Oct. 20, 1931. L. B. SPAFFORD 1,828,091

GAME APPARATUS

Filed March 22, 1928 4 Sheets-Sheet 1

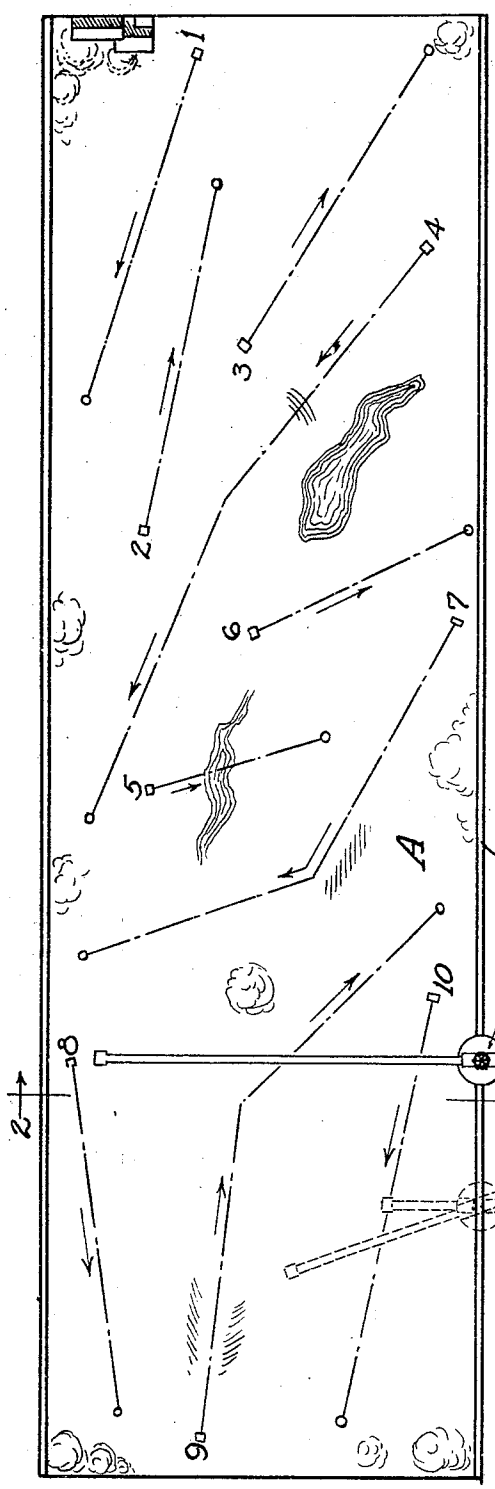


Fig. 1

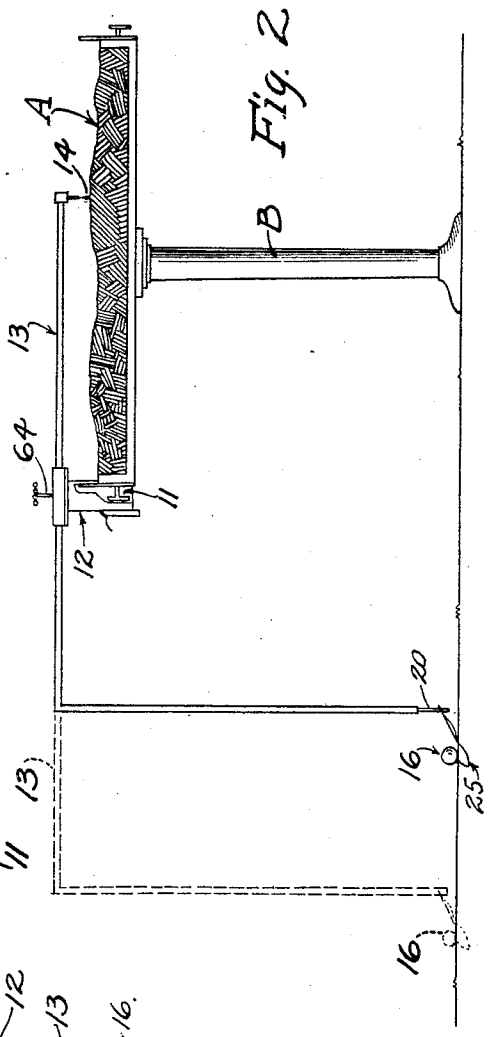


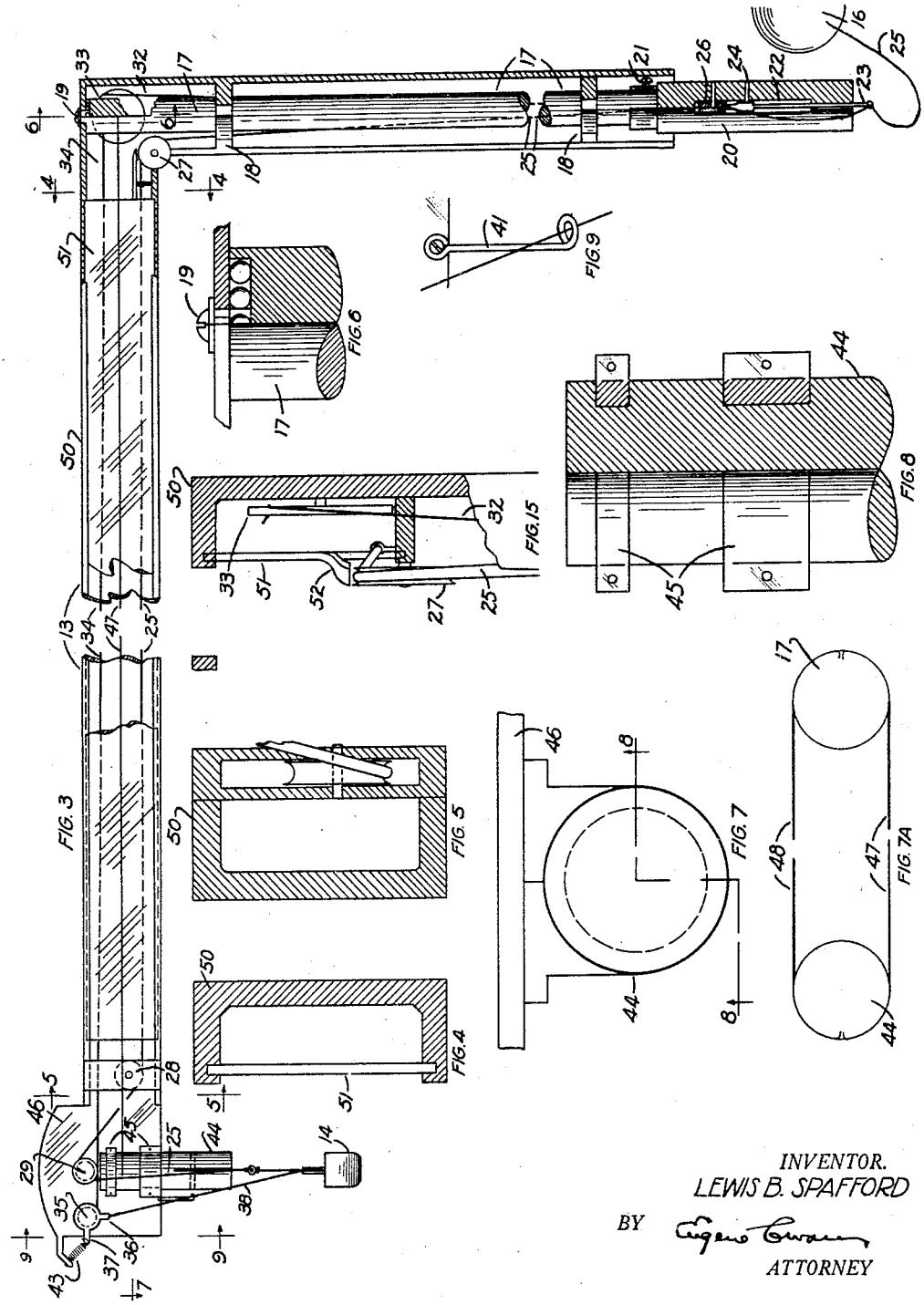
Fig. 2

INVENTOR.
LEWIS B. SPAFFORD
BY Eugene Owen
ATTORNEY

Oct. 20, 1931. L. B. SPAFFORD 1,828,091

GAME APPARATUS

Filed March 22, 1928 4 Sheets-Sheet 2



INVENTOR.
LEWIS B. SPAFFORD
BY Eugene Owen
ATTORNEY

Oct. 20, 1931. L. B. SPAFFORD 1,828,091

GAME APPARATUS

Filed March 22, 1928 4 Sheets-Sheet 3

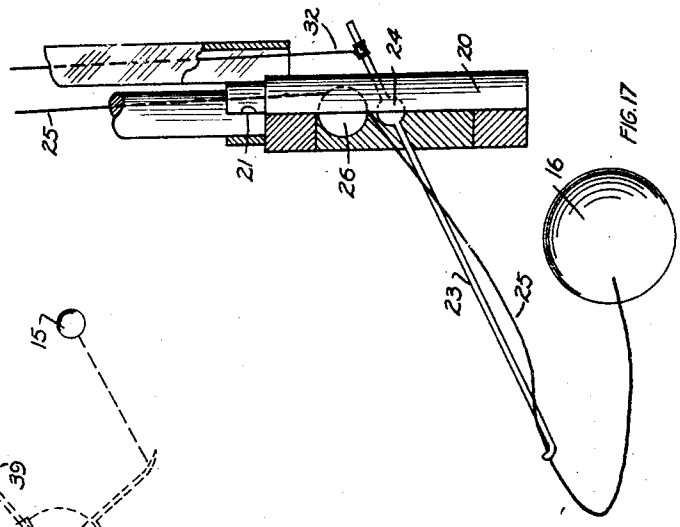


FIG. 17

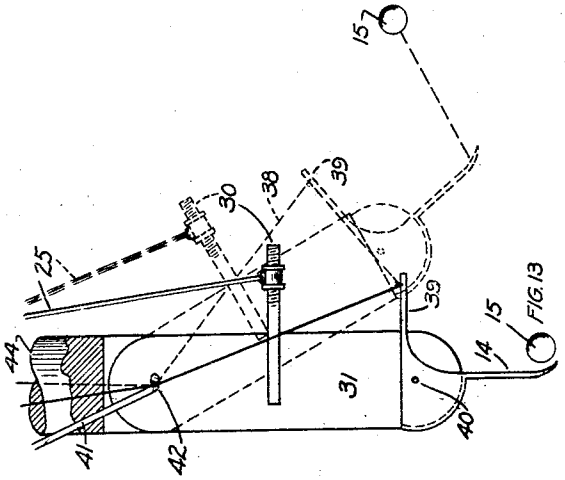


FIG. 13

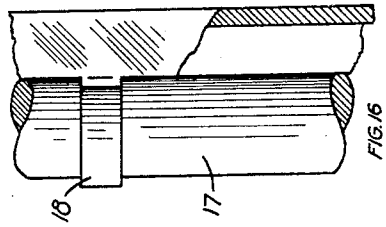


FIG. 16

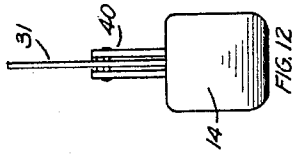


FIG. 12

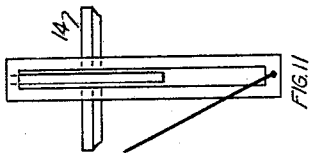


FIG. 11

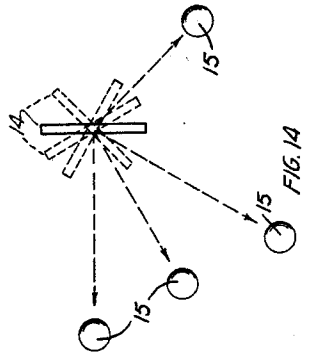


FIG. 14

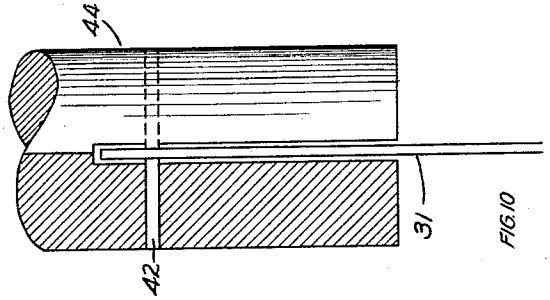


FIG. 10

INVENTOR.
LEWIS B. SPAFFORD
BY
ATTORNEY

Oct. 20, 1931. L. B. SPAFFORD 1,828,091

GAME APPARATUS

Filed March 22, 1928 4 Sheets-Sheet 4

