

No. 765,419.

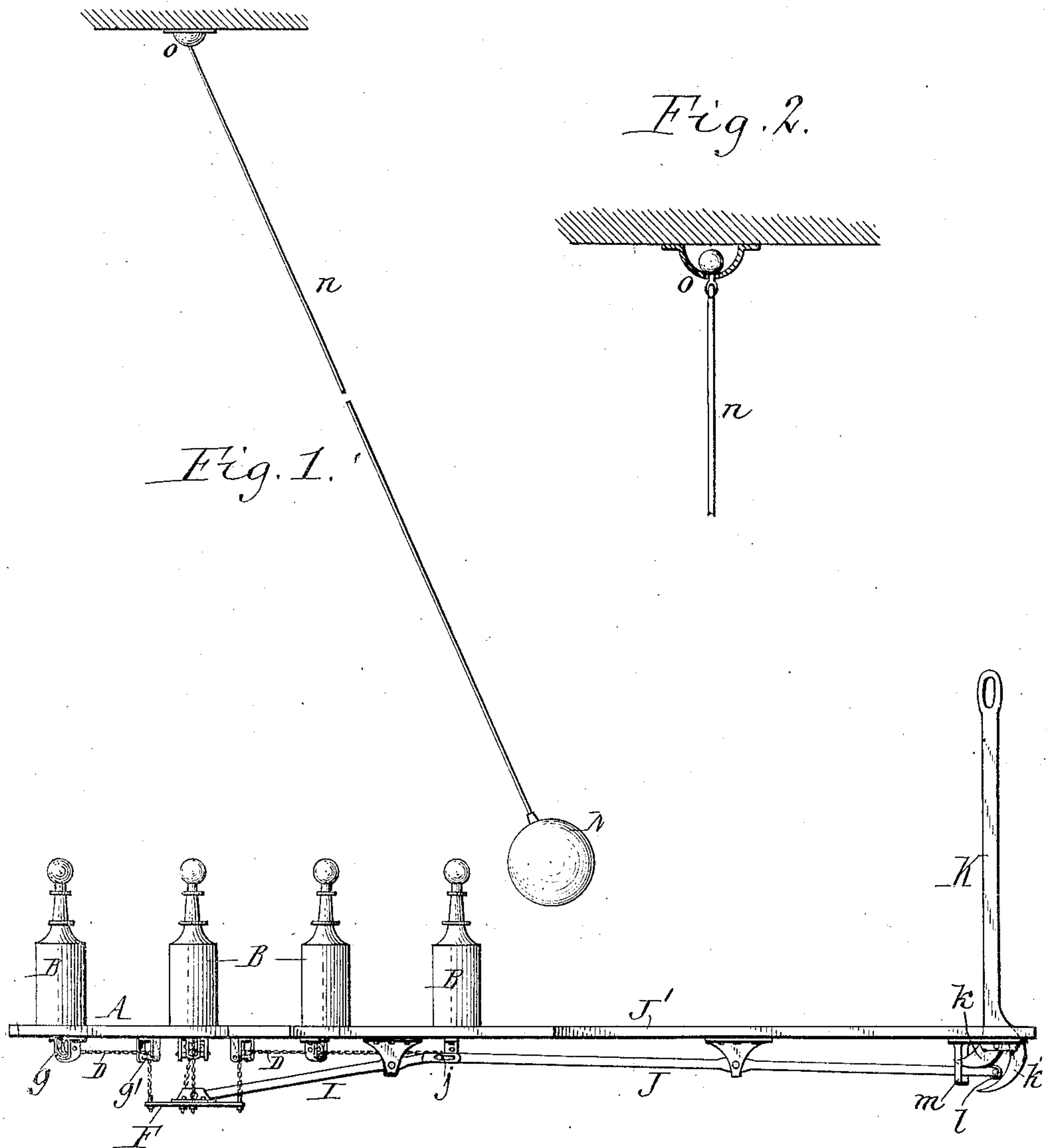
PATENTED JULY 19, 1904.

