

(No Model.)

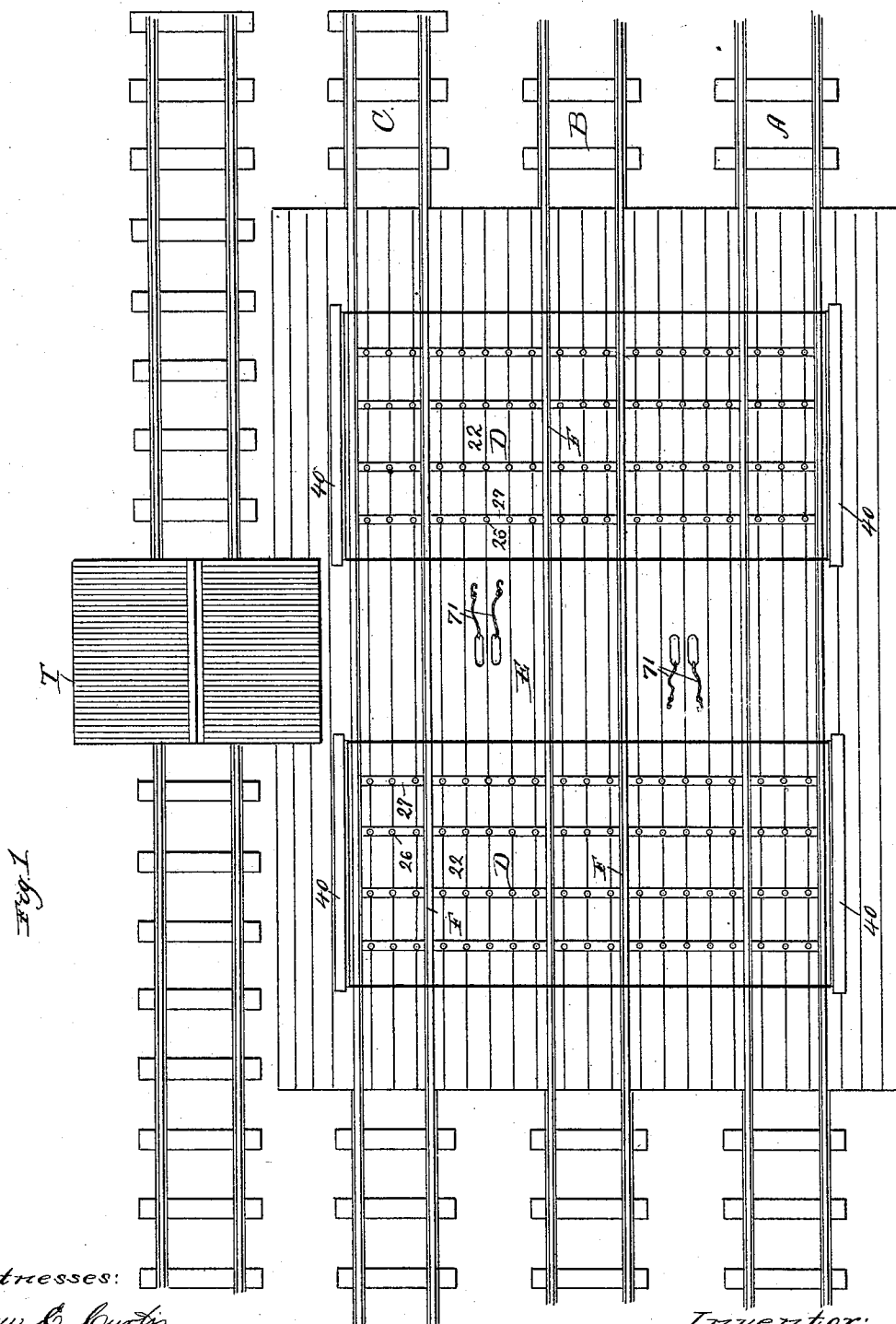
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A. D. CLARKE.

APPARATUS FOR TRANSFERRING RAILWAY CARS.

No. 487,717.

Patented Dec. 13, 1892.



Witnesses:

Geo. C. Curtis
Emma Hack

Inventor:

Alexander D. Clarke.

By Munday Evans & Adcock
his Attorneys.

(No Model.)

