

Jan. 15, 1929.

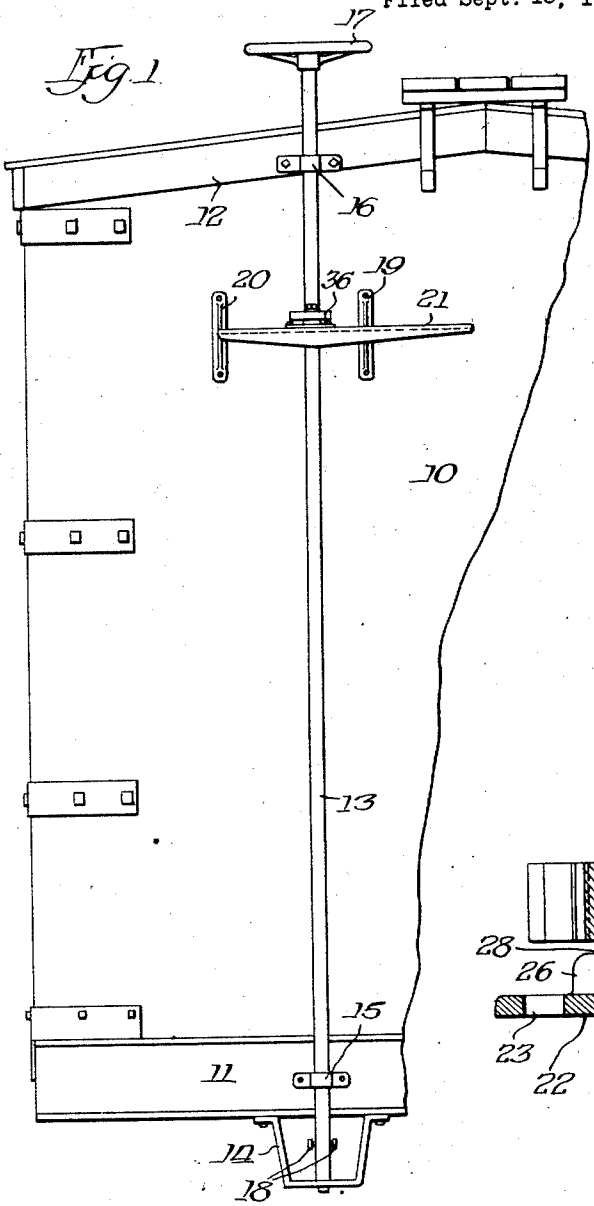
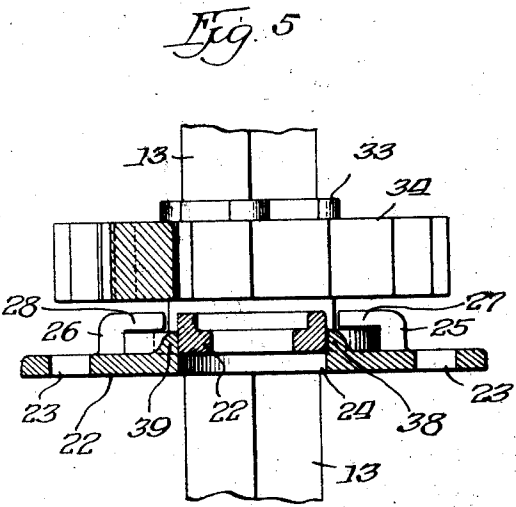
1,699,212

H. C. SMITH

HOLDING MEANS FOR RAILWAY BRAKES

Filed Sept. 13, 1926

4 Sheets-Sheet 1



Witness:

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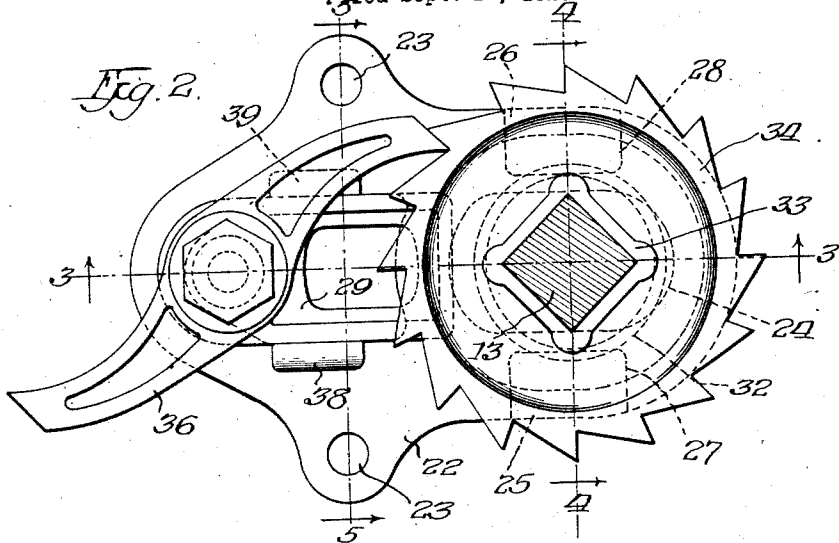
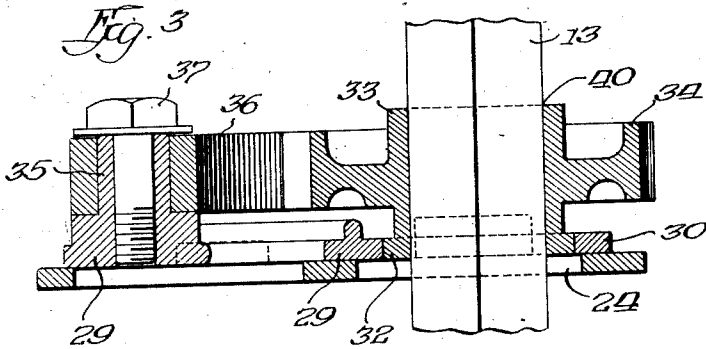
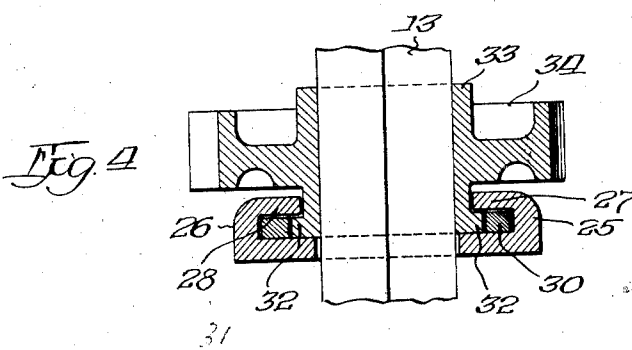
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H. C. SMITH

HOLDING MEANS FOR RAILWAY BRAKES

Filed Sept. 13, 1926

4 Sheets-Sheet 2



Witness:

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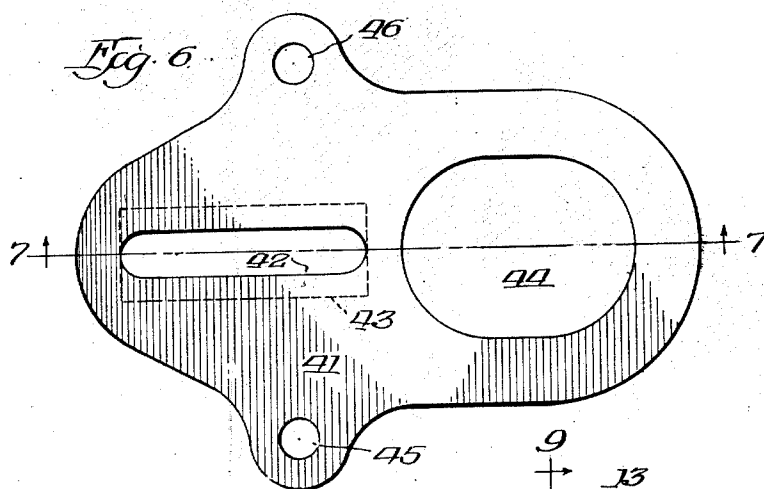
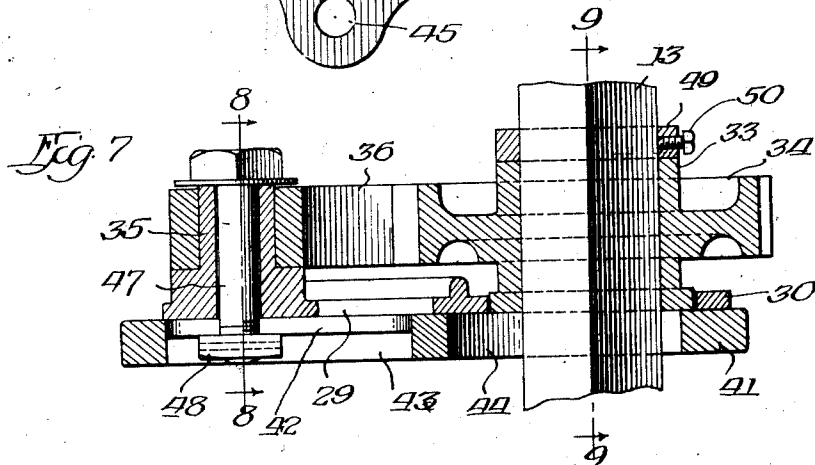
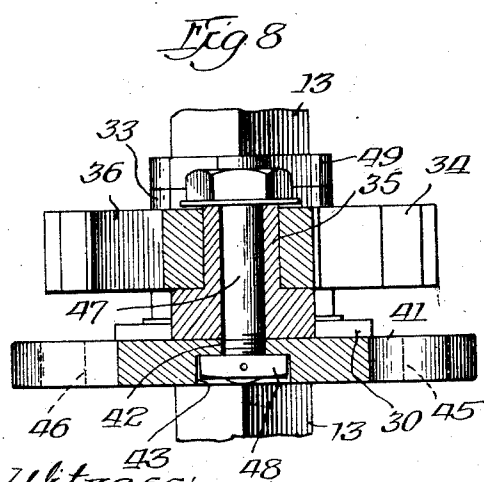
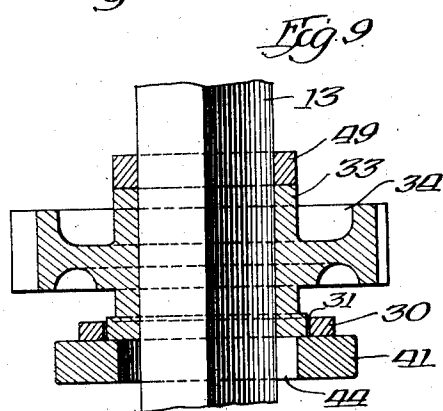
1,699,212

