A. L. W. BEGG.

SYSTEM OF LOCOMOTION.

APPLICATION FILED NOV. 13, 1916.

1,239,077.

Patented Sept. 4, 1917.

3 SHEETS—SHEET 1.

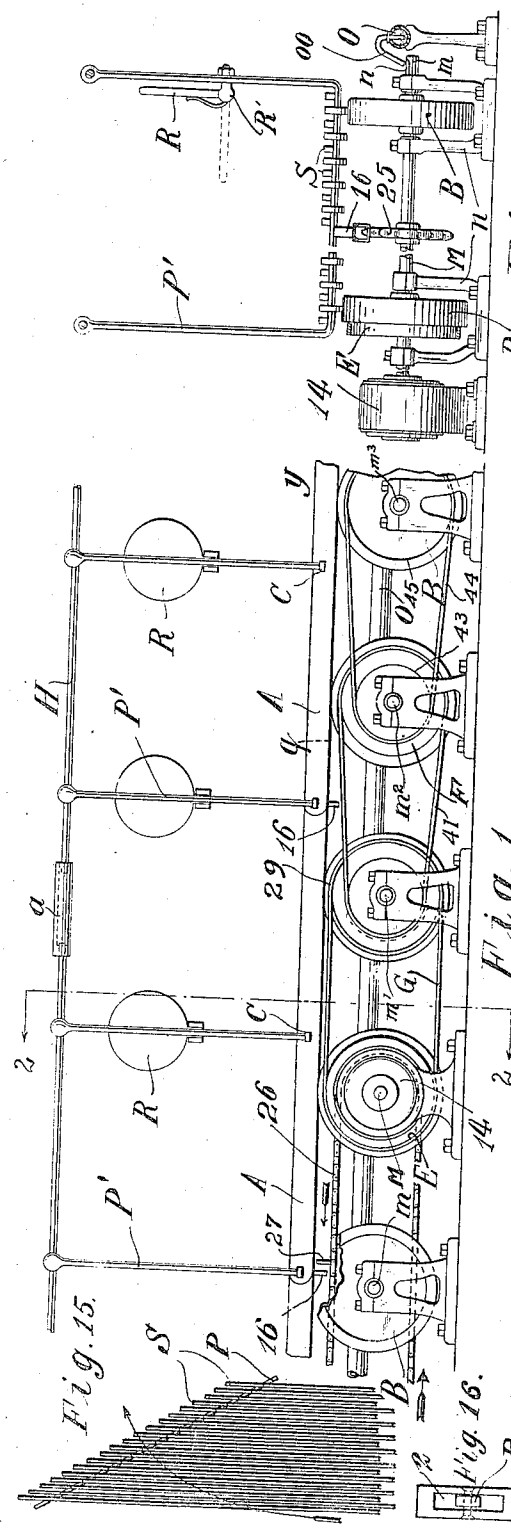


Fig. 1.

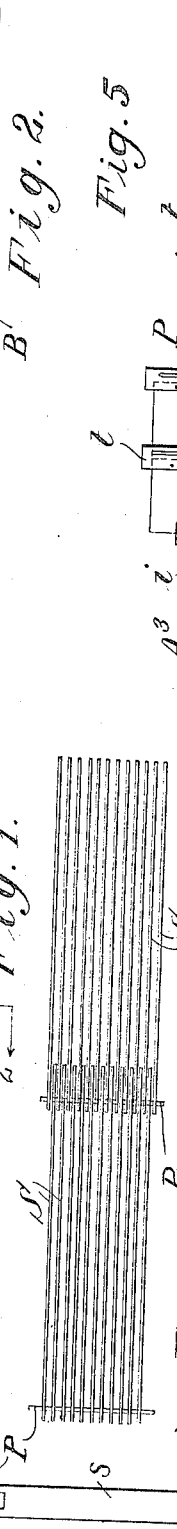


Fig. 2.