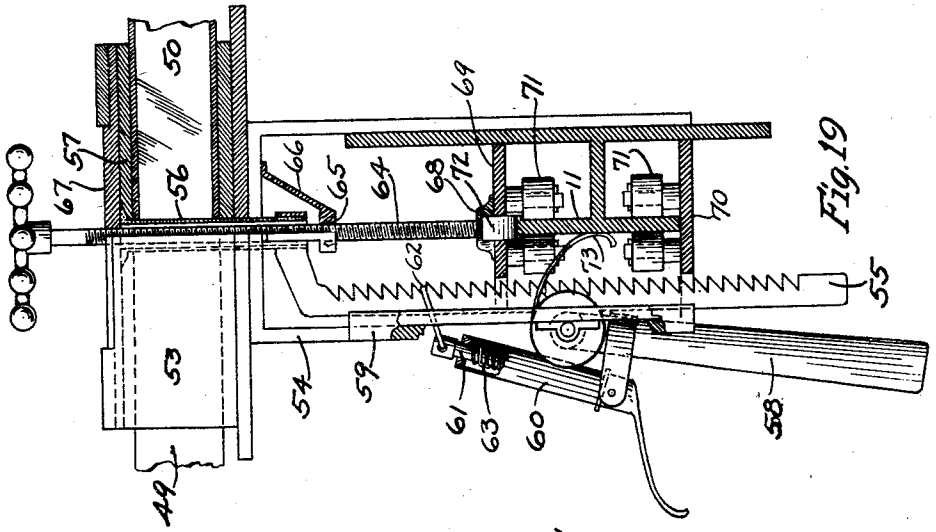


Fig. 19

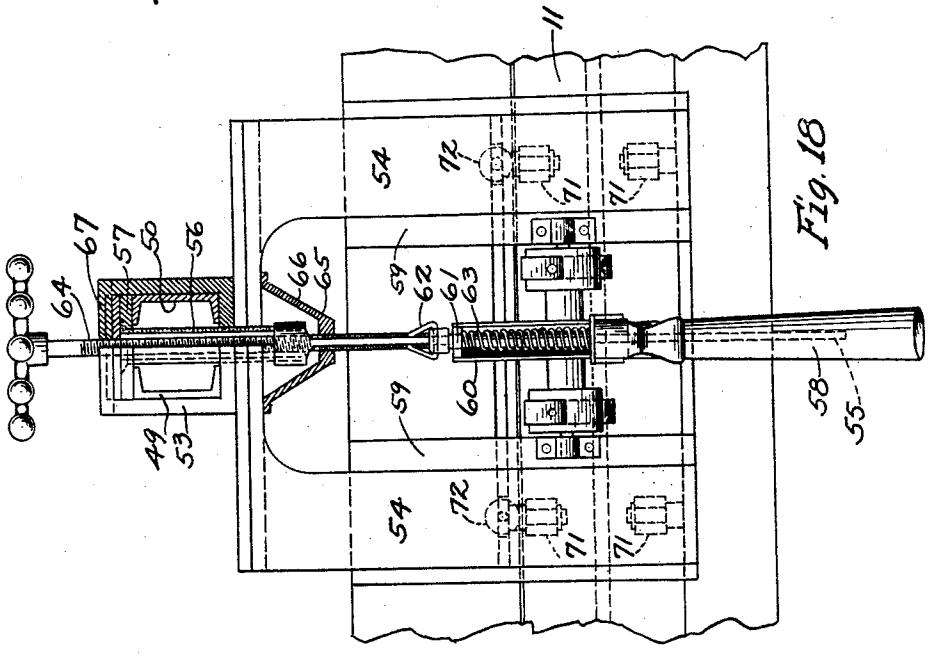


Fig. 18

INVENTOR.
LEWIS B. SPAFFORD
BY Eugene Owen
ATTORNEYS.

Patented Oct. 20, 1931

1,828,091

UNITED STATES PATENT OFFICE

LEWIS B. SPAFFORD, OF CHICAGO, ILLINOIS

GAME APPARATUS

Application filed March 22, 1928. Serial No. 263,640.

This invention relates to a game apparatus particularly designed for the indoor playing, teaching, and practicing of golf or other games in which a ball is struck by a club or otherwise projected.

The main object of my invention is to provide an apparatus in which the striking of a regulation ball by the regulation clubs will impart a corresponding projection to a smaller ball which is used with the device.

Another object of my invention is to provide means whereby the projection of the small ball will be projected similarly to the projection of the larger ball with respect to direction, elevation, and relative distance.

