

[54] **CURLING GAME**

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273/128 A

[51] Int. Cl. **A63f 3/00**

[58] Field of Search **273/109, 126, 37, 119,**
273/120; 198/74

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Primary Examiner—Richard C. Pinkham

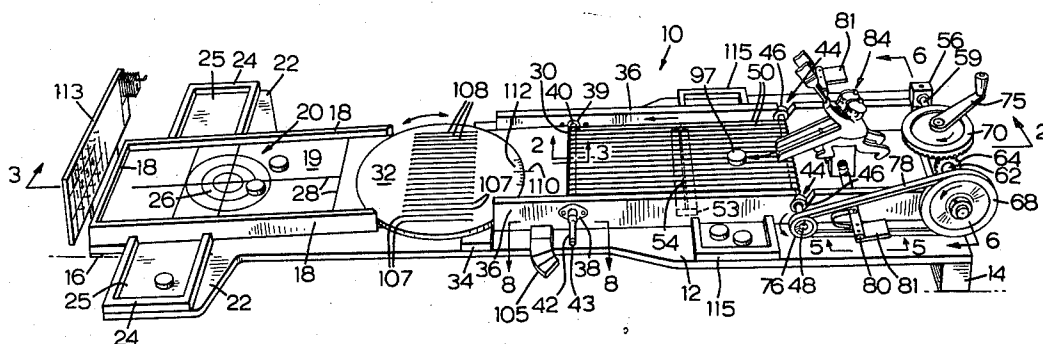
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[57] **ABSTRACT**

This invention provides a curling game including a smooth, flat surface on which a target area is painted. Playing pieces are conveyed by a conveyor between the flat surface and flush therewith at a speed which is manually variable. Recessed in the flat surface between the conveyor and the target is a disk of which the top surface is flush with the flat surface. The disk can be swivelled about its centre and has thread-like, parallel entraining means adapted to change the angle of travel of a playing piece whenever the direction of the entraining means differs from the direction of travel.

