Feb. 10, 1948. J. P. WHANN ET AL 2,435,729

RACE STARTING GATE

Original Filed Sept. 9, 1941

Fig. 1.

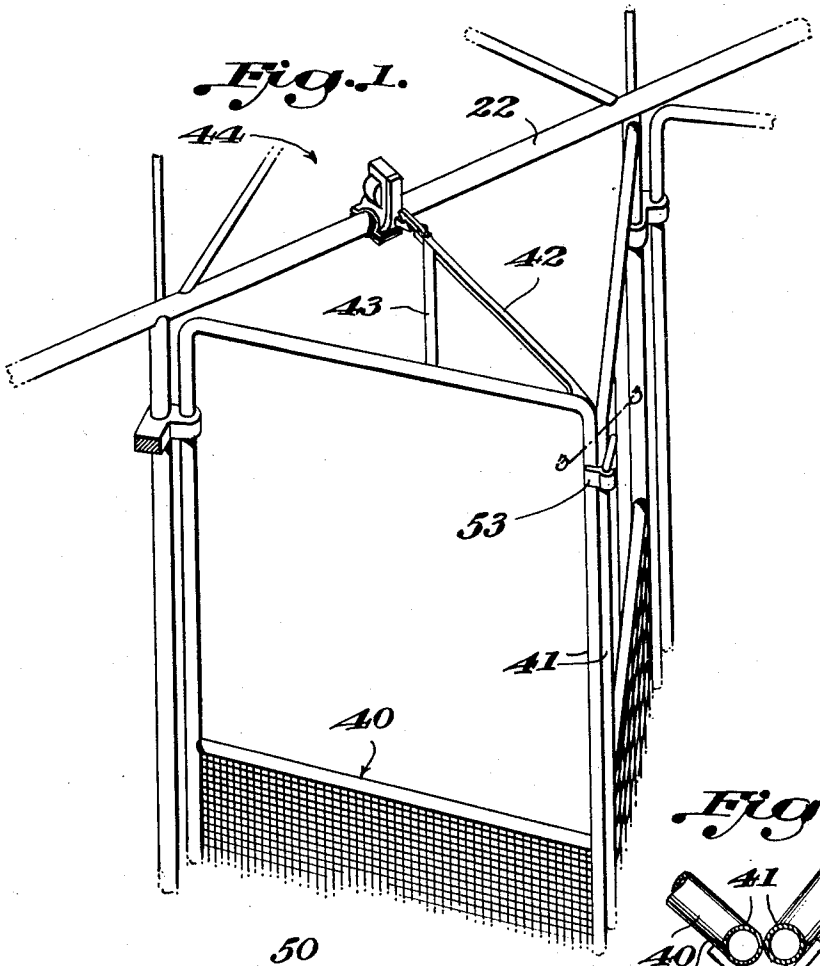



Fig. 3.

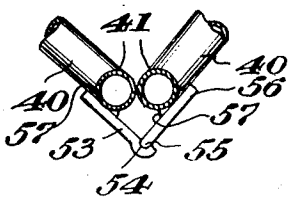
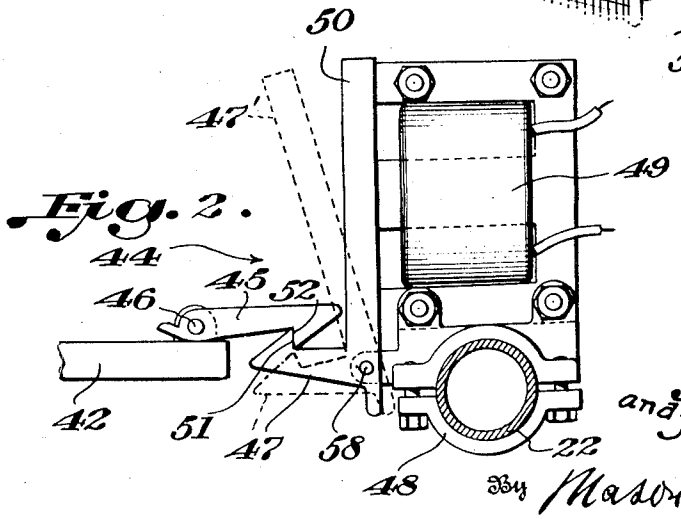



Fig. 2.




