No. 650,112. Patented May 22, 1900.

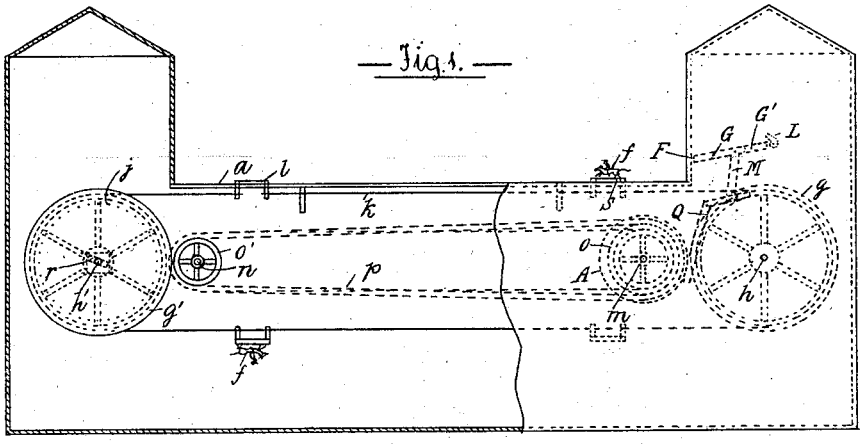
C. MIDDLEBROOK.

COIN FREED TOY RACING GAME.

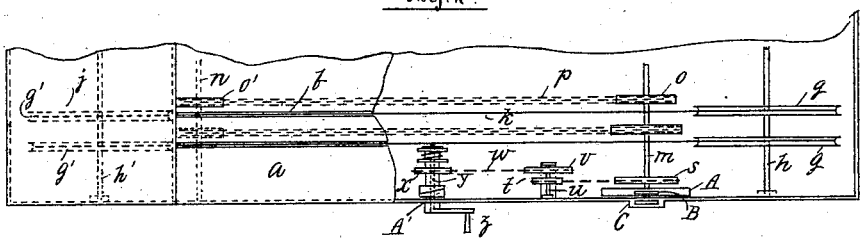
(Application filed Mar. 5, 1900.)

(No Model.) 2 Sheets—Sheet 1.

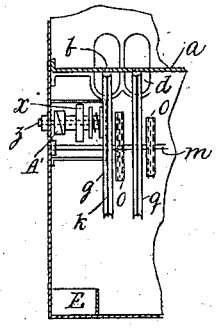
— Fig. 1. —



— Fig. 2. —



— Fig. 3. —



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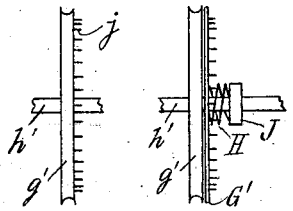
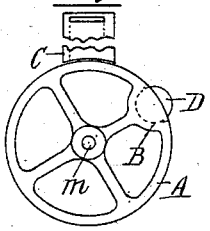
(No Model.) 2 Sheets—Sheet 2.

