June 6, 1950 W. R. MILLS 2,510,828

STARTING GATE FOR HORSE RACES

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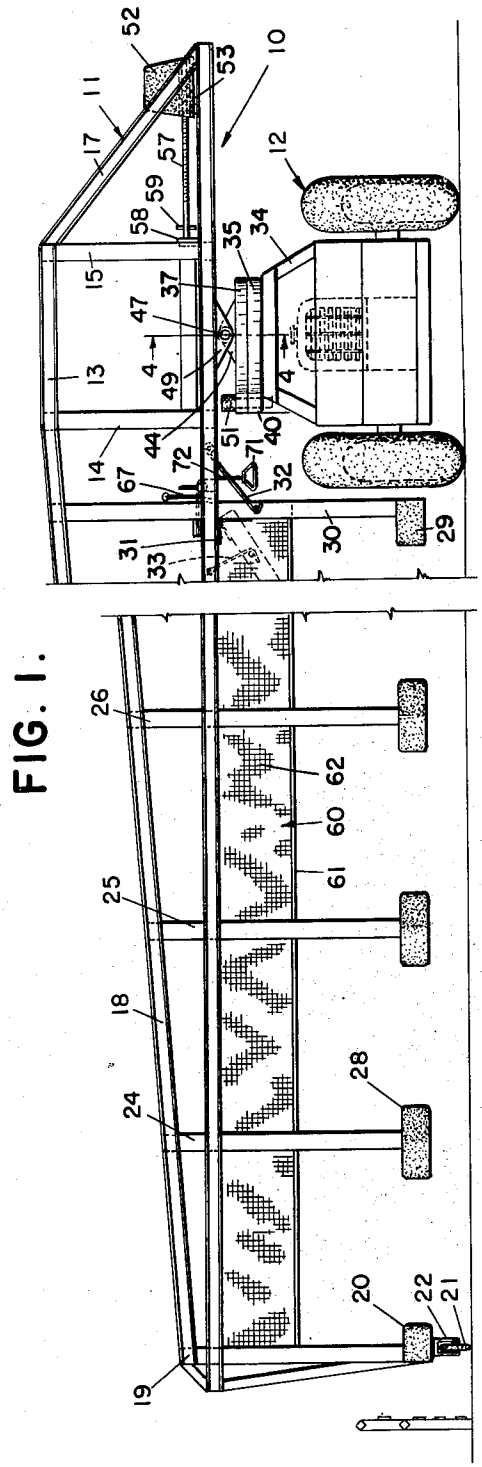


FIG. 1.

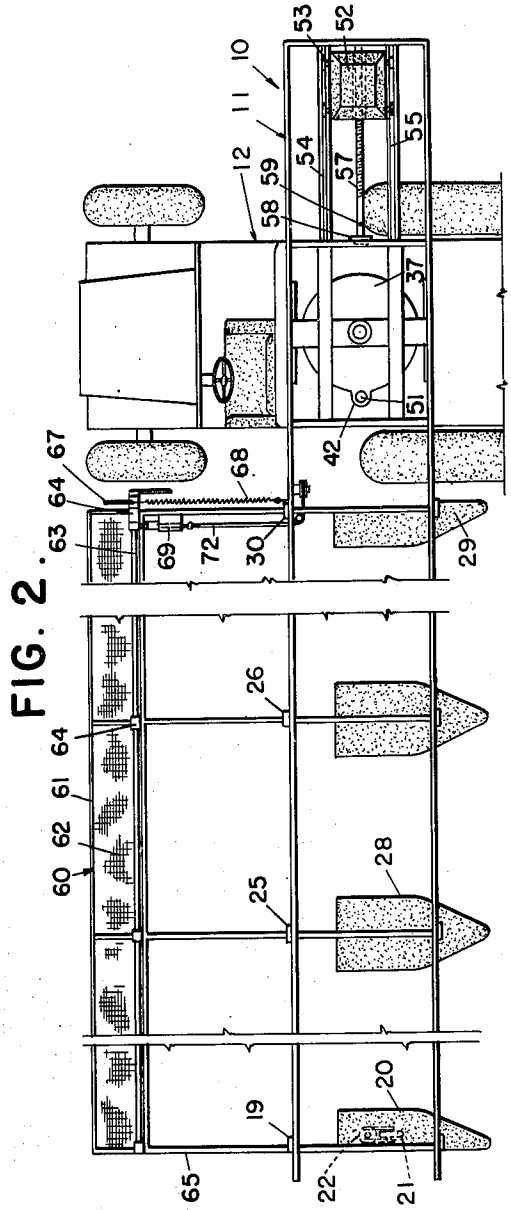


FIG. 2.