P. J. DUERR.  
BOWLING GAME.

APPLICATION FILED JULY 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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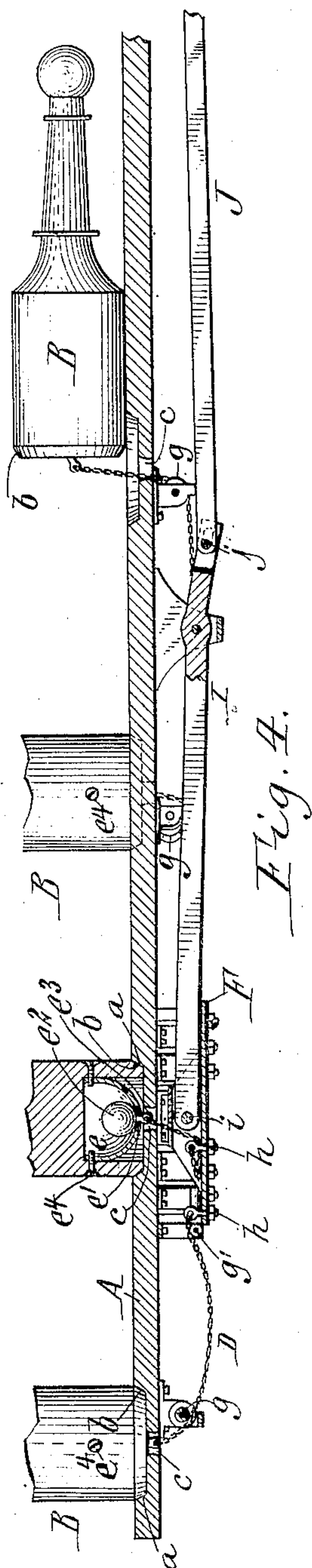


Fig. 4.

