This invention relates to transport vehicles. More particularly, this invention relates to a railway vehicle having a multiple section and deck arrangement.

A prime object of this invention is to provide an improved railway flatcar construction including readily adjustable decks adapted to be moved to a plurality of vertical positions so as to sectionalize the flatcar into a number of compartments whereby a variety of different size loads may be carried.

A still more general object is to provide an improved railway flatcar construction having a plurality of vertically positionable decks so that the flatcar may be quickly adjusted to suit the bulk to be shipped by facilitating the division of the car into a plurality of compartments or sections.

A still further object is the provision of an improved flatcar construction ideally suited for transportation of vehicles of different shapes and sizes, the said car including readily adjustable decks adapted to be positioned at different heights and including a novel loading or elevating compartment at one end of the flatcar.

A more specific object of the invention is the provision of an improved sectionalized or compartmentalized flatcar wherein the car may be divided into a plurality of separate sections, each having adjustable decks or floors, the said flatcar also being capable of a lowered position of the adjustable decks to carry articles extending the length of the flatcar and which do not require the splitting of the car into separate sections or compartments.

Another object of the invention is to provide an improved multiple deck flatcar assembly comprising a bottom deck, a first deck, and a second deck, the latter two decks being adjustable in a vertical direction relative to the bottom deck and being adjustable with respect to each other.

A more specific object is the provision of an improved flatcar having a plurality of vertically adjustable load-carrying decks, the flatcar including novel provisions for supporting the adjustable load-carrying decks in raised positions and for maintaining the decks in a lowered position against longitudinal and lateral displacement relative to the bottom deck of the flatcar.

These and other objects will become more readily apparent from a reading of the description when examined in connection with the accompanying sheets of drawings.

In the drawings:

FIGURE 1 is a side-elevation view of a flatcar embodying the novel arrangement of the invention;

FIGURE 2 is an enlarged plan view of a pair of sections or compartments of the flatcar shown in FIGURE 1;

FIGURE 3 is a sectional view taken substantially along the line 3-3 of FIGURE 1;

FIGURE 4 is a cross-sectional view taken substantially along the line 4-4 of FIGURE 2;

FIGURE 5 is a cross-sectional view through one side of a column structure showing portions of load-carrying decks taken substantially along the line 5-5 of FIGURE 1;

FIGURE 6 is a detail sectional view taken substantially along the line 6-6 of FIGURE 1;

FIGURE 7 is a detail view taken substantially along the line 7-7 of FIGURE 1;

FIGURE 8 is a detail sectional view taken substantially along the line 8-8 of FIGURE 2;

FIGURE 9 is a cross-sectional view of an elevating section or compartment taken substantially along the line 9-9 of FIGURE 1;

FIGURE 10 is a perspective detail view showing details of a floor and deck construction;

FIGURE 11 is a bottom view showing the underneath portion of a bottom deck or floor beneath an elevating section of a flatcar; and

FIGURE 12 is an enlarged sectional view taken along the line 12-12 of FIGURE 9.

Referring now particularly to FIGURE 1, a railway vehicle of the flatcar type is generally designated by the reference character 10. The flatcar 10 comprises a longitudinally extending body 11 having a bottom platform, floor, or deck designated at 12. The bottom floor or deck 12 is suitably supported on longitudinally extending transversely spaced frame members 13 suitably supported on railway wheel carriages generally designated at 14 and of conventional construction. The flatcar 10 may be divided into a plurality of compartments or sections generally designated at 15 and has at one end an elevating compartment or section generally designated at 16.

The bottom deck 12, as best shown in FIGURES 4 and 10, is provided with a plurality of U-shaped downwardly extending portions designated at 17 which include a plurality of transversely extending spaced vertical wall portions designated at 18. The wall portions 18 divide the portion 17 into transversely extending recesses 19 and 20. As shown in FIGURE 8, one end of the floor 12 is also provided with a downwardly extending portion 21 having upwardly extending walls 22 providing transversely extending recesses 23 and 24. The opposite end of the flatcar (though not shown) is similarly provided with a transversely extending portion 21 including the transversely extending recesses 23 and 24. At transversely spaced opposed ends of the downwardly extending portions 17, there are provided upwardly extending columns 26. The columns 26, as best shown in FIGURE 1, divide the flatcar 10 into the compartments 15 which are in longitudinally contiguous relation and are joined at one end by the elevating section designated at 16. Each column 26 comprises an upright channel 27, best shown in FIGURE 5. Each channel 27 is provided with flanges 28 and 29 and contiguous flanges 30 to provide vertically extending slots 31, 32, 33, and 34.

