Sept. 9, 1941. L. A. SHERTZER 2,255,455

AUTOMATIC TALLYING MACHINE

Filed May 23, 1940 2 Sheets-Sheet 1

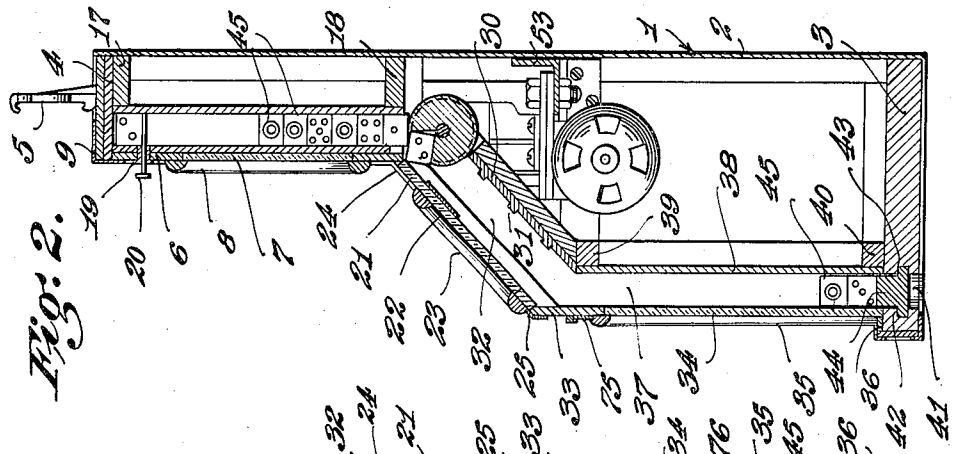

Fig. 2.

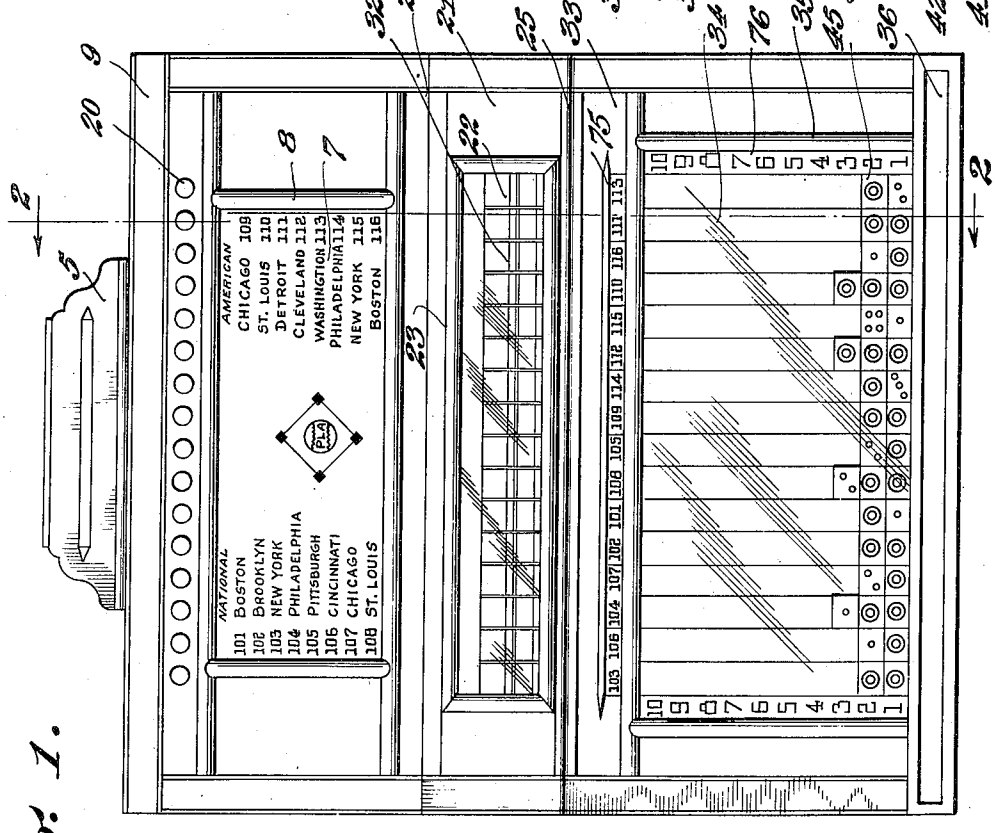

Fig. 1.