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FIG. 3.

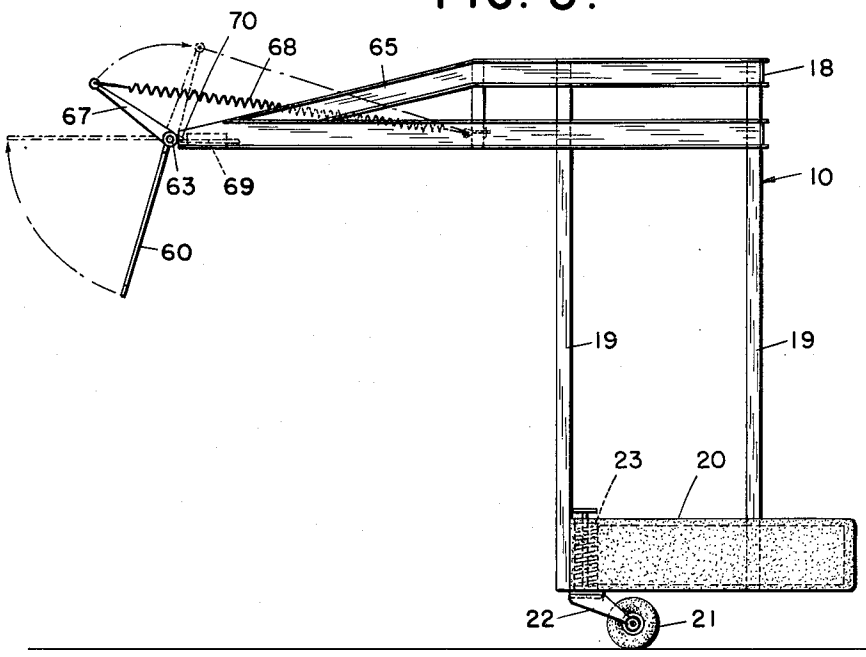


FIG. 4.

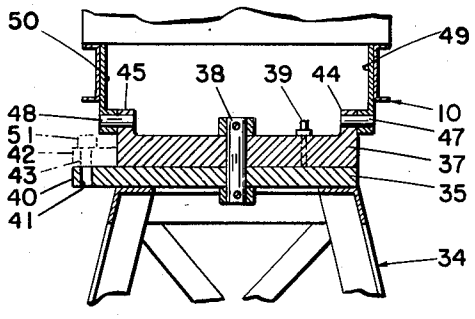


FIG. 5.

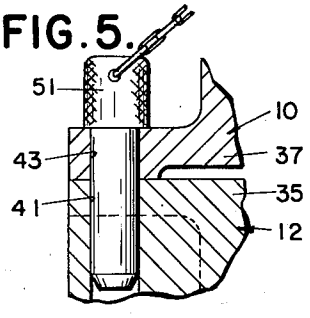
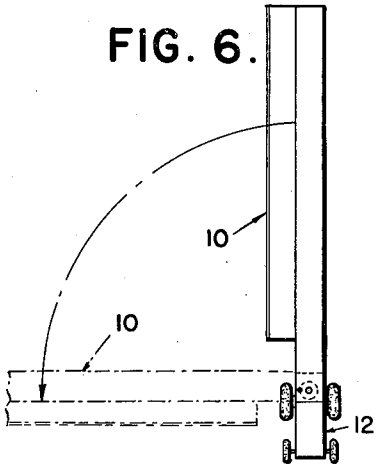


FIG. 6.



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STARTING GATE FOR HORSE RACES

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Application April 15, 1946, Serial No. 662,221

15 Claims. (Cl. 119—15.5)

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The present invention relates to a starting device for horse races and has reference more particularly to a starting device which is adapted for the starting of either harness or running horse races. A principal feature of the present starting device is that it permits the horses to be started from a moving condition.

