No. 860,236. PATENTED JULY 16, 1907.

A. PARKER-SMITH.

SLACK ADJUSTER.

APPLICATION FILED AUG. 31, 1906.

2 SHEETS—SHEET 1.

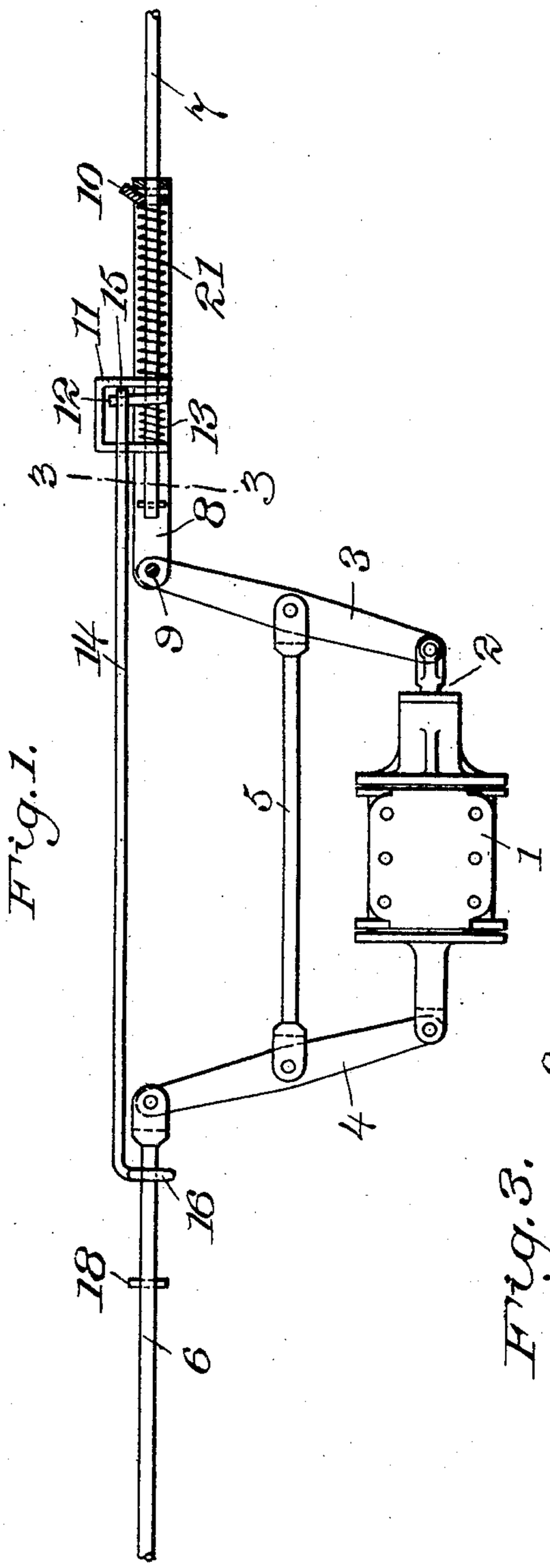

Fig. 1.

