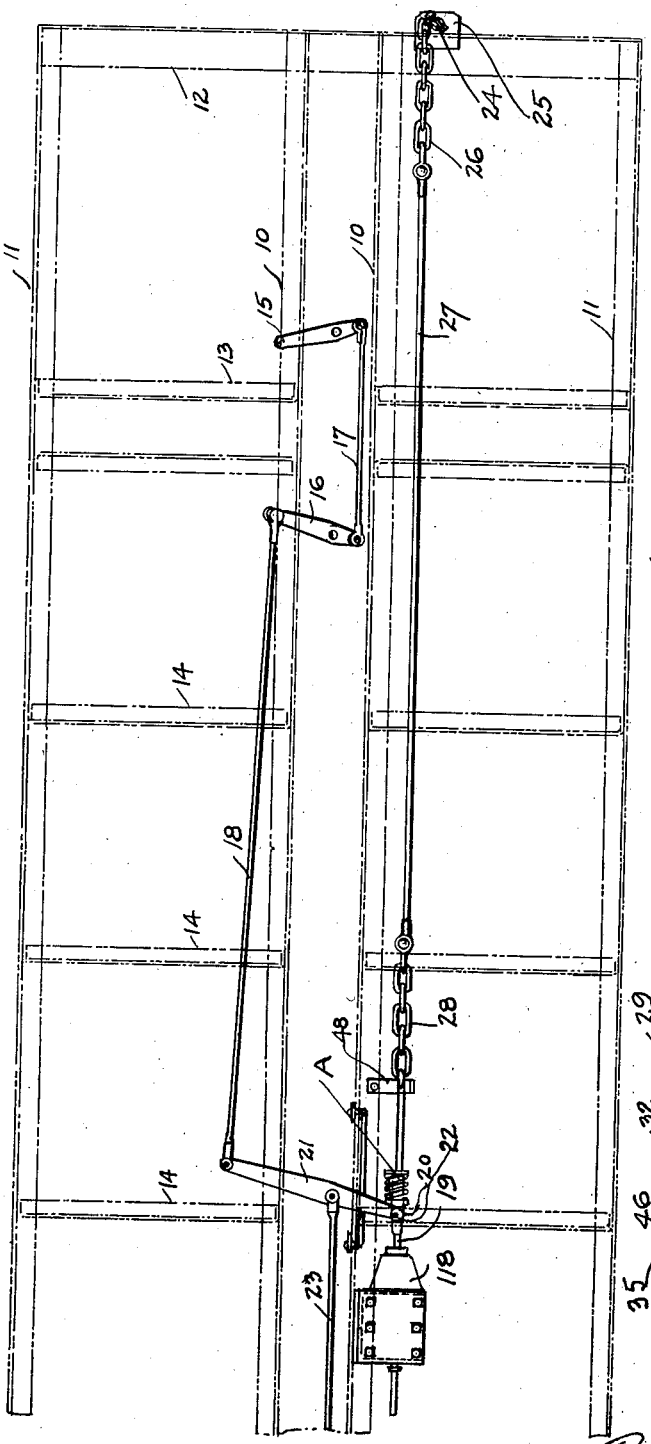
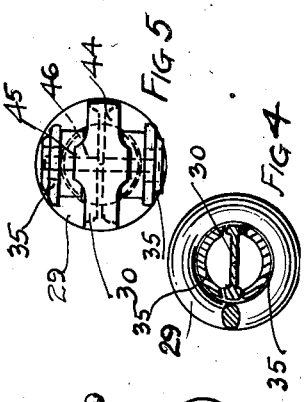
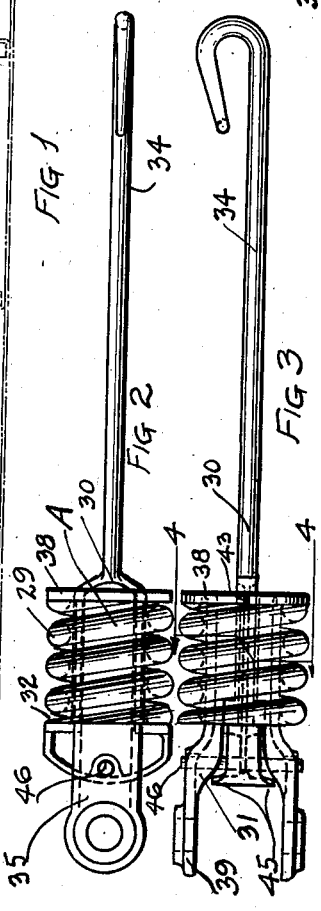
May 20, 1941. G. B. DOREY 2,242,994

