

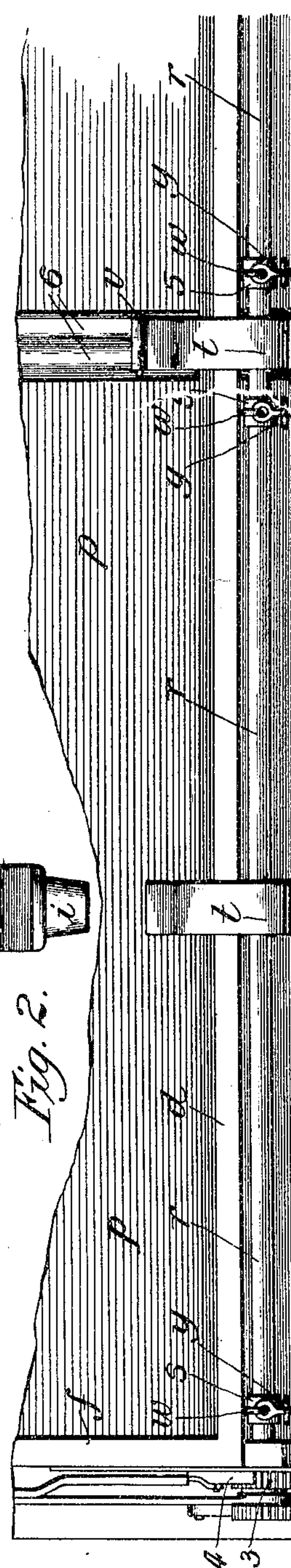
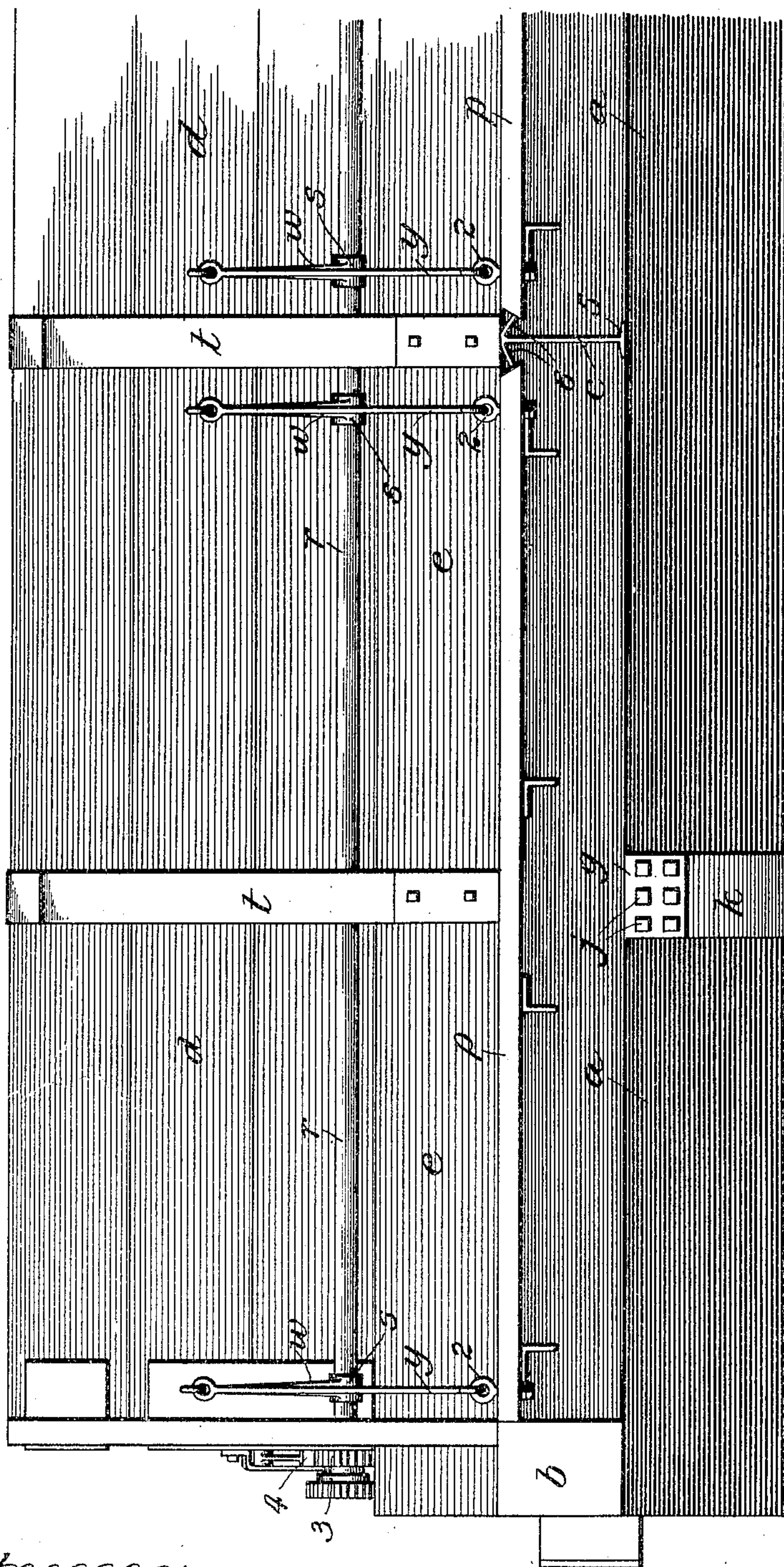
No. 780,765.

