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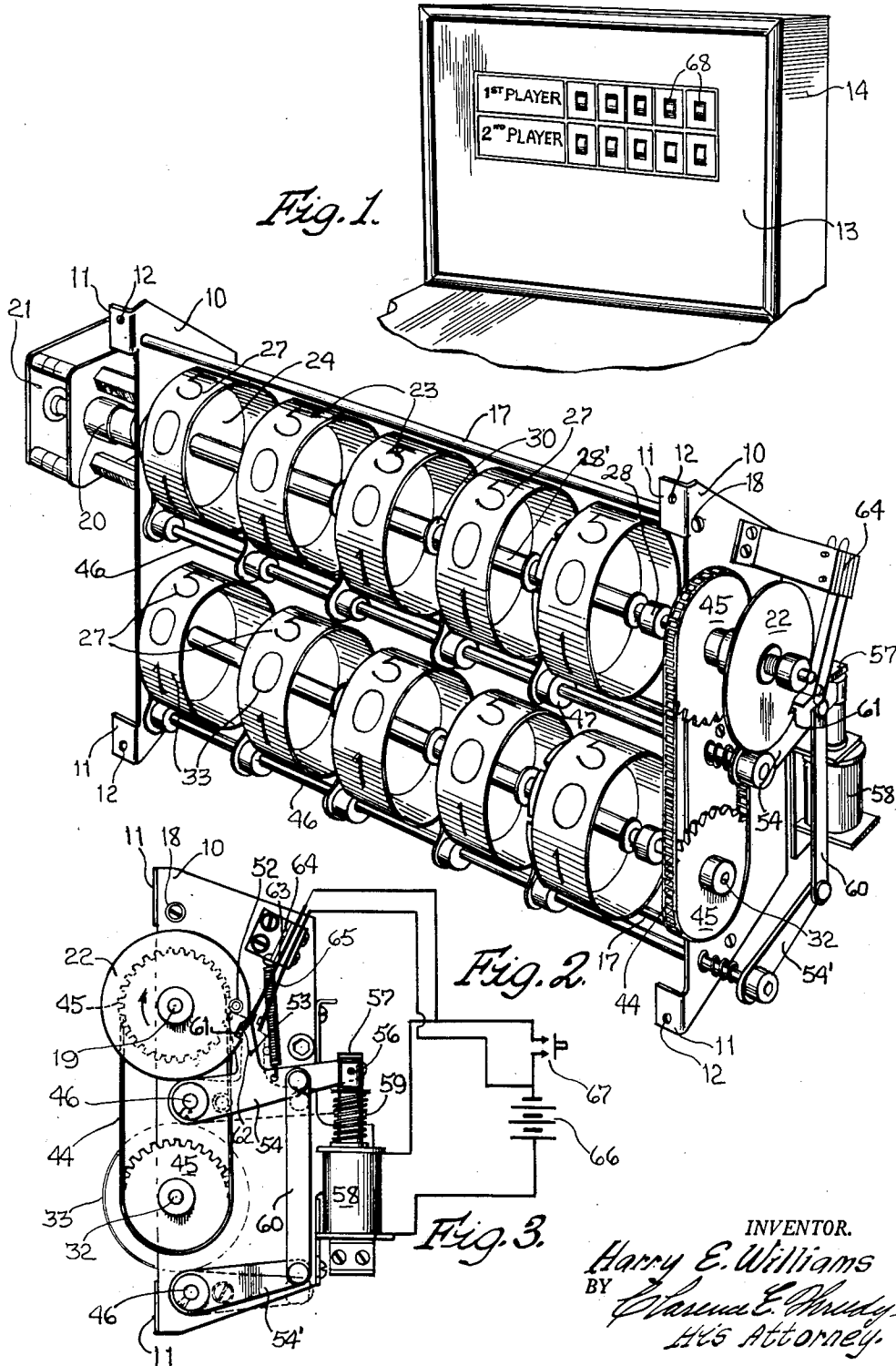
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2,651,464