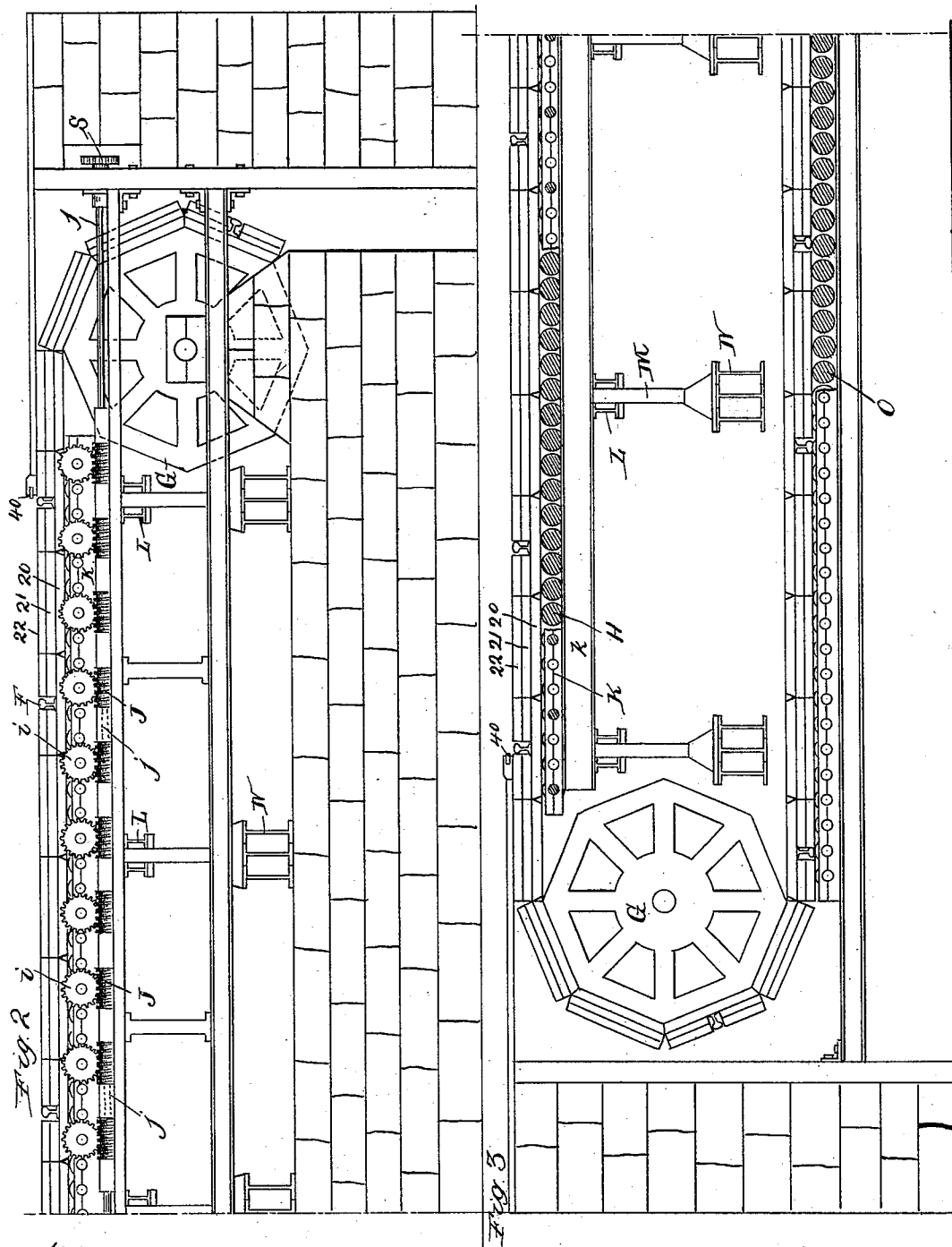
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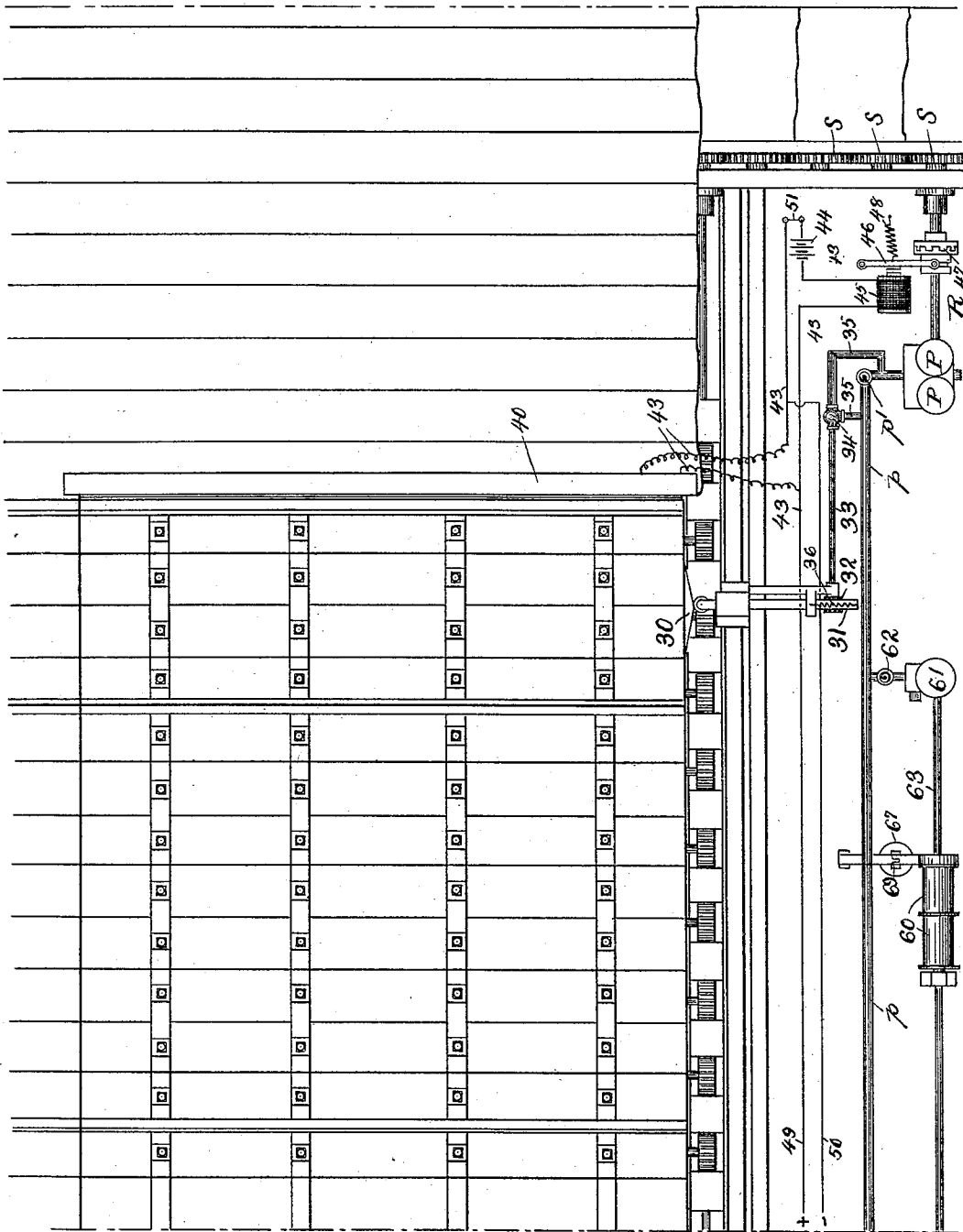
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Witnesses:

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Fig. 4.

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(No Model.)

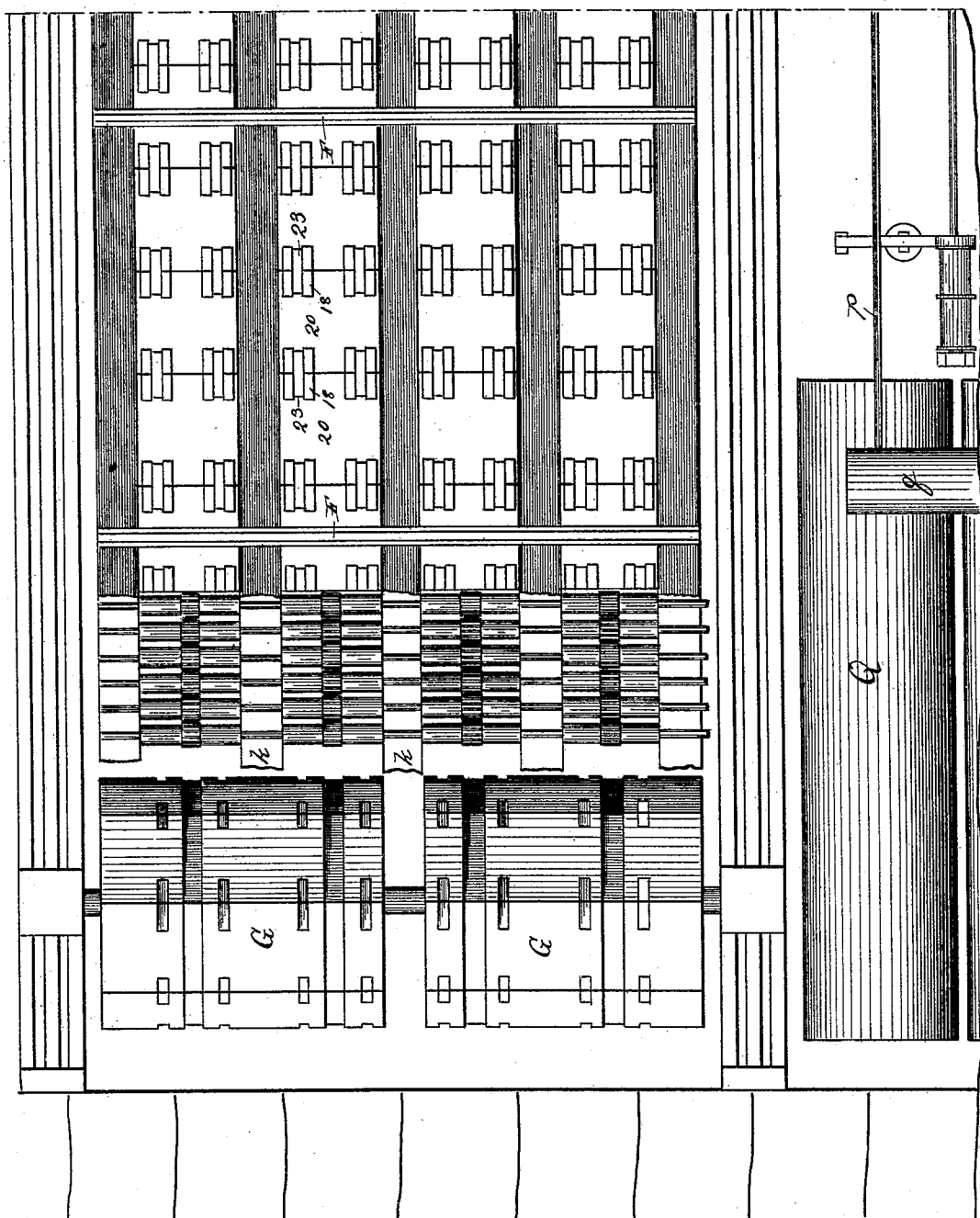
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Fig. 5.

