Sept. 19, 1933. A. F. KLASING 1,927,237

RAILWAY CAR BRAKE MECHANISM

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Fig. 1.

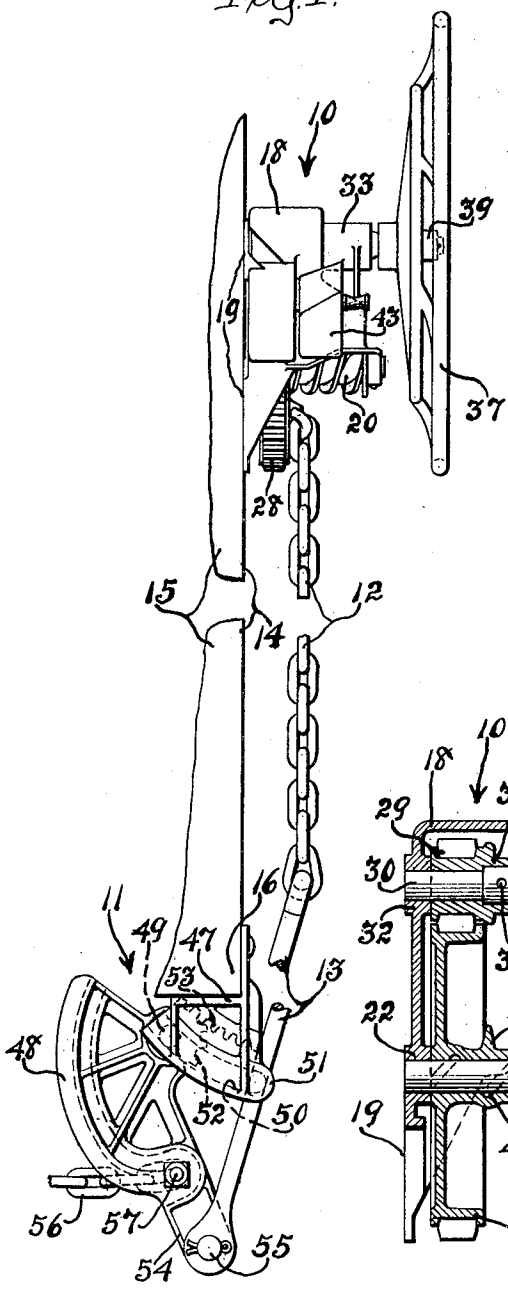


Fig. 2.

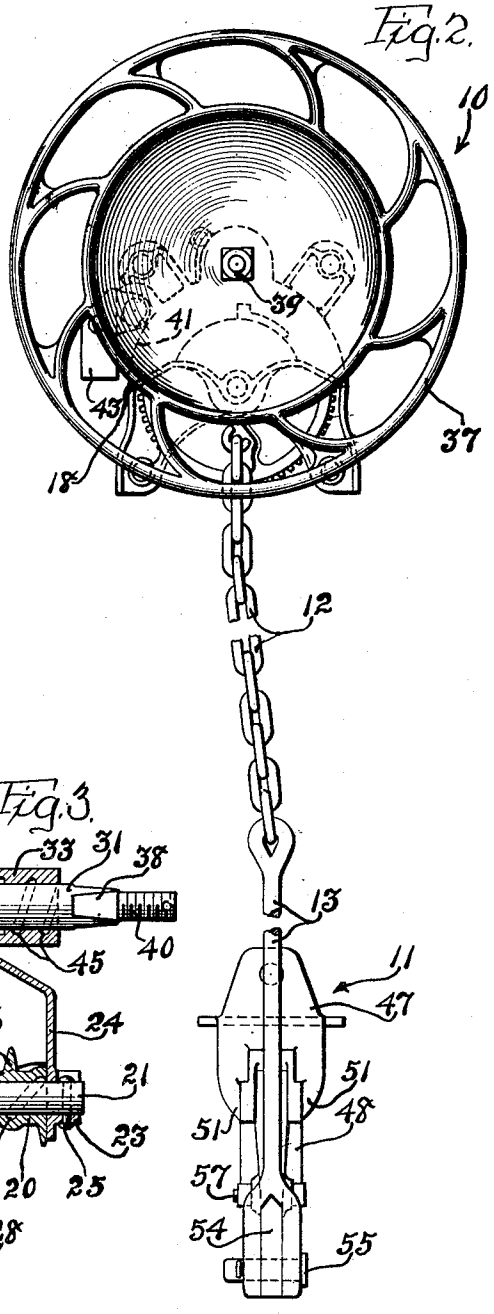
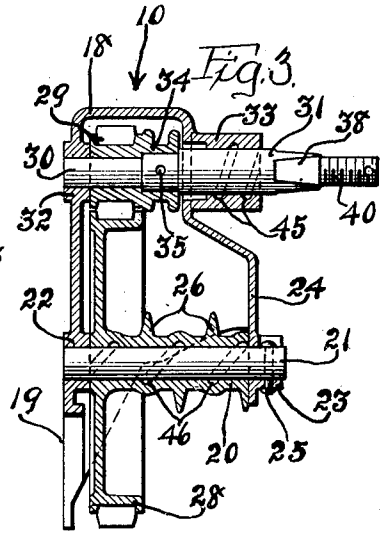


