(No Model.)

H. BORMANN.

SINUOUS PLEASURE RAILWAY AND TOBOGGAN SLIDE.

No. 450,609. Patented Apr. 21, 1891.

Fig. 1.

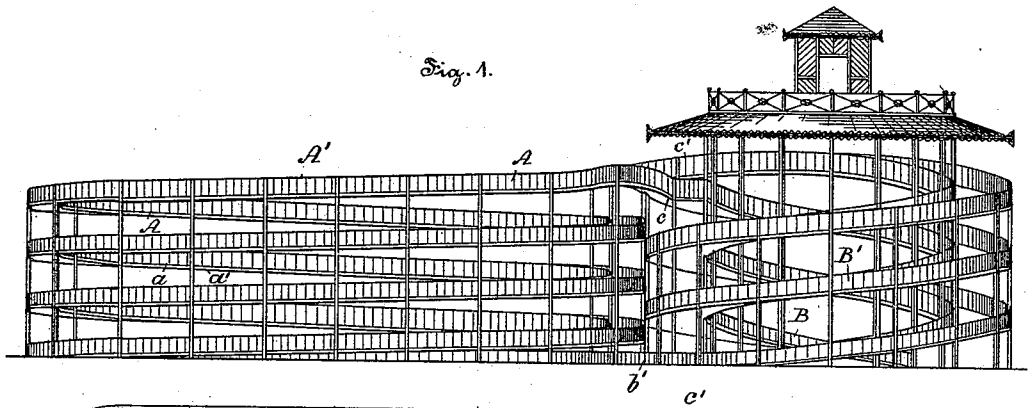


Fig. 2.

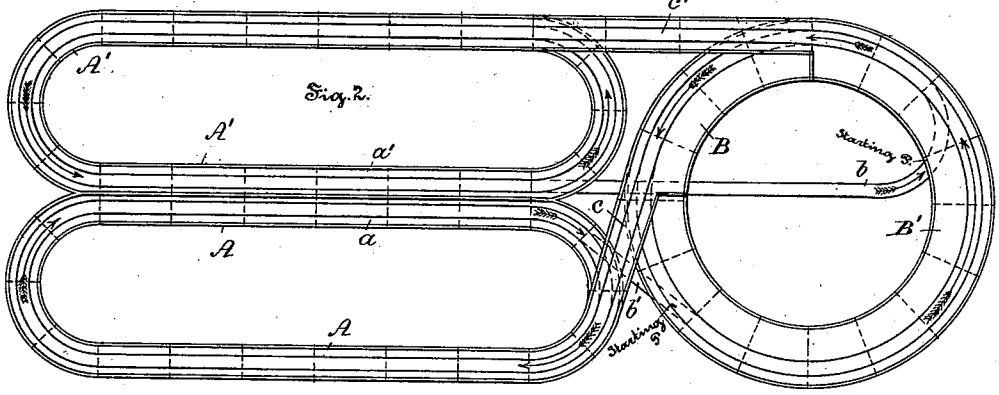


Fig. 3.

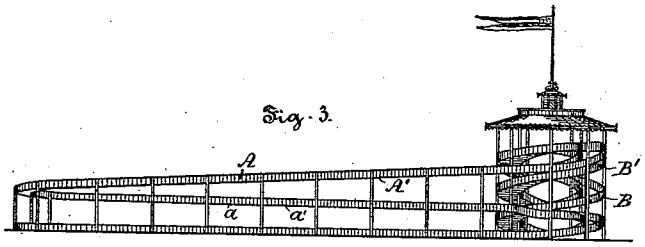


Fig. 4.

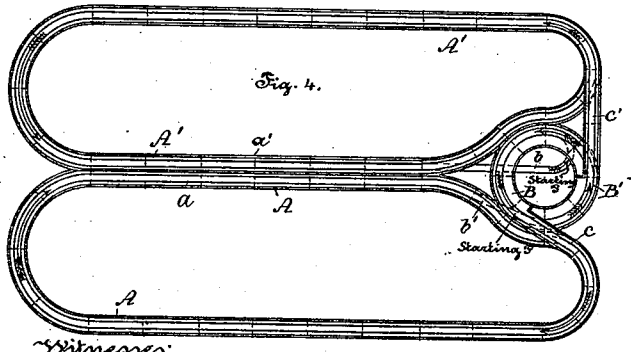
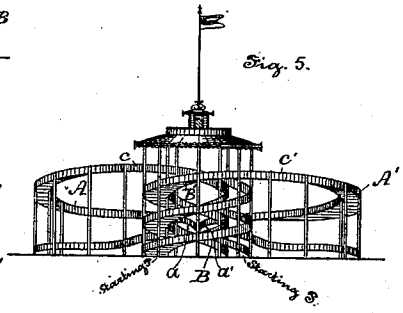


Fig. 5.