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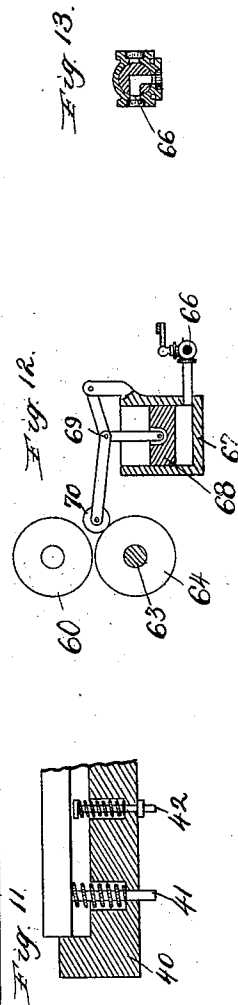
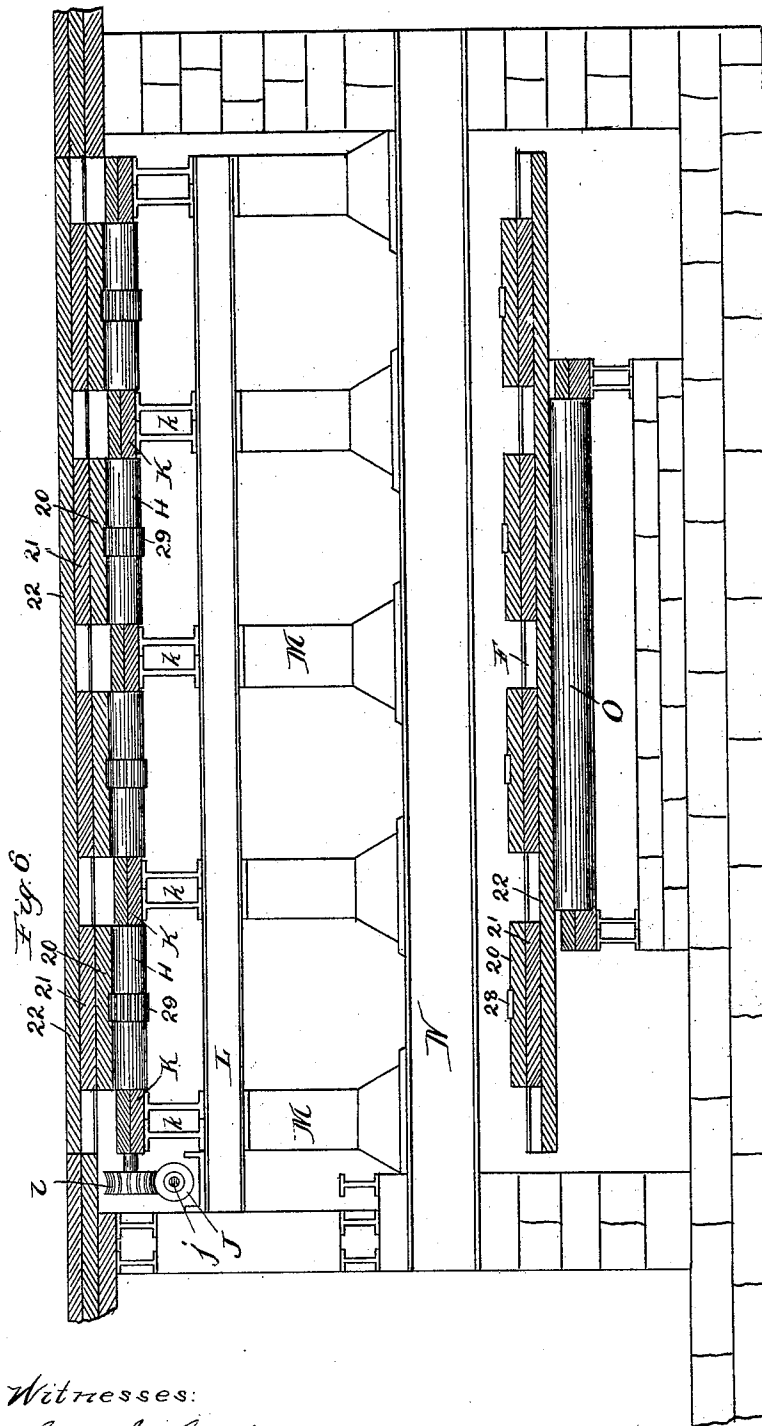
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Fig. 7.

