

No. 713,757.

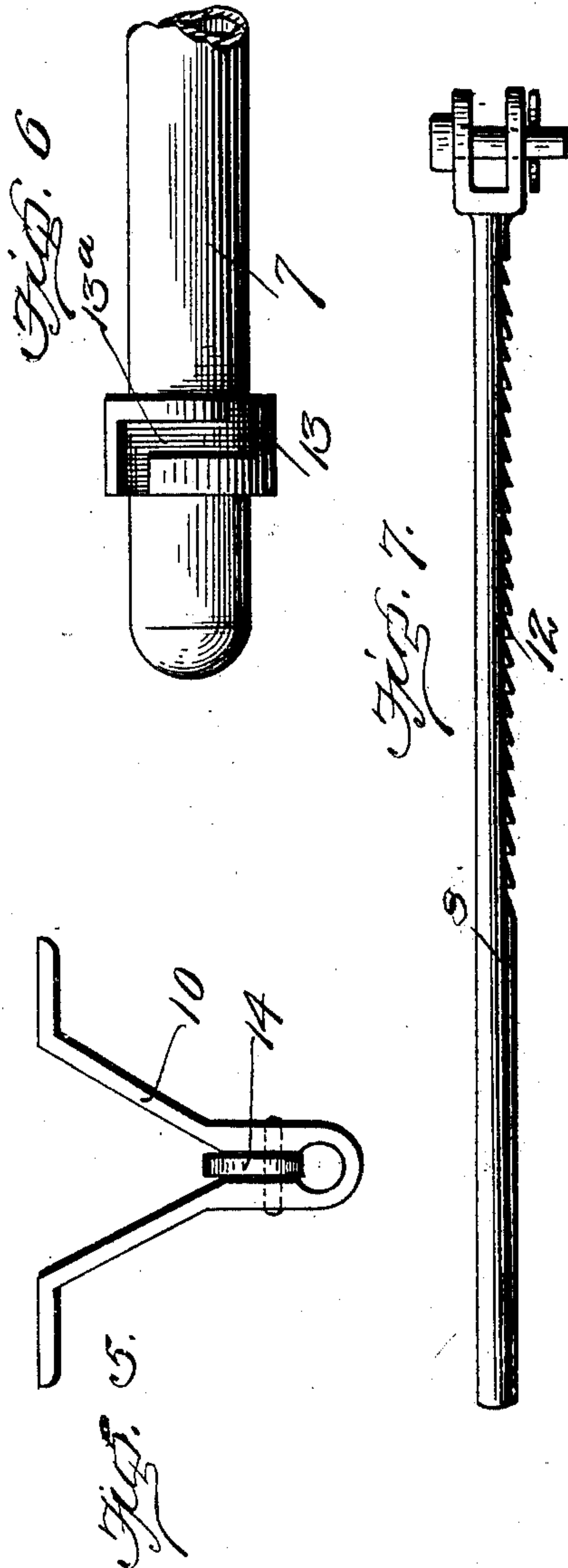
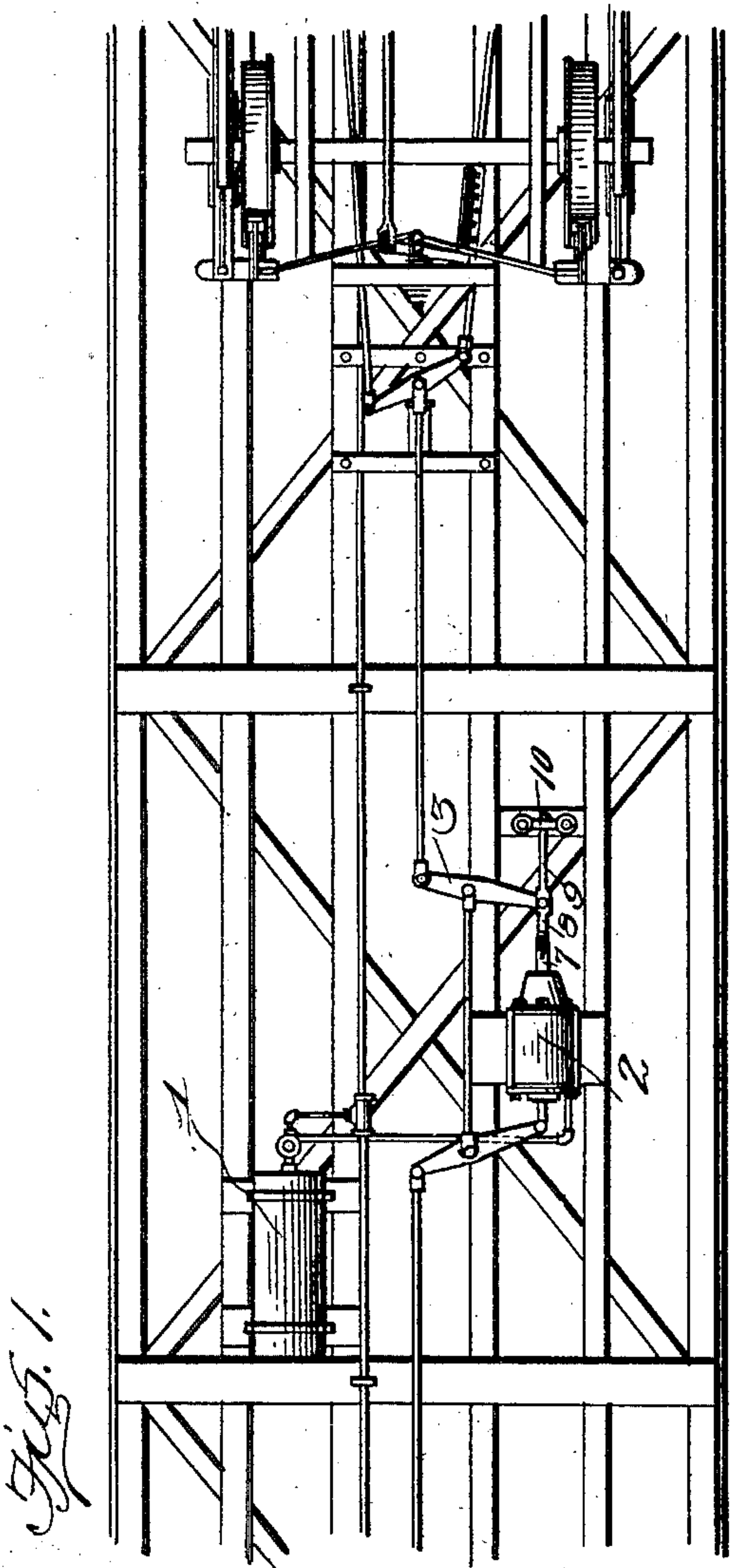
Patented Nov. 18, 1902.