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## RACE STARTING GATE

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6 Claims. (Cl. 119—15.5)

1

Our invention relates to improvements in starting gates such as used at race tracks to start animals in races and relates in particular to a starting gate device wherein all of the individual gate elements are held in closed relation by releasable latch means adapted for simultaneous operation to instantly and simultaneously open all of the gates, thereby giving all of the racing animals opportunity for an even start.

It is an object of the invention to provide a starting gate construction where the gates are all held so that possibility of failure to open is substantially avoided. Our present starting gate is an important improvement over starting gate devices having the ordinary forms of mechanical latches. The mechanical latch devices employed in the past for holding the starting gates in closed position have sometimes failed as the result of the sticking of a latch having frictionally engaging parts. A single failure of a starting gate causes considerable confusion and obviously spoils the race improperly started by failure of the mechanism.

It is an object of the invention to provide a starting gate having gate means for closing the forward end of the starting stall, with a latch for holding the gate means in closed position, such latch comprising two engageable parts which accomplish their latching effect by engagement of cooperating shoulders, at least one of the engageable parts being magnetically held in operative position in such manner that release of the magnetism results in a free movement of the part so held to a latch releasing position. Accordingly, the release of the latch is accomplished not by movement of two frictionally engaged shoulders or faces out of overlapping engagement, but by a free movement of at least one of the latch members due to gravity, as explained hereinafter in the specification, from the operative position in which it is held by magnetism.

A further object of the invention is to provide a starting gate structure having latch means wherein one of the latch elements is characterized by yieldability in a vertical direction so that when the gate means is moved into closed position, the cooperating engagement parts of the latch will pass by each other to the extent of moving portions of the engagement members into overlapping relation whereby the latching shoulders thereof may engage. According to the invention one of the engagement members is supported so that it may be moved from a releasing position to an operative position and there held by an electromagnet cooperating in such a manner that the only force holding the engagement member in operative position is the force of magnetism which passes from the electromagnet through an armature or keeper forming part of the movable engagement member. However, it is not necessary to adjust the gate means into closed position and then move the cooperating engagement members of the latch into holding position, but when the electric current of the system is turned on, the magnetically held engagement member will be moved by magnetism into its operative position. Thereafter, closing of the gate means results in latching of the engagement members of the latch, one of these engagement elements being characterized by yieldability which will permit the latching engagement. By "characterized by yieldability" we mean that the engagement member so characterized may yield bodily or may have a part thereof which is yieldable for the purpose of accomplishing the result specified.

2

A further object of the invention is to provide a starting gate device having gate means and non-sticking latch means for holding the gate means in closed position, such latch means having one part thereof on the gate means and the other part thereof on the frame structure of the starting gate device.

A further object of the invention is to provide a starting gate device having a pair of gate elements to close each starting stall of the device, and non-sticking latch means for the gates cooperating between the gate elements and the frame or supporting structure so that the gate elements may be separately and individually latched in closed position merely by swinging them from open position toward closed position, there being no care required in the bringing of the meeting edges of the gate element into a prescribed cooperative relation.

Further objects and advantages of the invention will be brought out in the following part of the specification.

This application is a division of application Serial No. 410,142, filed September 9, 1941, now Patent No. 2,418,807, granted April 8, 1947.

Referring to the drawings which are for illustrative purposes only:

Figure 1 is a fragmentary perspective view of the upper part of a starting stall,

Figure 2 is a side elevation showing in detail the magnet, armature and the latching means, and

Figure 3 is a detail view of the catch taken on line 3—3 of Figure 1.

