

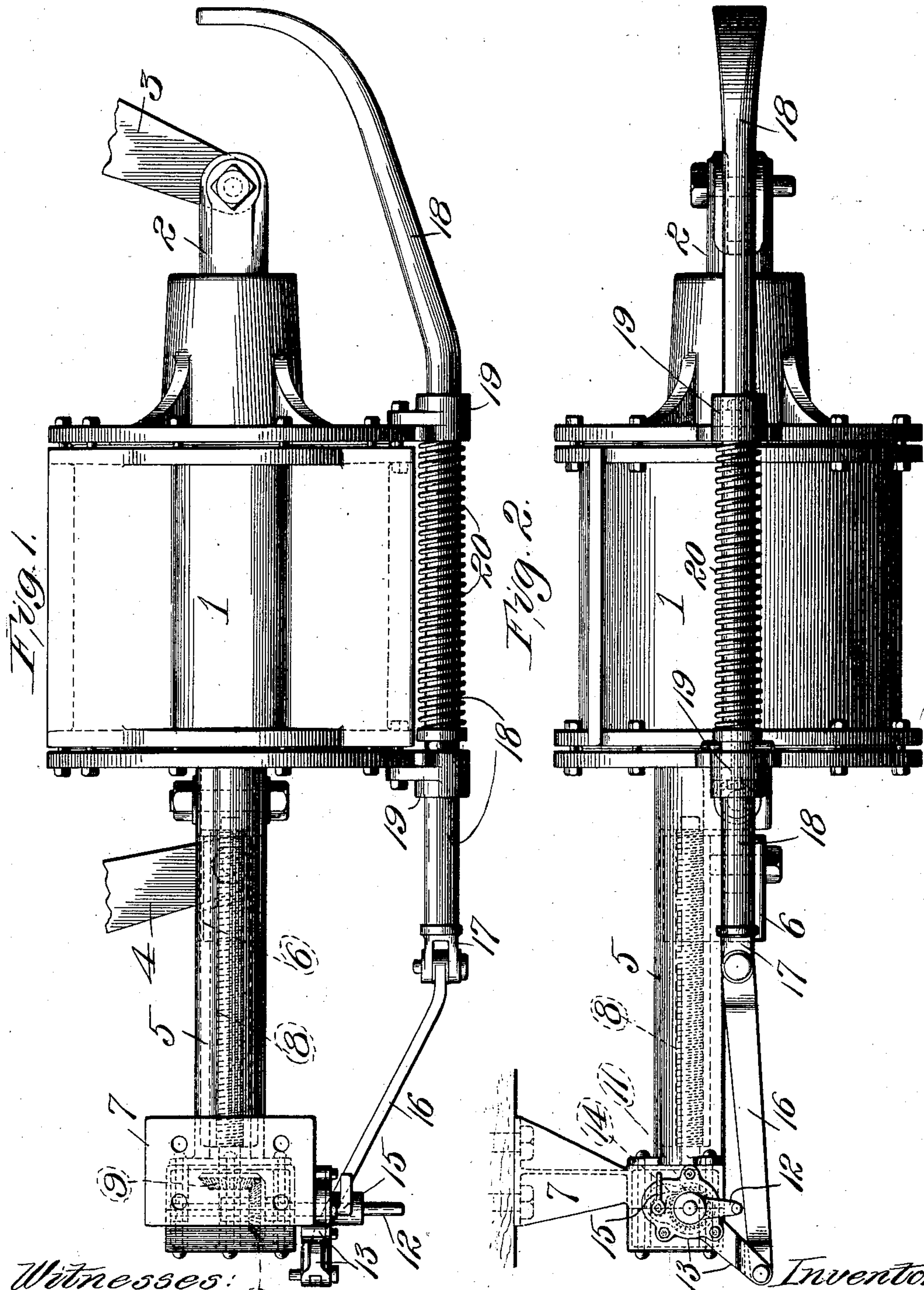
No. 753,648.

PATENTED MAR. 1, 1904.