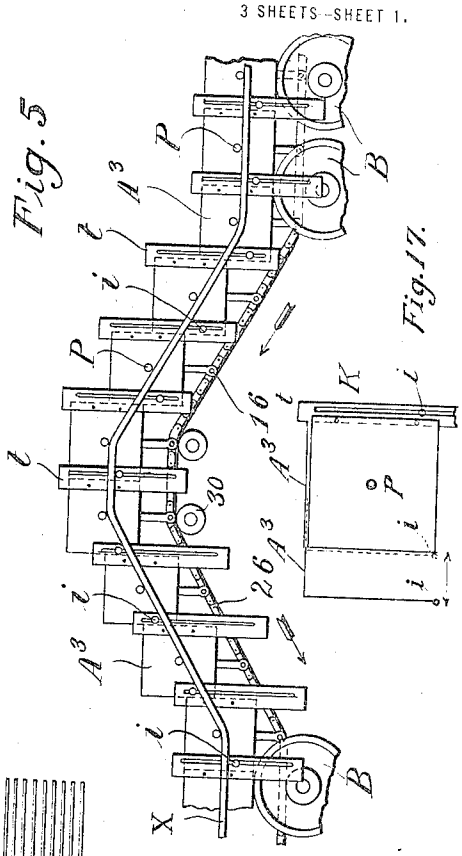


Fig. 5.

Fig. 17.

Fig. 4.

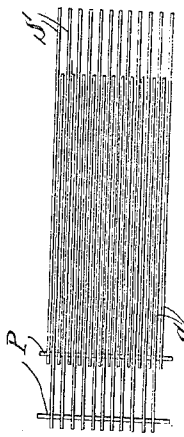


Fig. 3.

Fig. 15.

Fig. 16.

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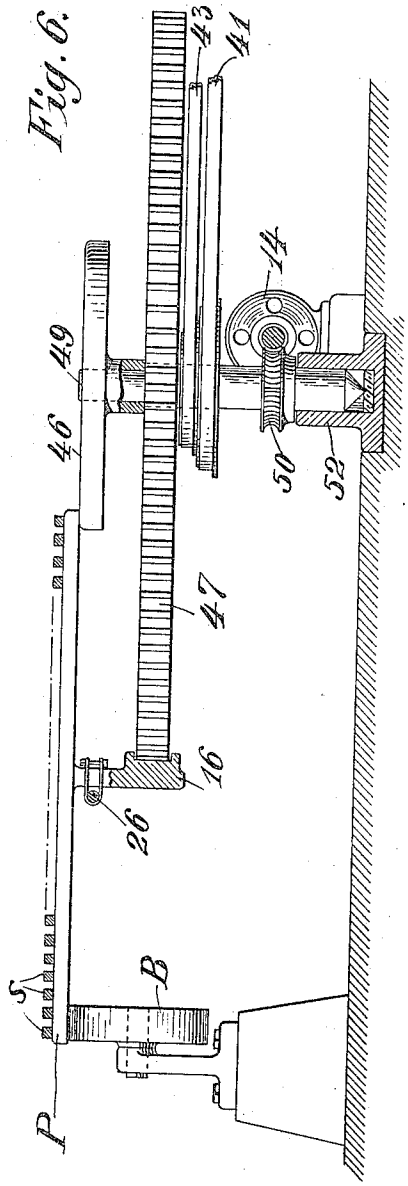
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3 SHEETS—SHEET 2.

Fig. 6.



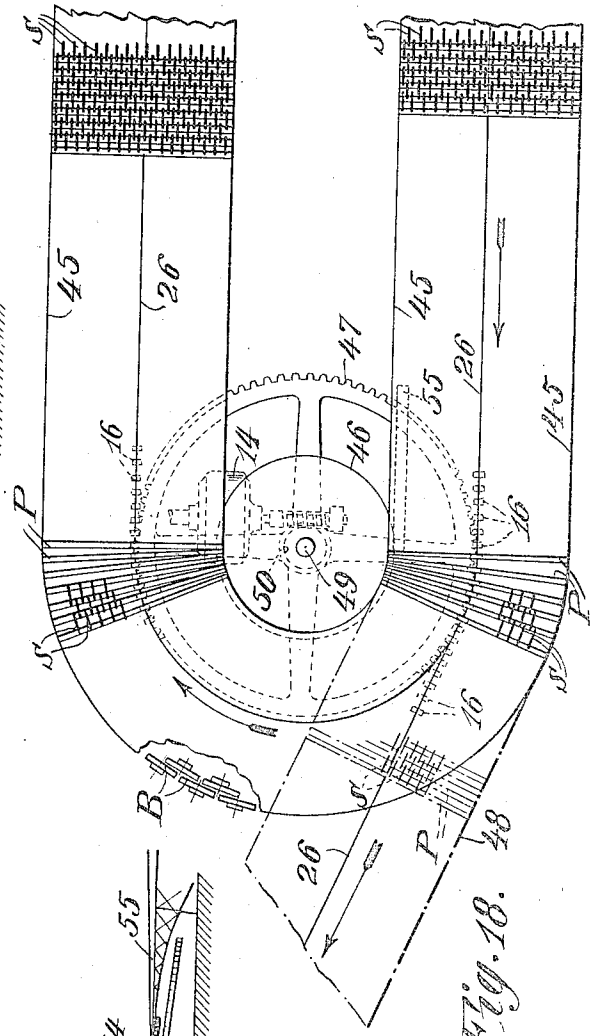


Fig. 18.