H. C. SMITH

HOLDING MEANS FOR RAILWAY BRAKES

Filed Sept. 13, 1926

4 Sheets-Sheet 3



Witness:
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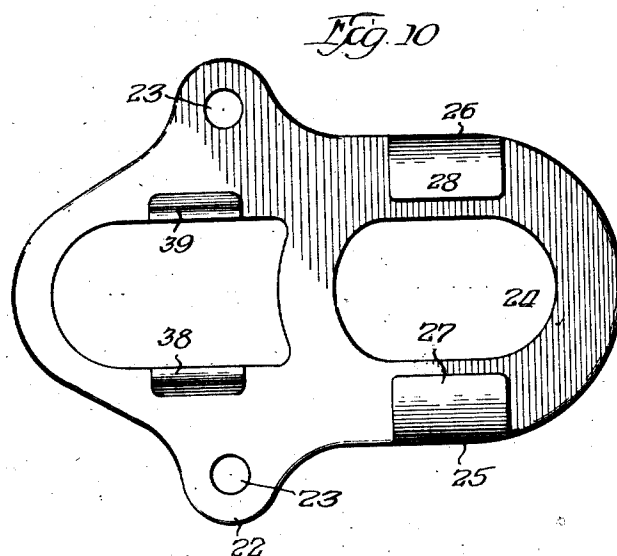
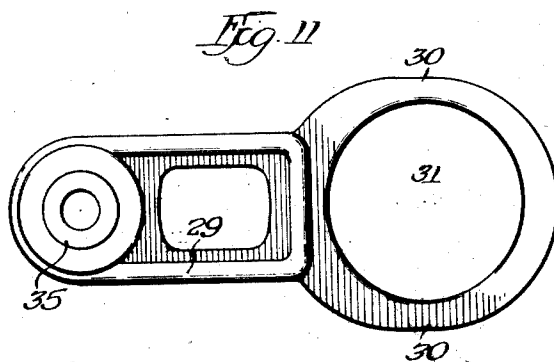
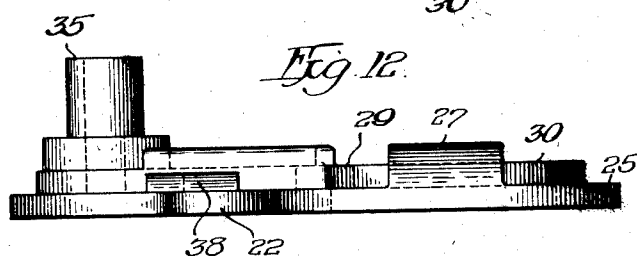
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H. C. SMITH

HOLDING MEANS FOR RAILWAY BRAKES

Filed Sept. 13, 1926

4 Sheets-Sheet 4



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Inventor
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UNITED STATES PATENT OFFICE.

