

(No Model.)

B. C. HICKS.  
STOCK CAR.

No. 504,692.

Patented Sept. 5, 1893.

Fig. 3.

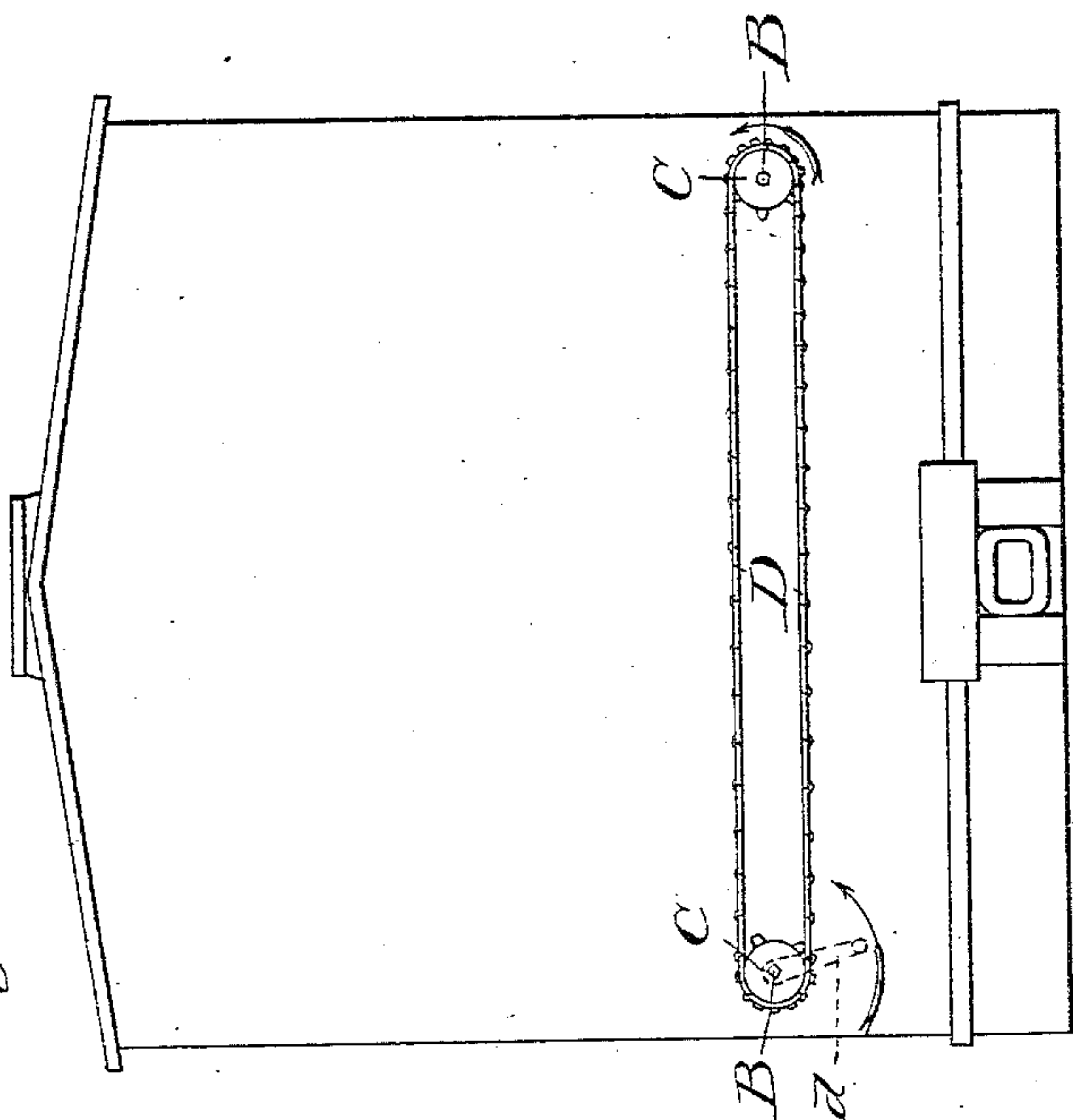


Fig. 1

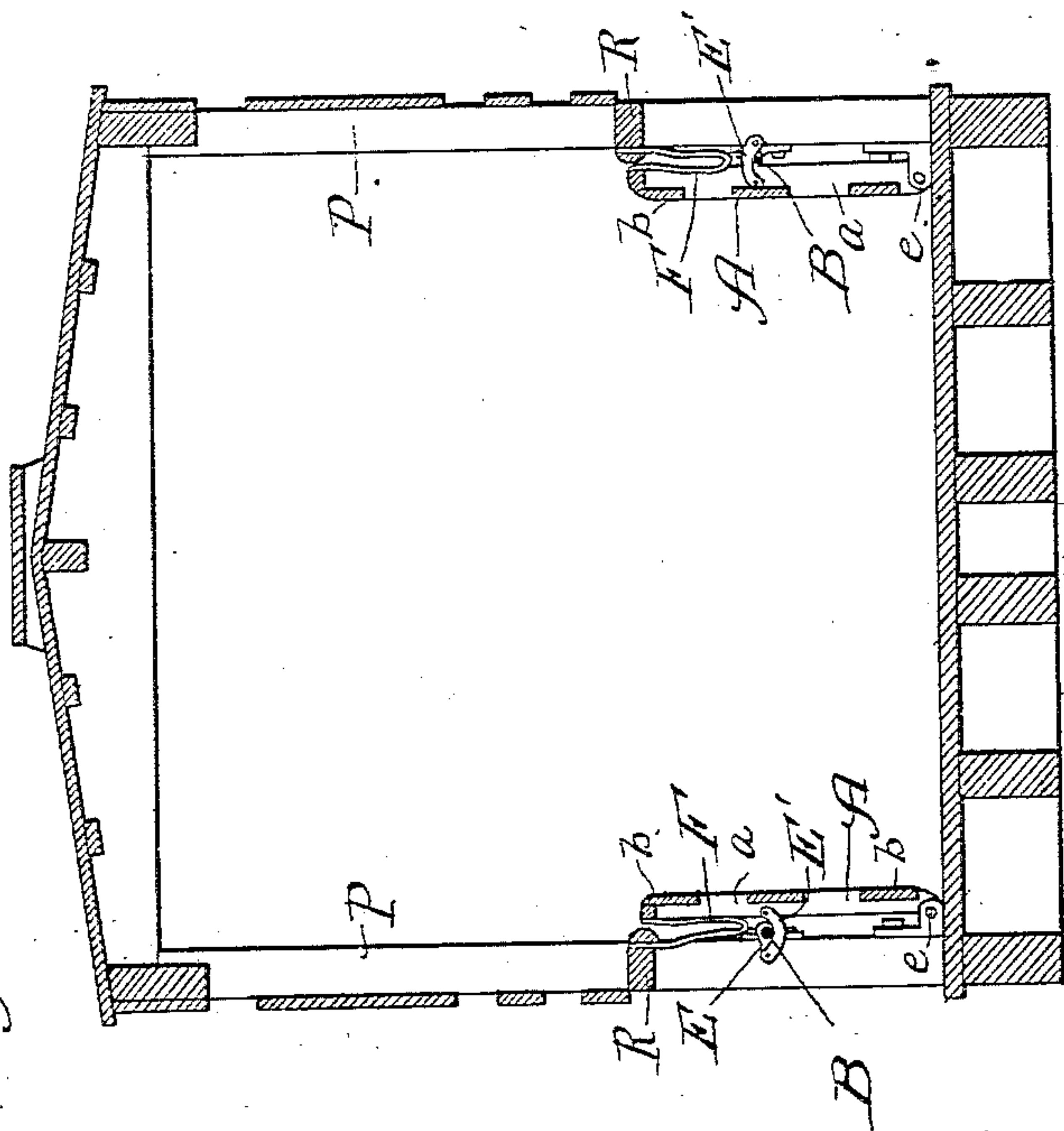


Fig. 4.

