Oct. 4, 1932. A. N. ALBERA 1,881,384

BASEBALL GAME

Filed Dec. 5, 1930 3 Sheets-Sheet 1

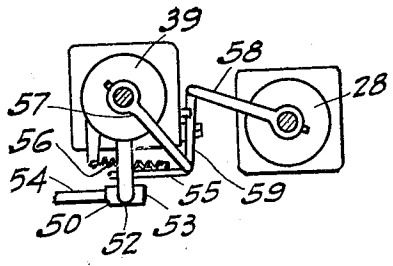


Fig. 5.

Fig. 1.

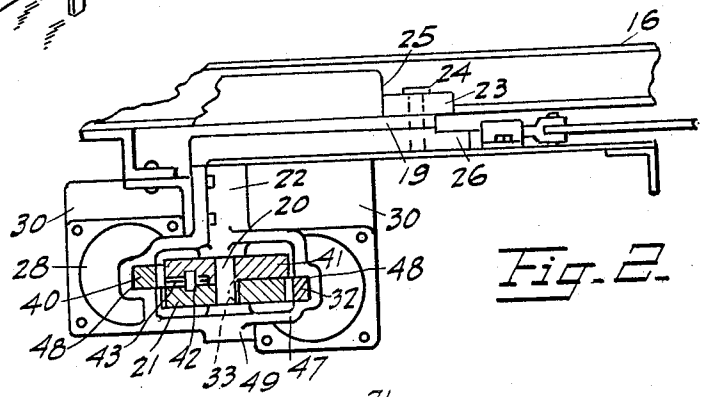


Fig. 2.

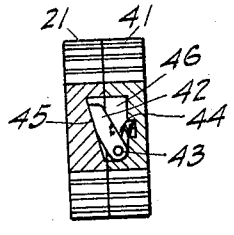


Fig. 3.

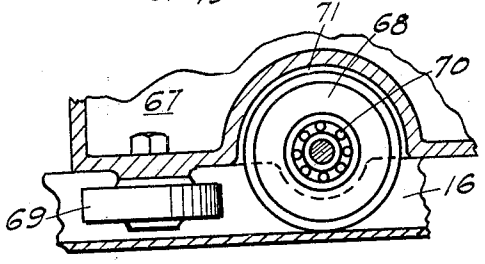


Fig. 4.

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BASEBALL GAME

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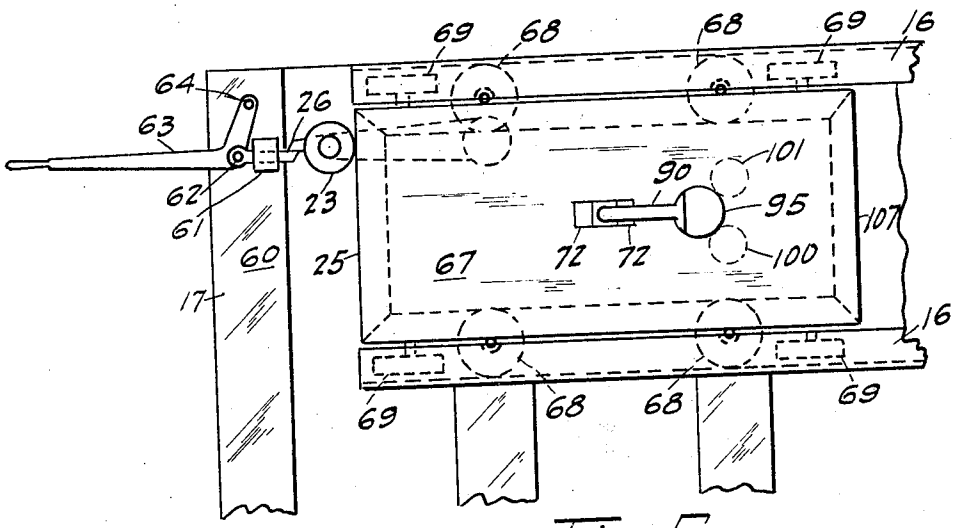


Fig. 6.