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UNITED STATES PATENT OFFICE.

HERMANN BORMANN, OF PHILADELPHIA, PENNSYLVANIA.

SINUOUS PLEASURE-RAILWAY AND TOBOGGAN-SLIDE.

SPECIFICATION forming part of Letters Patent No. 450,609, dated April 21, 1891.

Application filed August 14, 1890. Serial No. 361,958. (No model.)

To all whom it may concern:

Be it known that I, HERMANN BORMANN, a subject of the Emperor of Germany, but now residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pleasure-Railways and Toboggan-Slides, of which the following is a specification.

My invention relates in general to pleasure-railways and toboggan-slides, and more particularly to the arrangement of the superstructure and courses thereof.

Heretofore it has been customary to construct pleasure-railways and toboggan-slides in continuous courses arranged in spiral and oblong forms, so that the cars might traverse the continuous course or courses one after another in single file. Although good results have been attained in practice by the employment of such pleasure-railway courses, still the superstructures occupied a great deal of space, and inasmuch as the cars or coaches traveled in single file it was impossible for the passengers of one course to enjoy the pleasure and excitement incident to racing with the passengers of the other course.

The principal objects of my present invention are, first, to provide a compact, comparatively inexpensive, and convenient superstructure for pleasure-railways, toboggan-slides, and the like; second, to provide a longer course with reference to the superficial area occupied by the superstructure than has heretofore been obtained, and, third, to so arrange the railway course or courses with relation to the superstructure, that the cars, coaches, and toboggans will descend at the same time in opposite directions around two similar adjacent courses.

My invention consists of two similar adjacent helical courses winding or cycling in opposite directions, and in two intertwined spiral courses, and each of said helical courses connected at the top thereof to the summit of one of said intertwined spiral courses and at the bottom thereof to the base of the other of said intertwined spiral courses by straight and curved auxiliary courses, and my invention further consists of two similar contiguous helical courses winding in opposite directions and having the adjacent courses of substantially equal pitch, as is hereinafter more fully described, and pointed out in the claims.

The nature and particular characteristic features of my present invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevation of a superstructure for a sinuous railway and toboggan-slide embodying features of my invention, and showing two adjacent helical courses winding or cycling in opposite directions, two intertwined spiral courses, and straight and curved auxiliary courses connecting said helical and spiral courses. Fig. 2 is a top or plan view of Fig. 1, showing straight and curved auxiliary courses connecting each of said helical courses at the top thereof to the summit of one of said intertwined spiral courses and at the bottom thereof to the base of the other of said intertwined spiral courses. Fig. 3 is an elevation of a superstructure for a sinuous pleasure-railway and toboggan-slide embodying a modification of my invention, and showing the two adjacent helical courses disposed on either side of the intertwined spiral courses. Fig. 4 is a plan or top view of Fig. 3, and Fig. 5 is an end elevation of Fig. 4.

Referring now to the drawings, and more especially to Figs. 1 and 2 thereof, A and A′ are similar helical contiguous courses winding or cycling in opposite directions and having the adjacent courses *a* and *a′* of substantially equal pitch, so that two cars, coaches, or toboggans in descending from the top to the bottom of the courses A and A′ at the same time and under the influence of gravity will race side by side along the adjacent portions *a* and *a′* of the courses, and will then separate in traversing the other portions of the courses A and A′, and will finally again race over or upon the succeeding adjacent portions of said courses. Of course the pitch of the adjacent courses *a* and *a′* may be different and may be varied; but preference is given to the employment of courses of substantially equal pitch, because the excitement of the sport is greatly increased by permitting the cars, coaches, or toboggans to

race over the courses in the manner above described.

B and B′ are two intertwined spiral courses winding in opposite directions around a common vertical axis, and having their starting-points at their bases diametrically opposite each other.

b is a curved auxiliary course connecting the bases of the courses A′ and B. *b′* is a straight course connecting the bases of the courses A and B′.

c′ is a straight course connecting the summits of the courses A′ and B′.