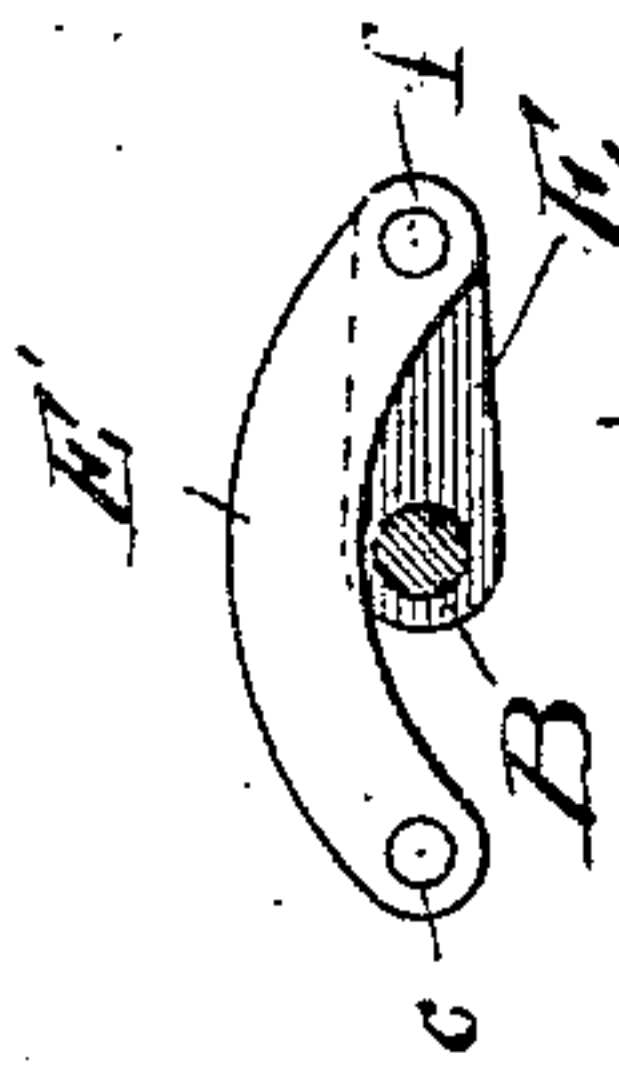


Fig. 5.