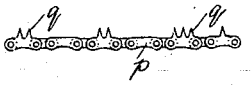
— Fig. 4. — — Fig. 11. —



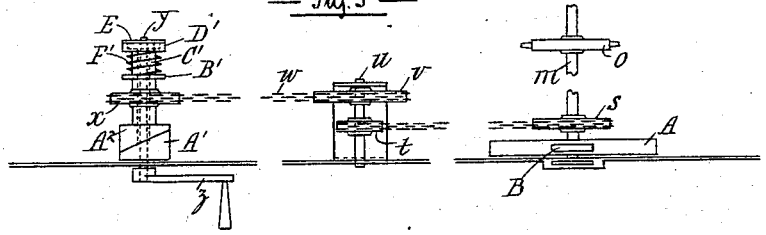
— Fig. 6 —



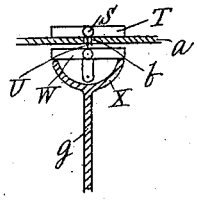
— Fig. 10. —



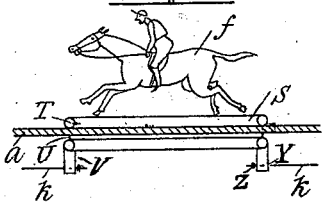
— Fig. 5 —



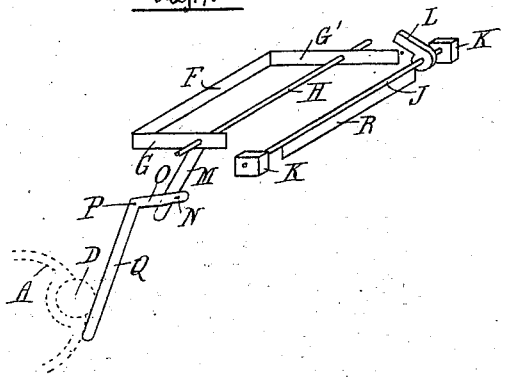
— Fig. 8. —



— Fig. 9. —



— Fig. 7. —



Witnesses:-
William Crossley
A. Clarke.

Inventor
Charles Middlebrook
per Hughes & Kemp
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES MIDDLEBROOK, OF LONDON, ENGLAND.

COIN-FREED TOY RACING GAME.

SPECIFICATION forming part of Letters Patent No. 650,112, dated May 22, 1900.

Application filed March 5, 1900. Serial No. 7,423. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MIDDLEBROOK, a subject of the Queen of Great Britain and Ireland, residing at 226 Brunswick road, Poplar, London, in the county of Middlesex, England, have invented new and useful Improvements in Coin-Freed Toy Racing Games, of which the following is a specification.

My invention relates to a new and improved coin-freed toy racing game, the object of which is to provide in exchange for a coin placed in the apparatus a spectacle of a race between toy animals, men, bicycles, or the like endeavoring to reach a winning goal with as great an uncertainty as exists in an actual race.

In carrying my invention into practice I proceed in or in about the following manner, making reference to the accompanying drawings, in which—

Figure 1 shows a sectional side view, Fig. 2 a sectional plan, and Fig. 3 a sectional end view, of the apparatus. Fig. 4 is an enlarged end view of part of the arrangement for giving the uncertain movement to the competitors. Fig. 5 is an enlarged plan of the driving-gear. Fig. 6 is a front view of the coin-wheel, and Fig. 7 an isometrical view of the arrangement for alining and releasing the competitors. Fig. 8 is an end, and Fig. 9 a side, view of a competitor "runner." Fig. 10 is a side view of part of the chain driving-gear. Fig. 11 is an end view of a modification in part of the arrangement for giving the uncertain motion to the competitors.

I provide a race-course *a*, having therein as many open-ended slots *b*, extending from end to end of the course *a*, as there are to be competitors in the race. This course is preferably made of comparatively-thin material and supported in any suitable manner, as by cross-girders *c*, having inverted arches or gaps *d* below the slots *b*, so as to permit the runners carrying the competitors *f* to pass freely along. For simplification only two competitors are shown in the drawings. At each end of the course and below it are as many grooved wheels *g g'* as there are slots *b* in the race-course *a*. These grooved wheels *g g'* are loose on their axles *h h'*, which extend across the casing which holds the whole together. Each of the grooved wheels *g'* at the end toward which the competitors race has pins *j* at equal distances from one another and outstanding from one of the faces of the wheels. This set of grooved wheels will hereinafter sometimes be called and referred to as the "pin-wheels." Running in the grooves of the wheels *g g'* are cords, wires, bands, or equivalents *k*, to each end of which are attached the competitors *f*, there being two or more competitors to each cord or equivalent, each cord and its competitor forming practically an endless combination. Between the competitors on each cord or equivalent may be weights *l* to keep the cords in position when the duplicate competitors are on opposite sides of the grooved wheels.