7 Claims, 9 Drawing Figures



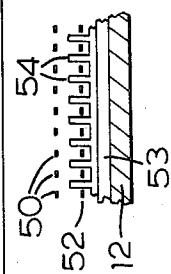
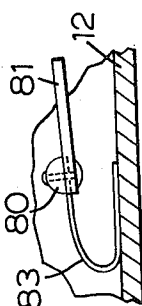
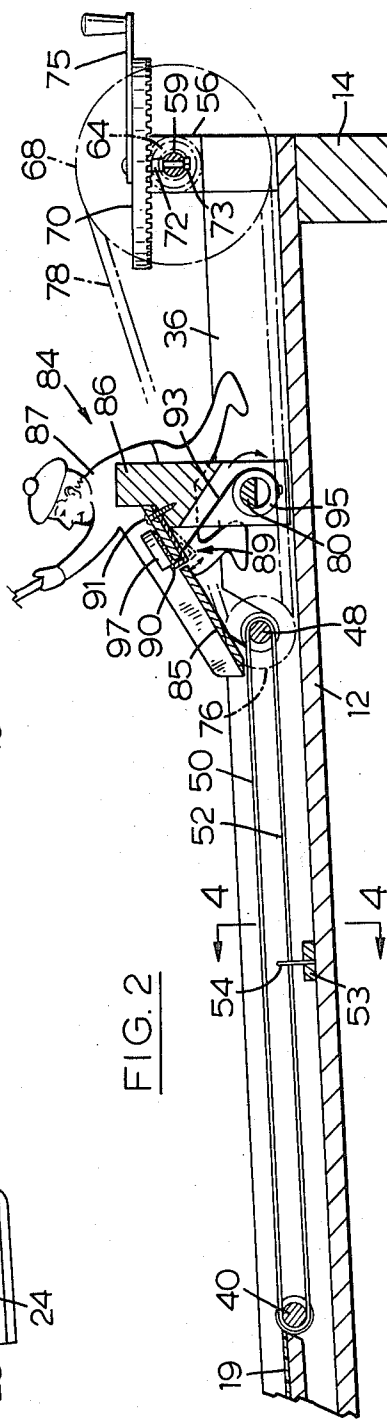
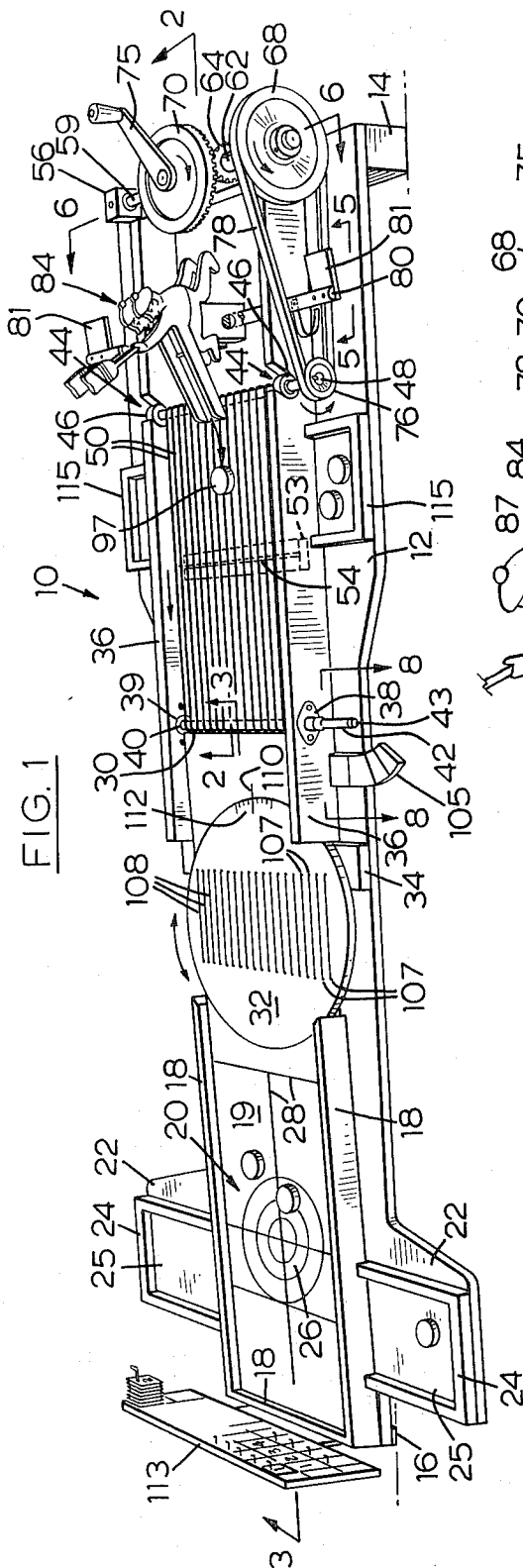


FIG. 3

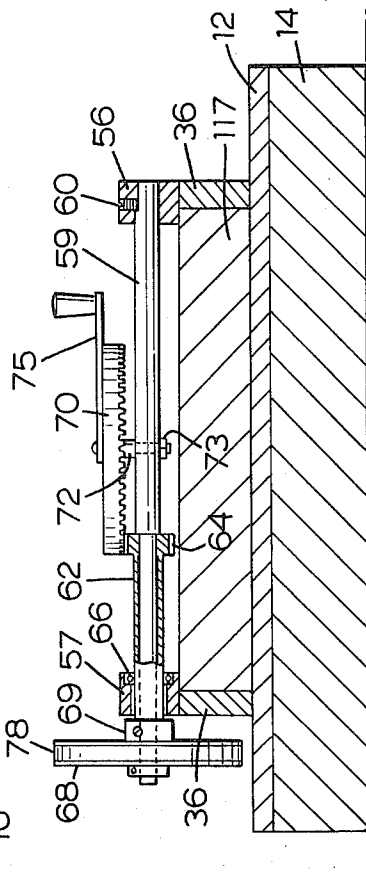
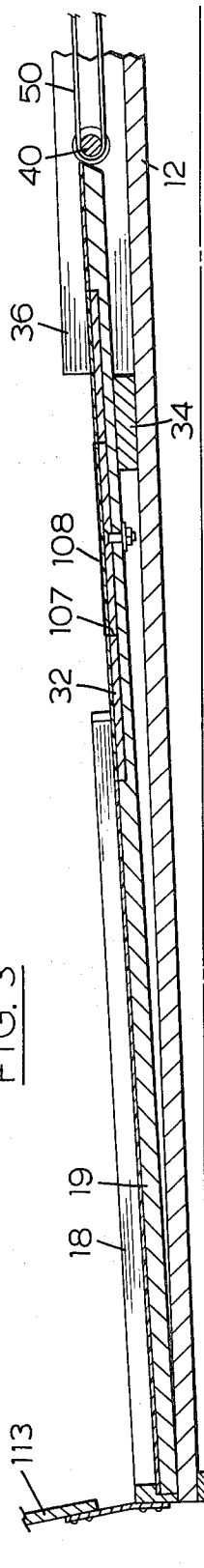