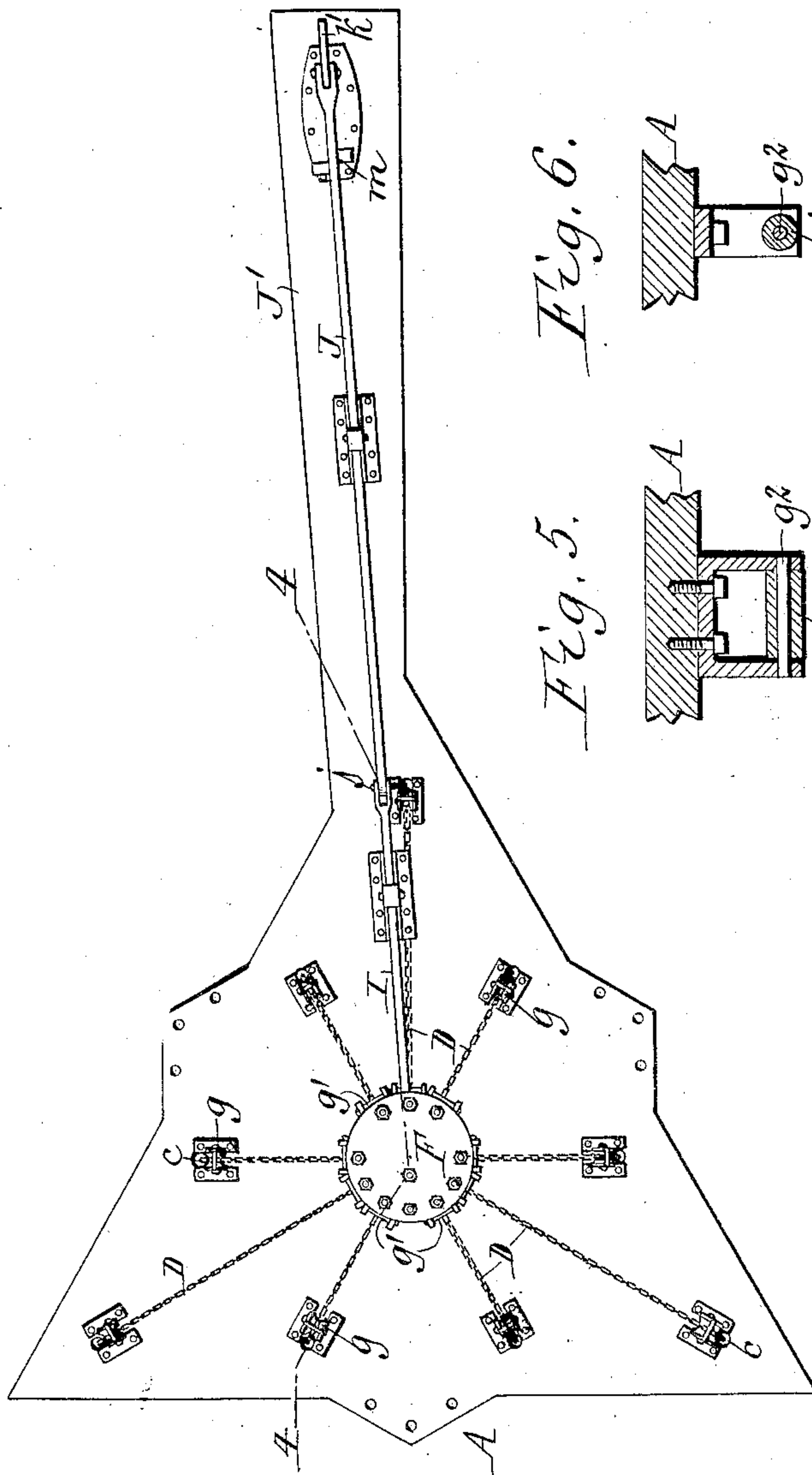


Fig. 3.

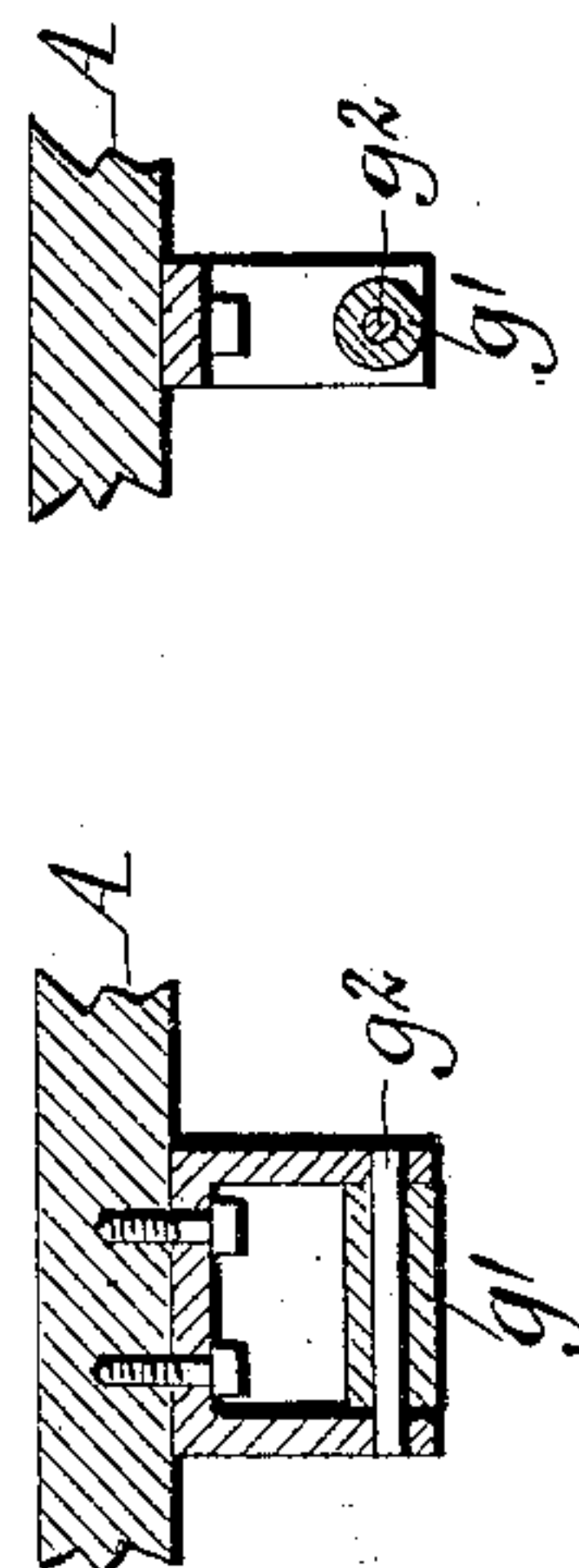


Fig. 5.



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# UNITED STATES PATENT OFFICE.

