

No. 720,963.

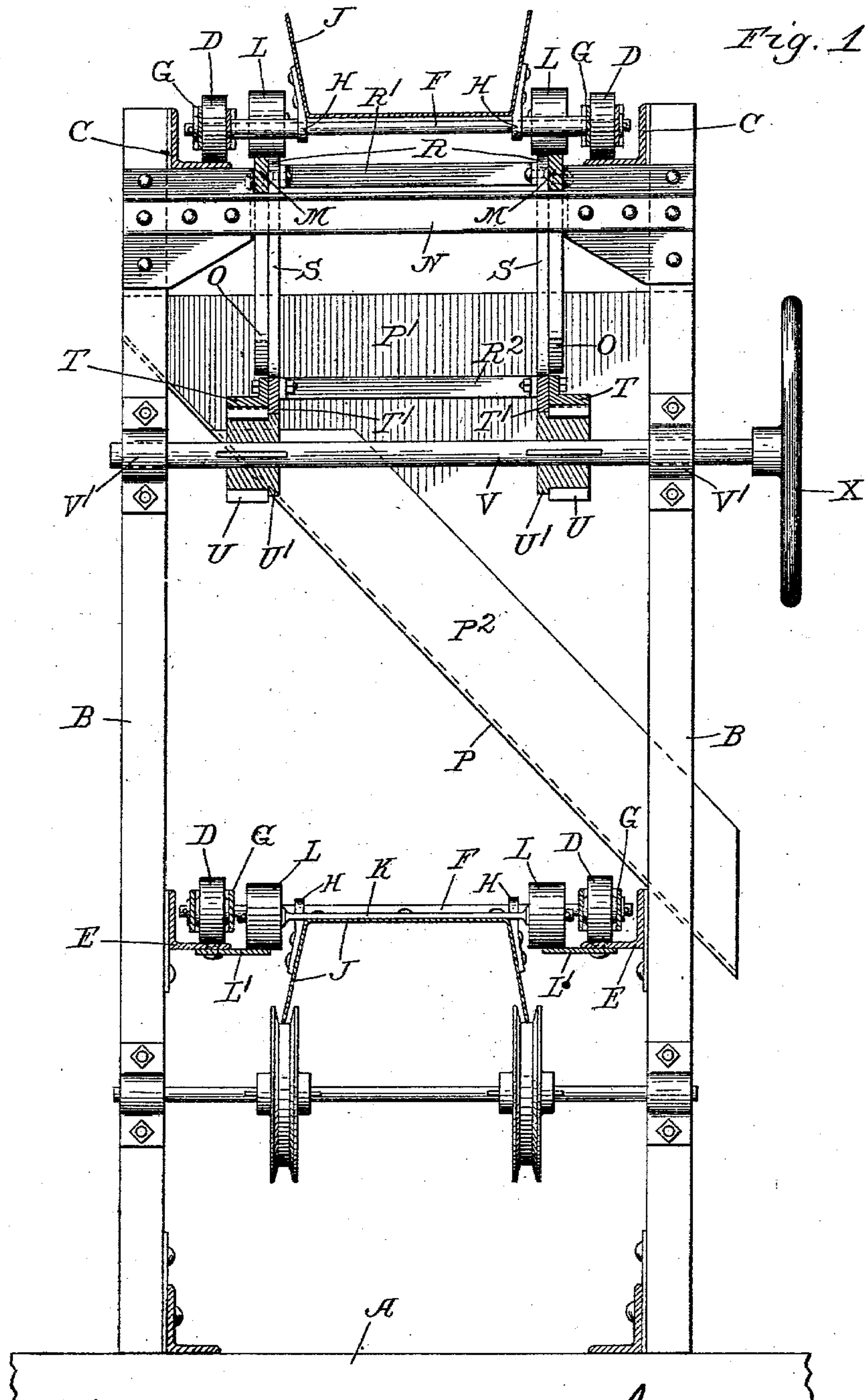
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J. PETERSEN.
DUMP GATE FOR ENDLESS TROUGH CARRIERS.

APPLICATION FILED MAR. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.