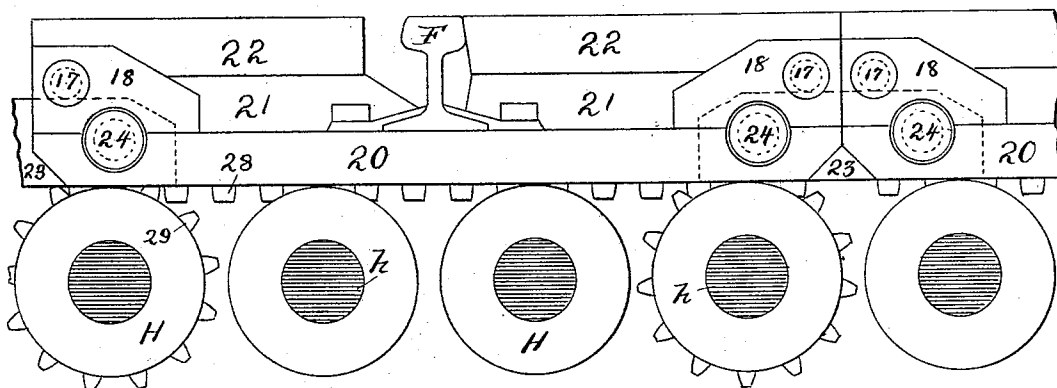


Fig. 8.

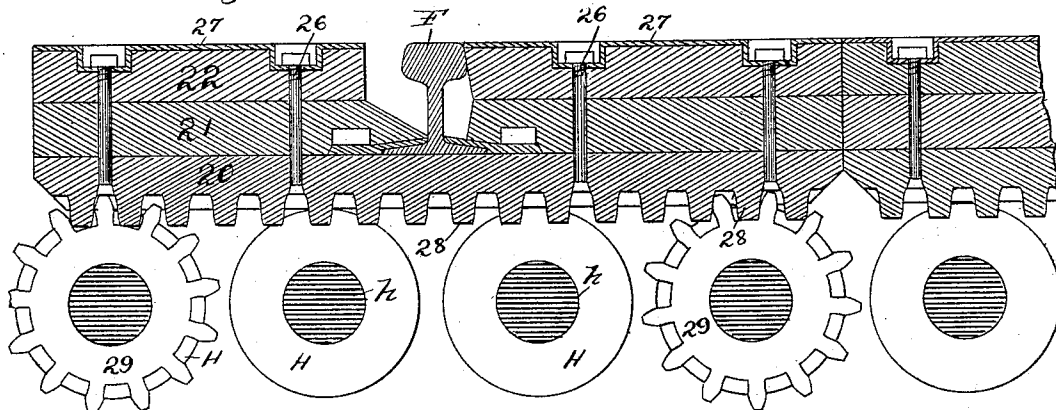


Fig. 9.

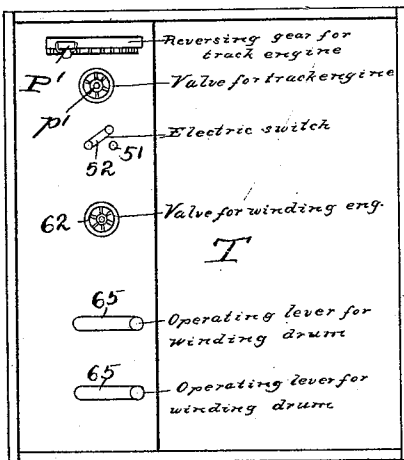
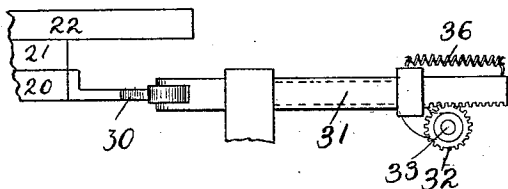


Fig. 10.



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UNITED STATES PATENT OFFICE.

ALEXANDER D. CLARKE, OF ST. LOUIS, MISSOURI.

APPARATUS FOR TRANSFERRING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 487,717, dated December 13, 1892.

Application filed November 27, 1891. Serial No. 413,166. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER D. CLARKE, a citizen of the United States, residing in St. Louis, in the State of Missouri, have invented a new and useful Improvement in Apparatus for Transferring Railway-Cars, of which the following is a specification.

This invention is designed to reduce the amount of switching necessary in railroad-yards, to enable the transaction of a large amount of business in a yard of small dimensions, and to economize time and labor in making up trains. These objects are accomplished by the use of the means following: Two or more parallel and adjacent tracks in the switching-yard are provided with a transversely-movable track-section of a length sufficient to carry a car, the movable track-section being mounted upon an endless platform supported upon suitable wheels and actuated by suitable mechanism to carry the movable section and any car which may be received upon it from one of the tracks transversely into line with an adjacent track. The endless platform leaves no open excavation in the yard, and it may be provided with a series of track-sections instead of a single one, so that when moved to carry a car from one track to another another track-section will take the place of the one carrying the car, and thus again complete the track from which the car has been removed. In this way I obviate any necessity for returning the track-sections into position after they have been used in transferring. The platform should also preferably be capable of moving in either direction, according to the necessities of the case. I also provide it with means for stopping the actuating mechanism automatically when the section carrying the car has reached the track to which the car is to be transferred, and I still further provide a safety mechanism for stopping the actuating devices should the operator through oversight or mistake fail to stop them, or in case the automatic devices usually relied upon for that purpose should fail to do their duty. The endless platform is preferably actuated by power applied directly to the platform, the drums around which it travels being mere idlers, and this power is also preferably ap-

plied simultaneously at several points along the length of the platform, so as to relieve the pivotal connections by which the sections of the platform are united of much of the strain and wear which would otherwise come upon them.