As best shown in FIGURE 7, the upper half of the columns 26 are formed only of the upwardly extending walls 29 and 30 providing continuations of the vertically extending slots 32 and 33. The recesses 19 and 20 of the floor 12 are in transverse alignment with respect to the slots 31, 32, 33, and 34. In other words, the recesses 19 re-
spectively are in alignment with slots 31 and 34 and the recesses 20 are respectively in alignment with the slots 32 and 33. As best shown in FIGURES 1 and 7, the up-right channels 27 are provided with vertically spaced holes designated at 37 and 38. Each load-carrying deck 37 and 38 comprises a channel 37 and laterally spaced recesses 20. Angle members 40 are suitably connected to opposite ends of the deck 37 and similar angle members 41 are connected to opposite ends of the deck 38. As indicated in FIGURE 10, the angle members 40 are provided with downwardly extending legs 42 which are seated within the recesses 19. Similarly, the angle members 41 are provided with downwardly extending flanges 43 seated within the recesses 20. As indicated, the recesses 19 and 20 like the angle members 40 and 41 extend transversely across the flatcar.

As shown in FIGURE 8, the opposite ends of the flatcar 12 are provided with the transversely extending recesses 23 and 24. The downwardly extending flanges 42 of the deck 37 are seated within the recesses 24 and the downwardly extending flange 43 of the deck 38 are seated within the recess 23.

As best shown in FIGURE 5, the angle members 41 extend along the outer surface of the deck 32 and 33 and each angle 41 has connected thereto perforated attaching plates 44. Similarly, the angle members 40 extend into the slots 31 and 34 and have connected thereto perforated attaching plates 45. Suitable pins 46 extend through the holes 35 and through the perforated plates 44 and 45 for securing the decks in a plurality of vertical positions on the columns 26. The lowered position of the decks 37 and 28 is best shown in FIGURES 4 and 6. From these views, it is apparent that the decks 37 and 38 are retained against longitudinal displacement by virtue of the engagement of the flanges 42 and 43 with the recesses 19 and 20. Thus the decks are retained against longitudinal displacement and suitable material for shipment or trucks or other vehicles may be supported on the decks which are retained against such longitudinal displacement. While the slots 19 and 20 have been shown somewhat wider than the flanges 42 and 43, which permits a limited amount of longitudinal movement, the sizes of the slots can be narrow to permit a much lesser longitudinal displacement if desired. Thus it can be seen that the decks 37 and 38 also can be easily raised to a desired vertical position to accommodate several vehicles or other materials by merely inserting the pins 46 at the desired height in the holes 35 so as to secure the decks in the manner shown in FIGURE 5. Thus in the raised position, the decks 37 and 38 are also firmly supported against longitudinal or lateral displacement and by merely removing the pins 46, the decks may be lowered as desired.

Referring now particularly to FIGURES 1, 9, and 12, the elevating station 10 is provided with four box-type columns 47 disposed in rectangular relation as indicated. The columns 47 in each include an inner flange 48 and opposed sidewalls 49, and are provided with vertically extending open slots 50. The columns 47 may be suitably secured to the floor 12 by any conventional securing means. Each column 47 is provided at its upper end with a shaft 51 suitably rotatably supported on the walls 49. A sprocket 52 is mounted on each shaft 51 and a chain 53 is trained about each sprocket. The deck 37 within the section 16 has its angles 40 extending into the slots 50, each angle 40 having connected thereto at opposite ends perforated plates 54. The perforated plates 54 are suitably connected by means of fasteners 55 to the chains 53 so that during movement of the chain 53 the deck 37 may be raised and lowered as desired within the section.

16. The angles 41 of the deck 38 within the section 16 also has at opposite ends thereof perforating connected plates 56 which are adapted to be secured to the flanges 48 in a plurality of positions by means of pins 57 suitably extending through slot openings 35'. The openings 35' are positioned in the flanges 48 at the same locations that the openings 35 are on the columns 26.

The chain 53, as best shown in FIGURES 9 and 11, extends downwardly through openings 58 provided in the floor 12 of the flatcar. The chains 53 are trained about sprocket 89 and rotate with transversely and longitudinally extending shafts 69 suitably supported in bearing brackets 61 connected to the underneath surface of the bottom 12. Thus rotation of the shafts 69 provides for rotation of the four sprockets 59 which in turn drives the chains 53 in turn rotating the sprockets 82 for raising and lowering the deck 37. Bevel pinions 62 are connected to the ends of the shafts 60 and are driven by means of bevel pinions 63 connected for rotation to a shaft 64 in turn supported in bearing bracket 65 suitably connected to the underneath surface of the bottom 12. The shaft 64 is rotated by means of a gear 67 in turn meshing with another gear 68 driven by a transversely extending shaft 69 suitably supported and transversely spaced bearing bracket 70 connected to the underneath side of the floor 12. The end of the shaft 69 is provided with a recess or slot 71. This slot or recess 71 may receive a suitable crank arm for effectuating manual operation of the gearing arrangement, or, it may receive a suitable drive shaft (not shown) from a suitable power driven unit (not shown).

FIGURE 1 shows the flatcar transporting trucks designated at 72. It is apparent from this view that several trucks may be positioned in one section 15 or a truck may extend through several sections 8. Small trucks may be transported in one section 15, or, as indicated, a small and a large truck may be divided between two sections.