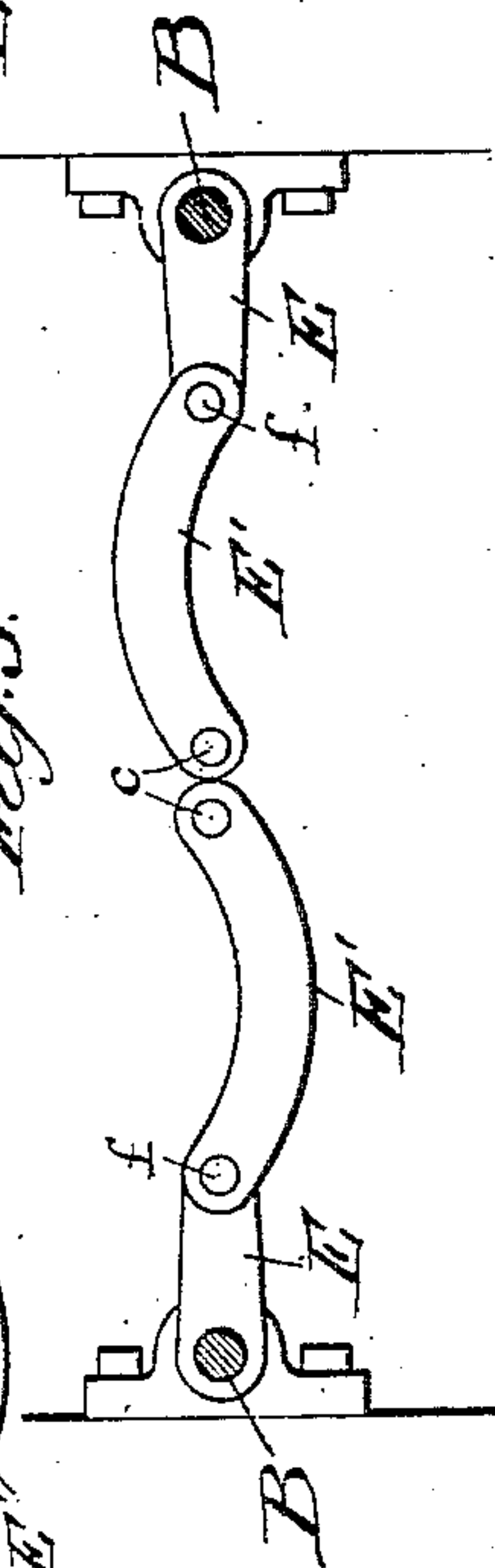
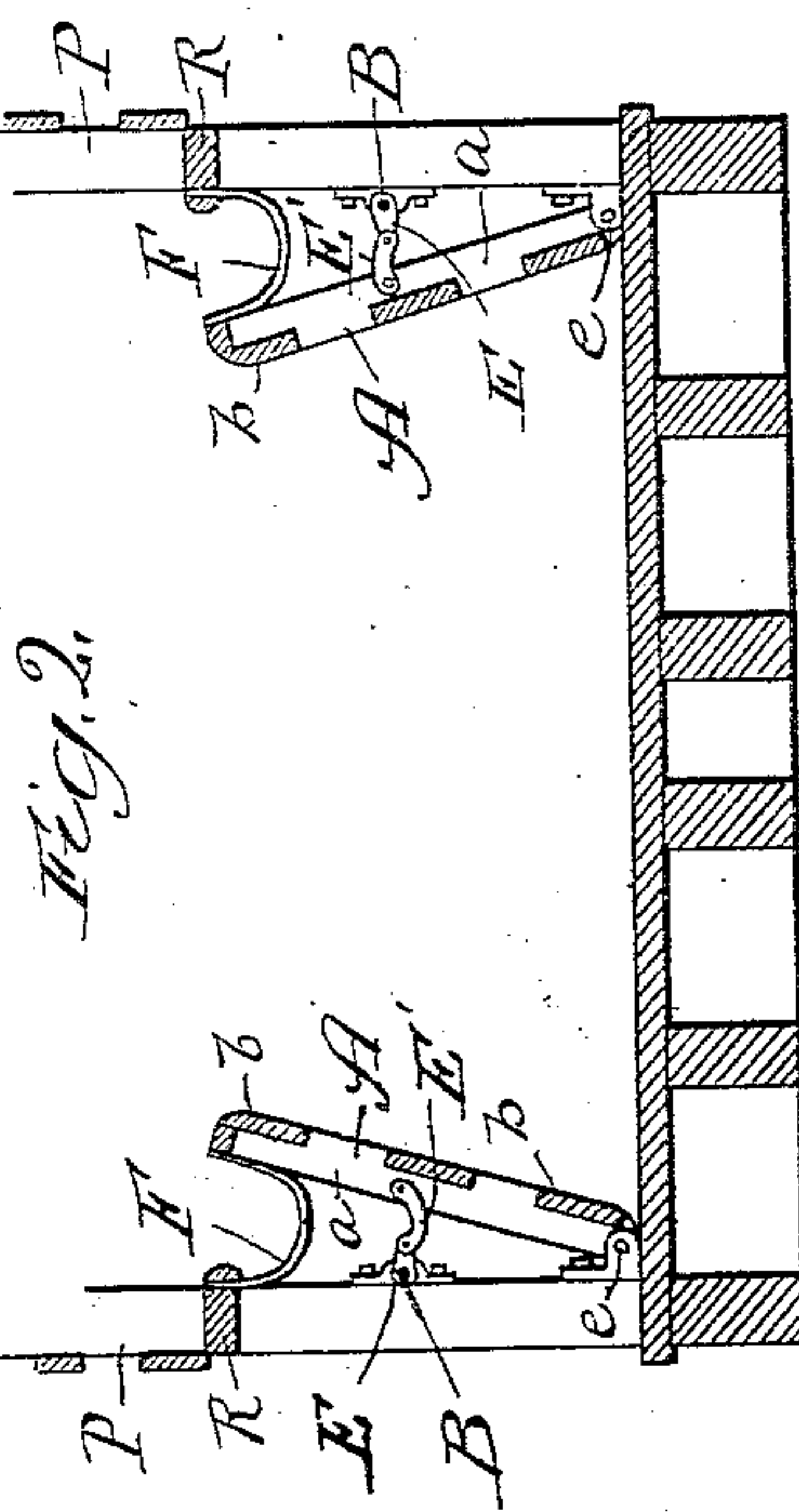


