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GAME APPARATUS

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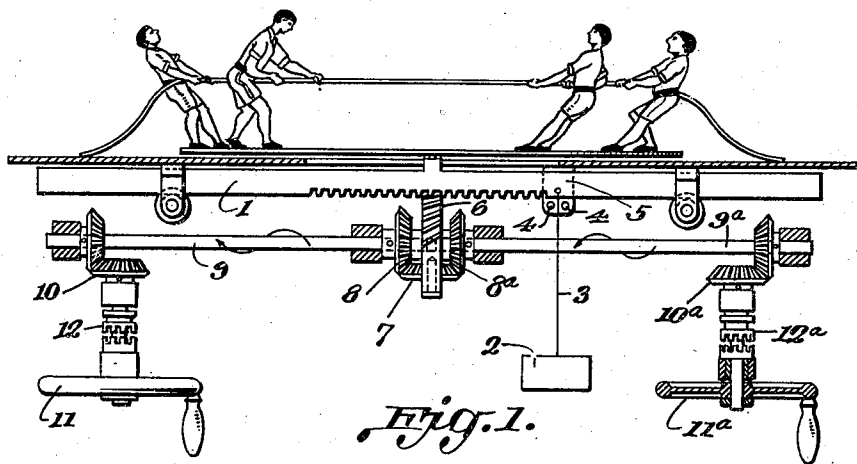


Fig. 1.

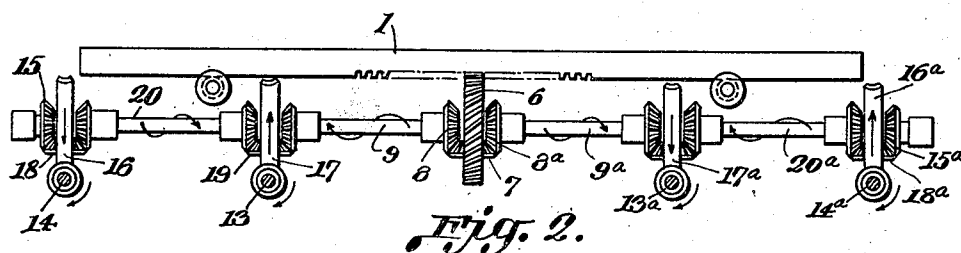


Fig. 2.

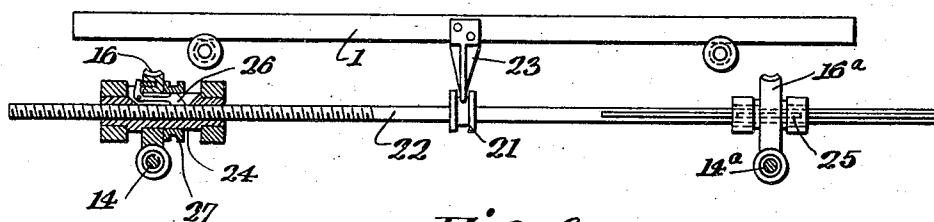


Fig. 3.

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GAME APPARATUS.

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The invention relates to game apparatus and provides means whereby two opposing players, or teams of players, may retard or neutralize each others efforts.

5 The present invention comprises essentially an improved mechanism adapted to be operated by suitable controls and so arranged that a differential motion is imparted to an indicating device arranged for a game.

10 In the accompanying drawing Fig. 1 is an elevation of a game apparatus constructed according to this invention. Figs. 2 and 3 are elevations of modifications.

Referring to Fig. 1 which illustrates one 15 form of this invention, an indicating device is arranged and may be provided with suitable apparatus and background to represent the game known as "tug-of-war," and consists of two teams of suitable figures appar- 20 ently tugging at each other through the medium of a rope.

The two sets of figures are fixed to a slidably mounted bar 1, and provided with suitable means such as springs or weights to 25 tend to keep the indicating bar 1 in a central or zero position. In the example shown, a weight 2 is carried by a cord or chain 3 fixed to the indicating bar 1 and the said cord passes freely between the two studs 4, which 30 are fixed to the stationary bracket 5.

When the indicating bar 1 is moved to either the right or to the left the weight 2 will be lifted and thereby tend to return the bar 1 to the centre or zero position.

35 The bar 1 is connected to the member of a differential gear mechanism which carries the intermediate or planetary wheel or wheels 7, which connection in this case is the spiral gear 6, which is suitably geared to the spiral rack cut in bar 1, and the axial 40 wheels 8 and 8^a are driven through shafts 9 and 9^a, gears 10 and 10^a, from handwheels 11 and 11^a.

Clutches 12 and 12^a are arranged to connect the motion from the handwheels, either 45 by hand or by known means, through the medium of coin operated mechanism and disconnect the said handwheels either by hand, or by other known means when the 50 indicating bar reaches a predetermined position, and known means may be provided to discharge a coin or coins when the indicating device reaches a predetermined position.

When the clutches are in gear and the 55 handwheels 11 and 11^a are caused to revolve in the same direction at equal speeds, motion

is transmitted to the wheels 8 and 8^a, which will revolve at equal speeds, but in opposite directions, and cause the wheel 7 to revolve on its own axis, without transmitting a motion to wheel 6, and indicating bar 1, but if 60 one handwheel is caused to revolve at a different speed to the other, then the resultant differential motion will be transmitted through wheel 6 to the indicating bar 1. 65

The indicating device may be made in any suitable form and may represent any game of a suitable nature.

