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F. M. TENNEY
TUG OF WAR MACHINE

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3 Sheets-Sheet 1

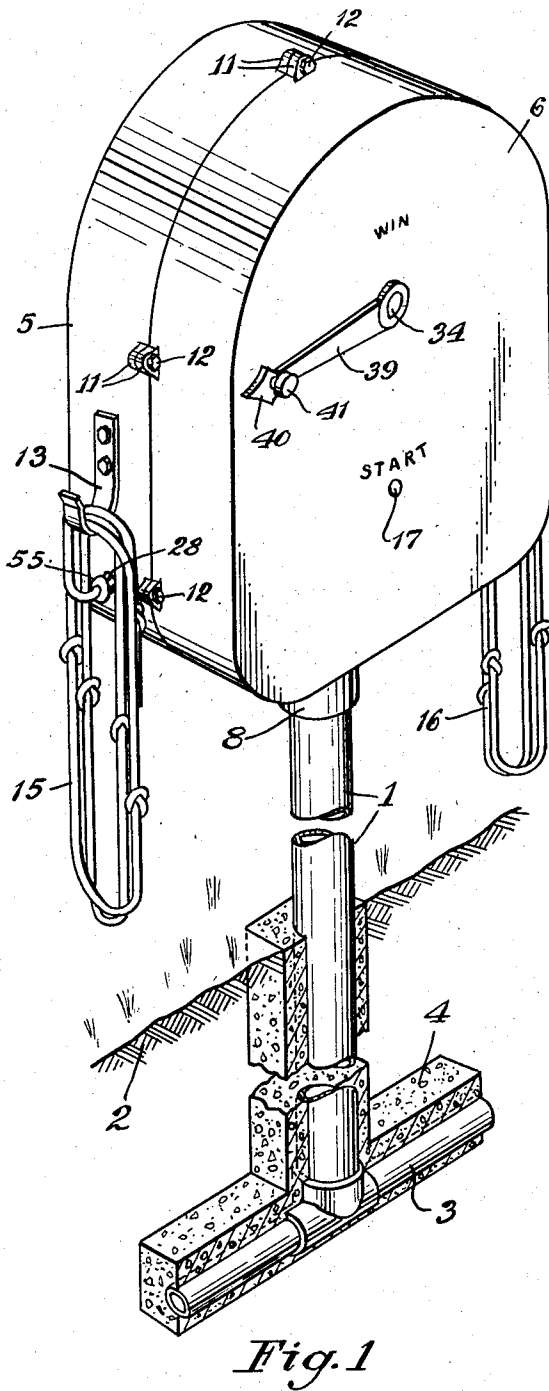
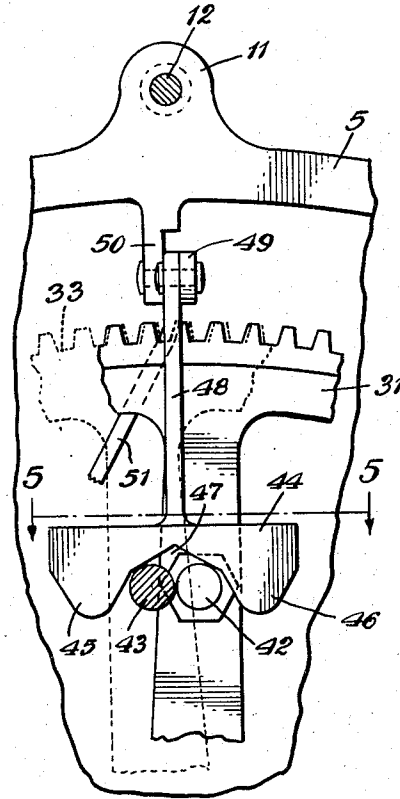


