

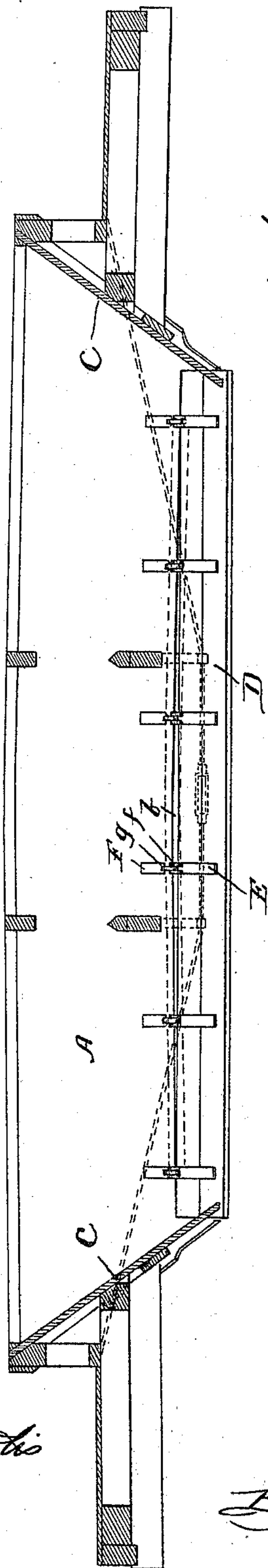
(No Model.)

E. S. HART.  
DUMPING CAR.

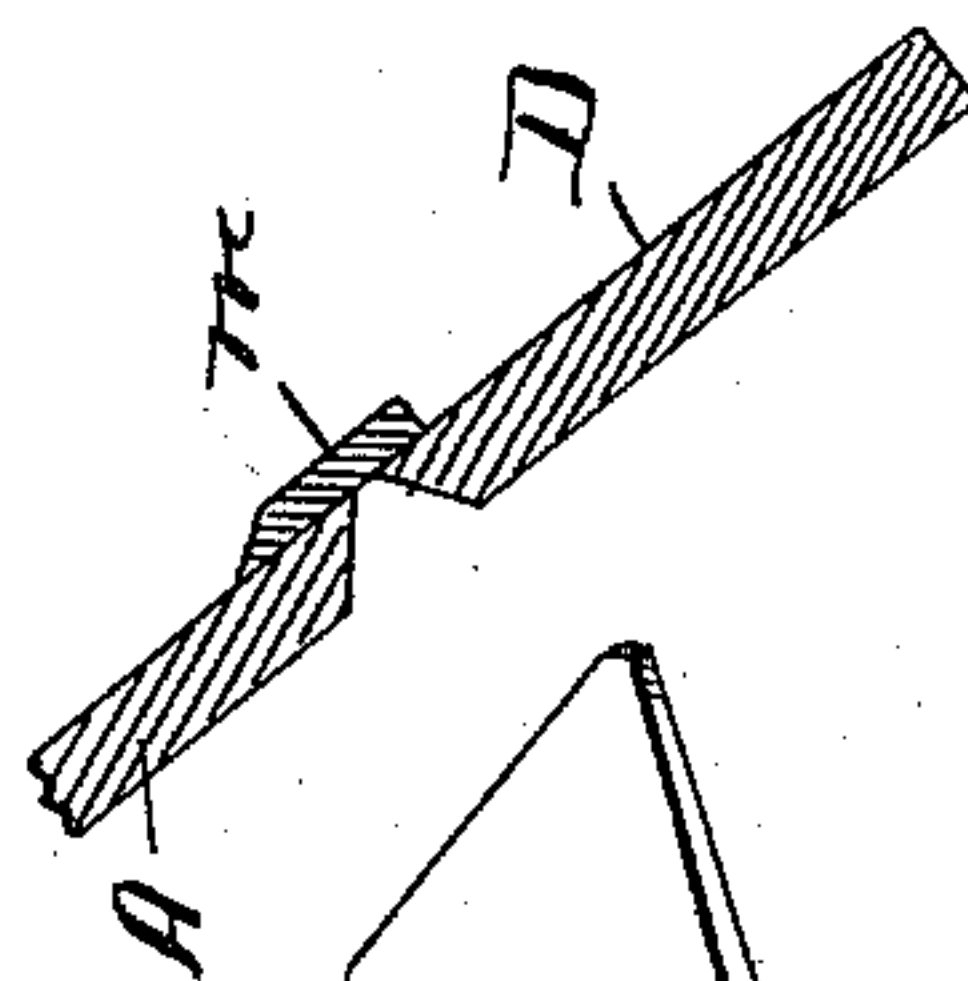
No. 578,986.

