

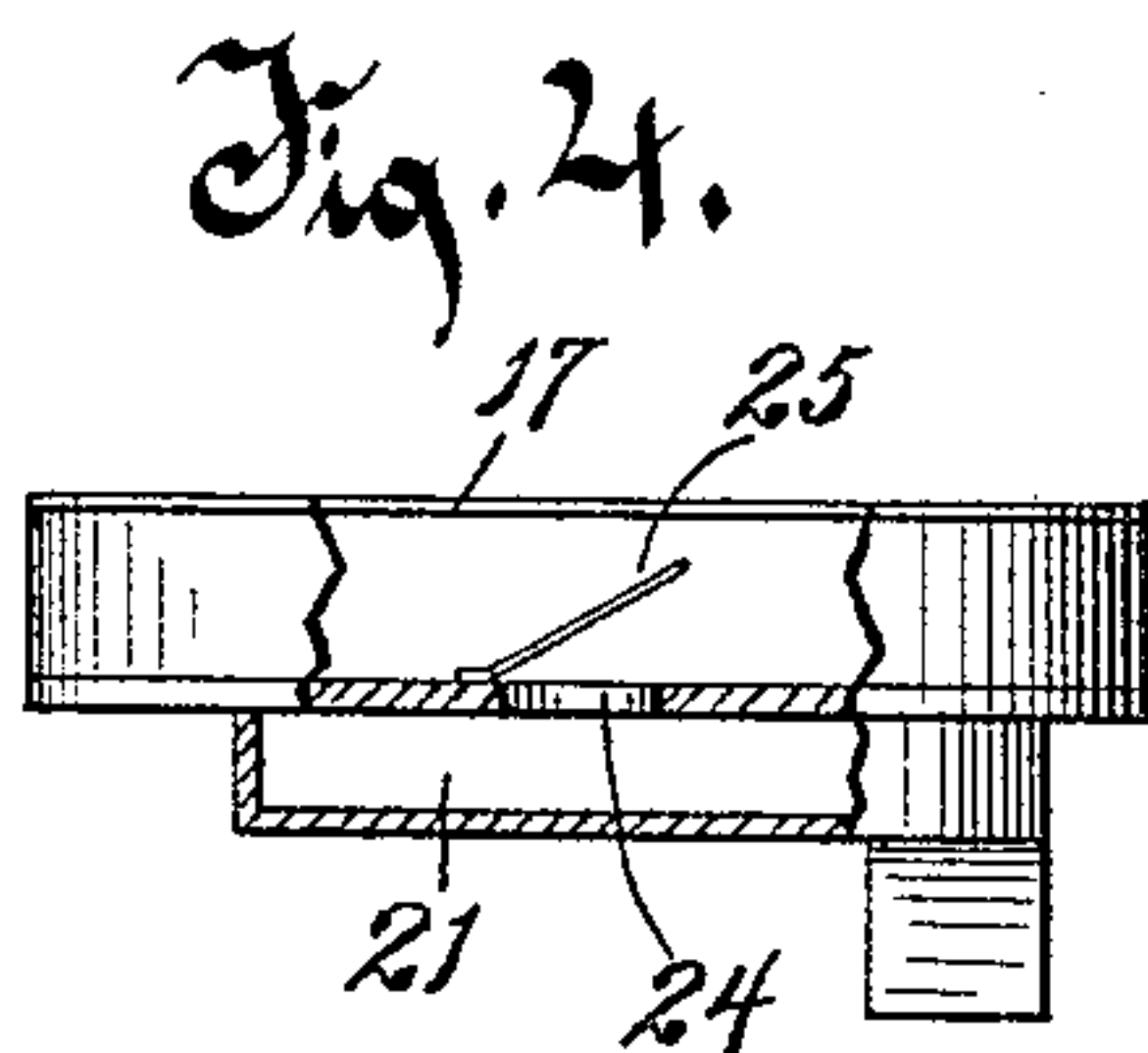
