Dec. 16, 1969 D. J. TEARPOCK 3,484,815

RAILWAY CAR HANDBRAKE CONSTRUCTION

Filed May 9, 1968 3 Sheets-Sheet 1

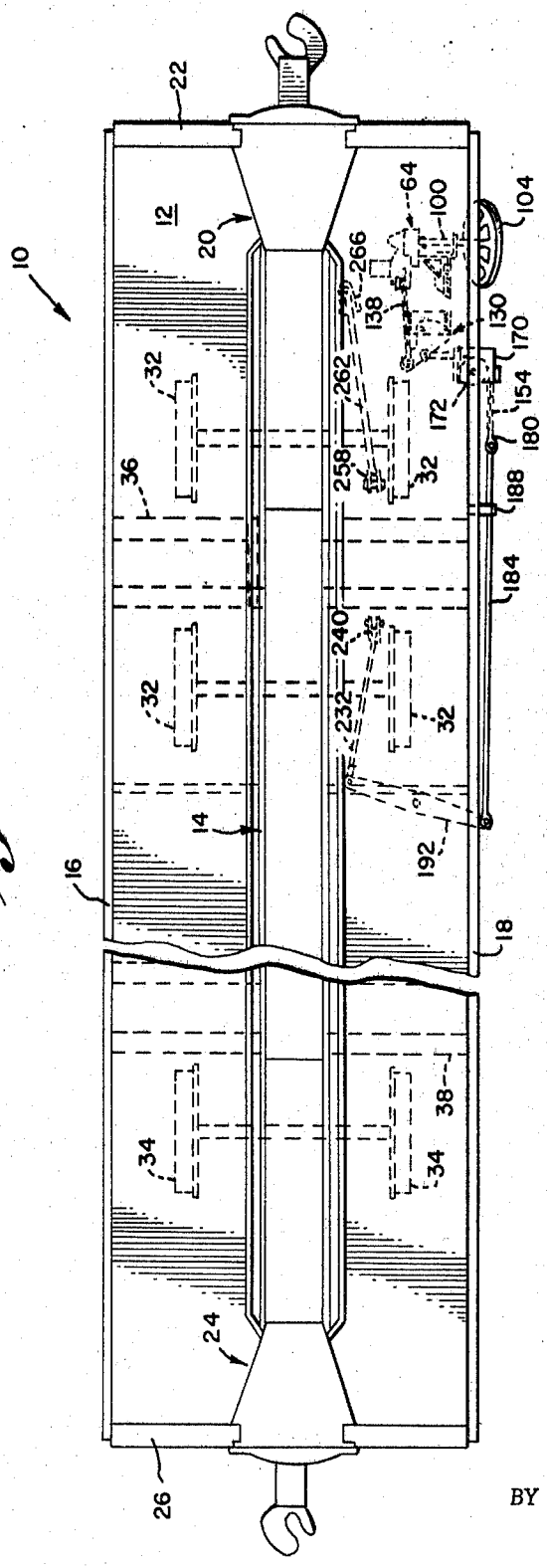


Fig. 1.

