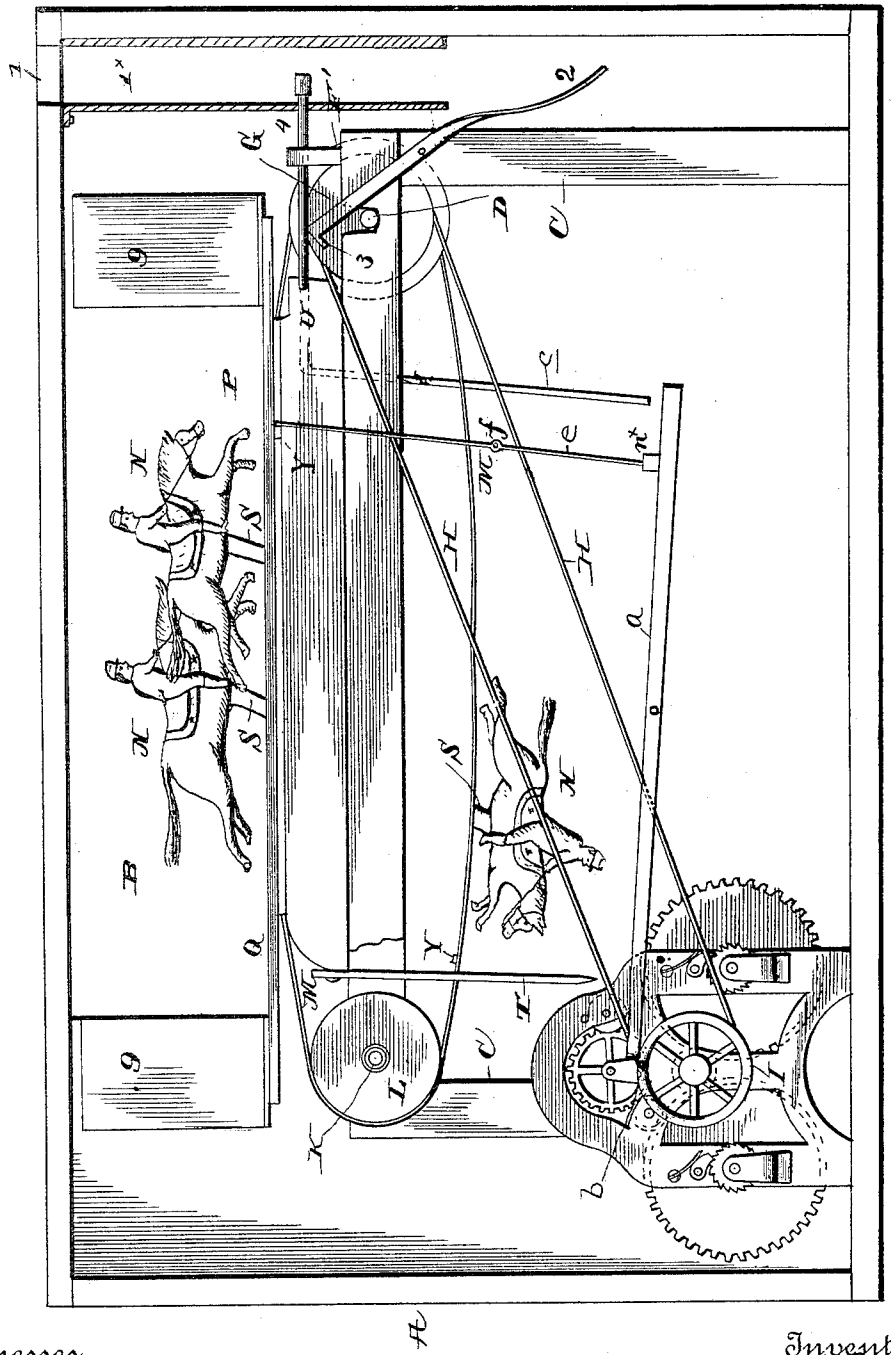
(No Model.) 3 Sheets—Sheet 1.

