No. 733,804. PATENTED JULY 14, 1903.

F. E. BLAISDELL.

CONVEYER.

APPLICATION FILED MAR. 31, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

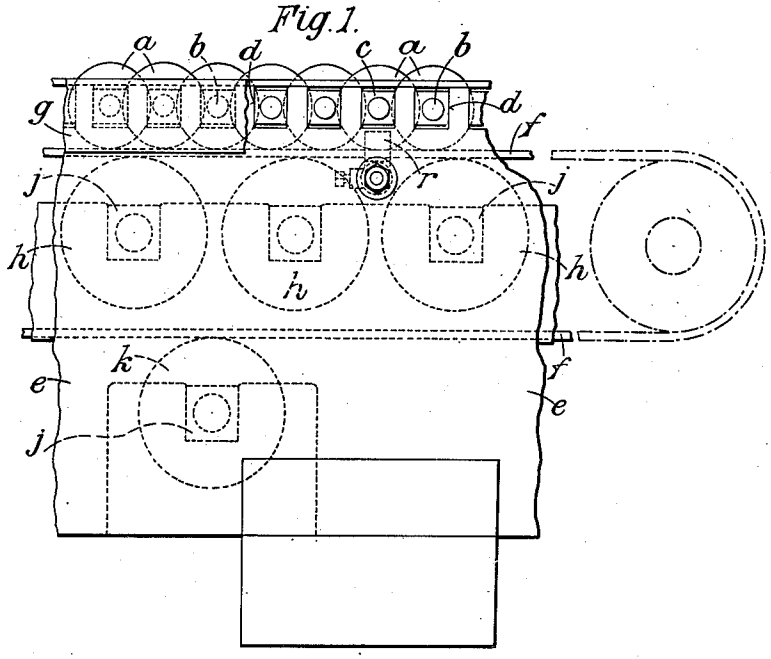
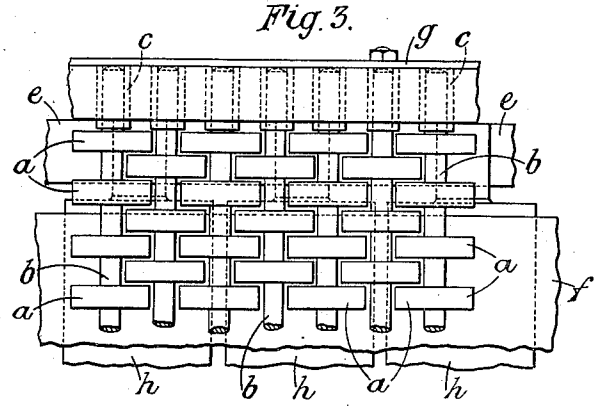


Fig. 3.



Witnesses:
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C. L. Kesler,

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By
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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.

