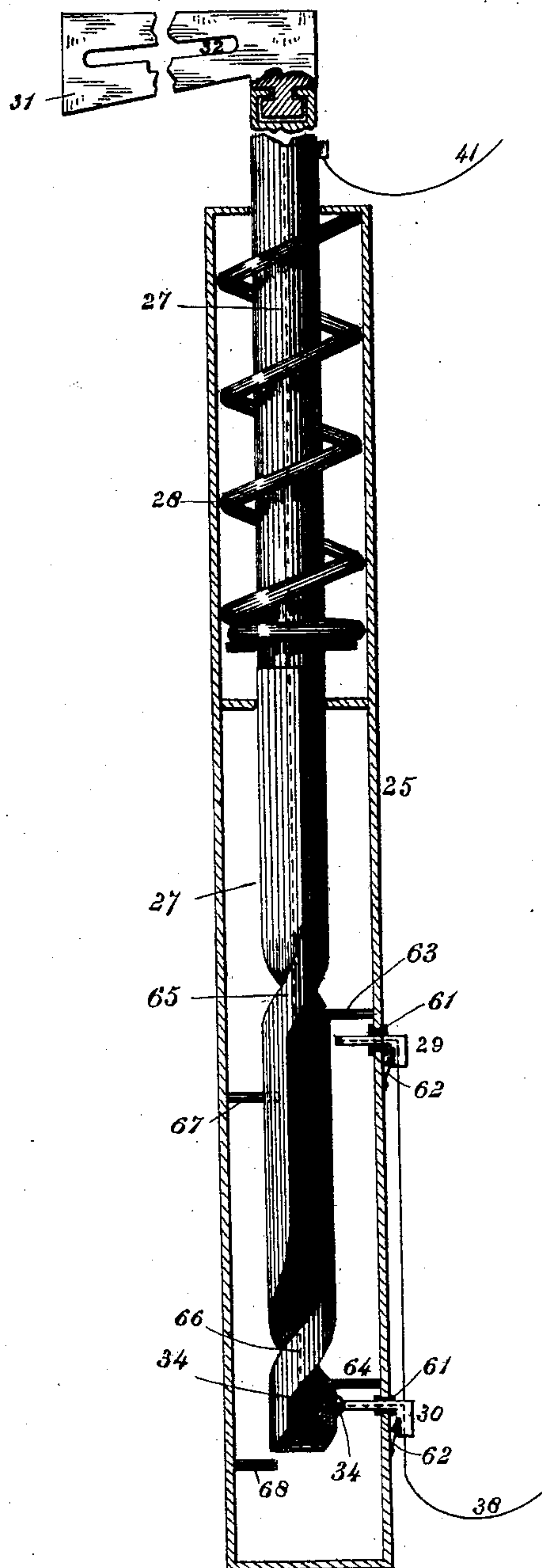


Fig 5.

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UNITED STATES PATENT OFFICE.

FREDERICK EDWARD LEIBNITZ, OF BIRMINGHAM, ALABAMA.

ELECTRIC BERTH-REGISTER FOR SLEEPING-CARS.

SPECIFICATION forming part of Letters Patent No. 417,052, dated December 10, 1889.

Application filed March 29, 1889. Serial No. 305,248. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK EDWARD LEIBNITZ, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Electric Berth-Registers for Sleeping-Cars, of which the following is a specification.

The object of this invention is to provide an electric register for a sleeping-car which will automatically register the use of the upper and lower berths of the car.

Figure 1 of the accompanying drawings is a view partly in elevation and partly in section, representing this electric register in connection with the upper berth of a Pullman sleeping-car. Fig. 2 represents a longitudinal section of a portion of a compartment of a Mann boudoir sleeping-car, showing the upper and lower berths in position for use as berths, a vertical section of the partition-wall between the compartments, and a vertical section of the circuit-closer disposed in said wall, the dotted lines indicating the position of the upper berth when approximately open and its position when closed and serving as a seat-back. Fig. 3 represents a section on line 3 3 of Fig. 2, showing the partition-wall between the compartments provided with a double-berth rest. Fig. 4 is a view similar to Fig. 3, showing the latches of the berth-rest adapted to act as circuit-closers. Fig. 5 represents an enlarged vertical section of the circuit-closer shown in Fig. 1.

Similar numerals of reference indicate corresponding parts in the different figures.

The main features of this improved berth-register are a register or register proper 10, an electro-magnet 11, an armature 12, for actuating the register, a battery (which term is designed to include any source of electricity) 13, and a circuit-closer actuated by the opening of the upper berth.