SCORE REGISTERING DEVICE

Filed Feb. 3, 1951

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

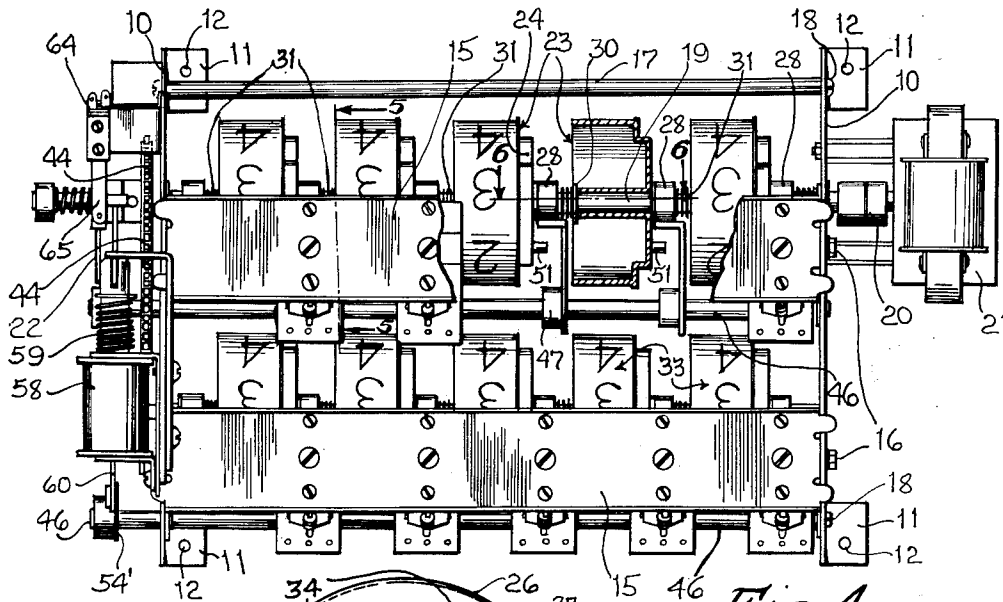


Fig. 4

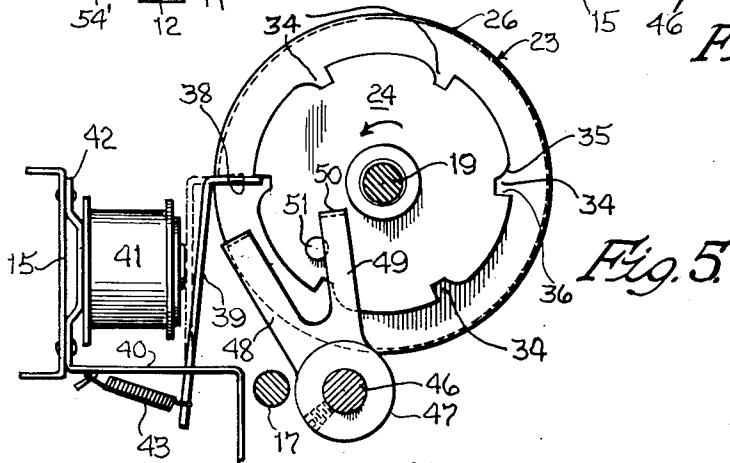


Fig. 5

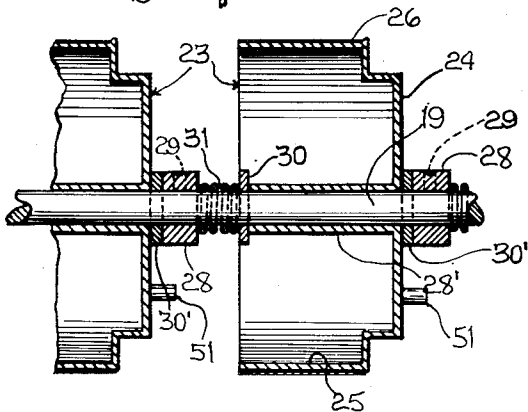


Fig. 6

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UNITED STATES PATENT OFFICE

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SCORE REGISTERING DEVICE

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4 Claims. (Cl. 235—92)

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This invention relates to certain new and useful improvements in score registering devices especially adapted for registering a score accomplished as a result of the playing of a coin-controlled amusement device, such as is illustrated in my Patent No. 2,459,011.

In this aspect of my invention it has as an object the provision of a plurality of individually and simultaneously rotatable score wheels and an arrangement for releasably restraining all but one of said wheels against rotation during score registering operation and also an arrangement for releasing all of such wheels for simultaneous rotation to zero position.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a fragmentary perspective view of a score cabinet with which my invention is associated;

Fig. 2 is a perspective view of the invention;

Fig. 3 is an end view of the invention as viewed from the right of Fig. 2;

Fig. 4 is a back side elevational view of the same;

Fig. 5 is a fragmentary sectional detail view taken substantially on line 5—5 of Fig. 4; and

Fig. 6 is a fragmentary sectional detail view taken substantially on line 6—6 of Fig. 4.

Referring more particularly to the drawings, the preferred form of construction there illustrated includes end plates 10 having laterally extending lugs 11 perforated as at 12 for the passage therethrough of attachment screws (not shown) for attaching the score registering device to the rear of a panel 13 of a score cabinet 14. The plates 10 are disposed in confronting spaced parallel relation with respect to each other by means of parallel plates 15 connected as at 16 to the side plates 10 at the rear thereof. Co-operating with these plates 15 are also several rods 17 connected as at 18 to the side plates 10.