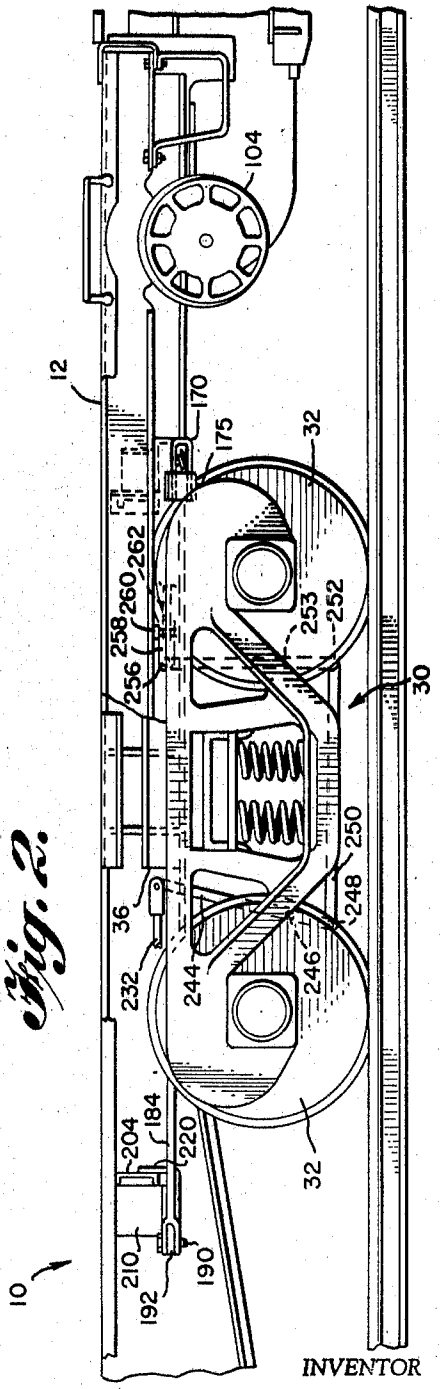


Fig. 2.

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RAILWAY CAR HANDBRAKE CONSTRUCTION

Filed May 9, 1968 3 Sheets-Sheet 2

Fig. 3.

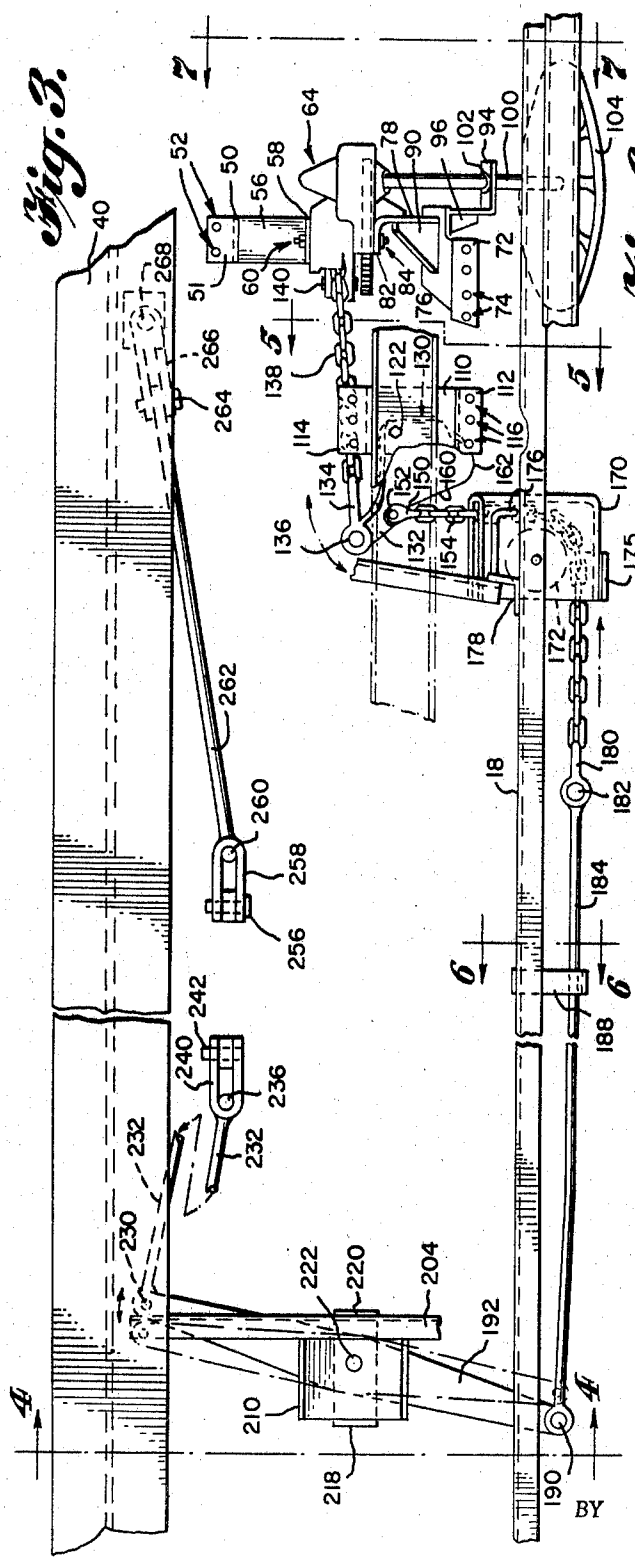


Fig. 6.