The register 10 is of any suitable construction. In the form illustrated it comprises a circular dial 15, having a series of consecutive numbers disposed at regular intervals in a circuit on its face. An arbor 16 is disposed centrally within the case and a toothed wheel 17 is fixed on said arbor. The arbor extends through the dial and an indicator 18 is adjusted on the extension of the arbor and

points to the numerals on the dial. A spring-pawl 19 is fixed within the casing and engages the teeth of the wheel for holding it in position. The casing of the register is provided with a pocket 20, in which the battery may be disposed.

The electro-magnet 11 is disposed in the casing of the register, and the armature 12 is pivoted on a pivot 21 within said casing. One end of the armature is adapted to swing into contact with the electro-magnet, and the opposite end thereof is provided with a spring-pawl 22, which engages the toothed wheel 17. A spring 23 within the casing is attached at one end to an eye 24 and at the other end to the magnet end of the armature and operates to hold said armature in normal position.

The circuit-closer is adapted to be actuated by the partial opening of the upper berth for registering the use of the lower berth and by the full opening or adjustment of the upper berth in normal open position for registering the use of the upper berth. This circuit-closer comprises a casing 25, disposed in the window-panel 26 of the car adjacent to the hinged berth, a sliding bolt 27, provided with a contact-button 34, a spring 28, surrounding said bolt within the casing, and two studs 29 and 30, projecting into said casing with which said button comes in contact for closing the circuit. The contact-studs pass through eyes 61, which insulate them from the casing and are preferably provided with springs 62, which cause them to have a yielding or elastic contact with the button. One end of the spring 62 is attached to the casing and the other end is attached to an insulated plate on the stud. The sliding bolt 27 is provided at its upper end with a laterally-projecting arm 31, having a horizontal slot 32, which is engaged by a pin 33 on the end of the upper berth, whereby the bolt is raised when said berth is opened and depressed when it is closed.

The casing 25 may be provided with two inwardly-projecting fixed pins 63 and 64, just above the contact-studs 29 and 30, respectively, and the bolt 27 may be rectangular in cross-section and provided with two twists 65 and 66 opposite said pins. The casing may also be provided with two inwardly-project-

ing pins 67 and 68 on the opposite side at points below said contact-studs. The pins 63 and 64 engage the twists of the bolt and turn it on its axis, so as to throw the contact-button 34 out of position for contact with the contact-studs during the action of closing the berth, and the pins 66 and 67 swing back the bolt during the closing of the berth, so as to bring its button in line with said studs for action when the berth is again opened. These devices prevent duplication of registration by the opening and closing of the berth. In such case the laterally-projecting arm 31 at the upper end of the bolt is pivoted on the body thereof, so as to permit the body of the bolt to turn axially. These features are illustrated in Fig. 5.

Instead of an axially-turning bolt the register proper may be so adjusted that two movements of the toothed wheel 17 will be required to cause the indicator 18 to move the distance of one section of the dial. In this case the opening of the berth will cause a half-movement of the register, and the closing thereof will complete one registration. The lower ends of the berth-chains or berth-spring ropes 80, which connect the opposite ends of the berth with the roof or side of the car, may be connected at their lower ends with the berth-springs 81, which are sufficiently stiff to sustain the weight of the berth, so that when opened the berth is arrested when nearly open and held in an inclined position. The springs 81 yield to an additional weight of, say, fifty or sixty pounds and permit the berth to assume its normal open position on the entrance of a passenger.

The electric circuit comprises a wire 37, which connects one pole of the battery with one end of the electro-magnet, a wire 38, connected to the other pole of the battery and extending around the car and provided with branch wires 39, which connect with the studs of the circuit-closers of the different berths, and wire 40, connected to the opposite ends of the electro-magnet and provided with branch wires 41, which connect with the sliding bolts 27 of the circuit-closers of the different berths of the car.

The operation of the berth-register when provided with the circuit-closer (shown in Fig. 1) is as follows: When the upper berth is opened to remove the bed-clothing for the lower berth, the sliding bolt 27 is raised until its horizontal arm 31 reaches the position indicated by the dotted lines 42 in said figure, at which point the berth-chain 80 is paid out its full length and the tension of the spring 81 holds the berth in the position indicated by the dotted lines 35. This raising of the bolt 27 brings its button 34 into contact with the lower stud 30 and closes the circuit, whereby the armature is attracted by the electro-magnet and swung on its pivot, causing its pawl to turn the toothed wheel 17 the distance of one tooth. This turning of the wheel causes the indicator 18 to move one-half step

on the dial, thereby registering for the lower berth. In case the upper berth is not sold it remains in the slightly-inclined position indicated by the dotted lines 35. If the upper berth be sold, the weight of the passenger on entering depresses it into normal open position, as indicated by the dotted lines 36 of Fig. 1. This depression of the berth causes a further upward movement of the bolt 27, bringing it into the position indicated by the dotted lines 45. This upward movement of the bolt causes the contact-button 34 to again close the circuit through the upper stud 29 of the circuit-closer, whereby the armature is again actuated and the indicator again moved one step on the dial for registering the use of the upper berth.