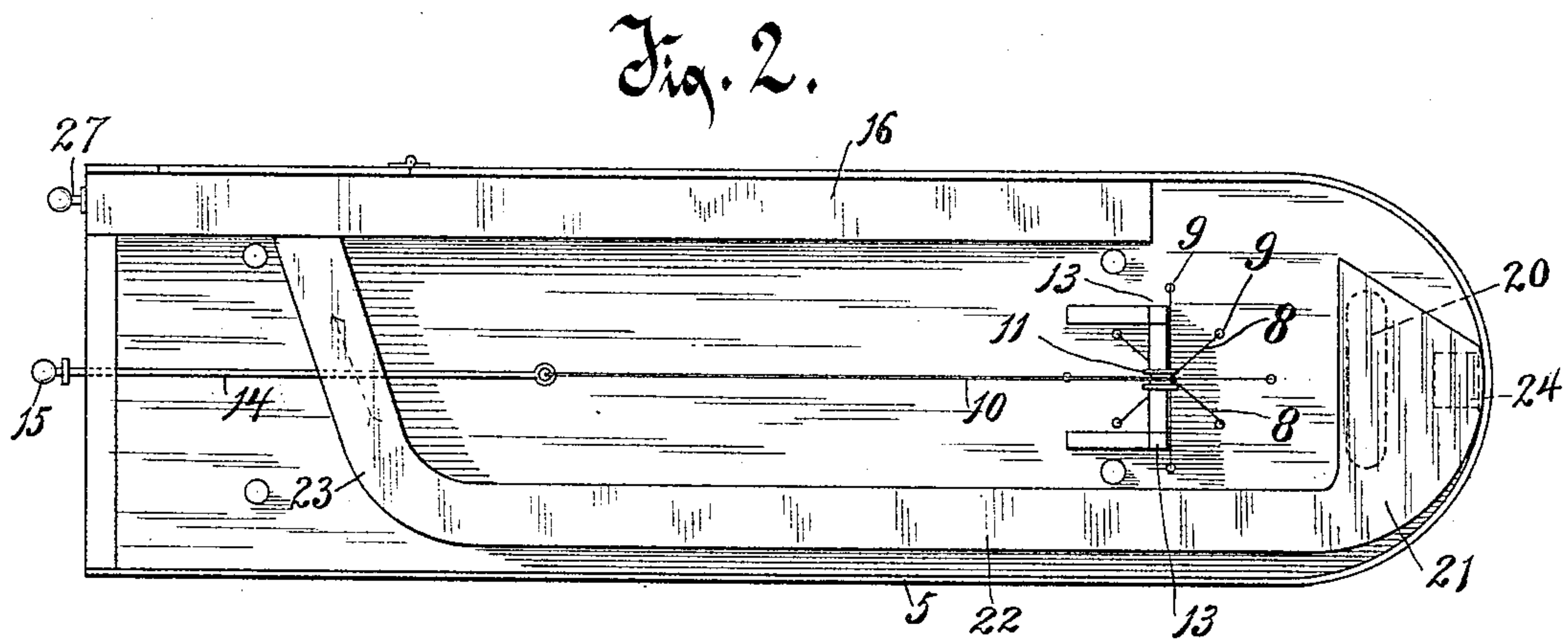
