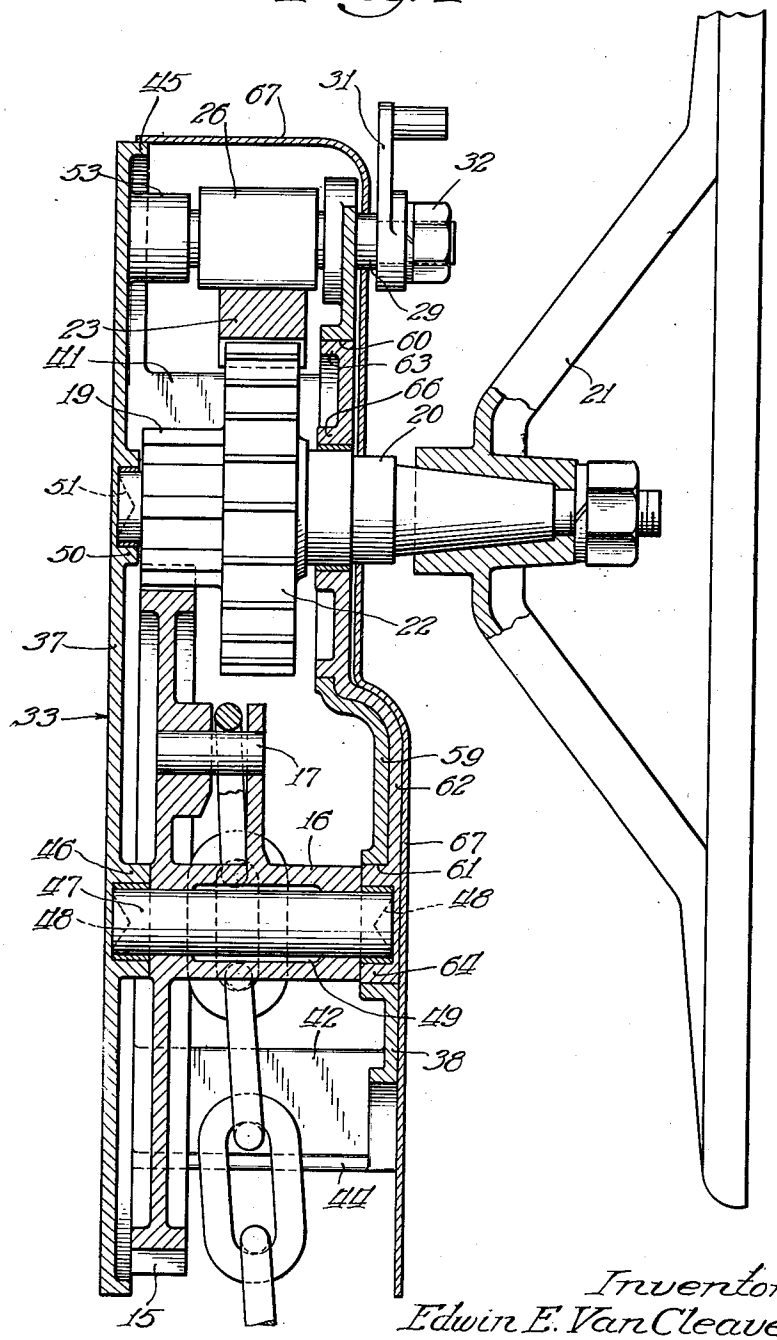
Aug. 6, 1940. E. E. VAN CLEAVE 2,210,740