Fig. 2 illustrates a modified construction where two pairs of controlling handwheels 70 are used, handwheel shafts 13 and 13^a constituting one pair, and 14 and 14^a constituting a second pair, and it will be readily understood that in this form of construction any number of handwheels may be used, preferably, but not necessarily, in pairs. 75

In this construction the end wheels 15 and 15^a must be stationary or dead wheels and each handwheel shaft 14, 14^a, 13 and 13^a transmit motion through worm wheels 16, 16^a, 17 and 17^a to the planetary members of the differential gears 18, 18^a, 19 and 19^a. Motions generated by handwheel shafts 14 and 14^a are transmitted from the dead wheels 15 and 15^a through planetary gears 18 and 18^a to shafts 20 and 20^a then through planetary gears 19 and 19^a to shafts 9 and 9^a and if handwheel shafts 13 and 13^a are turning, they will transmit an additional motion to shafts 9 and 9^a from shafts 20 and 20^a 80 through planetary wheels 19 and 19^a and the resultant motions are transmitted through differential gears 8, 8^a, 7 and 6 to the indicating bar 1 in a manner as previously described for Fig. 1. 85

A feature of this construction is that each handwheel adds its own share to the final motion and when a number of handwheels are employed, say 6 pairs, then the combined efforts of a team of six players against an opposing team of six players will be shown 100 by the indicating bar, or in the event of an unequal number of players, for example, six ladies opposing three gentlemen a true indication of the combined efforts of each team of players will be shown at the indicating bar. 105

The direction of rotation of the various members of this construction are preferably as indicated by the arrows, when all the 110 handwheels shafts are turning but may be modified to suit convenience of construction,

also, means are provided for returning the indicating bar to the zero position as previously described.

Fig. 3 illustrates a modification in which the indicating bar 1 is freely connected to the flanged collar 21 on the shaft 22 through bracket 23.

Handwheel shafts 14 and 14^a transmit motion through the wormwheels 16 and 16^a to nut 24 and shaft 22 respectively, the latter being provided with a long spline adapted to transmit motion from wormwheel 16^a by means of a suitable key as shown at 25 and at the same time permit a longitudinal sliding motion of shaft 22.

When the nut is engaging the thread on shaft 22, and both nut and shaft are caused to revolve in the same direction at the same speed, no motion will be transmitted to the indicating bar, but if any variation in speed of rotation between the shaft 22 and nut 24 occurs, then a resultant differential motion is transmitted to the indicating bar 1.

The body of nut 24 is bored to a clearance size, so as not to engage the threads of the screw on shaft 22, but to act only as a bearing for the said shaft, and a spring operated, threaded die 26 is carried in the body of the nut 24 and adapted to engage the threads of the shaft 22, and such engagement or disengagement is controlled by the position of the sliding flanged collar 27.

Means are provided for returning the indicating bar to a zero position as previously described.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A game apparatus comprising a movable indicating member, an element coupled to the indicating member for moving it in opposite direction from a zero point, a plurality of control devices coupled to the direction element adapted to be operated independently at competitive speeds by opposing participants in the game and an element coupled to the indicating member tending to keep such member in the zero position.

2. A game apparatus comprising a movable indicating member, a differential gear coupled to the indicating member, two shafts connected to the differential gear each adapted to be independently operated at competitive speeds by opposing participants in the game to move the indicating member in opposite directions and an element coupled to the indicating member tending to keep it in the zero position.

3. A game apparatus comprising a movable indicating member, a rack carried by the indicating member, a differential gear, gearing within the rack, two shafts connected to gear members of the differential gear through its planetary gear and to gear drives independently-operated at competitive speeds by opposing participants in the game to move the indicating member in opposite directions and an element coupled to the indicating member tending to keep it in the zero position.

4. A game apparatus comprising a movable indicating member, a differential gear coupled to the indicating member, a plurality of shafts connected to the differential gear, and to a plurality of additional differential gears not directly connected to the indicating member, adapted to be independently-operated at competitive speeds by opposing participants in the game to move the indicating member in opposite directions, and an element coupled to the indicating member tending to keep it in the zero position.

5. A game apparatus comprising a movable indicating member, a rack carried by the indicating member, a differential gear, gearing with the rack, a plurality of shafts connected to the differential gear and to a plurality of additional differential gears not directly connected to the indicating member, but connected to gear members of the differential gears through their planetary gears, gear drives for actuating the additional differential gears operated independently at competitive speeds by opposing participants in the game to move the indicating member in opposite directions, and an element coupled to the indicating member tending to keep it in the zero position.

6. A game apparatus comprising a movable indicating member, an axially-movable shaft connected to the indicating member so as to move with it simultaneously in either direction, worm gear devices operated independently at competitive speeds by opposing participants in the game to move the indicating member and the shaft in one direction or the other simultaneously, the worm wheel of one gear being splined to allow the shaft to move endwise through it whilst the other worm wheel is supported on a bush through which the shaft can slide, said bush being articulated to a screw-threaded portion of the shaft by a gear catch engaging said screw-threaded portion, and an element coupled to the indicating member to tend to keep it in the zero position.

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