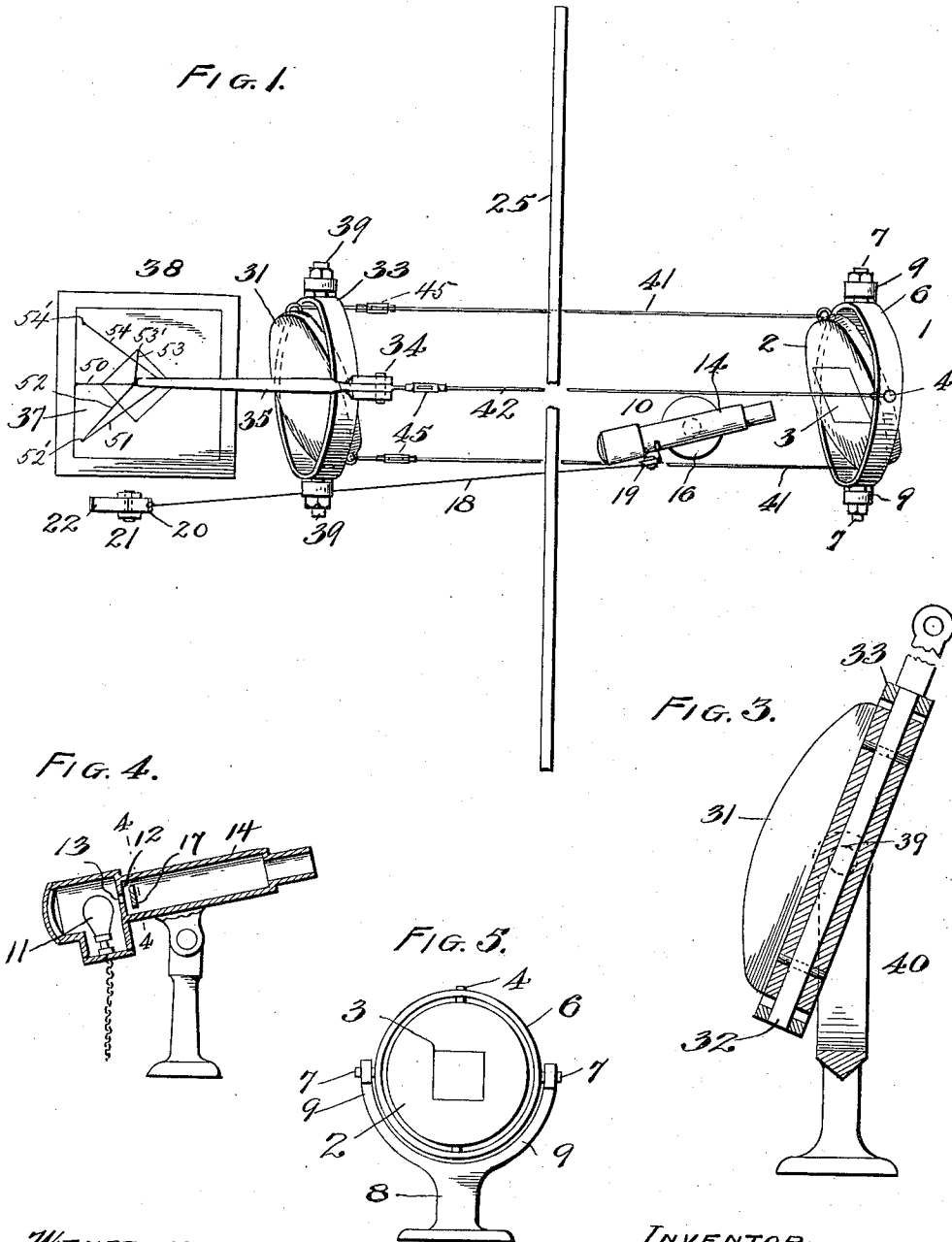


G. S. COLEMAN.
LIGHT PROJECTING APPARATUS.
APPLICATION FILED JAN. 8, 1914.

1,133,103.