Fig. 3.



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Fig. 4.

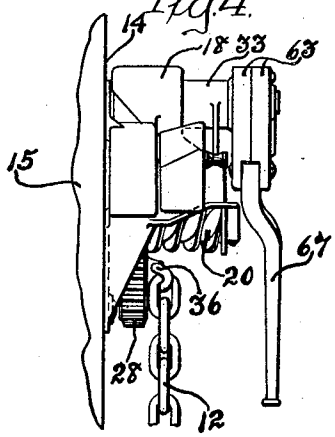


Fig. 5.

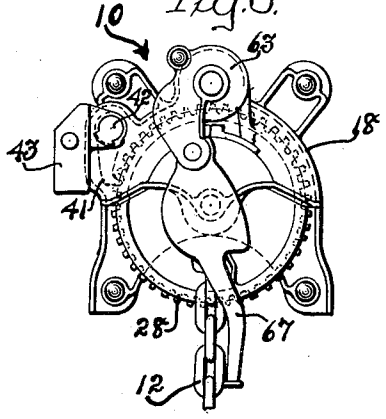


Fig. 6.

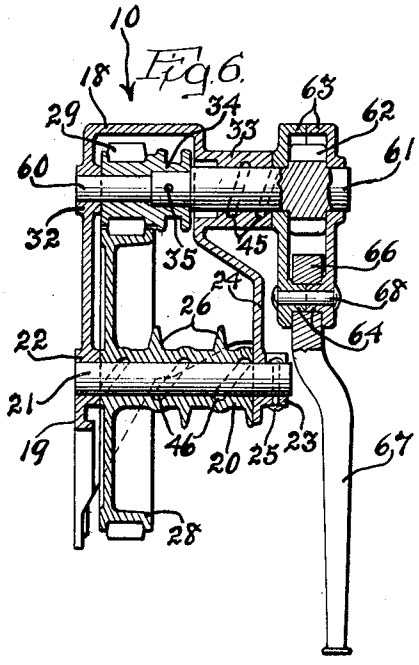
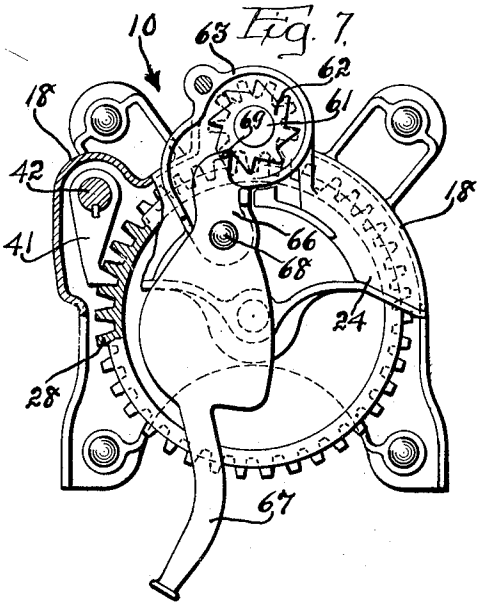


Fig. 7.



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UNITED STATES PATENT OFFICE

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RAILWAY CAR BRAKE MECHANISM

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Application June 8, 1932. Serial No. 615,981

8 Claims. (Cl. 74—112)

This invention relates to novel improvements in railway car brake mechanism.

One of the main objects of this invention is to provide an improved hand brake mechanism for railway cars including an upper power applying unit operable by hand, a lower power transmitting unit to be connected with the brake rigging, and operating connections between said two units, whereby to quickly and forcefully apply the brakes and to readily release the same, without danger to the operator.