A circuit-closer adapted for use in connection with the Mann boudoir sleeping-car is shown in Fig. 2. The case 25 of this circuit-closer is disposed in the partition-wall 46 between the compartments or boudoirs. The construction of the circuit-closer is similar to that before described, excepting that the slotted arm 31 of the sliding bolt 27 is dispensed with. The upper berth is provided with a projecting arm 47, which engages the upper end of said bolt. As the upper berth in the Mann car opens upward instead of downward, the upper stud 29 is first struck by the contact-button on the opening of the berth. In this case the upper-berth rest is provided with two spring-catches 48 and 49. When the lower berth is to be prepared for occupancy, the upper berth is swung upward until it is engaged by the catch 48, by which it is held in inclined position, as indicated by the dotted lines 50 of Fig. 2. In case the upper berth is not sold it remains in this position during the night. In case the upper berth is sold it is swung up into horizontal position and caught by the latch 49 of the upper-berth rest. This movement of the berth into normal open position again depresses the bolt 27 and closes the circuit through the lower stud 30 and causes a registration for the upper berth.

A circuit-closer of a modified construction is shown in Fig. 4, wherein the contact-button 34 is disposed on each of the spring-catches 48 and 49 of the upper-berth rest, making them circuit-closers proper, and the studs 29 and 30 are disposed on a plate 51, supported adjacent to said catches. In this case, when the upper berth is opened and passes the lower catch of the upper-berth rest, said catch is forced backward until its contact-button comes in contact with the lower stud 30 of the plate 51, and the circuit is closed and the register actuated. When the upper berth is opened for occupancy by being swung into horizontal position, it comes in contact with the upper catch 49, causing the contact-button thereof to come in contact with the upper stud 29 of said plate, whereby the circuit is again closed and the register again actuated. On swinging back the upper berth into

vertical position for day use the register will be again actuated once or twice, according as it has passed one or both the berth-rests 48 and 49, and a registration for the lower berth 5 or for both the upper and lower berths will be thus completed, as the case may be.

A berth-latch 55 will be provided for the berths of the Pullman style, to hold the same fully opened after occupancy, in order to prevent the actuation of the register several times during one night as the occupant thereof leaves and returns to his berth. The berth-latch 55 and the berth-spring ropes 80 serve as berth-holders for retaining the berth in 15 partially-open and fully-open positions, respectively, and in this sense are the equivalents of the spring-catches 48 and 49, constituting the upper-berth rest of the Mann car.

Any equivalent register or recorder may be 20 substituted for the specific form of register herein shown, and the term "register" as used in the claims is to be understood as covering such equivalents.

I claim—

25 1. The combination of a hinged berth, two berth-holders which hold said berth in partially-open and open positions, respectively, a register, an electric circuit, an electro-magnet, an armature for actuating said register, 30 and a circuit-closer operatively connected with the berth and having two contact-points operated in different positions of the berth.

2. The combination of a hinged berth, a

register, an electric circuit, an electro-magnet, an armature for actuating said register, two 35 contact-studs, a sliding bolt actuated by the movement of the upper berth, said bolt being provided with a contact-button and serving as a circuit-closer, and a spring surrounding 40 said bolt.

3. The combination of a hinged berth provided with a projecting arm, a berth-rest having two spring-catches, disposed adjacent to each other, for holding the berth in horizontal open position and in inclined open position, 45 respectively, two contact-studs connected with one of the wires of the circuit, and a sliding spring-bolt engaged by the arm of the berth and connected with another wire of the circuit, said bolt being provided with a contact- 50 button to adapt it to act as a circuit-closer.

4. The combination of a hinged berth having a pin at one end, a register, an electric circuit, an electro-magnet, an armature for actuating said register, a sliding bolt, a slotted 55 arm pivoted on said bolt and engaging the pin of said berth, a casing for said bolt, a contact-stud in said casing, and fixed pins in said casing, said bolt being provided with a contact-button, which engages said stud for clos- 60 ing the circuit, and with a spiral twist which is engaged by said pins for turning the bolt.

FREDERICK EDWARD LEIBNITZ.

Witnesses:

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J. K. WARREN.