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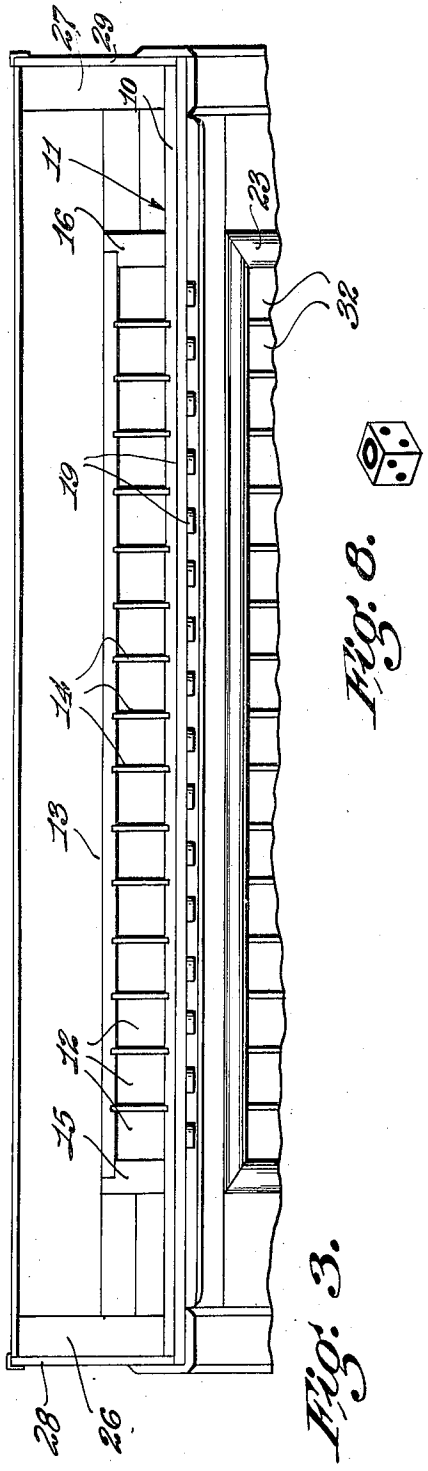

Fig. 3.

Fig. 8.