PATENTED JAN. 24, 1905.

S. OTIS.
RAILWAY CAR.

APPLICATION FILED AUG. 29, 1903. RENEWED DEC. 24, 1904.

2 SHEETS--SHEET 1.



Witnesses:
 L. P. Gaylord,
 John Enders,

Inventor:
Spencer Otis,
By Thomas F. Sheridan,
Att'y

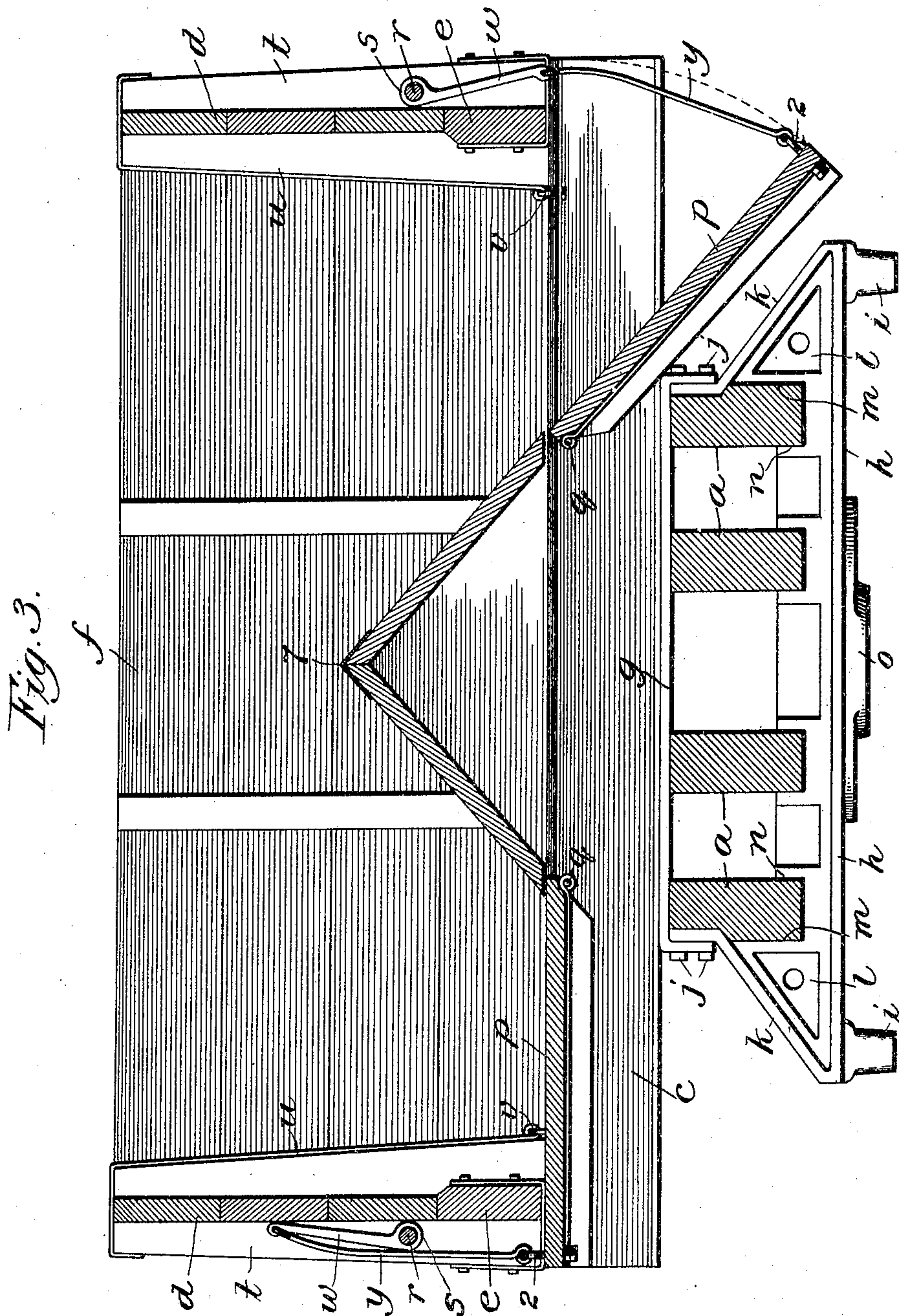
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UNITED STATES PATENT OFFICE.

