

No. 860,237.

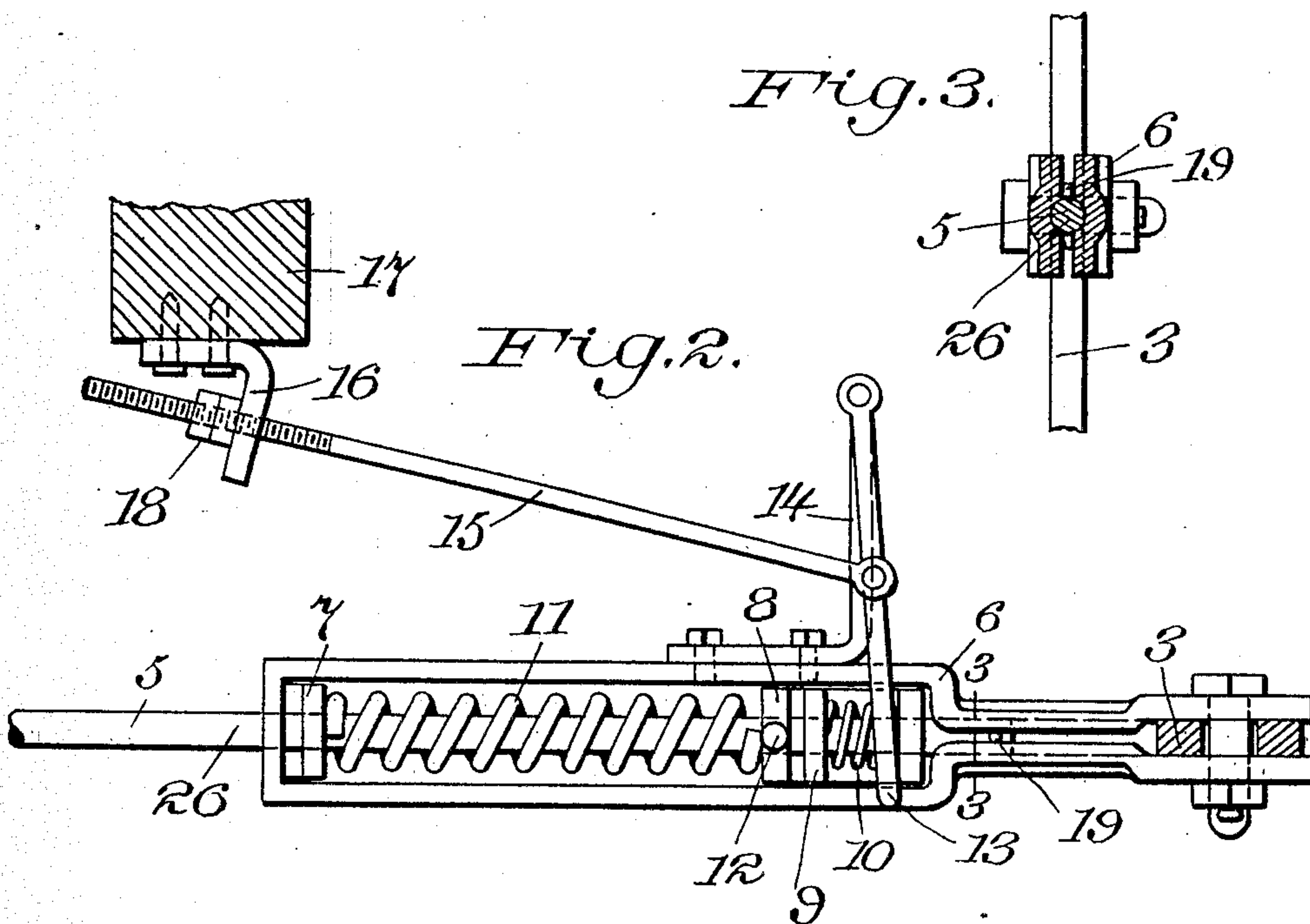