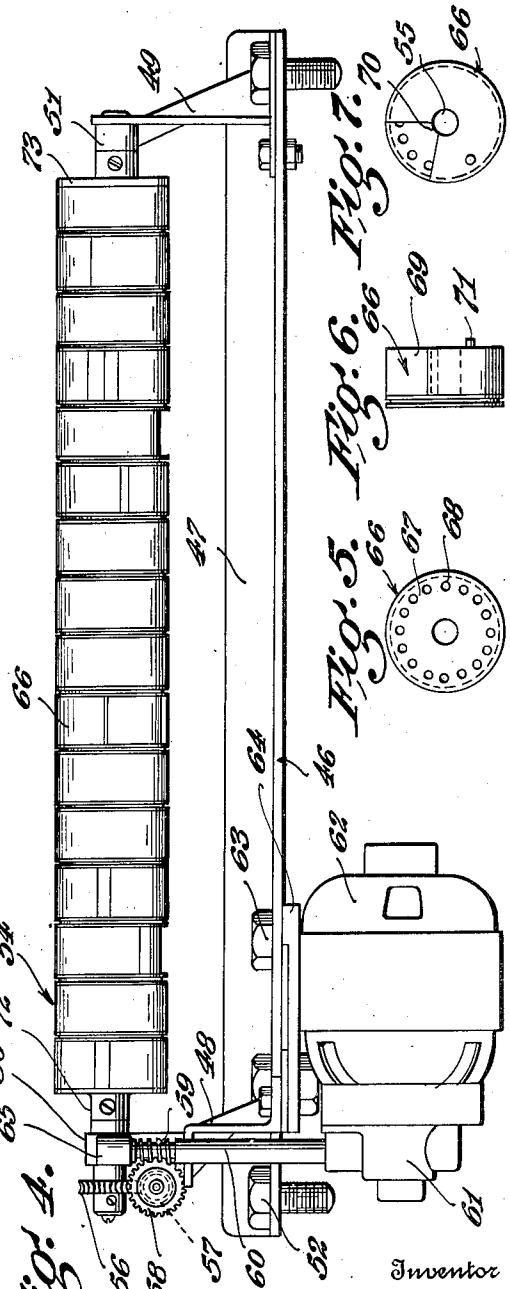

Fig. 4.

Fig. 7.

Fig. 6.

Fig. 5.

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AUTOMATIC TALLYING MACHINE

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Application May 23, 1940, Serial No. 336,827

13 Claims. (Cl. 273—144)

This invention relates to an improved automatic tallying machine and seeks, among other objects, to provide a machine of this nature which will automatically display and indicate the scores of a plurality of different teams playing imaginary games of baseball.

Another object of the invention is to provide an automatic tallying machine which will register the score of the inning played by the different teams in timed periods so that not more than one score can be registered at one time.

A further object of the invention is to provide a tallying machine employing means for eliminating the registering of tie scores.

A still further object of the invention is to provide a tallying machine employing cubes for indicating scores, said machine being equipped with means for causing the cubes to tumble so that it will be impossible for a player to set the cubes to cause a predetermined score to be registered.

As a further object, the invention seeks to provide a tallying machine having improved distributing means for the cubes, said distributing means being of such construction that the time interval between the discharge of cubes from said distributing mechanism may be regulated.

Another object of the invention is to provide a machine of this character, the distributing mechanism of which is of such formation that it will be impossible for individual cubes to be caught and retained against proper discharge.

And a still further object of the invention is to provide a tallying machine, the mechanism of which is contained in a single cabinet and which employs but one moving part for its proper operation.

Other objects of the invention not mentioned hereinbefore will become apparent during the course of the following description.

In the drawings forming a part of my application:

Figure 1 is a front elevation of my tallying machine,

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1 looking in the direction of the arrows,

Figure 3 is an enlarged top plan view of the machine, the cover being removed,

Figure 4 is an enlarged side elevation of the distributing mechanism,

Figure 5 is an end view of one of the elements of the distributer drum employed,

Figure 6 is a side elevation of said element,

Figure 7 is an end view showing the opposite end of the element, and

Figure 8 is a perspective view of one of the scoring cubes employed.

Referring now more particularly to the accompanying drawings, wherein like numerals of reference will be seen to designate like parts throughout the various views, the numeral 1 indicates in general the cabinet of my improved tallying machine. The cabinet may be formed of wood, metal or other suitable material. The cabinet includes a straight back wall 2 and a relatively thick base 3. A removable laminated cover 4 closes the cabinet at its top and said cover is provided with an ornamental plate 5, which rises from the cover at right angles thereto.