PHILIP J. DUERR, OF BUFFALO, NEW YORK.

## BOWLING GAME.

SPECIFICATION forming part of Letters Patent No. 765,419, dated July 19, 1904.

Application filed July 26, 1902. Serial No. 117,110. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP J. DUERR, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Bowling Games, of which the following is a specification.

This invention relates more particularly to a bowling game in which the tenpins are knocked down by a swinging ball suspended from an overhead support at a suitable height to strike the heads of the pins instead of by balls rolled upon an alley, as in the ordinary game of bowling.

One of the objects of my invention is to provide a simple and easy operating setting apparatus by which the pins, after being knocked down, may be simultaneously set up by the player from the point at which he stands, thus dispensing with an attendant for this purpose.

My invention has the further object to so construct and arrange the connections between the pins and the main hand-lever or equivalent operating device that they are all operated uniformly, thus insuring the proper setting up of all the pins.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of my improved game apparatus. Fig. 2 is an enlarged sectional elevation of the joint by which the swinging ball is suspended from the ceiling. Fig. 3 is a bottom plan view of the apparatus. Fig. 4 is a fragmentary, sectional elevation thereof, on an enlarged scale, the plane of the section being in line 4-4, Fig. 3. Fig. 5 is a longitudinal section, on an enlarged scale, of one of the inner guide-rollers of the setting connections. Fig. 6 is a cross-section thereof.

Similar letters of reference indicate corresponding parts throughout the several views.

The game is designed to be played in a suitable pavilion or inclosure erected upon the lawn of a residence or similar grounds. In the floor of the building is countersunk a plate A, upon which the tenpins B stand. This plate is preferably of triangular form and provided with ten circular pin seats or sockets a, which may be disposed in a triangular group

like the pin-spots of an ordinary bowling-alley. These seats preferably have flat bottoms and beveled walls, and the tenpins have flat bottoms and correspondingly beveled lower edges, as shown at b, to permit the pins to fall over easily when struck, and to accurately center the same and cause them to promptly cease vibrating upon being set up. In the center of each of these pin-seats is an opening c, through which passes a setting-chain or other flexible connection D, which is attached at its upper end to the bottom of the corresponding pin, each pin having such a setting-chain. These chains may be attached to the pins by any suitable means; but I prefer to employ a ball-and-socket joint comprising a hemispherical cup e, countersunk in a recess in the bottom of the pin and having a central aperture e', and a ball or enlargement e'', arranged in the cup and having a shank e'', which passes loosely through said aperture and is attached at its outer end to the chain D, as shown in Fig. 4. The cup e is secured in the recess of the pin by screws e' or other suitable fastenings. The opposite or lower ends of the several chains are attached to a vertically-movable setting head or disk F, arranged horizontally below the floor-plate A directly underneath the seat of the center pin. The chain of the center pin extends in a nearly vertical line from said pin to the central portion of this disk. The radiating chains of the remaining pins extend downwardly and inwardly in a substantially horizontal line around the outer guides or pulleys g, arranged on the under side of the floor-plate A at the inner side of the chain-openings c, and thence downwardly in a substantially vertical line over similar guides or rollers g', arranged in a circular row directly above the margin of the disk F. These guide rollers or pulleys are journaled in suitable bearings, which may be secured to or cast on the under side of the floor-plate. The inner chain-guides g' may consist of pulleys like the outer guides g; but they preferably consist of rollers or tubes journaled upon pins g'', which are secured in ears depending from the floor-plate, as shown in Figs. 4 and 5. In order to permit the length of the chains D to be properly



adjusted for causing all of the tenpins to be set up at the same time, the lower ends of the chains are connected with the disk F by adjustable attachments, consisting, preferably, of vertical eyebolts *h*, passing through unthreaded openings in the disk and having their nuts arranged to bear against the under side of the latter.