RESILIENT BRAKE CONNECTION FOR RAILWAY CARS AND THE LIKE

Filed April 25, 1938 2 Sheets-Sheet 1



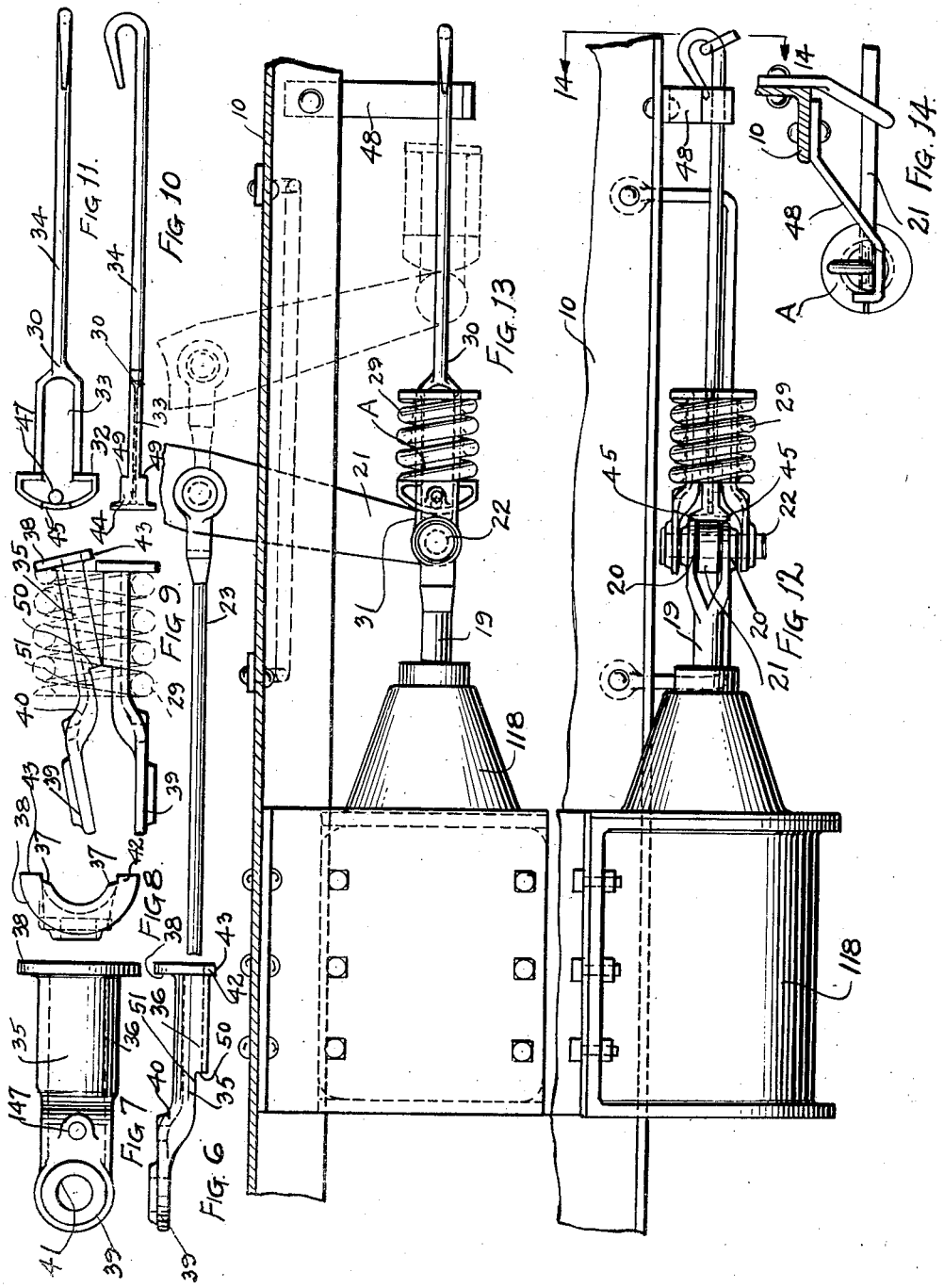

INVENTOR

George B. Dorey

May 20, 1941. G. B. DOREY 2,242,994

RESILIENT BRAKE CONNECTION FOR RAILWAY CARS AND THE LIKE

Filed April 25, 1938 2 Sheets-Sheet 2




INVENTOR

George B. Dorey

Patented May 20, 1941 2,242,994

# UNITED STATES PATENT OFFICE

2,242,994

## RESILIENT BRAKE CONNECTION FOR RAILWAY CARS AND THE LIKE

George B. Dorey, Westmount, Quebec, Canada

Application April 25, 1938, Serial No. 204,025

1 Claim. (Cl. 267—72)

My invention relates to improvements in a resilient brake connection for railway cars and the like.