As clearly seen in Figures 1 and 2 of the drawings, the cabinet 1 includes an upper straight front wall 6 which is cut away at its central portion to define an opening which is closed, normally, by a transparent or opaque pane 7. A bead 8 surrounds the pane and also extends longitudinally of the wall 6 near its upper and lower extremities. The wall 6 is held in place beneath the top wall or cover 4 by means of a removable angular plate 9. As clearly seen in Figure 3, the wall 6 extends throughout the entire length of the cabinet. It will also be observed that said wall lies in face to face engagement with the front wall 10 of a scoring element container 11. The scoring element container includes a plurality of chutes 12. Said chutes are defined by the wall 10, a rear wall 13, partitions 14, and end walls 15 and 16, said end walls extending vertically throughout the heights of the walls 6, 10 and 13 and, of course, throughout the heights of the partitions 14. The wall 13 is spaced from the rear wall 2 of the cabinet by means of upper and lower blocks 17 and 18. Mounted in the walls 6 and 10 in confronting relation to each of the chutes 12 are bushings 19. The bushings 19 slidably mount retaining flanges 20. The purpose of these plungers will be described in more detail hereinafter.

The cabinet 1 includes a forwardly and downwardly inclined intermediate front wall 21, said front wall 21 being cut away centrally and said cut away portion being closed by a transparent pane 22. A bead 23 extends about the pane and defines retaining means therefor. Angle plates 24 and 25 serve removably to retain the intermediate front wall in proper position. It should, of course, be understood that the cabinet is provided with vertically extending end walls which extend

throughout the entire height of said cabinet. These walls are indicated by the numerals 26 and 27. Ornamental plates 28 and 29 overlie the faces of the walls 26 and 27. The plates may be of metal, wood or any other material desired.

As shown clearly in Figure 2, there is provided a tumbling board for the scoring elements, to be described hereinafter. The tumbling board or base is indicated at 30 and is of two-piece laminated construction. Projections or ribs 31 extend transversely of the base and serve to cause tumbling of the elements. It should be noted that the base or tumbling board 30 cooperates with the intermediate front wall 21 for defining discharge chutes 32, one of said chutes being in alinement with each of the chutes 12.

A straight lower front wall is shown at 33. Said front wall is cut away throughout the major portion of its central area and said cut away portion is closed by means of a pane 34, the pane being transparent and, as shown in Figure 1, being preferably lined for defining the courses of chutes disposed behind said pane. The pane 34 is held in place by a bead or molding 35. A lower molding 36 defines the bottom forward edge of the cabinet. This molding is preferably of an ornamental nature. As will be seen in Figure 2, the discharge chutes communicate with registered chutes 37 which are defined by the lower front wall 3, with the pane 34 therein, and a lower back wall 38, said back wall 38 extending throughout the length of the cabinet and being connected to the base or tumbling board by means of a beam 39. An anchoring beam 40 retains the lower end of the wall 38 in proper operative position. As shown at 41, the wall 3 is provided with a longitudinally extending slot, said slot being formed with track grooves 42 and 43. Slidably mounted in the track grooves is an emptying bar 44, the purpose and operation of which will be set forth in more detail hereinafter.

As shown at 45, a plurality of scoring elements are normally contained in either the chutes 12 or the chutes 37, or both of them. The scoring elements are shown as being of cube shape although it should be understood that said elements may be of any desired configuration. It should also be understood that the manner of numbering the faces of the cubes can vary as desired.

There will now be described the distributing mechanism for causing the elements to shift from the chutes 12 to the chutes 37. The distributing mechanism includes a preferably metal frame 46 which is of angular contour. The frame 46 includes a base member 47 and brackets 48 and 49, said brackets rising from the opposite ends of the base member. The bracket 48 carries a trunnion bearing 50 while the bracket 49 carries a cap bearing 51. Bolts 52 are passed through the ends of the frame 46 and through brackets 53 which securely mount the distributer mechanism beneath the tumbling board 30. A distributer drum is shown generally at 54. The drum 54 includes a shaft 55 which extends throughout substantially the entire length of the frame and has one end journaled in the cap bearing 51. The opposite end of the shaft 55 is journaled by the trunnion bearing 50. Said shaft 55 carries a driving pinion 56. The driving pinion is adapted to be driven by a driving gear 57 and said gear 57 is to be driven by a gear 58 which meshes with a worm 59, said worm being mounted on a shaft 60 which extends from a motor gear box 61, said motor gear box being connected with an electric motor 62, which electric motor is fastened to the frame 46 by means of bolts 63, said bolts extending into a bracket 64, on the motor. The worm 59 is journaled in a cap bearing 65, which is carried on the trunnion bearing 50, said trunnion bearing being mounted on the bracket 48 and said bracket 48 also mounting the gears 57 and 58. It will now be understood that operation of the electric motor will cause rotation of the shaft 60, and said rotative movement will be transmitted through the worm 59, the gears 58 and 57, and the pinions 56, for rotating the drum.