C. J. FISHER.
AUTOMATIC BRAKE ADJUSTER.

(Application filed June 18, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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2 Sheets—Sheet 2.

Fig. 2.

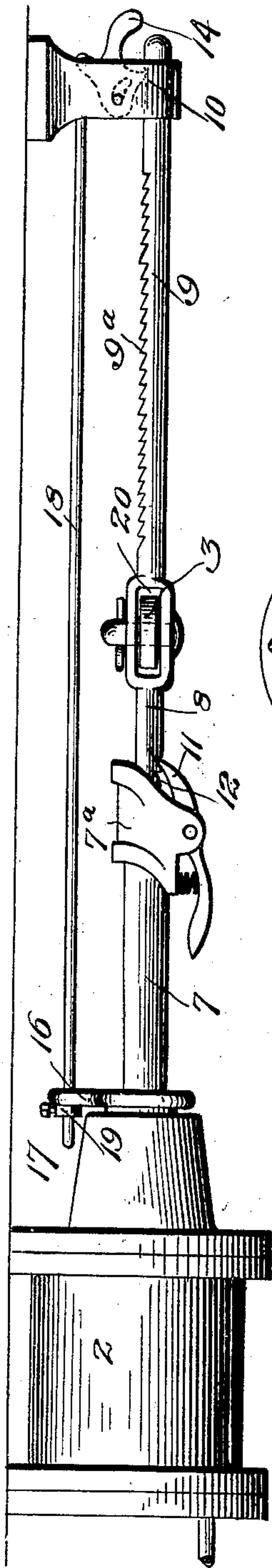


Fig. 4.

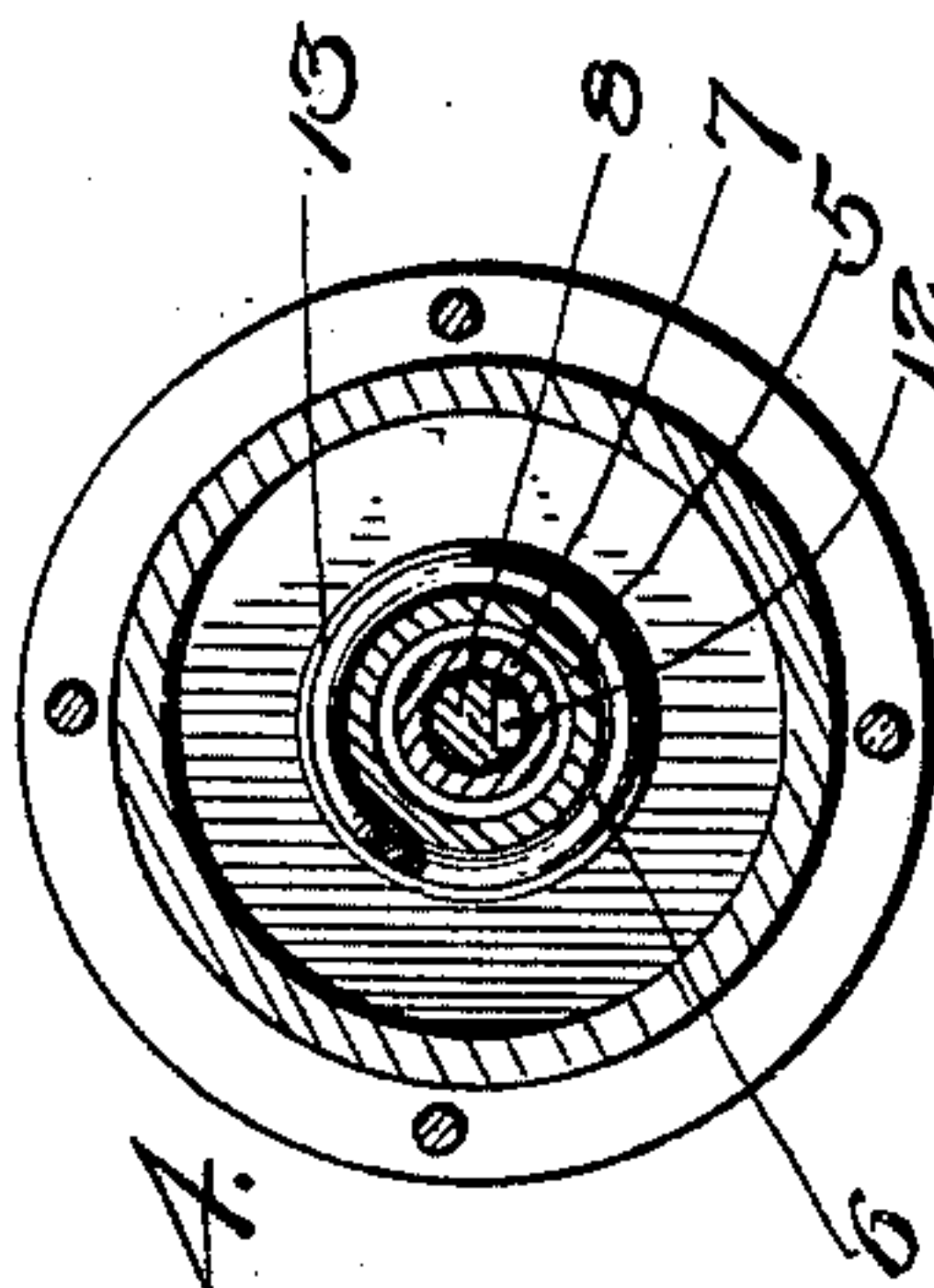
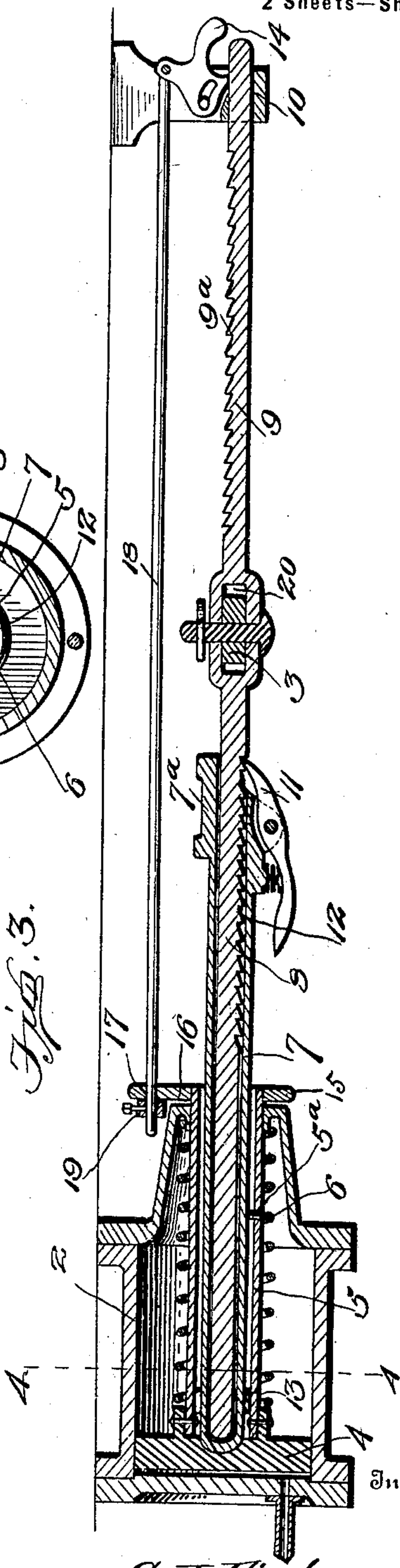