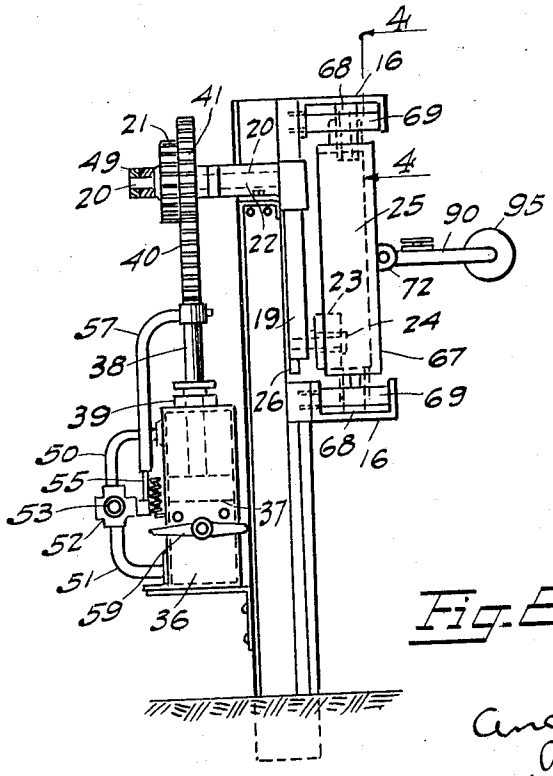


Fig. 7.

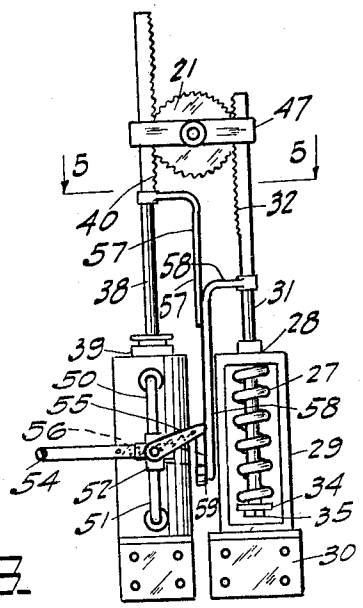


Fig. 8.

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BASEBALL GAME

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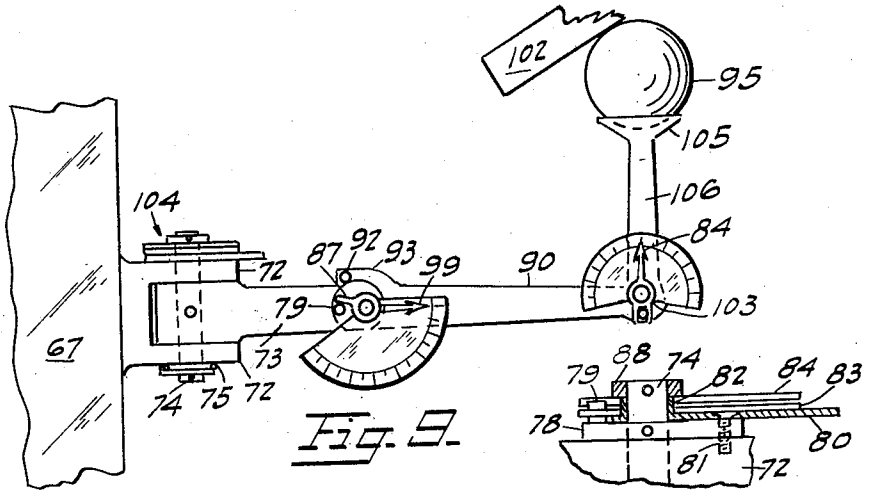


Fig. 9.

Fig. 10.

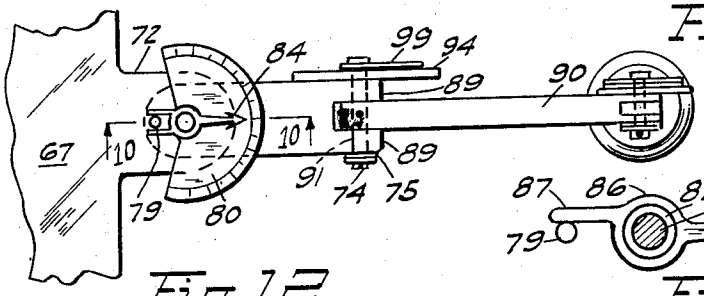


Fig. 12.

Fig. 11.