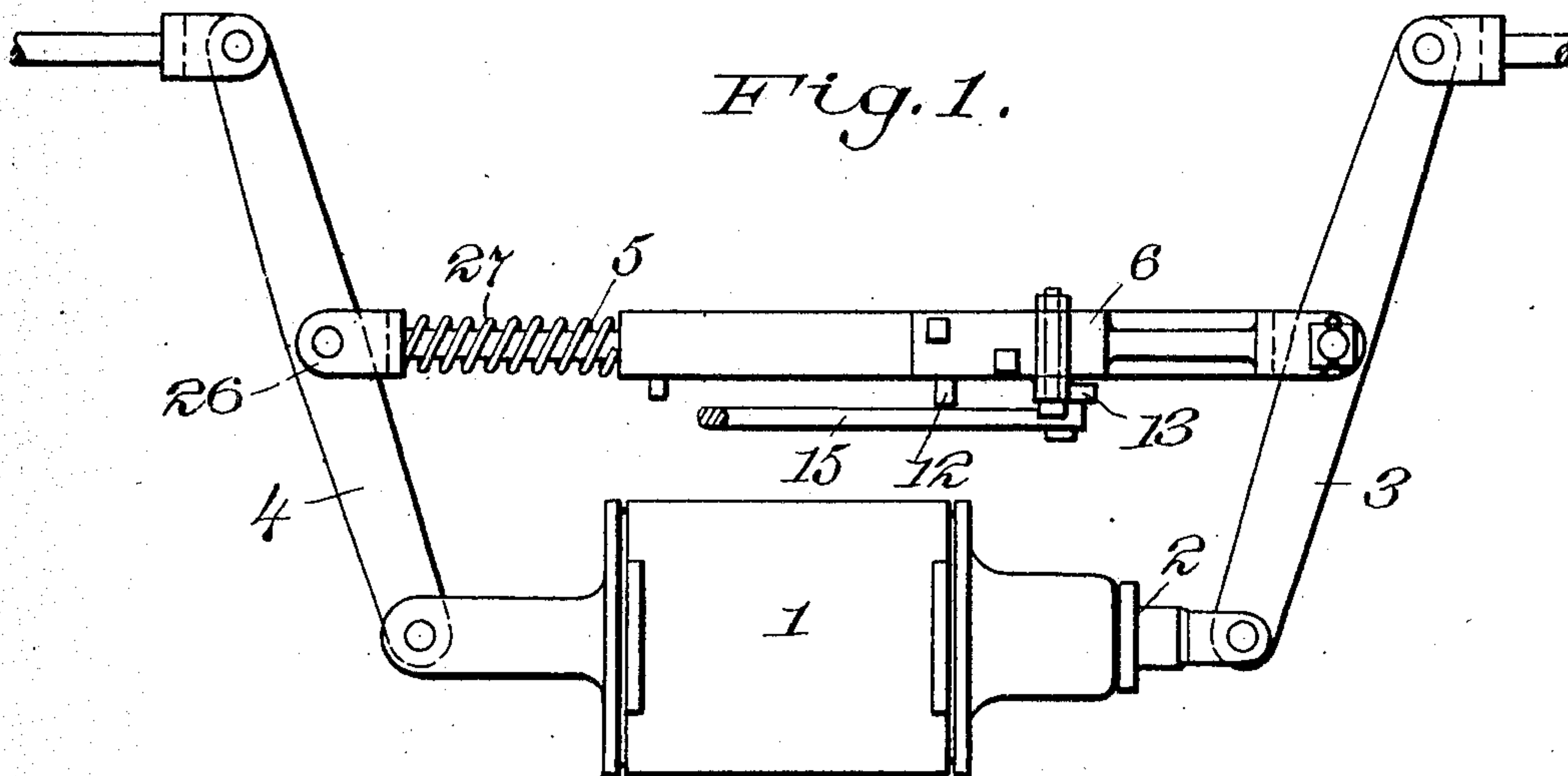
PATENTED JULY 16. 1907.