HOUSING FOR RAILWAY HAND BRAKES

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Fig. 1



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Fig. 2

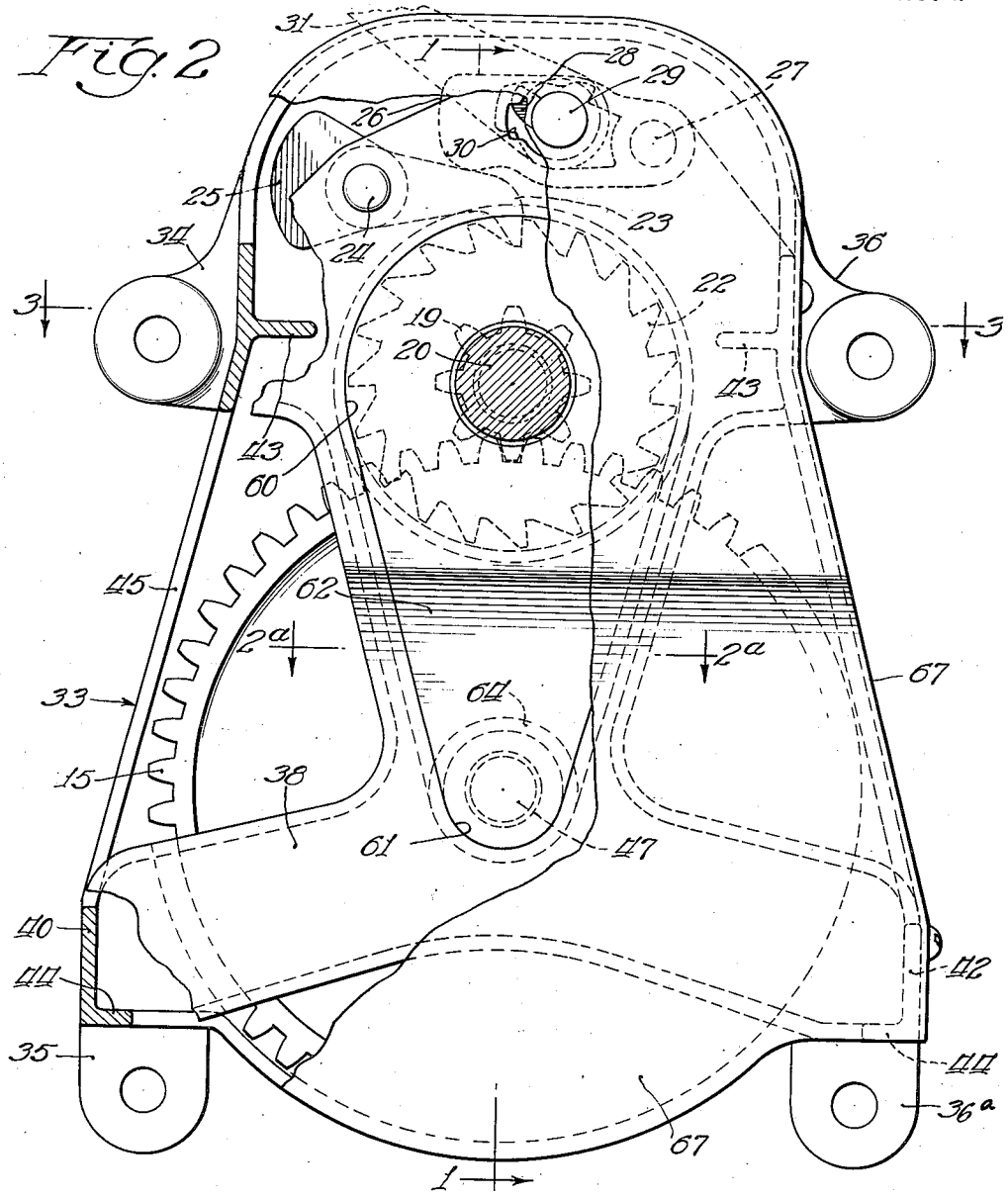
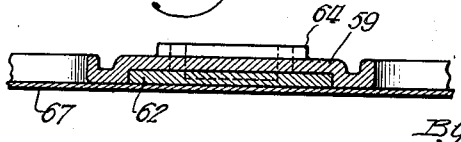


Fig. 2a



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HOUSING FOR RAILWAY HAND BRAKES