Patented Mar. 23, 1915.
2 SHEETS-SHEET 1.



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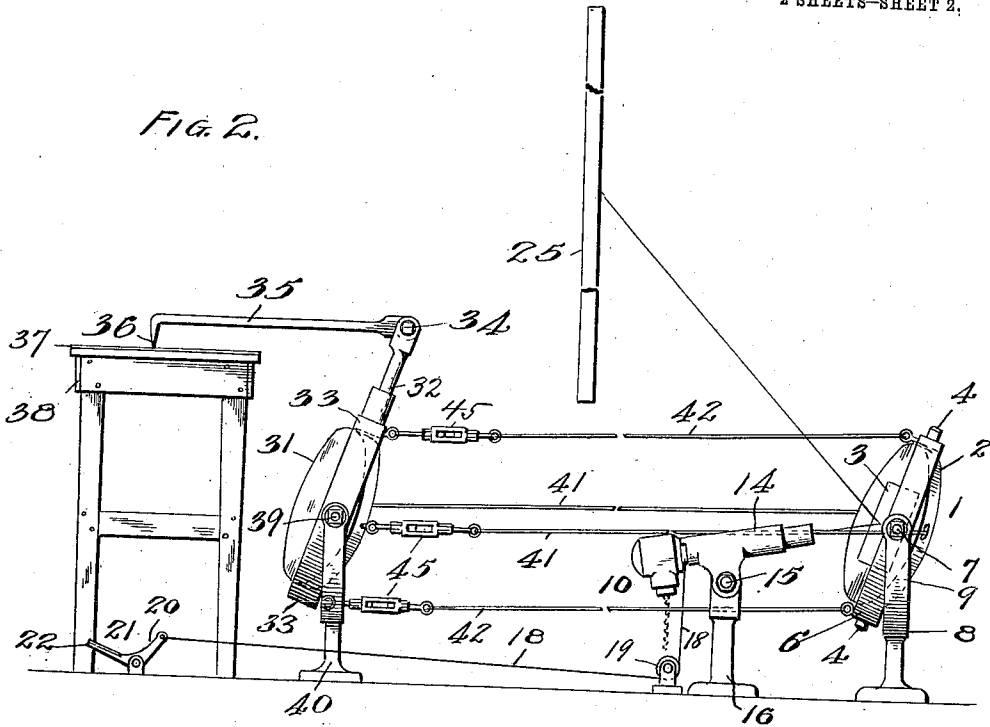


FIG. 6.

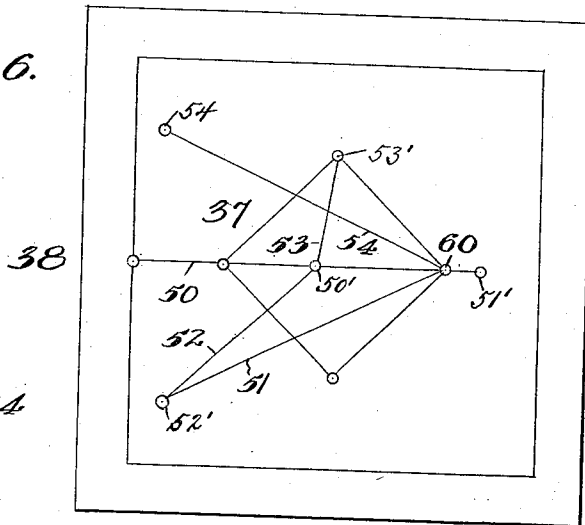


FIG. 4a

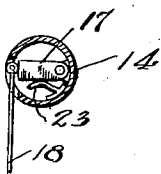
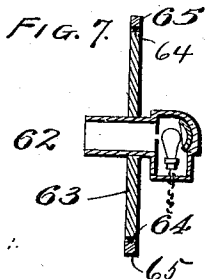


FIG. 7.



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LIGHT-PROJECTING APPARATUS.

1,133,103.

Specification of Letters Patent.