E. J. LUMLEY.

TOY HORSE RACE MACHINE.

No. 433,012. Patented July 29, 1890.



Witnesses

G. W. Taubenschmidt.

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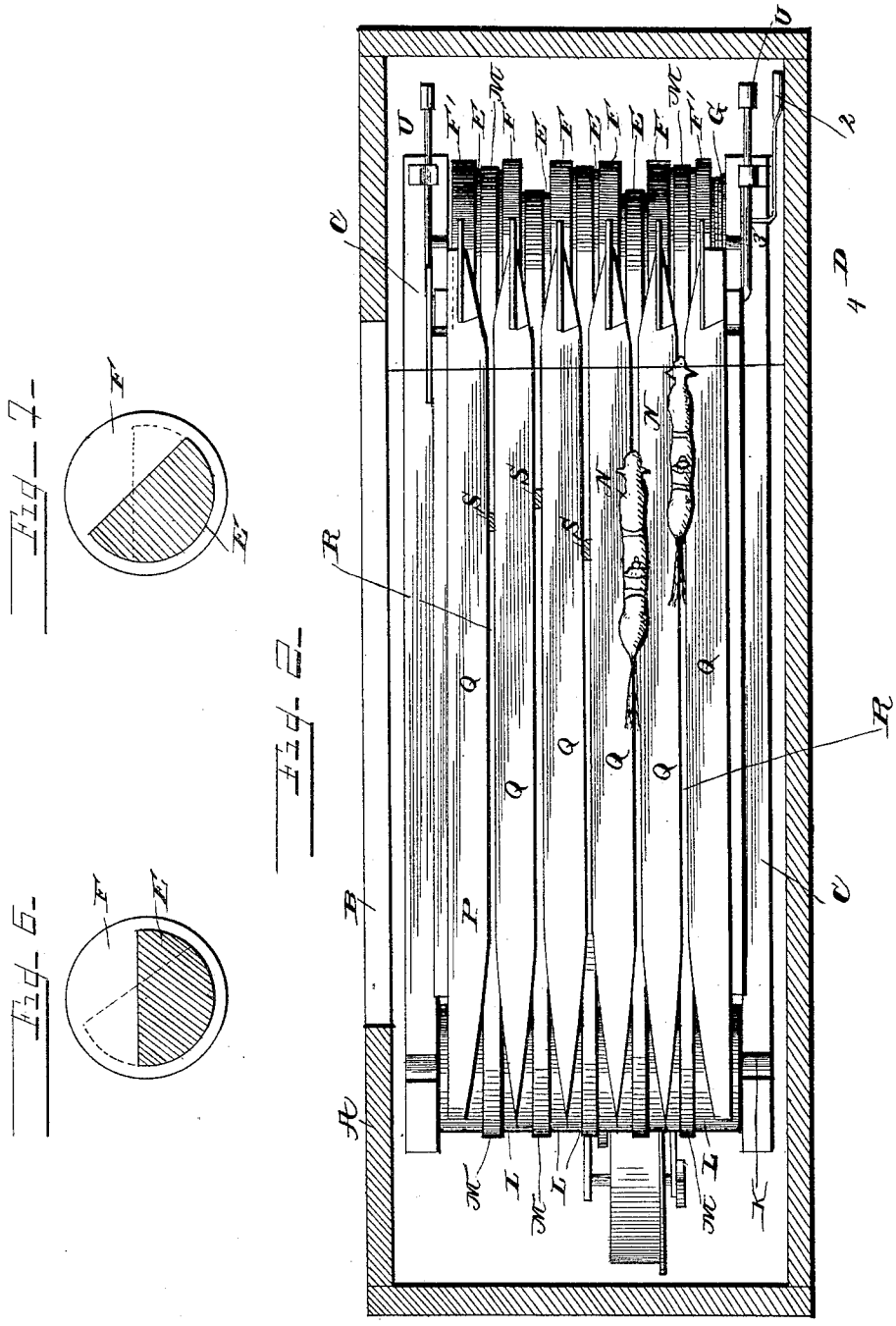
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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