J. C. WANDS.  
AIR BRAKE CONTROLLER.  
APPLICATION FILED OCT. 21, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:

*Wm. H. Cott*

*G. A. Pennington*

Inventor:

*John C. Wands,*  
*by Bakewell Cornwall*  
*Attys.*



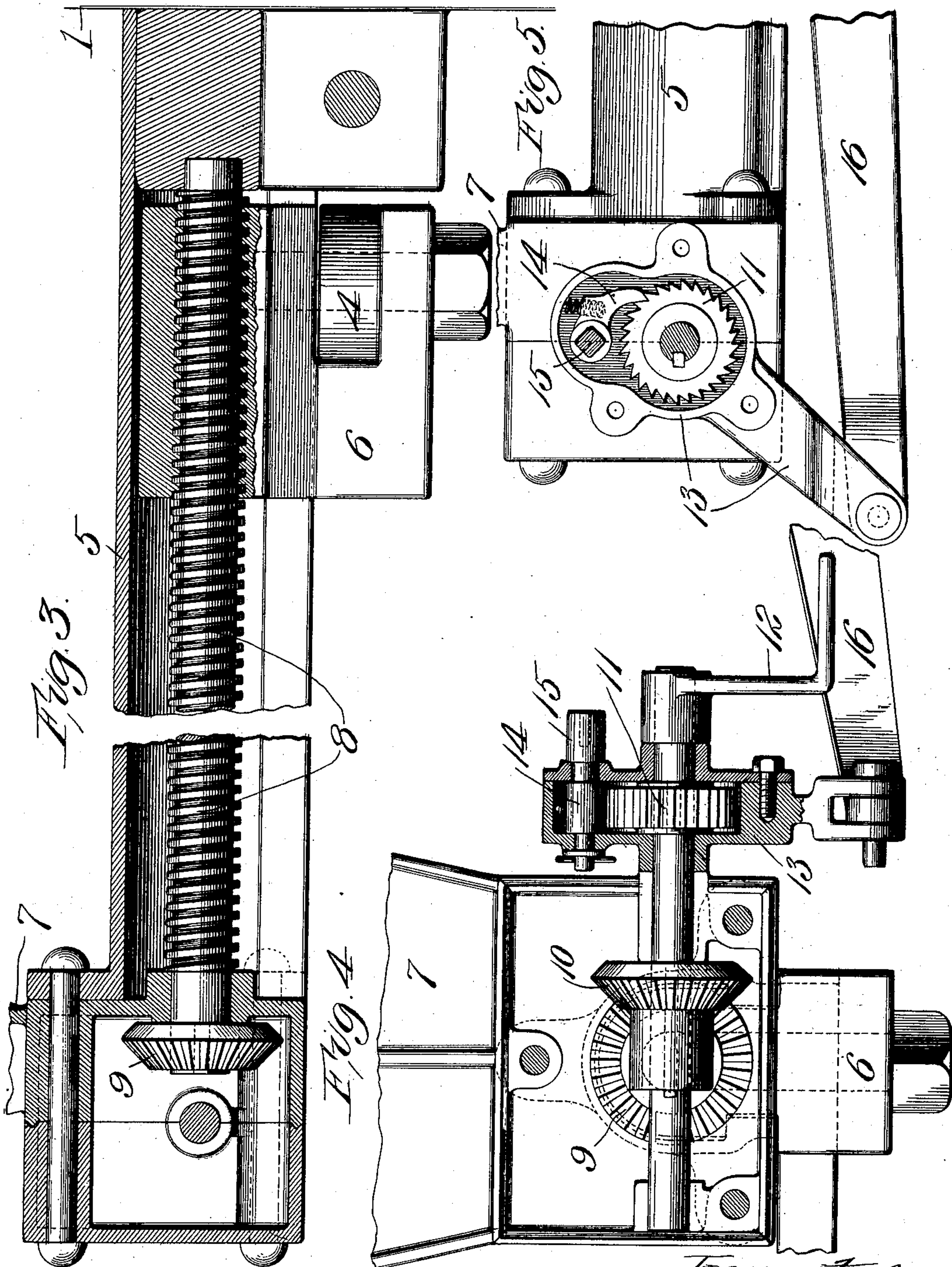
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4 SHEETS—SHEET 2.