Journalled through the plates 10 and extending therebetween are spaced parallel shafts 19 and 32. One end of the shaft 19 is connected by means of a suitable coupling 20 to an electric motor 21 of any approved construction. On the opposite end of the shaft 19 is mounted a cam disc 22.

On the shaft 19 there are mounted in confronting spaced relation with respect to each other, score wheels 23.

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Each of these wheels 23 is formed substantially cup-shaped to provide a wall 24 and a relatively wide cylindrical wall 25. On this wall 25 is mounted in any suitable manner a strip 26 having printed thereon numerals 27. Formed as an integral part of the wall 24 of the wheel is a hub 28 in which the shaft 19 is journaled. At predetermined points on the shaft 19 are arranged collars 28 fixed for rotation with the shaft 19 by means of set screws 29.

Arranged between each of these collars 28 and a washer 30 bearing against an adjacent hub 28' is an expansion spring 31. Arranged between the wall 24 and the adjacent collar 28 is a washer 30'. The arrangement is such that when the score wheels 23 are held against rotation, the shaft 19 is free to rotate relative to the wheels 23. However, when the score wheels 23 are released for rotation, the frictional contact between these wheels and the collars 28 produced by the springs 31, will result in the wheels 23 rotating with the shaft 19.

The shaft 32 has mounted thereon score wheels 33 similar in construction to the score wheels 23 and arranged for frictional connection with the shaft 32 in the same manner as is employed for providing a frictional drive between the shaft 19 and the wheels 23.

The wall 24 of each of the wheels 23 in its peripheral edge portion is provided with a plurality of equally spaced apart notches 34. One side wall 35 of each of the notches 34 provides a camming surface while the opposite wall 36 provides an abrupt stop shoulder. Normally engaging in one notch of each wheel is at latch finger 38 which, by engagement with the shoulder 36, restrains the rotation of the wheel with the shaft on which it is mounted, in the direction of the arrow indicated in Fig. 5.

The latch finger 38 is formed as an integral part of an armature 39 pivotally supported by a bracket 40. This bracket 40 supports an electromagnetic coil 41 which is adapted when energized to attract the armature 39 to pivot the same to dispose the latch finger 38 from engagement with the shoulder 36.

This coil 41 is mounted on a plate 42 in turn fixed to an adjacent one of the plates 15. The armature 39 is normally pivoted away from the coil by a spring 43.

The coils 41 (there being one for each wheel) are arranged in a scoring circuit of any approved construction wherein there is means for energizing the coils 41 upon the attainment of a certain score.

As long as the fingers 38 engage the shoulders

36, the wheels will be restrained from rotation with the shafts 19 and 32.

The shafts 19 and 32 are connected together for simultaneous rotation by means of a sprocket chain 44 having engagement with sprocket wheels 45 connected to the shafts 19 and 32.

Means is provided for simultaneously releasing the score wheels for simultaneous rotation to zero position. This is accomplished by providing a shaft 46 having its end portions journaled in the end plates 19 and extending therebetween, there being one shaft for each row of score wheels. Fixed to the shaft 46 adjacent each of the scoring wheels, is a collar 47. Formed as an integral part of this collar 47 and extending radially therefrom is a trip arm 48 which, when the shaft 46 is rocked in a manner hereinafter set forth, will engage the adjacent armature 39 and pivot the same in a direction to dispose the latch finger 38 from engagement with the adjacent shoulder 36. Also formed as an integral part of the collar 47 and extending radially therefrom is a stop finger 49 which is provided with a horizontally extending flange 50 adapted to move into the path of movement of a pin 51 carried by the wheel 23, when the shaft 46 is rocked as aforesaid, whereby to limit the return of the score wheel to zero position.

The cam disc 22 has frictional connection with the shaft 19 in the same manner as the wheels 23. Such cam disc is restrained from rotation with the shaft 19 by means of a pin 52 carried by the disc 22 and adapted to engage an arm 53. This arm 53 is formed as an integral part of a lever 54 fixedly connected to one of the shaft 46. The lever 54 is pivotally connected at 55 to a plunger 57 of an electromagnetic coil 58. The plunger 57 is projected with respect to the coil 58 by a spring 59.

A lever 54' is fixedly connected to the other of the shafts 46. The outer end portion of this lever 54' is connected by a link 60 to the lever 54 whereby upon energization of the coil 58 the levers 54 and 54' will pivot together.

The cam disc 22 is provided with a notch 61 into which engages an angled end portion 62 of a switch leaf 63 of a switch 64. The contact of the switch leaf 63 is normally spaced from the contact of its complementary switch leaf 65. When the angled end portion 62 rides on the periphery of the cam disc 22, the switch leaf 63 will be in contact with the leaf 65 thereby to establish a circuit between the coil 58 and a power source 66. Such an arrangement maintains energization of the coil 58 after it is initially energized by the closing of a reset push button type switch 67.