HENRY C. SMITH, OF CHICAGO, ILLINOIS.

HOLDING MEANS FOR RAILWAY BRAKES.

Application filed September 13, 1926. Serial No. 134,968.

My invention relates to holding means for railway brakes and has particular reference to a movably mounted ratchet member for use on the brake shaft of hand brakes for railway cars, so the ratchet wheel is in proper relation and alignment with the brake shaft for easy and satisfactory operation.

Another and further object of my invention is the provision of a mounting for the ratchet wheel employed upon the brake shaft for holding the brakes in engagement with the car wheels, which is free to move with the brake rod so that if the end of the railway car is bulged outward the brake shaft is not bent outward or if the brake rod is bent laterally, the ratchet wheel remains in operable position upon the brake shaft and does not bind in the bearings so that the brakes cannot be applied to or released from the railway cars.

Another and further object of my invention is the provision of a ratchet and pawl placed in movable relation with the brake shaft and the mounting for said pawl whereby the ratchet wheel and pawl are kept in proper spaced relationship with each other so the pawl can be applied to the ratchet wheel and hold the brake shaft against rotation when the brakes are applied to the car.

In applying the brake shafts to box cars particularly, it is common practice to apply a step to the end of the car upon which the trainmen stand when applying the brakes, this step being spaced from the top of the car so that the trainmen in applying the brake can stand sufficiently erect to exert force enough upon the brake wheel to properly apply the brakes and without having the brake shafts and brake wheel extend above the top of the car a considerable distance so that they might catch on overhead obstructions and the like. The brake shafts are fastened usually at their lower ends to the car end sill and at their upper ends to the end fascia and extend in a vertical line up the end of the car. After the car has been in service for a time the end of the car bulges outward, thus bending the brake shafts and causing the ratchet wheels to bind in their bearings or to be tilted sidewise so they resist rotation of the brake shaft and very frequently bind in the bearings through the car step to such an extent that the brake shaft can not be turned and the brakes applied to

the car. In my improved form of device the ratchet wheel and pawl are mounted in such manner so that the brake shaft is not kept or moved outward or if the shaft is bent the ratchet and pawl move with it and remain in proper alignment with the brake shaft so that they are in proper position to hold the brake shaft against rotation when the brakes are applied to the car.

Another and further object of my invention is the provision of a mounting for a brake ratchet and pawl which are held in fixed relationship with each other so that neither the pawl nor the ratchet wheel can be moved a sufficient distance from each other so the pawl cannot engage the ratchet wheel to properly hold the ratchet wheel against movement.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheets of drawings and in which:

Figure 1 is an end elevational view, partially in section, of a box car showing the brake shaft applied thereto;

Figure 2 is a plan view of my improved invention;

Figure 3 is a vertical sectional view on lines 3—3 of Figure 2;

Figure 4 is a vertical sectional view on lines 4—4 of Figure 2;

Figure 5 is a vertical sectional view on lines 5—5 of Figure 2;

Figure 6 is a plan view of a modified form of fixed holding member;

Figure 7 is a vertical sectional view on lines 7—7 of Figure 6;

Figure 8 is a vertical sectional view on lines 8—8 of Figure 7;

Figure 9 is a vertical sectional view on lines 9—9 of Figure 7;

Figure 10 is a plan view of the holding member illustrated in Figure 2;

Figure 11 is a plan view of the pawl mounting member illustrated in Figure 2; and

Figure 12 is a side view of the members illustrated in Figures 10 and 11 in assembled relation.

Referring now specifically to the drawings and in which like reference characters refer to like parts throughout, a box car end 10 is shown having the usual end sill 11 and an end fascia 12 with a brake shaft 13 held in position by a brake shaft guide 14

at its lower end which in turn is secured to the end sill 11 at the bottom of the car. The brake shaft 13 is held in vertical position by a guide 15 secured to the end sill 11 in any approved manner and by an upper guide 16 secured to the end fascia 12 of the car. The usual hand brake wheel 17 is mounted upon the upper end of the shaft 13 and studs 18, 18 are applied to the brake shaft at its lower end to which one end of a brake chain is applied, it being understood that the brake chain is wrapped around the brake shaft 13 as this shaft is rotated by the hand wheel 17 drawing the brakes against the wheels of the car.