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## STOCK-CAR.

SPECIFICATION forming part of Letters Patent No. 504,692, dated September 5, 1893.

Application filed February 10, 1891. Serial No. 380,966. (No model.)

*To all whom it may concern:*

Be it known that I, BOHN CHAPIN HICKS, of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Stock-Cars, of which the following is a specification.

The present invention relates to the construction of stock cars in order to adapt them for the accommodation and protection of watering troughs.

It has been usual in the past to provide cattle cars and other stock cars with watering troughs extending along the sides of the car in order that the cattle or other stock may be furnished with drinking water while in transit. In fitting cars with these troughs, a number of serious difficulties have in the past been experienced, to which brief allusion will be made.

In fitting a car with watering troughs, three main and controlling essentials must be regarded and taken into consideration. The first of these essentials is that when the troughs are supplied with water they must be conveniently accessible to the stock. Consequently, there must be provided room enough above the open mouths of the troughs between the inner edges of the troughs and the outer walls of the car to accommodate the heads of the animals. Since stock cars are largely, if not mainly, used for transporting horned cattle, the head space must be calculated and arranged so that horned cattle can conveniently drink from the troughs.

The second essential is that the presence of the watering troughs shall interfere to a minimum extent with the available carrying capacity and interior width of the car. There should be sufficient interior width to the car to enable one steer (or other animal) to pass behind others within the car when loading or unloading the car and during transit, and there should be room enough to allow the cattle some freedom of movement. Moreover, stock cars as a rule can be utilized for the transportation of stock only in a single direction, and they are used for ordinary freight purposes on the return trip. Hence, in order that the interior dimensions of the car may be normal without increasing its exterior dimensions, it is essential that the wa-

tering troughs should (when not in use for holding water) offer little or no obstruction to the interior of the car.

The third essential is that the troughs should be so located within the car and so maintained in place that they cannot be injured by the animals carried by the car. This is a matter of particular importance, and one which involves considerable difficulty, since the cattle within the car are frequently thrown with violence against the sides of the car by the movements of the train, and the cattle, especially when frightened, force themselves and each other against the sides of the car.

In order to adapt the watering troughs to these requirements, they have been arranged in the cars and the cars have been especially constructed to receive the troughs in various ways. Most, if not all, of the prior constructions and arrangements fall under the following four comparatively well-defined classes.

The first class comprises cars which have troughs located within the car. Where such troughs are employed, it is necessary that they should be protected from the animals, and accordingly it has been usual to place them behind a permanent inner vertical wall or partition. The patent of G. D. Burton, No. 376,729, dated July 24, 1888, may be mentioned as an example of this class. The objection to this class of troughs is that, if the trough is far enough within the car to be accessible to horned cattle, the protecting wall or partition is so far within the car as to seriously contract its width, so that the availability of the car for transporting cattle or for freight purposes is seriously affected.

The second class avoids the contraction of the car, and comprises those cars wherein the troughs are placed as far out (at least) as between the side posts of the car, so as to be exterior to the inner slatting carried by the side posts. To enable the cattle to drink from these troughs, the portions of the sides of the car above the troughs are constructed so as to swing outwardly. The patent of J. W. Street, No. 336,872, dated February 23, 1886, may be mentioned as an example of this class. Very serious objections exist, however, to these outwardly-swinging portions or sections, since they weaken the car structurally, and are



sources of danger when swung outwardly. They are apt to strike fixed structures along the track, or to be struck by passing trains.