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES J. FISHER, OF MURPHYSBORO, ILLINOIS.

AUTOMATIC BRAKE-ADJUSTER.

SPECIFICATION forming part of Letters Patent No. 713,757, dated November 18, 1902.

Application filed June 19, 1902. Serial No. 112,320. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. FISHER, a citizen of the United States, residing at Murphysboro, in the county of Jackson and State of Illinois, have invented certain new and useful Improvements in Automatic Brake-Adjusters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in brake-adjusters, and is designed to automatically compensate for the wear upon brake-shoes of air-braking mechanisms by taking up the slack produced by such wear upon the push-bar of said mechanism.

Another object is to provide a device of this character whereby a positive and yielding force may be applied when the brakes are operated and that slack in all the working parts will be taken up.

A further object is to construct such a device which shall be simple of construction, durable in use, and comparatively inexpensive of production.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts which will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a bottom plan view of a portion of an air-brake equipment of a passenger-car, showing the application of the invention. Fig. 2 is a side view of the device. Fig. 3 is a longitudinal vertical sectional view of the same. Fig. 4 is a vertical cross-section on the line 4-4 of Fig. 3. Fig. 5 is a detail view of the guide-bracket. Fig. 6 is a detail side view of the inner end of the push-rod casing, and Fig. 7 is a side view of another form of push-rod.