At each end of the apparatus is a shaft extending across from front to back below the level of the course *a*. On one of these shafts *m* are as many sprocket-wheels *o* as there are grooved wheels *g*, and these sprocket-wheels are arranged to run between the grooved wheels *g*. On the other shaft *n* are the same number of sprocket-wheels *o'*. The sprocket-wheels *o* are all of different diameters and rigidly attached to the shaft *m*, and the sprocket-wheels *o'* are all of equal diameter to one another and loose on their shaft *n*. Around the sprocket-wheels *o o'* are passed chains *p*, each of which has (along that side of it which will run nearest the pins on the pin-wheels *g'*) a number of upstanding teeth or points *q*, Fig. 10, arranged at irregular intervals and of such length that as the chains *p* pass around the sprocket-wheels *o o'* the points *q* will strike the pins *j* and give intermittent motion to the grooved wheels *g'* and (through the cords or equivalents *k*) to the other wheels *g*, and consequently to the competitors *f* on the said cords or equivalents. It is intended that the sides of the teeth *q* should strike the pins *j*; but as in some positions the points (instead of the sides) of the teeth *q* may come against the pins *j* and impede the motion I provide that the ends of the axles *h'* of the pin-wheels *g'* shall run in slotted bearings *r*, which incline somewhat downward from the adjacent end of the apparatus, by which arrangement the axle *h'* and the pin-wheels *g'* will "give" a little and so permit the points to pass easily. On the shaft *m*, carrying the rigidly-attached sprocket-wheels *o*, is another sprocket-wheel

s, over which passes a comparatively-short chain, carried also by a sprocket-pinion *t* on a spindle *u*, situated toward the center of the length of the apparatus. On the spindle *u* of the said sprocket-pinion *t* is a sprocket-wheel *v* of greater diameter than pinion *t*, and over this wheel passes a chain *w*, which also goes around a sprocket-pinion *x* on a spindle *y* protruding through the front part of the apparatus and provided with a handle *z* for working the race.

Near the front end of shaft *m* and close to the inside of the front of the apparatus is fastened a wheel A, having in its periphery a pocket or recess B, the edge of the wheel A being free to revolve as close as possible to the bottom of the coin-chute C, one side of which is left open, so that the coin can escape after the handle *z* has been turned sufficiently to "free" the apparatus. The size of the pocket B is such that it will allow a coin of the proper size to free the apparatus to project beyond the periphery of the wheel, as at D, while coins of less size will fall completely in the pocket and not project beyond the periphery of the wheel A. A coin-drawer E is provided to receive the coins thrown out of the pocket B when the apparatus is "freed."

In order to retain all the competitors *f* in a line previous to the commencement of the race and to release them for the race by the action of the coin, I make the following provisions: Passing across the apparatus at the line from which the competitors are to start I provide a bar F, Fig. 7, having return ends G G′, which are pivoted to the front and back of the apparatus by a rod H passed through and attached to them at about the center of the length of the return end G′, measured from the bar F, the ends of H protruding through G G′ and being free to work in bearings provided at the back and front of the apparatus. One, G′, of the return ends is somewhat prolonged, and behind this prolonged end I provide a rod J, extending across the apparatus from back to front and free to turn in bearings K, one at each end. On the rod J is a pawl or projection L, extending so as to be above the prolonged end G′. On the rod H and near the front end thereof is a downward-pointing arm M, which is in contact with a pin N, projecting from the arm O of the bell-crank lever, pivoted at P and having its other arm Q normally in contact with the periphery of the coin-wheel A, already mentioned. Between the pawl L and the front end of the rod J and attached to the under side of the rod J is a strip of flat material R of appreciable width.