In the accompanying drawings and subjoined description I have set out clearly the necessary details of the construction of my invention, the same being the best form of apparatus for the carrying out of the invention now known to me, and from which drawings and description the nature of the invention will be fully understood.

In the drawings, which form part of this specification and in which similar letters and figures of reference indicate like parts, Figure 1 is a plan view of my invention applied to three parallel tracks. Figs. 2 and 3 are side elevations, Fig. 3 being partly in section. Fig. 4 is a partial plan view with the covering of the actuating devices omitted. Fig. 5 is a horizontal section with the upper portion of the endless platform omitted from a portion of the figure and the upper planking of the platform being omitted from the balance of the figure, the cover of the actuating devices being also omitted. Fig. 6 is a transverse vertical section. Fig. 7 is a partial elevation of the endless platform enlarged. Fig. 8 is a longitudinal section of the parts shown at Fig. 7. Fig. 9 is a floor plan of the operator's house. Fig. 10 is a detail of the automatic device for stopping the driving mechanism. Fig. 11 is a detail view of the electric contacts of the safety stopping devices. Fig. 12 is a detail of the frictional actuating devices employed to operate the winding-drums, and Fig. 13 is a detail section of the valve controlling said frictional devices.

In the drawings, A, B, and C represent three parallel railroad-tracks connected by my transfer apparatus. While I have illustrated three tracks as being thus joined, it will be understood that I do not limit myself to that number, as my invention may be used with two tracks or with a greater number than three.

The endless platform may be made long enough to carry the cars to be transferred; but I prefer to make it in two parallel sec-

tions or parts, which will be used in unison, and each of which corresponds to the length of the car-trucks, and to place between these sections an immovable floor, inasmuch as

5 thereby I reduce the amount of weight to be moved and shorten the movable parts of the track. I therefore show in the drawings the latter construction, D D being the two parts of the endless platform and E being the intermediate stationary floor. In the further

10 description of the platform I will confine myself to one of these parts D, it being understood that the other part D is of the same construction. In the part D, I employ several

15 series of metal staves or plates 20, and one or more superimposed courses of wood 21 22. Those of the several series of plates 20 which lie in line with each other and in lines transverse of the platform are united

20 together by the upper planking 22, which extends from end to end of the platform, and the several series are also further tied together by the track-sections F, carried by the platform. Each plate 20 is also provided with ears 18 at

25 each end, and these are strengthened by the bolts 17. The several series of plates united by the continuous planking 22 are hinged together at their abutting sides by the links 23, and pivots 24, passing through the links and

30 having bearings partly in the plates and partly in the ears 18. The wood planks 21, which support the wood staves or planks 22, are substantially of the same shape and dimensions as plates 20, except in the case of those adjacent to the tracks F, which are divided to give room to

35 the rails, as shown at Figs. 7 and 8. The movable tracks may be supported upon the plates 20, and the surface of the platform is preferably raised, so as to be flush with the top of the tracks. The parts 20, 21, and 22 are tied

40 together in some suitable way, as by bolts 26, and metal straps 27 may also be used upon the upper surface, as illustrated. The tracks F are placed so as to register with the tracks

45 A, B, and C, and there are such number of them employed on the endless platform as will insure the presence after each movement of the platform of registering-rails F at each of the tracks A, B, and C, so that cars may be

50 moved onto the platform at either of the tracks without moving the platforms merely for the purpose of positioning them. The endless platform passes over large drums G, which are preferably idlers and receive motion

55 wholly from the platform. All parts of the platform must of course move in unison, and the device which I employ for this purpose will now be described. The under side of plates 20 is provided with rack-teeth 28, and

60 these teeth mesh with gears 29, formed upon a portion, or preferably upon all, of the supporting-rollers H, mounted upon shafts *h*, which extend across the endless platform, if desired, and are driven simultaneously and at

65 uniform speed by worms J, formed upon the shaft *j*, meshing with gears *i* upon the ends of the rollers. The rollers H are employed in

such number as may be necessary to properly support the platform from one wheel G to the other, and they are supported in bearings K, 70 sustained upon beams *k*, resting upon other beams L, laid at right angles to the first-mentioned ones. Beams L are supported in their turn upon pillars M, built upon large beams N, parallel with beams L. Those rollers H which 75 are driven are preferably neare enough together so that each section of the platform formed of the plate 20 and the parts secured above it will at all times while it is passing over said rollers receive actuating power from some 80 one of them. In other words, the platform, instead of being pulled by power applied to the end drums in the customary manner, which causes a great strain and wear upon the connecting-links and pivots, is moved by power 85 applied directly to the individual sections, so that said strain is almost wholly obviated, each section being urged along independently. That portion of the platform which may be traversing its return-path and underground 90 by reason of the sinking of the wheels G below the surface traverses the open space under beams N and is sustained therein upon idler-rollers O, employed in such number as may be requisite and suitably supported in said 95 space. The two platforms D are of course actuated simultaneously and at the same speed and in the same direction, so that both ends of the car may be moved in unison, and for this purpose it is of course desirable that the 100 driving worm-shafts receive motion from a common source. If it be preferred to make the platform as long as the car, the supporting roller-shafts *h* should be lengthened correspondingly, and it might be advisable to 105 duplicate the worm-gearing at the farther end.