Patented Mar. 23, 1915.

Application filed January 8, 1914. Serial No. 811,076.

To all whom it may concern:

Be it known that I, GEORGE S. COLEMAN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful improvements in Light-Projecting Apparatus, of which the following is a specification.

My invention relates to light-projecting apparatus and it relates more particularly to means designed to be used in conjunction with a base-ball score-board for the purpose of indicating a ball as being batted or thrown from one point on the field to another, *i. e.* as being batted by a batsman to a point on the field or to a fielder or as being thrown by one fielder to another.

Among the objects in view is to provide an apparatus of the character described which will be of extremely simple and inexpensive construction, and adapted to be readily and accurately operated to indicate a ball as being batted or thrown in any desired direction.

The invention consists in the novel construction, arrangement and combination of parts as hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In the drawings: Figure 1 is a plan view of the apparatus arranged in conjunction with a base-ball score-board. Fig. 2 is a side elevation of the parts seen in Fig. 1. Fig. 3 is an enlarged detail sectional view partly in elevation. Fig. 4 is an enlarged vertical sectional view through the light container and projector. Fig. 4^a is a transverse section on line 4—4 of Fig. 4. Fig. 5 is an elevation of the reflector and its support. Fig. 6 is a plan view of the indicating chart or diagram on an enlarged scale. Fig. 7 is a detail sectional view showing a modification.

In my Letters Patent, No. 1,069,920, dated August 12, 1913, I have disclosed a base-ball score-board embodying means for indicating a base-ball as being batted or thrown in various directions, such means comprising slots provided in the board and extending in various directions and an illuminant adapted to be moved along the slots whereby the light from such illuminant by showing through the slots will indicate a ball as being batted or thrown across the field.

The ball-indicating means disclosed in my said patent involves a construction

which necessarily considerably increases the cost of production, and besides this it is impossible to quickly and at the same time accurately manipulate the illuminating means within the slots, the manipulation of such illuminating means interfering at times with the proper manipulation of the illuminant used for indicating the players in action owing to the fact that some of the slots for the ball-indicating illuminant cross at various points some of the slots for the player-indicating illuminant. Also, with the described ball-indicating means it is necessary for the person operating the same to take up a position immediately in rear of the board and move back and forth and this interferes greatly with the persons who are manipulating the player-indicating means. Aside from the stated disadvantages the number of slots in the board for indicating the various directions taken by a batted or thrown ball is necessarily somewhat limited. It is practically impossible to obtain free and accurate working of the ball-indicating means with the construction disclosed in my said patent, and the ball-indicating means which I will now describe in detail avoids all the stated disadvantages of the patented construction and enables a free and accurate manipulation of the ball-indicating means to be obtained without any interference whatever with the manipulation of the player-indicating means, and it is also possible to indicate a ball as moving in any direction desired.

While it is my intention, primarily, to use my apparatus hereinafter described in conjunction with a base-ball score-board, and particularly a board embodying certain of the features disclosed in my aforesaid patent, yet my apparatus is adapted to be used independently of a base-ball score-board and therefore I do not wish to be restricted to its use in such connection.

I will describe first the construction of apparatus which is illustrated in Figs. 1 to 6, and in carrying out my invention I provide a light reflector 1 constructed in any suitable manner, as for instance by providing a disk-shaped support or holder 2 made of wood or other material within which is centrally arranged the reflecting surface proper 3, which may be of silvered glass or highly polished metal. The surface 3 may be square, as shown, or of any other desired outline and suitably held in its support 2,