Mounted upon the car end 10 by a pair of brackets 19 and 20 secured to the car end 10 in any suitable manner, is a step 21 through which the brake shaft 13 passes and upon which a fixed member 22 is mounted by means of bolts passing through holes 23, 23 in the member 22. The member 22 has an elongated opening 24 in the forward end thereof through which the brake shaft 13 extends without engagement with the member 22 so that the brake shaft 13 rotates freely or can move without binding in the member 22. Mounted alongside the opening 24 on the member 22 and formed integral therewith, is a pair of shouldered lugs 25 and 26 having inwardly projecting portions 27 and 28 respectively formed thereon for the purposes hereinafter described.

Mounted upon the member 22 is a longitudinally movable member 29 having an annular head portion 30 formed thereon with an opening 31 therethrough within which is seated a collar 32 formed on the end of the hub 33 of the usual ratchet wheel 34 mounted upon the brake shaft 13 and held against rotation thereon in any desirable manner. At the rear end of the movable member 29 is an upstanding post 35 upon which the usual double ended pawl 36 is mounted by means of a bolt 37. A pair of spaced lugs 38 and 39 extend upwardly from the member 22 which are formed integrally therewith and which are adapted to engage the sides of the member 29 to prevent lateral movement thereof, but permitting a sliding longitudinal movement of the member 29 upon the fixed member 22. The collar 32 of the hub 33 is fitted into the opening 31 in the head 30, the lower end of the hub resting upon and being supported by the fixed member 22, while the collar 32 passes under the portions 27 and 28 of the lugs 25 and 26 respectively and is thus held against being lifted. The brake shaft 13 is square as shown in the drawing, and passes through a square opening 40 through the hub 33 of the ratchet wheel 34 so that the ratchet 34 is held against rotation relative to the brake shaft 13. The brake shaft may be round and the

ratchet keyed thereto if desired, or secured thereto in any other manner so long as the ratchet is held against rotation upon the shaft 13.

In Figures 6 to 9 inclusive, a modified form of device is illustrated in which lateral, as well as longitudinal, movement of the brake shaft may take place without binding the ratchet mechanism or rendering it inoperative. A fixed member 41 is provided having a slot 42 therein and having a longitudinally extending recess 43 on the under side thereof, the slot 42 being centrally located with respect to the recess 43, the said member having an opening 44 in one end thereof through which the brake shaft 13 passes, the opening 43 being sufficiently large so that when the brake shaft 13 is centered therein, sufficient clearance is provided so that the brake shaft 13 may be moved in any direction. Bolt holes 45 and 46 are provided through which bolts pass in securing the member 41 to the car step 21. The movable member 29 is placed on top of the fixed member 41 and secured thereto by a bolt 47 which extends through the slot 42, the bolt 47 having a nut 48 thereon which is seated in the recess 43, the said bolt 47 extending through the post 35 upon which the pawl 36 is mounted. A collar 49 is placed upon the brake shaft 13 above the hub 33 of the ratchet wheel 34 which is secured to the brake shaft 13 by means of a set screw 50 for the purpose of preventing the ratchet wheel 34 slipping up so it will not be engaged by the pawl 36.

In assembling the preferred form of the device illustrated in Figures 1 to 5 inclusive, of the drawings, it will be understood that the brake shaft 13 is passed through the elongated opening 24 in the member 22 and through the square opening 40 in the hub 33 of the ratchet wheel 34 and that the end of the hub 33 rests upon the member 22 with the annular portion 32 of the hub extending underneath the portions 27 and 28 on the lugs 25 and 26, so that the ratchet wheel 34 is held against upward movement by the portions 27 and 28 with the shoulders 38 and 39 preventing a lateral or out of line movement of the member 29 upon the member 22 but permitting a longitudinal movement of the movable member 29. A slight clearance is provided between the upper edge of the annular portion 32 and the lower edge of the portions 27 and 28 so that a slight tilting or rocking movement of the ratchet wheel 34 is permitted so that if the brake shaft is bent or forced out of alignment in any manner, the ratchet wheel will not bind in the movable member 29. The member 22 is thereupon bolted to the car step 21 and the entire apparatus is thus held in proper relation with the brake shaft upon the car step 21 and the ratchet wheel and pawl move

outward with the brake shaft 13 if the shaft is bent outward by the bulging of the car end.