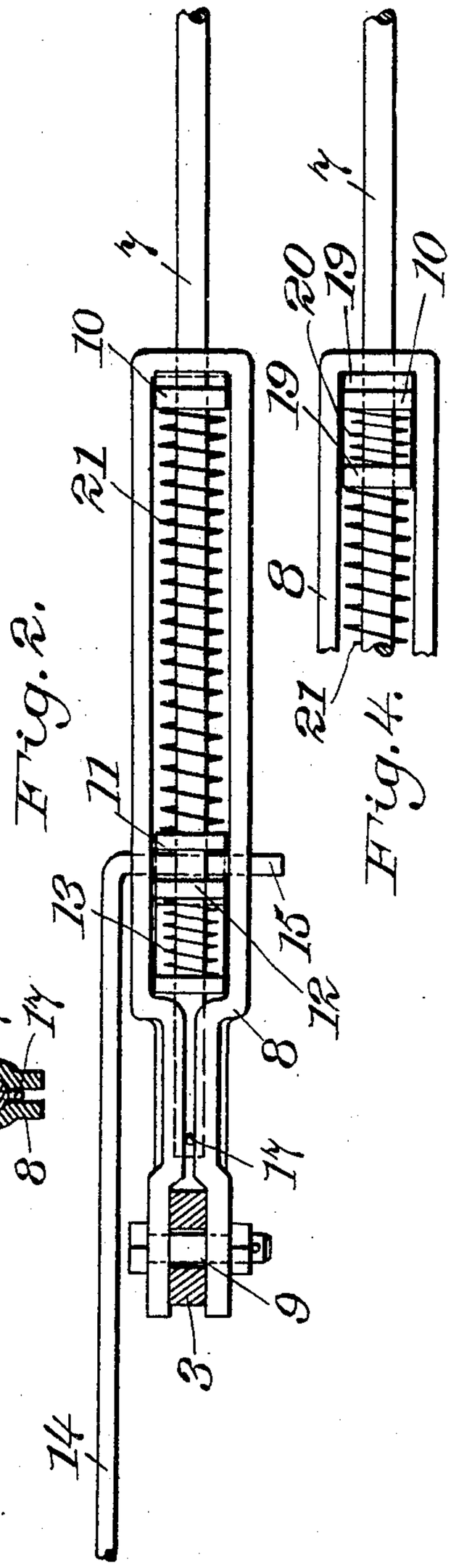

Fig. 2.

Fig. 3.

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5.

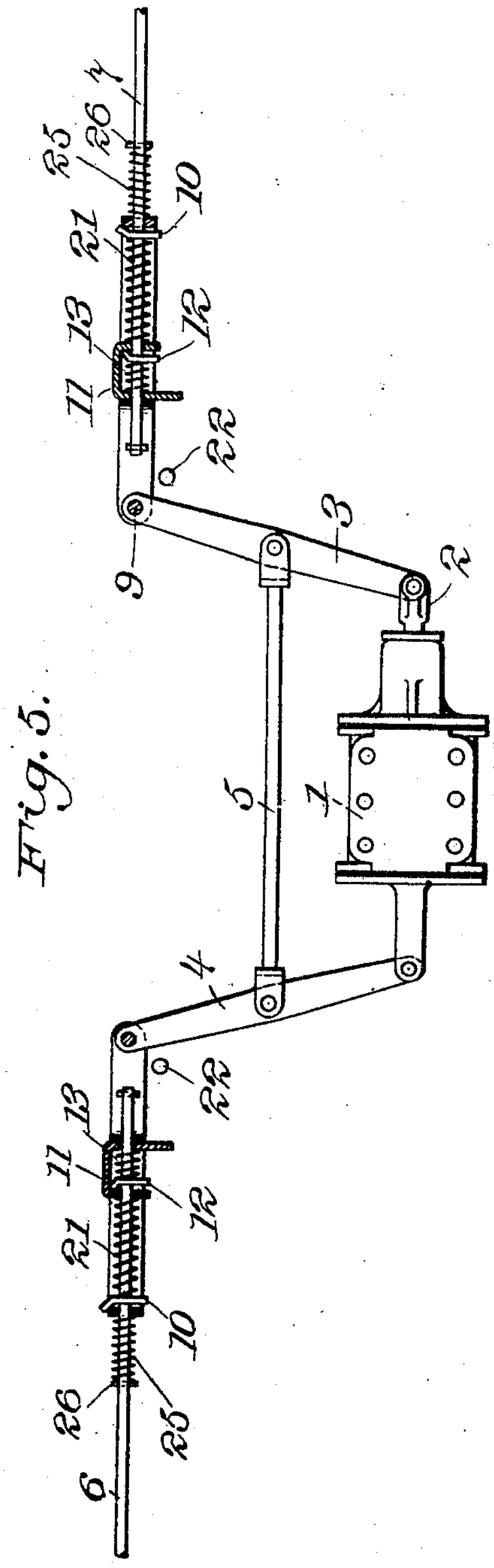
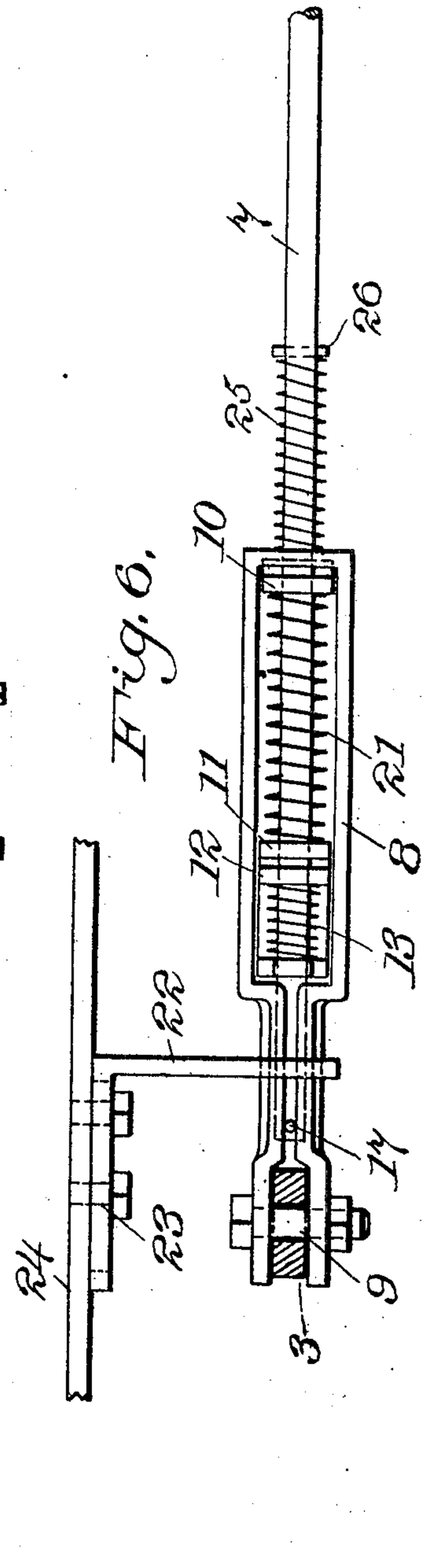