which latter may have any desired outline other than circular, if desired. At diametrically opposite points the reflector 1 is pivotally connected by pivot pins or studs 4 to a ring 6, which latter at diametrically opposite points at right angles to the pivotal points of the reflector has a pivotal connection by pivot pins or studs 7 with a suitable supporting stand 8 which comprises a semi-circular member 9, the outer ends of the arms of which carry the said pivot pins 7. By the described arrangement the reflector 1 may be turned upon its pivots 4 to cause said reflector to occupy various planes and reflect light to the right or left upon a receiving surface, and the ring 6 may be turned upon its pivots 7 to cause the reflector to swing so as to reflect light up or down upon said receiving surface. In effect the parts arranged as described constitute a gimbal whereby to permit the reflector to be swung into a greater variety of positions to thereby reflect light to any desired point on the receiving surface. The light to be projected onto the reflector and reflected thereby may be produced from any desired source, and I do not wish to be restricted to any specific character of light producing means. As an illustration of what might be used I show a light-containing casing or tube 10 within which is arranged preferably an incandescent electric lamp 11, in front of which is arranged a diaphragm 12 having a minute aperture 13. The light-containing tube which also constitutes a light-projector is to be arranged in such position relatively to the reflector that light passing through the aperture 13 will be projected upon the reflecting surface 3 at a point centrally, or substantially so, of the latter in the form of a small point of light. The light tube 14 is preferably journaled at 15 upon a suitable support 16, whereby the angle of projection may be varied when setting up the apparatus for use to get the proper relative position of the projector and reflector. Suitable means may be provided for temporarily exposing and screening the light projected by the tube, as for instance a swinging shutter 17 arranged in front of the apertured diaphragm. When the shutter lies across the aperture it will effectually screen the light and prevent it from being projected onto the reflector, and when the shutter uncovers said aperture it will expose the light. Preferably, the shutter lies normally in position across the aperture and suitable means are provided for operating the shutter to cause it to cover and uncover the aperture, as for instance a cord or wire 18 attached at one end to the shutter and passing around a pulley 19 and attached at the opposite end to one arm 20 of a pivoted lever 21, whose other arm 22 is adapted to be operated by the foot of the operator. By pressing downwardly

upon arm 22 the shutter will be moved to uncover the aperture and permit the light to be projected onto the reflecting surface, and when the arm 22 is released the shutter will be actuated by a spring 23 and moved into position across the aperture, thus screening the light. The point of light projected onto the reflecting surface 3 may be reflected therefrom onto any desired receiving surface, as a screen, etc., arranged in suitable position to receive such point of light.

As before stated I intend primarily to use my present apparatus in conjunction with a base-ball score-board, preferably such as is illustrated in my before-mentioned patent embodying the representations of various players in different playing positions, and I indicate in the accompanying drawings a score-board 25, which board, while it is not deemed necessary to illustrate in detail in the present instance, will be provided with representations of the players in their playing positions, and said board is to be arranged at a suitable and proper distance from the reflector so that the light reflected from the latter will be received upon the face of the board and indicate a base-ball as moving from one point on the field to another point, *i. e.* as being batted to some point on the field or as being thrown from one player to another. The score-board is to be suitably supported in a position which will not interfere with the working of the apparatus.

In practice the parts will be relatively so arranged that the apparatus may be made to indicate on the score-board the movement of the ball in different directions corresponding to the movements of the ball in a regular game; for instance, in one position of the reflector the point of light will be reflected onto the board at the point approximately where the representation of the pitcher is located so as to indicate that the latter has the ball and is about to pitch it, and when the reflector is being moved into another position it will cause the point of light to move across the board from the representation of the pitcher to the representation of the catcher, thus indicating that the ball is being pitched from one to the other. Or by properly manipulating the reflector it will cause the point of light while moving from the pitcher toward the batter to be arrested when opposite the latter and then caused to move to some point in the outfield or infield to thus indicate that the batter has batted the ball to such point. Similarly by properly manipulating the reflector the point of light may be made to move from the representation of any one player to any other player to indicate that the ball is being thrown. In the same manner the results obtained by changing the position of the reflector may be made to indicate the travel

of the ball in many different directions corresponding to the directions taken in an actually played game.

For operating the reflector any suitable means may be provided, and I have shown, for instance, in the drawings, operating means which I will now describe in detail.