SPENCER OTIS, OF CHICAGO, ILLINOIS.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 780,765, dated January 24, 1905.

Application filed August 29, 1903. Renewed December 24, 1904. Serial No. 238,226.

To all whom it may concern:

Be it known that I, SPENCER OTIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, am the inventor of certain new and useful Improvements in Railway-Cars, of which the following is a specification.

My invention relates to that class of cars known as "freight-cars."

It relates, further, to that class of freight-cars known as "dump-cars" having dumping-bottom portions arranged on opposite sides of the longitudinal center of the car, and having transverse or deck beams arranged transversely of the car, and having upper inclined surfaces extending outward laterally and downward at an incline.

It relates, further, and particularly, to such a car having deck-beams provided with flanges forming inclined upper surfaces extending outward laterally and downward at an incline from the center, such flanges forming shoulders adapted to engage the ends of the dumping-bottom portions and having suitable means for operating such dumping-bottom portions.

The principal object of my invention is to provide a simple, economical, and efficient railway-car.

A further object of the invention is to provide a dump-car having a plurality of dumping-bottom swinging sections and provided with suitable deck-beams mounted upon the longitudinal beams or sills and extending transversely of the car, each of such deck-beams having inclined flanges adapted to engage the ends of such swinging sections, such car being provided with suitable means for operating such swinging sections and holding them in closed position, whereby the contents of the car over the deck-beams may be discharged from the deck-beams and a tight joint formed between such deck-beams and the dumping-bottom sections.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a car constructed in accordance with my improvements; Fig. 2, a broken plan view of a portion thereof; and Fig. 3, a sectional elevation, taken on line 3 of Fig. 1, showing the dumping-doors or swinging dumping-bottom sections in their lowered position.

In the art to which this invention relates it is well known that it is very desirable to provide a dump-car having a bottom portion comprising a longitudinal central portion and having a plurality of swinging sections forming the dumping-bottom portions arranged on each side of such central bottom portion and having longitudinal center sills, deck-beams, and bolster mechanisms so arranged with relation to each other and of such form as to provide the necessary amount of dumping-space. It is also desirable that the rigid portions of the bottom of the car be so arranged as to permit all or the greatest possible amount of the material handled to be dumped without manual labor; also, to provide suitable means for operating the swinging sections which form the dumping-bottom portion and for holding such sections in closed position, so as to form a tight connection between such swinging sections and the deck-beams.

In constructing a car in accordance with my improvements and in order to accomplish these purposes I provide a supporting-frame portion composed of longitudinal sills *a*, centrally disposed and extending from end to end of the car. End sills *b* are mounted upon the upper sides of these longitudinal sills and flush with the opposite ends thereof. A plurality of deck-beams *c* are provided and laid upon these longitudinal sills extending transversely entirely across the car, and upon the bottom frame thus provided is mounted suitable side frames *d*, comprising side sills *e* and suitable end frames *f*; which may be of any ordinary and well-known type, all together forming the frame or box portion of the car.