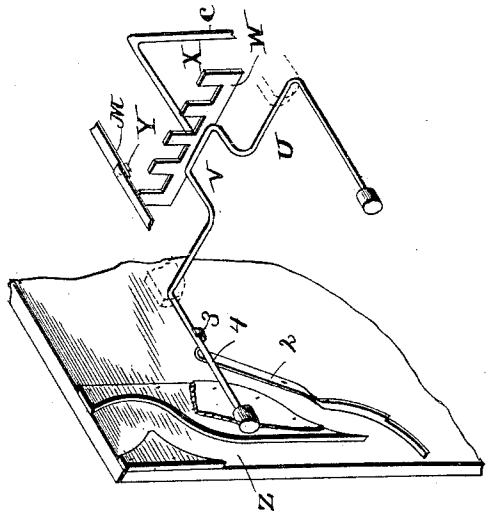


Fig. 5.

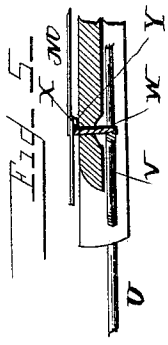
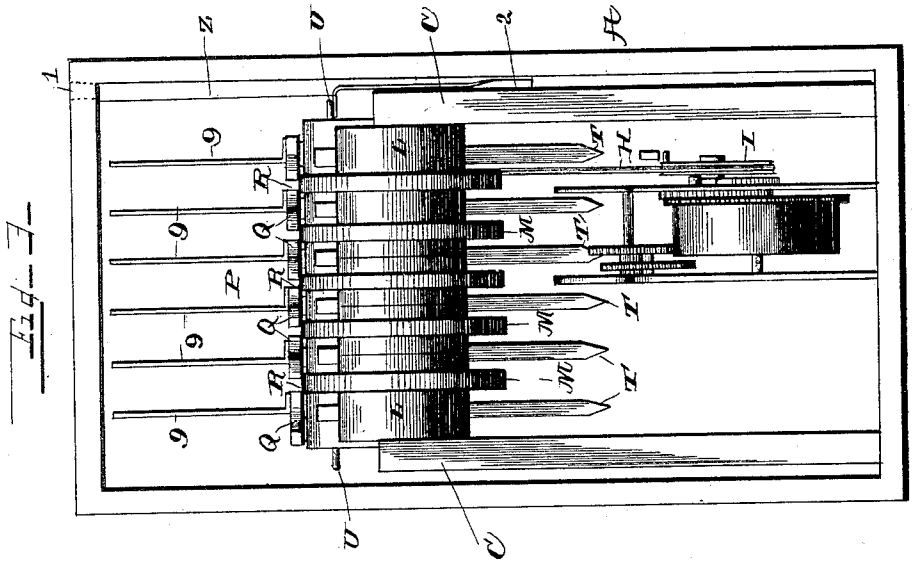


Fig. 1.



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UNITED STATES PATENT OFFICE.

EDWIN JOHNSON LUMLEY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO GEORGE McGOVERN, OF RICHMOND, VIRGINIA.

TOY HORSE-RACE MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,012, dated July 29, 1890.

Application filed August 13, 1889. Serial No. 320,643. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JOHNSON LUMLEY, a subject of the Queen of Great Britain, and a resident of Washington, in the District of Columbia, have invented a new and useful Improvement in Toy Horse-Racing Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to automatic toys, the driving mechanism of which is first wound to impart motion to a set of endless belts provided with inanimate figures, preferably horses mounted by riders in colors, and provided with a starting and stopping mechanism, the starting mechanism being arranged to be set in operation by dropping a five-cent nickel-piece into a slot at the top of a guideway, which guideway conducts the nickel to the power end of a starting-lever and trips said lever and permits the driving mechanism to unwind and propel the endless belts and the figures secured thereto in imitation of a horse-race or of a walking-match, as the case may be; and the invention consists in the construction and novel combination of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is an elevation of the toy, showing the internal mechanism for driving the endless belts provided with the figures in imitation of mounted riders. Fig. 2 is a horizontal lateral sectional view viewed from above the endless belts and riders. Fig. 3 is an end view taken from that end of the toy which is provided with the driving-gearing, the end plate of the casing being removed to show the internal mechanism. Fig. 4 is a detail view showing the weighted rocking lever, the guideway, and the tripping-lever. Fig. 5 is a sectional detail view of a portion of the tripping mechanism. Figs. 6 and 7 are sectional views in detail, showing one of the deflecting-guides E and a disk F, the guides being in section.