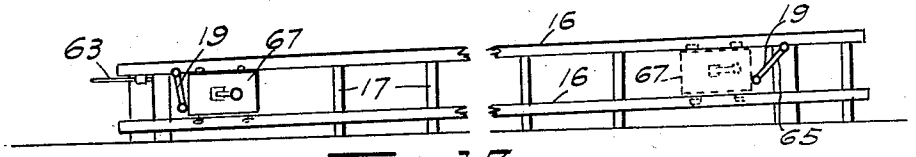


Fig. 13.

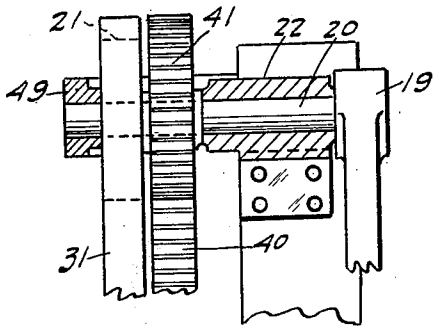


Fig. 14.

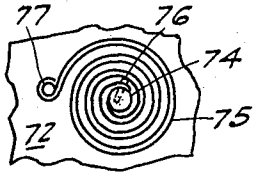


Fig. 15.

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UNITED STATES PATENT OFFICE

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BASEBALL GAME

Application filed December 5, 1930. Serial No. 500,214.

This invention is for a base ball game, and has special reference to a game in which a mechanically driven ball is driven at a speed approximating the normal speed of a pitched ball, and in a proper position to be intercepted by a bat wielded by a person in normal batting position.

The main object of the invention is to provide a base ball with mechanical means for driving or pitching the ball, at a speed substantially equal to the normal speed of a hand pitched ball, and in a plane adjacent the batter which is considered a fair ball in the regular game of base ball.

Another object of the invention is to provide a game as outlined which may be played indoors or outdoors and which will test the skill of the batter and develop accuracy in batting.

A further object of the invention is to provide a device as outlined with registering and indicating means, for the purpose of indicating the force of impact with the bat and whether a fair or foul ball was struck, whether the ball is driven straight, for a fly, grounder, or punt, the exact conditions being registered at the time of impact.

Other objects and advantages of the invention will become apparent as the description is read on the drawings forming a part of this specification.

The invention consists primarily of a track or guide, a carriage freely mounted in the guide and having a forwardly extending arm on the end of which is secured a base ball, the arm being adapted to swing in all directions except forward relative to the carriage and having a plurality of pivoted joints in angular relation to each other, and resiliently retained in normal positions, indicating or registering means operable by means of joint movement, and a catapult for projecting the carriage along the track or guide to the opposite end, where the energy of the moving carriage is dissipated in a resiliently restrained arm which immediately transmits the energy to the carriage for returning it to the starting point, and means for resetting and releasing the catapult.

The invention is adequately illustrated in the accompanying drawings in which

Fig. 1 is a perspective view of the invention with an intermediate section removed and a batter standing in position to bat the ball;

Fig. 2 is a plan view of the catapult power mechanism showing the operating and resetting gears in section;

Fig. 3 is a section taken through the gears showing the clutching mechanism;

Fig. 4 is a section taken on line 4—4 of Fig. 7;

Fig. 5 is a sectional plan view taken on line 5—5 of Fig. 8;

Fig. 6 is an elevation showing the carriage, catapult arm and latching mechanism, with the carriage in contact with the roller;

Fig. 7 is an end elevation of the device with the spring cylinder and cooperating parts removed;

Fig. 8 is a rear elevation of the resetting and power mechanism;

Fig. 9 is a top plan view of the ball arm and showing method of attachment to the carriage;

Fig. 10 is a section taken through the indicating mechanism taken on line 10—10 of Fig. 12;

Fig. 11 is a plan view of one of the hands;

Fig. 12 is a rear elevation of the ball arm;

Fig. 13 is a front elevation of the invention;

Fig. 14 is an enlarged sectional view taken through the catapult arm shaft bearings and showing the gears and racks;

Fig. 15 is a view of the arm retaining spring and method of attachment.

