

No. 682,750.

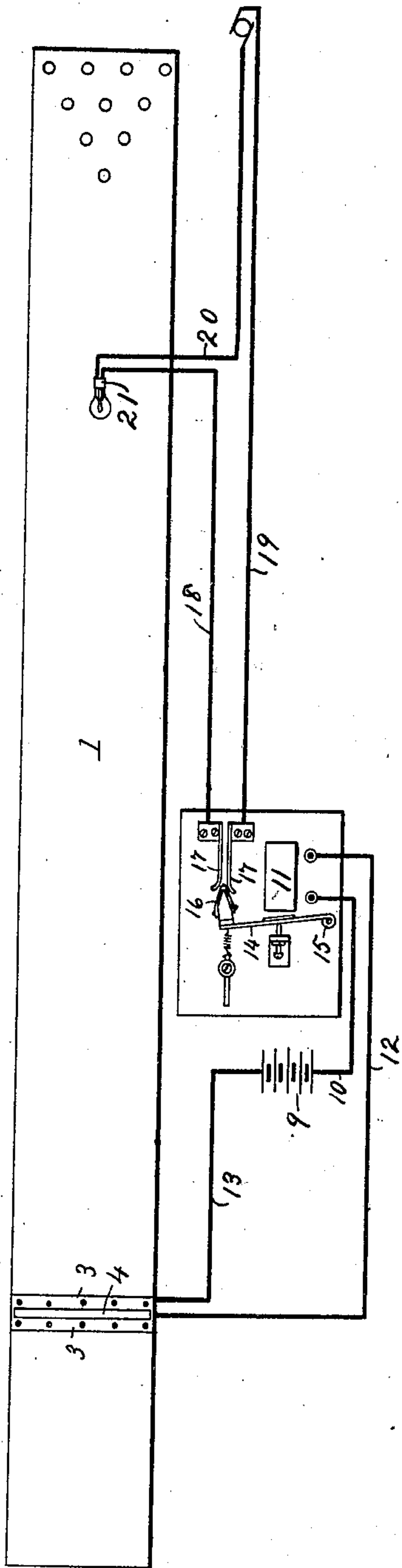
Patented Sept. 17, 1901.

H. G. RUENZEL.
BOWLING ALLEY.

(Application filed Apr. 1, 1901.)

(No Model.)

Fig. 1.



Witnesses:
F. A. Otto
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Fig. 3.