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Fig. 3

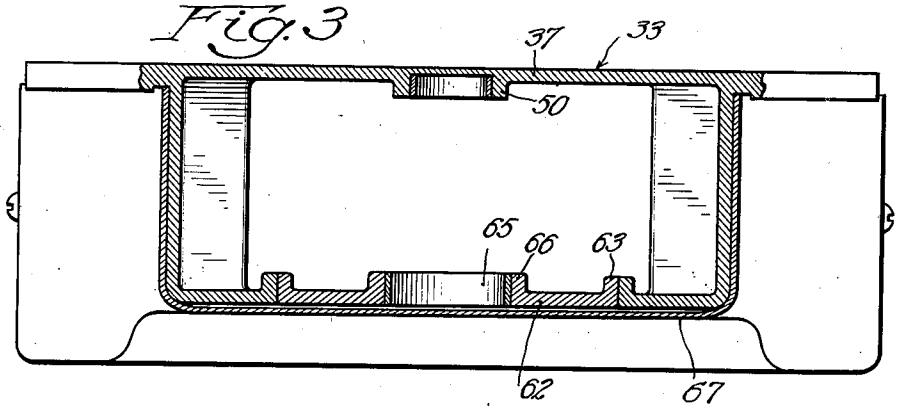


Fig. 4

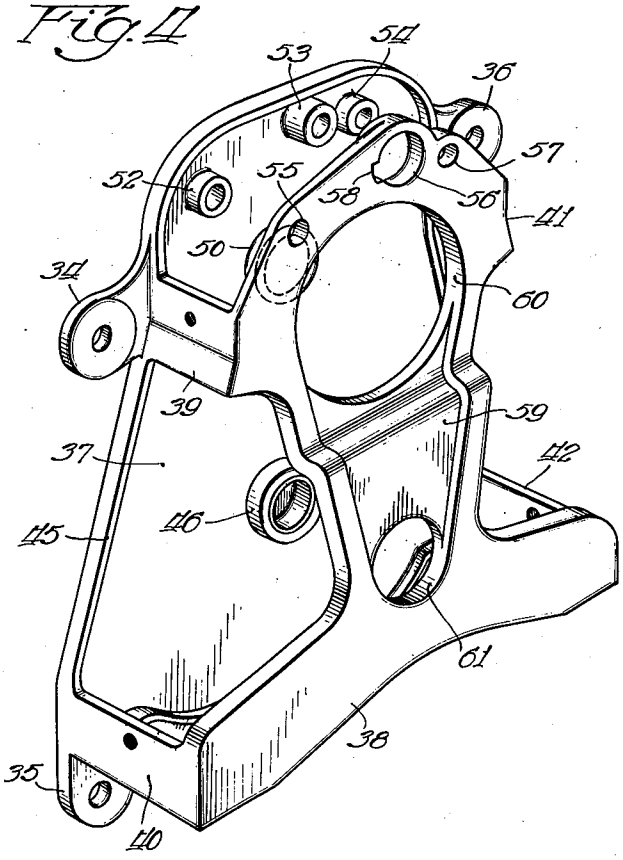
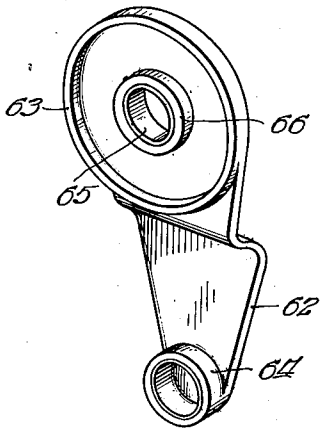