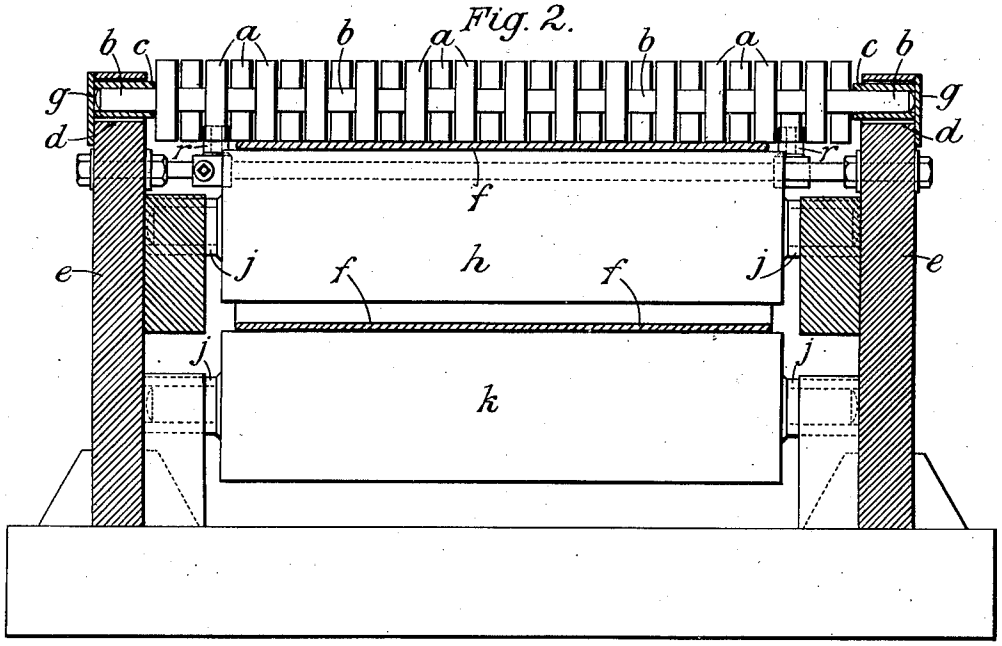


Fig. 4.

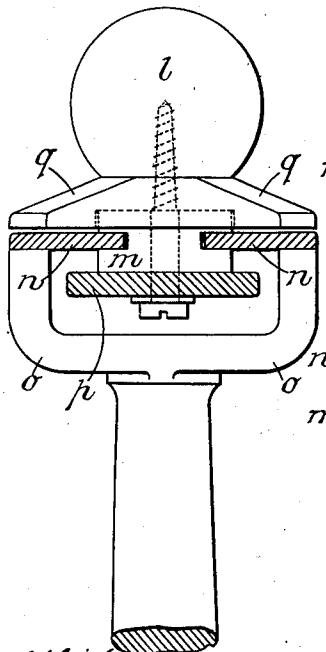
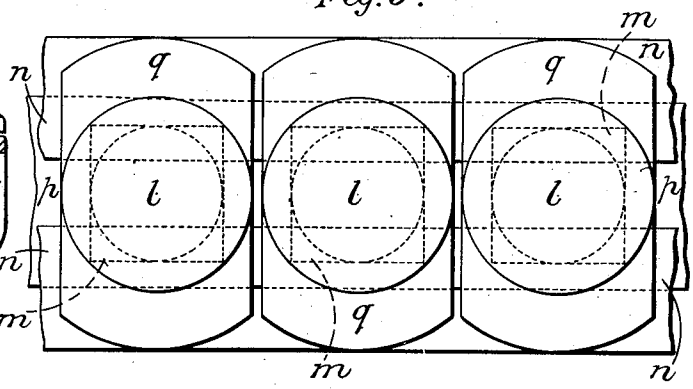


Fig. 5.



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NO MODEL. 3 SHEETS—SHEET 3.

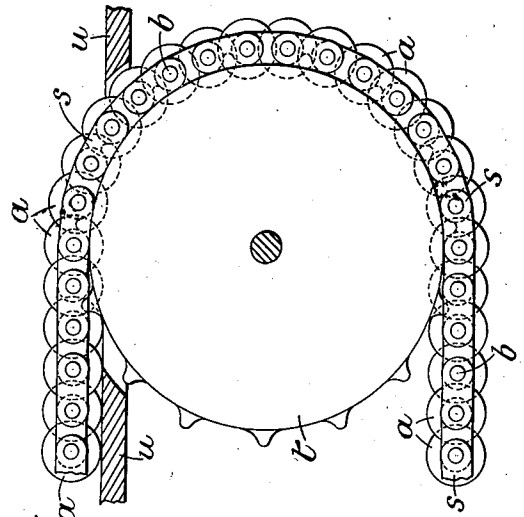


Fig. 6.

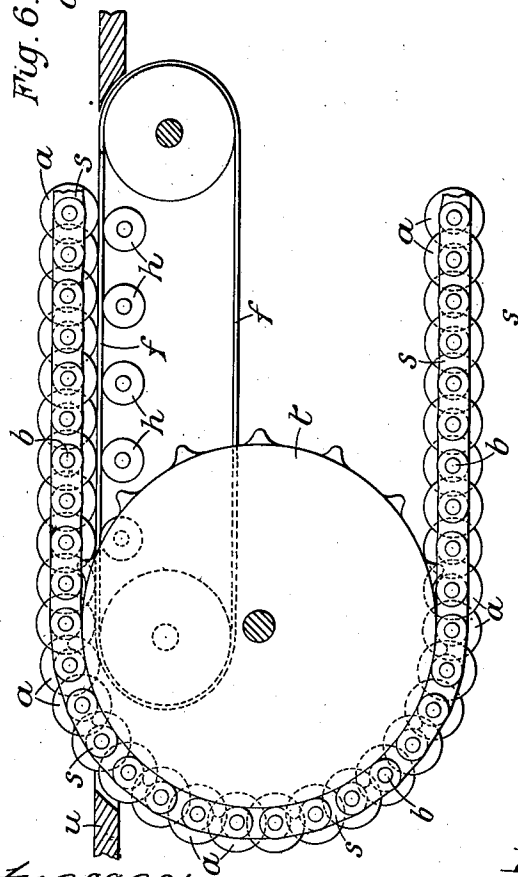
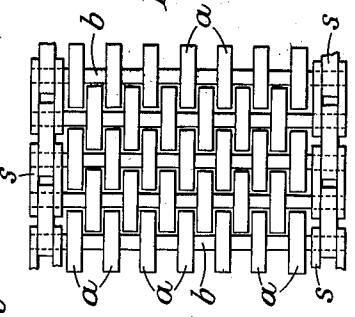