To provide a suitable body-bolster mechanism to be used in lieu of the ordinary body-bolsters known to the art and in order to provide means whereby such ordinary bolsters

with the transverse sills or deck-beams extending thereover may be disposed of, so as to enable the dumping-doors or swinging-bottom sections to extend over the body-bolster from one deck-beam to the other and swing downward over the ends of such bolster, I employ a body-bolster formed of an upper bar *g*, transversely arranged across and laid upon the upper surface of the longitudinal sills already described and extending downward at each end over the outer edges of the sills, and a lower bar *h*, which extends transversely across and beneath the under surfaces of the longitudinal sills and which is provided at its opposite ends with side bearings *i* upon the opposite sides of the center sills. From the extreme outer ends this bar extends upward and backward, preferably at an incline, until it meets the center sills and is connected thereto and to the downturned ends of the upper bar by means of bolts *j*, the opposite ends of such bar being provided at the inclined portions *k* with integral web portions *l*, forming shoulders *m*, which, together with upwardly-extending shoulder portions *n*, form suitable sockets for holding the center sills and metallic portions of such bolsters or bars firmly in position with relation to each other. This lower bar is also provided with a suitable center bearing *o*, the use of which is well known and needs no further description here. It will be seen from an inspection of Fig. 1 that this bolster is arranged midway between the deck-beams and end sills and that there is no deck-beam or other rigid element extending outward transversely of the car immediately over such bolster to interfere with the action of the swinging sections of the dumping-bottom portion or to necessitate the shortening of the swinging sections to provide space for deck-beams over such bolsters.

A plurality of swinging dumping-bottom sections *p* are pivotally connected to the framework of the car at each side of the longitudinal center thereof by means of hinges *q*, so that they may be dropped down over the ends of the bolsters above described and between the deck-beams to form inclined discharging-aprons, as shown at the right of Fig. 3, or raised and held in position to form a closed bottom, as shown at the left of Fig. 3. These swinging dumping-bottom sections are of sufficient width to extend outward laterally of the car beyond the side frames, as shown, so as to combine with the advantage of a wide discharge-opening and low inclined dumping portion the further advantage of discharging the contents at a great distance laterally of the car without raising the door so as to diminish the pitch of the incline, and these dumping-sections are of such length as to extend from one deck-beam to the other and entirely over the bolsters. By this arrangement it will be readily seen that no joint is necessary over the bolster and that the swinging sections may be

of any desired length, limited only by the distance between the deck-beams or between the end sill and the next adjacent deck-beam.

In order to provide suitable means for raising and lowering the swinging sections and for holding them in their raised or closed positions, suitable rods *r* are mounted in the side frames on the outside thereof in bearings *s*, which are preferably in the upright stakes *t* of such side frames, as shown in Fig. 3, such stakes, and thereby the side frames, being securely connected to the deck-beams by means of metallic straps *u* and staples *v*. Each of these operating-rods is provided with preferably a plurality of lever-arms *w*, the swinging ends of which are connected with the outer edges of the swinging bottom portions by means of links *y*, one end of which is pivotally connected to the lever and the opposite end of which is pivotally connected to the swinging-bottom section by means of an eyebolt *z*. A ratchet-wheel *3* and operating-lever *3'* are mounted upon each of such operating-rods, and a suitable pawl *4* is mounted in the end frame of the car in operative engagement with such ratchet-wheel to hold the operating-rods, with their links and lever mechanisms, against rotation, and thereby securely hold the dumping-bottom section in closed position when desired and permit it to be opened by rotating such operating-rods when desired. The links which connect the dumping-doors or swinging dumping-bottom sections with the lever-arms are bent inward at their upper ends, as at *5*, so as to permit the levers to pass over and beyond the center of the operating-rod when in their raised position, and thus form a locking connection between the levers and doors when they are in their raised position. By this arrangement the swinging sections are when in their raised position substantially flush with the upper edge of the deck-beams and in operation swing downward between the deck-beams into dumping position. It is very desirable to form a tight connection between the ends of these dumping-doors or swinging sections and the deck-beams and to provide the deck-beams with means whereby all of the material which would otherwise lodge thereon may be discharged when the dumping-doors or swinging sections are lowered. Each of the deck-beams is therefore made, preferably, of metal and is composed of a central web or body portion provided at its lower edge with integral flanges *5*, extending substantially at right angles to the web portion. Each deck-beam is also provided at its upper edge with integral flanges *6*, which extend outward laterally and downward at an incline from the center of the upper surface of such deck-beam beyond the edge of the lower flanged portions already described and into engagement with the ends of the swinging sections or dumping-doors. These upper inclined flanged portions thus form an A-shaped upper inclined surface

for the deck-beam which is adapted to discharge all material which might otherwise rest thereon, and the flanges form a tight connection between such deck-beams and the ends of the dumping-doors. The lower flanges being narrower than the upper flanges of the deck-beams permit the doors to swing down past such lower flanges and upward into raised position and into tight engagement with the wider upper flanges, as shown in Fig. 1. The lower flanges may be made of any desired width at the points where they rest over the center sills and also on the outside of the swinging sections; but where the swinging-bottom sections have to pass such flanges they should be made narrower than the upper flanges, as above described.