31 indicates a disk-shaped member of wood or other suitable material, rigidly mounted upon a rod 32 which is seated loosely and adapted to turn in a ring 33 and at its upper end it is pivoted at 34 to one end of a lever 35, whose other end carries a pointer 36 which is adapted to play over a diagram 37, presently described, supported upon a table 38 or other suitable support. The ring 33 is pivotally connected by pivot pins or studs 39 with the arms of a suitable support 40. By the described construction the member 31 is adapted to be turned in different planes when the rod 32 is turned on its longitudinal axis in its bearings in the ring, and said ring may be turned on its pivots 39 to swing the member 31 into different planes when the lever 35 is moved forwardly or rearwardly over the diagram 37, the parts 33 and 40 constituting a gimbal to permit the turning of the member 31 into the various planes as will be understood. The various parts are so arranged that the member 31 will be always in a plane parallel with the reflector, while the ring 33 will be always parallel with the ring 6, and for maintaining the described relative arrangement of the parts I provide connecting means between the member 31 and the reflector, and between the ring 33 and the ring 6. Such connecting means may be of any suitable character, as for instance cables or wires 41 having flexible connections at their ends with the member 31 and reflector at diametrically opposite points, and cables or wires 42 having flexible connections at their ends with the ring 33 and ring 6 at points at right angles to those where the wires 41 are secured. A turn-buckle 45 is interposed in the length of each wire whereby to permit of any desired adjustment of such wire for securing the proper relative position of the parts. It will be understood that the member 31 and reflector will be turned simultaneously, while the ring 33 and ring 6 will also be turned simultaneously, the parallelism of the parts being always maintained. With a view of facilitating the operation of the apparatus and for indicating accurately to the operator stationed in rear of the board 25 the exact degree to which the reflector is to be turned for causing the point of light to move from any point on the score-board to any other point thereon, I provide the chart or diagram 37, over the upper face of which chart the pointer 36 is adapted to be moved. The chart or diagram comprises a plurality of lines, as 50, 51, 52, 53, 54,

the number and direction of which will depend upon the character of batted and thrown balls it is intended to indicate upon the score-board 25. For instance, when the lever 35 is moved to the right as viewed in Figs. 1 and 2, to cause the pointer to move from point 50' to point 51' along the line 50, the point of light will be reflected upon the board 25 and be shown as moving from the pitcher to the catcher to indicate a pitched ball, and when the lever is moved to the left along said line from point 51' to point 50' the ball will be indicated as being thrown by the catcher back to the pitcher. Also, when the pointer is moved from point 50' to the right along line 50 as far as point 60, and then along line 51 to point 52' it will indicate the ball as being pitched and then batted to the left field. When the pointer is moved along the line 52 from point 52' to point 50' it will indicate the ball as being thrown by the left fielder back to the pitcher. When the pointer is moved along line 53 from point 50' to point 53' it will indicate the ball as being thrown from the pitcher to the first baseman, and when the pointer is moved along line 54 from point 60 to point 54' it will indicate the ball as being batted to the right field. In this manner it will be readily understood that the ball may be indicated as being batted or thrown in a great many different directions, and the operator, although stationed at the rear of the score-board, by noting the position of the pointer will know to a certainty the exact point on the board where the light appears. The position of the points and lines of the chart or diagram are to be determined by experimenting with the apparatus after it has been set up and the board 25 placed in the desired position.

It will be seen that by the described construction and arrangement of parts the lever 35 is supported in a universal manner at one end whereby said lever will be permitted to be moved in various directions to cause the pointer 36 to follow the lines of the diagram and thus effect the proper movement of the member 2 and the proper direction of the spot of light over the surface of the score-board.

Whenever it is desired to permit the point of light to be reflected onto the board 25 to indicate the ball in play, the operator presses downwardly with his foot upon the arm 22 of lever 21 which causes the shutter to uncover the aperture 13, and when the arm 22 is released the shutter again covers the aperture, thus preventing the point of light from being reflected onto the board 25.