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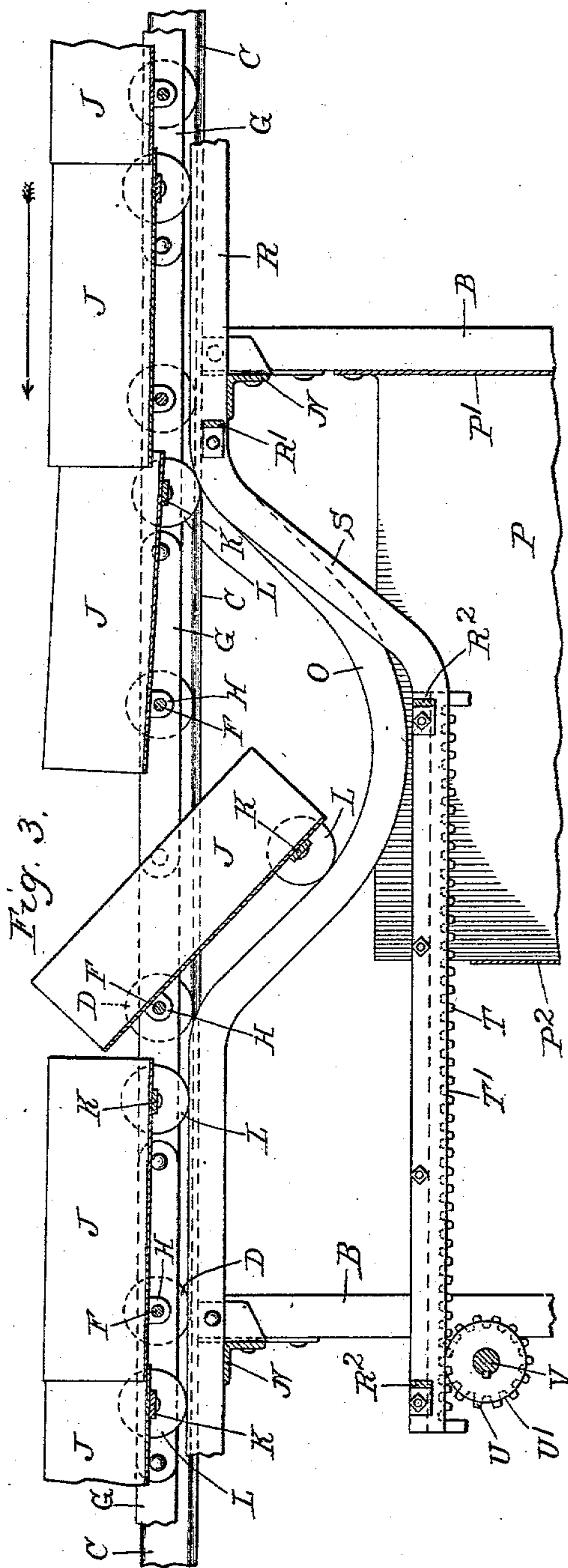
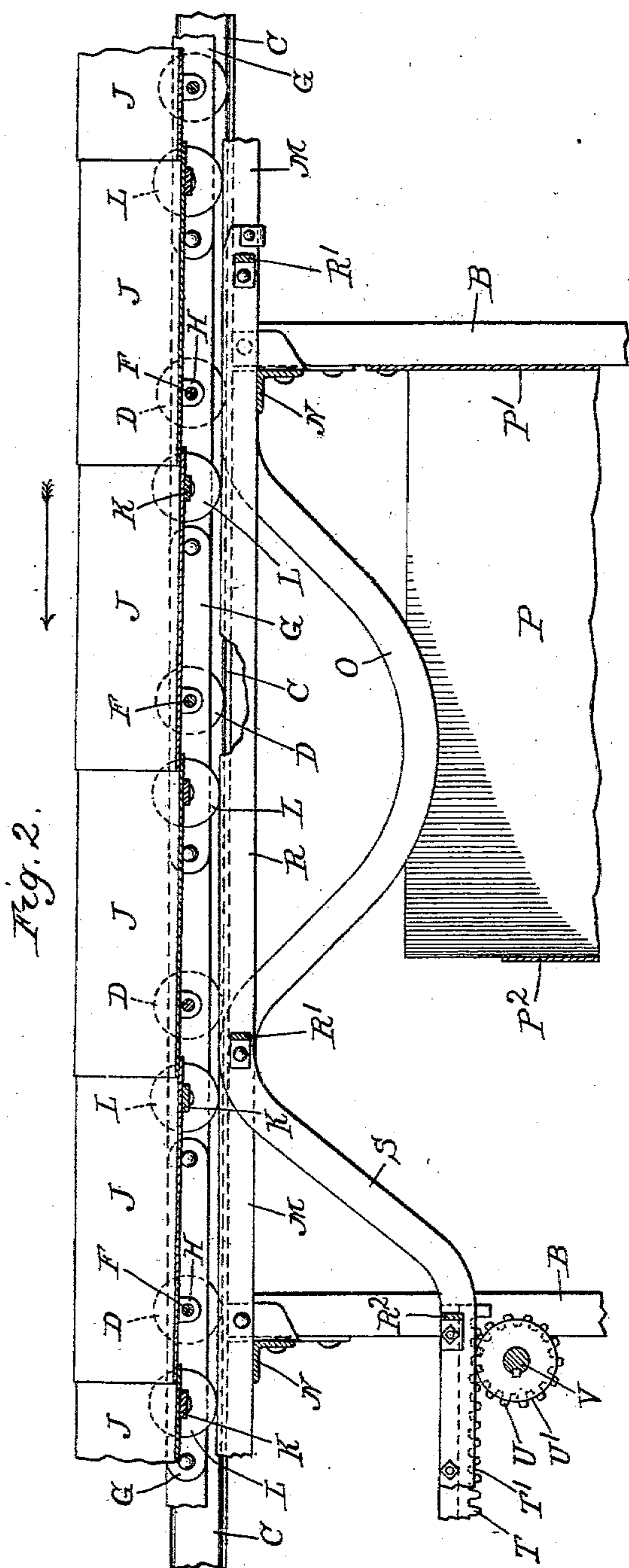
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APPLICATION FILED MAR. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