Fig. 5



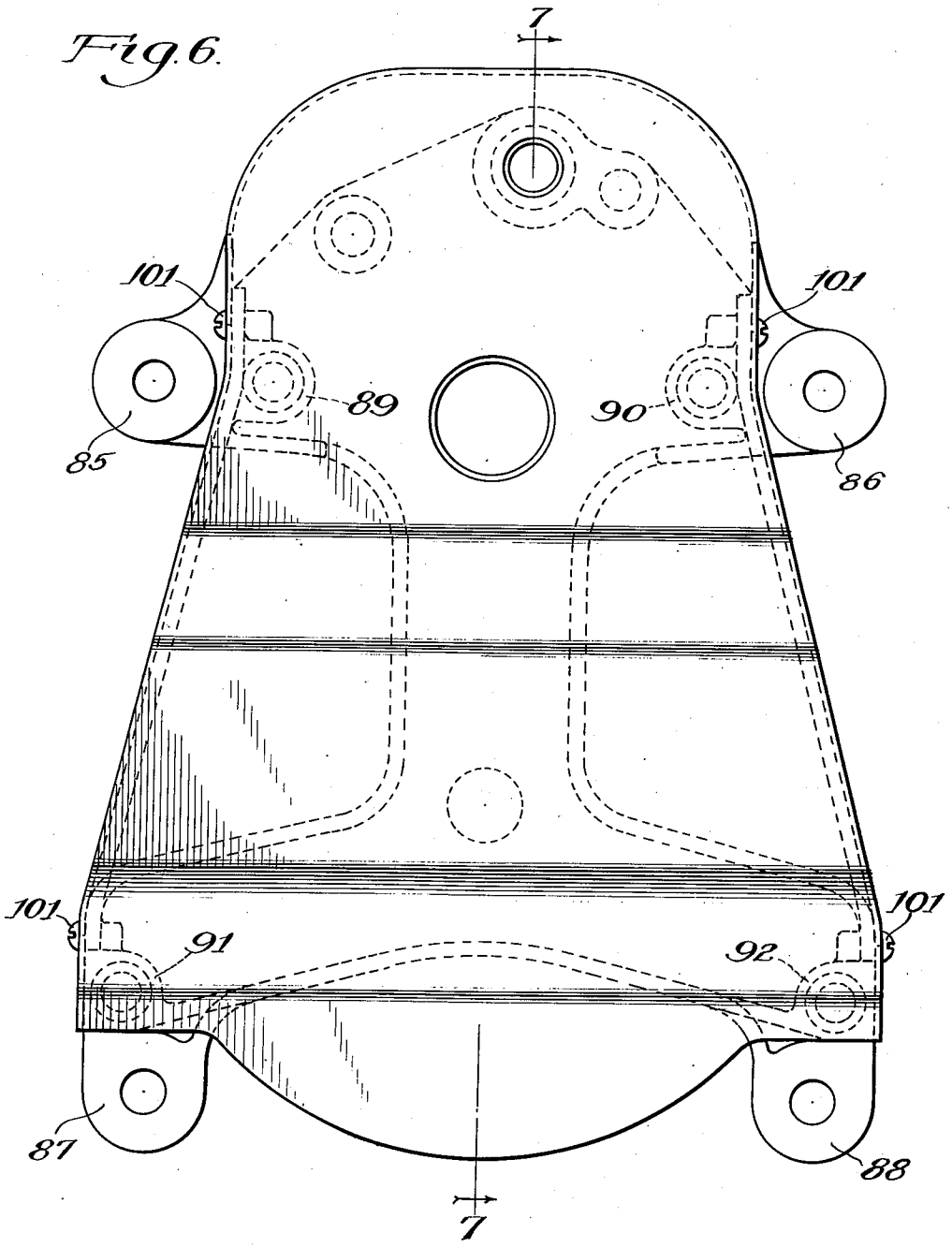
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Fig. 6.



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Fig. 7.

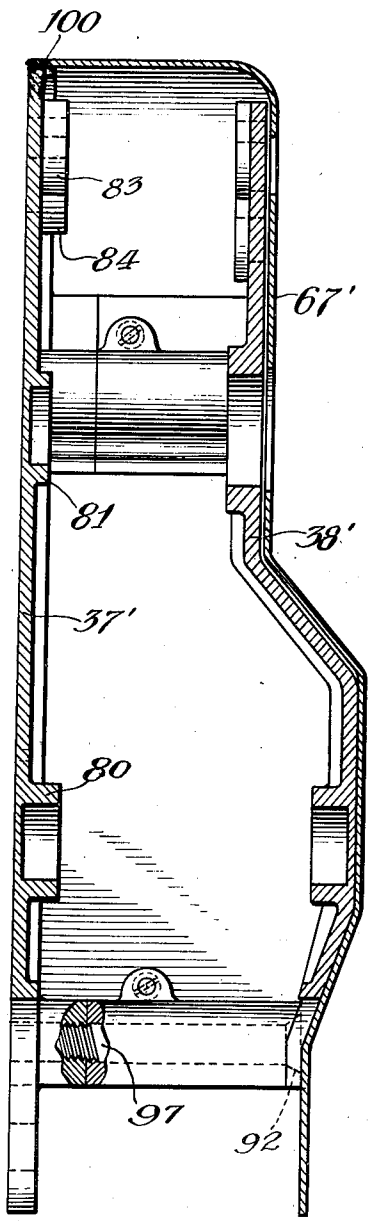


Fig. 8.