The drum is made up of a plurality of sections 66, one of said sections being provided for each of the chutes 12. By referring to Figure 2, it will be noted that the drum is located in communicating relation with the corresponding lower ends of each of the chutes 12 and also in communicating relation with the upper surface of the tumbling board or base 30. The elements 66 are of identical construction so that it is thought that a description of one will suffice for all. A typical element is shown in detail in Figures 5, 6 and 7 of the drawings. Said element includes a grooved end plate 67, said end plate having openings 68 formed in an angular spaced series throughout the circumference of the plate. The openings are, as seen, located near the edge of the plate. The element includes a body portion 69 which is formed with a sector-shaped pocket 70. The pocket is of sufficient width to receive a pair of adjacent walls of one of the scoring elements 45. For the sake of clearness, one of the scoring elements is shown in position in the pocket of a drum element in Figure 2 of the drawings. The opposite end wall of the element 66 is provided with a pin 71 which will have locking engagement in one of the openings 68 of an adjacent drum element. End members 72 and 73 are fitted on the shaft 55 and retain the element 66 in close engagement so that the pins 71 of each element will engage in an opening 68 of the plate 67 of its adjacent element. In this manner, the drum elements will be prevented from turning independently of each other. It should be understood that, by removing the drum and loosening the end members 72 and 73, the drum elements may be separated and caused to take up new positions. In other words, the pockets may be disposed at various points throughout the circumference of the drum so that no two of the pockets will be in discharge position at the same time.

The operation of the invention will now be described in more detail. It is first presumed that the chutes 12 have been supplied with the scoring elements 45. In order to fill the chutes, the plungers 20 are withdrawn so as to provide unimpeded passage for the elements into the chutes. After a suitable number of the elements have been placed in the chutes, the plungers are pressed inwardly for defining a barrier. As will be seen in Figure 2, there is space above each of the plungers for retaining one scoring element. One additional scoring element is, therefore, placed in each of the chutes above the plunger 20. The device is then ready to be operated.

On the pane 7 there are preferably placed the names of a number of different baseball teams. Those shown in Figure 1 represent the teams of the American and National Leagues. A number is provided for each team, i. e., 101, 102, etc. Above the pane 34 is mounted a scale 75 on which numbers corresponding with numbers of the teams are placed. The numbers on the scale 75 are not in order however. At the end of the pane 34 and extending vertically from bottom

to top is a scale 76 for indicating the inning of an imaginary game being played. It should, of course, be understood that the number of scoring elements in each chute will total ten. That is to say, one for each inning, with the addition of the extra scoring element above the plunger 20. The purpose of the extra scoring element is to break a tie score in case one should occur between two teams playing each other.

The electric motor is, in any event, connected to a source of power so that, when said power is turned on, the motor will become energized for causing continuous rotation of the drum 54. When this is done, the scoring elements will be caused to enter the pockets of each of the drum elements and, as said drum rotates, the scoring elements will pass from the pockets and tumble over the board 30 and then fall into the respective chutes 37. When the chutes 37 become entirely filled, that is to say, when each of them contains nine scoring elements, the game is over and the scores are added up. For example, suppose two persons were playing the game, one person might select the Boston team and the other person might select the Saint Louis team, in the National League. It is to be noted that the Boston team bears the number 101 and the Saint Louis team the number 108. After the game is over, it is only necessary to consult the scale 75 for ascertaining the scores in the chutes 101 and 108. If the scores should be tied, it is only necessary for each person to pull his proper plunger 40, when the playing element thereabove will fall into its proper chute, after passing from the pocket in the drum 54. In this way, an additional playing piece will be had for breaking a tie score. The drum 54 will, of course, rotate slowly so that the game will not be terminated too quickly.