Patented Mar. 16, 1897.

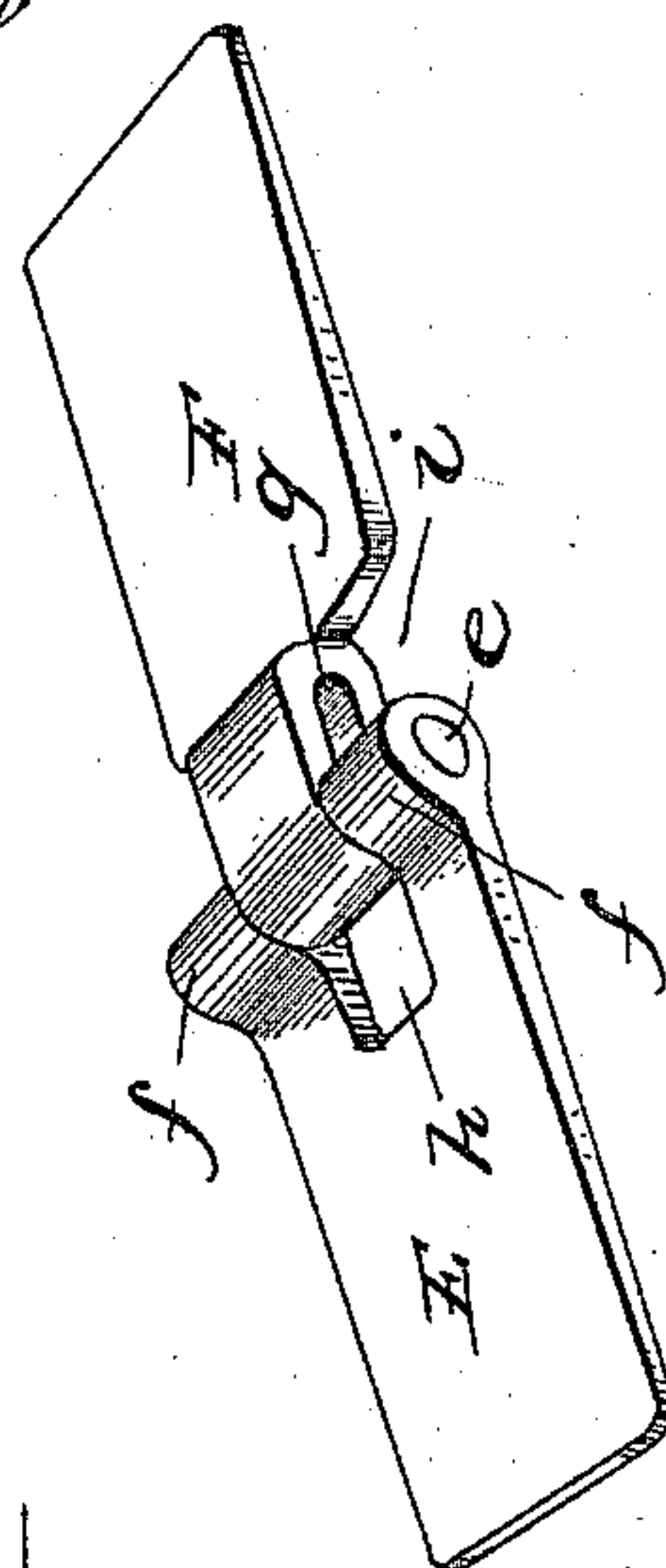
*Fig. 1.*



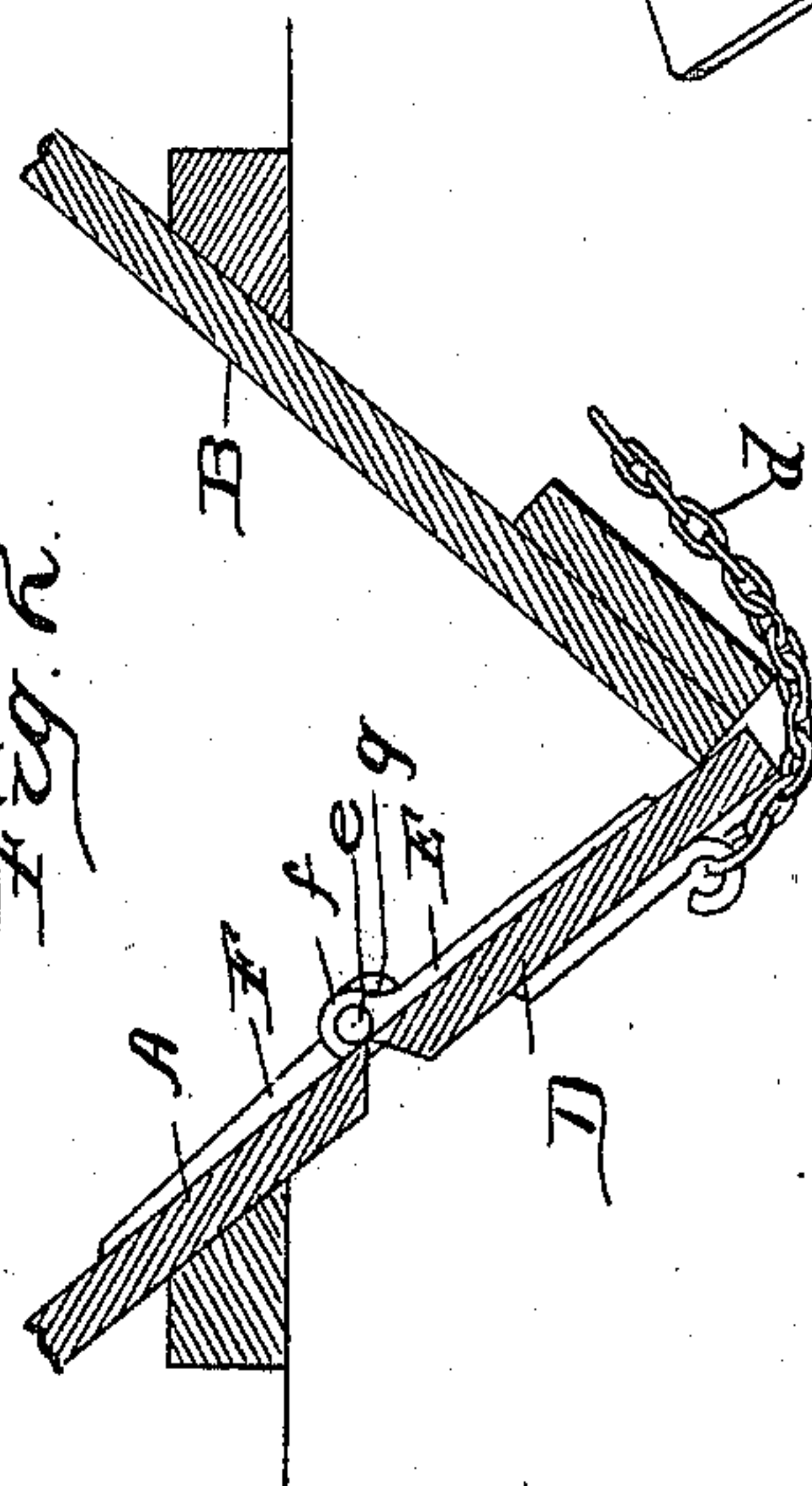
*Fig. 4.*



*Fig. 3.*



*Fig. 2.*



Witnesses:

*Lew. C. Curtis*  
*Emma Stack*

Inventor:

*Eli S. Hart*

*By Munday Evans & Adcock*  
*His Attorneys*



# UNITED STATES PATENT OFFICE.

ELI S. HART, OF CLINTON, IOWA, ASSIGNOR TO THE RODGER BALLAST CAR COMPANY, OF CHICAGO, ILLINOIS.

## DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 578,986, dated March 16, 1897.

Application filed October 5, 1892. Serial No. 447,965. (No model.)

*To all whom it may concern:*

Be it known that I, ELI S. HART, a citizen of the United States, residing in Clinton, in the county of Clinton and State of Iowa, have invented a new and useful Improvement in Dumping-Cars, of which the following is a specification.

This invention relates to certain improvements in the class of ballast-dumping cars shown in the patent to Thomas Rodger, No. 374,006, of November 29, 1887. These cars are now built with hoppers some nineteen or twenty feet long at the bottom and located in the center of the car between the trucks. In common with other descriptions of cars they are also built with the usual amount of camber to provide for the deflection caused by the weight of the load. The discharge-door, which is preferably of a length corresponding to that of the bottom of the hopper or receptacle in which the ballast is carried, is formed of one or more heavy plank, and its position when closed is an inclined one. It is very essential that this door swing freely and automatically when released from its fastening devices; but I found in actual use of the cars that in the majority of cases the door requires to be pried or pounded open, which is very difficult by reason of its inaccessible location. The sticking or binding which prevents the ready opening of the door is, as I have discovered, due to the deflection of the car and door under the load, and as the deflection is greatest at the middle of the car it forces the axes of the several hinges by which the door is hung to the car out of alinement with each other, so that the door cannot swing freely. During the opening of the door, too, the relative positions of the pintles change from the positions occupied by them prior to the opening by reason of the greater stiffness possessed by the door in the direction of its width than in that of its thickness, which increase of stiffness begins to be felt the moment the door begins to swing downward toward the vertical position. The prying or forcing open of the door is also attended with danger of breakage to both the door and hinges. To overcome this sticking or binding, which prevents the ready opening of the door, and to render the operation of the latter

both easy and automatic, I have devised my present invention, which consists in the combination, with the car and its discharge-door, of hinges uniting the latter to the car, so constructed as to permit the leaves of which they are formed to move with respect to one another, whereby compensation is obtained which permits the changes both in the deflection of the car and in the straightening of the door during the opening without interference with the operation of the door.