A further object of my invention is to so coördinate the various parts of the device that the elements controlling direction, elevation, and distance will act automatically in the required sequence so that the projection of the smaller ball will follow the projection of the regulation ball in one striking of the club.

A further object of my invention is to have the device adjustably mounted with respect to the playing surface so that the impact member for the smaller ball may be moved to follow up said ball and also be positioned to properly strike the same.

A further object of my invention is to provide a device which is simple in construction and operation and one which will efficiently accomplish the objects for which it is designed.

The invention consists further in the matters hereinafter described and claimed.

In the accompanying drawings—

Fig. 1 is a top plan view of a game apparatus constructed in accordance with my invention;

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a view of the arm structure to be hereinafter described;

Figs. 4, 5, and 6 are vertical sectional views taken on lines 4—4, 5—5, and 6—6, respectively, of Fig. 3 to show details of structure;

Fig. 7 is a horizontal sectional view taken on line 7—7 of Fig. 3;

Fig. 7ª illustrates a cable arrangement to be hereinafter described;

Fig. 8 is a vertical quarter section taken on line 8—8 of Fig. 7;

Fig. 9 is an elevational view taken on line 9—9 of Fig. 3;

Fig. 10 is a quarter section through the mounting of the paddle support;

Fig. 11 is a top plan view of the paddle;

Fig. 12 is a front view of the paddle;

Fig. 13 is a side view of the paddle assembly with dotted lines indicating the action of the structure;

Fig. 14 is a diagrammatic view showing the adjustments which may be given the paddle;

Fig. 15 is a view showing one of the cable sheaves mounted in the arm;

Fig. 16 is a view showing the mounting for one of the turnable rods;

Fig. 17 is a view partly in elevation and partly in section at the lower end of this rod;

Fig. 18 is a front view of the clamp and roller carriage assembly to be hereinafter described; and

Fig. 19 is a side view of this assembly with parts shown in vertical section.