FIG. 6

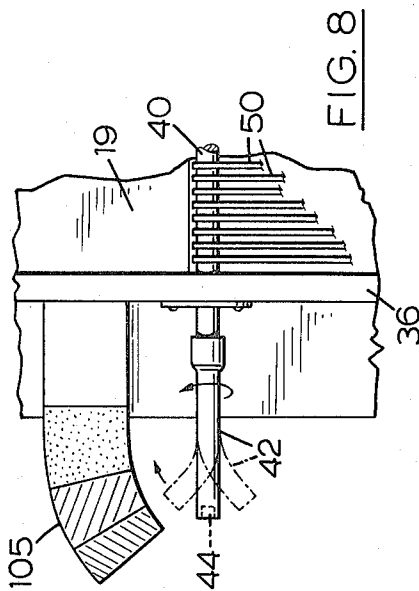


FIG. 8

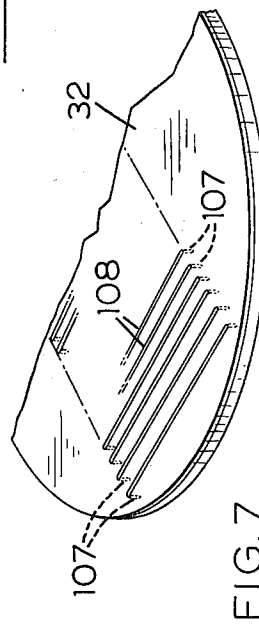


FIG. 7

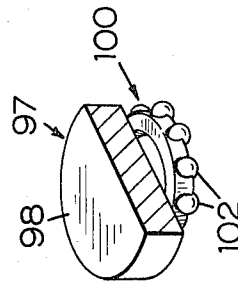


FIG. 9

CURLING GAME

This invention relates generally to games of skill, and has to do particularly with a game intended to simulate the characteristics of the well known sport of curling.

It is an object of this invention to provide game apparatus for simulating the sport of curling, in which the "weight" of a curling stone as well as its degree of "curl" can be adjustably set on the apparatus.

Accordingly, this invention provides a curling game comprising a smooth, flat surface having a target area, endless conveyor means having one reach substantially flush with the flat surface, drive means adapted to move said one reach towards said flat surface in the general direction of said target area, part of said flat surface being capable of swivelling with respect to the remainder of said flat surface about an axis perpendicular to said flat surface, said part of said flat surface supporting entraining means the angle of which with respect to the remainder of said flat surface can be altered by swivelling said part.

One embodiment of this invention is shown in the accompanying drawings, in which like numerals denote like parts throughout the several views, and in which:

FIG. 1 is a perspective view of a curling game apparatus constructed in accordance with this invention;

FIG. 2 is a partial sectional view taken along the line 2—2 in FIG. 1;

FIG. 3 is a partial sectional view taken along the line 3—3 in FIG. 1;

FIG. 4 is a vertical sectional view taken along the line 4—4 in FIG. 2;

FIG. 5 is a vertical sectional view taken along the line 5—5 in FIG. 1;

FIG. 6 is a sectional view taken at the line 6—6 in FIG. 1;

FIG. 7 is a fragmentary perspective view of one portion of the apparatus shown in FIG. 1;

FIG. 8 is a plan view taken at the line 8-8 in FIG. 1; and

FIG. 9 is partly broken-away perspective view of a stone adapted for use with the curling game apparatus of FIG. 1.

Attention is now directed to FIG. 1, in which a curling game apparatus generally designated by the number 10 is seen to include a base board 12 having a heel block 14 at one end and a toe block 16 at the other end. Edge members 18 define a rectangular "house" area 20 at the left end of the base board, within which an insert board 19 is located. The base board 12 widens adjacent the "house" area 20 to define two wings 22 that cooperate with upstanding ribs 24 to form enclosures 25 for stones out of play.