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DUMP-GATE FOR ENDLESS TROUGH CARRIERS.

SPECIFICATION forming part of Letters Patent No. 720,963, dated February 17, 1903.

Application filed March 21, 1902. Serial No. 99,324. (No model.)

To all whom it may concern:

Be it known that I, JOHN PETERSEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Dump-Gates for Endless Trough Carriers, of which the following is a specification.

My invention relates to dump-gates for endless trough carriers, or generally to means for conveniently dumping carrier-cars or sections of an endless trough carrier, such as that illustrated in the accompanying drawings.

One form of my invention is shown in the drawings, wherein—

Figure 1 is a vertical section through the carrier of the kind described. Fig. 2 is a longitudinal section of the upper portion of such carrier, showing the parts in one position. Fig. 3 is a similar view showing the parts in another position.

Like parts are indicated by the same letter in all the figures.

A is a base-bar or footing upon which rise the standards B B to support the various parts of the carrier. At the top of these standards are secured the angle-bars C C, the lower portions of which form tracks for the carrier-wheels D D. Similar angle-bars E E are placed at a suitable distance lower down on the standards and in like manner form tracks for the wheels D D. These wheels D D are mounted upon a series of axles F F, which axles are also associated with the carrier-chain links G G. Thus the carrier-chain, which in apparatus of this kind is comparatively heavy, is mounted upon rollers or wheels which run on tracks. One end—in this case the forward end—of each car or section is provided with downwardly-depending lugs H H, through which the axle passes, so that such end of each of said cars or trough-sections is in like manner supported by the wheels or rollers D D and is carried along by the carrier-chain. The cars or sections are indicated by the letter J. At the other end of each car or section—in this case the rear end—is secured a cross-piece K, having laterally-projecting portions upon which are jour-

naled the wheels or rollers L. These rollers or wheels travel upon the rails M M, which are properly secured in position on the standards—as, for example, by means of the cross-pieces N N. Each of these rails is provided with a downwardly-curved portion O, placed in proper relation to the discharge-way P. This curved portion is, however, normally protected by a short piece of movable rail R, which is downwardly curved at S and provided at its lower side with an extension carrying a rack T, engaging the pinion U on the shaft V, which is in turn controlled by the hand-wheel X. I have described a single movable rail and end parts R S T; but of course there are two such. They are connected above by the cross-bar R' and below by the cross-bar R². The rack portion T is secured to a flange-strip T', which rides upon the circular flange U' on the pinion U. Thus the two movable rails and their associated parts are kept in position, because they are supported on the cross-piece N, and the rails R R are placed between the rails M M, and the flange parts T' rest upon the flange parts U'. Obviously by operating the hand-wheel to rotate the shaft V the racks and the movable rails can be moved longitudinally, so as to cover or uncover the downwardly-curved portions O of the permanent rail. When they are in the position indicated in Fig. 2, or at the extreme limit of their motion toward the left, the movable rails R bridge the space above the curved portion O of the permanent rail, and the cars or trough-sections retain their parallelism to each other and travel forward in the direction of the arrow. If now the hand-wheel be operated so as to throw the movable rail and rack toward the right, as indicated in Fig. 3, the space theretofore bridged by the movable rails R will be uncovered, and the rear end of the next car will travel down upon the curved portion S and then upon the curved portion O, thus dumping the contents of such car or section into the discharge-way P, and the further motion of the car will restore it to its position of parallelism with the cars which have preceded it. The discharge-way P has the large side