To permit material which would otherwise remain upon the central longitudinal bottom portion of the car to be automatically discharged when the swinging sections are lowered, an A-shaped bottom portion extends downward and outward at an incline from the longitudinal center of the car over the center sills and to the floor-level at the point where the swinging sections are hinged to the car-frame when the swinging doors are lowered. The A-shaped central portion and such swinging doors thus form a continuous incline adapted to discharge the entire contents of the car, or at least all of such contents as may have been immediately over such parts, and the A-shaped upper edges of the deck-beams discharge all of the contents of the car which might otherwise remain upon such deck-beams, and at the same time the inclined upper flanges form a tight connection with the swinging sections when in their raised position. The deck-beams thus formed have great rigidity and strength and occupy the minimum of space between the ends of the swinging sections.

I claim—

1. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of movable dumping-bottom sections, and a plurality of deck-beams arranged transversely thereof each provided with an upper surface portion extending outward laterally from the longitudinal center of such deck-beam and downward at an incline toward the dumping-bottom sections, substantially as described.

2. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of movable dumping-bottom sections, and a plurality of deck-beams arranged transversely thereof and each provided with lateral flanges having inclined upper surfaces extending outward and downward at an incline toward the dumping-bottom sections, substantially as described.

3. In a railway-car of the class described, the combination of a plurality of longitudinal sills and a plurality of deck-beams mounted

upon and extending transversely across such sills each provided with inclined flange portions extending downward and outward laterally beyond the main body portion of such deck-beams, substantially as described.

4. In a railway-car of the class described, the combination of a plurality of longitudinal sills, and a plurality of deck-beams mounted upon and extending transversely across such sills each provided with lateral bottom flanges and having upper flanges extending outward laterally beyond the edges of the bottom flanges, substantially as described.

5. In a railway-car of the class described, the combination of a plurality of longitudinal sills, and a plurality of deck-beams mounted upon and extending transversely across such sills each provided with lateral bottom flanges and having upper flanges extending downward at an incline above and outward laterally beyond the edges of the bottom flanges and main body portion of such deck-beams, substantially as described.

6. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams mounted upon and extending transversely across such sills each provided with lateral bottom flanges and having upper flanges extending downward at an incline above and outward laterally beyond the edges of the bottom flanges, and dumping-bottom sections movable into and out of engagement with such inclined flanges, substantially as described.

7. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams mounted upon and extending transversely across such sills each provided with lateral bottom flanges and having upper flanges extending downward at an incline and outward laterally beyond the edges of the bottom flanges, swinging dumping-bottom sections pivotally connected to the bottom frame and movable into and out of engagement with the inclined flanges of such deck-beams, and means for operating such movable dumping-bottom sections, substantially as described.

8. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams mounted upon and extending transversely across such sills each provided with lateral bottom flanges and having upper flanges extending downward at an incline and outward laterally beyond the edges of the bottom sections pivotally connected to the bottom frame of the car and movable into and out of engagement with the inclined flanges of such deck-beams, operating-rods rotatably mounted in the car-frame provided with laterally-extending levers, and links pivotally connected with the swinging ends of such levers and to the swinging dumping-bottom sections, substantially as described.

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9. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams mounted upon and extending across such sills each provided
 5 with lateral bottom flanges and having upper flanges extending downward at an incline and outward laterally beyond the edges of the bottom flanges, swinging dumping-bottom sections pivotally connected to the bottom frame
 10 of the car movable into and out of engagement with the inclined flanges of such deck-beams, operating-rods rotatably mounted in the car-frame provided with laterally-extending levers, links pivotally connected with the
 15 swinging ends of such levers and to the swinging dumping-bottom sections, and means for holding such operating-rods against rotation when the swinging sections are in closed position and permitting them to rotate in either
 20 direction to open or close such swinging sections, substantially as described.