The cam disc 22 rotates in the direction of the arrow as shown in Fig. 3.

When the score register is mounted in the cabinet 14 the wheels 23 will be disposed to the rear of sight openings 68 to expose the numbers on the wheels through these openings.

During the operation of the motor 21, and as long as the wheels 23 and 33 as well as the cam disc 22 are restrained from rotation, only the shafts 19 and 32 will be rotated. However, whenever one of the latch fingers 38 is disengaged from the adjacent shoulder 36 the frictional connection between the score wheel and its respective shaft will cause the wheel to rotate with the shaft to advance the score number of the wheel to the next highest score number, it being intended that the coil 41 be only momentarily energized so as to accomplish the above results.

To reset the score wheels to zero or starting position the coil 58 is initially energized by the reset button 67, after which further energization of the coil 58 is maintained through the switch 64. Upon energization of the coil 58, both shafts 46 are rocked in a direction to bear the arms 48 against adjacent armatures 39 to disengage the latch fingers 38 from the shoulders 36. The rocking of these shafts 46 disposes the stop fingers 49 in the path of movement of the pins 51 whereby when the pin 51 engages the stop finger 49 the wheels 23 and 33 will be disposed in zero or starting position, with the zero exposed through the sight openings 68.

My present invention was especially designed to register through the medium of the wheels 23 and 33, runs attained in an amusement game apparatus simulating a baseball game. Such game is intended to be played by competitive players. The registering device herein disclosed may be used for other purposes. The simplicity of construction of my invention affords economical manufacture.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A device of the class described comprising a motor, a shaft rotated by the motor, a plurality of collars fixed to the shaft for rotation therewith and in spaced longitudinal relation with respect to each other, wheels each having numeral-bearing drums arranged on the shaft between the collars, springs embracing the shaft and arranged between the collar and the wheels providing frictional driving connection between the wheels and the shaft, means for releasably holding the wheels individually against rotation with the shaft, said last-named means including a plurality of notches on one side wall of said wheels and individual holding shoulders, said notches being adapted to be engaged by said holding shoulders, means for releasing individually said holding means, and means for simultaneously releasing all of said holding means to permit simultaneous rotation of the wheels with the shaft.

2. A device of the class described comprising a motor, a shaft rotated by the motor, a plurality of collars fixed to the shaft for rotation therewith and in spaced longitudinal relation with respect to each other, wheels each having numeral-bearing drums arranged on the shaft between the collars, springs embracing the shaft and arranged between the collar and the wheels providing frictional driving connection between the wheels and the shaft, means for releasably holding the wheels individually against rotation with the shaft, electromagnetic means for simultaneously releasing all of said individual holding means to permit simultaneous rotation of said wheels with said shaft, and a second electromagnetic means for releasing individually said holding means, said last-named means including a trip arm carried on a second shaft below and adjacent said wheels and adapted to engage and

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release said holding means when said second electromagnetic means is energized.

3. A device of the class described comprising a motor, a shaft rotated by the motor, a plurality of collars fixed to the shaft for rotation there- 5 with and in spaced longitudinal relation with respect to each other, wheels each having numeral-bearing drums arranged on the shaft between the collars, springs embracing the shaft and arranged between the collar and the wheels 10 providing frictional driving connection between the wheels and the shaft, means for releasably holding the wheels individually against rotation with the shaft, said last named means including a plurality of notches on one side wall of said 15 wheels and individual holding shoulders, said notches being adapted to be engaged by said holding shoulders, means for releasing individually said holding means, electromagnetic means for simultaneously releasing all of said holding 20 means to permit simultaneous rotation of the wheels with the shaft, said last named means including a trip arm carried on a second shaft below and adjacent said wheels and adapted to engage and release said holding means when said 25 electromagnetic means is energized.

4. A device of the class described comprising a motor, a shaft rotated by the motor, a plurality of collars fixed to the shaft for rotation there- 30 with and in spaced longitudinal relation with

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respect to each other, wheels each having numeral-bearing drums arranged on the shaft between the collars, springs embracing the shaft and arranged between the collar and the wheels 5 providing frictional driving connection between the wheels and the shaft, means for releasably holding the wheels individually against rotation with the shaft, said last named means including a plurality of notches on one side wall of said 10 wheels and individual holding shoulders, said notches being adapted to be engaged by said holding shoulders, means for releasing individually said holding means, electromagnetic means for simultaneously releasing all of said holding 15 means to permit simultaneous rotation of the wheels with the shaft, an electric circuit for said electromagnetic means, a switch in said circuit, a cam disc having frictional driving connection with said shaft for actuating said switch, and 20 means for releasably restraining rotation of the disc with the shaft.

HARRY E. WILLIAMS.

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