Fig. 7.



Witnesses:
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Inventor
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No. 733,804. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

FREDERICK ELIJAH BLAISDELL, OF COUNTY OF SURREY, ENGLAND.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 733,804, dated July 14, 1903.

Application filed March 31, 1903. Serial No. 150,482. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK ELIJAH BLAISDELL, a citizen of the United States of America, residing in the county of Surrey, England, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

My invention relates to means for conveying persons and goods from one place to another, either along a level or up or down gradients.

According to my said invention I employ a series of rollers of small diameter mounted on spindles at suitable distances apart, the spindles being so spaced that the rollers on each spindle project into the spaces between the rollers on the adjacent spindles, by which means a very even or continuous carrying-surface is provided. The rollers are rotated in the same direction by any suitable means and the persons or goods to be conveyed are placed on said rollers. The said rollers are driven by means of a surface moving relatively thereto and bearing against the under sides thereof, means being also provided, if desired, whereby a portion of the said surface can be moved at a different relative velocity than the remainder of such surface in order to accelerate, retard, or arrest the rotary motion of said rollers.

My said invention also comprises various detail improvements hereinafter set forth.

In the accompanying drawings I have shown how my said invention can be conveniently and advantageously carried into practice.

Figure 1 is a side elevation, Fig. 2 a transverse vertical section, and Fig. 3 a plan, showing a portion of a conveyer-track constructed according to my said invention. Fig. 4 is a transverse section, and Fig. 5 a plan, illustrating a traveling hand-rail adapted for use with my improved track. Fig. 6 is a side elevation, and Fig. 7 a plan, illustrating a modified form of my improved apparatus.

Like letters of reference indicate corresponding parts throughout the drawings.

a a are the rollers, which are mounted at short distances apart on rotary spindles *b b*. The rollers *a a* on each spindle *b* extend into the spaces between the rollers on the adjacent spindles, as shown, so as to form as continuous a surface as possible. These rollers are preferably made separately and fixed onto the spindles *b*, or they can be made integrally therewith.

The ends of the spindles *b b* turn in bearings *c*, which are capable of sliding vertically in sockets *d* in a frame *e*, so as to enable the rollers *a a* to rest at their under sides on a traveling belt *f*. In some cases the bearings *c* may be dispensed with. The spindles *b* are prevented from moving longitudinally by means of metal plates *g*, secured on the outer sides of the sockets *d* and against which the rounded ends of the said spindles bear. The belt *f* is preferably endless, and the part thereof in contact with the rollers *a a* is supported on a series of bearer-rolls *h*, running freely in bearings *j* in the frame *e*, while the return half of the said belt is supported on a second series of bearer-rolls *k*, arranged sufficiently near each other to prevent undue sagging of the belt and similarly running in bearings *j* in the frame *e*. The said belt is driven through a driving-pulley arranged at one or both ends of the track and actuated, for example, by an electric motor. The rollers *a a* can, however, be driven in any other suitable manner. Lateral guide-rollers *r*, mounted on brackets on the frame *e*, are preferably arranged at the edges of the belt *f*, as shown. In some instances two driving-belts may be used, one at each side, in contact with the spindles or with driving-rollers thereon instead of with the conveyer-rollers, the spindles in this case being suitably lengthened.

Where the track passes around curves, the rollers *a a* can be arranged with their axes radiating from the center of curvature, in which case conical rollers may advantageously be employed. When different straight portions of the track have different directions, the same may be worked by independent belts.