A. PARKER-SMITH.

SLACK ADJUSTER.

APPLICATION FILED NOV. 21, 1906.

2 SHEETS—SHEET 1.



Witnesses  
Manuel C. Lopez  
M. G. Crawford

Inventor  
A. Parker-Smith

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2 SHEETS—SHEET 2.

Fig. 4.

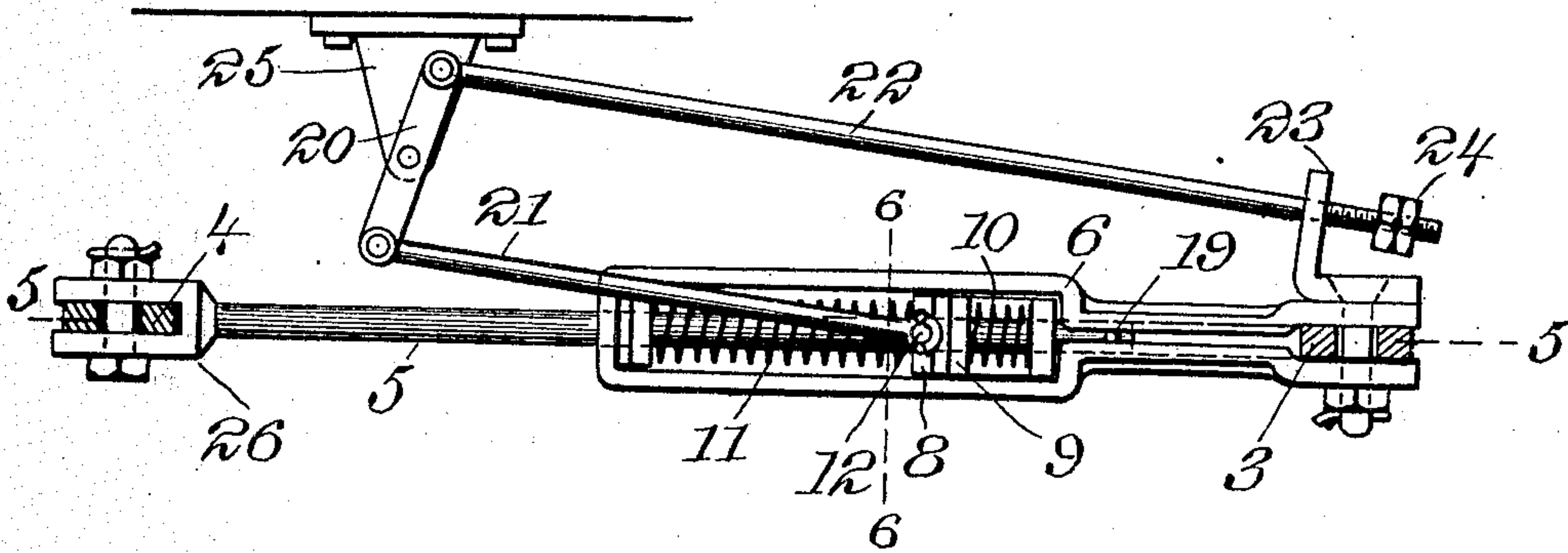


Fig. 5.

