

1

3,103,260

HANDICAPPING DEVICE FOR RACING SULKIES

John R. Gaines and Clarence F. Gaines, Sherburne, Chester C. De Pew, Farmingdale, and William J. Carry, Norwich, N.Y.; said John R. Gaines, said De Pew, and said Carry, assignors to Clarence F. Gaines, Sherburne, N.Y.

Original application Dec. 31, 1956, Ser. No. 631,963, now Patent No. 2,997,136, dated Aug. 22, 1961. Divided and this application July 10, 1961, Ser. No. 122,769 1 Claim. (Cl. 188—19)

This invention relates to handicapping devices for racing sulkies and pertains more particularly to mechanism for effecting a constant frictional drag in resistance to the rotation of sulky wheels during a race and by so doing, imposing a handicap upon the horse drawing the sulky. This application is a division of our copending application Serial No. 631,963, filed December 31, 1956, now U.S. Patent No. 2,997,136, for Handicapping Device for Racing Sulkies.

Ordinarily, racing sulkies are attached to the horse in such a manner that the sulky and its driver are balanced and impose substantially no weight upon the horse's back. It is the usual practice in saddle racing, of course, to provide handicapping and it is a primary object of this invention to provide an equivalent system in sulky racing.

Another object of this invention is to provide a means for handicapping horses in sulky races by establishing a constant frictional drag resisting the rotation of the sulky wheels and to provide this means in such a form as to be easily changeable to vary the amount of handicap imposed.

Still another object of this invention is to provide a means for handicapping horses in sulky races which incorporates a device rotated in response to rotation of the sulky wheels and bearing thereagainst and including mechanism resisting rotation of the sulky wheels to impose a constant frictional drag thereupon.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawing and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions, and minor details of construction, within the scope of the claim, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

FIG. 1 is a partial elevational view showing a portion of a sulky frame and an associated sulky wheel with the frame having mounted thereon one form of this invention for imparting a frictional drag for resisting rotation of the sulky wheel;

FIG. 2 is a front elevational view showing, in part, the assembly illustrated in FIG. 1; and

FIG. 3 is a view similar to FIG. 2 illustrating a further modified form of handicapping device.

Referring at this time more particularly to FIGS. 1 and 2, reference numeral 10 indicates a sulky wheel generally which is rotatably supported on the sulky frame by means of a generally vertically extending post or frame member 11 which extends downwardly on the outer side of the wheel 10, the inner side of the wheel being supported by a similar frame member 12, both members 11 and 12 being joined to similar members on the opposite side of the sulky by means of the intermediate or transverse portions 13 and 14 respectively thereof. In the particular assembly shown, the handicapping device consists essentially of a drag producing unit indicated generally by the reference character 15 which is mounted

2

substantially midway between the two wheels of the sulky upon the transverse frame portions 13 and 14. This assemblage in the particular form shown embodies a split casing formed of complementary half sections 16 and 17, each having a continuous outwardly directed flange 18, 19 which serve to abut each other and through which fasteners may extend to securely hold the sections in place. Each half section is provided with an outwardly extending hub portion 20, 21 journalling the inner ends of a pair of shafts 22 and 23. The outer end of each shaft has rigidly affixed thereto a wheel 24 which bears against the periphery of the sulky wheel and serving to rotate the two shafts 22 and 23, and provide a further journal support therefor, a split clamping bracket 25 is attached to each side of the sulky frame and preferably on the transverse frame portion 13 thereof. This bracket is pinned by means of the member 26 to one end of link 27 at each side of the frame with the link extending therefrom and journalling at its outer end an intermediate portion of its associated shaft 22 or 23, as is shown most clearly in FIG. 1.

Each link 27 is provided with a depending ear 28 having an aperture through which one hook end 29 of a tension spring 30 is hooked, the other end 31 of the spring being hooked through a similar ear 32 integral with a further clamping member 33 which is fixedly attached to the frame member 12 at each side of the sulky. The purpose of the springs 30 is to engage the wheels 24 with constant force against the sulky wheels 10.