In the drawings, 1 denotes the auxiliary reservoir, 2 the brake-cylinder, and 3 the cylinder-lever. These parts may be of any approved construction.

4 denotes the piston, having riveted there-to a hollow piston-rod 5. 6 denotes the release-spring coiled around the hollow piston-rod between the piston and the cylinder-head.

7 denotes a sleeve or casing in which is

adapted to slide a push-bar 8, to which is pivoted the cylinder-lever 3. These parts are adapted to be forced outward upon application of air to the cylinder. The push-bar 8 is formed with an extension 9, which is adapted to slide in and be guided by a bracket or hanger 10, fixed to the under side of the car. The portion of the push-bar which enters the sleeve 7 is provided on its lower side with a row of beveled ratchet-teeth 12, and the open end of said sleeve is provided with a head 7^a, in which is pivoted a spring-actuated take-up pawl 11, which is adapted to engage the ratchet-teeth 12. The sleeve 7 is also provided near its inner end with a collar 13, the purpose of which will hereinafter appear. The extension 9 of the push-bar has formed on its upper side a series of ratchet-teeth 9^a, which are adapted to be engaged by a weighted retaining catch or pawl 14, pivoted to the bracket or hanger 10, the said pawl being loosely pivoted to the bracket 10 by means of a pin-and-slot connection, as shown.

15 denotes a head fixed to the outer end of the hollow piston-rod and provided with an upwardly-projecting arm 16, provided with a passage or opening 17, through which is adapted to pass a releasing-rod 18, pivotally connected at one end to the weighted retaining catch or pawl 14, and is provided near its other end with an adjustable collar 19.

The push-bar 8 is provided midway its length with an enlargement in which is formed a slot 20, and in said slot is adapted to be pivoted one end of the cylinder-lever 3.

The hollow piston-rod 5 is provided with an inwardly-projecting piston travel pin or lug 5^a, which is adapted to engage the collar 13 when the piston is forced inwardly by the release-spring and to carry said sleeve along with the piston, the pivoted pawl 11 sliding loosely over the teeth 12 of the push-bar until the piston is all the way in, at which time the arm 16 on the head 15 will strike the collar 19 on the release-rod 18 and will cause said rod to release the retaining-catch 14 from engagement with the teeth on the extension of the push-bar and allow said bar to move back with its casing to the position formerly occupied by said casing within the hollow piston-rod.

The loose pin-and-slot connection by which

the retaining-pawl 14 is connected to the hanger 10 is for the purpose of permitting the arm 16 to readily release the said pawl by allowing the brake to recede a sufficient distance to relieve the brake-shoes of intense pressure, which, from the brake-shoes, is thrown on the push-bar.

The retaining catch or pawl is intended for use on brakes equipped with quick-release springs on brake-beams, which cause the push-bar to return so fast that the take-up pawl 11 cannot gain time enough to take up slack; but by the use of the retaining-pawl the push-bar is held until the piston returns and takes up slack.

The collar 13 on the inner end of the sleeve or casing 7 is provided with a slot 13^a, shaped substantially as shown in Fig. 6 of the drawings, so that when it is desired to entirely withdraw or to insert the sleeve or push-rod casing 7 into the hollow piston-rod 5 and past the pin 5^a the said sleeve is turned to bring one of the open ends of the slot 13^a into line with the pin, when the sleeve may be manipulated to move the same past the pin 5^a and out of or into the hollow piston-rod, as the case may be.

In Fig. 7 of the drawings I have illustrated a different form of push-rod which is to be used in place of the push-rod shown in the other figures and is for use on freight-car and engine-tender brake equipments.

It will be understood that my device is equally applicable to hand-brake mechanism, as in all cars and tenders having hand-brake rod connected to cylinder-lever next to the push-bar it is impossible to apply hand-brakes without taking up all slack just as perfectly as by air application.

