No. 835,662. PATENTED NOV. 13, 1906.

E. C. BRUEN.

INCLINED RAILWAY.

APPLICATION FILED MAR. 16, 1906.

Fig. 1.

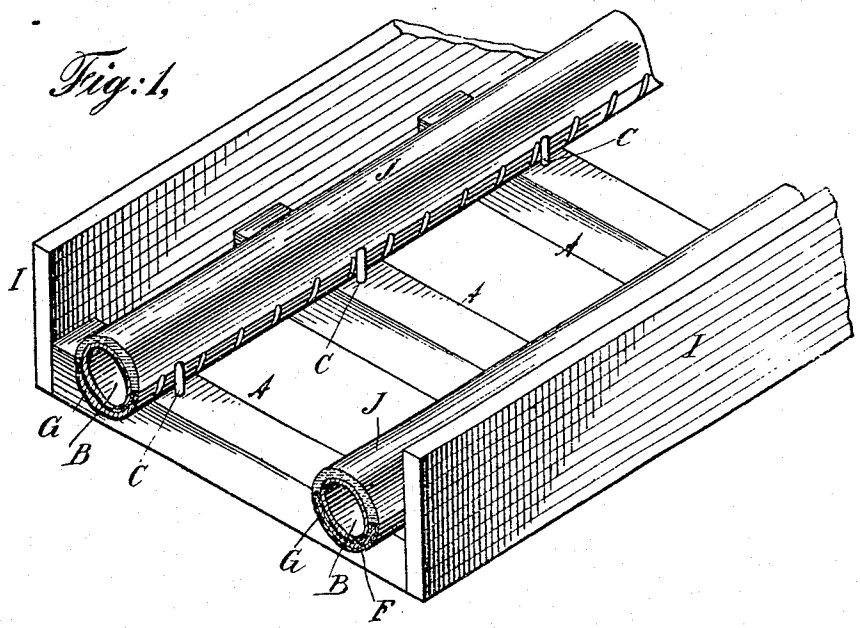


Fig. 2.

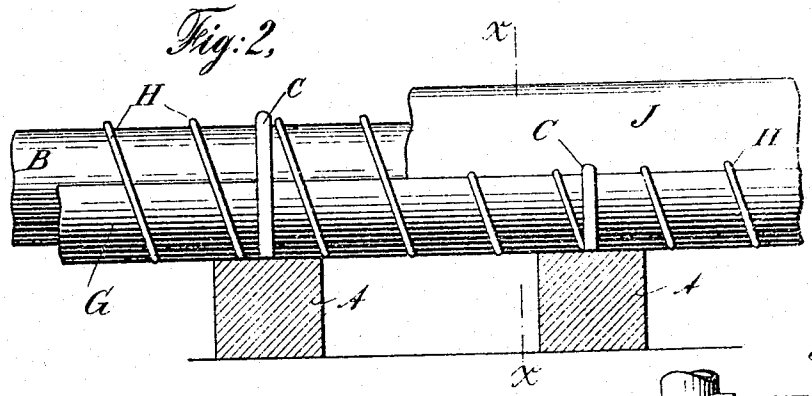


Fig. 4.

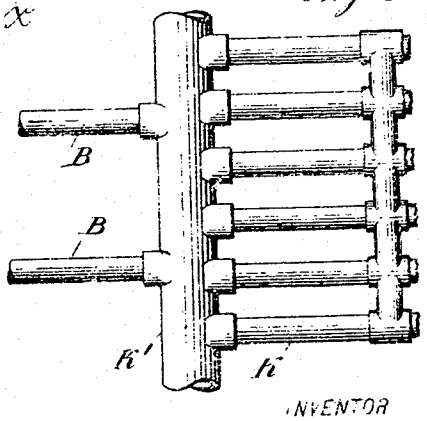
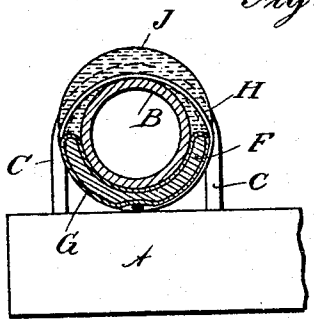


Fig. 3.



WITNESSES

Max B. A. Döring

Benj. Bruen.

INVENTOR

Edwin C. Bruen

UNITED STATES PATENT OFFICE.

EDWIN C. BRUEN, OF BROOKLYN, NEW YORK.

INCLINED RAILWAY.

No. 835,662. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed March 16, 1906. Serial No. 306,359.

To all whom it may concern:

Be it known that I, EDWIN C. BRUEN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Inclined Railways, of which the following is a specification.

My invention relates to improvements in inclined railways, and particularly to an incline railway upon the rails of which a coating or layer of ice of any desired thickness may be formed at any time by artificial means.

The main object of my invention is to produce an inclined ice-railway chiefly adapted for use as a toboggan-chute or slide during those periods of the year when the temperature is above the freezing-point.

My invention may also be utilized to make a railway of the type known as "roller-coasters," in which a series of inclines are employed to form an undulatory track.

While my invention is particularly adapted for use in climates and at temperatures when ice does not form naturally, it will be understood from the following description that it may be utilized during all seasons of the year.