Figure 1 shows the upper portion of gates or doors 40 in closed position, with the meeting edge bars 41 thereof in engagement as shown also in Figure 3. The left gate 40 as viewed in Figure 1 has arm means or bar 42 that is rigidly mounted on said door or gate and extends at an angle thereto therefrom, this bar 42 being braced by the member 43, if desired. To cooperate with the gate 40 through the use of the bar 42, latch means 44 are provided, such latch means consisting, as shown in Figure 2, of an engagement member 45 supported by means of a pivot 46 on the extremity of the bar 42 and an engagement member 47 pivotally supported on the frame member 22 by means of a bracket 48, which bracket 48 likewise carries an electro-magnet 49 for cooperation with a keeper or armature 50 which projects upwardly across the front face of the electro-magnet 49 at the rearward portion of the engagement member 47. The solenoid and its armature are mounted substantially remote from the meeting edge bar 41 as shown in Figure 1. In other words, the solenoid mounting means is constructed and adapted to support the solenoid at a distance from the edge 41, said edge being farthest from the door pivot of said left door 40 as viewed in the said figure. As will be seen by reference to these parts when viewing Figure 1, the solenoid mounting means 48 is constructed and adapted to support the solenoid at a distance from the left hand door 40 from the free end of said door 40 a distance which is at least equal to the length of said pivot member 45.

As shown in Figure 2, the magnetically held engagement member 47 has a latching shoulder 51 which is rigidly held in position when the electro-magnet 49 is energized. The engagement member 45 is yieldable so that as the end of the bar 42 moves toward the position in which it is shown, Figure 2, the forward end of the engagement member 45 will ride over and pass by the forward portion of the engagement member 47 to bring the latching shoulder 52 thereof into cooperative relation with the latching shoulder 51, as shown. A part 22 of the framework supports the magnet, as indicated in Figure 1.

As shown in Figure 1, the vertical member 41 of the left gate 40 cooperating with the latch means 44 has thereon a locking plate or member 53 for the remaining gate 40. This member 53 has therein a notch 54 to receive the end 55 of the member 56 mounted on the other gate 40. The members 53 and 56 may be secured in the position shown by use of welds 57. The operation of the gate is preferably connected as follows: The right hand gate 40 is first swung in the diagonal or closed position in which it is shown in Figures 1 and 3, and the left hand gate 40 is swung inward to bring the members 53 and 56 into adjacent relation with each other and to carry the latching element 45 into latching engagement with an engagement member 47 held in operative position by the magnetic flux of the energized electro-magnet 49. The right hand gate 40 will be held in closed position by the locking or holding means of the left hand gate 40 represented by the notched plate 53.

When the electro-magnet 49 is deenergized, the engagement member 47 will rotate in anti-clockwise direction from position 50 into the position thereof shown by dotted lines 47', removing the latching shoulder 51 thereof from engagement with the latching shoulder 52, thereby releasing



the gates 40. It will be noticed that the latching shoulders, Figure 2, are disclosed in a horizontal plane above the pivot pin 58 on which the engagement member 47 is swung. Accordingly, outward force exerted through the engagement member 45 tends to rotate the engagement member 47 into releasing position, which may occur should an excessive force be exerted against the gate means held by the latch means 44.

In the foregoing we have described a form of invention wherein the non-sticking latch means is employed to connect gates to stationary parts of the structure.

In the claims, the term "superstructure" includes all stationary parts of the starting gate including the framework, the partitions and supports therefor, but excludes the swinging doors or gates 40 and the wheels (not shown) which support the starting gate referred to by the numeral 12 in our Patent No. 2,418,807 supra. The expression in the claims "means pivotally attaching said armature to a fixed pivot adjacent to said solenoid," or a similar expression includes the attachment of said armature to the magnet or to the superstructure.

It is to be understood that the above description is merely illustrative and in no wise limiting and that we desire to comprehend within this invention such modifications as are comprehended within the scope of the appended claims.

We claim:

1. A starting gate having a superstructure including a plurality of partitions, a pair of doors between two adjacent partitions, said doors having pivot means and being swingable from a closed position wherein the side edges of said pair of doors farthest from said pivot means are adjacent to each other, to an open position where the doors are substantially parallel to each other, and holding means for holding one of said doors of said pair in closed position, said holding means including: arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, means pivotally mounting said member at one of its ends on said free end of said arm means, a solenoid provided with an armature, means attaching said solenoid to a stationary part of said superstructure, and means pivotally mounting said armature on a fixed pivot adjacent to said solenoid, the other end of said member being in engagement with said armature when said door is in closed position and during the time said armature is in engagement with said solenoid while being attracted thereby.