Due to the singleness of purpose which race horses exhibit prior to the start of a race, a moving start permits a fairer and more spectacular start, and at the same time is less detrimental to the horses. The benefit to the horses of a moving start accrues from getting them into motion gradually, so that when the barrier is sprung there is no need for the powerful forward surge which attends a standing start, resulting frequently in strains and injuries. In the case of a moving start, as provided by my present starting device, the attention of the horses is directed toward the movement, and the starting strain is greatly lessened.

Various types of starting devices have been developed for horse racing in attempts to insure that all of the horses in the race will get away to an even start. However, most of these starting devices are unsatisfactory in that they are so large that they require permanent installation on a track, and are so costly that only the larger and wealthier tracks are able to afford them. Furthermore, most of them are not adapted to getting the horses off to a moving start.

An object of the present invention is to make an improved device for starting horse races with a moving start.

Another object is to make an improved device for starting horse races with a moving start whereby a principal portion of the weight of the starting device is fulcrumed on a motive vehicle, a minor portion of the weight of the device being adjustably supported on a stabilizing support wheel adapted to roll along a race track.

Another object is to make a device for starting horse races with a moving start wherein one end of the starting device is adapted easily to be rolled into and out of starting position on a race track, adjustable means being provided to shift the center of gravity of the device, thereby to control the stability of a track traversing portion of the device.

Another object is to make a track traversing horse race starting device with a transported end, and a track traversing end, the device having weight adjusting features for varying the supported weight of a track traversing end of the device for minimizing damage to the track and for adjustably stabilizing the device.

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In general the device of the present invention comprises a horse race starting device having a framework with one end thereof fulcrumed on a pivoted support on a motor vehicle, the other end of the device being supported on a freely rolling pivoted stabilizing wheel support adapted to roll along a race track, the framework being adapted to align the horses for starting and to get the horses away to a moving start, and the center of gravity of the device being adjustable to vary the weight supported by the stabilizing wheel.

These and other features of the invention will be more fully set forth in the following description and the accompanying drawings, of which there are two sheets. In the drawings:

Fig. 1 is a view in rear elevation of a horse race starting device embodying the present invention, an intermediate portion of the device being broken away;

Fig. 2 is a partial plan view of the device illustrated in Fig. 1;

Fig. 3 is a left hand end elevational view of the device shown in Figs. 1 and 2, a barrier being shown in down position in solid lines, and in sprung position in dotted lines;

Fig. 4 is an enlarged fragmentary sectional view taken as on the line 4—4 of Fig. 1, showing a lockable pivotal fulcrumed connection between the starting device and a transporting motor vehicle as the parts would appear with the starting device in trail behind the transporting vehicle;

Fig. 5 is an enlarged fragmentary view of the locking pin and pivotal disc connection as it would appear with the starting device locked in starting position relatively to a transporting vehicle; and

Fig. 6 is a diagrammatic view showing, in solid lines, the starting device in trail behind a transporting vehicle, and, in dotted lines, locked in position for starting a race.

Referring to the drawings in detail, a rectangular frame 10 may be constructed of wood, or light structural metal, a truss 11 being provided above the longitudinal front and rear members of the frame 10 to add necessary strength and rigidity to the frame. The truss 11 comprises horizontal upper truss members 13 and vertical members 14 and 15, which connect the ends of the upper truss members 13 to the frame 10.

Diagonal truss bracing members 17 extend from an end of each of the horizontal truss members 13 to an end of the frame 10 which is fulcrumed on a motor vehicle such as a tractor 12.

From the other end of the horizontal truss members 13, diagonal truss members 18 are connected to a vertical member 19 mounted on a wheel 21 on the opposite end of the device from the tractor 12. The vertical support member 19 extends downwardly below the frame 10 and has a stall, or guide member 20 secured to its lower end. The guide member 20 comprises a wooden or metal frame suitably padded, as with felt, and covered with canvas to prevent the horses from injuring their legs when in starting position in the device.

The wheel 21 which provides a stabilizing support for the end of the device remote from the tractor 12 is mounted in a castored bracket 22, as best illustrated in Fig. 3. The bracket 22 is slidably mounted for limited vertical movement relatively to the member 20 and is provided with a coil spring 23 held in compression between the bracket 22 and the frame of the member 20, resiliently to support the device on the wheel 21.

A plurality of intermediate vertical stall or guide supports 24, 25 and 26 may be secured to the diagonal truss member 18 and to the frame 10. These guide support members extend downwardly the same distance below the frame 10 as the vertical member 19, and each of these frame members 24, 25 and 26 has a stall or guide member, such as the member 28, mounted on the lower end thereof.