Having these objects in view, my said invention consists in an inclined railway the rails of which are hollow and may at any time be provided with a layer or coating of ice of any desired thickness by artificial means, as hereinafter described.

My invention also includes the details of construction, as hereinafter fully described, and pointed out in the claims.

In the drawings, in the several figures of which like parts are similarly designated, Figure 1 is a perspective view of a portion of a chute or slide. Fig. 2 is a side view of one of the rails thereof with the coating of ice broken away; and Fig. 3 is a section of Fig. 2, taken on the line $x\,x$. Fig. 4 is a detail showing the arrangement of a group of pipes to form a starting-platform.

In the drawings, A designates the sleepers or tie-beams for the support of the rails.

B designates the rails, here shown in the form of iron or steel pipes, which are securely held to the sleepers by the straps or bands C. I do not wish to limit myself, however, to any form of rail, as any form of hollow rail will answer the purpose, and the precise shape and strength thereof will depend upon the purpose to which my invention is applied. Neither do I wish to be limited to any particular means of fastening the rails to the ties or sleepers. I have found, however, that the form of rails and method of fastening them shown in the drawings is cheap and efficient.

In order to lower the temperature of the rails to a freezing-point, I circulate through them a supply of cold air or freezing gas or fluid by means of a suitable pump, and in order to do this effectively and economically I arrange suitable return-pipes (not shown) connecting with the rails at the end of the chute or slide. By this means a complete circuit for the freezing medium is attained. When the temperature of the rails has been reduced sufficiently, the moisture already existing in the surrounding atmosphere in a gaseous state will condense upon the surface of the rails and freeze, and as the air surrounding the rails is constantly changing by natural circulation the ice J will continue to form upon the rails until the desired degree of thickness is obtained, when the supply of freezing medium may be reduced or cut off entirely, or instead of relying upon the supply of moisture drawn from this source I may arrange means for sprinkling a supply of water upon the rails, such as a toboggan equipped with a water-tank and sprinkling attachment, which may be sent over the railway from time to time.

I prefer to place a strip of felt or other non-conductor of heat F around the lower half of the rails B, the object being to prevent the formation of ice upon that portion of the rails to which it is applied, and I also prefer to envelop the felt with a waterproof material G to protect it from the moisture, as if it is allowed to get wet its non-conducting properties are impaired. A convenient method of securing the felt or other non-conducting material F to the rails is shown in the wire H, which is wrapped spirally around the two, the said wire being covered by a layer or coating of ice when the chute is ready for use. The guards I should be arranged on either side of the track to insure the safe descent of the toboggan.

While I have shown in the drawings a chute or inclined railway having two rails, it is obvious that a greater number may be used, if necessary or desirable.

In the use of my improved chute the ordinary form of toboggan may be employed, which in this case should be of a width

greater than the distance between the two rails, the toboggan being guided in its descent by the guards I.

In Fig. 4 of the drawings I have shown a group or series of pipes K, arranged side by side and preferably united by T connections and provided with a branch pipe K', from which the pipes constituting the rails B may extend. These pipes K are to be provided with the non-conductor F and waterproof material G, which may be arranged and applied as described with reference to the rails B, or the pipes K may be embedded in the non-conducting material. The object of this construction is to have a starting-platform for the toboggans which may at any time be provided with a layer or coating of ice of any desired thickness by the same means and in the manner described for the rails. It is obvious that any desired number of these pipes K may be employed.

What I claim as new, and desire to secure by Letters Patent, is—

1. An inclined ice-railway consisting of two or more exposed hollow rails having their upper surfaces coated with ice to form a chute, substantially as and for the purposes set forth.

2. An inclined ice-railway, consisting of two or more hollow rails, and means for forming a layer or coating of ice directly upon the upper surfaces thereof.

3. A toboggan chute or slide consisting of two or more hollow rails, said rails having a layer or coating of ice formed directly upon their upper surfaces by the action of a freezing medium circulating through said rails upon liquid or moisture deposited thereon, substantially as described for the purposes set forth.

4. An inclined ice-railway consisting of two or more hollow rails, said rails having a layer or coating of ice formed directly upon their upper surfaces by the action of a freezing medium circulating through said rails upon liquid or moisture deposited thereon, and means for depositing a supply of liquid upon the rails, substantially as described.

5. An inclined ice-railway consisting of two or more hollow rails, and means for forming a layer or coating of ice upon the upper surfaces thereof, said rails being provided on the lower surfaces with a covering of non-conducting material to prevent the formation of ice upon such portions, substantially as described.

6. An inclined ice-railway consisting of two or more hollow rails having a convex ice-surface formed upon the upper surfaces of said rails, substantially as described.

7. A platform for an inclined railway consisting of a group of pipes, and means for forming a layer or coating of ice upon the upper surfaces thereof, said pipes being provided on the lower surfaces with a covering of non-conducting material to prevent the formation of ice upon such portions, substantially as described.

8. An ice-platform consisting of a series of pipes, and means for forming a layer or coating of ice upon the upper surfaces thereof, said pipes being provided on the lower surfaces with a bed or covering of non-conducting material to prevent the formation of ice upon such portions, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 8th day of March, A. D. 1906.

EDWIN C. BRUEN.

Witnesses:
WM. CHAMBRECHT.
MORRIS SPIEGEL.