2. A starting gate having a superstructure including a plurality of partitions, a pair of doors between two adjacent partitions, said doors having pivot means and being swingable from a closed position wherein the side edges of said pair of doors farthest from said pivot means are adjacent to each other, to an open position where the doors are substantially parallel to each other, and holding means for holding one of said doors of said pair in closed position, said holding means including: arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, said member extending in a substantially horizontal position and in a direction transverse to the horizontal axis of said gate, at least when said door is in one of said positions, means pivotally mounting said member at one of its ends on said free end

of said arm means, a solenoid provided with an armature, means attaching said solenoid to a stationary part of said superstructure, and means pivotally mounting said armature on a fixed pivot adjacent to said solenoid, the other end of said member being in engagement with said armature when said door is in closed position and during the time said armature is in engagement with said solenoid while being attracted thereby.

3. A starting gate having a superstructure including a plurality of partitions, a pair of doors between two adjacent partitions, said doors having pivot means and being swingable from a closed position wherein the side edges of said pair of doors farthest from said pivot means are adjacent to each other, to an open position where the doors are substantially parallel to each other, holding means for holding one of said doors of said pair in closed position, said holding means including: arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, means pivotally mounting said member at one of its ends on said free end of said arm means, a solenoid provided with an armature, means attaching said solenoid to a stationary part of said superstructure, and means pivotally attaching said armature on a fixed pivot adjacent to said solenoid, the other end of said member being in engagement with said armature when said door is in closed position and during the time said armature is in engagement with said solenoid while being attracted thereby, and a plate member having means adapted to engage the other door and hold the same in closed position when said other door has been moved to closed position.

4. In combination, a pair of doors, said doors having pivot means and being swingable from a closed position wherein the edges of said pair of doors farthest from said pivot means are adjacent to each other to an open position where the doors are substantially parallel to each other, and holding means for holding one of said doors of said pair in closed position, said holding means including arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, means pivotally mounting said member at one of its ends on said free end of said arm means, a solenoid provided with an armature, a stationary support, means mounting said solenoid on said support, and means pivotally attaching said armature on a fixed pivot adjacent to said solenoid whereby said armature swings in a vertical plane parallel to the plane of said doors in their open position, the other end of said member being in engagement with said armature when said door having said arm means is in closed position and during the time said armature is in engagement with said solenoid and while being attracted thereby.

5. In combination, a pair of doors, said doors having pivot means and being swingable from a closed position wherein the edges of said pair of doors farthest from said pivot means are adjacent to each other to an open position where the doors are substantially parallel to each other, and holding means for holding one of said doors of said pair in closed position, said holding means including arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, means pivotally mounting said member at one of its ends on said free end of said arm means, a solenoid provided with an armature, a stationary support, means mounting said solenoid on said support, and means pivotally attaching said armature on a fixed pivot adjacent to said solenoid whereby said armature swings in a vertical plane parallel to the plane of said doors in their open position, the other end of said member being in engagement with said armature when said door having said arm means is in closed position and during the time said armature is in engagement with said solenoid and while being attracted thereby, said solenoid mounting means being constructed and adapted to support said solenoid at a distance from the door edge farthest from the door pivot of said one door, which is at least equal to the length of the said arm means.



6. In combination, a pair of doors, said doors having pivot means and being swingable from a closed position wherein the edges of said pair of doors farthest from said pivot means are adjacent to each other to an open position where the doors are substantially parallel to each other, and holding means for holding one of said doors of said pair in closed position, said holding means including arm means rigidly mounted on said door and extending at an angle from the plane of said door, said arm means having a free end, a member having a pair of ends, means pivotally mounting said member at one of its ends on said free end of said arm means, a solenoid provided with an armature, a stationary support, means mounting said solenoid on said support, and means pivotally attaching said armature on a fixed pivot adjacent to said solenoid whereby said armature swings in a vertical plane parallel to the plane of said doors in their open position, the other end of said member being in engagement with said armature when said door having said arm means is in closed position and during the time said armature is in engagement with said solenoid and while being attracted thereby, said solenoid mounting means being constructed and adapted to support said solenoid at a distance from the free end of said one door which is at least equal to the length of the said pivoted member.

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