wall P' to receive the contents of the car and the narrower side wall P² on the other side. The shaft V is journaled in the boxes V' V' on the standards B B. On the lower run the cars are inverted. The rollers or wheels D D travel, as indicated, on the angle-bars E, and the rollers L travel on the projecting flanges L', secured on the angle-bars E. The cars or trough-sections may be further supported or guided, as may be thought best.

It is obvious that the size, proportion, and arrangement of the several parts can be greatly modified without departing from the spirit of my invention. It is equally evident also that the details of the various connections and the particular devices by which the several parts are assembled together and held in position may be greatly varied. The particular means for supporting the several rails or arranging the movable rail so that it can be supported in its various positions and the particular means of moving the rail may all be varied, as well as other features of the device, without departing from the spirit of my invention.

The use and operation of my invention will of course be obvious. Under ordinary conditions the cars will continue to travel without parting from each other and without making any break in the trough-line. Of course the cars may take the form of separate cars if for any reason that is desirable, in which event some convenient means for automatically opening and closing the end gate might be supplied; but the natural form of my invention is that in which the cars are in the shape of trough-sections, as herein illustrated. The cars thus traveling will retain the continuity of the trough. The rear wheels of the car ride on the movable rails and the forward wheels on the fixed exterior rails. If now the operator desires to discharge a certain amount of the contents of the trough carrier at a given discharge-way, and there may be many such along the line of the carrier, he will cause the hand-wheel or other device to be operated so as to turn the pinion and move the rack, cross-piece, and movable rail toward the right. As soon as he does this there will be a break in the space over the curved portion O of the fixed rail. The rear wheels of the next approaching car or section will therefore find no track which they can engage except the downwardly-curved portion S, associated with the rail which is moving toward the right. They will therefore ride down this incline and at some point in their descent will strike the curved portion O of the permanent rail, whereupon the parts will have a position similar to that shown in Fig. 3 and the car will dump its entire load into the discharge-way P, and it will be carried off to the point where it is to be received. The car will continue its motion and promptly assume its ordinary normal position. After this action has continued long enough to supply so much of the contents of the trough-

carrier as may be required at the place in question the hand-wheel will be operated so as to bring the movable rail forward, and as the movable rail comes forward toward the left it will shorten the breach and soon come into the position shown in Fig. 2.

It will be seen that the curve of the permanent rails which support the rear ends of the carrier-sections are related to the curve of the movable rail so that as the latter advances in the direction indicated by the arrows it forms always a comparatively easy angle at the point where the two curves intersect, and thus the rear wheels of the carrier-section, which are to be depressed, are let down gradually and without any shock or strain to the machinery.

I have spoken of the "rear" and "forward" ends of the carrier-sections, and for convenience I have arranged them as indicated, so that the forward end is the one which pursues a comparatively uniform path, while the rear is the one which is depressed. Of course this arrangement could be reversed.

I have alluded to my carrier as being an endless trough carrier. Of course the features of my invention will be equally applicable in the case of a device which might not be endless and which might have some reciprocating motion, and so, also, I do not wish to be limited by the use of the term "trough," though it is to an endless trough conveyor or carrier that I desire to apply my invention. In the use of the terms "trough-sections" and "conveyor-sections" I wish, therefore, to be understood as applying such terms with a very broad meaning.

The chute, of course, is not indispensable, though some kind of a receiving-pocket is important. If the conveyor-sections, as in the case here illustrated, are returned along a lower level, then a chute or something of the sort is necessary to protect them. Any means for moving the movable rail-sections will answer, though I have shown a rack, pinion, and hand-wheel.

