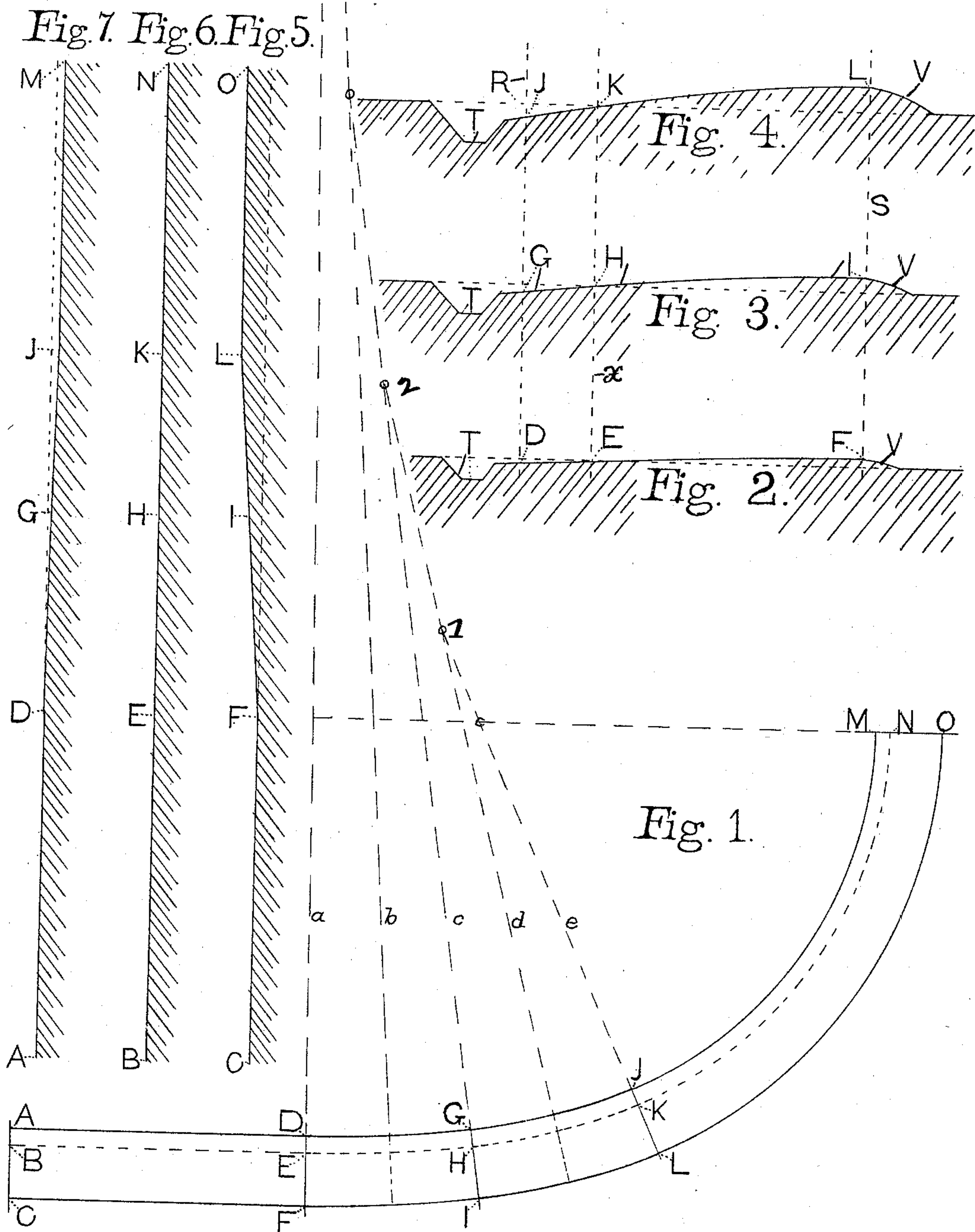


(No Model.)

R. A. HOWARD.  
RACE TRACK.

No. 475,769.

Patented May 31, 1892.



Witnesses.

*M. J. Oulin*  
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*Atty*



# UNITED STATES PATENT OFFICE.

ROBERT A. HOWARD, OF RICHMOND, INDIANA.

## RACE-TRACK.

SPECIFICATION forming part of Letters Patent No. 475,769, dated May 31, 1892.