Centrally of the "house" area, a "house" 26 is painted on the insert board 19. The usual longitudinal and transverse lines 28 are also applied to the insert board 19. The insert board 19 extends to its rightward edge 30, and adjacent its rightward end there is recessed into the insert board 19 a curling disk 32, which has a circular edge as shown in FIG. 1. The diameter of the curling disk 32 is greater than the width of the insert board 19, and thus the curling disk 32 extends to either side of the insert board 19. As best seen in FIG. 3, the insert board 19 is recessed about half its thickness to accommodate the curling disk 32 in such a way

that the surfaces of the insert board 19 and the curling disk 32 are flush with one another. Likewise, the edges of the recess in the insert board 19 have the same radius as curvature, and are complementary to, the periphery of the curling disk 32.

A support block 34 supports the rightward end of the insert board 19 in spaced relation to the base board 12. The leftward end of the insert board 19 lies against the base board 12, as can be seen in FIG. 3. Two parallel wall members 36 are aligned with the longitudinal dimension of the base board 12, and are secured thereto in such a position that their leftward ends sandwich the rightward end of the insert board 19. The rightward ends of the wall members 36 extend to the rightward end of the base board 12, as can be particularly seen in FIG. 1. Two bearing assemblies 38 and 39 mounted in the wall members 36 as shown in FIG. 1 support a shaft 40 for free rotation. The nearer end of the shaft 40 as seen in FIG. 1 extends through the bearing assembly 38 and has attached to it a short length of hollow rubber tubing 42. The tubing 42 is longitudinally aligned with the shaft 40. Lodged in the remote end of the tubing 42 is a weight 44, the purpose of which will later be explained.

Two oblique slots 44 in the wall members 36 are adapted to removably receive circular bearing housing 46 in which a shaft 48 is adapted freely to rotate. Entrained about the two spaced, parallel shafts 40 and 48 is a plurality of endless conveyor elements 50, which in this particular embodiment consist of large-size elastic bands. The elastic bands are arranged over the two shafts 40 and 48 in uniformly spaced locations and are situated at right angles to the axes of the shaft 40 and 48.

Fixed to the base board 12 beneath the lower reach 52 (see FIG. 2) of the conveyor elements 50 is a transverse block 53 which supports an upstanding comb element 54 the teeth of which are adapted to extend upwardly between adjacent ones of the conveyor elements 50, thereby to maintain a desired spacing between the conveyor elements 50.

On the rightward ends of the wall members 36 are mounted a support block 56 and a bearing block 57. A stationary shaft 59 has its one end anchored into the support block 56 by a lock screw 60 (see FIG. 6). The other end of the stationary shaft 59 is slightly reduced in diameter and supports a freely rotating sleeve 62 which is integral with a pinion gear 64 at one end and rotates freely within a bearing 66 at the other end. A first pulley 68 having a mounting collar 69 is secured to the other end of the sleeve 62 outside of the bearing block 57, as particularly shown in FIG. 6. At about the middle of the stationary shaft 59 a horizontally situated crank gear 70 is mounted for free rotation about a vertical shaft 72 which has reduced and threaded lower end and is secured to the stationary shaft 59 by a nut 73. A crank handle 75 secured to the crank gear 70 permits manual rotation of the crank gear 70, the teeth of which mesh with those of the pinion gear 64. Thus, rotation of the crank handle 75 causes rotation of the first pulley 68 at a greater number of revolutions per minute, because the pinion gear 64 is smaller than the crank gear 70.

Mounted on the nearer end of the shaft 48 in FIG. 1 is a second pulley 76 having a smaller diameter than that of the first pulley 68. An endless belt 78 is entrained around the two pulleys so that rotation of the

first pulley 68 causes the rotation at a higher speed of the second pulley 76.