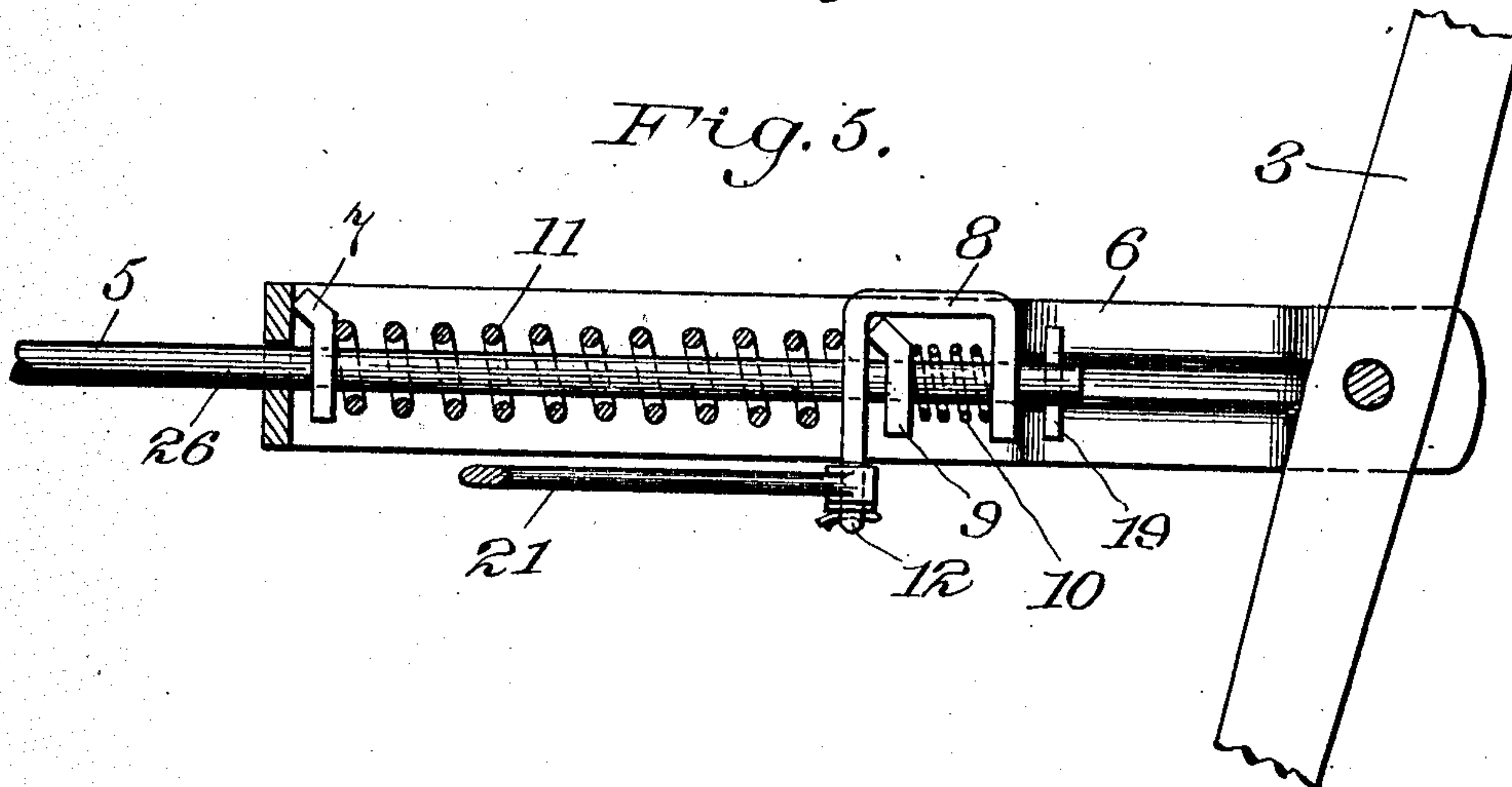
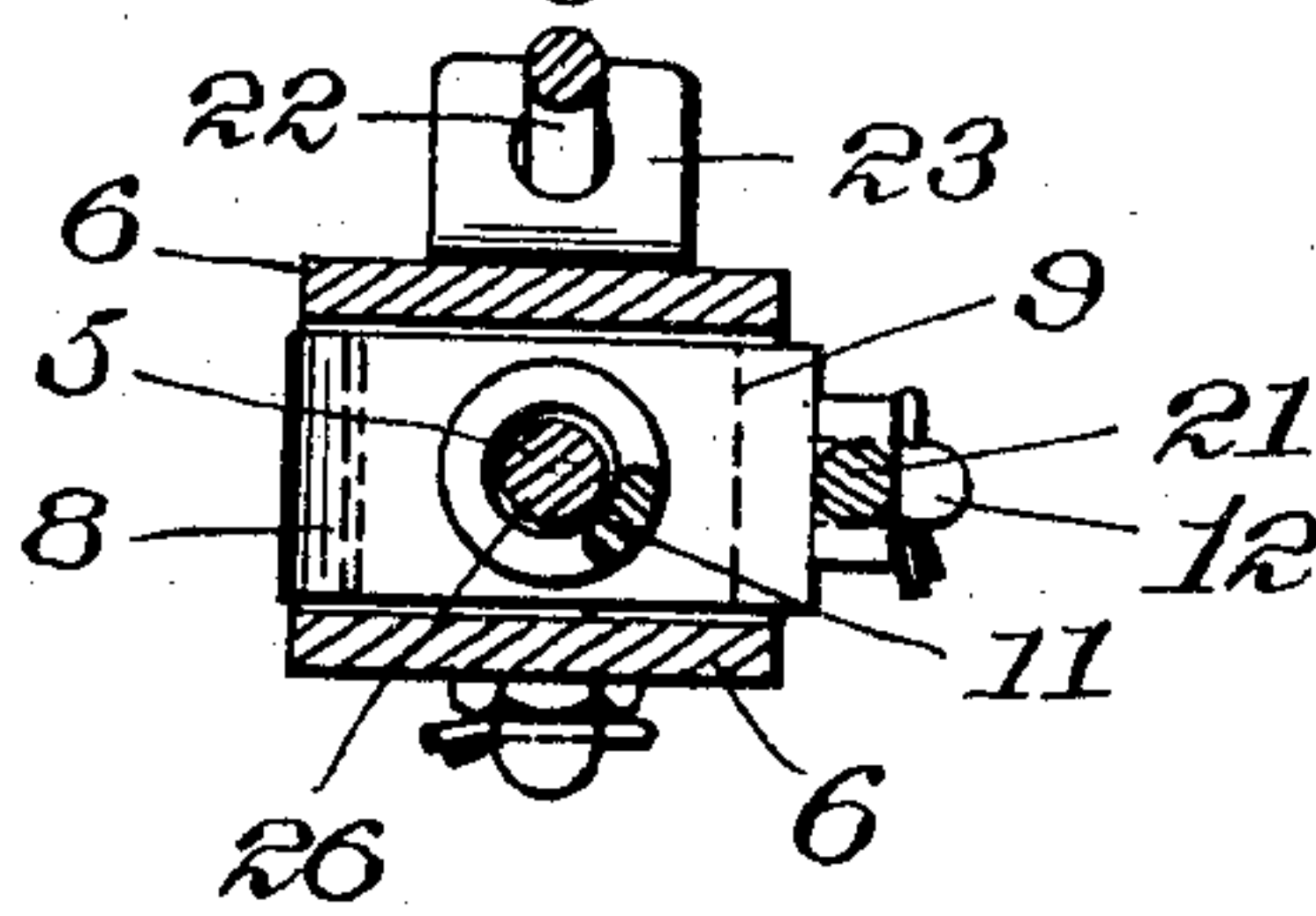