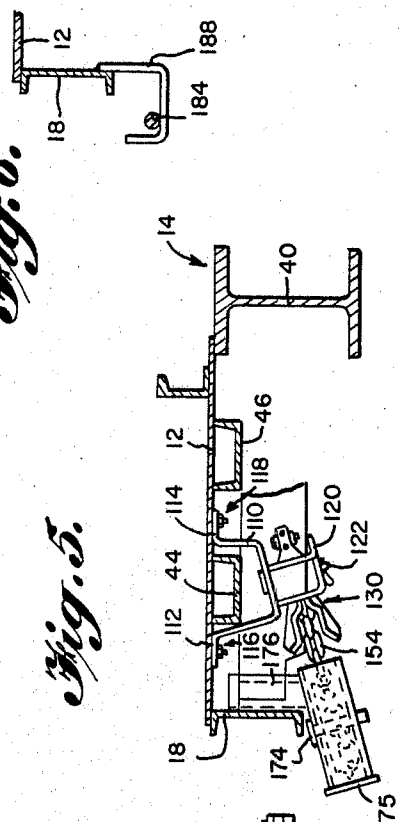


Fig. 5.

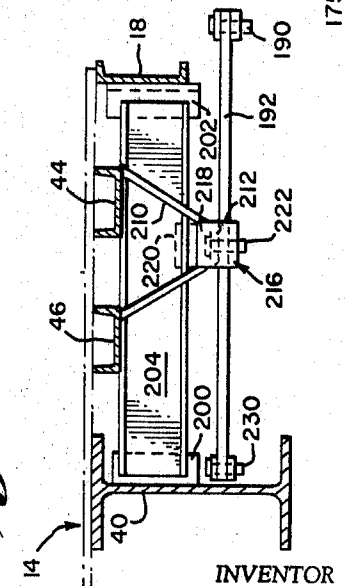
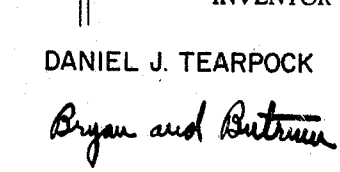


Fig. 4.



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Dec. 16, 1969 D. J. TEARPOCK 3,484,815

RAILWAY CAR HANDBRAKE CONSTRUCTION

Filed May 9, 1968 3 Sheets-Sheet 3

Fig. 7.