Witnesses:  
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Inventor:  
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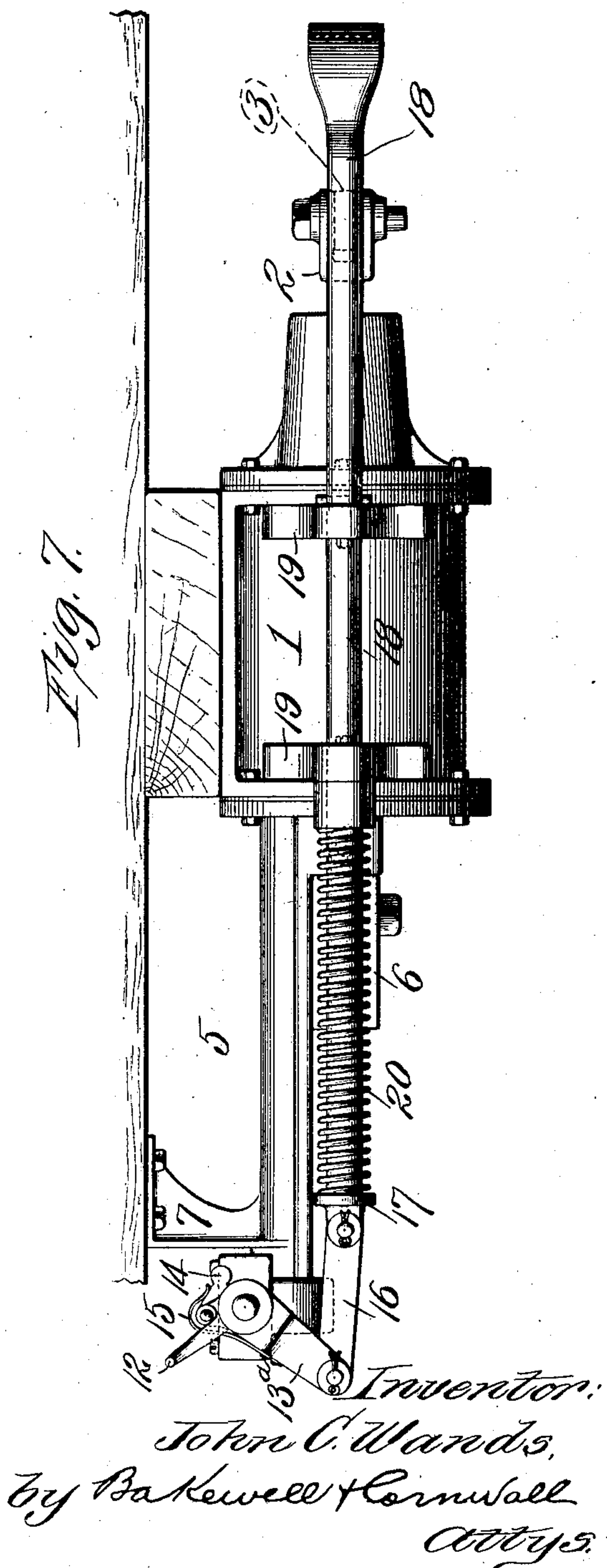
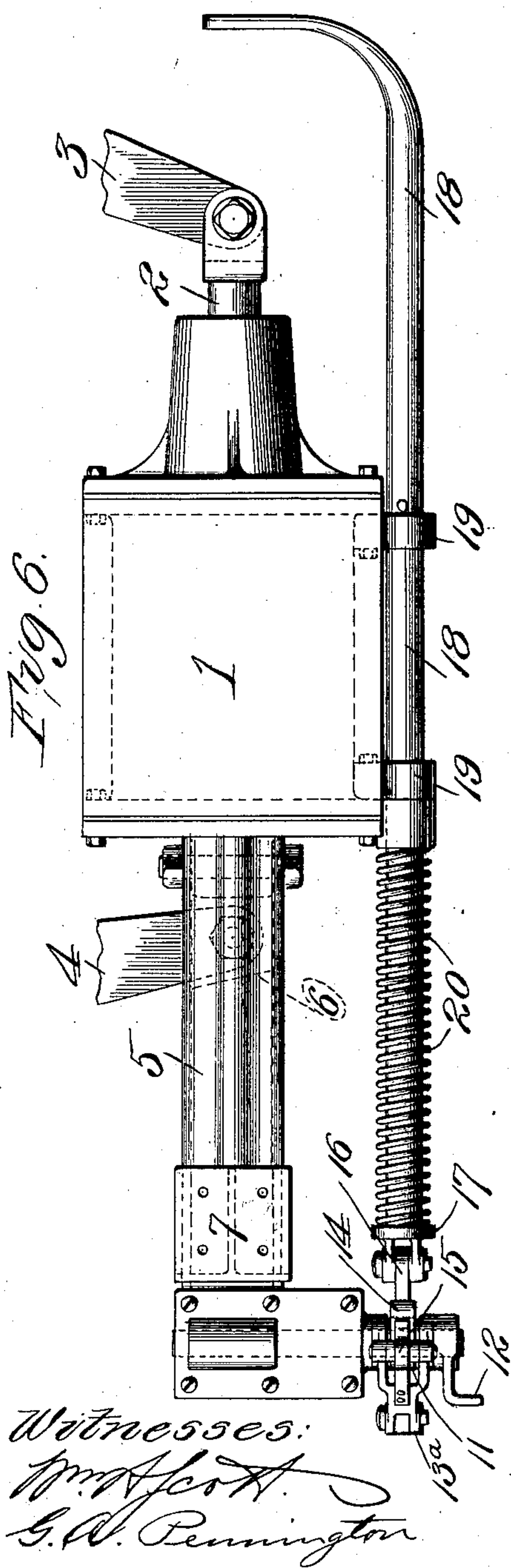
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4 SHEETS—SHEET 3.