Fig. 6.



Witnesses  
Samuel C. Lopez  
M. H. Crawford

Inventor  
A. Parker-Smith



# UNITED STATES PATENT OFFICE.

AUGUSTUS PARKER-SMITH, OF NEW YORK, N. Y., ASSIGNOR TO ATLAS SLACK ADJUSTER COMPANY, A CORPORATION OF NEW YORK.

## SLACK-ADJUSTER.

No. 860,237.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed November 21, 1906. Serial No. 344,430.

*To all whom it may concern:*

Be it known that I, AUGUSTUS PARKER-SMITH, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Slack-Adjusters, of which the following is a specification.

My invention relates to slack adjusting mechanism for railway brakes and is designed to take up any excess movement of the air brake piston by automatically shortening the tie rod which connects the two brake levers. This shortening of the tie rod is produced by the excess movement of said tie rod resulting from any excess travel of the piston.

The best form of apparatus embodying my invention with certain modifications are shown in the accompanying two sheets of drawing in which

Figure 1 is a plan view of a portion of the standard brake rigging with my invention applied thereto. Fig. 2 is a side elevation and partial section of certain portions of apparatus shown in Fig. 1 with parts omitted. Fig. 3 is a cross section on line 3—3 of Fig. 2. Fig. 4 illustrates a modification. Fig. 5 is a horizontal section on line 5—5 of Fig. 4 and Fig. 6 is an enlarged cross section on line 6—6 of Fig. 4.

Throughout the drawings like reference figures indicate like parts.

1 is the usual air brake cylinder, 2 the piston rod, 3 the right hand brake lever, 4 the left hand brake lever, 5 the tie rod connecting same. This tie rod is made so it can be telescoped to shorten or lengthen it, and for this purpose is preferably composed of the stirrup 6 pivoted to the right hand brake lever, and the section 26 pivoted to the left hand brake lever and telescoping up into the stirrup 6 as clearly shown in Figs. 2, 4 and 5. Within the stirrup is the perforated holding clutch dog 7 which may be bent at one end so as to form a fulcrum as shown in Fig. 5. Through this clutch dog passes the section 26 of the tie rod.