The operation of assembling the modified form of the device is substantially the same as that of the preferred form, and when assembled the lower end 32 of the hub 33 rests upon the member 41 and seats in the opening 31 in the movable member 29 which member is held by means of the bolt 47 to the fixed member 41, but is capable of movement longitudinally, as the nut 48 is not screwed down tightly so the member 29 can also have a laterally pivotal movement thus conforming to any movement of the brake rod 13.

In operation of each of the forms the device performs precisely in the same manner as the ratchets now in use in that the trainman grasps the hand wheel 17 and by rotating it, winds the brake chain around the lower end of the brake shaft and when the brakes are applied sufficiently tight the pawl 36 is turned so that one end thereof engages the teeth formed in the periphery of the ratchet wheel 34 to prevent backward rotation of the brake shaft 13 and thus hold the brakes in engagement with the car wheels. When it is desired to release the brakes the pawl 36 is released from the ratchet wheel and the brake shaft 13 allowed to rotate freely, thus releasing the brakes from engagement with the car wheels.

It will be noted that the movable member 29 has a ratchet wheel 34 mounted upon one end thereof and the pawl 36 at the opposite end thereof so that these members are always in fixed distance with relation to each other so that even though the ratchet wheel 34 may be moved outward, the pawl is in proper position to engage the ratchet wheel 34 and that the ratchet wheel being mounted for sliding movement upon the fixed bracket 22 in the brake shaft 13 is bent outward by the bulging of the car there is no binding of the ratchet wheel 34 in its bearings to prevent or retard rotation of the brake shaft 13 so that the hand brakes can always be easily applied to the car.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. Brake rod holding means comprising in combination a ratchet member mounted upon the brake rod, a pawl and a movable mounting for said ratchet member.

2. Brake rod holding means comprising in combination a ratchet member mounted upon the brake rod, a pawl and a movable

mounting upon which said ratchet member and said pawl are mounted.

3. Brake rod holding means comprising in combination a ratchet member, a pawl, and a common movable mounting for said ratchet and said pawl.

4. Brake rod holding means comprising in combination a ratchet member mounted upon a brake shaft, a movable mounting for said ratchet member, and a pawl, the said pawl and said ratchet member being held in fixed relation with each other.

5. Brake rod holding means comprising in combination a ratchet member, a pawl, and a movable mounting for said ratchet member and said pawl, the centers of the pawl mounting and the centers of the said ratchet being in fixed relation with each other.

6. Brake rod holding means comprising in combination a ratchet member mounted upon the brake rod, a fixed member, a movable member connected to said fixed member and means on said movable member for holding the said pawl and the said ratchet member.

7. Brake rod holding means comprising in combination a ratchet member, a pawl, a fixed member, a movable member mounted on said first mentioned member and means on said movable member for holding the said ratchet member and the said pawl.

8. Brake rod holding means comprising in combination a ratchet member connected to the brake rod, a pawl, a fixed member, a member mounted upon said fixed member and movable relatively thereto, and a pawl mounting on said movable member upon which the said pawl is secured, the said movable member having an opening therein adapted to receive the said ratchet member.

9. Brake rod holding means comprising in combination a ratchet wheel mounted upon the brake rod, a fixed member, a second member, means whereby the said second member is held in movable engagement with said fixed member, a pawl, a pawl mounting upon said second member, and means whereby the said ratchet wheel and said pawl are held in fixed spaced relation with each other.

10. Brake holding means comprising in combination a fixed member, a movable member, a ratchet wheel mounted upon the brake shaft upon said movable member, and a pawl also mounted on said movable member, the said fixed member having means thereon whereby the said movable member is held against rotary movement but allowing for longitudinal movement.

11. Brake holding means comprising in combination a fixed member, a movable member having a circular head, and an opening therein, a ratchet wheel mounted upon

the brake shaft and upon said movable bracket within said opening, and a pawl also mounted on said movable member, the said fixed member having lugs adapted to
5 engage the head of the movable member and the ratchet wheel whereby the ratchet wheel and the said movable member are held in operative relation with each other.

12. Brake rod holding means comprising
10 in combination a ratchet wheel fixed upon

the brake rod, a fixed member, a second member movably mounted upon said fixed member having an opening therein, a pawl, and a pawl mounting upon said second member, the hub of the ratchet wheel extending into the opening in the said movable member. 15

Signed at Chicago, Illinois, this 7th day of September, 1926.

HENRY C. SMITH.