Fixed within the casing of the assembly 15 is a pair of hydraulic pump members 34 and 35, each of which incorporates a drive shaft 36 projecting within its associated hub 20 or 21 and journaled therein by means of a ball bearing unit 37, each such drive shaft being notched at its end as is illustrated most clearly in FIG. 2 and receiving a tongue on the inner end of its associated shaft 22 or 23 so that when the shafts 22 and 23 are rotated as the sulky is moved, the pumps 34 and 35 will be driven. Each pump housing extends well down within the chamber defined by the casing sections 16 and 17 and below the level of hydraulic fluid 38 therein and the housings being provided with bores extending vertically upwardly therethrough and opening in the lower portions 39 and 40 thereof into the reservoir or hydraulic fluid, these openings serving as the intakes for the two pumps. The outlets for the two pumps are illustrated in dotted lines in FIG. 2 and are indicated by the reference characters 41 and 42 respectively, with each such outlet conduit leading up into a cylindrical pressure vessel 43 disposed within and rigidly supported by the casing sections. The pressure vessel 43 is entirely closed except for a bleed opening 44 disposed in one end thereof. Consequently, the capacity of the two pumps together is great enough to build up a considerable pressure within the pressure vessel 43 since the bleed opening 44 will be relatively small in comparison with the output capacity of the pumps and it will be appreciated that the faster the pumps are driven, the greater their output and the greater the pressure built up within the vessel 43 since the bleed opening is controlled by a pressure release, or regulating valve set to maintain a constant predetermined pressure in the chamber, a constant frictional drag will be imposed upon the shafts 22 and 23 as the pumps are rotated, thereby creating a drag or braking force resisting rotation of the sulky wheels.

As an alternative to the construction shown in FIGS. 1 and 2, the sulky frame may be utilized to support an electric generator 61, shown generally as in FIG. 3, whose output is fed into a suitable resistance load to establish a predetermined resistance to rotation of the shaft 62 and a similar shaft not shown but projecting

3

from the other side of the generator and having attached at its free end, like the shaft 62, a wheel 63. In the particular construction shown in FIG. 3, the wheel 63 instead of engaging directly upon the rubber tire mounted on the sulky wheel as is the case in FIGS. 1 and 2, bears upon an annular lateral projection 64 of the sulky wheel rim 65. In the particular assembly shown, the lateral projection 64 is integrally formed with the rim and is formed from an extension of the rim doubled back upon itself as is clearly shown and extending back into the tire receiving recess of the rim. The generator 61 is mounted on the sulky frame and the support for the shaft 62 is similar to that described for the shafts 22 and 23 in FIG. 2.

From the above, it will be readily apparent that there has been provided means for imposing a predetermined frictional drag in resistance to the motion of an associated sulky and each of which means incorporates structure whereby the frictional drag may be varied quickly and easily, in accordance with the particular handicap of any given horse. For example, with the hydraulic system, the outlet side of the pump has a variable restricted passageway by means of which the work done by the pump may be varied in accordance with the outlet pressure. In the electrical system as shown in FIG. 3, the load on the generator 61 is readily and easily varied by any conventional means such as a variable resistor for example. In this fashion, the device in either instance is readily adaptable for rapid and accurate adjustment to establish any predetermined handicap upon the particular vehicle with which it is used.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claim, all changes that fall within the metes and bounds of the claim or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by the claim.

We claim:

In combination, a horse racing sulky having a frame, rotatable wheels supporting said frame and handicapping

4

means of light weight relative to the sulky carried by said sulky frame for maintaining a predetermined, selectively variable resistance to the rotation of the wheels and movement of the sulky, said handicapping means including a drag producing unit supported by said frame, a pair of shafts extending outwardly from opposite sides of said unit and in opposite directions from one another, each of said shafts having a rotatable member fixed to the outer portion thereof for engaging one of said wheels, support means movably supported by said frame and journalling an intermediate portion of each of said shafts, resilient means connected between said support means and said frame for urging each of said rotatable members against an associated wheel with constant force, said unit including a pair of pumps, each of said pumps being drivingly connected with one of said shafts, said unit defining a cavity having hydraulic fluid therein, each of said pumps being at least partly immersed in the hydraulic fluid within said unit and being provided with bores extending upwardly therethrough and being in communication with said hydraulic fluid exhausted from said pumps, said unit including a pressure vessel, each of said bores including an outlet in communication with said pressure vessel, said pressure vessel being entirely closed and having a bleed opening disposed at one portion thereof and means for controlling the release of pressure through said bleed opening to maintain a constant predetermined pressure in the chamber to thereby provide a constant frictional drag resisting rotation of said wheels.

References Cited in the file of this patent

UNITED STATES PATENTS

2,020,201	Otis	Nov. 5, 1935
2,225,079	Neal	Dec. 17, 1940
2,780,322	Hickle	Feb. 5, 1957
2,892,514	Gaines et al.	June 30, 1959

FOREIGN PATENTS

587,446	France	Jan. 17, 1925
---------	--------	---------------