Fig. 4

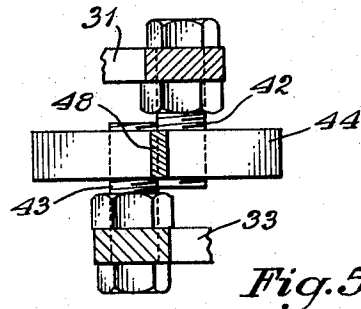


Fig. 5

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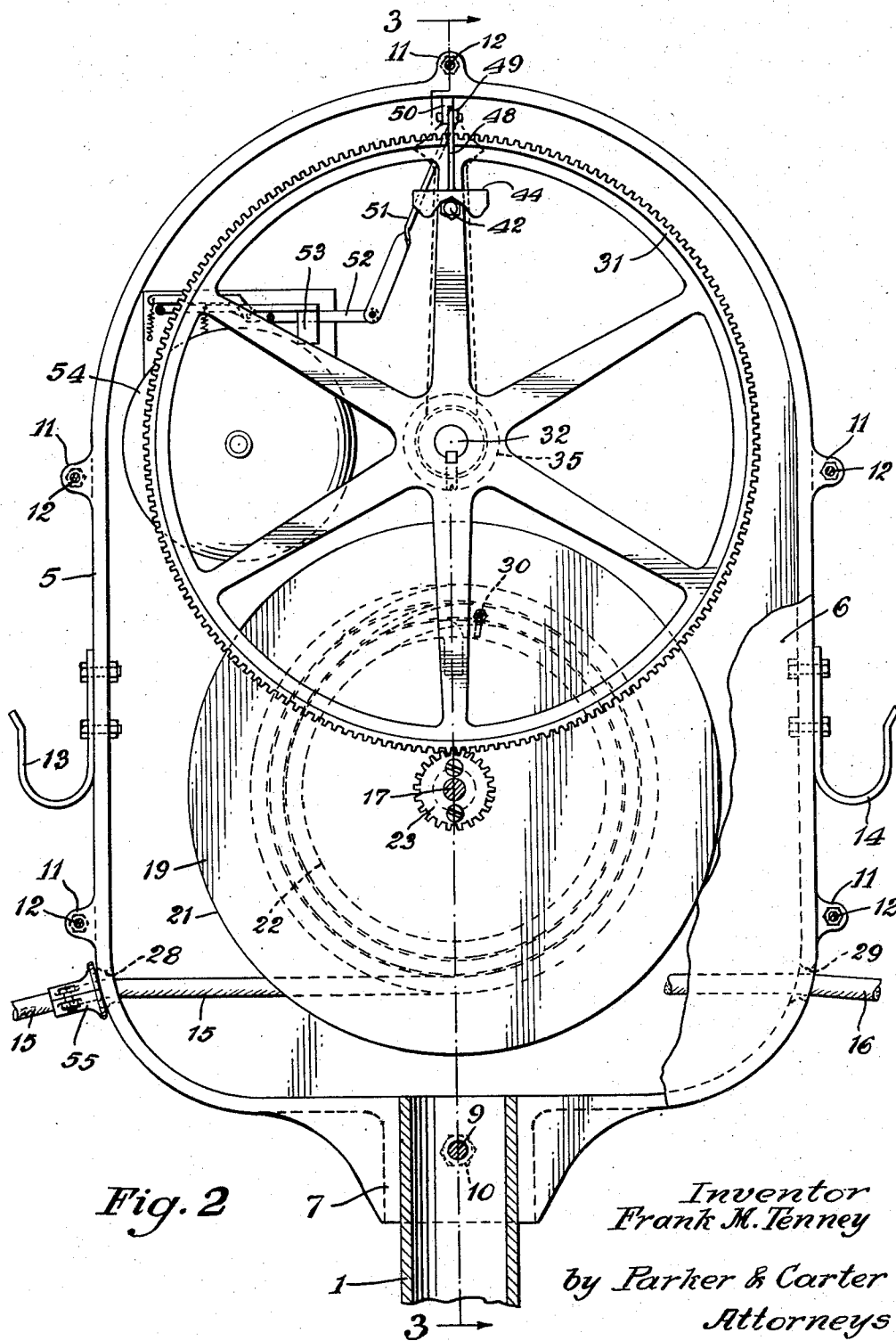