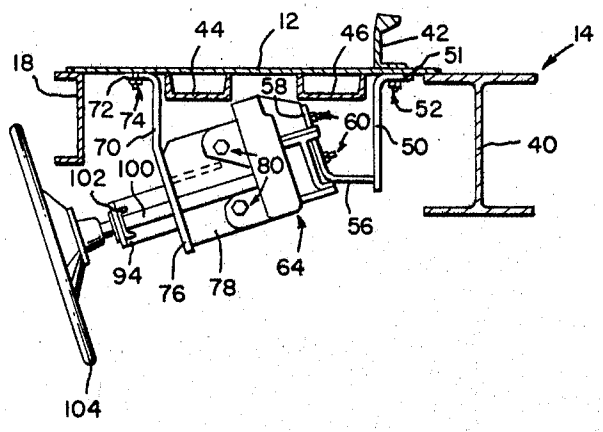
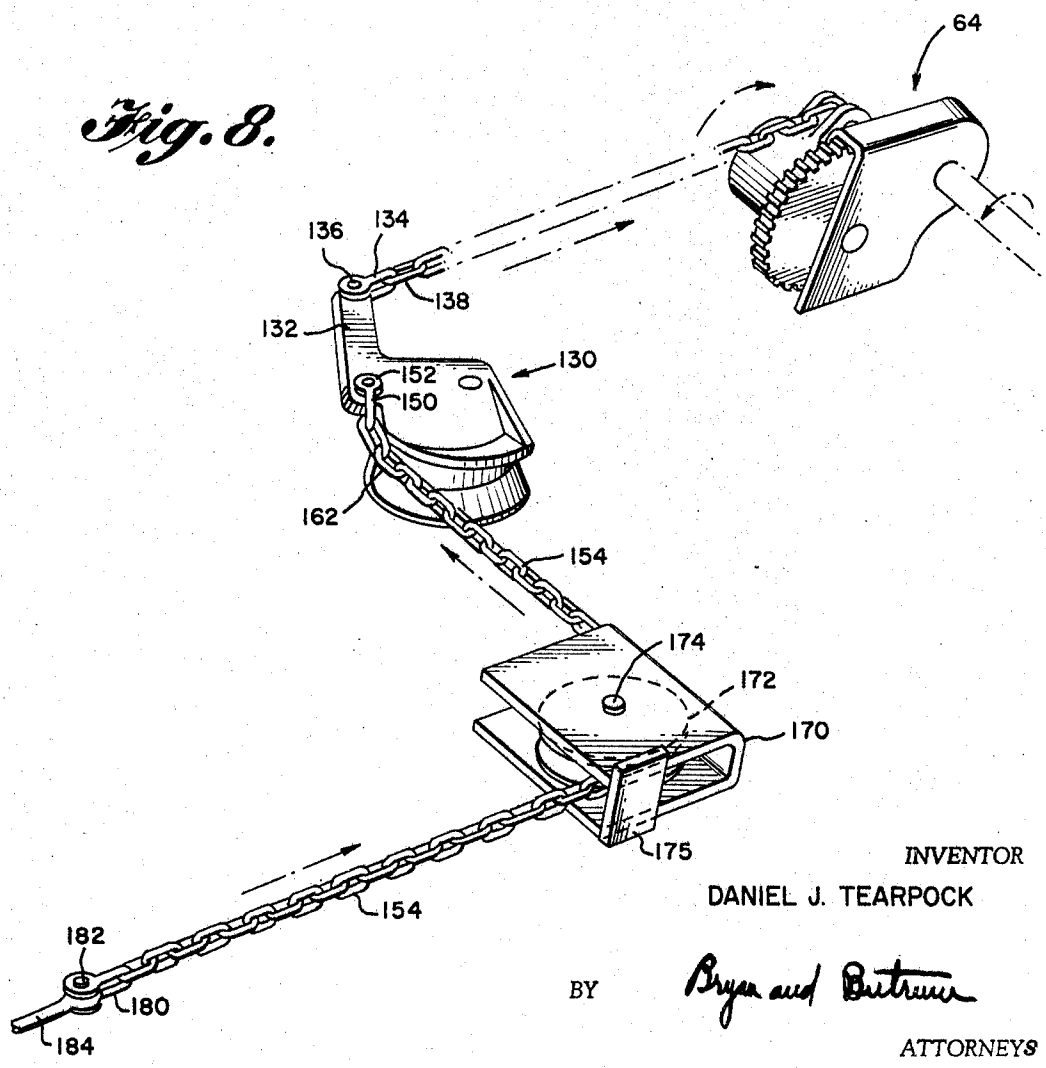


Fig. 8.



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3,484,815

RAILWAY CAR HANDBRAKE CONSTRUCTION

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Int. Cl. B61h 13/02
U.S. Cl. 188—33 4 Claims

ABSTRACT OF THE DISCLOSURE

The handbrake mechanism is mounted in an inclined position below the floor of a railway flatcar with a handwheel thereof disposed laterally outwardly of and adjacent to the side of the car. The handbrake mechanism is operatively connected by a chain with a pivotally mounted bell crank disposed for rotation in a generally horizontal plane. The bell crank is connected to a second chain which passes over a sheave disposed at the side of a car and disposed in a generally horizontal plane. The second chain is in turn connected to a pull rod which is operatively associated with a conventional brake means.