The third class comprises those cars which  
5 have movable troughs which are moved from a position of non-use where they are out of the way and are more or less protected, to a position of use within the car where they are accessible to the cattle. The patent of A. C.  
10 Mather, No. 396,100, dated January 15, 1889, may be mentioned as an example. The objection to these movable troughs is that both the troughs themselves and their operating mechanism are liable to injury while in use,  
15 and while being moved from the position of non-use to the position of use. When such troughs are in use they are necessarily within the car and within reach of the cattle, and consequently are liable to be injured by  
20 the movements of the cattle. And when such troughs are about to be moved from the position of non-use to the position of use, it very frequently happens that some of the cattle are in the way, so that it is necessary  
25 to force the troughs into operative position, and in this manner both the troughs and their operating mechanism become injured. Such troughs, also, when in use constitute shelves projecting into the car, and the cattle are  
30 liable to get under them, and thus either the cattle are prevented from regaining their feet or the troughs become injured.

The fourth class is a species under the third class and comprises those movable troughs  
35 which are flexible. The patent of O. Newell, No. 366,975, dated July 19, 1887, may be mentioned as an example of this class. In troughs of this character, the flexible material of the troughs is not injured by the cattle  
40 forcing themselves (or being thrown) against the troughs, since the troughs collapse and so escape injury. But the operating and supporting mechanism of these flexible troughs become injured and are thus rendered inop-  
45 erative, while the result of the collapsing of the troughs (should they then be filled with water) is to empty them of water, thus necessitating the delay and trouble necessary to again place the troughs in position and re-  
50 fill them with water. The practical difficulties which thus arise in the use of watering troughs have seriously impeded the general use of improved stock cars on railways, and even where improved cars fitted with water-  
55 ing appliances are employed the difficulties attending the use of the watering appliances frequently result in the entire failure of the train hands to make use of them in watering the stock.

60 The object of the present invention is to so construct and equip stock cars with watering appliances that all of the recited difficulties may be overcome.

65 In accordance with the present invention, the lower portion of each side wall of the car comprises movable sections which are located just inside of the usual side posts and braces

constituting the main side wall of the car. Each of these sections is pivotally connected at its bottom with the frame of the car, so that it  
70 may swing inwardly from a substantially vertical position in which it is close against the main side wall of the car, to an inclined position in which its upper edge projects within the car far enough to provide a space be-  
75 tween its upper edge and the side posts or main wall of the car sufficiently wide to enable cattle to gain access thereto. These hinged inwardly-swinging sections are made in a firm substantial manner, since they con-  
80 stitute themselves part of the side walls of the car, and they are as strong and as capable of resisting strains as any other part of the car. The sections are also so connected with the frame of the car that they can be rig-  
85 idly and securely locked either in their normal vertical closed position or in their inwardly-inclined open position. Co-operating with these sections are watering-troughs, which are so located and arranged that when the mov-  
90 able sections are swung inwardly the open mouths of the troughs occupy the space between the upper inner edge of the movable sections and the side posts or main side wall of the car, so that they are accessible to the cat-  
95 tle or other stock. When, however, the movable sections are returned to their vertical positions, the troughs are moved with the sections so that they do not interfere with the movement of the movable sections. And  
100 whether the sections occupy their vertical position or their inwardly-inclined position, they are between the cattle and the troughs, so that they protect the troughs from the cat-  
105 tle and prevent the troughs being injured, the only access to the troughs for the cattle being over the upper edge of the sections when the latter occupy their inwardly-inclined positions.

The present improvements are illustrated  
110 in the accompanying drawings, wherein Figure 1, is a vertical cross section of a stock car embodying the improvements. Fig. 2, is a similar section of the lower half of the car with the parts in a different position. Fig.  
115 3, is an elevation of the exterior of one end of the car. Figs. 4, and 5, are detail views showing the operating and locking devices.