It will be noted that the guide member 20 is similar to one-half of the member 28, as divided by a vertical median plane from front to rear thereof. The type of guides illustrated in Figs. 1 and 2 are particularly suitable for use in starting trotting or pacing races, since the tapered rear ends of the guide members act to cam or guide a horse and sulky into a starting stall between adajcent pairs of the guide members. Plain stall divisions, such as slats or wire fencing, not illustrated, or no stall divisions at all may be desirable for some uses, for example in starting some running races or steeple chases. Since such devices can be readily devised by an ordinary workman, it is believed unnecessary to illustrate or describe them in further detail.

A second end guide member 29 similar to the member 20 is mounted adjacent the tractor 12 on a support member 30 which is hingedly connected, as at 31, to the frame 10. A securing device, such as a hook 32, is provided to hold the support member 30 in the vertical solid line position of Fig. 1 during the starting of a race, and a second such device, such as a hook 33, is provided to hold the support member 30 in the angularly outward position illustrated in dotted lines in Fig. 1. The support member 30 is retained in the latter position when a transporting motor vehicle, such as the tractor 12, is to be swung pivotally in a horizontal plane relatively to the frame 10.

The fulcrum and driving support for the starting device comprises a frame 34, which may be of structural steel, mounted on a motor vehicle such as the tractor 12. A disc 35, which may be of cast iron or steel plate, is mounted horizontally on top of the frame 34. A second disc 37 is superposed in registering position on the disc 35 and is connected pivotally to the disc 35 by a pivot bolt 38. A lubricant fitting 39 may be mounted in a hole extending through the upper disc 37 to permit the injection of lubricant between the contacting faces of the upper and lower discs.

A pair of upwardly projecting bosses 44 and 45 are provided on the opposite sides of the upper

disc 37. These bosses 44 and 45 are connected by pivot pins 47 and 48, respectively, to a pair of frame members 49 and 50 (see Fig. 4) secured to the frame 10 to project downwardly therefrom.

The lower disc 35 has a laterally projecting boss 40 (see Fig. 4) with a vertical hole 41 therethrough, and the upper disc 37 (see Fig. 2) has a similar laterally projecting boss 42 with a similar hole 43 therein. The holes 41 and 43 are adapted to register with each other when the frame 10 is positioned at right angles to the longitudinal axis of the tractor 12, as shown in Figs. 1, 2 and in dotted lines in Fig. 6. A locking pin 51 is adapted to be inserted in the holes 41 and 43 to lock the tractor and the frame together in the right angle position as set forth above.

The stabilizing wheel 21 holds the fulcrumed starting device on a true and level course down the track as the device is carried along by the tractor 12 during the start of a race. The weight supported by the wheel should be light enough to prevent undue drag, but should be sufficient to hold the device steady on the track. The required adjustment of the weight supported by the wheel 21 for best performance varies with different tracks.

In order to permit adjustment of the weight supported by the wheel 21, means are provided to shift the center of gravity of the starting device relatively to its fulcrumed support on the tractor 12. The means illustrated for accomplishing this shifting of the center of gravity comprise a counterweight 52, which may be a cast block of lead or cement, mounted on a wheeled carriage 53. The wheels of the carriage are mounted in channelled tracks 54 and 55 and the body of the carriage is provided with a threaded opening therethrough to receive an adjusting member such as a screw 57. The inner end of the adjusting screw 57 is pivoted in a support plate 58 which permits rotation of the screw 57 and retains it against endwise movement.

An operating handle 59 is secured in position in the screw 57 to provide means for turning the screw so that the weight 52 may be moved inwardly or outwardly as desired on the channelled tracks 54 and 55. The fulcrum of the starting device is the axis of the pivot pins 47 and 48, so that by moving the weight 52 to the right, as illustrated in Fig. 2, the amount of weight supported by the stabilizing wheel 21 is lessened. By moving the weight inwardly toward the tractor, the amount of weight supported by the wheel 21 is increased. In this manner the amount of weight supported by the wheel 21 can be adjusted in accordance with the condition of the track on which the device is to be used, so as to provide suitable stability of the device without unduly increasing the drag on the wheel 21.