BACKGROUND OF THE INVENTION

The present invention relates to railway cars having a flat upper deck or floor portion, these cars being generally referred to as flatcars and presently commonly employed for so-called "piggyback" operation wherein a trailer or a container is adapted to be loaded onto the car.

In the case of "circus" loading, tractors and associated trailers are driven directly onto the railway cars. The containers may be also loaded from the side of the cars either by means of special tractors or overhead equipment.

In the past, handbrakes have been mounted on a stanchion extending above the deck surface of the car. This type of upwardly extending brake stanchion is very susceptible to damage when loading "piggyback" railway cars particularly when containers are placed on low pedestals.

Accordingly, the prior art handbrake mechanism on this type of railway car interferes with various loading and unloading operations and is liable to be damaged during such operations.

U.S. Patent No. 3,163,128 discloses an arrangement wherein the handbrake mechanism is disposed such that the handwheel thereof is positioned outboard of the side of the frame of the railway car and extends above the adjacent deck portion of the car only a relatively small distance. However, the handwheel of this arrangement does extend above the adjacent deck portion whereby it is in position to be damaged by containers or the like which are moved onto the supporting portion of the frame of the railway car. In fact, a U-shaped guard bar is disposed in spanning relationship to the handwheel to protect against such damage.

The arrangement shown in the aforementioned U.S. patent is of such a construction that it is difficult to obtain the desired amount of chain travel for operating the brake mechanism, and furthermore an undue amount of manual effort is required for operating the handbrake.

SUMMARY OF THE INVENTION

In the present invention, the handbrake mechanism is mounted in a unique manner whereby the handwheel thereof is disposed so that the upper portion thereof is positioned completely below the adjacent supporting deck of the railway car. Accordingly, the handwheel cannot be damaged by moving containers or the like laterally onto the deck of the car. The handwheel is positioned in this manner by disposing the handbrake mecanism in an inclined relationship with respect to the car, the operating shaft and the wind-up means thereof being disposed beneath the frame of the car, and the wind-up means of the handbrake mechanism further being located a substantial distance inboard of the side of the frame. At the same time, the handwheel of the handbrake mechanism is disposed sufficiently closely adjacent to the side of the frame so that it does not extend outwardly of the frame an excessive amount and will provide the necessary clearances.

The wind-up means of the handbrake mechanism is in turn operatively connected with the brake means of the railway car by a connecting means including a pair of chains operatively connected with a bell crank means. The brake means employed in the present invention may comprise a conventional truck mounted brake means or a well known foundation brake rigging arrangement may be employed. One of the chains connected to the bell chank means is connected with the wind-up means, and the other chain connected to the bell crank means extends around a sheave means and is connected to a pull rod.

The bell crank means is pivotally mounted for movement around a generally vertical axis so that the bell crank means moves in a substantially horizontal plane. This arrangement enables the connecting means to be effectively interconnected between the barke means of the car and the handbrake mechanism, and further insures that the required chain travel is provided as well as affording a mechanical advantage which enables the handbrake mechanism to be easily operated.

The sheave means is likewise mounted for rotation about a generally vertical axis so that it is positioned in a substantially horizontal plane for receiving the chain connected between the bell crank means and a pull rod disposed outboard of the side of the frame of the car.

The overall arrangement of the components of the present invention is such that they do not interfere with loading and unloading operations. The components furthermore extend outboard of the structure only a limited distance to thereby afford the desired clearances. The handbrake mechanism is supported beneath the frame of the car and extends substantailly inboard thereof so that the required chain travel and desired mechanical advantage may be obtained while utilizing available space beneath the frame of the car and providing a compact and simplified arrangement.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a top view partly broken away of a railway flatcar incorporating the handbrake construction of the present invention;

FIGURE 2 is an enlarged view partly broken away of an end portion of the car shown in FIGURE 1;

FIGURE 3 is a top view on an enlarged scale of an end portion of the structure shown in FIGURE 1 with the deck thereof removed and with parts broken away for the sake of clarity of illustration;

FIGURE 4 is a sectional view taken substantially along line 4—4 of FIGURE 3 looking in the direction of the arrows;