On one or both sides of the track is arranged a traveling hand-rail, preferably consisting of a series of wooden or other balls or handles *l*, mounted on studs or slides *m*, of white-metal

or other suitable material, which slide between guide-bars n, of steel or other suitable material, mounted on a rail o, supported at a convenient height to enable the balls l to be grasped by persons on the track. The slides m are secured to a belt or its equivalent, p, which is driven, by any suitable means, so as to travel at the same speed as the periphery of the rollers a a—*i. e.*, of the surface of the track. The handles l are preferably provided with an apron or flanges q, extending over the guide-bars n, so as to prevent the hands or clothes of persons grasping the said handles from being soiled by any oil or other matter there may be on the said guide-bars.

In the arrangement shown in Figs. 6 and 7 the spindles b b are mounted in endless chains s s, which extend over wheels t t at the ends of the track, one or other of these wheels being used for driving the said chains. The spindles b in this arrangement can either be arranged to turn in bearings arranged in or pivotally or rigidly secured to the links of the chains s or they can be fixed to the said links. In this latter case the rollers a a are either mounted on sleeves turning freely on the said spindles or are mounted so as to be capable of rotating independently thereon.

The rollers a a roll, during part of their travel, on a plane surface or floor u, thus causing their upper surfaces forming the conveyer-track to move in the same direction to the chains s s, the surface speed of the said track relatively to the floor u being equal to twice that of the said chains. At the end of the track at which the passengers or goods, respectively, step onto or are placed on the conveying-surface I provide a belt f, arranged similarly to that described with reference to Figs. 1, 2, and 3. This belt is driven in the same direction as and at double the speed of the chains s s, so as to enable any person or object on this part of the track to remain stationary relatively to the floor u. On gradually bringing this belt to rest the speed of the said person or object will be gradually increased from zero up to that of the remaining part of the track. If desired, this belt can be provided at the other end of the track and be arranged to work in the inverse manner to that above described for the purpose of bringing persons on the track slowly to rest. Moreover, parts of the floor u can be replaced by a belt or belts running in the opposite direction to the chains s s, so as to increase the surface speed of the track.

When used for ascending or descending gradients and in some cases on level floors, the rollers a a may be covered with india-rubber or other suitable material to afford increased hold for the shoes of passengers, and thus prevent slipping. Moreover, when ascending or descending gradients I prefer to continue the conveyer a short distance on the level at each end of the gradient.

What I claim is—

1. A conveyer-track comprising, in combination, a series of spindles, rollers arranged at intervals on said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, and means for rotating and for supporting said rollers.

2. A conveyer-track comprising, in combination, a series of spindles, rollers arranged at intervals on said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, a surface bearing against the under sides of said rollers, and means for moving said surface and said rollers relatively to each other, substantially as described.

3. A conveyer-track comprising a series of spindles, rollers mounted at intervals on said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, a surface bearing against the under sides of said rollers, means for moving said surface and said rollers relatively to each other, and means for moving one part of said surface relatively to another part of said surface, substantially as described.

4. A conveyer-track comprising a series of spindles, rollers mounted at intervals on said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, chains bearing said spindles, sprocket-wheels bearing said chains, a fixed and a movable surface supporting the under sides of said rollers, and means for moving said movable surface, substantially as described.

5. A conveyer comprising a series of spindles, rollers arranged at intervals on said spindles the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, a surface bearing against the under sides of said rollers, means for moving said surface and said rollers relatively to each other, guide-bars supported at one side of the track so formed, a traveling band, a series of slides movable along said guide-bars and connected to said traveling band, and handles mounted on said slides, substantially as described.

6. A conveyer-track comprising, in combination, a series of spindles, rollers arranged at intervals along said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles, means for maintaining said spindles at definite distances apart, and means for rotating and supporting said rollers, substantially as described.

7. A conveyer-track comprising, in combination, a series of spindles, rollers arranged at intervals along said spindles, the rollers on each spindle extending into the spaces between the rollers on the adjacent spindles,

means for maintaining said spindles at definite distances apart, a surface bearing against the under sides of said rollers, and means for moving said surface and said rollers relatively to each other, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK ELIJAH BLAISDELL.

Witnesses:
HERBERT A. BEESTON,
WALTER J. SKERTEN.