Application filed December 14, 1891. Serial No. 414,975. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT A. HOWARD, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Race-Tracks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of race-tracks used for speeding horses.

The object of my invention is to facilitate the passage of the animal in traversing that portion of the track leading from the straight into the curved section.

My invention consists in connecting the straight with the curved portions by a combination-curve composed of a series of curves of radii greater than the circle of the track proper, converting the line of travel of the animal from a straight line on the side to the circle at the end by a constantly-increasing curvature until it coincides and harmonizes with the end circle.

In the drawings, Figure 1 represents a plan view of one-quarter of a regulation race-track. Fig. 2 is a cross-section of the surface of the track at the point of beginning of the combination-curve. Fig. 3 is a cross-section of the same about midway between the commencement of the combination-curve and its junction with the end circle. Fig. 4 is a cross-section of the same at the point where the combination-curve joins the end circle. Fig. 5 represents a profile or longitudinal section of the outer edge of the whole length of Fig. 1. Fig. 6 represents a profile or longitudinal section, shown in dotted lines, between the outer and inner edge of the track the whole length of Fig. 1. Fig. 7 represents a profile or longitudinal section of the inner edge of the track the whole length of that part shown in Fig. 1.

In Figs. 5 and 7 the dotted lines show the horizontal surface-line.

In Fig. 1 the line A D G J M represents the inside boundary of the one-fourth of a regu-

lation-track. The line C F I L O represents the outside of the same. The dotted line B E H K N, nearer the inner than the outer line of the track, represents the axis of the plane of deviation of the surface of the track in its cross-section from a level line.

The first degree of deviation or pitch is seen at D F, Fig. 2, where the surface of the outer edge shows a rising incline from the inner edge in a slight degree. A further and greater pitch or deviation in Fig. 3 is shown at G H I with its axis at  $x$ , showing the inner end of incline depressed below the surface, and the outer end of the incline is elevated more than in Fig. 2, which is also shown in Fig. 5. A still further and yet greater pitch or deviation is shown in Fig. 4, which is the point of junction with the end circle of the track where the inner end of the incline is still lower and the outer end of the line of the incline more elevated than in Fig. 3, as seen at L, Fig. 5, and at J, Fig. 6.

In Fig. 1,  $a$ ,  $b$ ,  $c$ ,  $d$ , and  $e$  represent the radii of the curves which form the combination by which the axis of deviation is given a regularly-increased curvature from a straight line at B E to the arc of the circle K N. The combination of the compound curve above described with the increasing dip or pitch of the cross-section plane of the surface of the track enables the animal going at a high rate of speed to accommodate itself to the slight change from the straight line of its course without interfering with or changing its stride or speed, while the incline of the surface of the track from circumference to center in easy gradation permits the animal to overcome the effects of the centrifugal force of its speed and at the same time have the angle of inward inclination of the animal's body at right angles with the dip or pitch of the track, thus insuring firm tread and proper footing. The change from a straight line to a curved one is so delicate and gradual and the dip or pitch of the cross-section lines made to conform so nicely to the changing curve that neither the animal nor the driver seems to be conscious of the point where the dip or curve begins and the sudden transition from a straight line to a circle, which is found in the present style of regulation-tracks, is done away with.

T T T, Figs. 2, 3, and 4, represent a ditch or



drain for carrying off surface water and located just inside the fence bounding the inner edge of the track.

V V V represents rounded embankments thrown up against the outer edge of the track to sustain the same and hold it in position.

The dotted line R represents the fence on the inner edge of the track and the dotted line S represents the outer fence inclosing the track. The radial lines *e* and *d* terminate at 1, Fig. 1, and the line *c* terminates at 2, Fig. 1, and the lines *a* and *b* terminate in the distance, as indicated by their convergence.

The common acceptation of a regulation-track is that it shall be formed of straight sides and semicircular ends and shall measure one mile in its circumference on a line three feet from the inside edge of the track. My improvement is adapted to the construc-

tion of this kind of track as well for a half-mile track as for a full mile.

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

1. In a race-track, the increasing compound curve of the track D G J, in the manner and for the purpose as herein set forth.

2. In a race-track, the combination of the ditch T, the dip or pitch D L, and the compound curve D J, constructed and operating in the manner and for the purpose substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT A. HOWARD.

Witnesses:

W. T. DENNIS,  
W. I. DULIN.