After the game has been completed, and it is desired to refill the chutes 12, it is only necessary to remove the bar 44 and to place the scoring elements resting thereon into a portable receiving tube for filling the chutes 12.

As stated hereinbefore, the elements of the drum are positioned about the circumference of said drum in such a manner that no two of the pockets will confront the tumbling board 30 at the same time. This arrangement assures that there will be indication of the scores of innings at time intervals so that no more than one score can be registered at the same time. Of course, if desired for any reason, the drum elements may be arranged so as to discharge simultaneously, in which case, the scores would all appear at the same time.

Attention is directed to the fact that, inasmuch as the drum elements each includes the grooved plate 67, it will be impossible for the scoring elements to be caught or held, by a partition or the like, at the point of delivery into the lower chutes.

Attention is also directed to the fact that my improved machine operates by the force of gravity and not by the use of mechanical means. The only mechanical means employed is the distributing mechanism, which is used for retarding the movement, by force of gravity, of the scoring elements. As stated, the distributing mechanism assures the movement of the cubes at a predetermined set time. The distributer mechanism may be removed from the cabinet with the utmost facility by removing the bolts 52. It is only necessary to remove the bracket 49 and loosen the end member 73 for changing the relative positions of the elements 66.

It is desired to mention that the construction of my invention is such that it requires no levers, stops, pawls, cams, springs, ratchets or timing devices for its operation for scoring imaginary baseball games.

It is thought that the construction and operation of my improved tallying machine will be thoroughly understood.

Having thus described the invention, what is claimed as new is:

1. A tallying machine including a cabinet having upper, intermediate and lower chutes, scoring elements in the chutes, means for releasing individual scoring elements from the upper chutes to pass to the intermediate and lower chutes for indicating the scores made by imaginary baseball teams, an additional scoring element in each of the upper chutes, and a barrier extending into each of said upper chutes and normally supporting said additional scoring element in inoperative position, said barrier being shiftable for permitting passage of the additional scoring element through the upper and intermediate chutes and into the lower chute for breaking a tie score.

2. In a tallying machine, a cabinet, upper chutes in the cabinet, intermediate chutes in the cabinet, lower chutes in the cabinet and communicating with the intermediate chutes, scoring elements normally carried in the upper chutes, and means for discharging at predetermined times the scoring elements from the upper chutes to pass to the intermediate and lower chutes for indicating the scores in an imaginary game of baseball, said last-mentioned means including a drum having sections each having a pocket for receiving a scoring element, and means for rotating the drum.

3. In a machine of the class described, a cabinet having a top, a rear wall, an upper front wall, chutes carried behind the upper front wall, an intermediate front wall, a tumbling board beneath the intermediate front wall and cooperating therewith to define chutes, a lower front wall, a back wall cooperating therewith to define chutes cooperating with the intermediate chutes, bushings carried by the upper front wall, plungers slidable through the bushings and extending into the upper chute, scoring elements carried in the upper chutes, one of said scoring elements being retained above the plungers in engagement therewith in each of the chutes, said plungers constituting means for retaining the elements in the upper chute, and means for releasing one at a time the scoring elements from the upper chutes to pass over the tumbling board into the lower chutes for indicating scores in an imaginary game, said plungers being shiftable for releasing a scoring element to pass through the chutes to eliminate a tie score.