Referring by letter to the accompanying drawings, A designates the inclosing-box, which is provided in its front face with a view-opening B, which is preferably covered with glass to prevent accidental or intentional interference with the internal mechanism of the toy.

C is a frame, which is located within the external casing, and is provided at one end with a shaft D, which shaft is provided with a set of integral irregularly-arranged laterally-deflecting guides E, five or more in number, or less, if need be, said deflectors being separated by integral disks F, and also bounded near the ends of the shaft by similar disks F′, and at one end being provided with a pulley G to receive a driving cord or belt H, which latter runs from the pulley G on the shaft D to a pulley I on the driving-shaft of the propelling mechanism.

The segmental belt deflectors or cams are designed to alternately engage with the belts M to tighten and loosen them at proper times during the race, thereby giving intermittent fast and slow movements to the said belts.

At the opposite end of the supporting-frame C from the driving mechanism is a shaft K, which is provided with a set of belt-pulleys L, corresponding in number with the number of deflectors E on the shaft D to receive the endless belts M, which latter are provided with the mounted figures N.

The roadway or race-track P consists of longitudinal strips Q, having parallel spaces R between them, through which spaces R project standards or supports S, to the upper ends of which the figures—such as horses or pedestrians—are secured in any suitable manner. At its rear end the roadway is provided with a number of depending fingers T, which serve as guides for the endless belts or carriers and keep said belts separated during the operation of the toy or machine. At its front end and upon the lower side of the same the raceway is provided with a rock-shaft U, having a forwardly-projecting angular bend or finger V at its middle portion, to which bend or finger V is secured a toothed bar W, the teeth X of which project upwardly from the base or body of said bar W and are designed normally to engage stops or projections Y on the inner faces of the

endless belts M to stop the endless belts, and consequently the images thereon each time the figures or images have made a circuit of the track or raceway.

A guideway Z extends down from the pay-slot 1, in the top of the inclosing-case near the front end of the latter, and a trip-lever 2 is fulcrumed to the side of the casing within said slot, and is provided at its upper end with an inwardly-projecting bend 3, which normally is in engagement with the adjacent arm 4 of the rock-shaft U. The lower end of the trip-lever 2 normally closes the lower end of the guideway Z, and said lever is designed only to be tripped by a five-cent nickel-piece when the latter is dropped into the slot at the top of the inclosing-case. In descending within the guideway, the nickel-piece strikes the projecting end of the trip-lever 2 and depresses it, causing the said lever to raise the arm of the rock-shaft, with which said lever is in engagement, said movement of the lever causing the toothed bar W to be depressed and the several endless belts to be released therefrom so that the driving mechanism will set the several endless belts in motion, thus starting the race. After the lever 2 has been thus tripped and the nickel has passed below it said lever immediately returns to its normal position, and the belts make one circuit of the track and are there stopped by the toothed bar W in the starting-position. Immediately in front of the starting-point the several tracks or courses are separated by several vertically-projecting fingers 9, behind which the figures or images disappear immediately after each start is made, and before which they are automatically stopped at the conclusion of each race by the toothed bar W on the weighted rock-shaft. In order to prevent the driving mechanism from running continuously, which would permit it to run down too soon, I provide a stop-pin, which stops the mechanism after the completion of each race, and is only started when the tripping-lever is again operated by another nickel striking it.