Motive power for moving the platform is obtained from any suitable source—such, for instance, as the high-speed engine P, receiving 110 its supply of steam through the pipe *p* from the boiler Q and steam-drum *q*. This engine gives power to the shaft R, and thereby drives the train of gearing S S, which actuates the worm-gear shaft *j*. This engine is controlled 115 by reversing-gear P', located in the operator's house T, which may be, and preferably is, elevated above the tracks and in proximity to the transfer apparatus. By means of the reversing-gear the operator determines the 120 direction the platform shall move, and by means of the feed-valve *p'* in pipe *p* sets it in motion or stops it. It is desirable, however, to provide means for automatically shutting off steam as the several movable sections of 125 track come into register with the stationary tracks, so that the operator may shut off his valve *p'* and give no further attention to the apparatus. This may be done in many ways; but a simple construction will be found in 130 the drawings, and consists of cam-surfaces 30 applied to the ends of certain of plates 20 and which engage with the end of a sliding rack 31, and thereby actuate a gear 32 upon

shaft 33 and closes valve 34, located in the branch pipe 35 at both sides of the valve p' . The latter valve is ordinarily closed by the operator as soon as the parts are fairly under motion, the valve 34 then opening by reason of the retraction of the rack-bar 31 by its spring 36. The cam-surface 30 is adapted to allow this retraction of the rack, and in operation it holds the valve 34 closed only while the movable and stationary tracks are in register. Its normal position therefore when the platform is moving is open, so that the closing of the valve p' by the operator does not stop the apparatus. Where this feature of construction is employed and the transfer-platform connects a greater number of tracks than two, the operator can, in case the car is to be moved entirely by one or more of the intermediate tracks, hold valve p' open until after the car has passed such intermediate track or tracks, or if he shuts off the valve p' right away after starting the apparatus and the same is automatically stopped upon reaching the first track all he will have to do, if he wishes it to go beyond, is to open valve p' again.

To prevent injury, which might happen if the automatic valve-controlling devices should fail to operate, or in case there should be a concurrence of failure upon the part of the operator to close the valve p' and upon the part of the automatic devices to close valve 34, I provide safety mechanism which will insure the stopping of the platform when any car upon the platform has reached the proper limit of its movement. This device may either shut off the steam from the engine or separate some clutch in the mechanism connecting the engine with the worm-shaft. I have shown the latter construction. At the point where the platform begins to turn downward upon the wheel G is a stationary bar 40; under which are two electrodes 41 42, connected by the electric circuit 43 with the battery 44 and magnet 45. The armature 46 of the magnet is adapted when the magnet is energized to slide the movable part and open the clutch 47 upon the shaft R, and thus stop the platform. The spring 48 normally holds the parts of the clutch together. The operation of this safety mechanism will be understood at once when it is stated that the contact of the car-wheels with the bar 40 will act to depress said bar and close the electric circuit by connecting the electrodes. A similar bar 40 is located at the other end of the platform's path, and, by means of similar electrodes connected with the same battery and armature by wires 49 and 50, will serve to open the clutch 47 in the same manner. Whenever the electric circuit is completed by contact of the car with either of the bars 40 and the movement of the platform has been stopped thereby, the safety devices will have served their purpose and the electric circuit may then be broken by means of the switch 51, the lever for which is shown at 52 in the operator's house, and such break-

ing of the circuit permits the spring 48 to again close the clutch.

I contemplate using with my transfer-platform devices for pulling cars onto and off the same, thus enabling the transfers to be made when no switching-locomotive is at hand. For this purpose I provide suitable winding-drums 60 60, actuated from an engine 61, the valve of which is located at 62 and may be operated from the operator's room, as shown. The engine 61 actuates a shaft 63, carrying pulleys 64 64, located under the winding-drums, as seen at Fig. 12. When it is desired to throw either of the winding-drums into action, the operator, by means of one of the levers 65, opens a valve 66 and thereby admits steam into a cylinder 67 and under a movable plunger 68. This plunger is connected with a toggle 69, one end of which carries a friction-pulley 70 in such position that when the plunger is raised by the admission of steam under the same it straightens the toggle and forces pulley 70 into contact with both pulley 64 and the winding-drum, thereby carrying motion to the latter. This construction of devices for giving motion to the winding device is used for both of the drums and it allows the engine 61 to remain in continuous motion. The cables 71 are connected to the drums, and by their aid cars may be drawn onto the platform from either direction. The valve 66 is adapted not only to admit steam to the cylinder, but also to give it exit therefrom, serving in one position to feed and in its other position to discharge.

The operation of my invention is fully set forth in what has already been written, and therefore need not be repeated.

It will be noticed that while the supports of the endless platform are located underground and the return path of the platform also, the upper course of the platform substantially fills or covers the opening, so that no open excavations are left in the yard which might be objectionable and very dangerous to the switchmen and others; also, that the drums are adapted to give room to the links and rack-teeth of the platform; also, that the mechanism connecting the platform with the motor is of such a nature as to insure a slow movement of the platform, and also such as to prevent a continuance of motion through momentum on the part of the worm-shaft after the driving power is shut off.

