

Jan. 25, 1927.

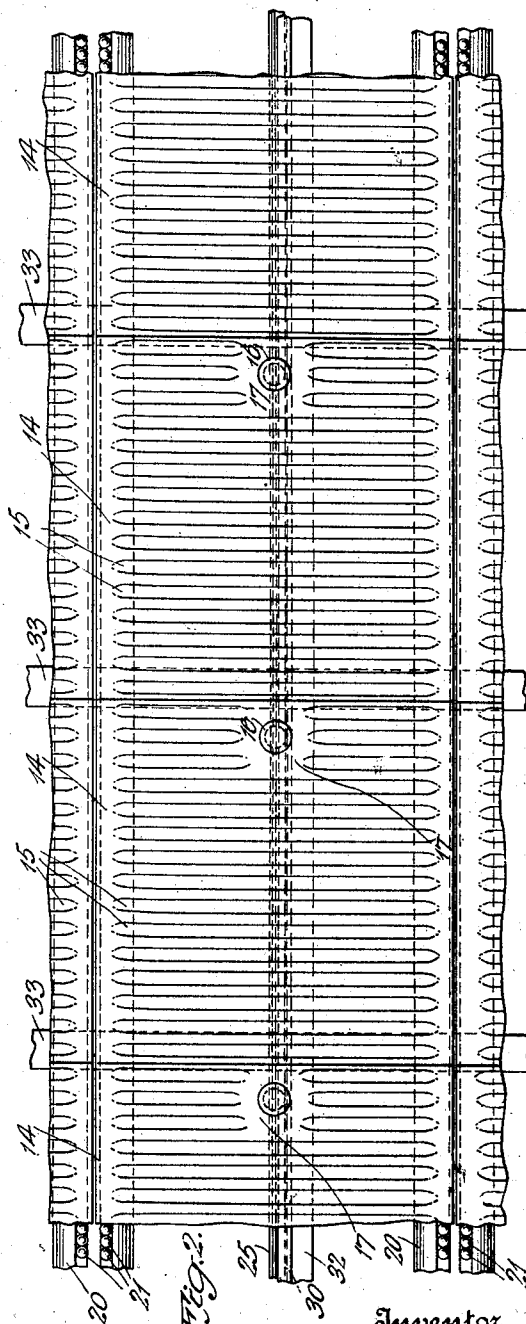
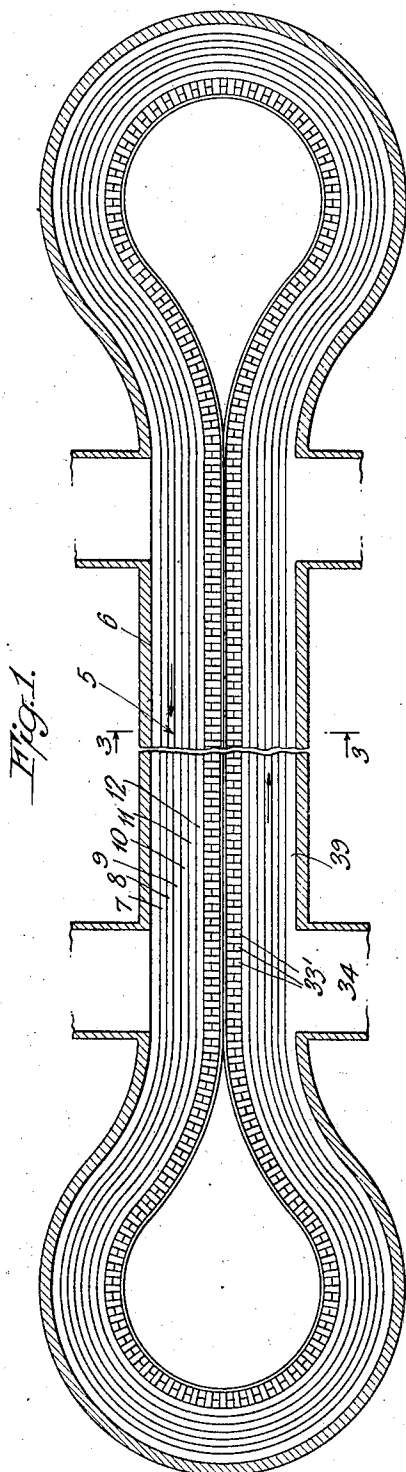
J. K. HENCKEN

1,615,453

CONVEYER

Filed June 24, 1925

3 Sheets-Sheet 1



Inventor
John K. Hencken
By his Attorneys
Williams & Green

Jan. 25, 1927.