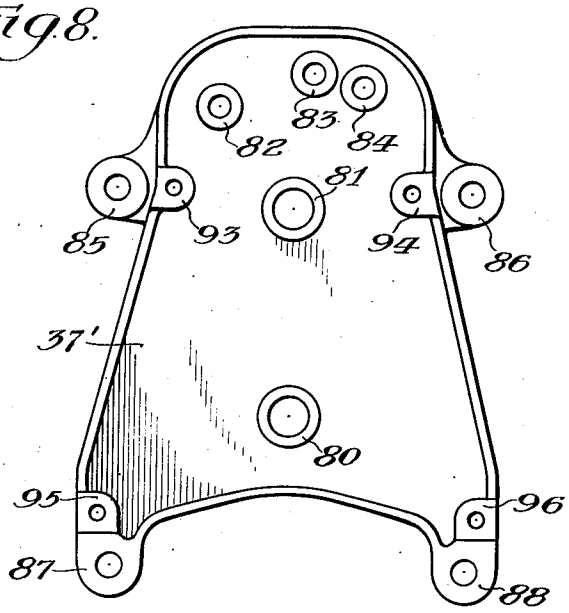
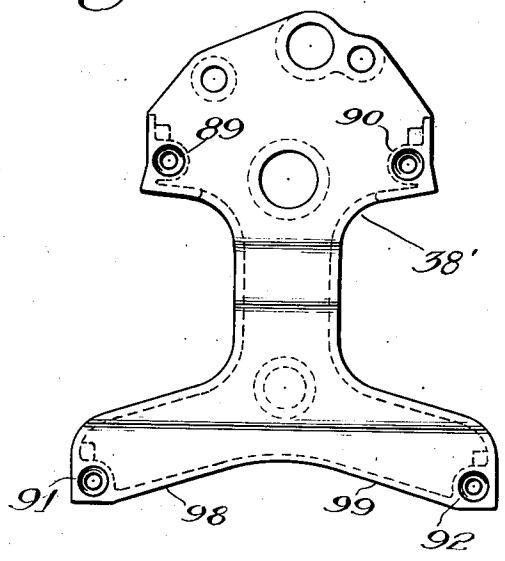


Fig. 9.



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UNITED STATES PATENT OFFICE

2,210,740

HOUSING FOR RAILWAY HAND BRAKES

Edwin E. Van Cleave, Chicago, Ill.

Application January 27, 1938, Serial No. 187,330

4 Claims. (Cl. 74—505)

The present invention relates to housings for railway hand brakes, and is a continuation in part of my application Serial No. 115,798, filed December 14, 1936, for the same general subject matter. The present invention is directed particularly to a housing and brake mechanism so combined that the several operating parts of the winding and holding mechanism, such as the winding member, the gear and pinion for rotating it, the pawl and ratchet for holding the winding member, are fully enclosed within the housing by means of a readily removable cover, and may be inspected in operation by removal of the cover and replaced without removing the brake from the car.

The present invention contemplates a brake housing structure consisting of a plate or frame that is permanently attached to the car, a front frame part which cooperates with the main frame to position the several parts of the mechanism and retain them in place, and a cover, which, when applied to the frame, secures all of the mechanism against removal and acts as an enclosure. The present device is particularly advantageous, in that it enables one to inspect the brake parts and their operation and make any minor repairs or replacements right on the car, with a final inspection to see that the replacements also work successfully.

The features and advantages of the invention will appear more fully as the description proceeds, reference being had to the accompanying drawings, wherein a preferred form of the invention is shown.

In the drawings, Fig. 1 is a vertical, sectional view through a hand brake embodying the invention.

Fig. 2 is a front view with certain parts broken away of the housing of the hand brake.

Fig. 2*a* is a fragmentary sectional view taken one the line 2*a*—2*a* of Fig. 2.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the frame, showing all of the winding mechanism and associated parts removed.

Fig. 5 is a perspective view of a front member which cooperates with the frame shown in Fig. 4 to hold certain parts of the winding mechanism in position.

Fig. 6 is a front view of a slightly modified form of the invention.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a front view of the back frame member shown in Figs. 6 and 7, and

Fig. 9 is a similar view of the front frame member shown in the same figures.