FIGURE 5 is a sectional view taken substantially along line 5—5 of FIGURE 3 looking in the direction of the arrows;

FIGURE 6 is a sectional view taken substantially along line 6—6 of FIGURE 3 looking in the direction of the arrows;

FIGURE 7 is a sectional view taken substantially along line 7—7 of FIGURE 3 looking in the direction of the arrows; and

FIGURE 8 is a top perspective view illustrating a portion of the handbrake construction according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, as seen most clearly in FIGS. 1 and 2, a railway flatcar is indicated generally by reference numeral **10** and includes an elongated frame having an upper deck **12** and a center sill means **14** extending longitudinally of the car. Side sill means **16** and **18** are disposed at opposite sides of the frame of the car. A housing indicated generally by reference numeral **20** supports coupling means and draft gear means at one end of the car and is operatively associated with an end sill means **22**. A similar housing **24** supports coupling means and draft gear at the opposite end of the car and is operatively associated with end sill means **26**.

The elongated frame of the car is supported by a pair of wheeled trucks one of which is indicated generally by reference numeral **30** in FIG. 2 and includes the track wheels **32**. A similar wheeled truck includes wheels **34** as seen in FIG. 1. The frame is supported upon bolsters **36** and **38** which are in turn supported by the wheeled trucks in the usual manner.

Referring now to FIG. 7, the center sill means **14** includes an I-beam **40** which supports the deck **12**. A curb guide means **42** is supported by the deck and extends longitudinally of the deck. A pair of channel-shaped longitudinal stringers **44** and **46** are secured to the undersurface of the deck **12**.

In order to support the handbrake mechanism in the desired inclined operative position, a bracket member **50** is provided and includes a normally extending flange portion **51** which is secured by means of mechanical fasteners **52** to the deck. A further bracket member **56** is rigidly secured as by welding to the bracket member **50**, bracket member **56** including an angularly extending portion **58** which in turn is secured by means of mechanical fasteners **60** to the casing **64** of a conventional handbrake mechanism which may in a typical example comprise a Champion-Peacock handbrake Model 1180 of the non-spin type.

A further bracket member **70** includes a flange portion **72** secured by mechanical fasteners **74** to the deck. Bracket member **70** includes a sloping portion **76**. A plate **78** is rigidly secured as by welding to the portion **76** of bracket member **70**, portions of the casing **64** being secured to plate **78** by mechanical fasteners **80**. Plate **78** also includes a flange portion **82** as seen in FIG. 3 which is further secured to portions of the casing **64** by means of mechanical fasteners **84**. A gusset plate **90** is disposed between the portion **76** of bracket member **70** and plate **78** to rigidify the structure.

An L-shaped bracket member **94** is rigidly secured as by welding to the portion **76** of bracket member **70**, and a gusset plate **96** is disposed between the portion **76** and bracket member **94** for rigidly securing this latter bracket member in place.

The handbrake mechanism includes a conventional operating shaft **100** which is rotatably journaled within a bushing **102** supported by bracket member **94**. The operating shaft **100** is provided with a conventional handwheel **104** disposed at the outer end thereof whereby the handbrake mechanism may be manually operated.

It will be noted as seen most clearly for example in FIG. 7 that the handbrake mechanism is supported in inclined position with the handwheel **104** thereof disposed closely adjacent to and outwardly of the side sill means **18**. It will further be noted that the upper portion of the handwheel is disposed below the deck **12** of the car so that the handwheel will in no manner interfere with loading or unloading operations.

It will also be noted that the wind-up means of the handbrake mechanism is disposed beneath the frame and substantially inboard of the side thereof.

As seen most clearly in FIG. 5, an elongated generally U-shaped strap member **110** has opposite ends **112** and **114** thereof secured to the deck **12** by mechanical fasteners **116** and **118** respectively. A generally L-shaped bracket member **120** is rigidly secured as by welding to the strap member **110**, and a pin **122** is supported between strap member **110** and bracket member **120** for pivotally supporting a bell crank means indicated generally by reference numeral **130**. This bell crank means includes an elongated arm **132** the outer end of which is pivotally connected by means of a clevis **134** and a clevis pin **136** with one end of a flexible connector in the form of a chain **138** the opposite end of which is connected to a pin **140** operatively connected with the wind-up means of the handbrake mechanism. This handbrake mechanism of course includes conventional reduction gearing of the usual construction.