The game apparatus of my invention comprises a playing surface A, which may be supported on a table such as B in Fig. 2. The surface A may be given such configuration and design as required for the character of the game to be played, taught, or practiced with my improved apparatus. In Fig. 1, a golf course is represented on the surface A, and the latter, as shown in Fig. 2, is made to conform to the general topographical contour of such a course.

The "tees" of the course are appropriately located over the playing surface and for illustration are marked 1 to 10 inclusive. The fairways are indicated by dot and dash lines, and the direction of play over each fairway is indicated by an arrow. The "tees" are preferably indicated by square outlines, while the "greens" at the ends of the respective fairways are indicated by circular outlines, as shown. The lengths of the fairways may be varied and they may be either straight or irregular as on a regulation golf course.

On at least one side of the playing surface

A is provided a track or rail 11, upon which is movable a suitable roller carriage 12 carrying an arm structure 13.

A paddle 14 is carried by the arm 13 at its inner end or at the end of the arm which is over the playing surface A. The paddle 14 is so mounted that it may be moved to project a small or secondary ball 15 (Fig. 13) over the surface A upon the striking of a larger ball 16 at the outer end of the arm 13. When the surface A is on a table, as shown in Fig. 2, the outer portion of the arm 13 extends downward toward the floor so that the larger ball 16 may lie on the floor in position to be struck by a regulation golf club of the character used in the game of golf. The ball 16 may be a regulation golf ball, but it is preferably captive in that it is connected with the paddle 14 through means to be presently described.

Arranged in the vertical portion of the arm 13 is a rod or equivalent element 17. The rod 17 is journaled in the arm by members 18, 18 which are rigidly secured to the arm and which encircle the rod and engage in annular grooves therein so that the rod may have turning movement in the arm. As an additional support the upper end of the rod 17 is attached to the horizontal part of the arm 13 by a screw 19 and around which are arranged bearing balls in a recess in the end of the rod to give it ease of movement. (See Fig. 6.)

The lower end of the rod 17 fits into a socket at the upper end of the member 20, which extends below the rod and forms a downward continuation thereof. A set screw 21 connects the member 20 to the rod 17 so that both turn together. The member 20 is provided with an elongated vertical slot 22 through which extends a lever 23 which is fulcrumed between its ends in the slot on a pin 24. The outer end of the lever 23 is provided with a loop or eye through which passes a cord or flexible cable 25 and to which cable is permanently attached the ball 16.

A grooved roller or sleeve 26 is mounted in the slot 22 above the fulcrum pin 24, and the cable 25 passes under the roller, as shown in Fig. 17. The cable 25, on leaving the roller 26, extends upward through the vertical portion of the arm 13 and passes over a sheave 27 located at the junction of the horizontal and vertical portions of the arm. From there the cable 25 extends along the inside of the horizontal portion of the arm 13 and passes under a sheave 28 adjacent the inner end of the arm, as shown in Fig. 3. From here the cable 25 passes over another sheave 29 at the inner end of the arm and extends down toward the paddle 14, where it is adjustably connected with a screw rod 30 fixed to a member 31 to the lower end of which the paddle 14 is pivotally connected. Through the cable 25 the distance of the smaller ball 15 is determined when struck by the paddle 14.

A cable 32 connects the lever 23 on the side of its fulcrum 24 opposite the ball 16 with a rotatable disc 33 at the upper end of the vertical portion of the arm 13, as shown in Figs. 3 and 5. A cable 34 is connected to this disc and extends along and within the horizontal portion of the arm 13 to a drum 35 about which the cable extends and to which it is secured so as to turn the drum through the upward and downward swinging movements of the lever 23.