The disk F is carried by the front arm of a vertically-swinging lever I, which is pivoted centrally to the upper side of the disk by a transverse pin *i* to allow the disk to assume a substantially horizontal position upon being lowered, thereby pulling all of the chains uniformly in resetting the pins. The lever I is actuated by a second vertically-swinging lever J, the rear arm of which has a pin-and-slot connection *j* with the front arm of the rear lever I. The rear lever is fulcrumed on the under side of the floor-plate A, while the front lever J is pivoted to the under side of a forward extension *J'* of the plate. This front lever is in turn operated by an upright hand-lever K, pivoted in a longitudinal slot of the plate extension *J'* and provided below the latter with a cam *k*, which bears upon the front end of the lever J, so that upon swinging the hand-lever forwardly its cam depresses the front arm of said lever, thereby rocking the rear lever I in the proper direction to depress the disk F, drawing all the chains D taut and simultaneously setting up the several pins. The hand-lever K is also provided with a horn or lower cam *k'*, which engages against the under side of an antifriction-roller *l*, journaled at the front end of the adjacent lever J, so that upon pulling the hand-lever backwardly its horn raises the front arm of said lever, rocking the rear lever I in the proper direction to raise the disk F, and allowing the chains to slacken sufficiently to permit the pins to fall and roll freely when struck. As shown in Fig. 1, the front arm of the lever J is steadied by a vertical guide *m*, extending downwardly from the extension *J'*.

N is the swinging ball, by which the tenpins are knocked down, and *n* the cord or chain by which it is suspended from the ceiling or other overhead support. The attachment of this cord is arranged directly over the center pin of the group and located about thirty feet above the pins, so that the ball, which should be about on a level with the heads of the pins, sweeps through the latter in a nearly horizontal line. Any suitable cord attachment which permits the ball to swing freely may be employed; but I prefer to use a ball-and-socket joint *o*, similar to that employed for connecting the chains D with the tenpins.

In playing the game the player stands at one side of the hand lever K in line with the center pin, this lever being arranged on one side of the center line of the floor-plate for this purpose, as shown in Fig. 3. The player first sets up the pins by pushing the hand-le-

ver forwardly, as above described, and then returns it to its backward position to slacken the connections D. He then seizes the suspended ball and according to the rules of the game adopted by me swings it forwardly and laterally in such manner that it clears the pins on its forward stroke, but sweeps through the same on its return stroke, knocking down one or more of them. The ball is made slightly larger in diameter than the spaces between adjacent pins, so that it may strike two pins of the rear row at a time and knock down as many more as stand in its path. The ball is to be caught by the player upon its return stroke and not be allowed to again strike the pins except upon the return stroke of the next shot. If the player knocks down any of the pins on the forward stroke of the ball, he loses his play, and he likewise fails to score if he does not knock down any of the pins on the return stroke of the ball.

By arranging the short inner portions of all the flexible setting connections D except the center one substantially at right angles to their long inner portions or, in other words, extending the same vertically upward from the disk F and thence horizontally outward to the respective pins the effect of the downward movement of the disk F is to pull all of the connections equally, and all of the pins are therefore righted and properly drawn into their seats regardless of the varying or unequal lengths of the horizontal portions of the connections leading to different pins.

Instead of the chains D herein shown and described any other suitable connections which are not liable to stretch to an objectionable extent may be employed—for instance, leather or hemp cords.

I claim as my invention—

1. In a bowling game, the combination of a support or floor-plate having an opening, a tenpin arranged to stand over said opening and provided in its bottom with a recess, a cup secured in said recess and provided in its bottom with an aperture, and a setting connection passing through said opening and provided at its end with a shank which passes through the aperture of the cup and terminates in an enlargement arranged in the cup, substantially as set forth.

2. In combination, the supporting-plate and pins, a setting-head beneath the plate having flexible connections to said pins, a lever fulcrumed beneath the supporting-plate and having one end pivotally connected to said head, a second lever fulcrumed beneath the supporting-plate and having one end connected to said first-named lever, and a hand-lever fulcrumed in the supporting-plate and having a cam to act on the free end of said second lever, substantially as described.

3. In combination, the supporting-plate and pins, a setting-head beneath the plate having flexible connections to said pins, a lever ful-

crumed beneath the supporting-plate and having one end pivotally connected to said head, a second lever fulcrumed beneath the supporting-plate and having one end connected to  
5 said first-named lever and having its other end provided with a transversely-disposed roller, and a hand-lever fulcrumed in the supporting or bed plate and having a cam face

or portion to engage on each side of said roller, substantially as described. 10

Witness my hand this 12th day of July, 1902.

PHILIP J. DUERR.

Witnesses:

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CARL F. GEYER.