Another object of this invention is to provide a power applying mechanism having different hand operated members, as for example, a hand wheel and an operating lever, for applying the brakes, and which members are readily interchangeable, to suit various conditions and requirements of different purchasers and users.

A further object is to provide economically constructed grease holding means in the main bearing parts of the brake operating unit for lubricating said parts.

These and various other objects and advantages will become apparent from the following description, taken in connection with the accompanying drawings, in which the invention is shown in its preferred form, it being understood that various other arrangements and forms of construction may be resorted to for carrying out the objects and purposes of this invention.

In the drawings:

Fig. 1 is a side elevational view, showing a part of a railway car and my brake mechanism, including the hand wheel, applied thereto.

Fig. 2 is an end elevational view of the brake mechanism.

Fig. 3 is an enlarged vertical sectional view through the upper brake unit.

Fig. 4 is a side elevational view showing a part of a railway car and my upper brake unit, including the operating lever, applied thereto.

Fig. 5 is an end view of this brake unit.

Fig. 6 is an enlarged vertical sectional view thereof.

Fig. 7 is an enlarged end view thereof, with parts removed.

The drawings illustrate my invention in its preferred form of construction, comprising an upper brake unit 10 and a lower brake unit 11, and operating connections including a chain or flexible member 12 and a link or lower member 13 connecting said units 10 and 11. Upper unit 10 is adapted to be mounted on the end wall 14 of a railway car 15, adjacent the top thereof, and lower unit 11 on the lower edge 16 of the car, in the manner indicated in Fig. 1.

The upper brake unit 10 comprises supporting means which is preferably in the form of a housing 18 having a rear face or attaching wall 19 secured to the end wall 14 of the car, with any suitable securing elements. A drum 20 is mounted in the housing, by means of a shaft 21 supported in a bearing portion 22 in rear wall 19 and in a bearing portion 23 in the outer wall 24 of the housing, said shaft being held stationary by means of a pin 25. The drum is preferably provided with spiral guide ribs 26 in order to wind chain 12 thereon in an outward direction.

The means for operating the drum preferably includes a spur gear 28 which is formed integral with the drum, and a pinion 29 meshing with said gear for driving the same. Said pinion is removably mounted on the reduced end 30 of a shaft 31 which is supported in a bearing portion 32 provided on rear wall 19, the main portion of said shaft being journalled in a sleeve 33 which is formed integral with and extends horizontally outwardly from the upper part of the housing. Said pinion is provided with an integral collar 34, and a pin 35 is extended through said collar and through shaft 31 to hold said collar and pinion fixed on the shaft, but said pin being removable to enable withdrawing it and said shaft from said pinion and collar. A U-bolt 36 secures chain 12 to gear 28, adjacent the drum. A hand wheel 37, of comparatively large diameter, is mounted on the outer angular portion 38 of shaft 31 for operating the same, and is removably held in position thereon by a nut or threaded member 39 secured upon the threaded end 40 of the shaft.

A pawl 41 is secured on a shaft 42 in the housing to engage the teeth of spur gear 28; while a weight 43 is mounted on shaft 42 outside the housing to normally depend therefrom and urge the pawl against the gear and hold it stationary. To release the brake mechanism the weight is moved to turn shaft 42 and withdraw pawl 41 from the teeth of gear 28.

This mechanism is arranged and provided with novel means for lubricating the main bearing parts of the upper unit, and for that purpose I have provided groove means 45, which is preferably in the form of a spiral groove formed in sleeve 33 so as to extend spirally around shaft 31 journalled therein. This means further includes groove means 46, preferably in the form of a spiral groove provided in drum 20 so as to extend spirally around shaft 21 upon which

it is rotatably supported. A firm or comparatively hard grease or lubricating substance is packed in these grooves 45 and 46, thereby providing lubrication for these rotary connections for an extended length of time.

The lower brake unit 11 comprises a bracket 47 having a rectangular seat secured upon the lower edge 16 of the car, by the use of suitable securing elements; also a bell crank 48 which is mounted on said bracket so as to have a rocking movement and also a translatory movement thereon. This is accomplished by the use of trunnions 49 extending laterally from the fulcrum portion of the bell crank and being movable in slots 50 provided in the spaced jaws 51 of the bracket; while a ratchet segment or sector 52 on the bell crank, above said fulcrum portion, travels along a ratchet portion 53 provided between jaws 51 on the bracket, when the upper brake unit is operated and actuates link 13 which is connected to the rear arm 54 of the bell crank, as by a pin 55, thereby drawing arm 54 outwardly and upwardly to rotate or rock the bell crank and at the same time move it rearwardly with a translatory movement, by means of the cooperating ratchet teeth of members 52 and 53. A lower horizontal chain 56 is attached to the bell crank, as by an element 57, and is adapted to be connected with the brake rigging under the car.

