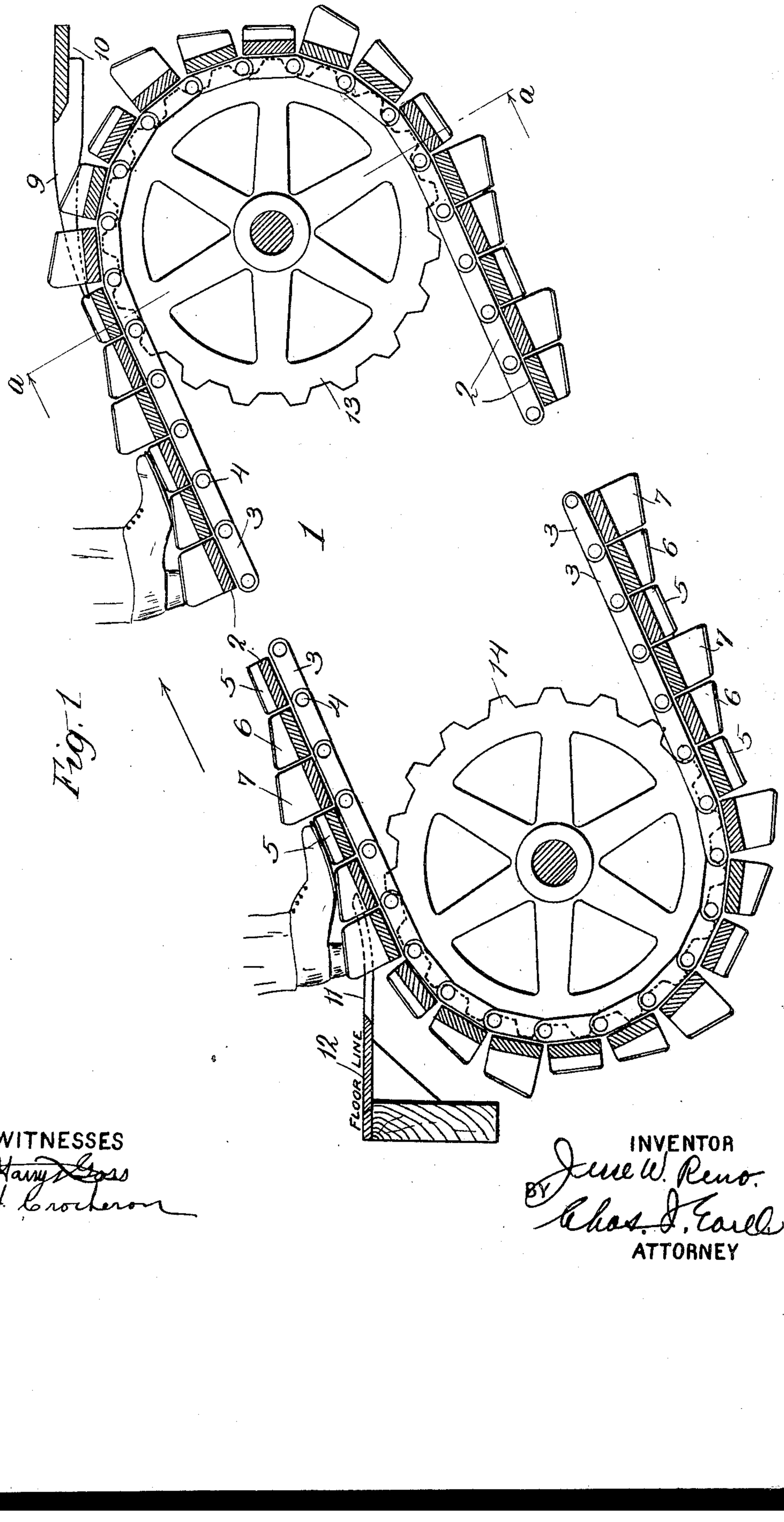
No. 804,266. PATENTED NOV. 14, 1905.

J. W. RENO.

INCLINED ELEVATOR.

APPLICATION FILED AUG. 11, 1905.

2 SHEETS—SHEET 1.



WITNESSES

Harry L. Goss

H. Crocheron

INVENTOR

BY June W. Reno.

Chas. D. Earle

ATTORNEY

No. 804,266. PATENTED NOV. 14, 1905.

J. W. RENO.

INCLINED ELEVATOR.

APPLICATION FILED AUG. 11, 1905.