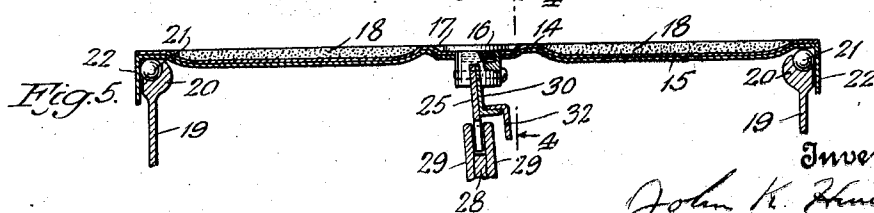
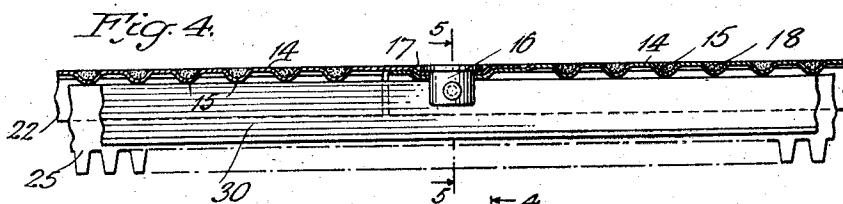
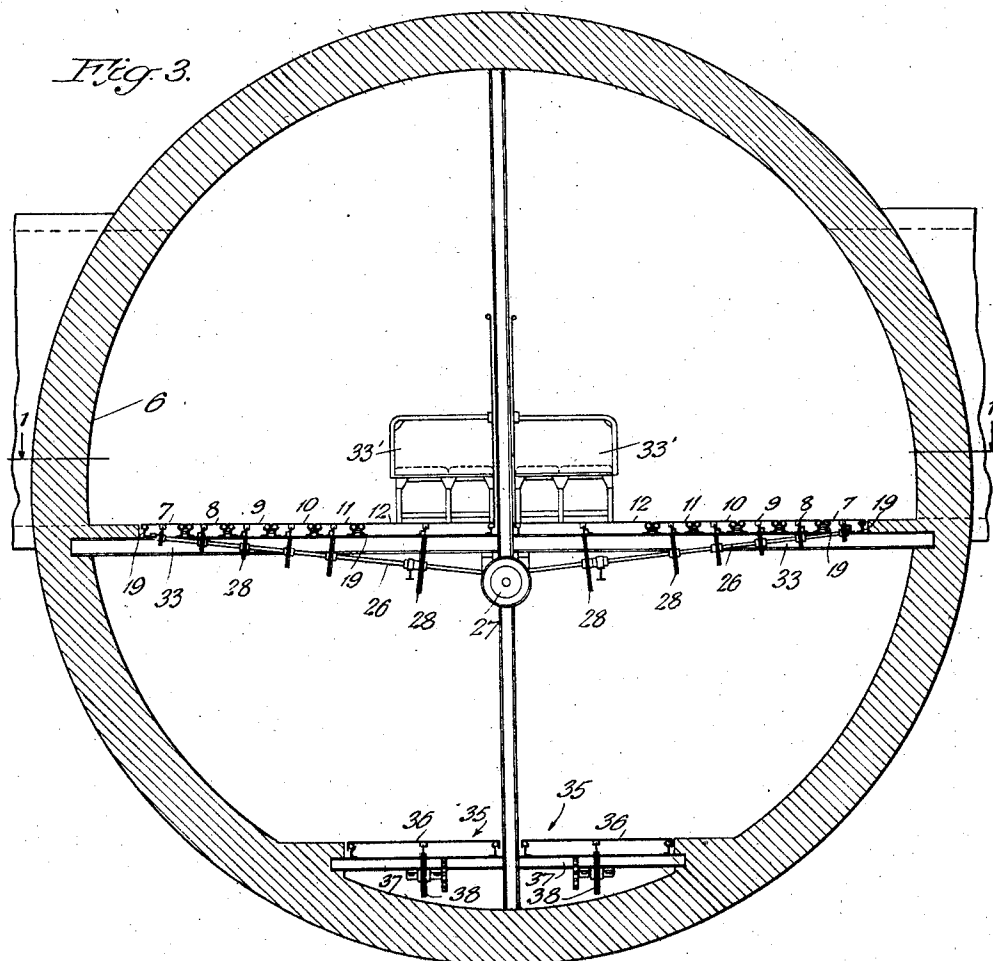
J. K. HENCKEN