When the starting device is locked at right angles to the longitudinal axis of the tractor, as illustrated in Figs. 1 and 2 and by dotted lines in Fig. 5, the tractor is free for lateral tilting movement about the pivot pins 47 and 48 with respect to the frame 10 which may be caused by unevenness in the portion of the track traversed by the tractor 12 or the wheel 21. At the same time, the frame 10 will be held rigidly against fore and aft tilting movement relatively to the tractor by the pivot bolt 38 and the pivot pins 47 and 48.

When it is desired to transport the device other than in starting a race, the device is unlocked from the position illustrated in Figs. 1 and 2 by withdrawing the locking pin 51 from the holes 41

and 43. When the locking pin thus is withdrawn, the upper disc 37 is free to swivel about the pivot bolt 38, so that the entire starting device will follow the tractor in trail, as indicated in solid lines in Fig. 5.

When thus being towed in trail the axes of the pivot pins 47 and 48 will be normal to the longitudinal axis of the tractor, and thus will permit fore and aft tilting of the tractor due to unevenness of the ground. In such trail position the starting device will be held by the pivot pins 47 and 48 against lateral tilting relatively to the tractor. Lateral tilting of the device in conjunction with the tractor will be permitted, however, by the single wheel 21 which supports what is in this position, the rear end of the device.

Before moving the tractor forward after releasing the locking pin 51, the stall support member 30 adjacent the tractor is swung outwardly to the dotted line position illustrated in Fig. 1, and is secured in this position as by means of the hook 33 so as to permit free horizontal pivotal movement of the tractor relatively to the starting device.

A barrier 60 is mounted so as to be in front of the horses' heads prior to their release after a predetermined initial movement of the device along the track. The barrier comprises a rectangular frame 61, which may be of light tubular metal, with a covering 62 which may be of wire mesh, screen or other light material. The selection of this material will depend on whether it is desired to give the horses more or less freedom to see the track ahead of the starting device.

The frame 61 is secured to a shaft 63 which is pivotally mounted in brackets 64 on a laterally projecting frame portion 65 carried by the frame 10. An arm 67 also secured to the pivot shaft 63 has its outer end connected to a coil spring 68 which is held in tension between the outer end of the arm 67 and the projecting frame portion 65. A spring-pressed latch 69 is positioned to engage a dog 70 secured to the shaft 63 to hold the barrier 60 downwardly against the tension of the coil spring 68 in the position illustrated in solid lines in Fig. 3. A latch operating handle 71 may be connected to the releasing latch 69 by a cord 72. On releasing the latch 69 the coil spring 68 swings the barrier 60 outwardly to the dotted line position illustrated in Fig. 3, thereby releasing the horses for the start of the race. Barriers, of course, are not new per se, and various types of suitable electrical and mechanical latches and motivating arrangements are available for controlling their operation.

The operation of the starting device is as follows: When it is desired to transport the device from place to place, the locking pin 51 is withdrawn to permit free relative pivotal movement between the plates 35 and 37 about the pivot bolt 38. The vertical stall support member 30 is latched outwardly in the dotted line position illustrated in Fig. 1, after which the device will follow the tractor in trail and may be towed readily to any desired point; even, if necessary, along the highways.

When the device is to be used for starting a race it is towed onto the race track and the tractor is headed down the track in the direction of the start of the race. The starting device is swung to a position transversely across the track, either by manipulating the tractor or manually. The starting device is locked in position illustrated in Figs. 1 and 2 and in dotted lines in Fig. 5 and, if the device has not already been balanced for the particular track conditions existing at the time, the tractor, carrying the device in the right angle or starting position, is driven along the track in a manner simulating the start of a race. The position of the weight 52 on the tracks 54 and 55 is adjusted during such trial run to bring about the desired stabilizing effect by the castored wheel 21.

In starting a race, the starting device is positioned as illustrated in Fig. 1 with the barrier 60 in the down position illustrated in Figs. 1, 2 and in solid lines in Fig. 3. The horses are then driven or ridden, depending on the type of race, into starting position back of the barrier. The tractor then is started down the track carrying the starting device in the position illustrated in Fig. 1. The drivers or riders are permitted to keep their horses as close to the barrier as they desire and are able, and when the starting line is reached the barrier release handle 71 is operated to spring the barrier, thereby releasing the horses for the official start of the race.