The drum 35, as shown in Fig. 3, is provided with a pair of radially arranged lugs 36 and 37 to the former of which is connected a cable 38 which extends downward to the paddle 14 and is connected with an outwardly extending portion 39 of said paddle so as to turn the same about its fulcrum connection 40 with the lower end of the member 31 and thus give elevation to the flight of the ball 15 when the latter is struck by the paddle, as indicated by dotted line in Fig. 13. The cable 38 extends through a guide 41 fixed to the inner end of the arm 13. The eye or loop in this guide through which the cable extends, as shown in Fig. 3, is offset outward from and is in horizontal alignment with the fulcrum 42 of the member 31 so that the fulcrum points of the cable and the member 31 will be in the same horizontal plane and thus prevent any change in the angular position of the paddle 14 with respect to member 31 when cable 25 alone is actuated. In further explanation of this I may state that cable 38 will cause paddle 14 to swing independently of the member 31. That is to say, in operating the device by hand, for instance the paddle 14 can be made to change the angle of incline without any change in position of member 31. The eye or loop has the same position relative to the paddle as the fulcrum 42. Hence, any change in inclination of the paddle will take place regardless of the inclination of member 31. For instance, if I merely pull the ball forward without impact at an angle of 45 degrees the paddle will take the position of 45 degrees but member 31 will not move. When the ball is struck and velocity imparted to it, the member 31 will move forward according to the force of the impact, but member 31 and cable 38 acting from approximately the same pivots, the movement of the paddle relative to member 31 will be the same as though the member 31 were standing still. A coiled spring 43 is connected to the other lug 37 and serves to permit the return of the paddle 14 to its normal vertical position in the dropping by gravity of the member 31 after the secondary ball 15 has been projected through the striking of the primary ball 16.

The member 31 is carried by a rod or other equivalent element 44 which is turnably sup-

ported by the arm 13 at its inner end by a number of journals 45, 45. These journals may be in the form of straps which engage the rod 44 in annular grooves, as shown in Fig. 8. The straps 45, 45 are preferably bolted or otherwise secured to a supporting plate 46 which is vertically arranged and is secured by welding or otherwise to the arm structure 13.

A pair of cables 47, 48 extend between and are connected to the rods 17 and 44, respectively, as shown in Fig. 7ª. These cables are arranged on opposite sides of the rods and extend around each of them so that, when the rod 17 is turned in either direction, a corresponding turning will be given to rod 44. This will change the angular position of the paddle 14 to accord with the direction that the ball 16 goes when struck by a club and thus impart a like direction of movement to the smaller ball 15, as indicated by the dotted lines in Fig. 14.

The arm structure 13 may consist of a pair of channel shaped members 49, 50 arranged with their channels opposed so as to provide a housing for the cables and other associated parts of the device. A vertically arranged partition plate 51 is mounted in the channel of one of the members, such as 50, so as to keep the cable 25 when slack from getting caught by the clamp structure to be presently described. As shown in Fig. 15, the partition plate 51 is provided with a projection 52 which extends over the upper side of the sheave 27 and serves as a guard to prevent the cable 25 from lifting out of the groove in the sheave.

The horizontal portion of the arm 13 extends through a suitable box 53 which rests on the top of an inverted U-shaped frame 54, as shown in Figs. 18 and 19. Members 49 and 50 are clamped in the box 53 through a rack 55 which is connected at its upper end with the lower end of a tube 56. Said tube has a headed engagement at its upper end with a clamp plate 57 which rests directly on the upper portions of members 49, 50 within the box. The tube 56 extends between the opposed inner edges of the members 49, 50 and is on the side of the partition plate 51. A handle 58 is trunnioned on upright plates 59, 59 over the outer sides of which the frame 54 has a sliding movement. Pivoted to the handle 58 is a tubular link 60 which has a rod 61 fitting within the link and provided with a bail 62 which extends about the rack 55 and engages the teeth thereof. When the handle 58 is turned downward to the position shown in Fig. 19, the link is drawn downward against the spring 63 about the rod 61, and the latter draws the rack 55 in the same direction to clamp the members 49 and 50 in the box through the plate 57.

A screw 64 extends downward through the tube 56 and passes through a nut 65 which is carried below the tube by a bracket 66 fixed to the frame 54. The screw 64 has threaded engagement with a top plate 67 which rests on the plate 57 and has its ends reduced so as to fit under the end portions of the box which are made by cutting away the top wall of the box, as shown. The lower end of the screw 64 rests in a cup 68 on a horizontal web 69 which is preferably made intergral with the uprights 59, as shown. The frame 54 also slides over an upright web 11ª which carries the track 11 and which web 11ª is secured to the table at the side of surface A.

These uprights also have another horizontal web 70 which is below the track 11. Suitable rollers 71, 71 are carried by the webs 69, 70 and engage against the opposite sides of the track 11. The upper web 69 also supports a number of rollers 72 which travel on the upper edge of the track, as shown. These rollers permit the carriage 12 and the arm 13 to be adjusted along the track when the handle 58 is swung upward to its released or non-clamping position. When in clamping position, the spring strips 73, 73 are pressed against the track 11 and hold the roller carriage from accidental sliding movement and also the handle in its clamped position. By turning the screw 64, through the handle at its upper end, the arm 13 will be adjusted vertically so as to bring the paddle 14 into the desired position with respect to the ball 15 on the playing surface A.

