

Feb. 10, 1925.

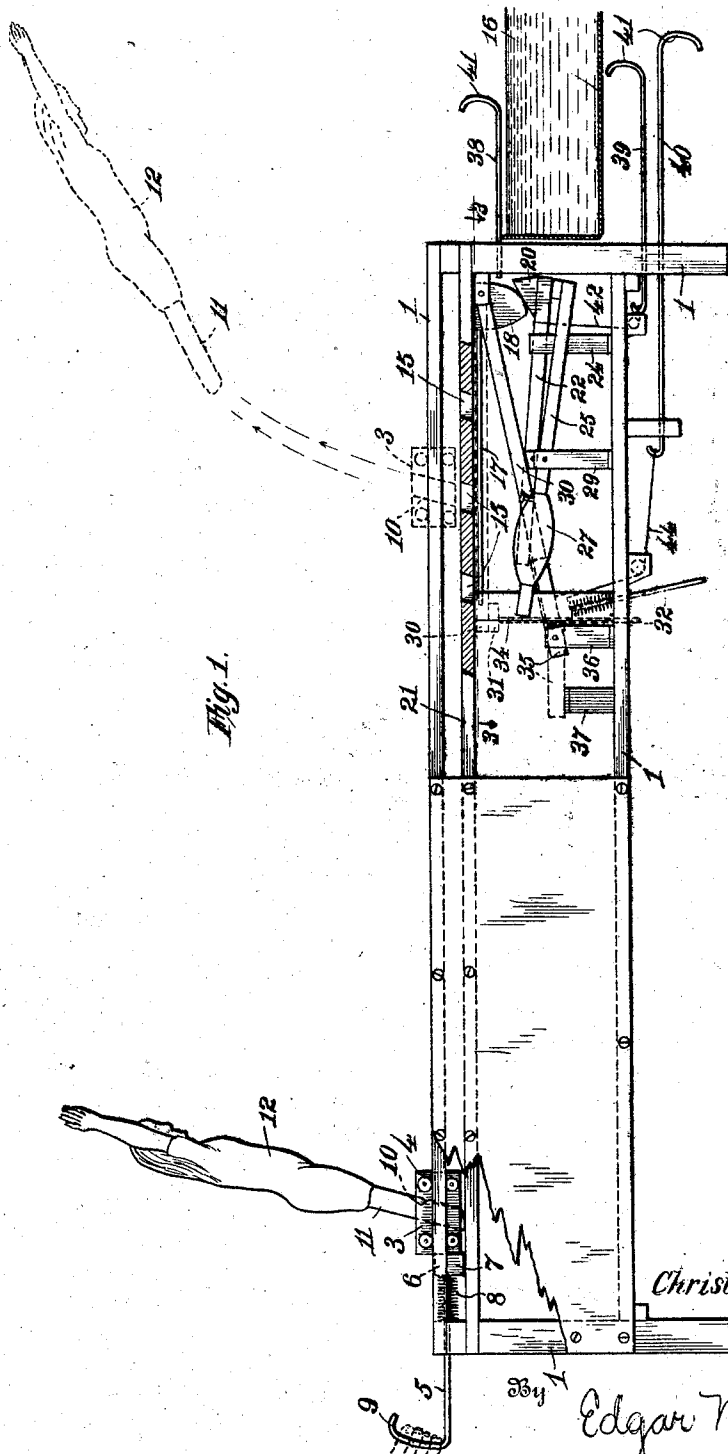
C. CHRISTENSEN

1,525,569

MECHANICAL PROJECTING APPARATUS

Filed June 14, 1922

3 Sheets-Sheet 1



Inventor
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By Edgar M. Kitchin
His Attorney.

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Fig. 2.