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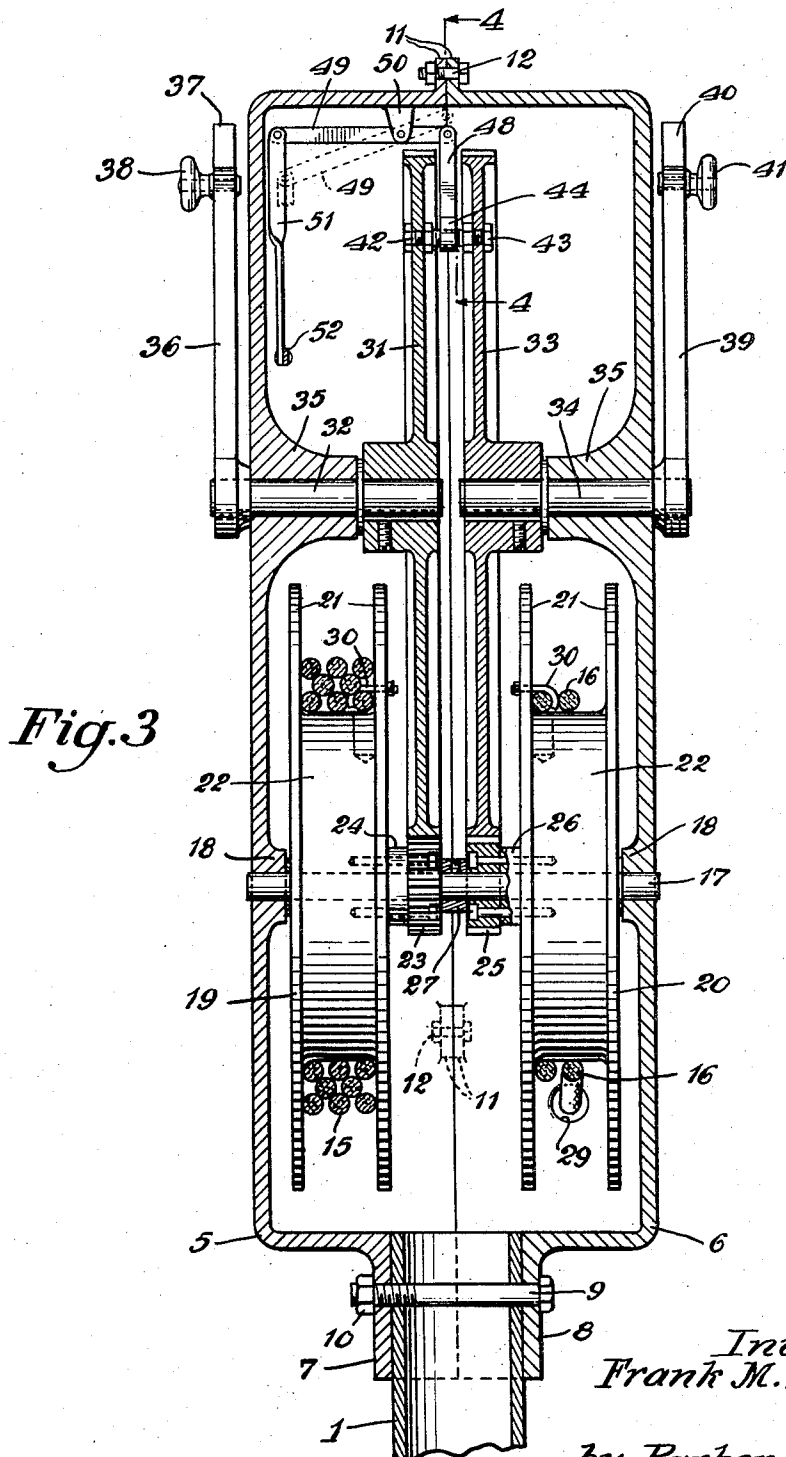
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TUG OF WAR MACHINE