In addition to the above described handwheel 37 I have also provided this invention with an operating lever which may be readily substituted for and interchanged with the handwheel, so that either the handwheel or the lever may be used, whichever is preferred for operating the brakes. This interchangeable lever and its mounting means comprise a shaft 61 which is similar to shaft 31 for the handwheel, adapted to fit snugly in sleeve 33, and also including a reduced end portion 60 of the same shape and size as end portion 30 of shaft 31, so that the shaft will closely fit in the bearing portion 32 of housing 18, and will likewise fit in pinion 29 and collar 34 to be secured thereon by pin 35.

Shaft 61 has a ratchet wheel 62 provided thereon and preferably formed integral therewith. A pair of hood-shaped links 63 are rotatably mounted on said shaft, at the outer end of sleeve 33, and together are arranged in the form of a housing to protect ratchet wheel 62 therein. Said links are provided at their lower ends with trunnions 64 which engage in a suitable aperture provided in the upper part 66 of operating lever 67, and these links are secured together by rivet means 68, or the like. An integral dog or tooth 69 is provided at the upper end of the lever, being adapted to engage with the ratchet teeth of wheel 62 when the lever is swung upwardly, or in a left-hand direction as viewed in Fig. 7, for operating said wheel and said shaft.

This lever is normally suspended, as indicated in Fig. 5, so that dog 69 is released from the ratchet teeth, and as this lever is swung upwardly, in a left-hand direction as viewed in Fig. 7, the dog engages the ratchet teeth and the links 63 and ratchet wheel 62 are swung or rotated in unison with the lever for operating pinion 29 and gear 28 and the drum, for tightening the brake chain as described above. Upon releasing the lever it swings on element 68 to release dog 69 from the ratchet wheel and thus returns to its release position, as shown in Fig. 5. A construction similar to this lever and link arrangement is disclosed and claimed in applicant's prior United States patent for Hand brake operating means, No. 1,704,438, granted March 5, 1929.

Either the handwheel 37 or the lever 67 can thus be readily supplied with this brake mechanism, and the same can also be readily interchanged, by removing pin 25 from drum shaft 21, whereupon said shaft and the drum are withdrawn from the housing. Pin 35 is then removed from operating shaft 31 or 61, whichever has been formerly mounted therein, whereupon the particular operating shaft can be withdrawn from pinion 29 and collar 34 and from the housing, and the other operating shaft with its hand actuated operating member can then be substituted therefor.

With this invention, by the use of either the handwheel or the operating lever, the brake of the car is readily and forcefully applied, and can be again readily released, without any danger of injury resulting to the operator; and as chain 12 is wound upon the spiral drum 20 and is guided thereon in an outward direction, the bell crank is simultaneously rotated and translated, whereby the connecting part or element 55, connecting link 13 with arm 54, travels equally outwardly from the car along with the outward travel of the chain on the drum, so that the chain and link are maintained substantially vertical, and so as to produce a direct and straight pull upon the arm of the bell crank, thereby operating the brakes very effectively.

I claim:

1. A railway brake mechanism comprising a brake housing mountable on a car wall, a brake drum having an integral gear thereon, a shaft mounted in said housing whereon said gear and drum are journalled, a pinion with an integral member on its end mounted in said housing to actuate said gear, a brake wheel and a brake lever, each being provided with a shaft, and an element extending through said shaft and member and adapted to be removed therefrom while they are in the housing for removably mounting either shaft in said housing and in said pinion, whereby to operate said gear and drum.

2. A railway brake mechanism comprising a brake housing having a rear wall adapted to be mounted on a vertical wall of a car, bearing means in said wall, a bearing sleeve extending integrally from said housing, opposite said bearing means, an operating shaft removably mounted in said bearing means and sleeve and having a manually actuated operating member on its outer end, a pinion and integral collar mounted on said shaft, a pin extending through the collar for detachably securing said collar and pinion on the shaft, a drum shaft and bearing means with a removable pin for removably mounting it in the lower part of the housing, a chain-winding drum mounted on said shaft, and a gear integral with said drum being engaged and actuated by said pinion.