A swivel shaft 80 passes through suitable apertures (not visible in the figures) in the wall members 36, and extends outwardly of either side of the wall members 36. Trigger tabs 81 are secured to the ends of the swivel shaft 80. A metal spring 83 secured at one end to the base board 12 and at the other end to the swivel shaft 80 tends to maintain the swivel shaft in the orientation shown in FIG. 5. Laterally slidable on the swivel shaft 80 is a trigger trough shown generally at 84, which can be seen in FIG. 2 to consist of a trough member 85, a slide block 86, an ornamental representation of a player 87 and a spring trigger 89 of which one end 90 is bent at right angles and extends upwardly through an appropriate slot in the bottom of the trough member 85, and of which the other end is firmly secured to the slide block 86 by a screw 91. A flexible wire 93 is attached at one end to the movable end 90 of the spring trigger 89, and at the other end is entrained around a spool 95 firmly attached to the swivel shaft 80. Rotation of the swivel shaft 80 in the clockwise direction as seen in FIG. 2 causes the wire 93 to pull downwardly on the spring trigger 89, thus withdrawing the end 90 of the spring trigger 89 from the position in which it obstructs the trough member 85.

The playing pieces for the game apparatus of this invention are constructed as shown in FIG. 9. Each piece 97 consists of a disk member 98 and a ring bearing member 100 attached to the bottom thereof. The ball bearing 102 in the ring bearing member 100 permits the piece 97 to move with very little friction across a smooth surface. As can be seen in FIG. 2, a piece 97 is placed in the trough member 85 above the end 90 of the spring trigger 89, with the end 90 is its obstructing position. By pressing down on the trigger tabs 81, the swivel shaft 80 is rotated in the clockwise direction as seen in FIG. 2, and this withdraws the spring trigger 89 from its obstructing position, thus permitting the piece 97 to run down the trough member 85 under the influence of gravity.

Prior to releasing a piece 97 in the trough member 85, two conditions are "set" in the game apparatus of this invention, these two conditions being the intended "weight" of the piece 97 (corresponding to the weight of a curling stone) and the "curl" of the piece 97 (corresponding to the curl of a curling stone).

The "weight" of the piece 97 is related to its speed, and this speed is established by the speed at which the endless conveyor elements 50 are moving about the shafts 40 and 48. By cranking the crank handle 75 in the clockwise direction as seen in FIG. 1 (looking down on the crank gear 70), the pulleys 68 and 76 are caused to rotate in the counter-clockwise direction as seen in FIG. 1, and this causes the upper reaches of the endless conveyor elements 50 to travel in the direction from right to left as seen in FIG. 1 (i.e. in the direction toward the insert board 19). The speed at which the crank handle 75 is rotated is directly proportional to the speed of movement of the upper reach of the endless conveyor elements 50.

The way in which the tubing 42 indicates approximately the "weight" (i.e. the speed) of the piece 97 will now be explained. Because of the presence of the extra weight 43 at the nearer end of the tubing 42 as seen in FIG. 1, the rotation of the shaft 40, and the consequent rotation about its axis of the tubing 42, will cause the

nearer end (the free end) to swing outwardly away from the axis of the shaft 40 due to centrifugal force. This tendency is shown in FIG. 8. Naturally, this centrifugal tendency is countered by the natural resistance of the tubing 42. The greater the rate of rotation of the tubing 42 the greater the extent to which the free end of the tubing curls around away from the axis of the shaft 40. An indicator tab 105 is fixed horizontally to the base board 12, and preferably has coloured zones to indicate the different degrees of "weight" of the piece 97. As a player rotates the crank handle 75, he keeps his eye on the tubing 42 to see which coloured zone of the indicator tab 105 the freely swinging end of the tubing 42 is adjacent. This gives the player a reasonably good idea of the speed of the upper reaches of the endless conveyor elements 50, and thus of the speed of the piece 97.

The "curl" of the piece 97 is set by rotating the curling disk 32. The curling disk 32 has two lines of parallel spaced holes 107, and between each pair of holes 107 a thread 108 extends. The threads 108 are all parallel and evenly spaced, and the direction in which they extend can be altered by rotating the disk 32 within its recess. An index mark 110 on the insert board 19, and graduation marks 112 on the adjacent periphery of the disk 32 give the player some idea of the degree of slant of the threads 108 with respect to the longitudinal axis of the game apparatus.