In Fig. 7 I illustrate a modified construction of the apparatus wherein I dispense with the use of a reflector and mount the light tube or projector so that the light will be thrown therefrom directly onto the score-

board. In said figure, 62 indicates the light projector held within a disk 63 similar to disk 2 and pivotally mounted at diametrically opposite points by means of pivots 64 upon a ring 65, which latter is to be pivotally mounted upon a suitable support similar to support 8 by means of pivots at diametrically opposite points at right angles to the pivotal points of the disk 63. The disk 63 and ring 65 are adapted to be operated in a manner similar to the reflector 2 and ring 6 of the construction shown in Figs. 1 to 6 by the means shown in the last-mentioned figures.

15 The electric lamp may be temporarily extinguished during the operation of the apparatus by arranging a suitable switch convenient to the operator.

What I claim is:

20 1. In an apparatus of the character described the combination with a source of light comprising a tube and a lighting means arranged within said tube, of a diaphragm arranged within the tube and having a minute aperture through which the rays of light are adapted to pass, a base-ball score-board arranged to receive the said rays of light, a diagram, and means for causing the rays of light to move in various directions over the surface of the said score-board embodying an operating lever adapted to play over the said diagram.

2. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, a support for the reflector, an operating lever adapted to play over the said diagram, and connections between said lever and said reflector whereby the latter may be turned into different planes for the purposes specified.

3. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, a support for the reflector, an operating lever adapted to play over the said diagram, connections between said lever and said reflector whereby the latter may be turned into different planes, and means for screening the light from the reflector.

4. In an apparatus of the character described the combination with a diagram comprising indicating lines extending in different directions, of a source of light, a reflector arranged to reflect the light from said source, a support for the reflector, an operating lever adapted to play over the said diagram coincidently with said indicating lines, and connections between said lever and said reflector whereby the latter may be turned into different planes.

5. In an apparatus of the character described the combination with a source of

light comprising a tube and a lighting means arranged within said tube, of a diaphragm arranged within the tube and having a minute aperture through which the rays of light are adapted to pass, a base-ball score-board arranged to receive the said rays of light after passing through the said aperture, a diagram, and means for causing the light to move in various directions over said score-board embodying an operating lever one end of which has a universal support and the other end being adapted to play over the said diagram.

6. In an apparatus of the character described the combination with a diagram, of a source of light, a support for the reflector, a reflector arranged to reflect the light from said source, an operating lever adapted to play over the said diagram, connections between the lever and the reflector whereby the latter may be turned into different planes, and a base-ball score-board arranged to receive the light reflected from the reflector.

7. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, an operating lever adapted to play over the diagram, connections between the lever and the reflector whereby the latter may be turned into different planes, a support for the reflector, and a base-ball score-board arranged intermediate the indicator and the diagram and adapted to receive the light reflected from the latter.

8. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, a support for the reflector, an operating lever adapted to play over the said diagram, and adjustable connections between the operating lever and the reflector.

9. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, a gimbal upon which the reflector is mounted, an operating lever adapted to play over said diagram, and connections between the said lever and the reflector whereby the latter may be turned into different planes.

10. In an apparatus of the character described the combination with a diagram, of a source of light, a reflector arranged to reflect the light from said source, an operating lever adapted to play over said diagram, a gimbal upon which the reflector is mounted, a disk-shaped member, a gimbal upon which the disk-shaped member is mounted, connections between the latter and the operating lever whereby the disk-shaped member may be turned into different planes, and

connections between said member and the reflector and between one gimbal and the other.

11. In an apparatus of the character described the combination with a diagram, of a source of light comprising an electric lamp, an apertured diaphragm in front thereof, and a shutter adapted to cover and uncover the aperture in the diaphragm, means for operating said shutter, a reflector arranged to reflect the light from said

source, a support for the reflector, an operating lever adapted to play over the said diagram, and connections between said lever and said reflector whereby the latter may be turned into different planes.

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

GEORGE. S. COLEMAN.

Witnesses:

CHAS. E. RIORDEN,
WM. E. BOULTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."