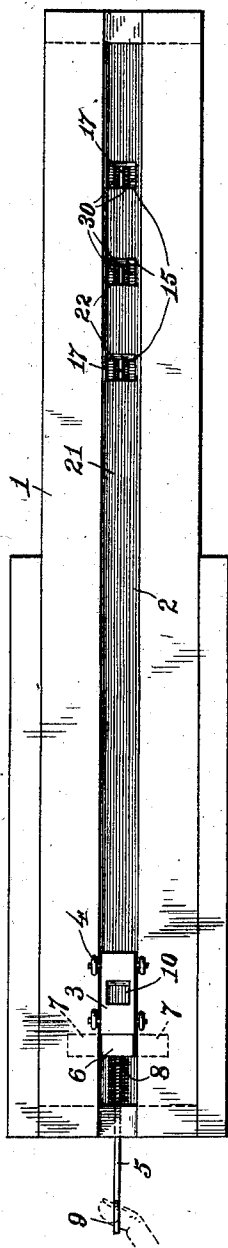


Fig. 7.

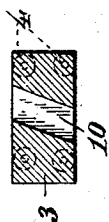


Fig. 6.

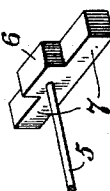


Fig. 8.



Fig. 9.

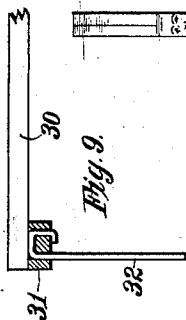
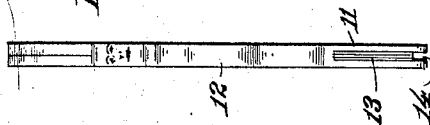


Fig. 10.



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Fig. 3.

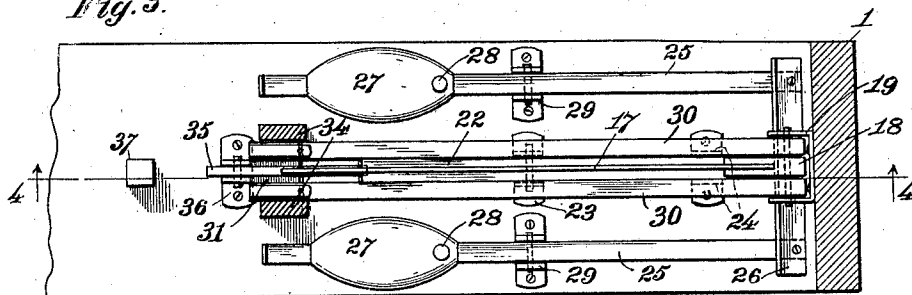


Fig. 4.

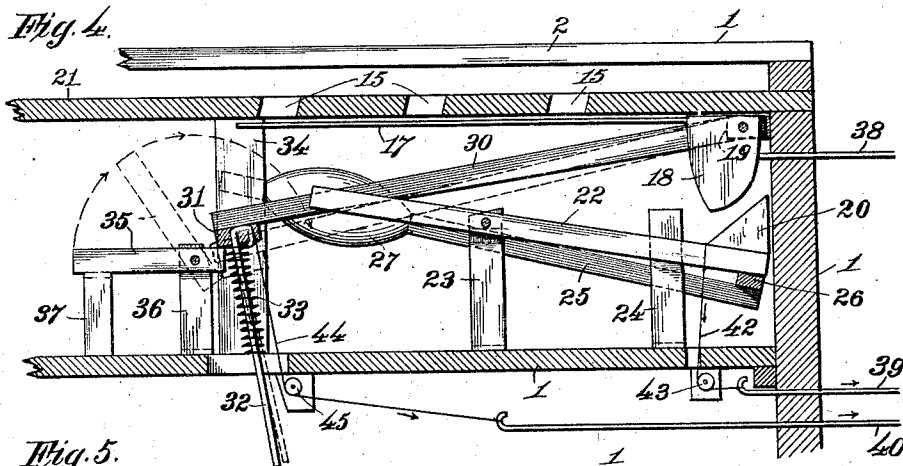
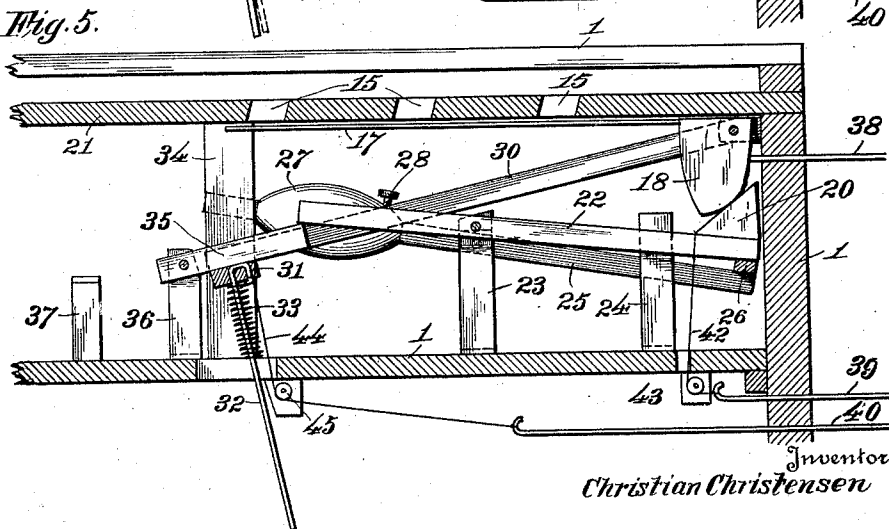