The nature of the invention is fully disclosed below, and the invention is also illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a ballast-dumping car provided with my invention. Fig. 2 is a partial cross-section thereof, and Fig. 3 is a perspective of one of the hinges detached. Fig. 4 is a partial cross-section taken between the hinges.

In said drawings, A represents one of the longitudinal sides of the hopper or receptacle of the car in which the ballast is carried, B the opposite side, and C the ends thereof.

D is the discharge-door, which, it will be noticed, forms part of one of the sides of the hopper, and, when closed, as in Fig. 2, it occupies an inclined position in which it yields in unison with the car under the weight of the load. This deflection throws the pintles of the several hinges by which the door is supported out of line with each other, so as to prevent or render very difficult the opening of the door; and the door, when it opens and assumes a vertical position, being much more rigid in the direction of its width than in that of its thickness, changes from the deflection or curvature of the body of the car and becomes straight. This is apt to change the relative positions of the pintles without, however, bringing them in line, so that the hinges are necessarily strained severely by the opening of the door. To obviate these evils, I provide in place of the ordinary or butt hinges heretofore used hinges in which one leaf may move toward or from the other without disengagement and in which the leaves may turn freely upon the pintle even if the latter is not strictly in alinement with the pintles of the other hinges. The preferred



construction of this hinge is shown at Fig. 3 and is as follows: The leaf E is provided with knuckles *f* in which the pintle *e* is secured, and the leaf F carries the eye *g*, through which the  
 5 pintle passes, the opening in the eye being elongated. The leaf E is also cut away, as at *h*, to give room to the eye *g* when the leaves approach each other, and leaf F is also cut away, as at *i*, to make room for the knuckles  
 10 *f*. The parts of the several hinges move apart or together, according to the necessities of the case, and thus accommodate themselves to the changes in the deflection occurring at the times of opening the door without becoming  
 15 in any wise detached from each other. They also render easy the swinging of the door, so that it freely opens when the holding chains or ties, one of which is shown at *d*, are released.  
 20 I sometimes prefer to arch slightly the under edge of the side B of the hopper, so as to leave a space *b* between it and the door, and thus provide room for the center of the hopper to deflect without depressing the door. This  
 25 opening *b* will not be objectionable where the ballast is coarse or wet, but in case it does permit the loss of material it may be covered by shields *m*, applied to the inside of the hopper and projecting down therefrom suffi-  
 30 ciently to cover the joint between the hopper side and the door, as plainly indicated in Fig. 4. These shields are shown in broken lines in Fig. 1 and need extend only from hinge to hinge. They will be found useful in all cases  
 35 where there is any gap or open space between the door and the edge of the hopper side to which the door is hinged.

I prefer that all the hinges be made with provision for the deflection of the car, but do  
 40 not wish to be limited in that respect, inas-

much as they are not all affected alike by the deflection.

At times the door will be sustained upon the pintles of the central hinges and at other times possibly upon the pintles of the end hinges.

My invention allows all the freedom necessary to accommodate all the changes caused by the varying deflection of the car-body and the varying conditions of the door both when  
 5 opened and closed.

While I have shown a construction of hinge which is adapted to accomplish the purpose I have had in view, it will be understood that I do not wish to be restricted to that con-  
 5 struction, as obviously any hinge the parts of which are free to move toward and away from each other without disengagement can be substituted for the one shown.

I claim—

1. The combination with a dumping-car and a discharge-door arranged longitudinally of the car and at an angle to the body, of a series of hinges constructed to move apart with-  
 6 out disengagement essentially as set forth, whereby the deflection of the center of the car-body is accommodated by the hinges and binding is obviated, substantially as specified.

2. The combination with a dumping-car and a discharge-door arranged longitudinally of the car and at an angle to the body, of a series of hinges, one leaf of each of which has an elongated eye for the pintle, whereby the deflection of the center of the car-body is accommodated by the hinges and binding is ob-  
 7 viated, substantially as specified.

ELI S. HART.

Witnesses:

EDW. S. EVARTS,  
 EMMA HART.