The summits of the two courses B and B′ are separated by an arc of ninety degrees more or less, instead of being diametrically opposite to each other, so that the length of the courses A and B is approximately equal to the length of the courses A′ and B′. Good results have been obtained in practice by the employment of the two intertwined courses B and B′, for permitting of the elevation of the cars, coaches, and toboggans from the base of the course A′ to the summit of the course B, and from the base of the course A to the summit of the course B′; but the present invention is not limited to the employment of such courses, because the cars, coaches, and toboggans may be elevated and transferred from the base of one of the courses A or A′ to the summit of the other course by means of many well-known appliances—for example, by means of elevators.

In use one of a pair of cars, coaches, or toboggans after having been loaded with passengers is started at each of the diametrically-disposed starting-points designated on the drawings "Starting P" and located at the bases of the intertwined spiral courses B and B′. The two cars, coaches, or toboggans are drawn to the respective summits of the courses by means of a positively driven endless cable or motor cars, or in any other preferred manner. The cars then proceed under the influence of gravity respectively over the auxiliary courses *c* and *c′* to the helical courses A and A′, and then cycling around the latter in opposite directions, as indicated by the arrows in the drawings, arrive simultaneously, or nearly so, at the adjacent straight portions *a* and *a′* of these courses. It will be readily understood that the cars, coaches, or toboggans will race with each other over the adjacent portions *a* and *a′* of the courses A and A′, thereby greatly enhancing the excitement of the sport. After the cars, coaches, or toboggans have traversed the courses *a* and *a′* they are respectively conducted by means of the auxiliary courses *b* and *b′* to the starting-points, marked on the drawings "Starting P," and located diametrically opposite to the points from which they started. The passengers may then alight, and after others have taken their places on the cars, coaches, or toboggans the latter may again be permitted to traverse the courses in the manner indicated.

The cars, coaches, or toboggans are described as arriving at the adjacent courses *d* and *a′* and at the starting-points at the same time, and this result is due to the fact that the courses A B *b c* and A′ B′ *b′ c′* are of equal length and pitch; but, if preferred, the length or pitch of either of these courses may be increased or diminished without departing from the spirit of the invention.

The construction and mode of operation of the form of superstructure illustrated in Figs. 3, 4, and 5 are the same as shown and described with reference to Figs. 1 and 2, with the following exceptions: That the helical courses A and A′ are slightly curved outward and are separated at one extremity thereof, and the intertwined spiral courses B and B′ are located between them, so that the complete structure occupies a very small area, and is therefore especially adapted for use on a small piece of ground. Moreover, the relative positions of the auxiliary courses *b b′ c* and *c′* are slightly shifted in order to accommodate them to the changed positions of the other courses, as will be readily understood from an examination of the drawings.

Although the mode of operation of the invention has been described with reference to only two cars, coaches, or toboggans, still it will be obvious that more than two cars may be advantageously employed by starting them out successively in pairs, and in the manner hereinbefore explained.

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

1. The herein-described superstructure or pleasure-railway and toboggan-slide, consisting of two adjacent helical courses cycling in opposite directions and two intertwined spiral courses cycling in the same direction, and each of said helical courses connected at the top to the summit of one of said intertwined courses and at the bottom to the base of the other of said intertwined courses by straight and curved auxiliary courses, substantially as and for the purposes set forth.

2. The herein-described superstructure or pleasure-railway and toboggan-slide, consisting of two continuous helical courses winding in opposite directions and having the adjacent courses of substantially equal pitch, curved and straight auxiliary courses, and means for connecting each of said helical courses at the top to the summit of one of said intertwined courses and at the bottom to the base of the other of said intertwined courses, substantially as and for the purposes set forth.

3. The herein-described superstructure or pleasure-railway and toboggan-slide, consisting of two adjacent helical courses cycling in opposite directions and curved outward and separated at one extremity thereof, and two intertwined spiral courses winding in the same direction and located in the sepa-

rated extremity of said helical courses, and each of said helical courses connected at the top to the summit of one of said intertwined courses and at the bottom to the base of the other of said intertwined courses by straight and curved auxiliary courses, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

HERMANN BORMANN.

Witnesses:
THOMAS M. SMITH,
RICHARD C. MAXWELL.