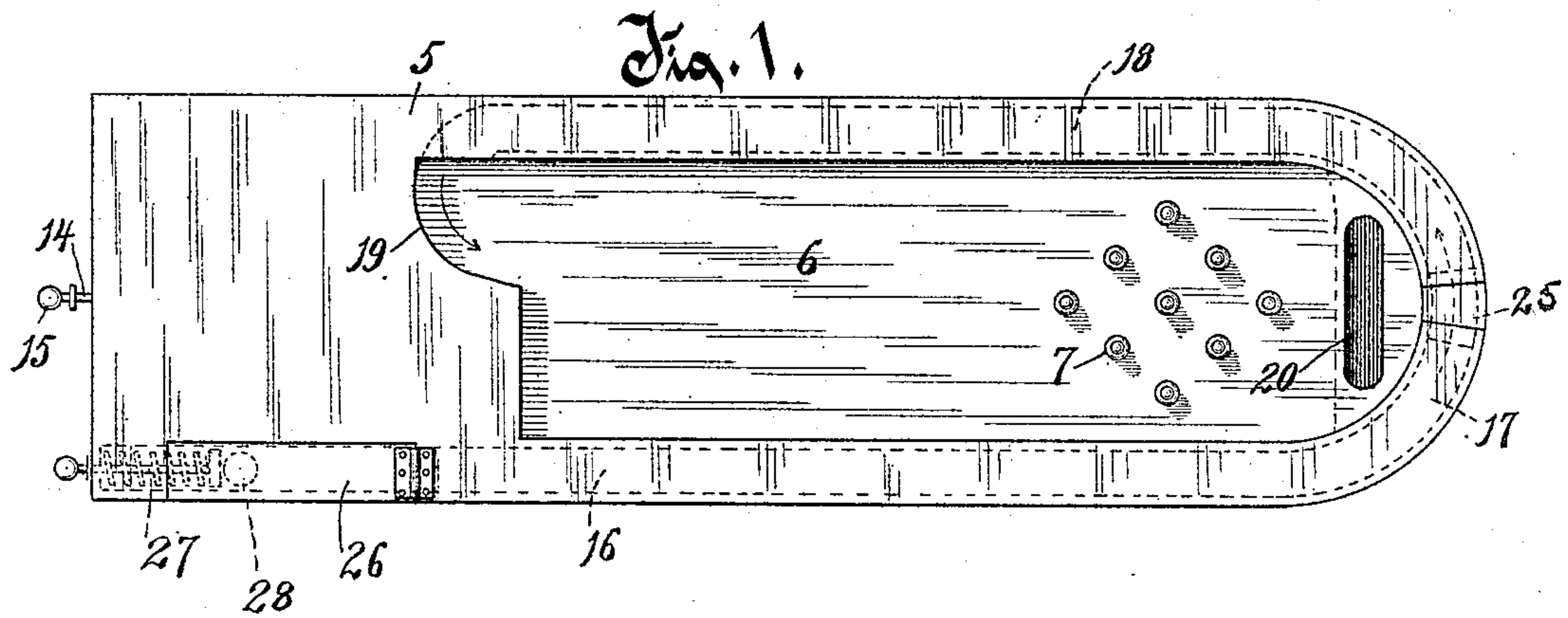
(No Model.)