I claim—

1. In a trough carrier, the combination of a permanent track on which is supported one end of each carrier-section, with a second permanent track having movable sections on which the other end of each carrier-section is supported in varying positions at the will of the operator, both of said tracks being normally in substantially the same plane, and the movable track-sections being adapted to be moved longitudinally.

2. In a trough carrier the combination of a permanent track on which one end of each section of the carrier travels with a permanent track on which the other end of such section travels, provided with downwardly-depressed portions at intervals along its length, and a longitudinally-movable rail-section adapted to bridge the depressions so formed.

3. In a trough carrier the combination of permanent rails to normally support one end

of each section with downwardly-curved sections of such rails and longitudinally-movable rail-sections adapted to support such ends of the carrier-sections, and when moved into position to bridge the depressions formed by the downward curves.

4. In a trough carrier the combination of a driving-chain with a series of carrier-sections, one end of each carried by the chain, a series of rails to support the other end of each section and downwardly-curved portions of such rails to permit such end of the carrier-section to sink below its normal level and thus discharge its load; a longitudinally-movable rail-section adapted to support such last-mentioned end of the carrier-section, and when in position to prevent the same from sinking at the curved portions.

5. In a trough carrier the combination of a driving-chain with a series of carrier-sections, one end of each carried by the chain, a series of rails to support the other end of each section and downwardly-curved portions of such rails to permit such end of the carrier-section to sink below its normal level and thus discharge its load; a movable rail-section adapted to support such last-mentioned end of the carrier-section, and when in position to prevent the same from sinking at the curved portions, said movable rail-section provided with a curved part to let the end of the carrier-section down onto the permanent curve gradually.

6. In a trough carrier the combination of an endless carrier-chain with a series of carrier-sections and a series of permanent rails whereby the forward end of each section is carried along, a series of permanent rails on which the rear ends of the carrier-sections are supported, downwardly-curved portions of such permanent rails which permit the rear ends of the carrier-sections to be depressed so as to discharge their loads, and longitudinally-movable rail-sections to support the rear ends of the carrier-sections above such curved portions.

7. In a trough carrier the combination of an endless carrier-chain with a series of carrier-sections and a series of permanent rails whereby the forward end of each section is carried along, a series of permanent rails on which the rear ends of the carrier-sections are supported, downwardly-curved portions of such permanent rails which permit the rear ends of the carrier-sections to be depressed so as to discharge their loads, and movable rail-sections to support the rear ends of the carrier-sections above such curved portions, said movable rails provided with curved portions to let the rear ends of the carrier-sections down gradually.

8. In a trough carrier the combination of an

endless carrier-chain with a series of carrier-sections and a series of permanent rails whereby the forward end of each section is carried along, a series of permanent rails on which the rear ends of the carrier-sections are supported, downwardly-curved portions of such permanent rails which permit the rear ends of the carrier-sections to be depressed so as to discharge their loads, and longitudinally-movable rail-sections to support the rear ends of the carrier-sections above such curved portions, and a receiving-chute beneath the curved portions.

9. In an endless trough carrier the combination of two rail systems with a series of trough-sections, each supported at each end on a pair of wheels, connecting parts associated with such wheels and constituting in effect an endless hauling-chain, downwardly-depressed portions of the rails on which the wheels of one end of the sections travel and bridge-rails associated therewith to cover such downward depressions.

10. In an endless trough carrier the combination of two rail systems with a series of trough-sections, each supported at each end on a pair of wheels, connecting parts associated with such wheels and constituting in effect an endless hauling-chain, downwardly-depressed portions of the rails on which the wheels of one end of the sections travel and bridge-rails associated therewith to cover such downward depressions, such bridge-rails longitudinally movable.

11. In an endless trough carrier the combination of two rail systems with a series of trough-sections, each supported at each end on a pair of wheels, connecting parts associated with such wheels and constituting in effect an endless hauling-chain, downwardly-depressed portions of the rails on which the wheels of one end of the sections travel and bridge-rails associated therewith to cover such downward depressions, such bridge-rails longitudinally movable, and provided with a curved section.

12. In an endless trough carrier the combination of two rail systems with a series of trough-sections, each supported at each end on a pair of wheels, connecting parts associated with such wheels and constituting in effect an endless hauling-chain, downwardly-depressed portions of the rails on which the wheels of one end of the sections travel and bridge-rails associated therewith to cover such downward depressions, such bridge-rails longitudinally movable, and a rack and pinion whereby the same can be moved.

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Witnesses:

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