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SLACK-ADJUSTER.

No. 860,236. Specification of Letters Patent. Patented July 16, 1907.

Application filed August 31, 1906. Serial No. 332,792.

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.

The purpose of the invention is to maintain an approximately uniform maximum travel of the piston in the power cylinder of power brake systems, as the brake shoes wear down, or other parts of the brake rigging yield.

The best form of apparatus embodying my invention at present known to me is illustrated in the accompanying two sheets of drawings, together with some modifications.

Figure 1 is a plan view of a brake cylinder with its levers and top rods, with my invention applied thereto. Fig. 2 is a detail side elevation of the take-up and holding mechanism. Fig. 3 is a cross section on line 3—3 of Fig. 1. Fig. 4 is a modification. Fig. 5 shows a modified arrangement in which two take-up and holding devices are used, one on each top rod, and Fig. 6 is an enlarged side elevation of one of them.

Throughout the drawings like reference figures indicate like parts.

1 is the usual brake cylinder, 2 the piston rod, 3 the right hand brake lever, and 4 the left hand brake lever.

5 is the tie-rod, 6 the left hand top rod and 7 the right hand top rod. In my invention one or both of the top rods has a telescoping joint and a gripping device therein, which permits said top rod to be shortened but prevents its being lengthened. Preferably the gripping device is a friction clutch. In Figs. 1 and 2, one top rod 7, is provided with such telescoping joint. Preferably it is composed of a stirrup 8, pivoted to the brake lever 3 at 9, having its outer end perforated for the passage of the top rod, and provided with a holding clutch dog 10. Within the stirrup is a take-up frame 11, containing a second clutch dog 12, and spring 13 for holding the dog up to its work. This take-up frame is mounted and slides on the top rod. A strong take-up spring 21 normally holds the take-up device against the left hand end of the stirrup 8, as clearly shown in Fig. 2, and also serves to hold clutch dog 10 up to its work. The inner portions of the stirrup are curved or fluted in cross section, as shown in Fig. 3, and this forms a pocket or guide for the inner end of the top rod. A pin 17, or other stop, prevents the rod from being withdrawn from the take-up frame in letting out the apparatus.

14 is a reach rod having a bent end 15, which engages the take-up frame and also serves as a fulcrum for the take-up dog 12 therein. The other end of the reach rod has a ring-shaped portion 16, which loosely encircles the top rod 6 and engages the stop 18 thereon whenever the predetermined amount of piston travel is exceeded.