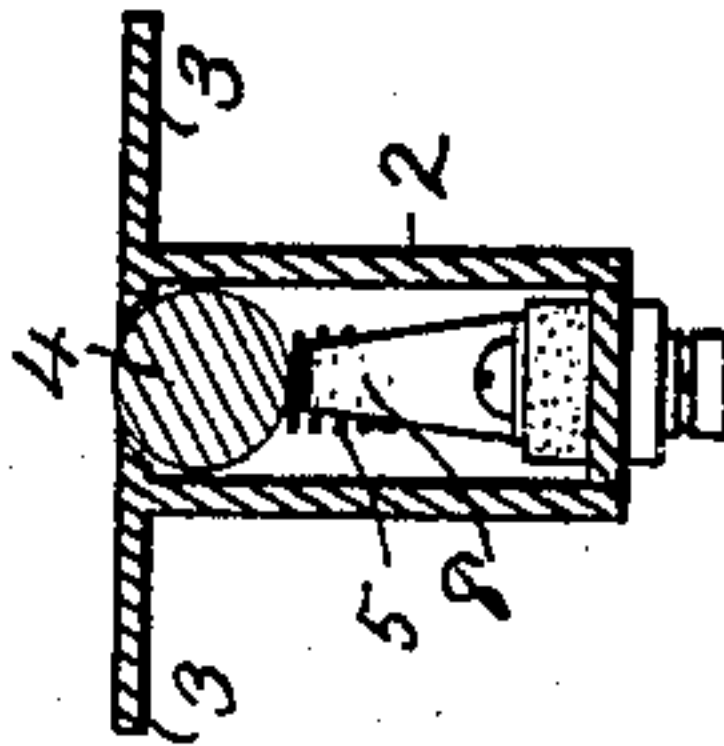
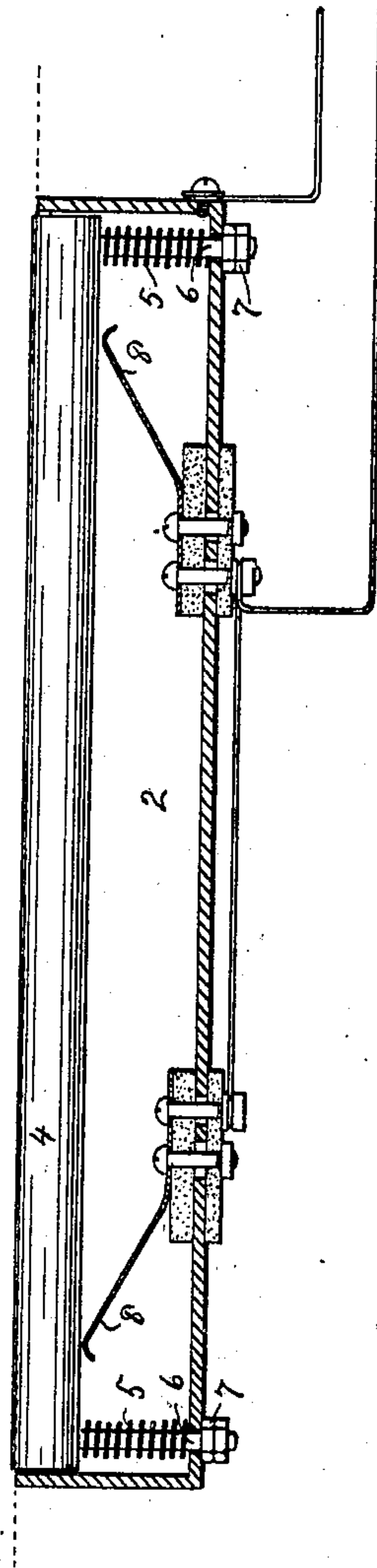


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY G. RUENZEL, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO HENRY P. HOEHL, OF SAME PLACE.

BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 682,750, dated September 17, 1901.

Application filed April 1, 1901. Serial No. 53,878. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. RUENZEL, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Bowling-Alleys, of which the following is a specification.

My invention relates to improvements in bowling-alleys.

Disputes have frequently arisen in connection with bowling games as to whether or not a player has crossed the foul-line. This is owing to the fact that most players prefer to take a short run, ending with a slide, upon the surface of the alley or its approach preparatory to delivering the ball, and when so sliding if the player observes that he is about to pass the foul-line he takes several short quick steps backwardly to prevent his feet from being carried across the foul-line by the momentum of the sliding movement, and it is frequently difficult for the umpire or referee to determine whether or not the feet of the player have crossed the line while he is checking his speed by thus stepping backwardly.

The object of my invention is therefore to provide means for automatically signaling or indicating the fact that a player has crossed the foul-line, whereby all such disputes may be avoided.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a plan view of a bowling-alley equipped with my invention, the electrical connections and signaling apparatus being diagrammatically illustrated. Fig. 2 is a vertical longitudinal sectional view of that portion of my apparatus which is located transversely of the alley at the foul-line. Fig. 3 is a cross-sectional view of the same.

Like parts are identified by the same reference characters throughout the several views.