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHRISTIAN CHRISTENSEN, OF RYE, NEW YORK.

MECHANICAL PROJECTING APPARATUS.

Application filed June 14, 1922. Serial No. 568,182.

To all whom it may concern:

Be it known that I, CHRISTIAN CHRISTENSEN, a citizen of Germany, residing at Rye, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Mechanical Projecting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in games of the class in which parts are projected, and also includes the idea of chance in the throwing of the projected part.

The invention involves certain novel constructions, combination, and arrangements of parts as will be subsequently specified and claimed.

In the accompanying drawings,—

Figure 1 is a view, partly in side elevation and partly in vertical section, of an apparatus embodying the features of the present invention.

Figure 2 is a plan view thereof.

Figure 3 is an enlarged, detail, horizontal, fragmentary section taken on the plane indicated by line 3—3 of Figure 1, looking downward.

Figure 4 is a vertical section taken on the plane indicated by line 4—4 of Figure 3, the parts being in the position in the course of being restored after a tripping operation; the movement of the latch bar with the further re-setting of the parts from the position seen in Figure 4 to that seen in Figure 5 being indicated in dotted lines.

Figure 5 is a view similar to Figure 4 with the parts in their completely re-set position.

Figure 6 is an enlarged, detail, fragmentary, perspective view of the carriage driving follower detached with the spring omitted.

Figure 7 is an enlarged detail, vertical section through the carriage.

Figure 8 is a view similar to Figure 6 of the trip rod and its cam.

Figure 9 is an enlarged, detail view, partly in section and partly in elevation, of the actuating lever and its spring-pressed plunger, the spring being detached.

Figure 10 is an edge view of the doll or other toy projectile detached.

Referring to the drawings by numerals, 1 indicates an appropriate frame having

vertical posts, side walls and a top or cover plate. The top or cover plate is formed with a longitudinal slot 2 in which is mounted a carriage 3. The carriage 3 may be of any appropriate construction, but consists preferably of a block of material engaged by guiding and carrying wheels 4, 4, arranged in pairs above and below the cover plate of frame 1 so as to eliminate friction and allow the block to move freely along the slot 2. Reciprocally mounted in and extending through the rear end portion of frame 1 is a rod 5 of a follower 6, which follower is preferably provided with underhanging arms 7, 7 lying beneath the cover plate of frame 1. The follower 6 is arranged to move along and within the slot 2, and is fixed to its rod 5, which rod is surrounded by a coiled spring 8 tensioned between the follower 6 and the rear end of the frame 1. Rod 5 is provided with a suitable handle 9 for manual manipulation for enabling the follower 6 to be thrown back against the tension of the spring 8, and to be suddenly released so as to strike and impart momentum to the carriage 3. The carriage 3 is formed with an inclined aperture or apertures 10 into which extends the shank or lower end portion 11 of a doll or other appropriate projectile 12. The passage 10 is preferably inclined so that its upper end is advanced relative to its lower end, and as the shank 11 substantially fits the passage 10, the doll 12 will stand in an inclined position, leaning forward, while sustained by the carriage 3. As best seen in Figure 10 the doll 12 has its shank 11 bifurcated and preferably weighted, as by the introduction of a lead or other appropriate plate 13. An opening or recess 14 is left at the lower end of the bifurcation for receiving the tripping rod, as hereinafter described.