After the horses have been released by springing the barrier, the tractor is stopped and the locking pin 51 may be withdrawn. As the tractor is again driven ahead, the starting device will move pivotally into trail position behind the tractor. The entire device may then be driven off the track so that the track will be clear for the finish of the race.

In case of power failure of the tractor after the horses have been released, the starting gate may be swung manually into the trail position behind the tractor so as to minimize the amount of obstruction of the track at the finish of the race.

While I have illustrated and described a specific, simple, hand operated means for adjusting the center of gravity of the starting device relatively to its fulcrum so as to vary the weight on the stabilizing wheel, this arrangement is capable of numerous ready modifications or mechanization by those familiar with the art without departing from the spirit of my present invention. Other modifications also will readily occur to those familiar with the art, and it is desired therefore not to limit the invention except as specifically defined in the following claims.

I claim:

1. A device for starting horse races in a moving start comprising a frame elevated to clear racing horses passing beneath it, a barrier operatively mounted on said frame, a stabilizing support at one end of said frame, a motor vehicle pivotally connected to said frame adjacent the other end of said frame from said stabilizing support, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to said motor vehicle axis, and means providing limited lateral tilting connection between said motor vehicle and the frame.

2. A device for starting horse races in a moving start comprising a frame elevated to clear racing horses passing beneath it, a plurality of stall divisions mounted to depend downward from said frame, a barrier operatively mounted on said frame, a stabilizing support wheel at one end of said frame, a motor vehicle pivotally connected to said frame a short distance inwardly from the other end of said frame from said wheel, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to said motor vehicle axis, and means providing limited lateral

tilting connection with said motor vehicle with the device locked at right angles to the longitudinal axis of said motor vehicle.

3. A device for starting horse races in a moving start comprising a frame elevated to clear racing horses passing beneath it, a barrier operatively mounted on said frame, a stabilizing support wheel at one end of said frame, a motor vehicle pivotally connected to said frame a short distance inwardly from the other end of said frame from said wheel, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to said motor vehicle axis, and means providing limited lateral tilting connection with said motor vehicle with the device locked at right angles to the longitudinal axis of said motor vehicle, said locking means being releasable to free said device for pivotal movement to a position in trail rearwardly of said motor vehicle.

4. A device for starting horse races in a moving start comprising in combination with a motor vehicle, a frame fulcrumed on said motor vehicle to project laterally therefrom at an elevation to clear racing horses passing beneath the frame, means for holding the frame in such laterally projecting position during a forward driving action of said motor vehicle, a barrier operatively mounted on said frame, and track engaging stabilizing means carried by said frame remotely from said motor vehicle.

5. A device for starting horse races in a moving start comprising in combination with a motor vehicle, a pivotal support on said motor vehicle adapted to pivot in a horizontal plane, a frame fulcrumed on said pivotal support to tilt only lengthwise of said frame relatively to the plane of pivotal movement of said pivotal support, the frame projecting a substantial distance beyond said fulcrum in one direction at a height to clear racing horses passing beneath said frame, a barrier operatively mounted on the frame, a track engaging stabilizing wheel mounted adjacent the end of said frame in said one direction, weighted means carried by said frame on the other side of said fulcrum from said wheel, and means for shifting the center of gravity of said weighted frame relatively to said fulcrum and said wheel thereby to vary the weight supported by said wheel.

6. A device for starting horse races in a moving start comprising in combination with a motor vehicle, a frame adapted to be fulcrumed on said motor vehicle to project laterally therefrom at an elevation to clear racing horses passing beneath the frame, releasable means for holding the frame in such laterally projecting position during a forward driving action of said motor vehicle, a barrier operatively mounted on said frame, track engaging stabilizing means carried by said frame remotely from said motor vehicle, and means providing free lateral swivelled connection between the motor vehicle and the frame on release of said releasable holding means.

7. A device for starting horse races in a moving start comprising in combination with a motor vehicle, a fulcrum support pivoted to turn in a horizontal plane mounted on said motor vehicle, a frame fulcrumed on said support at an elevation to clear racing horses passing beneath the frame, track engaging stabilizing means carried by said frame remotely from said fulcrum support, locking means releasably locking the frame at right angles to the longitudinal axis of the motor vehicle, and a starting barrier operatively mounted on the frame.