3. A railway brake mechanism comprising a brake housing mountable on a car wall, upper bearing means on the housing, a brake operating member having shaft means thereon supported in said bearing means, there being groove means provided on one of said means for receiving lubricating means, a shaft and means for mounting it removably but stationary in said housing, a drum rotatably mounted on said shaft, there being groove means provided for receiving grease for lubricating the surface between said drum and its shaft, co-acting members on the drum and on the upper shaft means to operate the

former by the latter, and annular flange means on the upper member to prevent escape of grease from the upper bearing means.

4. A railway brake mechanism comprising a brake housing mountable on a car and having a supporting sleeve thereon provided with a spiral grease groove therein, a manually actuated member provided with an operating shaft journalled in said sleeve to be lubricated by the grease in said groove, said shaft having a reduced portion inward of said sleeve, a shaft secured in said housing, a winding drum and a gear including an integral inner cylindrical bearing which is provided with a spiral grease groove in its inner face and is journalled on said secured shaft, and a pinion and collar detachably secured on said reduced portion of said operating shaft to engage said gear and rotate them together, the end of said collar extending across the end of the cylindrical bearing face in said sleeve for retaining the grease therein.

5. A railway brake mechanism comprising a brake housing having a plate-like rear wall adapting it to be mounted on the vertical wall of a car, said housing having a narrow upper part and a deep lower part projecting forwardly from said rear wall, bearing means in said wall and a companion bearing sleeve extending integrally from said upper part and over said lower part, an operating shaft removably journalled in said sleeve and having a reduced portion located within said upper housing part and journalled in said bearing means, a hand actuated operating member removably secured on the outer end of said shaft, a pinion and integral collar on its end mounted on the reduced shaft portion, between said rear wall and said sleeve, a pin extending through said collar and shaft for removably securing it in said bearing means, and a chain winding drum and a pinion integral thereon journalled on said secured shaft, said gear being in mesh with said pinion for actuating said drum.

6. A railway brake mechanism comprising a brake housing having a rear wall mountable on a vertical car wall and having a narrow upper housing part and a deep lower part projecting forwardly from said rear wall, a bearing sleeve extending integrally forwardly from said upper portion and a companion bearing means of smaller diameter on the rear wall, said sleeve having a spiral grease groove provided in its bearing face, a shaft journalled in said sleeve, to be lubricated by the grease in said groove, said shaft being reduced in diameter inward of said sleeve and at its end which is journalled in said bearing means, a hand actuated member on the outer end of said shaft, a pinion and integral collar mounted on said reduced shaft portion in said narrow housing portion and said collar extending across the end of the bearing face to retain the grease therein, a removable element for detachably mounting said collar and pinion on said shaft, a shaft and means for removably securing it in said lower housing part, and a drum and a gear including an integral cylindrical bearing provided with a spiral grease groove therein rotatably mounted on said secured shaft.

7. A railway brake mechanism comprising a brake housing having a rear wall adapted to be mounted on a vertical wall of a car, bearing means in said rear wall and a companion bearing sleeve on the front part of the housing, a brake wheel and a brake lever, each including an operating shaft apt to be journalled in said sleeve and bearing means and having a reduced portion within said housing, an operating member with a collar thereon mountable on either of said reduced shaft portions, a removable element in the collar for selectively securing either one of said operating shafts in it and in said member, a shaft secured in the lower part of the housing, and a chain-winding drum and member thereon journalled on said secured shaft and driven by the above said member.

8. A railway brake mechanism comprising a brake housing having a rear wall mountable on a vertical car wall and having a narrow upper housing part and a deep lower part projecting forwardly from said rear wall, a bearing sleeve extending integrally forwardly from said upper portion and a companion bearing means on the rear wall, said sleeve having a grease groove provided in its bearing face, a shaft journalled in said sleeve to be lubricated by the grease in said groove, a hand actuated member on the outer end of said shaft, a pinion and integral collar mounted on said shaft in said narrow housing portion and said collar extending across the end of the bearing face to retain the grease therein, a pin extending through said collar and shaft, and being removable therefrom in said housing, a shaft and means for removably securing it in said lower housing part, and a drum and a gear including an integral cylindrical bearing provided with a grease groove therein rotatably mounted on said shaft.

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