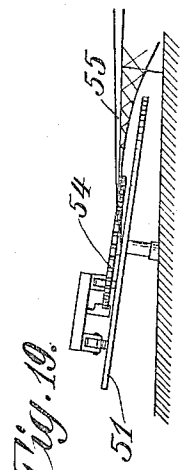


Fig. 19.

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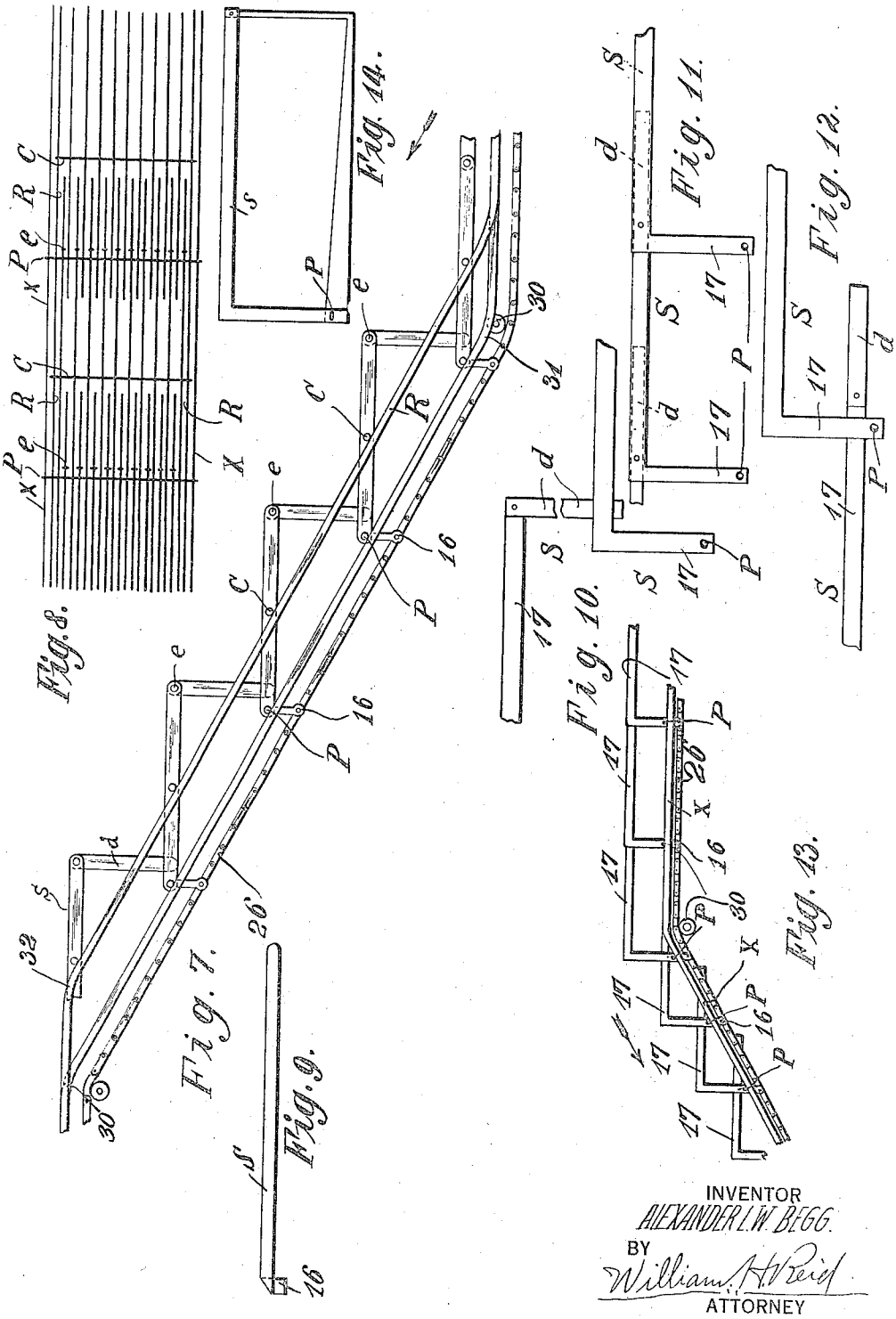
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3 SHEETS—SHEET 3.