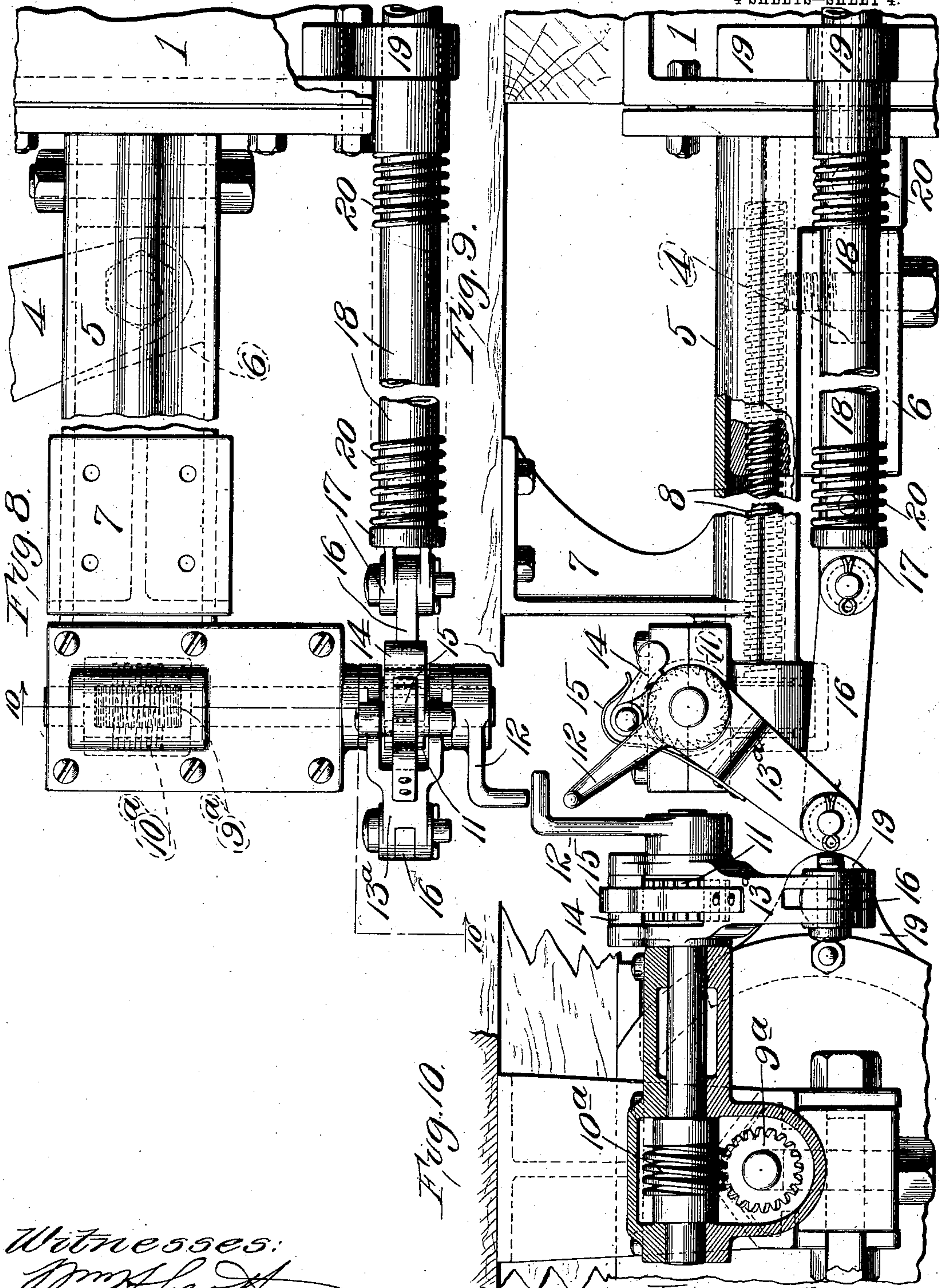
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NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN C. WANDS, OF ST. LOUIS, MISSOURI.