The invention consists of a track or guide indicated as a pair of opposed channel members 16 preferably of a length approximating the distance between the pitcher's and catcher's boxes of a base ball diamond, so as to provide similarity of conditions relative to a hand pitched ball. Suitable supports 17 rigidly secure the track members in proper alignment. A guard rail 18 is preferably spaced parallel to the track to prevent injury to bystanders by getting in the path of the ball and arm when catapulted.

The catapult is located at one end of the track and consists of a pivoted arm 19 fixedly mounted on a shaft 20 on the opposite end of which is fixedly secured a gear 21, the shaft 20 being rotatably mounted in a bearing 22. Arm 19 has rotatably mounted at the outer end, a roller 23 pivoted on a stud 24 and adapted to engage the rear end 25 of the carriage. A projection 26 integral with arm 19 cooperates with a latch for retaining the arm in retracted position.

The power for catapulting is derived from a spring 27, seated against a head 28 of a frame or cylinder 29 which is secured to the frame work or supports by a bracket 30. A rod 31 is slidable in the head 28 and has rack teeth 32 formed at the upper end which mesh with the gear 21 which is keyed to shaft 20 as indicated at 33. Rod 31 extends through spring 27 and has a thrust washer 34 and nut 35 cooperating with the opposite end of spring 27. It will be noted that with arm 19 in retracted position, rod 31 is drawn upward by gear 21 and spring 27 is thereby compressed.

The resetting mechanism consists of a cylinder 36 having a piston 37 to which is secured a piston rod 38 which is slidable through cylinder head 39, and has rack teeth formed at the upper end as indicated at 40, which mesh with a clutch gear 41 rotatably mounted on shaft 20. Gear 41 has engaging means consisting of a pawl 42, pivoted in gear 41 and 43 and urged forward by a spring 44, into a notch 45 formed in gear 21, a recess being provided in gear 41, as indicated at 46, into which the pawl 42 may be retracted by cooperation with the normal side surface of gear 21. An encompassing bracket 47 is integral with bearing 22 and provides sliding bearings 48 for the racks 32 and 40, and an end bearing 49 for shaft 20. Cylinder 36 is suitably mounted on a bracket which is fixed to a support 17. The cylinder has pipes 50 and 51 communicating with the opposite ends and controlled by a four way valve 52 which communicates with an exhaust 53 and a fluid supply 54. A lever 55 actuates the valve by cooperation of a spring 56. A rod 57 fixed on piston rod 38 cooperates directly with the end of lever 55 and a rod 58 fixed on spring rod 31 cooperates with one end of a centrally pivoted lever 59, the opposite end of lever 59 cooperating with the under surface of lever 55 to provide a reverse action of valve 52.

The latch mechanism consists of a bolt 60 slidably mounted in a bearing 61 and pivoted at 62 to an L shaped lever 63 which is pivoted to a support 17 at 64, bolt 60 and projection 26 having cooperating bevels formed at the ends.

The opposite end of the track is equipped similarly except the cylinder 36 and all cooperating parts, as also the latch mechanism 63 is omitted, and consists of the arm 19, roller 23, shaft 20, gear 21, bearing 22, rack and rod 31, spring 27, housing 29 and cooperating parts, and is only adapted as a shock absorber and rebound device, consequently is adjusted to stop in an angular position as shown at 65.

The carriage consists of a base 67 mounted between the channels 16 and guided thereby through vertical rollers 68 and horizontal rollers 69 which are pivotally mounted on the carriage base 67 and preferably on roller or ball bearings 70, recesses 71 permitting close coupling of the rollers in the base 67.

Integral ears 72 project forwardly from the carriage base 67 and pivotally receive a link member 73 of the ball carrying arm, which is fixed to pivot pin 74. A spiral spring 75 is fixed to the one end of pin 74, as shown at 76, and has the opposite end fixed to one of the ears 72 as at 77 which is located to provide just sufficient tension to overcome the weight of the ball arm and ball, being thus neutralized and normally maintaining the ball arm in a horizontal position.