8. A device for starting horse races in a moving start comprising in combination with a motor vehicle, a fulcrum support, pivoted to turn in a horizontal plane, mounted on said motor vehicle, an elongated frame fulcrumed on said support to tilt only about an axis normal to the longitudinal axis of the frame, the frame being mounted at an elevation to clear racing horses passing beneath the frame, a starting barrier operatively mounted on the frame, and a single track engaging stabilizing castored wheel mounted on said frame remotely from said motor vehicle, said wheel supporting a portion of the weight of said frame as determined by the position of said fulcrum relatively to the center of gravity of the device.

9. A device for starting horse races in a moving start comprising a frame elevated to permit racing horses to pass beneath it, a barrier operatively mounted on said frame, a stabilizing support wheel adjacent one end of said frame, a motor vehicle pivotally connected to said frame adjacent the other end of said frame from said wheel, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to said motor vehicle axis, means providing limited lateral tilting connection with said motor vehicle with the device locked at right angles to the longitudinal axis of said motor vehicle, said locking means being releasable to free said device for pivotal movement to a position in trail rearwardly of said motor vehicle, a weight mass carried by said frame beyond the connection of the frame to the motor vehicle from said stabilizing support wheel, and means for adjusting said weight mass longitudinally of said frame to vary the weight on said stabilizing wheel.

10. A device for starting horse races in a moving start comprising a frame elevated to permit racing horses to pass beneath it, a barrier operatively mounted on said frame, a stabilizing support wheel adjacent one end of said frame, a motor vehicle pivotally connected to said frame adjacent the other end of said frame from said wheel, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to the longitudinal axis of said motor vehicle, a weight mass mounted on said frame on the opposite side of the pivotal connection from said stabilizing support wheel to counterbalance a portion of the weight carried by said support wheel, and means for adjusting the weight mass longitudinally of said frame.

11. A device for starting horse races in a moving start comprising a frame elevated to permit racing horses to pass beneath it, a barrier operatively mounted on said frame, a stabilizing support wheel at one end of said frame, a motor vehicle pivotally connected to said frame a short distance inwardly from the other end of said frame from said wheel, means for locking the frame at right angles to the longitudinal axis of the motor vehicle for movement in a direction parallel to the longitudinal axis of said motor vehicle, means providing limited lateral tilting connection with said motor vehicle with the device locked at right angles to the longitudinal axis of said motor vehicle, said locking means being releasable to free said device for pivotal movement to a position in trail rearwardly of said motor vehicle, a track mounted longitudi-

nally of said frame on the opposite side of the pivotal connection from the stabilizing support wheel, a carriage mounted for movement lengthwise on said track, means for adjusting the position of the carriage on the track, and a weight mass securely mounted on said carriage.

12. In a device for starting a horse race in a moving start, a mobile support adapted for movement along a racetrack, a barrier support fulcrumed on said support to extend transversely in overhanging position relatively to the track, and means acting relatively to said barrier support and said fulcrum to change the center of gravity of the barrier support relatively to the fulcrum.

13. In a device for starting a horse race in a moving start comprising a mobile support adapted for movement along a racetrack, a barrier support fulcrumed on said support to extend transversely in overhanging position relatively to the track, a track engaging support element carried by the barrier remotely from the mobile support, and means acting relatively to said barrier support and said fulcrum to change the center of gravity of the barrier support relatively to the fulcrum thereby to vary the supported weight on said track engaging support element.

14. In a device for starting horse races in a moving start, a mobile support adapted for movement along a race track, a barrier supporting frame, means mounting said frame on said support for pivotal movement about a vertical axis and for limited tilting movement about a horizontal axis, means for releasably locking said

frame in a position at right angles to the normal direction of travel of said mobile support against pivotal movement about said vertical axis while permitting tilting of said frame about said horizontal axis, and a track engaging stabilizing wheel mounted on said frame at a point remote from said mobile support.

15. In a device for starting horse races in a moving start, a mobile support adapted for movement along a racetrack, a barrier supporting frame, means mounting said frame on said support for pivotal movement about a vertical axis and for limited tilting movement about a horizontal axis, means for releasably locking said frame in a position at right angles to the normal direction of travel of said mobile support against pivotal movement about said vertical axis while permitting tilting of said frame about said horizontal axis, a track engaging stabilizing wheel mounted on said frame at a point remote from said mobile support, and a counterweight mounted on said frame and adjustable along said frame to a predetermined position thereon.

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