## AIR-BRAKE CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 753,648, dated March 1, 1904.

Application filed October 21, 1903. Serial No. 177,902. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. WANDS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Air-Brake Controllers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of an air-brake cylinder, showing my improved controller in position thereon. Fig. 2 is a side elevational view of the same. Fig. 3 is an enlarged sectional view of the controlling device, parts thereof being broken away. Fig. 4 is an end elevational view, partly in section, of the controlling mechanism. Fig. 5 is a side elevational view. Fig. 6 is a top plan view of an air-brake cylinder, showing a modified form of my improved controller. Fig. 7 is a side elevational view of the same. Fig. 8 is an enlarged top plan view of the controller device, parts thereof being broken away. Fig. 9 is a side elevational view, partly in section, of the modified form of controller; and Fig. 10 is a sectional view on line 5 5 of Fig. 8.

This invention relates to a new and useful improvement in air-brake controllers, the object being to take up the wear on the brake-shoes, so that the braking power of the cylinder will be effective. This is accomplished by adjusting the fulcrum of the cylinder-lever, which fulcrum is movable with respect to the cylinder, its movement being controlled by mechanism located in part in the path of the piston, whereby when the piston exceeds its normal stroke devices will be set in operation to cause the travel of a fulcrum-block for the cylinder-lever, which fulcrum-block is mounted in suitable ways.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will be hereinafter described, and afterward pointed out in the claims.

In the drawings, 1 indicates the brake-cylinder; 2, the piston-rod; 3, the piston-lever, and 4 the cylinder-lever, all of said parts being of usual construction.

5 indicates a casting secured to the rear cylinder-head, which casting forms a housing and provides a way in which the fulcrum-block 6 of the cylinder-lever is mounted. The outer end of this casting may be supported by a bracket 7, bolted to the underframing of the car.

8 indicates a rod having a threaded connection with the fulcrum-block 6, said rod being mounted at its inner end in a suitable socket-bearing, whereby upon the rotation of the rod in the proper direction the fulcrum-block will be adjusted outwardly from the cylinder, so as to change the relation between levers 3 and 4, this changed relation taking up the wear of the brake-shoes. So far as the movable fulcrum-block and the threaded rod for operating the same is concerned this is shown in a former United States patent, No. 680,091, granted to me August 6, 1901, and my present invention relates particularly to improved means for rotating this threaded rod, whereby I am enabled to dispense with the cables shown in my former patent.

Referring to the construction shown in Figs. 1 to 5, inclusive, the outer end of the threaded rod has mounted thereon a miter-gear 9, with which coöperates a miter-gear 10, arranged on a shaft mounted in suitable bearings provided by the casting 5 and extends practically at right angles to the screw 8.

11 indicates a ratchet-wheel fixed on the shaft of miter 10, and 12 indicates a handle secured to the extremity of said shaft.

13 indicates an arm in the form of a housing loosely mounted on the shaft and inclosing the ratchet 11. This housing carries a pawl 14, which is preferably spring-pressed to hold it in operative position, the stem extending outside the housing, whereby the pawl may be disengaged from this ratchet when it is desired to manually rotate the screw-threaded rod 8 by means of the handle 12.



To the lower end of the housing 13 is connected a link 16, whose other end is connected to a casting 17, inserted in the rear end of a pipe 18. This pipe is loosely mounted in bearings 5 19, secured to the cylinder 1, preferably by means of the same bolts which secure the cylinder-heads in position. The pipe 18 is surrounded by a compression-spring 20, interposed between a fixed collar thereon and one 10 of the bearings 19. The forward end of the pipe 18 is flattened and bent inwardly in the path of the piston 2.