Referring now to the drawings, the invention is shown as embodied in a hand brake of the type disclosed in the application of Carl Taylor, Serial No. 90,368, filed July 15, 1936. The winding mechanism comprises a gear 15 and a winding sheave 16. The gear 15 and the sheave 16 are united to form a single structure and include means 17 for attaching a chain thereto. The winding mechanism further comprises a pinion 19 meshing with the gear 15. This pinion is formed upon a shaft 20 to which an operating hand wheel 21 is secured. A ratchet wheel 22 is fixed upon the shaft 20 and cooperates with a pawl 23 to prevent rotation of the shaft 20 in one direction. The pawl 23 is mounted on a shaft 24. The pawl also carries a counterweight 25, the normal tendency of which is to hold the pawl away from the ratchet wheel 22. A weighted arm 26 is carried by a shaft 27. The arm 26 is adapted to rest upon the pawl 23 for forcing it into engagement with the ratchet wheel 22. The arm 26 is manually controlled by means of a finger 28. The finger 28 operates within an aperture 30 in the arm 26 to either press the arm 26 against the pawl 23 or lift the arm 26 away from the pawl 23. The shaft 29 is operated by a hand lever 31 which is secured upon the shaft 29 in any suitable manner such, for example, as by the nut 32. The details of the winding mechanism are more clearly brought out in the Naylor application hereinabove referred to. It is therefore believed to be unnecessary to further explain the details and operation of the winding mechanism except in connection with the housing which forms the subject matter of the present invention.

The winding mechanism which is described is mounted upon the end of a car body by means of a frame-work 33 which has ears 34, 35, 36 and 36*a* apertured to receive rivets or bolts for securing the frame to the car body. The frame 33 has a back part 37 and a front part 38 spaced apart to receive the winding mechanism therebetween. The front and back parts are connected adjacent the ears 34, 35, 36 and 36*a* by integral flanged webs 39, 40, 41 and 42. The webs 39 and 41 have flanges 43 projected inwardly from substantially the mid-point of the webs to strengthen the connection between the front part 38 and the back part 37. Similarly, the webs 40 and 42 are provided with flanges 44 to strengthen

the connection of the front part 38 with the back part 37. The back part is in the form of a flat plate having a peripheral flange 45 along the sides and top. The front part 38, however, is of skeleton construction to reduce the weight thereof, while still maintaining adequate strength. This skeleton, or open, construction also facilitates inspection of the moving parts of the winding mechanism when the housing is open. The back part 37 is provided with a lower boss 46 which is adapted to receive one end of a shaft 47 that rotatably mounts the gear 15 and sheave 16. The shaft 47 is hollowed out at its opposite ends as indicated at 48 to provide pockets for lubricants. Also the sheave 16 is provided with an annular pocket 49 for receiving a lubricant. A boss 50 is provided in the back part 37 for the shaft 20, the shaft 20 being also provided with a lubricant pocket 51. Three other bosses 52, 53 and 54 are provided in the back part for the shafts 24, 29 and 27 respectively. The front part 38 is provided with apertures 55, 56 and 57, which apertures are aligned with the bosses 52, 53 and 54 in order that the shafts may be inserted through the apertures 55, 56 and 57 into place to secure the pawl 23, the arm 26 and the finger 28 in place. The aperture 56 has to be cut out, as indicated at 58, in order to receive the finger 28 on the shaft 29.

The front part 38 has a recess 59 in the face thereof and is provided with an enlarged opening 60 concentric with the boss 50. The front part 38 also has a lower opening 61 concentric with the boss 46. A front plate 62 has an annular flange 63 adapted to fit within the opening 60 and an annular flange 64 adapted to fit within the opening 61. The recess 59 is so shaped that when the front plate 62 is placed therein the outside of plate 62 fits flush with the outer surface of the front part 38. The flange 64 provides a pocket to receive the front end of the shaft 47 and provides a bearing therefor. The plate 62 is apertured at 65 to provide a bearing for the shaft 20, a suitable flange 66 being provided in the aperture 65 to give adequate bearing surface. Proper bearing bushings may, of course, be pressed into the bosses 46 and 50 and the flanges 64 and 66 as shown.

The plate 62 is held in place by a front cover 67 which is substantially U-shaped in cross section, as shown in Fig. 3, and is adapted to fit snugly down upon the front part 38, overlapping the flange 45 of the back part 37 to enclose the entire winding mechanism, except where the shafts 20 and 29 have to project therefrom to the hand wheel 21 and the lever 31. The shaft 29 has an enlarged portion fitting in the aperture 56 so that the cover may hold this shaft in place, and naturally, since it is closed over the ends of the shafts 24 and 27, it holds them in place. The cover 67 is secured to the webs 39, 40, 41 and 42 by screws so that it can be readily removed to permit inspection of the operating parts. The plate 62 will remain in place when the cover is removed so that all of the operating parts may be seen in their normal positions and may be operated, if desired, by merely holding the plate 62 in place by hand. Thus an inspector may see all of the parts and, by operating them, determine the degree of wear and whether any of the parts are broken sufficiently to require replacement. If any parts need replacing, they may be readily removed and replaced while the brake housing remains on the car. The replacement parts can then be operated with the other parts to see that they fit properly, before replacing the cover.