4. In a tallying machine, a cabinet, said cabinet having upper, intermediate and lower chutes, scoring elements in the upper chutes, means for releasing one at a time the scoring elements from the upper chutes to pass through the intermediate chutes and into the lower chutes for indicating the score of innings of a baseball game played between imaginary teams, and a slide mounted in the bottom of the cabinet and being removable for permitting removal of the scoring elements from the lower chutes at the conclusion of a game preliminary to placing them in the upper chutes for use in a new game.

5. In a tallying machine, a cabinet including a rear wall, an upper front wall, an intermediate

downwardly inclined front wall, a lower front wall, laterally spaced partitions above the inclined front wall, a wall cooperating with the upper front wall, the inclined wall and the partitions for defining upper chutes, a tumbling board having projections, said tumbling board cooperating with the intermediate front wall and partitions for defining intermediate chutes, partitions behind the lower front wall, a back wall cooperating with the lower front wall and partitions for defining lower chutes, said lower front wall having a transparent pane formed with indicia for engaging the score by innings in a baseball game, scoring elements in the upper chutes, and means for releasing the scoring elements one at a time at predetermined intervals to pass from the upper chutes through the intermediate chutes and into the lower chutes for engaging inning by inning scores in an imaginary baseball game, said tumbling board causing tumbling of the scoring elements in the intermediate chutes, said last-mentioned means including a drum comprising a plurality of drum elements each having a pocket for receiving scoring element, said drum being rotatably mounted on the frame, gearing, and an electric motor connected with the gearing for rotating the drum.

6. In a tallying machine as recited in claim 5, wherein the drum elements are disposed so that none of the pockets are in alinement so that the scoring elements will pass from the drum at different time intervals.

7. In a tallying machine, a distributer including a frame, brackets carried by the frame, one of said brackets having a trunnion bearing and the other of said brackets having a cap bearing, a drum having a shaft journaled by the bearings, drum elements carried by the drum and each having a pocket in its periphery and between its ends, an end plate, a body and a pin, said end plates having openings so that the pins on adjacent drum elements will engage in openings in the plates in their adjacent drum elements for locking against relative rotation, end members for retaining the drum elements against separation, and means for rotating the drum.

8. In a tallying machine as recited in claim 7, wherein the pockets of the drum elements are located out of line so that no two of said pockets will be disposed to discharge at the same time.

9. In a tallying machine, a drum element having a body provided with a pocket, said body having a pin, and a grooved end plate secured to the body at one end, said end plate having a plurality of openings arranged in a circumferentially spaced series, said pin being selectively engageable in the openings for locating the element in a selected position with respect to the end plate.

10. A tallying machine including a cabinet, polygonally shaped scoring elements, said cabinet having an upper front wall, a rear wall and partitions cooperating with the upper front wall for defining upper chutes, said partitions being laterally spaced between the ends of the cabinet, an intermediate front wall, laterally spaced partitions thereon, a board cooperating therewith for defining intermediate chutes, said board imparting end over end movement to scoring elements moving thereover, a lower front wall, partitions, a back wall cooperating with the lower front wall and partitions for defining lower chutes, a transparent pane in the lower front wall and being lined and formed with indicia, said scoring elements being carried normally in the upper chutes, and means for releasing the scoring elements from the upper chutes, said scoring elements passing through the intermediate chutes to the lower chutes for indicating the scores in an imaginary game.

11. A tallying machine including a cabinet having upper, intermediate and lower chutes, polygonal shaped scoring elements normally in the upper chutes, means for releasing the scoring elements from the upper chute, said scoring element passing from said upper chute through the intermediate chute to the lower chute, and means in the intermediate chute for imparting end over end movement to the scoring elements.

12. A tallying machine as recited in claim 11, wherein said last-mentioned means consists of a tumbling board having ribs.

13. A tallying machine including communicating upper and lower chutes, flat-sided scoring elements movable through said upper chute, means on one of said chutes for releasably retaining the scoring elements in said upper chute, said scoring elements passing through said upper chute to said lower chute upon release thereof by said means, and means beneath said releasing means for imparting end over end movement to the scoring elements.

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