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6 Claims. (Cl. 273—1)

This invention relates to a game or exercise mechanism and it has for one object to provide a means for use in a so-called "tug-of-war" game. It has for another object to provide means for indicating the progress of rival teams during a game and for indicating finally victory of one team.

The game or contest, generally known as "tug-of-war," involves the use of a rope or its equivalent and is played by two or more opposing individuals each seeking to pull the other generally past a given point.

A further object of the invention is to provide means for use in connection with such a game or contest and in the particular form here shown the invention is exemplified in a piece of equipment which may be used in a game yard or playground which furnishes storage means for the rope used and indicating means to show the progress of the game and the ultimate victory.

Other objects will appear from time to time throughout the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings wherein:

Fig. 1 is a perspective view of the device with parts broken away and parts in section;

Fig. 2 is a transverse vertical section on an enlarged scale showing the interior of the device and its moving parts with some parts shown in elevation;

Fig. 3 is a section taken at line 3—3 of Fig. 2;

Fig. 4 is a sectional detail on a further enlarged scale taken at line 4—4 of Fig. 3; and

Fig. 5 is a transverse sectional detail taken at line 5—5 of Fig. 4.

Like parts are designated by like characters throughout the specification and drawings.

The device comprises generally a housing within which the indicating and securing mechanism is located, as well as parts of the mechanism upon which the rope may be wound. This housing is carried upon a standard which is fixed to a foundation so that the device may comprise a permanent piece of equipment in a playground. It may also, of course, be supported on a movable standard, if desired. In the particular form shown a standard 1 may be of tubular formation. It is of such length as to support the housing at a convenient height above the ground 2 and to extend sufficiently below the ground to provide a firm support. Preferably a lateral extension 3 is provided for the member 1 below the ground and this and the varied portion of the standard 7 may be enclosed in concrete, as indicated at 4 in Fig. 1.

The housing as shown is formed of two sections 5 and 6. These may be made of any material and by any process of manufacture. Those shown are indicated as being cast of metal. Each housing section defines a hollow portion and at its lower end a semitubular section 7 or 8. These sections may be strengthened by reinforcing webs, as shown in Fig. 2, and are of such size as to fit about the upper end of the standard 1. They are secured to it and held together by a bolt 9 and nut 10. The housing sections may be rounded at their upper por-

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tions, as shown in Figs. 1 and 2, and are conveniently provided with laterally extending areas 11 which are positioned at suitable intervals about the periphery of the sections and are perforated to receive fastening means 12 which may comprise screws or bolts, if desired.

The housing is provided with a plurality of hooks 13 and 14 secured to the housing in any desired manner and arranged to support, respectively, the rope sections 15 and 16. The ropes, as shown, may have knots, if desired, and may be of whatever thickness and length chosen. The invention is not limited to a particular rope, cable or equivalent member, nor to any particular size of rope.

A shaft 17 is positioned within the housing and is supported in portions 18 of the housing sections. Reels 19 and 20 are positioned on the shaft 17 for rotation about it. The reels as shown comprise end members 21, 21 and central portions 22, 22 about which the ropes may be wound. Fixed to the reel 19 is a pinion 23. These two are joined by screws or otherwise and a spacing member 24 is interposed between them. Fixed to the reel 20 is a pinion 25. A separate or integral spacing member 26 is interposed between the pinion 25 and the reel 20 and the two are joined by screws or otherwise. A spacing and positioning ring 27 may be fixed on the shaft 17 intermediate the two pinions.

Each reel is positioned to lie within one of the housing sections, the reel 19 lying within the housing section 5 and the reel 20 within the section 6. Each housing section is perforated to permit the rope to extend outwardly. In Fig. 1 the perforation 28 appears in the housing section 5 and in Fig. 3 the perforation 29 appears in housing section 6. Each rope is secured to its respective reel by a fastening member such as the hook shown at 30 in Fig. 3.

Located within the housing is a pair of gears, each meshing with one of the above mentioned pinions. The gear 31, which is carried on a stub shaft 32, meshes with the pinion 23 and the gear 33, carried on the stub shaft 34, meshes with the pinion 25. The housing section adjacent each of the shafts 32 and 33 may be enlarged to provide a bearing portion 35, if desired. Each shaft carries at its outer end a pointer and handle member. The shaft 32 has fixed to it the handle member 36 which is provided with a pointer portion 37 and a handle knob 38. Fixed to the shaft 34 is a handle 39 with a pointer portion 40 and a handle knob 41. As shown and described, the two reels, the two pinions and the two gears have no positive connection. Each reel and its gear comprises in effect a pair of members which rotate together but independently of the other pair of members comprising the other reel and its gear. Means must be provided for latching or holding them together during the contest or game so that they do rotate together in response to the pulling of contestants on the two ropes. The means of engaging the two pairs for the period of a contest comprises screws or bolts 42 fixed to the gear 31 and bolt 43 fixed to the gear 33. As shown in detail in Figs. 5 and 6, these bolts or screws comprise projections from each gear toward the adjacent gear and the members 42 and 43 project sufficiently to contact each other, as shown in Figs. 3, 4 and 5, and their respective gears are in the proper position of rotation. When they are in this position relative rotation of the two gears in one direction is stopped by the contact of the members 42 and 43. Relative rotation of the two gears in the opposite direction is not stopped since the projections 42 and 43 can, upon reverse movement of their respective gears, be carried out of contact with each other.