1,615,453

CONVEYER

Filed June 24, 1925

3. Sheets-Sheet 2



Inventor

John K. Hucker

By the Attorney

Williams & Co.

Jan. 25, 1927.

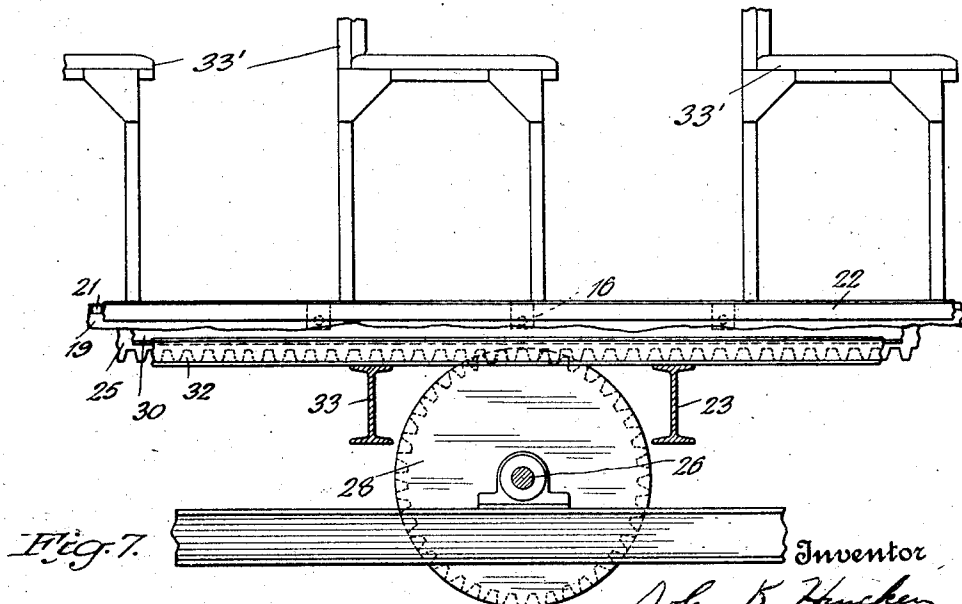
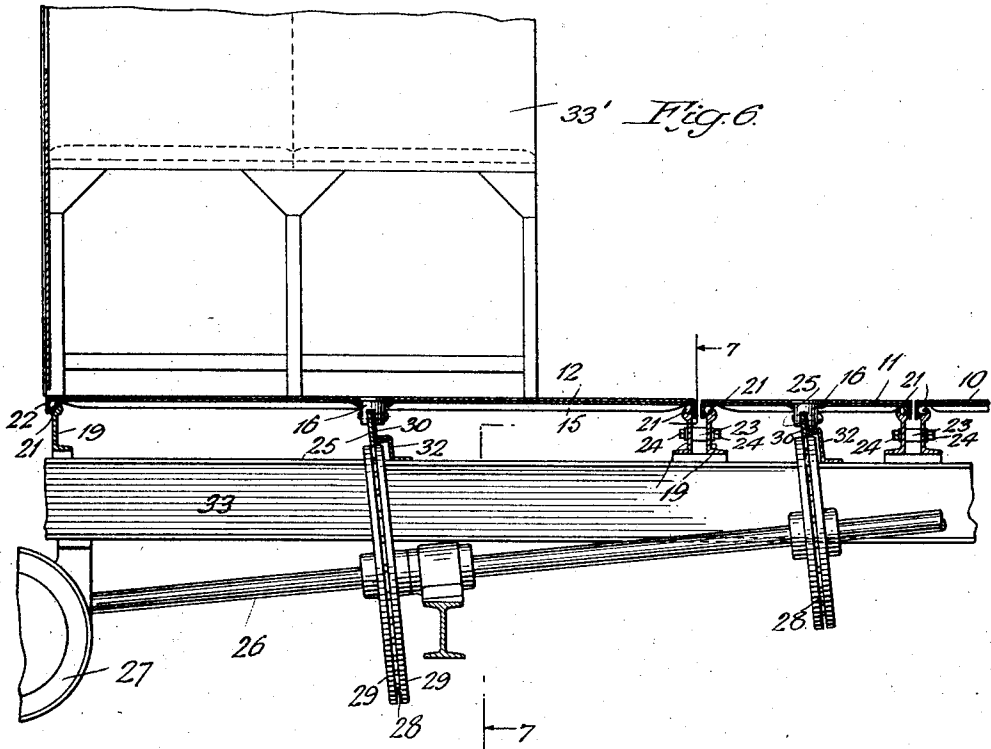
1,615,453