My invention relates to an improved type of resilient connection adapted to impart resiliency in the brake connections of a railway car whereby the brake may be gradually and smoothly applied and irregularities in the brake and car structure compensated for.

My improved connection is especially adapted for use as an extension of the usual type of push rod which is found in the fluid pressure operated system.

Another object of my invention is the provision of a resilient connection assembly which may be easily and conveniently assembled as a unit and applied to the car structure as a self contained unit.

Another further object of my invention is to provide a resilient connection which may be assembled as a self-contained unit with initial tension temporarily retained therein, and to provide means whereby said tension may be later transferred to react against the member with which said connection is connected.

My invention further resides in certain other features of construction and detail of parts such as will be more fully pointed out hereinafter and claimed.

For further comprehension of my invention, reference may be had to the accompanying drawings wherein; Figure 1 is a plan view of a portion of a railway car and part of the brake system, said view showing my improvements incorporated therein; the said view shows the framing of the car indicated by conventional dot and dotted lines and the brake in full lines. Fig. 2 is a top plan view, on an enlarged scale, of my improved brake connection as shown in Fig. 1. Fig. 3 is a side longitudinal elevational view of the connection shown in Fig. 2. Fig. 4 is a vertical, transverse sectional view taken on a line 4—4 of Fig. 3. Fig. 5 is a vertical end elevational view of Fig. 3 as viewed from left to right. Fig. 6 is a side longitudinal vertical view of one of the jaw members. Fig. 7 is a top plan view of the jaw member shown in Fig. 6. Fig. 8 is an end view of Fig. 7 as viewed from right to left. Fig. 9 is a vertical elevational side view of the jaw members, with the spring conventionally indicated, illustrating the manner in which the jaw members are tilted during the assembly operation of the jaw members and spring. Fig. 10 is a side elevational vertical view of the central pulling member. Fig. 11 is a top plan view of the member illustrated in Fig. 10. Fig. 12 is a vertical longitudinal elevational view, on an enlarged scale, showing so much of the car structure as necessary to show my improved construction applied thereto. Fig. 13 is a top plan view of the structure shown in Fig. 12. Fig. 14 is a vertical transverse sectional view taken through a portion of Fig. 12 and on a line corresponding substantially to a line 14—14.

In said drawings, the car framing is shown as consisting of longitudinal center sills 10, side sills 11—11, end sills 12, body bolster 13 and crossbeams 14.

The brake system includes truck levers 15 and 16 united by a bottom connection 17 and the levers of the respective trucks connect with the fluid operated leverage system by top rods 18. The fluid operated brake consists of a cylinder 118 which is rigidly mounted on the car structure and actuated through the medium of said cylinder is a push rod 19.

The push rod 19 is formed adjacent its outer end with a pair of spaced jaws 20, said jaws straddle the main lever 21 of the brake system and pivotally unite therewith at 22. The lever 21 connects with another lever (not shown) by means of a top rod 23 and in this manner the truck levers at the respective ends of the car are caused to function in unison on movement of the push rod.

The push rod is movable longitudinally to a position indicated by dotted lines in Fig. 13 and may be moved either by the admission of fluid pressure in the cylinder or through the medium of a manually operated device which is commonly known as a hand brake.

The hand brake, in the present embodiment of my invention, is shown as consisting of a rotatable brake shaft 24 mounted in a bearing 25 at the end of the car. Connection between the brake shaft and the push rod is effected through the medium of connecting means which includes winding chain 26, rod 27, chain or other suitable flexible connection 28 and the resilient extensible connection A.

Said resilient connection includes a coil spring 29 interposed between oppositely movable shouldered connecting means 30 and 31 respectively. The shouldered means 30 includes a shoulder 32 and a flat body portion 33, the latter being of preferably I section and lying within the spring and being of a width corresponding substantially to the inside diameter of the spring. The flat body portion is centrally disposed within the spring by reason of the side walls of the I

section being in contact with the inside of the spring, and beyond the spring the said connection member 30 is preferably formed with an extension of substantially circular section as indicated at 34. The outer end of the section 34 terminates in a hook like portion whereby connection is effected with chain 28.