Arranged within and spaced below the cover plate of frame 1 is a plate 21 which horizontally fills the space within the frame and serves as a support for the follower 6, and also for the lower end of the shank 11. The carriage 3 does not rest upon the upper surface of the plate 21, but is sustained entirely by its wheels 4. Near the forward end portion of the frame and above the tripping mechanism hereinafter described, the plate 21 is formed with a series of apertures 15 in line with the slot 2 and corresponding in inclination to the inclination of passage 10.

The apertures 15 are preferably slightly larger than the passage 10 so as to allow the lower end portion of shank 11 to pass down into the respective aperture 15 freely when the carriage 3 is projected with just the right velocity to come to rest with the shank 11 in line with the given aperture 15. However, the lower end of shank 11 is rounded or formed cam-shaped, as seen in Figure 1, and if the carriage is moving with sufficient velocity, the shank will ride past and over an aperture 15 and may ride over all of them. Thus the shank 11 will drop into one of the apertures 15 or will be sustained by an intermediate imperforate portion of plate 21, according to the point at which carriage 3 comes to rest, and the doll 12 will not be projected when this occurs.

Should the carriage 3 approach a position over one of the apertures 15 at just the required velocity to permit the lower end of the shank 11 to pass down through the aperture, the doll 12 will be first allowed to drop for substantially that portion of the length of shank 11 normally above the carriage 3, and will then be projected through a trajectory describing a graceful curve and causing the doll to plunge into the water of tank 16 arranged at the forward end of frame 1. The incline of the passageway 10 and of apertures 15 insures the projection in such form as to cause the doll to turn and descend head foremost in imitation of a dive. It will be obvious, of course, that for use by small children or otherwise as a toy, it may be sufficient to provide the mere picture, or other imitation, of a pond on which the doll will light instead of providing the tank 16 with its supply of water. At amusement places, or under conditions where it is desired to attract special attention, the water will usually be provided.