2 SHEETS—SHEET 2.

Fig. 3,

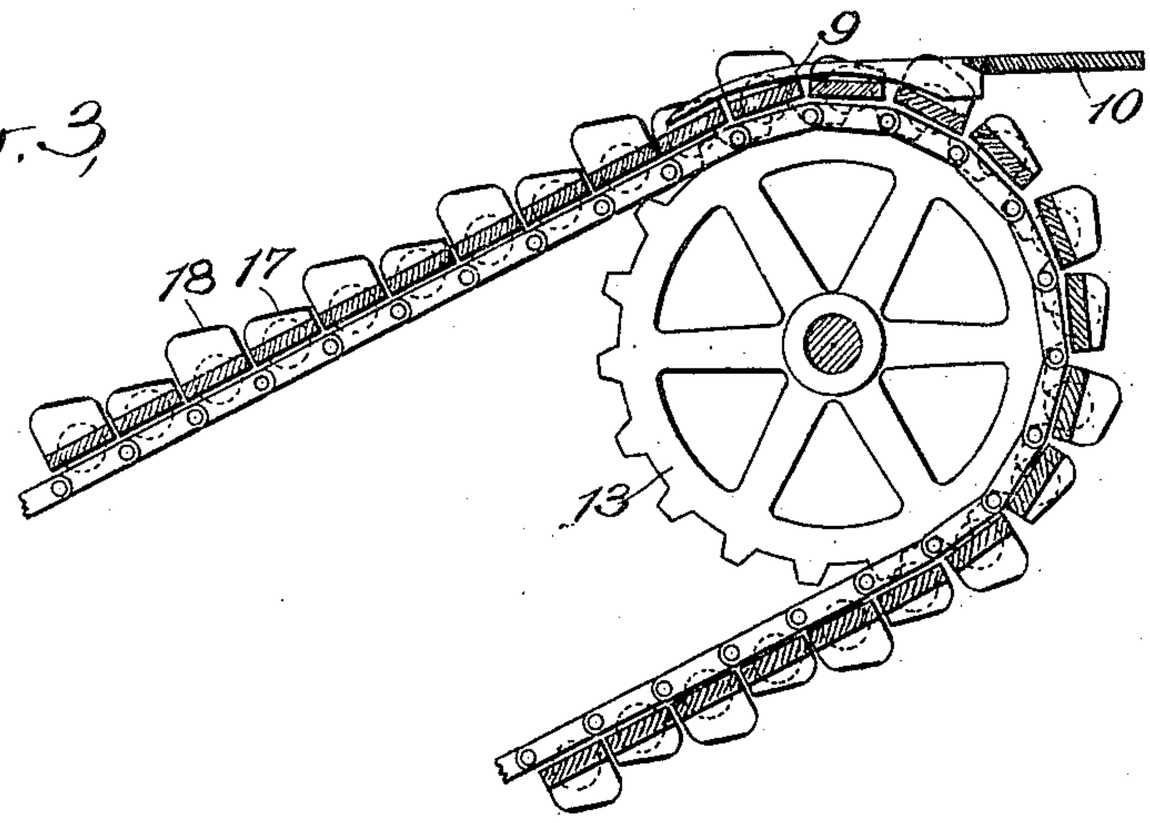
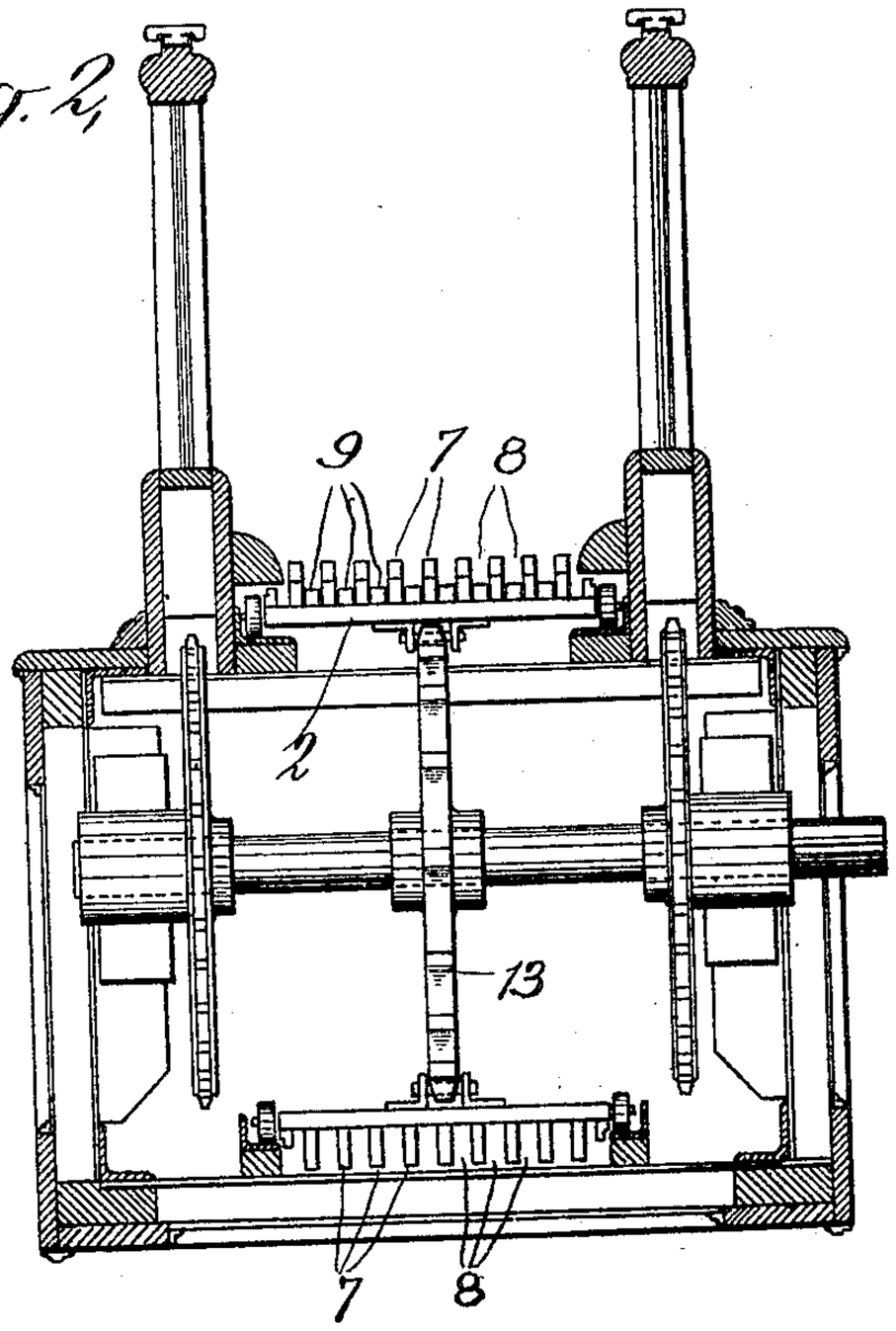