2 Sheets—Sheet 1.

M. KNOLLMÜLLER.
BOWLING ALLEY.

No. 529,392.

Patented Nov. 20, 1894.



Witnesses:
 C. H. Keeney.
 Anna V. Faust.

Inventor.
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(No Model.)

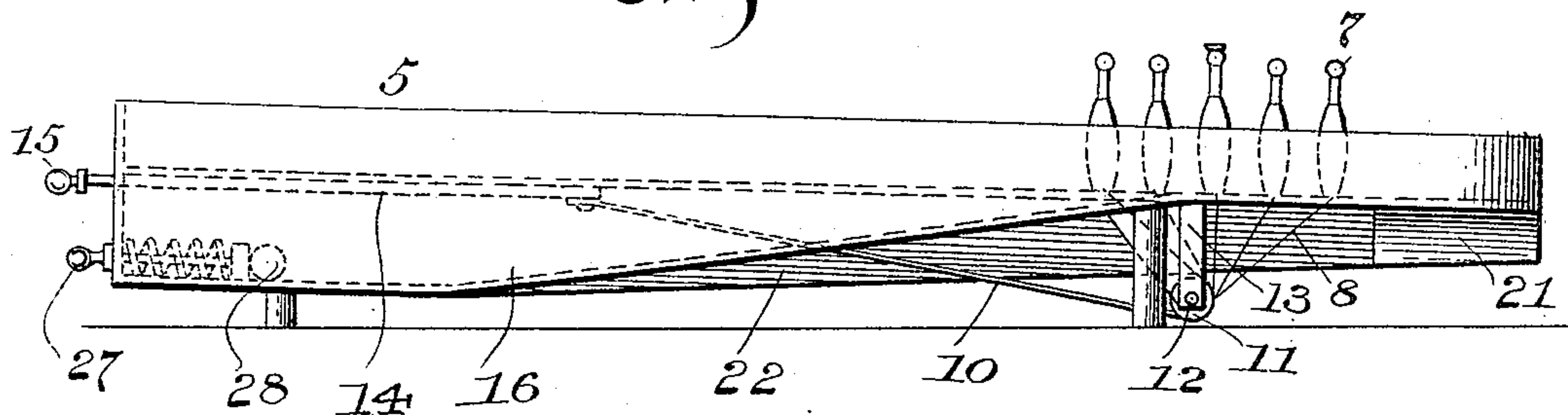
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Fig. 3.



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UNITED STATES PATENT OFFICE.

MAX KNOLLMÜLLER, OF MILWAUKEE, WISCONSIN.

BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 529,392, dated November 20, 1894.

Application filed April 18, 1894. Serial No. 507,988. (No model.)

To all whom it may concern:

Be it known that I, MAX KNOLLMÜLLER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and
5 useful Improvement in Bowling-Alleys, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements
10 in bowling alleys.

The object contemplated is the provision of a simple form of bowling alley, consisting of the devices and parts, or their equivalents, as hereinafter more fully set forth and
15 claimed.

In the accompanying drawings, Figure 1, is a plan view of the device. Fig. 2, is an inverted plan view. Fig. 3, is a side elevation showing clearly the declination of the machine from front to rear, and Fig. 4, is an
20 end view with a part broken away, to disclose the interior spring plate.

Like numerals of reference denote like parts throughout the several views.

Referring to the drawings, the numeral 5
25 indicates the frame of the machine, the top of which is provided with an interior depression 6, at one end of which depression the pins 7 are arranged. These pins have attached to their lower ends cords 8, which
30 cords pass through apertures 9 in the bottom of the frame, and are there brought together, and connected to a single cord 10, said cord 10 passing under and within a central grooved
35 portion of a roller 11 mounted upon a shaft 12, the ends of which shaft are journaled in depending bearing arms 13, 13. The single cord 10 is extended upward and forward, and connects with the inner end of a pull rod 14.
40 This rod passes through the end of the machine, and is provided on its outer end with a suitable knob 15. The frame is provided along one side with a passage way 16, which is on a gradual upward incline from near the
45 front of the machine to the rear, as indicated fully in Fig. 3. This passage continues around the rear end of the frame, as indicated at 17, but at this point is on a plane corresponding to the plane of the bottom of
50 the depression 6. It thence continues along the opposite side of the machine, as indi-

cated at 18, on a plane corresponding to the plane of the rear portion 17. The front open end of the passage 18 terminates at a curved wall 19, which constitutes a portion of the
55 wall of the depression 6. At the rear end of the depression 6, just back of the point where the pins are located, is a transverse elongated opening 20, which communicates with a passage 21 below, said passage in turn commu-
60 nicating with another passage 22 running along the side of the machine, and located below the side passage 18. At the front end of the frame, this passage 22 communicates with a transverse passage 23, which latter passage
65 opens into the front end of the passage 16.

By reference particularly to Fig. 4 of the drawings it will be seen that the bottom of the passage 17 is provided with an opening
70 24 leading to the passage 21 below. Over this opening is arranged a spring plate 25, which plate extends over the opening at an incline, and has its lower end secured to the bottom of the passage.