10. In a railway-car of the class described, the combination of a plurality of centrally-disposed longitudinal sills, a plurality of deck-
 25 beams mounted thereon and extending transversely across such sills, a plurality of swinging dumping-bottom sections pivotally connected to the bottom frame formed by such longitudinal sills and deck-beams, operating-
 30 rods rotatably mounted in the car-frame and each provided with laterally-extending lever-arms, and links pivotally connected at one end with the swinging ends of such lever-arms and connected at the opposite ends with such
 35 swinging dumping-bottom sections, substantially as described.

11. In a railway-car of the class described, the combination of a plurality of longitudinal sills arranged centrally of the car, a plurality
 40 of body-bolster mechanisms upon which such sills are mounted, a plurality of deck-beams mounted upon the upper side of such sills and extending transversely across the car, swinging dumping-bottom sections extending over
 45 such bolster mechanisms in a substantially horizontal position and in engagement with the deck-beams when in closed position and in an inclined position when open, and means for operating such swinging dumping-bottom sections, substantially as described.
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12. In a railway-car of the class described, the combination of a plurality of longitudinal sills arranged centrally of the car, a plurality
 55 of body-bolster mechanisms upon which such sills are mounted, a plurality of deck-beams upon the upper side of such sills and extending transversely across the car, swinging dumping-bottom sections extending over such bolster mechanisms in a substantially horizontal position and in engagement with the
 60 deck-beams when in closed position and in an inclined position when open, operating-rods rotatably mounted in the car-frame each provided with laterally-extending lever-arms, and
 65 a plurality of links each connected at one end

with the swinging end of such operating lever-arms and at its opposite end with the swinging dumping-bottom sections, substantially as described.

13. In a railway-car of the class described, 70 the combination of a plurality of longitudinal center sills, a plurality of bolster mechanisms upon which such sills are mounted, a plurality of deck-beams mounted upon the upper side of such center sills and extending transversely 75 across the same each provided with flanges extending downward at an incline and outward laterally beyond the main body portion of such deck-beams, a plurality of swinging dumping-sections pivotally connected to 80 the car-frame and movable into and out of engagement with such inclined flanges, an A-shaped central bottom portion extending over the longitudinal sills, and means for operating such swinging dumping-bottom sections, 85 substantially as described.

14. In a railway-car of the class described, the combination of a plurality of longitudinal center sills, a plurality of bolster mechanisms upon which such sills are mounted, a plurality 90 of deck-beams mounted upon the upper side of such center sills and extending transversely across the same each provided with flanges extending downward at an incline and outward laterally beyond the main body portion 95 of such deck-beams, a plurality of swinging dumping-sections pivotally connected to the car-frame and movable into and out of engagement with such inclined flanges, an A-shaped central bottom portion extending over 100 the longitudinal sills, a plurality of operating-rods rotatably mounted in such frame each provided with laterally-extending lever-arms, a plurality of links each connected at one end with the swinging ends of the arms 105 and at the opposite ends with such swinging dumping-bottom sections, and means for holding such dumping-bottom sections in closed position when desired, substantially as described. 110

15. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams extending transversely across such sills, side and end frames mounted upon such deck-beams, a plu- 115 rality of swinging dumping-bottom sections pivotally mounted in the car-frame and extending laterally beyond the side frames when in closed position, and means for supporting such swinging dumping-sections in closed po- 120 sition, substantially as described.

16. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams extending transversely across such sills, side and end 125 frames mounted upon such deck-beams, a plurality of swinging dumping-bottom sections pivotally mounted in the car-frame and extending laterally beyond the side frames when in closed position, and means mounted upon 130

the outside of the side frames for operating such dumping-sections and holding them in open or closed position, substantially as described.

5 17. In a railway-car of the class described, the combination of a plurality of longitudinal sills, a plurality of deck-beams extending transversely across such sills, side and end frames mounted upon such deck-beams, a plu-
o rality of swinging dumping-bottom sections pivotally mounted in the car-frame and extending laterally beyond the side frames when

in closed position, operating-rods rotatably mounted outside of the side frames each provided with lever-arms, curved links pivotally 15 mounted on the swinging ends of such lever-arms and attached to the swinging dumping-bottom sections, and means for operating such rods and thereby the dumping-sections, substantially as described.

SPENCER OTIS.

Witnesses:

HARRY I. CROMER,

ANNA L. SAVOIE.