Fig. 2,



WITNESSES:

Harry A. Goss

H. Crocheron

INVENTOR

Jesse W. Reno.

BY

Chas. J. Earll

ATTORNEY

UNITED STATES PATENT OFFICE.

JESSE W. RENO, OF NEW YORK, N. Y.

INCLINED ELEVATOR.

No. 804,266. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed August 11, 1905. Serial No. 273,793.

To all whom it may concern:

Be it known that I, JESSE WILFORD RENO, a citizen of the United States of America, and a resident of the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Inclined Elevators, of which the following is a specification.

My invention relates to inclined elevators, and has for its object to provide a tread-belt and upper and lower landings to coöperate therewith which shall be simple and effective in their construction and operation and which shall be safe and convenient for passengers.

My invention consists in providing a tread-belt composed of transverse slats hinged together in the form of an endless belt adapted to travel upon suitable inclined guides forming the framework of the elevator and around suitable sprocket-wheels at the upper and lower terminals thereof and in so forming the tread-surfaces of the slats composing the tread-belt that they shall, in effect, produce steps upon the incline, each step being composed of a plurality of transverse slats, and in providing longitudinal grooves along the surface of the tread-belt adapted to register and coöperate with the prongs or fingers of comb-landings for the upper and lower terminals of the elevator.

My present invention is similar in character to that described in my previous patent, No. 637,526, of November 21, 1899. In that patent I have described a tread-belt composed of relatively narrow transverse slats, the width of said slats being such that the ordinary adult human foot should span a plurality of them, the upper or tread surfaces of said slats being arranged at such an angle with the incline that they are substantially horizontal. If with this form of tread-belt the passenger adjusts his feet so that they stand transversely of the tread-belt or longitudinally of the slats of which it is composed, they will rest upon a flat horizontal surface. If, however, the passenger's feet are arranged longitudinally of the tread-belt, in which position they will ordinarily span a plurality of slats, the general inclination of the surface upon which the foot rests will be substantially that of the incline of the elevator. By means of my present improvement the passenger may stand with his feet in the position last named and have the whole surface of his foot rest upon a surface which is substantially horizontal or one which is not materially or uncomfortably inclined from the horizontal. At the same time the relative width of the slats has been retained, so that the facility with which the tread-belt turns about the upper and lower terminal sprocket-wheels and coöperates with the upper and lower comb-landings is not lessened from that which is obtained in the construction illustrated in my prior patent above referred to, which construction has gone widely into use.

In the drawings accompanying and forming part of this specification, Figure 1 is a longitudinal section of a tread-belt, showing the upper and lower sprocket-wheels and upper and lower landings. Fig. 2 is a transverse section on line *a a* of Fig. 1, showing in addition to the parts shown in Fig. 1 certain other parts of the elevator structure. Fig. 3 is a partial section similar to Fig. 1, showing a modification of the tread-surface.