The other end of pin 74 has fixedly secured thereon a collar 78 having an upwardly projecting pin 79 fixed therein. A dial 80 is provided with index marks of a suitable nature readable from zero in both directions, and is fixed to the one of the ears 72 as indicated at 81, and has an integral collar 82 formed to provide a non-rotating bearing for the hands 83 and 84 which are frictionally retained in relative position. The hands 83 and 84 are formed alike but reversed as to mounting and consist of the pointer 85, hub 86, and offset arm 87, the inner edge of which is offset from the center of the pointer a distance equal to the radius of pin 79 so the pointers will be in registry when the arms 87 are in contact with pin 79. A collar 88 retains the hands on the collar 82. Arm 73 is provided with a yoke end consisting of a pair of ears 89 disposed transversely to the ears 72 and has pivotally mounted therein, the ball carrying arm 90, which is fixed to the pivot 91, the construction and arrangement of parts being identical to that described for the other joint, except only one hand 99 is employed, as the swing of the arm is only in one direction, a stop pin 92 fixed in a projection 93 integral with arm 90 preventing back swing of the arm, and a single reading dial 94 is used.

The arm 90 has a right angle joint and indicating means at 103 which is a duplicate of the first joint indicated at 104. A base ball 95 is secured to the cupped end 105 of the forwardly extending portion 106 of arm 90 by any suitable means, such as cementing.

The operation of the device is as follows: A fluid supply is delivered to cylinder 36 through pipe 54. At this time, the arm 19

is in the position shown at 96, Fig. 1, and the power and resetting mechanism is as indicated in Fig. 8, valve lever 55 being in position as shown, and directing the fluid supply through pipe 50 to the upper end of the cylinder, which acts to force the piston 37 down, drawing down on rod 38 and turning gear 41 counter-clockwise. Pawl 42 is engaged in notch 45 and drives gear 21 in the same direction, which meshes with the rack 32 on rod 31, drawing rod 31 upwardly and compressing spring 27, and coincidently swinging arm 19 to the position shown at 97 in Fig. 1, and as shown in Fig. 6. As the arm is swung back, the carriage follows, due to a slight down grade of the track, as indicated in Fig. 13, the carriage coming to rest against the roller 23, the arm 19 being drawn back sufficiently to cooperate with the latch bolt 60 which is caused to engage by the weight of lever 63. As the piston nears the bottom of its stroke plunger 57 fixed on rod 38 cooperates with lever 55 until center is passed, when spring 56 throws lever 55 the balance of the way, reversing the valve, directing the fluid supply through pipe 51 to the lower end of the cylinder 36 and opens the upper end of the cylinder to the exhaust 53. The piston is forced upwardly, rotating gear 41 in a clockwise direction, pawl 42 backs out of notch 45 and over the side surface of gear 21. The pressure is maintained in the cylinder, thereby offering no hindrance to the free operation of arm 19 and spring 27. This places all parts in readiness, and a batter takes his position, as shown in Fig. 1. Lever 63 is raised, retracting bolt 60 and releasing arm 19. Spring 27 draws rod 31 down, rack 32 cooperating with gear 21, which, being keyed to shaft 20 swings arm 19 to the position shown at 96 in Fig. 1, roller 23 cooperating with the rear end 25 of carriage 67, drives the carriage at high speed along the track 16. As the carriage approaches the position shown in Fig. 1, the batter strikes at the ball 95 with a regulation bat 98. Should he fail to hit the ball 95, none of the hands, 83, 84 and 99 would be moved and all would register zero. In case the bat would contact, as shown at 100 in Fig. 6, glancing the lower surface of ball 95, hand 99 would be swung about, indicating on the dial the horizontal component of the force, the hand remaining in its indicating position until manually returned to cooperation of the arm 87 with pin 79. Coincidently hand 83 would be moved counter-clockwise on dial 80 indicating the vertical component of the force, and the combination of the vertical and horizontal components would provide the necessary data for calculating the tangent and obtaining the theoretical angle of flight of the ball. A tipped ball would show no horizontal component and would indicate a foul ball. Should the ball contact as shown at 101, Fig. 6, hand 84 would be deflected indicating a grounder. Should the bat contact squarely with the ball, no vertical component would be indicated, and only hand 99 would register. In the event of the bat striking the ball as shown at 102, Fig. 9, the hand 84 of joint 103 would swing to the right indicating that the ball was struck toward left field, similarly, if the ball is struck late, hand 83 would be moved to the left and indicate travel of the ball in right field. It will be seen that the exact conditions of contact of the bat and ball may be ascertained by the indicators, which indicate the force components in all directions, and the exact direction of flight may be calculated.