An indicating means, which includes a bell or other sound-making device, is shown in detail in Figs. 4 and 5

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and generally in Fig. 2. This comprises a saddlelike member 44 having a pair of downwardly projecting extensions 45, 46 defining between themselves a notch or cavity 47. The member 44 is attached to or integral with an upwardly extending part 48 which, as shown particularly in Fig. 3, is movably mounted at one end of a lever 49, the lever being supported in a bearing member 50 attached to or formed as a part of the housing section 5. The lever 49 at its opposite end is movably connected to a link 51 which is connected to an arm 52 arranged to actuate means for causing the bell striker 53 to strike the bell 54. The precise details of the striking mechanism need not be shown as they form no particular part of the present invention. It is sufficient for the purposes of that invention that means be provided for striking the bell when the game or contest has been finished. When the two members 42 and 43 meet at the top, as they are shown in Figs. 2, 3, 4 and 5, the contest has been completed and the bell has been struck. Any bell-ringing means might be used. They might be electrical and a switch mechanism would be actuated by the appropriate movement of the gears 31 and 33, or the mechanical means shown might be used, or any other signal member and signal-actuating means might be used.

Although I have shown an operative form of my device, the invention is not limited to the particular details shown. Many changes may be made in the form, shape and arrangement of parts without departing from the spirit of the invention.

The use, operation and function of my invention are as follows:

The rope may be provided with limiting stops. One such stop is shown at 55 in Figs. 1 and 2. These stops may be omitted or each rope may have one and if the stops are present they will be positioned on the rope so that the stop is reached at approximately the time that the maximum rope has been pulled in at the occurrence of the termination of the contest.

When the device is not in use the parts may occupy any position. Generally, however, the handles 36 and 39 will be moved to rotate their respective gears and thus through the gears and pinions to rotate the reels to bring a substantial portion of each rope onto its respective reel.

When the game is to be played each handle 36 and 39 will be moved until it points vertically downwardly. When the pointer portions of the handles are in this position the stop members 42 and 43 will have moved with the gears 31 and 33 to the bottom position, 180 degrees from the position shown in Figs. 2 and 3. In that position if a pull is exerted upon each rope, one will be pulling against the other, as is customary in the known game of tug-of-war and each team or contestant will be pitted against the other. As the game or contest continues frequently one and then another will be ahead and the ropes will be pulled in and out in response to the efforts of the contestants; the pointers will rise and fall until finally one team or contestant will have succeeded in pulling out a sufficient amount of his own rope and, correspondingly, pulling in a sufficient amount of his opponent's rope to permit rotation of the gears to the position shown generally in Figs. 2 and 3 and in detail in Figs. 4 and 5. As the gears are rotated toward the maximum upper position, moving clockwise or counterclockwise, as seen in Fig. 2, the two members 42 and 43 will strike one or the other of the parts 45 and 46; these having inclined faces they will be deflected upwardly as rotation of the gears continues. This upward movement of the member 44 is transmitted through the parts 48, 49, 51 and 52 to the bell-striking mechanism first, in effect to cock it as the portion 45 or 46 rides over the stops 42 or 43, and finally to ring the bell as the parts reach the full upward position and the members 42 and 43 come in to the position of Fig. 4 until they

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fit into the depression 47, thus permitting the member 44 to move downwardly and through the linkage above described, releasing the bell for striking. When this has occurred the pointer will have been moved to the full upward position pointing to the word "win" or some other suitable indication. As the parts are shown in Fig. 2 the pointer is shown in dotted line in that position and the bell-striking mechanism will have been cocked and released so that the bell will have been rung to notify the contestants that a side has won. The mechanism thus gives visual indication of the termination of the contest by the position of the pointer and gives an audible indication by the striking of the bell.