The reference characters are used in the same sense in the drawings and specification.

Numeral 1 represents the preferred form of tread-belt embodying my present invention. It is composed of transverse slats 2, which have rigidly secured to them the links 3, said links being joined together by pins 4, so as to form a continuous endless belt or chain. The slats are arranged in groups of three each, and upon the advance slat of each group are secured a series of tread-pieces 5, whose tread-surfaces are substantially parallel to the plane of the slat. On the following slat is arranged a series of tread-pieces 6, whose tread-surfaces are arranged at an angle with the surfaces of the slat and the general plane of the belt, so as to bring them substantially horizontal when the slats are on the elevator-incline. The third slat of each group is provided with tread-pieces 7, whose tread-surfaces are arranged in substantially the same plane as that of the tread-pieces 6 and considerably higher than the adjacent tread-pieces 5, secured to the advance slat of the succeeding group. The effect of this construction is to produce a tread-belt the general character of which is in the form of steps of sufficient width to accommodate an ordinary adult human foot when placed in a position at right angles to the direction of the slats. It is not necessary that the tread-surfaces of the tread-pieces 6 and 7 should be accurately horizontal or that the surfaces of the tread-pieces 5 should be strictly parallel

to the surfaces of the slats to which they are secured; but by making the tread-pieces 6 and 7 substantially horizontal and in approximately the same plane and making the surface of the tread-pieces 5 incline upward relatively to the surface of the tread-pieces 6 and 7 the foot may rest securely in position, bending naturally and without discomfort at the ball-joint thereof, and at the same time the difference in height between the highest point of the tread-pieces 7 and the following tread-pieces 5 is kept down, so as not to interfere with the landing of passengers upon the comb-landings.

The tread-pieces 5, 6, and 7 are arranged on the slats in longitudinal rows so as to leave grooves 8 between them, which grooves register with the prongs 9 of the upper comb-landing 10 and the prongs 11 of the lower comb-landing 12.

Numerals 13 and 14 represent, respectively, the upper and lower sprocket-wheels, around which a tread-belt passes, and it is desirable to keep these sprocket-wheels as small as possible in order to reduce the space occupied by the elevator as a whole and also to avoid the necessity of using long prongs for the comb-landings.

By forming the steps of the tread-belt of approximately the size of the steps of an ordinary stairway and of a plurality of slats hinged together, preferably three in number, it is possible to use smaller sprocket-wheels, and consequently shorter combs, and at the same time the angle of the tread-surface, and especially that portion on which the heel rests when passing the comb-landings as it is just coming to and just going out of operative position, is reduced to a minimum.

In Fig. 3 I have illustrated a modification of the tread-belt in which the step-like surface thereof is composed of groups, each having two slats, and the first and second slat of which group being provided with tread-pieces 17 and 18, respectively, the tread-pieces 18 projecting higher above the surface of the slat than the tread-pieces 17 and the surfaces of the tread-pieces 17 and 18 of each group being arranged in substantially the same plane, which plane is at an angle with the general direction of the tread-belt, so as to be more nearly horizontal in its operative position upon the incline of the elevator.

Having thus described my invention, what I claim is—

1. A tread-belt for inclined elevators consisting of a series of transverse members hinged together in the form of an endless belt, said members being arranged in groups or sets of varying heights.

2. A tread-belt for inclined elevators consisting of groups of transverse slats hinged together in the form of an endless belt, the tread-surfaces of the elements of each group being arranged at successively-increasing heights above the general plane of the belt.

3. A tread-belt for inclined elevators consisting of groups of slats, each group comprising a plurality of transverse slats hinged together in the form of an endless belt, the different members of each group having their tread-surfaces arranged so that when said tread-belt is operatively placed upon its incline the top surfaces of the different members of a group shall lie in substantially the same plane, which plane is at an angle and more nearly horizontal than the general inclination of the incline.

4. A tread-belt for inclined elevators having its tread-surface in the form of steps, each step being composed of a plurality of transverse slats hinged together.

5. A tread-belt for inclined elevators having its tread-surface in the form of steps, each step being composed of a plurality of transverse slats hinged together and longitudinal grooves adapted to register with the comb of a comb-landing.

6. A tread-belt for inclined elevators composed of transverse slats hinged together in the form of an endless belt, said slats having trapezoidal strips secured to their surfaces leaving longitudinal grooves adapted to register with a comb-landing the strips secured to one slat varying in shape with those secured to the adjacent slats so as to form therewith a step-like surface, each step of which is composed of a plurality of transversely-jointed elements.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JESSE W. RENO.

Witnesses:
JOHN H. MCNULTY,
ROGER H. LYON.