The carriage continues until the front end 107 contacts with roller 23 in the position shown at 65, the energy of the carriage being spent in forcing lever 19 back and compressing spring 27 at the catchers end. As soon as the carriage comes to rest, the energy stored in spring 27 is transmitted to arm 19 which returns to the position shown at 65, driving the carriage back to the pitcher's end at a substantially low speed and which is stopped by contact with roller 23.

At the time arm 19 is released by lever 63 and swings to the position shown at 96, Fig. 1, by the force exerted by spring 27 through rod 31 which returns thereby to the lowered position, a finger 58 fixed to rod 31 cooperates with lever 59, which cooperates with the undersurface of lever 55, reversing the fluid supply and causing piston 37 to be forced downwardly, drawing down on rod 38, rotating gear 41 which clutches with gear 21, drawing up on rod 31 and compressing spring 27, coincidently returning arm 19 to the position shown in Fig. 6.

It will be noted that the device is automatic in operation, requiring only the release of latch 60 by means of lever 63, and resetting of the hands of the indicators. Charts may be prepared from which the travel and direction of flight of the ball may be read directly from the values obtained from the respective indicators.

It will further be noted that a scientific game is thereby provided which is instructive and physically beneficial and a source of pleasant recreation, and it will be understood that variations in construction and arrangement of parts which are consistent with the appended claims may be resorted to without detracting from the spirit or scope of the invention or sacrificing any of the advantages thereof.

I claim:

1. A base ball game, in combination with a base ball fixed to the end of an arm, said arm being pivotally jointed to a carrier, a carrier, a guide for said carrier, means for catapulting said carrier along said guide

and means for automatically returning said carrier.

2. A base ball game, in combination, a base ball secured to the forward end of an arm, said arm being pivotally jointed and resiliently retained in normal position and secured to a carriage, a carriage, a guide for said carriage and means for catapulting said carriage on said guide.

3. A base ball game, in combination, a base ball secured to the forward end of an arm, an arm pivotally jointed and pivotally secured to a carriage, a carriage guided by a track, a track for said carriage and catapulting means for said carriage, the pivotal joints of said arm being resiliently retained in normal position.

4. A base ball game, in combination, a track, a carriage guided by said track along a course, an arm pivotally mounted on said carriage and extending outwardly therefrom, said arm being intermediately formed at right angles and projecting forwardly in the line of travel of said carriage and intermediately pivoted and resiliently retained in a normal position, a ball secured to the forward end of said arm, and catapulting means for said carriage.

5. A baseball game, in combination, a track, a carriage guided by said track, an arm pivotally mounted on said carriage and extending outwardly therefrom, said arm being intermediately pivoted, the end of said arm extending forwardly in the line of travel of said carriage, said arm being resiliently retained in a normal position, a ball fixed to the forward end of said arm, means for driving said carriage along said track, and means for retaining and releasing said driving means.

6. A baseball game, in combination, a track, a carriage guided by said track, an arm pivotally secured to said carriage and resiliently retained in an outwardly extending position, the end of said arm extending forwardly at right angles in the direction of travel of the carriage and having a ball affixed to the forward end, catapulting means for said carriage, means for retaining and releasing said catapulting means, and means for returning said carriage, said returning means constituting a shock absorber.

7. A baseball game, in combination, a track, a carriage guided by said track and freely movable thereon, an arm pivotally secured and resiliently retained in normal position on said carriage, said arm being intermediately pivoted and having a forwardly extending portion, a ball secured to the end of said forwardly extending portion, impulse driving means for said carriage and retaining and releasing means therefor, and shock absorbing means adapted to stop and return said carriage by the energy stored therein by cooperation with said carriage.

8. A baseball game, in combination, a track, a carriage guided by said track and freely movable longitudinally thereof, an arm having a plurality of pivoted joints in angular relation to each other and resiliently retained in a normal position, said arm being pivotally secured and resiliently retained in a normal position projecting outwardly, thence at right angles forwardly to said carriage, a ball secured to the forward end of said arm, impulse driving means for said carriage and retaining and releasing means therefor, shock absorbing means at the opposite end of said track adapted to transmit the energy stored therein by cooperation with said carriage to return said carriage to said impulse driving means, and means for resetting said impulse driving means.