In operation when air is admitted to the brake-cylinder the piston will force the push-rod casing and the push-rod outwardly until the brake-shoes are firmly applied. When the air in the cylinder is discharged, the piston will be forced back by the release-spring, while the push-rod and its casing will be held stationary either by the retaining-pawl as used in connection with quick-release springs or by the friction of the rod and levers when using ordinary braking equipment until the piston recedes far enough for the pin on the piston-rod to engage the collar on the push-rod casing, when the said casing will be carried back by the said pin, the take-up pawl playing loosely over the teeth of said push-bar until the piston is clear back, at which position all the slack will have been taken up.

In all brakes not provided with quick-release springs of some kind it will take a pull of from fifty to one hundred pounds on the push-bar to move them. Therefore as it only requires ten pounds pull to move the push-rod casing back it will readily be seen that the pawl will slip back over the teeth of the push-bar without moving the same. When the cylinder is in full release, the push-bar

will settle back to its normal position by the motion of the car.

The distance between the collar on the push-rod casing and the pin on the hollow cylinder-rod equals the constant and predetermined piston travel.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of the invention will be readily understood without requiring an extended explanation.

Various changes in the form, proportion, and details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a braking mechanism, the combination with a braking-cylinder, of a piston carrying a hollow piston-rod, a sleeve or push-rod casing adapted to slide within said hollow piston, a pin fixed to said hollow piston-rod and adapted to engage a collar on said push-rod casing to actuate the same, a push-rod pivotally connected to the cylinder-lever of an air-braking mechanism and provided with one or more series of ratchet-teeth and being adapted to slide within said push-rod casing, one or more take-up pawls carried by said push-rod casing and adapted to engage the teeth on said push-rod to actuate the same, means for retaining and holding said push-rod in an extended position, and means for automatically releasing the same, substantially as set forth.

2. In a braking mechanism, the combination with a braking-cylinder, of a piston carrying a hollow piston-rod, a sleeve or push-rod casing adapted to slide within said hollow piston, a pin fixed to said hollow piston-rod and adapted to engage a collar on said push-rod casing to actuate the same, a push-rod pivotally connected to the cylinder-lever of an air-braking mechanism and provided with one or more series of ratchet-teeth and being adapted to slide within said push-rod casing, one or more take-up pawls carried by said push-rod casing and adapted to engage the teeth on said push-rod to actuate the same, a toothed extension carried by said push-bar and adapted to slide in a guide bracket or hanger, a pivoted retaining-pawl adapted to engage said toothed extension, and means for releasing said pawl from engagement with said toothed extension, substantially as set forth.

3. In a braking mechanism, the combination with a braking-cylinder, of a piston carrying a hollow piston-rod, a sleeve or push-rod casing adapted to slide within said hollow piston, a pin fixed to said hollow piston-rod and adapted to engage a collar on said push-rod casing to actuate the same, a push-

rod pivotally connected to the cylinder-le-
ver of an air-braking mechanism and pro-
vided with one or more series of ratchet-
teeth and being adapted to slide within said
5 push-rod casing, one or more take-up pawls
carried by said push-rod casing and adapted
to engage the teeth on said push-rod to actu-
ate the same, a toothed extension carried by
said push-bar and adapted to slide in a guide
10 bracket or hanger, a pivoted retaining-pawl
adapted to engage said toothed extension, a
releasing-rod pivotally connected to said re-
taining-pawl, and an adjustable collar car-
ried by said releasing-rod, an arm fixed on

the outer end of the hollow cylinder-rod and 15
adapted to have a sliding engagement with
said releasing-rod and to contact with said
adjustable collar to actuate said releasing-
rod to trip said retaining-pawl and release
said push-rod, substantially as set forth. 20

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

CHARLES J. FISHER.

Witnesses:

H. A. SMITH,
DAVID STEVENSON.