1 represents a bowling-alley of ordinary construction, except that at the foul-line I have provided a box 2, extending transversely across the alley, with plates 3 coincident with the surface of the alley itself. A rod 4 is supported in the box 2 by means of springs 5, the rod being provided with depending bolts 6, extending through the bottom of the box 2 and provided with lock-nuts 7, where-

by the upward movement of the rod 4 is limited by the engagement of the nuts 7 against the bottom of the box 2. The nuts 7 are so adjusted that the rod 4 will be held by the springs 5 in the position in which it is shown in Figs. 2 and 3, with the upper surface of the rod projecting slightly above the surface of the bowling-alley, which is indicated by dotted lines in Fig. 2. If the foot of a player slips past the foul-line, it will depress the rod 4 into contact with the spring-electrodes 8, located in the box 2, but insulated therefrom. When the rod 4 is thus in contact with the electrodes 8 an electric circuit of a battery 9 will be closed through the medium of the conductor 10, an electromagnet 11, conductor 12, electrodes 8, rod 4, the box 2, and conductor 13, whereby the electromagnet will be energized and the signaling-circuit closed through the medium of an armature 14, which is pivotally supported at 15 and provided with a tapered circuit-closing plug 16, operating between two yielding contact-surfaces or electrodes 17 of the lighting-circuit, of which the wires 18, 19, and 20 form a part.

21 illustrates a lamp included in the signaling-circuit and which may be used to indicate the foul. It will be understood, however, that any other form of signal may be used.

As soon as the foot of the player is removed from the rod 4 the latter is restored to its normal position by means of the spring 5, thus breaking the contact with the electrodes 8 and opening the circuit of the battery 9. As soon as the magnet 11 is deenergized by the opening of the battery-circuit the armature 14 is retracted by means of a spring 22 to withdraw the circuit-closing plug 16 from the electrodes 17, and thus break the signaling-circuit. It will of course be understood that if desired the spring 22 may be omitted and the signaling-circuit manually opened, in which case the signal will remain after a foul has been committed until the parts are readjusted to their normal position. The use of a cylindrical rod 4 or a bar with a rounded upper surface is preferred, as such rod or bar can readily be arranged, as shown, so that only the central portion will project above the surface of the alley on a line which coincides exactly with the foul-line, while the sur-

face of the rod pitches downwardly in both directions and offers no obstruction against which the fingers or shoes of the player can catch or which will alter the course of a ball in case the latter should be delivered before the foul-line is reached.

It will of course be understood that a great variety of signals and signal-operating apparatus may be employed without departing from the scope of this invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. A bowling-alley provided with a transverse channel, located at the foul-line thereof; a rod or bar located in said channel, and yieldingly supported in a position for contact with the foot of a player; and a signaling device connected with said rod or bar.

2. A bowling-alley provided with a transverse channel, located at the foul-line thereof; a rod or bar located in said channel and extending transversely across the alley; means for yieldingly supporting said rod or bar in a position for contact with the foot of a player; and a signaling device connected with said rod or bar.

3. A bowling-alley, provided with a transverse channel, located at the foul-line thereof; a rod or bar located in said channel and extending transversely across the alley; means for yieldingly supporting said rod or bar in a position for contact with the foot of a player; and a signaling device connected with said rod or bar, said rod or bar being rounded or inclined downwardly in both directions from the foul-line.

4. A bowling-alley, provided with a transverse channel, located at the foul-line thereof; a rod or bar located in said channel, and having its upper surface inclined downwardly from the foul-line; means for yieldingly supporting said rod or bar in position for contact with the foot of the player at the foul-line; covering-plates, partially covering said channel and bar; and a signaling device operatively connected with the bar.

5. The combination with a bowling-alley; of a transverse rod or bar yieldingly supported at the foul-line thereof, and arranged to project slightly above the surface of the alley when in normal position; electrodes arranged for contact with said rod or bar, when the latter is depressed; a source of electric-current supply, having a circuit arranged to include said electrodes; an electromagnet also included in said circuit; an armature arranged to be operated by said magnet, and also adapted to serve as a switch for making and breaking a signaling-circuit; an electrically-operated signaling device; and a source of current-supply therefor, having a circuit arranged to be closed by the movement of said armature when the magnet is energized; together with means for retracting said armature when the magnet is deenergized.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY G. RUENZEL.

Witnesses:

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LEVERETT C. WHEELER.