The upper side of the passage 16, at the
75 forward end thereof, is provided with a hinged cover 26 which readily permits the balls 28 to be placed properly within the passage. A spring-encircled operating rod 27 is also located within the passage 16, and one end
80 thereof extends through the open forward end of said passage.

In operation, the rod 27 is pulled outward, and the spring encircling the same is thereby compressed. The moment the rod is released,
85 the expansion of the spring will force the inner end of the rod against the ball, and propel said ball with considerable impetus up the inclined passage 16, into the passage 17, over the spring plate 25, which is depressed thereby
90 so as to cover the opening 24, thence into the passage 18, and around the curved wall 19, as indicated by the arrow, into the depression 6, and finally along the depression to the pins. After knocking down one or more of the pins,
95 the ball passes to the opening 20, and falling through said opening passes into the passage 21 beneath, from the passage 21 into passage 22, then into transverse passage 23, as indicated by the arrow, Fig. 2, and from the pas-
100 sage 23 back to the starting point. The pins which were knocked down can readily be

turned up vertically, or adjusted back to their normal position, by pulling outward on the pull rod 14.

In case a ball is not propelled with sufficient force to pass from the passage 18 into the depression 6, it will, owing to the declination of the entire machine from front to rear as shown in Fig. 3, roll backward in the passage 18 into the passage 17. It is prevented from continuing around said passage 17 into the passage 16, however, by the spring plate 25. It, therefore, passes under said spring plate through the opening 24, into the passage 21, thence along passage 22, into passage 23, and finally back to the starting point. It would not, of course, be desirable for the balls that do not pass from the passage 18 on to the depression 6 and which enter the passages 18 and 17, as just described, to continue from the latter passage around directly into the passage 16, inasmuch as such balls would interfere with other balls which might, in the meantime, be forced by the player along the passage 16. It is, therefore, important that the plate 25 should be provided for intercepting such balls, and causing the same to pass through the opening 24 into the passage 21, and then by a circuitous route back to the starting point.

My invention is preferably constructed of a size and form somewhat approximating that of a billiard table, being intended more especially to be placed in public resorts, and used as a game for amusing patrons. It can, however, be constructed on a much smaller scale to adapt it for a parlor game; or, on the other hand, it can be made in the form of a permanent full size bowling alley.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A bowling alley, comprising a base having a gradual declination from the front to the rear, a channel running along one side of the base into which side the balls to be propelled are placed, said channel then extending around the rear end of the frame, the bottom

of this rear portion of the channel provided with an opening, and the channel finally extending along the opposite side of the frame, a central depression or recess between the channels, into which the last-named side of the channel opens, said depression or recess provided with an opening leading to a channel beneath, the opening in the bottom of the rear portion of the first-named channel also opening into this last-mentioned channel, said last-named channel leading back to and opening into the forward end of the side of the channel into which the balls are placed for propulsion, and a spring-plate extending over the opening in the rear upper channel, said plate permitting the balls to freely pass over the same in traveling around in one direction, and to pass under the same, and through the opening, in traveling around the channel in the opposite direction, substantially as set forth.

2. A bowling alley, comprising a base having a gradual declination from the front to the rear, a channel running along one side of the base, into which the balls to be propelled are placed, said channel then extending around the rear end of the frame, the bottom of this rear portion of the channel provided with an opening, and the channel finally extending along the opposite side of the frame, and a central depression or recess between the channels, into which the last named side of the channel opens, said depression or recess provided with an opening leading to a channel beneath, the opening in the bottom of the rear portion of the first-named channel also opening into this last-mentioned channel, said last named channel leading back to and opening into the forward end of the side of the channel into which the balls are placed for propulsion, substantially as set forth.

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

MAX KNOLLMÜLLER.

Witnesses:

ARTHUR L. MORSELL,
ANNA V. FAUST.