In order that the contests may take place more frequently than when each endless belt has only one image or contestant mounted thereon or secured thereto, I provide each endless belt with a second figure or dummy image, which is placed at such a distance from the first figure or image that when one of the figures or images is in view at the starting-point the other figure or image on the same belt will be behind the rear fingers 9 at the rear end of the raceway, which fingers are similar in construction to those shown at the front end of the raceway. The fingers serve to obstruct the view at the ends of the raceway, so that the contestants are only in view while passing the view-opening and cannot be seen by persons standing at either end of the view-opening. Furthermore, in order to prevent the driving mechanism from running constantly, which would permit the said mechanism to run down too frequently and would also require very frequent winding, I provide a stop mechanism, which stops the images at the termination of each race and at the same time permits the images to be brought up to the starting-line at the termination or conclusion of each race or contest. To accomplish this purpose or result, I employ a pivoted stopping-lever a, which is pivoted within the casing in front of the driving mechanism and beneath the raceway out of sight of the spectators and others. The pulley I is provided on its outer face near its rim with a stop-pin b, which is adapted to engage the rear end of the stopping-lever a when said rear end is lowered, and will be released therefrom when said rear end is raised, which latter effect is produced by the dropped nickel falling against or striking the lever 2, which operates the lever U and depresses the rod c, which operates the stopping-lever by depressing its power end, and thereby elevating its opposite or weight end, clearing the pin b on the stopping-wheel I and permitting the driving-gear to resume motion. A pivoted stop-rod e is employed in this connection and is fulcrumed on a transversely-disposed rod f, secured or seated at its ends in the sides of the encasement or in any other suitable manner below the course of the endless belts on which the figures or images are mounted or fixed. The upper end of the stop-rod e is designed to engage at the proper time the appropriate stop Y, as shown in Fig. 1, which, when the nickel is dropped in the slot 1 and falls through guideway $1^{\times}$, will be released by the weight of the nickel depressing the starting-lever, which will permit the driving-gearing to propel the figures or images until the belts have caused them to make one course across the view-opening and have brought the second or following set of images or contestants up to the starter's point on the raceway.

Referring again to the rod e, this rod is fulcrumed at f, as above stated, and its lower arm should be heaviest, so that by its own gravity it will normally assume the position shown in Fig. 1, its lower end impinging upon a boss $n^{\times}$ and its upper end being in alignment with a stop Y on an endless belt M, so that when such stop strikes the upper end of the rod e the lower end will be freed from the boss $n^{\times}$ on the stopping-lever a, thus allowing the heavier end of this lever to drop and engage with the stop b on the pulley I and check the driving-motor temporarily. When a nickel is dropped into the casing of the device, its weight causes the flattened limb of the lever 2 to preponderate and the opposite bent portion 3 to raise one portion of the bifurcated lever U, thereby depressing the opposite portion, together with the toothed bar W thereon, and releasing the teeth of this bar from the several stops Y on the endless belts M, thus allowing these belts to start again.

In the meantime the stop-rod *e* will have assumed a position to be acted on, as above described, by a stop on an endless belt M.

It will thus be seen that in the operation of my race-course toy I have provided, first, a motive power therefor which can be wound up at pleasure; second, that when a piece of money of a proper weight is dropped into the slot it will start the device and allow the same to give a revolution to the tapes or endless belts. The belts traverse their courses independently of each other, and it is impossible to determine before the start which horse or figure will reach the goal first. As every belt is provided with a stop Y, arranged just in front of the figures, and as each stop Y is arrested by a tooth on the bar W, all the belts will be similarly arrested when the last stop Y is brought into transverse alignment with the other stops, the stop-rod *e* will be disengaged from the boss $n^{\times}$ on lever *a* and allow the gravitating end of this lever to drop and engage with the stop *b* on the pulley I, thus preventing further movements of the device.