A further form of the invention is illustrated in Figs. 6 to 9. In this form, the back part 37' is a casting of the general shape indicated in Fig. 8. This casting is provided with bosses 80, 81, 82, 83 and 84 adapted to provide bearings for the shaft of the winding sheave and shafts 20, 24, 27 and 29 of the winding mechanism. Outwardly extending lugs or ears 85, 86, 87, and 88 are provided upon the back part 37', for mounting the back part upon the car body.

A front frame member 38' cooperates with the back part 37' to support the winding mechanism. The back part 37' and the front frame member 38' are secured together by four rearwardly extending lugs 89, 90, 91 and 92 formed upon the front frame member 38'. These lugs engage corresponding bosses 93, 94, 95 and 96 on the back part 37'. The lugs are secured to the bosses by any suitable means such as rivets or screw bolts 97.

It will be noted that the lower lugs 91 and 92 of the front frame member 38' are carried by outwardly and rearwardly extending portions 98 and 99 of the front frame member 38'. The front frame member 38' supports a cover 67' which projects over the back part 37' at the top thereof as indicated at 100. The cover 67' is secured to the front frame member 38' by screws 101 which screws thread into the lugs 89, 90, 91 and 92. The cover 67' protects the operating mechanism from weather and prevents movement of the bolts, pins, etc. in the frame member 38'.

This form of the invention is also readily opened for inspection and repair like the form shown in Figs. 1 to 5, inclusive. The cover 67' may be readily removed to provide access to all the winding mechanism supported and secured by the back part 37' and the front frame member 38'. The front frame 38' can be removed to replace major parts such as the gear and pinion. All inspection and replacement can be made without disturbing the attachment of the back plate to the car body.

While the preferred embodiment of the invention has been shown and described, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims in which it is the intention to claim all novelty inherent in the invention as broadly as possible in view of the prior art.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An end car brake comprising an operating mechanism including a winding sheave, a gear fixed to the sheave, a pinion meshing with the gear, ratchet and pawl means for holding the sheave, gear and pinion against rotation in one direction, and mounting and housing means for the aforesaid parts comprising a framework consisting of a solid back part and a skeleton front part spaced to receive the aforesaid operating mechanism therebetween, said framework including means holding the operating mechanism in functionally operative position but said means being releasable to remove and replace certain parts of said operating mechanism, and a cover member cooperating with said back part to enclose the operating mechanism and prevent removal of the parts thereof from said framework.

2. A hand brake operating mechanism comprising in combination a framework adapted to be permanently mounted on a car, a handwheel, operating parts comprising a winding member, a gear and a pinion for driving said member, and pawl and ratchet means to hold said winding member against turning in one direction, the aforesaid parts being removably mounted in said framework, a removable cover on said framework holding the parts against removal, and means retaining the parts in operative position when the cover is removed, whereby the parts may be removed at will while the framework is permanently attached to a car.

3. A hand brake operating mechanism comprising in combination a framework adapted to be permanently mounted on a car, a handwheel, operating parts comprising a winding member, a gear and a pinion for driving said member, and pawl and ratchet means to hold said winding member against turning in one direction, the aforesaid parts being removably mounted in said framework, and means, including a part of said framework which may be removed without disturbing the mounting of the framework upon a car, to removably mount the parts, said part of said framework comprising a separable plate having shaft bearings therein for the winding sheave and the pinion, said framework having a recess in which said plate seats.

4. A hand brake operating mechanism comprising in combination a framework adapted to be permanently mounted on a car, a handwheel, operating parts comprising a winding member, a gear and a pinion for driving said member, and pawl and ratchet means to hold said winding member against turning in one direction, the aforesaid parts being removably mounted in said framework, and means, including a part of said framework which may be removed without disturbing the mounting of the framework upon a car, to removably mount the parts, said part of said framework comprising a separable plate having shaft bearings therein for the winding sheave and the pinion, and a cover for said framework holding said plate to the framework.

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