After the termination of a contest the parts may be returned to the original inactive position by rotation of the gears through the handles 36 and 39 or they may be moved to the position for starting a new game.

I claim:

1. In combination in a game device, a supporting housing means, a pair of reels positioned therein for rotation, a pair of ropelike members, each fastened at one end to one of said reels and each protruding from said housing, each reel having fixed to it a pinion, a pair of gears positioned for rotation within said housing, each meshing with one of said pinions, crank members positioned outside of said housing, one for each of said gears and fixed thereto and said gears being free for relative rotation with respect to each other, and joining means extending between said gears adapted to limit the relative rotation of said gears and to cause them to rotate together, and a signal device positioned to be moved by said joining means after said gears have rotated together a predetermined distance.

2. In combination in a game device, a supporting housing means, a pair of reels positioned therein for rotation, a pair of ropelike members, each fastened at one end to one of said reels and each protruding from said housing, each reel having fixed to it a pinion, a pair of gears positioned for rotation within said housing, each meshing with one of said pinions, crank members positioned outside of said housing, one for each of said gears and fixed thereto and said gears being free for substantial relative rotation with respect to each other, and joining means extending between said gears adapted to limit the relative rotation of said gears and to cause them to rotate together, said means including a projection on each of said gears extending in the direction of the other gear, and a signal device positioned to be moved by said joining means after said gears have rotated together a predetermined distance.

3. In combination in a game device, a supporting housing means, a pair of reels positioned therein for rotation, a pair of ropelike members, each fastened at one end to one of said reels and each protruding from said housing, each reel having fixed to it a pinion, a pair of gears positioned for rotation within said housing, each meshing with one of said pinions, crank members positioned outside of said housing, one for each of said gears and fixed thereto and said gears being free for relative rotation with respect to each other, and joining means extending between said gears adapted to limit the relative rotation of said gears and to cause them to rotate together, stop members on each of said ropes positioned to limit the inward movement of each rope, and a signal device positioned to be moved by said joining means after said gears have rotated together a predetermined distance.

4. In combination in a game device, a supporting housing means, a pair of reels positioned therein for rotation, a pair of ropelike members, each fastened at one end to one of said reels and each protruding from said housing, each reel having fixed to it a pinion, a pair of gears positioned for rotation within said housing, each meshing with one of said pinions, crank members positioned outside of said housing, one for each of said gears and fixed thereto and said gears being free for relative rotation with respect to each other, and joining means extending between said

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gears adapted to limit the relative rotation of said gears and to cause them to rotate together, said means including a projection on each of said gears extending in the direction of the other gear, stop members on each of said ropes positioned to limit the inward movement of each rope, and a signal device positioned to be moved by said joining means after said gears have rotated together a predetermined distance.

5. In combination in a game device, a supporting housing means, a pair of reels positioned therein for rotation, a pair of ropelike members, each fastened at one end to one of said reels and each protruding from said housing, each reel having fixed to it a pinion, a pair of independent gears positioned for rotation within said housing, each meshing with one of said pinions, crank members positioned outside of said housing, one for each of said gears and fixed thereto, each said crank member shaped at its free end as a pointer and each provided with a handle adjacent its free end, indicia, carried by said housing, for cooperation with said pointers, said gears being free for substantial relative rotation with respect to each other, and joining means extending between said gears adapted to limit the relative rotation of said gears and to cause them to rotate together, said means including a projection on each of said gears extending in the direction of the other gear, stop members on each of said ropes positioned to limit the inward movement of each rope, and a signal device positioned to be moved by said joining means after said gears have rotated together a predetermined distance.

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6. In combination in a game device a supporting means, a pair of reels carried by said supporting means for rotation, a pair of ropelike members each attached at one end to its respective reel and extending at the other end away from said supporting means, and means for rotating the reels to wind the ropes thereon, said means including pinions fixed to each reel and independent of each other, a gear meshing with each pinion, supporting means for each gear, a crank for each gear whereby it may be rotated, each crank comprising an indicating means to indicate the position of its respective gear, said reels, pinions and gears mounted for substantial independent relative rotation and joining means for causing them to rotate together, and an audible signal means including a bell and a part adapted to be moved by said joining means, linkage between said joining means and said bell whereby movement of said part is effective to ring said bell after a predetermined rotation of said gears.

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