8 is a take up clutch frame mounted on section 26 of the tie rod and in stirrup 6. It contains the take up clutch dog 9 which is normally held in gripping position by the spring 10.

11 is a strong spring normally compressed between the holding clutch 7 and the take up frame 8.

12 is any suitable projection from the take up frame adapted to be struck by the lever 13 which is pivoted at the upper end to the bracket 14 mounted on the stirrup 6, (see Fig. 2). The rod 15 is connected to the lever 13 at a point intermediate of its ends and extends to and through the lug 16 mounted on the car body 17, as shown in Fig. 2.

18 represents two jam nuts or other convenient form

of adjustable stop on the rod 15 adapted to engage the lug 16.

19 is any convenient form of stop put at the end of section 26 of the tie rod to prevent the complete withdrawal of the same through the take up frame 8.

In the modification shown in Figs. 4, 5 and 6 20 is a two arm lever having one end pivoted to the connecting rod 21 which extends to the projection 12 on the take up frame. The other end of the lever 20 is pivoted to the adjusting rod 22 which passes through the lug 23 mounted on the stirrup 6 and this rod 22 is provided with the jam nuts 24 or other adjustable stop. The lever 20 is pivoted at the middle point to bracket 25 fastened to the car body.

The operation of my invention is as follows: In form shown in Figs. 1, 2 and 3 the jam nuts are so placed upon the rod 15 that a normal movement of the brake piston will not be sufficient to cause the lever 13 to strike the projection 12 on the take up frame but any excess travel of the piston will of course cause the lever 13 and the projection 12 to come together. The excess movement of the piston will cause a proportional excess movement of the tie rod, and this excess movement of the tie rod will be equal to one half of the distance by which the tie rod should be shortened in order to eliminate such excess movement of the piston on succeeding strokes. The stirrup 6 will partake of the movement of the tie rod to the right. The lever 13 being pivoted to the rod 15 at a point half way between its pivoted connection with the bracket 14 and the projection 12, it is evident that the lower end of said lever 13 at the point of contact with said projection 12 will travel to the left the same distance which the tie rod travels to the right. The result of these two motions will be to shift the take up frame 8 in the stirrup 6, a distance to the left equal to twice the excess travel of the tie rod over the predetermined limit. This will compress the spring 11 and on the release of the brakes and movement of the tie rod to the left resulting in swinging the lever 13 to the right the spring 11 will be free to expand and return the take up frame to its original position in the stirrup. On such motion of the take up frame the clutch dog 9 will grip the section 26 of the telescoping tie rod, draw the same in to the stirrup 6 and shorten the tie rod by the desired amount. The spring 27 shown in Fig. 1 may be used to prevent any tendency of the section to telescope into stirrup 6 when there is no strain upon the clutch 7. The spring 27 therefore constitutes elastic means normally holding said telescopic tie rod extended.

In the modification shown in Fig. 5 the same movement of the take up frame is produced through the medium of the lever 20 and the rods 21 and 22. In



this case the adjustment is produced by shifting the jam nuts 24, while in the other form the adjustment is produced by shifting the jam nuts 18.

It is evident that other form of friction clutches might be substituted for those shown and that still other gripping devices might be substituted to operate upon the telescoping sections of the tie rod under the control of an adjustable lever system such as is illustrated in the drawings; the essential principle of my invention being the employment of the movement of the tie rod itself to cause the shortening of said tie rod by an amount corresponding to the excess piston travel.

Having, therefore, described my invention, I claim:

1. In a fluid pressure brake apparatus, the combination with the usual cylinder, piston and brake levers, of a telescoping tie rod for said brake levers, gripping devices in the telescoping joint which normally permit the tie rod to be shortened, but prevent its being lengthened, and mechanism adapted to be operated wholly by the movement of the tie rod with reference to the car body when the piston travel exceeds a predetermined maximum to shorten the tie rod a proportional amount after the brakes have been released.

2. A tie rod for the brake levers of a fluid pressure brake composed of two sections combined with a friction clutch carried by one section and clutching the other section.