J. K. HENCKEN

CONVEYER

Filed June 24, 1925

3 Sheets-Sheet 3



Inventor
John K. Hencken
By his Attorneys
Williams & Lewis

UNITED STATES PATENT OFFICE.

JOHN K. HENCKEN, OF BROOKLYN, NEW YORK.

CONVEYER.

Application filed June 24, 1925. Serial No. 39,174.

This invention relates to improvements in conveyers of the class commonly known as "moving platforms" and is herein shown in two forms designed for transporting passengers and freight respectively.

An important object of the invention is to provide a generally improved device of the character mentioned which is so constructed as to readily permit the removal and replacement of various parts thereof without necessitating a shutdown in operation when it becomes necessary to make repairs.

A further object of the invention is to provide a device of the character mentioned which is so constructed as to require a minimum amount of driving energy per unit of load carried.

Another object of the invention is to provide a structure in which the stresses, incident to operation, are so distributed as to relieve the device, at any one point, of excess stresses, thereby lessening the possibility of breakdowns under operating conditions.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings in which—

Figure 1 is a diagrammatic sectional plan view taken on line 1—1 of Figure 3 and showing a series of continuous platforms adapted to be operated at constant speeds respectively, but at different speeds with respect to each other.

Figure 2 is an enlarged fragmental plan view of a platform on opposite sides of which are fragmentally shown adjacent platforms.

Figure 3 is a transverse sectional view taken on line 3—3 of Figure 1.

Figure 4 is a longitudinal sectional view taken on line 4—4 of Figure 5 showing the overlapping ends of adjacent sections of a platform.

Figure 5 is a transverse sectional view taken on line 5—5 of Figure 4.

Figure 6 is a transverse sectional elevation taken through a pair of platforms and showing in detail the driving mechanism employed in connection therewith.

Figure 7 is a longitudinal sectional view taken on line 7—7 of Figure 6.

In the drawings, wherein for the purpose of illustration, are shown what I at present consider the preferred forms of my invention, Figure 1 shows, in plan, a continuous

conveyer adapted for operation within a tunnel or subway 6 (Figure 3), although not restricted to underground use. The conveyer is adapted for continuous operation, in a given direction as indicated by the arrows in Figure 1, and is sufficiently flexible to enable the same to pass around a curve at each end of the system so that one-half of the conveyer travels in one direction while the other half travels in an opposite direction. The conveyer 5 comprises a plurality of continuous platforms, indicated by the numerals 7 to 12, inclusive, and each platform comprises a plurality of sections 14 provided with corrugations 15. The sections 14 are overlapped in nesting engagement with one another and are secured in an overlapping relation by means of pivots 16 passed through flattened areas 17 of adjacent sections. It may be remarked here that a sufficient clearance is allowed between the interlocking corrugations to permit a relative movement on one section with respect to the other about the pivotal connection between the adjacent sections. This relative movement is necessary inasmuch as the conveyer passes around a curve at opposite ends of the system, as shown, but since the curve is long and gradual the relative movement between adjacent sections is necessarily very small and consequently only a small amount of clearance need be afforded between the interlocking corrugations. If desired, all corrugations of each section, except those into which the corrugations of the adjacent section fit, may be filled with a suitable anti-slip compound 18 for the purpose of preventing accidental slipping of persons boarding or departing from the conveyer.