In operation the parts are set originally as shown in Fig. 1, wherein the fulcrum-block 15 is adjusted close to the cylinder. In applying the brakes the piston 2 in practice has an outward movement of about six inches, and if in service this movement is not exhausted the piston will not operate the controlling devices. 20 However, should this movement be exceeded by the piston it will contact with the bent end of pipe 18 and move said pipe longitudinally its bearings. As soon as the pipe is released, as when pressure is exhausted from behind 25 the piston and the piston returns, the spring 20 exerts its power to force the pipe to its normal position. We will assume that the piston 2 comes in contact with the bent end of pipe 18 and moves the same forward. By the 30 link connection with the housing 13 said housing is rotated on its shaft, and if the movement is sufficient the pawl 14 will ride over one or more teeth of the ratchet 11. When the pipe 18 is released, the spring 20 restores 35 the same to its normal position, and in so doing through the medium of the pawl 14 forces the ratchet-wheel 11 to make a partial revolution, which is communicated through the gearing 9 and 10 to the threaded rod 8. By 40 reason of the threaded connection between this rod 8 and the fulcrum-block it will be seen that the rotation of rod 8 will move the block outwardly. This movement of the block in an outward direction is of course comparatively slight at each operation, but is repeated 45 as often as the piston 2 exceeds its movement. It will be noticed that the pitch of the threads on rod 8 will not permit the power applied to the fulcrum-block 6 to reversely rotate the 50 ratchet 11, and therefore it is possible to utilize this period of time when the brakes are applied in causing the pawl 14 to take a new bite on the ratchet in readiness to move the parts when the brakes are released.

55 In the event that it is desired to restore the fulcrum-block to its inner position—as, for instance, when new brake-shoes are applied—it is only necessary to raise the pawl 14 out of engagement with the ratchet 11 and through 60 the handle 12 rotate the rod 8 in the opposite direction.

In Figs. 6 to 10, inclusive, I have shown a modified form of controlling device in which instead of using miter-gears for transmitting

65 motion to the threaded rod I employ a worm-gear 9<sup>a</sup> on the end of said rod, which meshes with a worm 10<sup>a</sup>, arranged on the shaft carrying the ratchet 11. The pawl 14, cooperating with this ratchet, is weighted and carried 70 by a bifurcated arm 13<sup>a</sup>. The spring 20 in the modified form is located at the rear end of pipe 18 instead of opposite the cylinder in the preferred construction, and the bearings 19 are arranged to cooperate with the heads 75 of the cylinder instead of against the cylinder.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made 80 and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters 85 Patent, is—

1. In an air-brake controller, the combination with a fulcrum-block, of a brake-lever mounted therein, gearing for moving said fulcrum-block, a pawl-and-ratchet mechanism 90 for driving said gearing, and means controlled by the excessive movement of the piston for operating said pawl-and-ratchet mechanism; substantially as described.

2. In an air-brake controller, the combination with a movable fulcrum-block, of a brake-lever 95 mounted therein, a pawl-and-ratchet mechanism for effecting a movement of the fulcrum-block, a rod operated by the excess travel of the piston for operating said pawl-and-ratchet mechanism, and a spring on said 100 rod which becomes effective to restore the parts to normal position and whose power moves the fulcrum-block when the rod is released by the piston; substantially as described. 105

3. In an air-brake controller, the combination with a brake-cylinder, of bearings secured in position thereon by the same bolts which are employed for holding the cylinder-heads in position, a rod mounted in said bearing 110 and carrying a part in the path of movement of the piston whereby, when the piston exceeds its movement said rod will be actuated, a spring on said rod for restoring the same to normal position, a pawl-and-ratchet mechanism 115 operated by said rod, gearing operated by the pawl-and-ratchet mechanism, a fulcrum-block movable by said gearing, and a brake-lever mounted in said fulcrum-block; substantially as described. 120

4. In an air-brake controller, the combination with a brake-cylinder and its piston, a cylinder-head, bolts for securing the cylinder-heads in position, bearings secured on the brake-cylinder by said bolts, a rod movable 125 in said bearings and carrying a part in the path of movement of said piston, whereby, when the piston exceeds its ordinary length of



travel it will engage and operate said rod, a  
spring on said rod for restoring it to normal  
position, a movable fulcrum-block, a brake-  
lever pivoted in said fulcrum-block, and con-  
5 nection between said rod and fulcrum-block  
whereby the latter is moved; substantially as  
described.

In testimony whereof I hereunto affix my  
signature, in the presence of two witnesses,  
this 22d day of September, 1903.

JOHN C. WANDS.

Witnesses:

F. R. CORNWALL,  
GEORGE BAKEWELL.