9. A baseball game in combination, a track, a carriage guided thereby, an arm pivoted at a plurality of points and secured to said carriage and having a forwardly projecting portion, a ball affixed to the end of said forwardly projecting portion, impulse driving means for said carriage, retaining and releasing means and resetting means for said impulse driving means, and impulse driving means for returning said carriage actuated by energy stored therein by impact of the carriage therewith.

10. A baseball game in combination, a track, a carriage guided thereby, an arm having a plurality of pivoted joints and secured to said carriage and having a forwardly projecting portion having a ball affixed to the end thereof, indicating means cooperating with each of the pivotal joints for indicating the intensity and direction of various force components, said pivotal points being resiliently retained in a normal position and impulse driving means for said carriage.

11. A baseball game, in combination, means for carrying a ball along a predetermined course, and means for driving said carrying means, means for indicating the intensity and direction of the several force components when said ball is intercepted and resilient means for retaining said ball in a normal position relative to said carrying means.

12. A baseball game, in combination, means for carrying a ball along a predetermined course, and means for impulsively driving said carrying means, means for indicating the intensity and direction of the several force components when said ball is intercepted by a bat, resilient means for retaining said ball in a normal position relative to said carrying means, and resiliently operated means actuated by impact of said carrying means therewith for returning said carrying means to the starting point.

13. A baseball game, in combination, a flexibly mounted ball, said mounting means being secured to a carrier, a carrier driven along a course, impulse driving means for

said carrier, and indicating means cooperating with said mounting means for indicating the intensity and direction of the several force components when said ball is intercepted by a bat.

14. A baseball game, in combination, a carriage freely mounted in a guide, a guide extending along a predetermined course, impulse driving means at one end of said guide, shock absorbing means at the other end of said guide, said shock absorbing means impulsively returning said carriage by the energy stored therein by impact of said carriage therewith, flexible ball carrying means secured to said carriage and extending outwardly therefrom, a ball secured to the end thereof, said flexible carrying means being resiliently retained in a normal position to be intercepted by a bat.

15. A baseball game, in combination, a carriage freely mounted in a guide, a guide extending along a predetermined course, impulse driving means for said carriage at one end of said course, and retaining and releasing means therefor, shock absorbing means for said carriage at the other end of said course adapted to simultaneously stop said carriage and store energy for returning said carriage, a flexible ball carrying arm secured to said carriage and resiliently retained in an outwardly extending position, a forward extension on said arm, a ball affixed to the forward end thereof, and indicating means cooperating with said arm for indicating the comparative intensity and direction of the several force components created by interception of said ball by a bat.

16. In combination, a track, a carriage freely mounted to travel along said track, impulse driving means at one end of said track adapted to drive said carriage to the opposite end, said opposite end having impulse return means actuated by impact of said carriage therewith, and an arm provided with a plurality of joints resiliently retained in a normal position, said arm being pivotally secured to said carriage and having a ball secured to the end of a forwardly projecting portion thereof, retaining and releasing means for said impulse driving means and automatically operated resetting means therefor.

17. In combination, a track, a carriage freely mounted to travel along said track, impulse driving means at one end of said track adapted to project said carriage along said track, resiliently operated impulse return means at the opposite end of said track actuated by impact of said carriage therewith, an arm pivotally secured to said carriage and resiliently retained in extended horizontal position, a ball fixed to the end of said arm, said arm being intermediately pivoted at a plurality of points in angular relation to each other and resiliently retained in a normal position, releasable retaining means for said impulse driving means, and automatically operated energy storing means for said impulse driving means.

18. In combination, a track, a carriage freely mounted to travel along said track, impulse driving means at one end of said track adapted to project said carriage along said track, automatically operated energy storing means for said impulse driving means, releasable retaining means for said impulse driving means, resiliently operated impulse return means at the opposite end of said track actuated by energy stored through impact of said carriage therewith, an arm pivotally secured to said carriage and resiliently retained in a position extending outwardly therefrom and having a forwardly extending portion having a ball secured to the end thereof, said arm having a plurality of pivoted joints in angular relation to each other and intermediate of its ends, each of said joints having a cooperating indicating means for indicating the comparative intensity and direction of travel of said ball when intercepted by a bat, and resilient means for retaining said joints in a normal position whereby said ball may be projectedly intercepted by said bat.

In testimony whereof I affix my signature.

ANGELO N. ALBERA.