3. A tie rod for the brake levers of a fluid pressure brake composed of two sections combined with a friction clutch carried by one section and clutching the other section, a take-up clutch also engaging the second section, a spring tending to hold the two clutches a fixed distance apart, and mechanism adapted to cause the two clutches to approach each other and compress the spring when the tie rod is moved an abnormal amount by an excessive movement of the brake levers.

4. A tie rod for the brake levers of a fluid pressure brake composed of two sections combined with a friction clutch carried by one section and clutching the other section, a take-up clutch also engaging the second section, a spring tending to hold the two clutches a fixed distance apart, and mechanism adapted to cause the two clutches to approach each other and compress the spring when the tie rod is moved an abnormal amount by an excessive movement of the brake levers, said mechanism comprising a lever pivoted on the tie rod and engaging the take-up clutch and a connection from said lever to a fixed point on the car body.

5. A tie rod for the brake levers of a fluid pressure brake composed of two sections combined with a friction clutch carried by one section and clutching the other section, a take-up clutch also engaging the second section, a spring tending to hold the two clutches a fixed distance apart, and mechanism adapted to cause the two clutches to approach each other and compress the spring when the tie rod is moved an abnormal amount by an excessive movement of the brake levers, said mechanism comprising a lever pivoted at one end to the tie rod and engaging the take-up clutch with the other end, and an adjustable connection from an intermediate point of the lever to a fixed point on the car body.

6. A tie rod for the brake levers of a fluid pressure brake comprising the combination of a stirrup pivoted to the brake lever at its open end and perforated at the other end, a rod pivoted to the other brake lever and passing through the perforation in the stirrup, and a friction dog mounted inside of the stirrup and clutching the rod.

7. A tie rod for the brake levers of a fluid pressure brake comprising the combination of a stirrup pivoted to the brake lever at its open end and perforated at the other end, a rod pivoted to the other brake lever and passing through the perforation in the stirrup, and a friction dog mounted in the stirrup and clutching the rod, together with a take-up clutch also mounted in the stirrup and clutching the rod, and a spring normally tending to hold said take-up clutch in a fixed position in the stirrup.

8. A tie rod for the brake levers of a fluid pressure brake comprising the combination of a stirrup pivoted to one brake lever at its open end and perforated at the other end, a rod pivoted to the other brake lever and passing through the perforation in the stirrup, and a friction dog mounted in the stirrup and clutching the rod, together with a take-up clutch engaging said rod, within the stirrup and movable thereon toward the closed end of the stirrup, a spring confined between the take-up clutch and the closed end of the stirrup and a lever having a fulcrum on the stirrup at one end connected to said take-up clutch at its other end and having a stationary fulcrum intermediate of its ends whereby any excessive movement of the tie rod beyond the limit permitted by lost motion in the lever system will operate said lever system to move the take up clutch on the rod a distance double the excess of movement of the tie rod.

9. In a fluid pressure brake apparatus, the combination with the usual cylinder, piston and brake levers pivoted to the top rods, of a telescoping tie rod for said brake levers, gripping devices in the telescoping joint which normally permit the tie rod to be shortened, but prevent its being lengthened, and mechanism adapted to be operated by the movement of the tie rod when the piston travel exceeds a predetermined maximum to shorten the tie rod a proportional amount after the brakes have been released, together with elastic means normally holding said telescoping tie rod extended.

10. In a fluid pressure brake apparatus, the combination with the usual cylinder, piston and brake levers pivoted to the top rods, of a telescoping tie rod for said brake levers, gripping devices in the telescoping joint which normally permit the tie rod to be shortened but prevent its being lengthened, and mechanism adapted to be operated by the movement of the tie rod when the piston travel exceeds a predetermined maximum to shorten the tie rod a proportional amount after the brakes have been released, together with elastic means normally said telescoping tie rod extended, said elastic means comprising a spring mounted on one member of the telescoping joint and compressed between the other member of the joint and one of the brake levers.

Signed at New York, N. Y., this 19th day of November, 1906.

A. PARKER-SMITH.

Witnesses:

MANUEL C. LOPEZ,  
M. G. CRAWFORD.