It will be observed from the following description of my toy racing-machine that I employ any suitable number of figures fixed to independent endless belts actuated by clockwork mechanism or other suitable motive power, and that I combine with this mechanism certain devices which will give movements to the endless belts to which the figures are attached. It will also be seen that I employ certain bars or vertical portions 9 to indicate the starting or passing "posts" for the figures; also, that I employ, in combination with rotative belt-drums, certain deflectors on the shaft of this drum, devices by means of which, when a nickel is dropped into the casing, the weight of this nickel will start the mechanism and the figures will perform their revolutions in exact imitation of a race.

I do not claim the combination, with a figure and guiding devices for directing its movements in an orbital path, of a rotating driver forming part of the motor device, an intermitting impelling mechanism intermediate the driver and figure, and a starting and stopping mechanism; nor do I claim the combination, with the figures and the guiding mechanism therefor, of intermitting impelling mechanism for each figure for alternately releasing and re-engaging the latter, a motor device operating said impelling mechanism, and a detent mechanism controlling the starting and stopping of said motor device.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the inclosing-case provided with a view-opening and a coin-slot, of the shaft provided with deflectors separated by disks and having at one end a pulley, said shaft provided with belt-pulleys, the spaced roadway above said shafts, the endless belts mounted upon said deflectors and pulleys and provided on their outer faces with images or toys representing contestants in a race, driving mechanism, substantially as described, a rock-shaft provided with a toothed-bar and weighted arms; and a tripping-lever engaging said rock-shaft normally and projecting below a guide-way where it may be tripped by dropping a nickel upon it and caused to operate the rock-shaft to release the endless belts and permit them to be set in motion by the driving mechanism, substantially as specified.

2. The combination, with the inclosing-case and the spaced raceway, the depending fingers near one end thereof and the upwardly-projecting blinds at the other end thereof, of the shaft at one end of the raceway provided with irregularly-disposed deflectors thereon separated by disks, a shaft at the other end of the raceway provided with belt-pulleys, the endless belts provided with images of contestants and mounted on the deflectors and belt-pulleys, a band connecting a pulley on the driving-shaft with a pulley on shaft of the irregularly-disposed deflectors, winding-gearing connected with the driving-shaft, a rock-shaft provided with a toothed bar and weight-arms, and a trip-lever engaging the arm of the rock-shaft and projecting into the guide-way beneath the drop-slot in the top of the inclosing-case, substantially as specified.

3. The combination, with the spaced roadway having beneath it at one end the shaft provided with irregularly-disposed deflectors and at the other end the shaft provided with belt-pulleys, of the endless belts mounted on said deflectors and pulleys and provided with figures representing contestants in a race, and stops for engaging a toothed bar, the cranked rock-shaft having the toothed bar secured to the bend at its middle portion and having weights at the ends of its arms, and the tripping-lever engaging one of the arms of the rock-shaft and projecting beneath the guide-way leading from the drop-slot, substantially as specified.

4. The combination, with the spaced raceway provided with the separating-blinds in front of the starting-line and the depending fingers near the rear end of the raceway, of the shaft provided with irregularly-disposed deflectors, the shaft provided with disk-pulleys, the endless belts provided with contesting figures, the weighted rock-shaft provided with the toothed bar, and the tripping-lever engaging the rock-shaft and projecting into the guideway beneath the drop-slot, substantially as specified.

5. The combination, with the spaced raceway, of the shaft provided with irregularly-disposed deflectors and a pulley, the shaft provided with the belt-disks and a pulley on the main shaft of the driving mechanism, a band connecting said pulley with a pulley on the shaft provided with the deflectors, the tripping-lever engaging the rock-shaft, and a stop on the main shaft of the driving-gearing, substantially as specified.

6. The combination, with the raceway, the

mounted endless belts provided with figures or images representing contestants in a match or race, of driving or propelling mechanism connected by an endless belt with a deflector-shaft engaged by each of said endless belts, a stopping-lever engaging a pin on the pulley-wheel of the driving mechanism, a stop-rod connected with the weighted rock-shaft, and a fulcrumed rod or lever disposed so that its ends may engage both a stop on the inner face of one of the endless belts and an anvil on the upper face of the stopping-lever, substantially as specified.

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