The several platforms, indicated by the numerals 7 to 12, are suitably supported throughout their lengths by tracks 19 each of which is provided with a head 20 having a groove formed therein carrying a series of ball-bearings 21. It will be noted that the sections 14 are provided at opposite sides with depending flanges 22 which project downwardly intermediate adjacent tracks 19. These flanges form with the heads 20 and the flattened margins of the sections chases within which the ball-bearings 21 are confined. Between adjacent tracks 19 are arranged a plurality of spacers 23 which serve to retain the tracks 19 in a properly spaced relation, the tracks being

secured together by means of bolts 24 passed through the spacers and the webs of the tracks.

To each of the conveyers there is attached
 5 a continuous rack 25 which is suitably secured to each of the pivots 16. These racks are sufficiently flexible to permit the platforms to readily pass around the curves at each end of the system without setting up
 10 any undue strain at any point within the conveyer structure. As a means for driving the platforms at different speeds, I provide a plurality of inclined shafts 26, journaled in suitable supports and adapted to be
 15 driven from suitable sources of power such as a plurality of motors 27 operatively connected therewith through proper reduction gearing, not shown. These shafts and motors may be arranged at proper intervals
 20 throughout the continuous length of the system, and each shaft is provided with a plurality of shrouded gears 28, of different sizes, which are adapted to mesh with the several racks 25, the side plates 29 of each
 25 gear being so spaced as to receive therebetween the toothed area of the racks thus insuring engagement between the racks and gears under all conditions. The gears 28 may be so dimensioned, depending upon the
 30 speed of rotation of the shafts 26, as to obtain any desired speed of the several platforms 7 to 12, inclusive, but I prefer to employ gears of such diameters, assuming a
 35 given speed of rotation of the shafts 26, as to drive the platforms 7 to 12 at the rate of three, six, nine, twelve, fifteen and eighteen miles, respectively, per hour. In order to further insure engagement between the several racks 25 and gears 28, I have provided each platform with a flanged guide
 40 30 which is secured to the several pivots 16, and lies flat against the rack 25. These guides may be slotted so as to permit them to yield or bend with the racks when the
 45 several platforms are distorted from a straight line of travel without setting up any undue strain within the conveyer structure. A plurality of guide bars 32 are carried by the transverse supports 33 which
 50 support the tracks 19 and are so arranged as to engage the guides 30 adjacent the several gears 28. It will be appreciated that since the racks 25 are confined intermediate the plates 29, and since guide bars 32 engage the guides 30 at points adjacent the
 55 gears 28, a positive driving connection between the several gears and their respective racks is afforded under all conditions.

The innermost platform 12, when the
 60 system is employed for the transportation of passengers, may be provided with a plurality of seats 33 for accommodating the passengers. These seats may be arranged either longitudinally of the platform 12 or
 65 transversely thereof as desired.

In practice the passengers enter upon and leave the conveyer from a loading platform 39 at certain prescribed stations, such as subway entrances 34 if the system is employed underground, and inasmuch as the
 70 platforms are propelled at progressively increased speeds, ranging from a minimum of three miles per hour to a maximum of eighteen miles per hour, the platform 12 may be reached by the passengers with ease
 75 and comfort, and for the same reason the passengers may with equal ease depart from the conveyer.

Under certain conditions it may be found desirable to employ a freight carrying system in connection with the passenger system. In the present instance a freight conveyer 35 is illustrated as occupying the lower portion of the tunnel or subway 6 and embodying a single moving platform 36,
 85 substantially identical with those indicated by the numerals 7 to 12, inclusive, and hereinbefore described. The platform 36, like those already described, is supported by a plurality of transverse supports 37 and employs the same form of driving means except that a single series of shrouded gears 38 is used for the entire freight carrying system since it is made up of but a single
 90 platform.