The oppositely movable connecting means 31 consists of a pair of members 35—35 between which the central member 30 is interposed. The respective members 35 being of similar construction, the description hereinafter following will be confined to only one of said members. Said member 35 includes a body portion 36 of arcuate form which is adapted to lie within the spring with the edges 37 of the arcuate portion contacting the side edges of the I portion of the central member 30. At one end of the member there is a shouldered portion 38 which engages one end of the spring 29 and the opposite end of said member 31 is extended beyond the spring and beyond the shoulder of the central member to present a head portion 39. Intermediate the body portion 36 and the head portion 39, the said member is deflected outwardly in the form of a reverse curve as indicated at 40 thereby spacing the head portions 39 of the respective members 31 outwardly beyond the body portion of the central member.

The head portions 39 are formed with an aperture 41 and the heads of the respective members of the pair present a pair of jaws which straddle the jaws of the push rod. The pin 22, in addition to extending through the push rod and the lever 21 also extends through the apertures 41.

The members 31, at the end opposite to the jaws, are centered with respect to each other by having the shoulders 38 extended beyond the edges 37 of the body portion and around the body portion 33 of the central member as indicated at 42 to meet in abutting relation as indicated at 43. It will thus be seen that the pair of members 31 are maintained in positive spaced relation by the shoulders at one end and by the jaws of the push rod at the opposite end.

When the parts are in operative relation, it will be observed that the heads 39 of the connecting means 31 lie in the plane of the spring, but as such heads are of slightly lesser width than the inside diameter of the spring, the assembly of the parts is carried out by tilting the parts towards each other as indicated in Fig. 9. In making the assembly, one of the members 35 is first positioned and thereafter the other member 35 is placed in position by passing the head through the central or widest portion of the spring necessitating a tilting of the part as shown in Fig. 9. The fact that there is a considerable space between the respective members 35 permits the tilting of the parts during assembly and as the space is afterwards occupied by the central member body portion 33, it will be apparent that the arcuate portion 36 of the two members in combination with the flat portion 33 of the central member together present a substantially circular support for the spring.

The rear wall 44 of the central member 30 is extended vertically above and below the level of the lever 21 and contacts the end of the push rod jaws as indicated at 45. The spring is placed under initial compression before the parts are mounted on the car and such compression is maintained by a retaining pin 46 which extends through aligned openings 47 and 147 respectively formed in members 30 and 35, said openings 47 and 147 are of larger size than the pin which they receive and therefore when the first extension movement of the connection takes place, the pin 46 is released and thereafter the resilience of the spring reacts against the ends of the push rod jaws.

The force exerted by the compressed spring against the end of the push rod jaws operates to force the shoulders 38 outwardly from the pin 22 and consequently takes up the slack in the pin clearances and thereby makes the spring and connecting members substantially self supporting in relation to the push rod. The outward pressure thus exerted by the spring on the resilient connection has the effect of virtually making the resilient connection an extension of the push rod and undue rattling of the parts is prevented.

The outer end of the connection is supported, at a location lying beyond the limit of travel of the spring, by means of a bracket 48 extending outwardly from the center sill.

In order to safeguard the spring against overloading or as a precaution against spring breakage relative travel between the opposed movable means 30 and 31 is limited by stops 49 and 50 respectively disposed on the members 30 and 35. Stop 49 is defined by forming the shoulder 32 deeper than the thickness of the body portion 33 and to accommodate said deeper portion of the shoulder the member 35 is formed with a recess 51, said recess terminating in the stop 50.

The operation of the device, as will be understood, does not affect the fluid operated brake as in the event of the brake being fluid operated, the brake connection merely moves with the push rod. When the brake is operated by the manually operated device, the spring is gradually compressed as the pulling strain increases and in this manner the brake applying pressure may be graduated and the brake applied smoothly.

What I claim is:

As an article of manufacture, a resilient connection for maintaining a stabilizing tensional force in the brake connections of a railway car, said connection including oppositely movable shouldered means and a coil spring interposed between the shoulders of the respective means, said respective oppositely movable means being extended beyond each other to present portions for attachment to adjacent brake members, the means movable in one direction including a centrally disposed element within the spring and extending substantially from side to side thereof, and the means movable in the opposite direction being formed of two members respectively lying on opposite sides of the centrally disposed member, each member of the pair having the shouldered portion extending around the centrally disposed element in order to bring the pair of members in abutting relation and thereby centralize said members with respect to the spring.

GEORGE B. DOREY.