Thus, a player executes his turn in the game in the following manner. He firstly places his piece in the trough member 85 above the end 90 of the spring trigger 89, so that the piece 97 is retained in the trough member 85 at the position shown in FIG. 2. Then the player adjusts the disk 32 to the angle which will give him the desired "curl" of his piece 97. Next, the player adjusts the lateral position of the trigger trough 84 along the swivel shaft 80, so that the piece 97 will be set down on the endless conveyor members 50 at the desired lateral position (i.e. at the desired location between the two wall members 36). Following that, the player cranks the crank handle 75 in the clockwise direction in order to cause the upper reaches of the endless conveyor members 50 to move from right to left as seen in FIG. 1 with a speed generally indicated by the tubing 42 and indicator tab 105 in the manner described earlier. Lastly, the player presses downwardly on one of the trigger tabs 81 in order to release the piece 97 so that the latter travels down the trough member 85 and onto the upper reaches of the endless conveyor members 50. The endless conveyor members 50 carry the piece 97 toward the insert board 19 at approximately the same speed as they are travelling, and the piece 97 moves onto the insert board 19 at that speed. The piece 97 continues to move to the left, engages the threads 108, and tends to assume a direction of travel parallel to the threads 108. If the threads 108 are aligned with the longitudinal direction of the game generally, the piece 97 will not change its direction of travel (unless for some reason it leaves the endless conveyor members 50 with a slight angulation in its direction of travel). If, however, the disk 32 has been turned so that the direction of the threads 108 forms an angle with the longitudinal direction of the game apparatus, the piece 97 will change its direction of travel either completely or partially so that it veers to some extent in the direction in which the threads 108 are aligned. The piece continues on toward the "house" 26, and if

the player has adjusted the weight of his piece correctly the piece will tend to come to rest at some position in the neighbourhood of the "house" 26. Those familiar with the rules of the sport of curling will understand that it may be desirable to give the piece greater weight when it is desired to knock a competitor's piece out of the house by impact. In like manner, a smaller weight may be desired where it is wished to deposit a piece in a protecting or "guard" position to the right of the "house" 26 as seen in FIG. 1.

A scoring apparatus 113 of any appropriate form is situated at the leftward end of the game apparatus as shown in FIG. 1 and in FIG. 3.

The base board 12 widens to some extent at the rightward end, and ridge members 115 are attached thereto to define further storage areas for the retention of pieces 97 that are not in play.

The surfaces of the insert board 19 and the disk 32 can be coated with arborite or any other low friction surface.

A filler wall member 117 (seen in section in FIGS. 2 and 6) may be situated between the rightward ends of the wall members 36 as viewed in FIG. 1.

What I claim is:

1. A curling game comprising:

a smooth, elongated flat surface having a target area,

endless conveyor means adjacent an edge of said flat surface and having one reach substantially coplanar with said flat surface,

drive means adapted to move said one reach toward said flat surface in the general direction of said target area,

a circular part of said flat surface being capable of angular movement about its center with respect to the remainder of said flat surface while remaining flush with the remainder of said flat surface, said circular part being situated generally between said endless conveyor means and said target area,

and a plurality of spaced-apart, parallel entraining elements fixed to said circular part such that the direction of said elements with respect to the remainder of said flat surface can be changed

through the angular movement of said circular part, whereby a playing piece propelled across said elongated flat surface toward said target area by said endless conveyor means traverses said entraining elements such that its direction of movement responds to the angulation of said entraining elements.

2. The invention claimed in claim 1, which further includes means for depositing a playing piece on said endless conveyor means.

3. The invention claimed in claim 2, in which said flat surface is substantially rectangular, in which said circular part is a disc recessed in the flat surface, and in which said entraining elements are threads strung along and against the surface of said disc.

4. The invention claimed in claim 3, in which the target area is located at one end of said rectangular surface, and in which the endless conveyor means is located adjacent the other end of said rectangular surface.

5. The invention claimed in claim 4, in which said endless conveyor means comprises a plurality of resilient closed loop elements arranged side-by-side around two parallel, spaced-apart shafts, one shaft being mounted for free rotation, and manual means for rotating the other shaft at a controlled rate of speed.

6. The invention claimed in claim 5, in which said one shaft is adjacent said other end of the elongated rectangle, and has indicator means for indicating the approximate speed of rotation of said one shaft.

7. The invention claimed in claim 6, in which said indicator means includes a flexible elongated member extending axially from one end of said one shaft and attached thereto, weight means on the outer end of the elongated member, and stationary scale means adjacent said elongated member, whereby an increasing rate of rotation tends to fling the weight means centrifugally outward with greater force, thus bending the elongated member to a greater extent as the weight means spins around the axis of said one shaft, the trajectory of the spinning weight means passing adjacent the scale means.

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