A clevis **150** is pivotally connected by a clevis pin **152** with another portion of the bell crank means **130**, this latter clevis being operatively connected with a flexible connector or chain **154**.

In the position shown in FIG. 3, the components are illustrated in the unlock position of the handbrake construction. As the handbrake mechanism is moved up to swing the bell crank means in a clockwise direction as seen in FIG. 3 to move the brake means into its lock position, the chain **154** will first be engaged with an elongated relatively straight side trough portion **160** of the bell crank means and will then move around a curved side trough portion **162**. Accordingly, as the bell crank means is rotated about its pivot pin **122**, an increasing mechanical advantage is obtained and a relatively large amount of travel of chain **154** is obtained.

As seen in FIG. 8, a bracket member **170** of generally U-shaped cross-sectional configuration is adapted to support a sheave means **172** which is mounted for rotation on a pin **174** supported by the bracket member **170**. A plate **175** is rigidly secured as by welding to the outwardly facing upper and lower surfaces of bracket member **170**. The bracket member **170** is in turn rigidly secured to members **176** and **178** as seen in FIG. 3 which are rigidly secured as by welding to the side sill means **18** of the frame of the car. As seen particularly in FIG. 5, the sheave means is disposed at the side of the frame of the car with a portion thereof extending inboard of the side of the car and a portion thereof extending outboard of the side of the car.

It should also be noted as seen especially in FIG. 5 that the bell crank means and the sheave means are mounted for movement about generally vertically extending axes so that the bell crank means and the sheave means move substantially in a horizontal plane whereby the various components of the handbrake mechanism and the connecting means connecting the handbrake mechanism with the brake means of the car may be disposed in a minimum amount of vertical space beneath the frame of the car to provide a compact arrangement while at the same time affording the desired chain travel and mechanical advantage for operation of the mechanism.

The opposite end of chain **154** is connected with a clevis **180** which in turn is connected by a clevis pin **182** with one end of a rigid pull rod **184**. This pull rod is supported by a generally U-shaped bracket member **188** which as seen in FIG. 6 is rigidly secured as by welding or the like to the inner surface of the side sill means **18**. The opposite end of pull rod **184** is pivotally connected by a pin **190** with one end of a lever **192**.

As seen in FIG. 4, a pair of spaced members **200** and **202** are rigidly secured to the I-beam **40** and the side sill means **18** respectively. A channel member **204** has the opposite ends thereof rigidly secured to members **200** and **202**. A generally V-shaped bracket member **210** is rigidly secured at the upper ends thereof to the longitudinal

stringers **44** and **46** as by welding or the like, this bracket member including a flat bottom portion **212**. A generally U-shaped bracket member indicated by reference numeral **216** includes upwardly extending end portions **218** and **220** as seen in FIG. 3 which are respectively rigidly secured as by welding to the bracket member **210** and the support member **204**.

The lower portions of bracket member **216** and bracket member **210** are spaced from one another and support a pivot pin **222** which extends through a suitable hole provided in an intermediate portion of lever **192** whereby the lever **192** is mounted for swinging movement about the axis of the pivot pin.

The opposite end of lever **192** is connected by a pivot pin **230** with one end of a rigid elongated rod **232**. The opposite end of rod **232** is connected by a pin **236** with a clevis **240**. This clevis **240** is in turn connected by a pivot pin **242** with a depending lever indicated schematically by reference character **244** in FIG. 2 of the drawings. This lever is part of a conventional truck mounted brake means and is pivotally connected at **246** with the usual brake beam which carries the brake shoes for engagement with the track wheels. The lower end of lever **244** is pivotally connected at **248** with a rod **250** the opposite end of which is pivotally connected at **252** to the lower end of a second lever **253**.