The roof, sides, floor, and other parts of the car not hereinafter more particularly de-  
120 scribed, are made in the usual manner, and being well known require no further description. The lower portion of the side of the car, however, is provided with movable sections, each of which is hinged at its lower edge at a  
125 point at or near the floor of the car, so as to be swung inwardly. This lower section is lettered A. There may be a single section to each side of the car, as when the doors of the car are at or near its ends, or there may  
130 be several sections, as may be found necessary or desirable. Each section is located immediately inside the side posts P, of the car, and it is movable from a vertical position



where it rests against said side posts to an inwardly-inclined position as shown in Fig. 2. Each section is composed of vertical bars *a*, *a*, and horizontal slats *b*, *b*, connecting the same. These slats are on the inside of the bars *a*, *a*, and they take the place of the slats which are usually secured to the side posts P. They constitute the only slats at the lower portion of the car, there being none secured to the lower portions of the side posts. Consequently, the space between the side posts is accessible from the exterior of the car. The upper slat *b*, of each section is at the upper ends of the bars *a*, so that it constitutes the upper edge of the section.

The operating mechanism for the inwardly-movable sections is as follows: Along each side of the car runs a shaft B. These shafts extend through the ends of the car and are provided with sprocket wheels C, connected by a chain D, and provided with a crank *d*, by means whereof the wheels and shafts may be turned in one direction or the other as desired. The movable side sections are connected with these shafts by means of crank arms E, and arched links E', the crank arms being attached to the shaft and to one end of the links, and the other end of the links being fastened, as shown, to the movable sections. The pivotal point *c*, between the arched link and the swinging section A, and likewise the axis of the shaft B, are approximately in the arc of which the axis *e*, on which the section A, swings is the center. The crank arm E, is shorter than the link E', and the link E', is curved or otherwise shaped so that it can swing either over or under the shaft B. Consequently, whether the section A, is open or closed, the pivotal point *c*, the axis of the shaft B, and the pivotal point *f*, between the link and crank arm, will be approximately in an arc of which the axis *e*, is the center, and therefore the section will be locked in either position.

In shaping the link E', so that it may perform its locking function, it is only necessary that each link should be so shaped that (when the sections occupy their vertical position as shown in Figs. 1, and 4) it may extend across its shaft and at the same time permit the three centers (to wit, first, the axis of the shaft B, second, the pivot between the crank E, and link E', third, the pivot between the link E', and section A) to be in line with each other, or, more accurately, to all lie in an arc having as a center the axis on which the section A swings. The proper shape of the links may be secured by arching the links, as shown, or by any of the equivalent shapes which will readily suggest themselves.

As it is desirable to fold both of the movable sides against the car and to open them both simultaneously, and as the shafts B, revolve in the same direction, the position of the links E', on the opposite sides of the car must be reversed; as, for instance, the link E', on the left hand side of the car may be

placed in one position (as shown in Fig. 5) so that as the shaft on that side of the car revolves toward the right the link passes under the shaft (as shown in Figs. 1, and 4) drawing the movable side into the position shown in Fig. 1, while the link at the right hand side of the car, when the shaft at that side revolves toward the right, passes over the shaft into the position shown in Fig. 4, drawing the movable wall into the position shown in Fig. 1. As the shafts are revolved toward the left, the links and movable sections pass from the position shown in Figs. 1, and 4, to those shown in Figs. 2, and 5.

From the mode in which the links and arms are constructed and arranged, it will be seen that the movable sections are locked in either position to which they may be thrown, so that unless the shafts are rotated it will not be possible to open or shut the sections, since a pull or push on the movable section will have no tendency to rotate the shaft. When the sections A, occupy their inwardly-inclined position, as shown in Fig. 2, a space is left between the upper edge of each section and the side posts or main side wall of the car, through which the cattle gain access for drinking purposes to a watering trough F. The open mouth of this trough (when the section alongside it is swung inwardly) is located between the upper edge of the section A, and the main side wall of the car. The particular construction of the trough itself is immaterial. It is only necessary that it should be so constructed and arranged that when the section A, is swung inwardly its mouth should be accessible above the upper edge of the section to the cattle, and that when the section is swung outwardly to its vertical position the trough should move also so as to be out of the way and neither prevent the movement of the section nor remain an obstruction within the car. As a convenient and suitable construction for the trough, I have shown in the drawings a flexible collapsible trough, made of canvas or other suitable material, which is attached along its inner edge to the upper edge of the movable section and along its outer edge to the side posts or to the side rail R, of the car. Consequently, when the section is moved, either outwardly or inwardly, the trough will move with it.