The game is played as follows: The small ball 15 is placed at any desired location on the playing surface A, preferably at No. 1 "tee", at the start of the game. The arm 13 is then adjusted along the track and longitudinally over the surface A to position the paddle 14 behind the ball 15. If the paddle 14 needs vertical adjustment, the screw 64 is turned to raise or lower the paddle as the situation may require. The angular setting of the arm 13 with respect to the track will depend on the position required to drive the ball 15 down the fairway. The carriage 12 and the arm 13 are then clamped in place and the game is ready to be played.

The ball 16 is set in the desired position on the floor and the player with the selected golf club, as for instance a driver, strikes the ball 16 in the same way as he would when driving the ball down a fairway in a regular game of golf. When the ball 16 is struck, the slack in the cable 25 is first taken up in the flight of the ball, and if the latter is sliced it goes to one side or the other of the arm 13 and pulls on the lever 23 to turn rods 17 and 44 and adjust the paddle 14 about a vertical axis to cause the smaller or secondary ball 15 to be projected by the paddle in the same direction as the larger or primary ball. If the larger ball 16 goes upward, the lever 23 is raised accordingly through cables 32, 34, and 38 to tilt the paddle 14 to the angle re-

quired to project the ball 15 to substantially the same elevation as the flight of the larger ball. When the ball 16 finally draws out the cable 25, the paddle 14 is swung upward with its member 31, and the smaller ball 15 is then projected by the paddle to the same relative distance that the larger ball would go if free. The movements of the paddle 14 as just described follow automatically in sequence, and the flight of the smaller ball when struck is similar to the projection of the larger ball in direction, elevation, and relative distance.

With the apparatus of my invention, the flight of the smaller ball will depend upon the skill of the player striking the larger ball. Thus, should the payer make a slice or a hook on the larger ball, the same motion would be translated to the smaller ball. In this way perfect and imperfect shots will be registered by the smaller ball so that the game not only affords amusement but also provides means for practice and teaching. The player in using the same clubs that are used in the regular golf game may, by noting the flight of the smaller ball, rectify the errors in his strokes and also gauge the force of his strokes in relation to the distance he wishes to drive the small ball. The player plays the game in exactly the same manner as he would the regular game of golf, using different clubs, selecting the one adaptable to the lay of the ball in addition to playing the game, instead of having merely a practice device which in and of itself would have no amusement features. Each time the small ball comes to rest on the surface A, the apparatus is adjusted for the next play, and this is repeated from time to time as may be required to play the entire course. The surface A may be of felt or such other material which will represent the turf of a golf course and thus prevent too free rolling of the ball 15.

When a number of players play the game, the arm 13 is adjusted along and over the surface A to position the paddle 14 at the tee from which the play is to be made. Then each player in turn projects a small ball 15 toward the green associated with the tee. There will be as many small balls as there are players, and the small balls may be differently colored or otherwise marked so that they may be distinguished one from the other. After all the players have teed off, then the arm 13 is adjusted to bring its paddle 14 to the rear of the small ball farthest from the green. The arm will be set at such angle as to normally project the small ball in the direction of the green.

In the actual striking of the large ball, however, the player may slice or make an imperfect shot and the small ball will be projected accordingly. The arm is next adjusted to take care of the small ball farthest from the green. The player possessing that ball will attempt to drive it toward the green, using such club as he may select for the purpose for controlling direction, elevation, and distance. When the small balls of all the players reach the green, then the putting takes place through the medium of the paddle 14, and, when the players hole out or project their balls in the cup, the arm 13 is adjusted for the next tee. This method of operation is continued until the players have driven their balls along each of the several fairways of the course and have putted them into the various cups of the course, marked on the surface A. The number of strokes taken by each player for each fairway are counted and the total computed constitutes the score, the same as in the regular game of golf.

One of the important features of my invention is the automatic adjustment of the paddle or impact member 14 for translating to the smaller ball the same conditions of projection as given to the larger ball. While I have shown cables for this purpose, other means, mechanical or otherwise, could be used for accomplishing the result. I would not wish to be limited to a mechanical arrangement, as it is within the spirit and scope of my invention to employ pneumatic, electric, or other means for such purpose.

Another feature of my invention resides in the adjustability of the arm 13, lengthwise, crosswise, and up and down with respect to the surface A, as well as at various angles to the track, so that the impact member 14 may be set to accord with the lay or position of the small ball on said surface.

The surface A may be arranged at such elevation as may be desired. It may be supported on the top of a table, as shown in Fig. 2, or it may be located on the floor. When so located, the arm 13 will have its outer vertical portion much shorter than shown, so as to be in keeping with the height of the surface A above the floor.

While I have shown and described herein the apparatus of my invention as applied to the game of golf, it is also adaptable for other games using projectible playing pieces and either bats or clubs for projecting the same. Among such games are tennis and hockey. For games of the character mentioned, such changes will be made in the apparatus as will be required to adapt the apparatus to the particular game represented; otherwise, the principle of operation hereinbefore described will remain the same.