In operation of this form of the invention, the distance between the stop 18 and end 16 of the reach rod determines the maximum piston travel. When these two come together by reason of excessive travel of piston rod 2, it thrusts the reach rod to the right, or holds it against the motion of the take-up frame to the left, with the result in either or both cases that the take-up frame 11 is moved toward the right hand end of stirrup 8, compressing spring 21. When brakes are released, the spring 21 expands and forces take-up frame 11 back to its original position. Take-up dog 12 then pulls the top rod 7 along with it, through holding clutch 10, a distance corresponding to excess of piston travel. The next time brakes are applied, dog 10 holds all that has been taken in and the piston travel will be held down to the predetermined maximum till the further wearing of the brake shoes permits the take-up device to operate again on a heavy application of the brakes.

In case the pressure of spring 21 on holding clutch dog 10 should be too heavy and produce excessive wear of the same or of the top rod, I may use a separate holding clutch frame 19, and light clutch spring 20, as shown in Fig. 4.

In case the taking up of all the slack on one top rod should skew the brake levers too much, a separate take-up and holding device may be used on each top rod, as shown in Figs. 5 and 6. In such case each device would best be operated by a fixed stop 22, 22. These stops should be made adjustable in any convenient manner, as by bolt and slot connection 23 to a fixed plate 24 (see Fig. 6).

Among the advantages of my invention may be mentioned its ease of application to existing brake rigging, no change being necessary other than to cut the top rod and insert the take-up and holding device; the economy in first cost and maintenance; and the non-liability to disablement by ice, rust or dirt. In the preferred form, but one device is needed for each car, thus reducing cost to the lowest point.

Of course other forms of gripping and take-up devices could be substituted for those shown, and other features of constsuction modified without departing from the principle of my invention so long as a telescoping top rod is used.

Usually the binding action of the clutch dogs on the top rod under the pressure of the clutch spring may be relied upon to prevent the rod sliding into the stirrup under the action of the parts in releasing brakes when

no kick springs are used. Especially is this true when the strong take-up spring 21 bears directly on one of the dogs 10, as shown in Figs. 1 and 2. To further guard against such sliding in of the rod when brakes are released, however, I may employ the springs 25, 25, shown in Figs. 5 and 6. These springs are compressed between the outer ends of the stirrups 8, and stops 26, 26, on the top rods. Of course the springs 25 must be less powerful than take-up springs 21, so as not to interfere with the normal action of the latter as hereinbefore described.

Having, therefore, described my invention, I claim:

1. In a fluid pressure brake apparatus comprising the usual cylinder, piston and brake rigging, the combination of a top rod having a telescoping joint, a gripping device in said joint permitting the rod to be shortened, but normally preventing its being lengthened, and apparatus operated by excessive movement of the piston to shorten the effective length of the top rod by taking up the telescoping joint, said apparatus comprising a take-up gripping device on the top rod, a spring normally holding the same a fixed distance from the first gripping device and means operated by the movement of the piston to shift said take-up gripping device and compress said spring.

2. In a fluid pressure brake apparatus comprising the usual cylinder, piston and brake rigging including two top rods, the combination of a telescoping joint in one top rod, a clutch in said joint preventing the extension of the top rod, but permitting its length to be shortened, and a take-up mechanism operated by the relative movement of the two top rods, to take up the telescopic joint when the piston exceeds a predetermined maximum travel, said take-up device comprising a second clutch apparatus, a spring normally holding the same at a fixed distance from the first mentioned clutch, and a rod having a lost motion connection to the other top rod, and extending to the second clutch apparatus.

3. The combination with the cylinder, piston, brake levers and tie rod, of a stirrup pivoted to one brake lever and perforated for the passage of a top rod, a friction dog mounted in the foot of the stirrup and engaging the top rod, a take-up clutch also mounted in the stirrup and engaging the top rod, a spring normally holding the take-up clutch a fixed distance from the foot of the stirrup, and a reach rod connected to the take-up clutch and having a lost motion connection with the other top rod.

4. The combination with the cylinder, piston, brake levers, and tie rod, of a stirrup pivoted to one brake lever and perforated for the passage of a top rod, a friction dog mounted in the foot of the stirrup and engaging the top rod, a take-up clutch also mounted in the stirrup and engaging the top rod, a spring normally holding the take-up clutch a fixed distance from the foot of the stirrup, and a reach rod connected to the take-up clutch and having a lost motion connection with the other top rod, together with a second weaker spring compressed between the outer end of the stirrup and a stop on the top rod.

Signed at New York, N. Y., this 30 day of August, 1906.

AUGUSTUS PARKER-SMITH.

Witnesses:
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