The trip mechanism, which is actuated when the shank 11 drops through one of the apertures 15, is automatic, in so far as functioning is concerned, at the time of the projection of the doll, but is preferably of the re-set type for each separate operation, and such mechanism includes a trip rod 17 fixed to and projecting horizontally from a cam 18 pivoted to a bracket 19 outstanding rearward from the front end of the frame 1. Rod 17 is of a length and location to lie across all of the apertures 15 and of a size transversely to fit within the recess 14 of the shank 11. The rear end of the rod is left free, so that pressure on the rod will cause the cam 18 to swing upon its pivot and cam downward the upper face of a block 20 carried by a lever 22. Lever 22 is pivoted intermediate its ends to an upstanding bracket 23 sustained by the lower portion of frame 1. The forward end portion of lever 22 is preferably guided by a pair of brackets 24 fixed to and upstanding from the same plate of frame 1 as that carrying the bracket 23. The lever 22 swings between the brackets 24 and is prevented from having any torsional movement by the presence of said bracket. A pair of counter-balancing levers 25 is arranged with one near each side of frame 1 and extending longitudinally thereof substantially parallel to and spaced laterally from the lever 22, the forward ends of the levers 25 being connected by a cross bar 26 which underhangs and engages the forward end portion of lever 22 and stresses the same upward incident to the pressure of weights 27, 27, adjustably mounted on the rear end portions of the levers 25. A set screw 28 is provided for each weight 27 for adjustably securing the weight to its respective lever 25. Each lever 25 is pivoted to and between a pair of brackets 29 fixed to and upstanding from the same plate of frame 1 from which the brackets 23 and 24 upstand. The bracket 19 is of a width considerably greater than the width of cam 18, and at each side of the cam within the bracket 19 is arranged a lever 30, the two levers 30 being pivoted on the same pin carried by bracket 19 on which cam 18 is pivoted. The two levers 30 are employed as a single lever and are duplicated to provide an effective balancing of the parts. The rear end portions of the levers 30 are connected by a cross bar 31 in which is anchored the upper end portion of a plunger rod 32 surrounded by a coiled actuating spring 33. The coiled spring 33 surrounds the rod 32 and is tensioned between the cross bar 31 at one end and the plate of frame 1 from which the several brackets 23, 24 and 29 upstand. A pair of posts or bars 34 is arranged between the last-named plate and the plate 21, and the bars 34 are fixed to both so as to lie just outside of the two levers 30 and to serve as guides therefor to prevent any torsional or other undesired movements of levers 30. A latch or trigger bar 35 is pivoted to a bracket 36 upstanding from the same plate of frame 1 as that carrying the brackets 23 and 24; and a post 37 is fixed to and upstands from said plate in position for sustaining the longer end portion of bar 35 after a trip operation and up to the time of the re-setting action. The bar 35 is of a length sufficient to extend just beneath the rear end of lever 22 when the forward end of said lever is in its raised position. As the bar 35 thus laps beneath the lever 22, when the parts are in the position indicated in Figure 5, the lever 22 retains the bar 35 in such position against the upward pressure of the cross bar 31, of levers 30. It will be observed that the weights 27 are proportioned and adjusted to retain the levers 25 in position for sustaining the lever 22 in its raised position against the stress of spring 32 on the bar 35. However, when the parts

are in the position indicated in Figure 5, and the doll has its shank 11 dropped through one of the apertures 15, the rod 17 will be thereby depressed and cam 18 swung upon its pivot, so that the lower face of the cam forces the block 20 downward, thereby elevating the rear end of lever 22 until bar 35 is released and swings rearward under the upward pressure of spring 33. The spring 33 being thus released will throw the levers 30 to their uppermost or horizontal position (not illustrated), in reaching which position the levers 30 will strike the lower end of shank 11 such a blow as to project the doll 12 after the manner heretofore described. After the trip mechanism has thus been actuated it is necessary to re-set the same for the next operation. To do this, rods 38, 39 and 40 are slidably mounted in frame 1, and each provided with a handle 41. The rod 38 is so located that, after the tripping of the mechanism as just described, the handle 41 may be grasped and the rod 38 pushed inward or rearward so that its rear end will strike the cam 18 and lift the rod 17 to its upper or horizontal position where it will remain while the rest of the mechanism is being re-set. A cable 42 engages the forward end of lever 22 and extends downward through a portion of frame 1 about a shive 43 carried by the frame and to the inner end of rod 39 to which the cable 42 is fixed. A similar cable 44 is fixed to the cross bar 31 and extends down through a portion of frame 1 about a shive 45 carried by said frame and to the rod 40, and to the inner end of which the cable 44 is connected. After the rod 38 has been pressed in, the handles 41 of rods 39 and 40 are grasped and the rod 39 is pulled out or away from the frame so as to pull the lever 22 with the cross bar 26 and weighted levers 25 down low enough to permit the passage of the longer end of bar 35; and then, while the rod 39 is held in its outer position, the rod 40 is pulled out for pulling down the cross bar 31 which moves from its upper position, not shown, to the position seen in Figure 4, and then as it moves further downward, toward the position seen in Figure 5, the short end of bar 35 is struck by the cross bar 31 and the bar 35 is thereby swung, after the manner indicated in dotted lines in Figure 4, until it assumes the position seen in Figure 5, the rear end of lever 22 being meanwhile held in its raised position by the retention of the rod 39 in its outer position. As soon as the bar 35 assumes the position indicated in Figure 5, rod 39 is released, and the weights 27 will lift the forward end of lever 22 and cause the rear end to overhang the forward end of bar 35; thus locking the bar 35 and the cross bar 31 under the force of the weights 27 in the po-

sition seen in Figure 5. The rod 40 is then released and the parts re-set ready for another operation.