An important feature should be noted in reference to the flexible collapsible trough and its connection with the side wall and movable section. In folding and unfolding, the bottom of the trough does not fold on a single line, but folds with a rolling movement so that there is no danger of the trough cracking or breaking at the fold. This feature is of special importance where a flexible sheet metal trough is employed.

The trough F, it will be observed, is located immediately behind the top slat *b*, of the section, so that the trough is protected thereby both when the section is open and when it is closed. The only access that the cattle have



at any time to the trough is over the edge of the movable section. It is impossible at any time for the cattle to get beneath the troughs, this being prevented by the slats *b, b*. The movable sections constitute portions of the side walls of the car both when they are folded against the sides of the car and when they are swung open to expose the mouths of the troughs; and the slats being on the inside of the sections smooth sides are presented to the cattle. These sections in either of their two positions afford the same means of inclosure to the animals as has heretofore been afforded by the usual slatting at the bottom of the car; and the movable character of these sections of the side walls of the car does not interfere with reaching the cattle from the exterior of the car to direct the cattle and assist them in rising in case they should fall down. When the swinging sections *A*, are closed up against the main side walls of the car, the interior width of the car is contracted only a few inches, so that the available carrying capacity of the car is not appreciably affected. When the swinging sections are open, the troughs are conveniently accessible, and the sections themselves are securely held so that they cannot be moved by the cattle. And in whatever position the sections are, the troughs are fully and completely protected.

I claim as my invention—

1. An inwardly-swinging section forming the lower part of the side wall of a stock car and pivotally connected at its bottom at the floor thereof, said section being movable from a substantially vertical position at the side of the car inwardly to a position where a space is left between the upper edge of said section and the lower edge of the upper part of said side wall, said section having horizontal slats constituting its inner side, and also the side slats of the lower portion of the car one of said slats extending along the upper part of said section, in combination with a trough exterior at all times to said section and correspondingly movable, the open mouth of said trough being exposed and rendered accessible when said section occupies its inward position, and said trough being then located behind said upper slat whereby it is protected, substantially as set forth.

2. An inwardly-swinging slatted section forming the lower part of the side wall of a stock car and pivotally connected at its bottom at the floor and at the side of the car, said section being movable from a substantially vertical position at the side of the car inwardly to a position where a space is left between the upper edge of said section and the lower edge of the upper fixed part of the said side wall, in combination with a flexible collapsible trough secured along its inner edge to the upper outer edge of said swinging section and secured along its outer edge to the upper fixed part of the side wall of the car, substantially as set forth.

3. Inwardly-swinging sections pivotally connected at their bottoms at the floor and at both sides of a stock car, each of said sections having an outer and an inner position, in combination with rotary operating shafts at both sides of the car, said shafts being connected so as to be operated simultaneously and in the same direction, crank arms rigidly carried by each shaft, and arched links each pivotally connected at one end to one of said cranks and at the other end to one of said sections, the links at opposite sides of the car being oppositely arched so that the links on one side of the car pass over the shaft on that side while the links on the other side of the car pass under the shaft on that side, whereby said sections are locked in both positions, substantially as set forth.

4. An inwardly swinging section pivoted at its bottom at the floor and at the side of a stock car, said section having an outer and an inner position, in combination with an arched link pivoted to said section, a rotary shaft, the axis of said shaft and the pivotal point between said link and said section being both located approximately in an arc having as its center the axis on which said section swings, and a crank arm carried by said shaft and pivoted to said link, said crank arm being shorter than said link, whereby said section is locked in either of its two positions, substantially as set forth.

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