Having thus described my invention I claim:

1. A conveyer comprising an endless platform including a plurality of sections pivotally connected together and adapted to
 100 move with respect to each other when the platform is distorted from a straight line course, a flexible rack secured to said sections and adapted to flex to conform with the distortion of the platform, and a driving
 105 gear adapted to mesh with said rack for moving said platform along its course.

2. A conveyer comprising an endless platform including a plurality of sections pivotally connected together and adapted to
 110 move with respect to each other when the platform is distorted from a straight line course, a flexible rack secured to said sections and adapted to flex to conform with the distortions of the platform, a driving
 115 gear adapted to mesh with said rack for moving said platform along its course, and means for maintaining meshing engagement of said rack with said gear.

3. A conveyer comprising a moving platform including a plurality of sections movably connected to each other, tracks at each side of said conveyer, anti-friction bearings carried by said tracks and supporting said
 120 conveyer throughout its length at opposite sides of said sections, a flexible rack secured to said sections, and a driving gear meshing with said rack for moving said platform along its course.

4. A conveyer comprising a plurality of 130

moving platforms arranged in the same plane, each of said platforms including a plurality of sections pivotally connected together and adapted for relative movement when said platforms are distorted from a straight line travel, flexible racks carried by said platforms and adapted to yield to conform to the relative movement between said sections, a driving shaft inclined with respect to the plane of said platforms, and a plurality of gears carried by said shaft and adapted to mesh with said racks for moving said platforms.

5. A conveyer comprising a plurality of moving platforms arranged in the same plane, each of said platforms including a plurality of sections pivotally connected together and adapted for relative movement when said platforms are distorted from a straight line travel, flexible racks carried by said platforms and adapted to yield to conform to the relative movement between said sections, a driving shaft inclined with respect to the plane of said platforms, and a plurality of different size gears carried by said shaft and meshing with said racks for moving said platforms at different speeds with respect to each other.

6. A conveyer comprising a moving platform including a plurality of corrugated sections overlying each other, the corrugations of adjacent sections being interlocked, means for pivotally connecting said sections together whereby relative movement between said sections is permitted when the platform is distorted from straight line travel, a continuous flexible rack secured to said sections at their respective points of pivotal connection and adapted to flex to conform to the distortion of said platform, a driving gear meshing with said rack and adapted to move said platform along its course.

7. A conveyer comprising a moving platform including a plurality of corrugated sections overlying each other, the corrugations of one section being fitted into the corrugations of an adjacent section, means for pivotally connecting said sections together

whereby relative movement between said sections is permitted when the platform is distorted from straight line travel, a continuous flexible rack secured to said sections at their respective points of pivotal connection and adapted to flex to correspond to the distortion of said platform, a driving gear meshing with said rack and adapted to move said platform along its course, tracks for supporting said platform, said tracks being provided with grooves and arranged at opposite sides of the platform, flanges carried by said sections and forming with each of said grooves a chase, and anti-friction bearings carried within each chase and adapted to receive said sections thereupon.

8. A conveyer comprising a plurality of moving platforms arranged in parallelism, a driving shaft inclined with respect to said platforms, racks connected to said platforms, and different sized gears carried by said shaft and adapted to engage said racks for moving said platforms at different speeds with respect to each other.

9. A conveyer comprising an endless platform including a plurality of sections adapted to move with respect to each other when the platform is distorted from a straight line course, a flexible rack carried by said platform and adapted to undergo distortion corresponding to the distortion of said platform, and a driving gear adapted to mesh with said rack for moving said platform along its course of travel.

10. A conveyer comprising a plurality of moving platforms, each of said platforms including a plurality of sections adapted for relative movement when said platforms are distorted from a straight line course, flexible racks carried by said platforms and adapted to yield as said platforms are distorted, and driving means cooperating with said racks for moving said platforms at different speeds with respect to each other.

In testimony whereof, I have affixed my signature to this specification.

JOHN K. HENCKEN.