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To all whom it may concern:

Be it known that I, ALEXANDER L. W. BEGG, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Systems of Locomotion, of which the following is a specification.

This invention relates to a system of locomotion or apparatus, for the transportation of both freight and passengers. One of the objects of the invention is to provide a device of this character that will furnish such transportation by a gradual acceleration of movement of the articles carried, with both safety and comfort.

Another object of the invention is to provide a device of this character that can adapt itself to an irregular path of movement; the object or passengers can be transported in a path that diverges laterally, and which conveyer also is adapted to carry passengers both up and down an incline, as well as on a level.

In the accompanying drawings illustrating embodiments of my invention, Figure 1 is a side elevation of a portion of the device. Fig. 2 is a cross section through the same on the line 2—2 of Fig. 1. Fig. 3 shows the planes or bars closed together, and Fig. 4 shows the same drawn apart. Fig. 5 shows the application of the planes to a step formation. Fig. 6 is a vertical section, partly in elevation, of a modification of a motive power as applied to the planes. Fig. 7 shows the step formation for the ascent. Fig. 8 is a detail of the planes. Fig. 9 shows one of the bars bent to form a lug or hook. Figs. 10, 11 and 12 show modifications of the bars. Fig. 13 shows the device operating on a decline. Fig. 14 shows a bar having a rectangular frame formation. Fig. 15 shows the bars adapted to assume lateral deflections. Fig. 16 shows the slotted connections of the bars. Fig. 17 is a modified section. Fig. 18 is a plan view of the parts shown in Fig. 6; and Fig. 19 is a modification of the latter.

In the drawings the conveyer is shown as composed of a series of connected or articulated article-engaging sections, and means is provided for supporting and guiding the sections, both on a level and also to pass up an incline and then down another incline support to resume the former level. The planes or sections denoted generally by A, are shown as composed of bars S suitably connected in each section at one end, as by rods P extending transversely through slots 2 in the bars, as shown in Fig. 16. The bars in adjacent sections overlap, and the free ends of the bars of one section rest on the cross rod P of the bars of the adjacent section, as indicated in Figs. 3 and 4. This will permit relative movement longitudinally in adjacent sections, for the purpose of producing an effect of acceleration in the conveyer, and also a retardation in the speed of advance of the sections, as may be necessary to return to former speed, in an endless conveyer.

In Figs. 1 and 2 a series of shafts m, m^1 and m^2 are mounted on bearing members M, which shafts carry supporting pulleys B. It will be seen that these pulleys are arranged at close intervals so that two of them support each of the sections A. One of the shafts is shown as driven by a motor 14, and this shaft carries a sprocket wheel 25 that serves to drive an endless chain 26. This chain is provided with projections 27 adapted to engage with projections 16 on the bars S of the sections, shown in these views.

A pulley E on the driving shaft M connects by a belt G with a pulley 29 on the adjacent shaft m', and a smaller pulley 40 connected with the pulley 29 serves to drive by a belt 41 a pulley fast on a shaft m^2, by means of which the supporting pulleys B on this shaft m^2 will be driven at a slower speed, and hence the bars S while engaging this pulley will travel at a reduced speed. The shaft m^2 carries a small pulley 43 connected by belt 44 with a larger pulley 45 supported on a shaft m^3. Hence the pulley B on shaft m^3 will have a still further reduction in speed than the other pulleys or wheels. By this means a gradual acceleration is provided for the conveyer moving in the direction indicated by the arrow in Fig. 1; this being permitted by reason of the relative longitudinal movement of the adjacent sections.

The projections 16 on the bars S may be

formed by bending one end portion on itself to extend downwardly, as shown in Fig. 9, which thereby obviates the use of an additional lug attached thereto.

In Figs. 1 and 2 the cross rods P are shown provided with extensions P^1 that project upwardly as shown, their upper ends being apertured to receive rails H, that are connected at their extremities by a sleeve *a* permitting a telescoping action of the rails to accommodate the relative longitudinal movements in the sections. The upright extensions P^1 may be provided with adjustable seats R hinged thereto by supports R^1. These seats when swung down to the horizontal position as indicated in Fig. 2 are for the convenience of passengers.