The details of structure shown and described may be variously changed and modified without departing from the spirit and scope of my invention.

I claim as my invention:

1. A game apparatus comprising, in combination, primary and secondary projectible members, an arm, an impact element carried

by the arm, and means carried by the arm whereby the projection of the primary member will cause the impact element to project the secondary member similar to the projection of the primary member with respect to direction, elevation, and distance.

2. A game apparatus comprising an arm, a paddle carried by the arm and connected therewith in a manner permitting the paddle to be swung, turned, and angularly adjusted with respect to the arm, a projectible member associated with said arm, and means carried by the arm whereby the projection of said member will automatically cause the paddle to be turned, angularly adjusted, and swung for direction, elevation, and distance, respectively.

3. A game apparatus comprising an arm, a pair of turnable elements carried by said arm in spaced relation along the length of the same, a paddle pivotally connected to one of said elements, a projectible member attached to the other element, and cable means associated with the elements, the paddle, and the projectible member, respectively, for operating the paddle through the impulse of the projection given to the projectible member.

4. A game apparatus comprising, in combination, a playing surface, an arm adjustable with respect to said surface, an impact element carried by said arm, a projectible member associated with said arm, and means carried by said arm for imparting movement to the impact element upon the projection of the projectible member.

5. A game apparatus comprising, in combination, an arm, a paddle at one end of the arm, means providing a pivotal and turnable connection for the paddle with the arm, an element turnably mounted at the other end of the arm, a lever pivoted to said element, a projectible member associated with said lever, and cable means connecting the member and lever, respectively, to the paddle for operating the latter upon the projection of said member.

6. A game apparatus comprising, in combination, an arm, a paddle at one end of the arm, a projectible member at the other end of the arm, and means carried by the arm for connecting the paddle with the projectible member in a manner to cause the paddle to be turned about a vertical axis and to be adjusted and swung, respectively, about horizontal axes under the impulse of the projection of the projectible member.

7. A game apparatus comprising, in combination, an arm, an element carried by the arm for turning on a vertical axis, a member pivoted to said element on a horizontal axis, a paddle pivoted on a like axis to said member, cable means for turning the element and for swinging the paddle and member, respectively, about their respective axes, and a guide for causing the cable for the paddle to extend thereto from a point in horizontal alignment with the pivotal axis of the member.

8. A game apparatus comprising, in combination, an arm, a paddle and a lever pivotally connected to the arm in spaced relation along the length of the same, a projectible member associated with said lever, and means including cables connecting the projectible member and lever, respectively, to the paddle, the connection of the cable to the lever being adjustable so that the tilt given to the paddle may be regulated with respect to the tilt of the lever.

9. A game apparatus comprising, in combination, an arm, a paddle assembly pivotally connected with the arm, a projectible member associated with the arm, and means including cables connecting the projectible member with the paddle assembly, the cable for swinging the paddle assembly having adjustable connection therewith so that the projective force of the paddle may be regulated with respect to the impulse given to the projectible member.

10. A game apparatus comprising, in combination, a playing surface, a track associated therewith, a carriage movable along said track, an arm adjustably mounted on the carriage and extending over said playing surface, means carried by the arm for projecting a member over the playing surface, and means whereby the carriage and the arm may be clamped in any of their adjustable positions with respect to the track.

11. A game apparatus comprising, in combination, a playing surface, two projectible members, one a secondary member to be projected over said surface and the other a primary member which may be projected in any forward direction exterior of said surface, means for transmitting the impulse of the projection of the primary member to the secondary member for causing the projection of the latter over said surface, and means for causing the projection of the secondary to simulate the projection of the primary member.

12. A game apparatus comprising, in combination, a playing surface having a representation of a golf course thereon, two balls, one being a regulation golf ball and the other being a smaller ball, means for transmitting the impulse of the projection of the golf ball by a golf club exterior of said surface in any forward direction to project the smaller ball over said surface, and means for causing the projection of the smaller ball to simulate the projection of the golf ball with respect to direction, elevation, and distance.

13. The combination with primary and secondary projectable members, of impact means for the secondary member, and means for transmitting the impulse of the projection of

the primary member to said impact means for causing the projection of the secondary member by said impact means to simulate the projection of the primary member.

14. The combination with primary and secondary projectable members, of impact means for the secondary member, and means for transmitting the impulse of the projection of the primary member to said impact means for causing the projection of the secondary member by said impact means to simulate the projection of the primary member with respect to direction, elevation and distance.

15. The combination with two projectable members, one being captive and the other being free, of impact means for the free member, and means for transmitting the impulse of the projection of the captive member to said impact means for causing the projection of the free member by said impact means to simulate the projection of the captive member.

In testimony whereof I affix my signature.

LEWIS B. SPAFFORD.