In assembling the various parts together I so arrange that when there is no coin at all or no coin of proper size in the pocket B of the wheel A the pawl L is turned up above and free of the top of the prolonged end G′ of the cross-bar F, thus allowing the bar F to come below the tops of the competitors *f* and prevent their starting until all are in line with one another. The competitors *f* are mounted on a bar S, Figs. 8 and 9, which has side lugs T to run along the upper face of the race-course. Below the bar S are pins U, which run in the slots *b*, and under the pins U are the legs V, having side lugs W to run on the rims X of the grooved wheels *g g′*. The ends of the portions of the cords or equivalents *k* are attached to the runners by passing the ends through holes in the legs V, which are prolonged below the side lugs W, as at Y, and knotting them behind, as at Z. The weights for keeping the cords in adjustment, as above mentioned, may be of the same construction as the competitor runners, but without the figures of the competitors. The handle *z*, by which the apparatus is set in motion, is arranged so as not to operate the apparatus when turned the wrong way. To insure this, I provide a ratchet-clutch A′ A², Fig. 5, the handle *z* and the first part A′ of the clutch being attached to the spindle *y*. Free to slide on the said spindle *y* is the second part A² of the clutch, integral with which is the sprocket-wheel *x*, the disk B′, and the prolonged part C′, on which prolonged part is free to move longitudinally the washer D′ of considerable thickness, which is kept in contact with the bracket E′ (carrying the inner end of the spindle *y*) by a spiral spring F′. The prolonged part C′ is not of sufficient length to touch the bracket E′ until forced into D′ by the reverse action of the handle *z* acting on the second part A² of the clutch. By this arrangement when the handle *z* is turned the right way the clutch, spindle, and sprocket-wheel X all go around together. When, however, the handle is turned the wrong way, the movement on the spindle of the parts which are loose thereon prevents any motion being communicated to the racing parts.

I sometimes omit the pins *j* from the grooved wheels *g′* and put them around a disk G′, which is kept against the face of the wheel *g′* by a spring H′, acting between the disk G′ and a collar J′ on the axle *h′*.

The action of the apparatus is as follows, assuming that all the competitors *f* have been brought into line by the bar F being below the heads of the competitors, and consequently also preventing them from starting on the race: A coin of the proper size being dropped down the chute C will pass into the pocket B and protrude therefrom, as already mentioned. As the handle *z* is continued to be turned the coin D will come into contact with the arm Q and lift the bar F above the heads of the competitors by the action of the arm O on the arm M. The continued operation of the handle *z* will cause the competitors *f* to race one another by irregular movements given to them by the actions of the cords, sprocket-wheels, chains, and pin and grooved wheels, and the irregular motion will destroy all certainty as to which competitor or competitors will win. When the coin has operated the bell-crank lever and released the competitors by raising

the bar F, the return end G' is held in position by the pawl L and so retained until any one of the competitors strikes the strip R, and which each must do before reaching the bar F. The striking of R having taken place, the pawl is again raised and the bar F allowed to resume its normal position for alining the competitors for the next race, and so on.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a coin-freed race game a course having therein a number of longitudinal and parallel open-ended slots; runners to pass along the said slots; figures of competitors on the said runners; cords or equivalents carrying the said runners in duplicate and forming therewith an endless combination; grooved wheels to carry cords and runners; axles to carry the grooved wheels loosely thereon; sprocket-wheels rigidly attached to a shaft at the starting end of the apparatus, the said sprocket-wheels being situated between the said grooved wheels; sprocket-wheels loose on a shaft at the goal end of the apparatus; endless chains passing over the said sprocket-wheels; upstanding teeth attached at irregular intervals to one side of each of the said chains; pins outstanding from one face of each of the grooved wheels at the goal end of the apparatus to engage with the said upstanding points on the chains; slotted bearings to carry the ends of the shaft having on it the pin-furnished grooved wheels; a wheel on the axle carrying the rigidly-attached sprocket-wheels; a coin-pocket in the periphery of the said wheel; a bell-crank lever operated by contact with a coin passed into and protruding from the coin-pocket; a coin-chute to receive the freeing coin; means for alining the competitors at the commencement of the race: means for releasing the competitors by the action of the said bell-crank lever: a handle for operating the apparatus: a driving sprocket-wheel on the axle carrying the rigidly-attached sprocket-wheel operating the teeth-provided chain: and chain-gearing for acting on the said sprocket-wheel: the whole substantially as described and illustrated.

In testimony whereof I have signed my name to this specification in the presence of two witnesses.

CHARLES MIDDLEBROOK.

Witnesses:
JOSH. D. WATTS,
ARTHUR CARRICK.