The apparatus or system as described so far is adjustable for use on a level, but to accommodate inclines I arrange the conveyer to assume a step formation, such as indicated in Fig. 7. For this purpose I provide a guide rod 32 that is engaged by cross rods C passing through the bars S, while the said chain 26 engages guide wheels 30, as shown in Fig. 7. For such use I further provide extensions *d* pivoted to the bars S at *e*, that will act as the rise portions for the treads composed of the bars S. A modification of the bars is shown in Figs. 10–12 in which the bars have a right angled form caused by an integral extension 17 at one end that carries the connecting rod P, while the other extremity is provided with the hinged extension *d*. When moving on a level their position is as shown in Fig. 11; while on the incline their position is as indicated in Fig. 10. In Fig. 13 is shown a guide rod X extending on a level and then inclined downward to permit the descent of the parts as shown in Figs. 10–12. The chain 26 here shown passes around a guide pulley 30 and then travels down the incline. In Fig. 5 is shown a modification in which the sections are composed of rectangular members A^3. These members are provided at one end with slotted plates *t*, that are engaged by bolts *i* on the adjacent member A^3. By this means the adjacent members are relatively movable in a vertical path. This will permit them to assume the step formation on both an incline and a decline in their forward direction, as clearly shown in Fig. 5, wherein the guide rod X is first deflected upwardly, then extends on a level, and then extends downwardly to the former level. In this view the chain 26 is deflected by guide rolls 30 as indicated in Fig. 13.

In a system of this character involving the use of a large number of the shafts and guide rolls, it is obviously necessary to provide lubricating means for the rolls or pulleys. As shown in Figs. 2 and 6 the axles *m* of the pulleys are provided with longitudinal grooves *n*. I provide a reservoir O from which extends a wick tube *oo* provided with a wick *w*. The tube extends to the groove *n* and the wick projects beyond the tube into the groove. The wick will absorb the oil in the reservoir and will convey it to the groove. If desired the reservoir O may be in the form of a pipe extending along from axle to axle, and hence it is only necessary to keep the pipe supplied with the lubricant. In order to regulate the position of the wick tube, the pipe O may be turned on its axis as indicated in Fig. 6 by a handle *x*.

That the system is susceptible to changes because of local conditions, is obvious, as for instance, the lapping or meshing of the plane surfaces may be lateral, as in Fig. 17, instead of longitudinal as disclosed in the preferable form, or, the planes may have the supporting wheels directly attached to them or be supported by another rolling or sliding means and other such modifications would be quite within the principle of the invention.

And it will be understood that the application of the principle of increasing articulation to a body through the medium of a wheel revolving at varied speeds as shown in Figs. 1 and 2, is merely illustrative.

In Figs. 6 and 18 is shown a different application of the motive power to the planes. 45 is the path in which the planes travel, and 26 shows the rope or chain shown in Fig. 1, to apply the power. A turn-table 46 is shown having a gear 47 that revolves on a shaft 49, suitably supported in a step bearing 52. A worm gear 50 connected with a motor 14 revolves the turn-table. The lugs 16 shown in Fig. 1 projecting down from the planes A, engage the teeth of the wheel 47 and hence the chain revolves around the wheel. But if desired, the planes may advance in a slightly deflected path 48 instead of making a half revolution. These turn-tables, of which there may be a number in a given system, may vary in size for application of the motive power through 41, 43, 47, (see Fig. 6) or deflection of the same as the case may be.

In Fig. 19 the turn-table 51 is much wider and extends across the path, to permit the gear 54 to pass under the wheels on one side of the planes. A bridge 55 permits the wheels to pass over the gear.

This turn-table feature of the system is open to a variety of applications and uses, as for instance, the article-engaging units received by it may be articulated (joined) as shown in the preferred form illustrated or separate and still be within the scope of this invention.

It is self-evident that instead of the revolving means (47) for the application or deflection of the power being of one general

circumference, the same end may be attained, possibly to better local advantage, by the substitution of a number of smaller revolving means, together completing the said general circumference.

Having thus described my invention, what I claim is:—

1. In a system of locomotion, a conveyer composed of a series of article-engaging sections that are relatively movable longitudinally as they are bodily advanced, and means for bodily advancing the sections at different relative speeds, each section being composed of a laterally disposed series of bars, which bars project between the bars of adjacent sections, and which intermeshing bars are relatively movable both laterally and longitudinally to permit the conveyer to travel in a laterally deflected path.

2. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections.

3. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections at different relative speeds.

4. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections, the engaging portions of the bars in adjacent sections being also laterally movable to permit the sections to advance in a path deflected laterally.

5. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, a series of wheels forming a support for the conveyer, and means for driving the wheels at different relative speeds.

6. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, supporting means for engaging a plurality of the sections for advancing them at a certain speed, and means arranged to engage others of the sections to advance them at different relative speeds.

7. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, a series of wheels forming supports for the conveyer, means for driving the wheels at a certain speed, a flexible driving member connected with said moving wheels, and means for causing the flexible member to engage each of the sections, the flexible member being moved to advance the sections at a different speed from those being advanced by the said wheels.

8. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, wheels for supporting the sections for movement, a chain member having stops thereon, the bars having lugs engaged by said stops to advance the bars, and supporting wheels engaging other sections and driven at different relative speeds whereby to advance the engaged sections at slower speeds than the sections engaged by the chain.

9. In a system of locomotion, a conveyer composed of a series of article-engaging sections that are relatively movable longitudinally as they are bodily advanced, the sections being provided with lugs, a chain member provided with lugs, supporting means for moving the chain to engage the lugs on the sections to advance the sections, and driving means for the other sections that cause the sections to move at relative speeds different from the sections advanced by the chain.

10. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, a series of wheels forming supports for the conveyer, means for driving the wheels at dif-

ferent relative speeds, the pivot rods having upright members at their extremities, and rails connecting the upright members, the rails having end connections.

11. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, a series of wheels forming supports for the conveyer, means for driving the wheels at different relative speeds, the pivot rods having upright members at their extremities, rails connecting the upright members, the rails having end connections, and seats carried by the upright members.

12. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections, the bars having elongated openings for engagement with the pivot rods for permitting lateral deflection of the sections.

13. In a system of locomotion, a conveyer composed of a series of article-engaging section, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, a series of wheels forming supports for the conveyer, and means for driving the wheels at different relative speeds; the bars having elongated openings for engagement with the pivot rods for permitting lateral deflection of the sections.

14. In a system of locomotion, a conveyer composed of a series of article-engaging sections that are relatively movable longitudinally as they are bodily advanced, and means for bodily advancing the sections at different relative speeds, each section being composed of a laterally disposed series of bars, which bars project between the bars of adjacent sections, each of the bars having an extension pivoted thereto at one end.

15. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections, each of the bars having an extension pivoted thereto at the free end beyond the pivot rod of the adjacent section.

16. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, and means for supporting and advancing the sections, each of the bars having a lateral extension at the free end.

17. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, means for supporting and advancing the sections, said pivot rods projecting at each side of the conveyer, and guiding means engaging said rod extensions whereby to cause the conveyer to ascend an incline.

18. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section, permitting the sections to advance at different relative speeds, means for supporting and advancing the sections, said pivot rods projecting at each side of the conveyer, and guiding means engaging said rod extensions whereby to cause the conveyer to ascend an incline, said bars having angle pieces at the free ends to form steps on the incline.

19. In a system of locomotion, a conveyer composed of a series of article-engaging sections, each section comprising a laterally disposed series of bars, a pivot rod passing through the bars at one end of each section, each section having the free ends resting on the bar of the adjacent section permitting the sections to advance at different relative speeds, means for supporting and advancing the sections, said pivot rods projecting at each side of the conveyer, and guiding means engaging said rod extensions whereby to cause the conveyer to ascend an incline, the sections also having another rod extending at the sides, and guideways in the path of the conveyer for engaging the latter rods for descending an incline.

20. In a system of locomotion, a series of pivotally connected sections, each section comprising an open rectangular form as a slat member.

21. In a system of locomotion, a moving

platform composed of a series of articulated bars, a turn-table composed of a circular platform and a gear wheel, means to connect the bars with the gears and means to support the bars, in whole or in part, upon the turn-table.

22. In a system of locomotion, a moving platform composed of a series of articulated bars supported on wheels, and means for advancing the platform either in a semicircle or merely deflecting it from its straight course at a tangent to said semicircle.

23. In a store service system a platform composed of articulated parts, a revolving turntable arranged to support and actuate said parts, and driving means arranged to revolve the turntable.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."