Conceivably, if desired, all of the decks may be in a lowered position whereby the full length of the car is available for transporting such material as elongated pipes, logs, poles, etc. However, if it is desired to sectionalize the car into various compartments or sections 15, it is a simple matter to raise the decks and to secure them in position by means of the pins 46 shown in FIGURE 1.

By the utilization of reticulated steel material for the sections 39 indicated, the decks 37 and 38 are light and one man can easily raise them into position and insert the pins 46 into the openings 45. In this position, the decks are securely fastened by virtue of the channel-shape of the columns with the vertically extending slots. The decks may be vertically adjusted as desired, and each section can be divided itself into three definite sections, if so desired. Thus division of the car into sections and subsections is readily accomplished. In the raised position of the decks, they are firmly supported and retained against displacement and again lowered with a minimum of effort. In the lowered position of the decks, it is obvious that the decks are securely retained against longitudinal displacement by means of the recesses 19 and 20 provided in the floor 12. This, with the provision of the slotted columns, serves to provide a strong support for the decks in the lowered position. Also, the decks may be seated on a flat floor on top of one another in the lowered position, thereby minimizing the space required in this particular position.

The section 16, besides being utilized for carrying freight, is also utilized as an elevating or elevator-type compartment so that loading can be easily handled. Supposing now that it is desired to load any of the sections having raised decks in position, it is a simple matter to adjust the other decks of the other sections to the same vertical height and then to raise the deck 37 within the section 16 to the same height for shifting a load from
the said section 16 to the other decks. This is accomplished by merely rotating the shaft 69 which imparts a movement to said platform 67 and to the shaft 60, which in turn causes raising of the section 37.

As the section 37 is raised, it carries with it freely the section 38 having seated thereon the load desired to be elevated. When the section 38 has been moved to the vertical height desired in registry with the deck 38 or 37 of an adjacent section, it is a simple matter to move the load carried thereon to and then again lower the section 37.

As indicated in FIGURE 11, the shaft 64 may have a suitable braking means generally designated at 66 thereon, which by means of a conventional brake can affect a locking of, or prevent turning of, the shaft 64 if desired.

As indicated in FIGURE 12, it is also a simple matter to position the deck 38 within the section 16 at the particular height desired by simply inserting the pins 57 through the perforated plates 56 and openings 35 of the flanges 48 so that the deck 38 can also be adjusted to any position desired.

Thus it is believed that an improved multi-deck flatcar construction has been disclosed, which provides for a variety of loading and unloading arrangements. The arrangement provides for maximum versatility with a minimum of effort and cost. Thus it is believed that the objects of the invention have been fully achieved and that changes and modifications may be made without departing from the spirit of the invention as disclosed nor from the scope thereof as defined in the appended claims.

What is claimed is:
1. A vehicle comprising an elongated body, supporting wheels connected to said body, a longitudinally extending bottom deck supported on said body, a plurality of vertically extending columns mounted on said body in laterally spaced relation on opposite sides of said deck and in longitudinally spaced relation along the length of said deck to divide the same into a plurality of longitudinally spaced contiguous load-carrying sections, each column including first and second vertically extending channels having first and second vertically extending recesses respectively in alignment with said first and second slots, first and second decks positioned in superposed relation within said sections, each first and second deck comprising an elongated load-supporting platform, a transversely extending support member connected to longitudinally spaced opposite ends of said platforms, the said support member having first and second ports engaging said first and second recesses, the said support member having second portions engaging said second recesses, whereby said decks are secured in a lowered position against longitudinal displacement, each of said first and second support members including first and second securing members disposed at opposite ends of said angle members and projecting into said first and second slots whereby during a raised position of said decks said first and second securing members are engaged thereby forming said first and second securing members.
2. A vehicle comprising an elongated body, supporting wheels connected to said body, a longitudinally extending bottom deck supported on said body in laterally spaced relation on opposite sides of said bottom deck and in longitudinally spaced relation along the length of said deck to provide a plurality of longitudinally spaced contiguous load-carrying sections, each column including first and second vertically extending channels having first and second vertically extending slots facing inwardly toward the center of said deck, said including first and second transversely extending recesses respectively in alignment with said first and second slots, first and second decks positioned in superposed relation within said sections, and means cooperating with said columns and said securing members for retaining said decks in raised positions relative to each other and to said bottom deck.
3. A vehicle comprising an elongated body, supporting wheels connected to said body, a longitudinally extending bottom deck supported on said body, a plurality of vertically extending columns mounted on said body in laterally spaced relation on opposite sides of said deck and in longitudinally spaced relation along the length of said deck to divide the same into a plurality of longitudinally spaced contiguous load-carrying sections, each column including first and second vertically extending channels having first and second vertically extending slots facing inwardly toward the center of said deck, said including first and second transversely extending recesses respectively in alignment with said first and second slots, first and second decks positioned in superposed relation within said sections, first and second securing members disposed at opposite ends of said support members and projecting into said first and second decks whereby during a raised position of said decks said first and second securing members are engaged thereby forming said first and second securing members.
second decks and slidably engaging said first and second slots whereby said first and second decks may be moved to raised positions, and means on said columns engaging said first and second decks for supporting them in said raised positions.

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