This lever **253** is in turn pivotally connected at **254** to another conventional brake beam carrying the usual brake shoes. The upper end of lever **253** is connected by pivot pin **256** with a clevis **258** which in turn is connected by means of a pivot pin **260** with the end of an elongated rigid rod **262**.

As seen most clearly in FIG. 3, the opposite end of rigid rod **262** is connected by a pivot pin **264** with a clevis **266**. This clevis **266** is in turn pivotally connected by a pivot pin **268** with the I-beam **40**.

It should be understood that the brake means carried by the truck is of conventional construction and has been only illustrated schematically since the construction and operation thereof are well known to one skilled in the art.

As mentioned hereinbefore, the handbrake mechanism is illustrated in the unlock position shown in FIG. 3. When it is desired to actuate the handbrake mechanism, the handwheel **104** will be turned so as to wind up the chain **138** and swing the bell crank means **130** clockwise as seen in this figure. This will cause the chain **154** to move around the sheave means **172** in a counterclockwise direction pulling on the rod **184** to thereby swing lever **192** in counterclockwise direction. This movement of rod **232** causes the truck mounted brake means to be operated in a conventional manner so as to engage the brake shoes thereof with the track wheels to thereby apply a braking force.

When it is desired to subsequently release the handbrake mechanism, the handwheel will be rotated in the opposite direction whereupon the components will return to the unlock position shown in FIG. 3.

In the above description, the handbrake construction has been described in association with a conventional truck mounted brake means. It should also be understood that this novel handbrake construction can be equally as well utilized in combination with a conventional foundation brake rigging arrangement such as shown in the aforementioned U.S. Patent No. 3,163,128. In FIG. 3 of this patent, a typical foundation brake rigging arrangement is illustrated, and the chain **154** of the present invention would be connected with the pull rod **59** as illustrated in the patent to operate the brake means associated with the trucks at the opposite ends of the car.

It is accordingly evident that the handbrake construction of the present invention can be employed for actuating the brake means carried by one of the trucks in the case of a truck mounted arrangement or for operating the brake means carried by both of the trucks in the case of a foundation brake rigging arrangement.

The term "brake means" as used in the claims is intended to denote the brake beam and brake shoe assembly carried by the trucks of a railway car either in a so-called truck mounted brake arrangement or a foundation brake rigging arrangement. The "connecting means" as defined in the claims includes the operating linkages and connection which serve to connect the handbrake mechanism with the brake beam and brake shoe assemblies for moving such assemblies into braking position.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive.

What is claimed is:

1. A railway car including a frame, said frame being supported by a pair of spaced wheeled trucks, brake means carried by at least one of said trucks, handbrake mechanism including a handwheel disposed adjacent the side of said frame, said handbrake mechanism including an operating shaft operatively connected with said handwheel and being inclined inwardly and upwardly with respect to said frame and being disposed therebeneath, wind-up means operatively connected with said operating shaft and disposed a substantial distance inboard of the side of said frame and being supported therebeneath, connecting means providing an operative connection between said wind-up means and said brake means, said connecting means including a bell crank means pivotally carried by said frame, and sheave means for guiding a portion of said connecting means, each of said bell crank means and said sheave means being mounted for movement about generally vertically extending axes, a first chain being operatively connected between said wind-up means and said bell crank means, a second chain being operatively connected with said bell crank means and extending partially around said sheave means, said bell crank means being supported beneath said frame substantially inboard of the side thereof, said sheave guide means being supported at the side of said frame and including a portion extending inboard of the side of the frame as well as a portion extending outboard of the side of the frame.

2. Apparatus as defined in claim **1** including a first pull rod having a portion disposed outboard of the side of said frame, said second chain being operatively connected with said first pull rod.

3. Apparatus as defined in claim **2** including a pivoted lever supported by said frame, said lever being mounted for movement in a generally horizontal plane, said first pull rod being operatively connected with one end of said lever.

4. Apparatus as defined in claim **3** including a second pull rod supported by said frame, said second pull rod being operatively connected with the opposite end of said pivoted lever, said second pull rod also being operatively connected to said brake means.

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U.S. Cl. X.R.

105—368; 74—505