The actuation of carriage 3 is entirely under the control of the operator and he effects movement of the carriage by pulling back on the handle 9 until spring 8 is placed under the tension which he thinks will effect just the required momentum of the carriage. Then the handle 9 is released and the carriage moves out along the frame 1 until it comes to a position of rest either with the shank 11 in line with one of the apertures 15 or resting on an imperforate portion of plate 21. In the latter instance, the operator will have failed and in the former succeeded, so that if the apparatus is used as a game, the one who causes registration and a consequent diving projection will be said to have won. It may be found in some instances desirable to grasp the doll 12 in one hand for steadying the same while the handle 9 is held by the other, so that the carriage 3 will be resting against the follower 6 when the handle 9 is released. Thus, any suggestion of a blow against the carriage 3 is obviated.

What is claimed is:—

1. In apparatus of the class described, the combination, with trip and projecting mechanism, of means for moving a part to be projected relative to the trip and projecting mechanism for being projected thereby, and variable tension means for actuating the moving means and for injecting an element of chance in the actuation of the trip and projecting mechanism.

2. In apparatus of the class described, the combination, with trip and projecting mechanism, of means for moving a part to be projected relative to the trip and projecting mechanism for being projected thereby, and covering means for the trip mechanism having perforations affording access to the trip mechanism by the part to be projected.

3. In apparatus of the class described, the combination, with trip and projecting mechanism, of means for moving a part to be projected relative to the trip and projecting mechanism for being projected thereby, and a variable actuator for the moving means for injecting an element of chance in the actuation of the trip and projecting mechanism, the moving means being susceptible of variable movement corresponding to variations in the action of the actuator.

4. The combination of a carriage, a guiding support therefor, a part carried by and adapted to be projected from the carriage, and a trip and projecting mechanism disposed adjacent to the guiding support, the part adapted to be projected being formed with means adapted under variable conditions to engage the trip and projecting mechanism for effecting actuation thereof.

5. The combination of a carriage, a guiding support therefor, means for imparting variable velocity to the carriage, a part carried by and adapted to be projected from the carriage, and a trip and projecting mechanism disposed adjacent to the guide and support, the part adapted to be projected being formed with means adapted to engage the trip and projecting mechanism for effecting actuation thereof.
6. The combination of a carriage, a guiding support therefor, means for imparting variable velocity to the carriage, a part carried by and adapted to be projected from the carriage, a trip and projecting mechanism disposed adjacent to the guide and support, the part adapted to be projected being formed with means adapted to engage the trip and projecting mechanism for effecting actuation thereof, and means co-operating with variable velocity imparting means for injecting an element of chance in the actuation of the trip and projecting mechanism.
7. The combination of a movably mounted carriage having an inclined aperture, and an independently movable object detachably engaging the carriage in the aperture thereof and adapted to be projected therefrom, the engagement of the object in the aperture being of sufficient length to control the trajectory of the object when ejected from such engagement.
8. The combination of a movably mounted carriage having an inclined aperture, an object having a shank extending through the aperture, means for striking the shank for projecting the object from the carriage, and means for guiding the carriage to a position enabling the striking means to act upon the shank.
9. The combination of a movably mounted carriage having an inclined aperture, an object having a shank extending through the aperture, means for striking the shank for projecting the object from the carriage, means for guiding the carriage to the position for having the striking means act upon the shank, and means disposed between the carriage and the striking means for imparting an element of chance to the striking of the shank.
10. The combination of a movably mounted carriage having an inclined aperture, an object having a shank extending through the aperture, means for striking the shank for projecting the object from the carriage, means for guiding the carriage to the position for having the striking means act upon the shank, and means for imparting an element of chance to the striking of the shank.
- In testimony whereof I affix my signature in presence of two witnesses.
- CHRISTIAN CHRISTENSEN.
- Witnesses:
A. N. GRANDJEAN,
PERRY D. DUNN.