It is necessary for the working of some features of my invention that the railroad-tracks and also the track-sections on the platform should all be located at equal distances apart, so that when the platform is moved the track-sections on the platform which are thereby brought to the surface may register with and complete the tracks as truly as did the ones carried out of register by the movement of the platform. The safety stopping devices may also come in use should the attendant start the motor in the wrong direction when a car is standing on one of the outside tracks of the

platform. The cam 30 has two faces inclined in opposite directions, as indicated. By this feature I secure a gradual closing of the automatic steam-valve, and also a gradual opening of the same.

My improved transfer apparatus is preferably located where a slight grade, either natural or artificial, can be taken advantage of to move the cars onto and off the table. Some of the tracks with which my transfer apparatus is intended to operate may have a downgrade to the platform and others a downgrade from the platform, so that some of the tracks will be adapted to carry cars to the platform and others to discharge them therefrom. These advantages are well understood by railroad men and often save the services of a locomotive.

I claim—

1. The combination, with a plurality of railroad-tracks, of a transversely-moving platform carrying one or more track-sections and also carrying a cam 30, a slide actuated by said cam, mechanism for moving said platform, a motor, and a valve controlling said motor connected to said slide, substantially as specified.

2. The combination, with a plurality of railroad-tracks, of a transversely-moving platform carrying one or more track-sections and also carrying a cam 30, a slide actuated by said cam, a spring 36, mechanism for moving said platform, a motor, and a valve controlling said motor connected to said slide, substantially as specified.

3. The combination, with the railroad-tracks of a switch-yard, of a transversely-movable endless transfer table or platform, drums around which the same passes, and a series of driven rollers H for supporting and moving said platform, substantially as specified.

4. The combination, with the railroad-tracks of a switch-yard, of a transversely-movable endless transfer-platform provided with rack-teeth 28, a series of driven rollers supporting and moving said platform and provided with gear-teeth meshing with said rack-teeth, substantially as specified.

5. A railroad endless transfer-platform supported upon end drums and a series of driven rollers H and actuated by said rollers, in combination with said drums and rollers, substantially as specified.

6. An endless railroad transfer-platform, drums therefor, and a series of driven rollers supporting the platform between the drums and giving motion thereto, all combined substantially as specified.

7. An endless railroad transfer-platform and end drums for the same, in combination with a series of rollers for actuating said platform and a worm-shaft for driving said rollers, substantially as specified.

8. An endless railroad transfer-platform and end drums therefor, in combination with a

series of rollers gearing with the platform and a worm-shaft for driving said rollers, substantially as specified.

9. A railroad transfer-platform, in combination with a motor geared to and operating the same, a valve whereby the attendant may set the motor in operation, a branch steam-pipe supplying the motor, a valve controlling said branch pipe, and automatic means for closing the last-named valve, substantially as specified.

10. A railroad transfer-platform, in combination with a motor geared to and operating the same, a valve whereby the attendant may set the motor in operation, a branch steam-pipe supplying the motor, a valve controlling said branch pipe, and means for automatically closing said last-named valve when the tracks come into register and opening it when the tracks move out of register, substantially as specified.

11. The combination, with a railroad transfer-platform and its actuating mechanism, of safety devices for stopping the movement of the platform, such devices consisting of a clutch located in the line of gearing connecting the platform with the source of power, mechanism for opening such clutch, and a device acted upon by the car being transferred for causing the operation of said opening mechanism, substantially as specified.

12. The combination, with a railroad transfer-platform and its actuating mechanism, of safety devices for stopping the movement of the platform, such devices consisting of a clutch located in the line of gearing connecting the platform with the source of power and electrical appliances for opening such clutch, substantially as specified.

13. The railroad transfer apparatus wherein are combined a transversely-moving endless table or platform adapted to carry a car laterally from one track to another, end drums for said table, and a high-speed engine geared to and operating a worm-shaft, said worm-shaft and rollers driven by said shaft and supporting the table between the drums, substantially as specified.

14. The railroad transfer apparatus consisting of the two movable parts D D, each adapted to carry one of the car-trucks, and an intermediate stationary floor E, substantially as specified.

15. The railroad transfer apparatus consisting of two movable endless tables or platforms D D, each adapted to carry one of the car-trucks, and mechanism for moving them in unison, substantially as specified.

16. The railroad transfer-platform consisting of metal plates 20, hinged together and having rack-teeth in their under surfaces, the blocks 21, and upper planking 22, substantially as specified.

17. The railroad transfer-table provided with metal plates 20, forming the base of the

platform and provided with teeth adapted to mesh with the driving-gearing, substantially as specified.

5 18. The railroad transfer-platform provided with hinged metal plates 20, forming the base of the platform, substantially as specified.

10 19. The endless railroad transfer-table and its drums, in combination with actuating mechanism engaging with and applying power to the table-sections between the drums, substantially as specified.

15 20. The endless railroad transfer-table, the sections whereof are provided with rack-teeth and the end drums, in combination with gears located between the drums and

engaging said teeth, and means for actuating said gears, substantially as specified.

21. The endless railroad transfer-table, the sections whereof are provided with rack-teeth and the end drums, in combination with 20 gears located between the drums and also located close together, so as to give power to the individual sections of the table, and means for actuating said gears, substantially as set forth.

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Witnesses:

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