

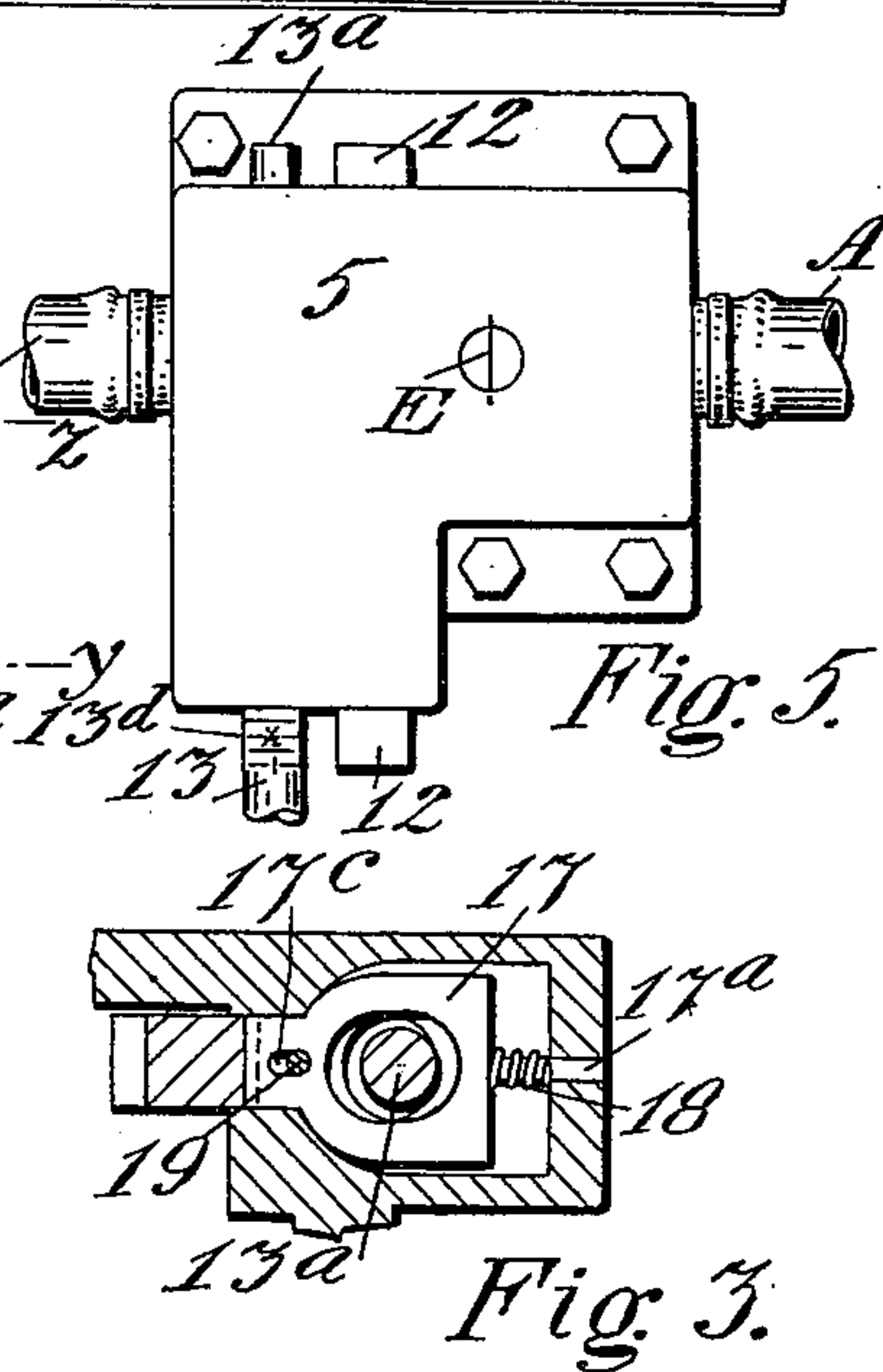
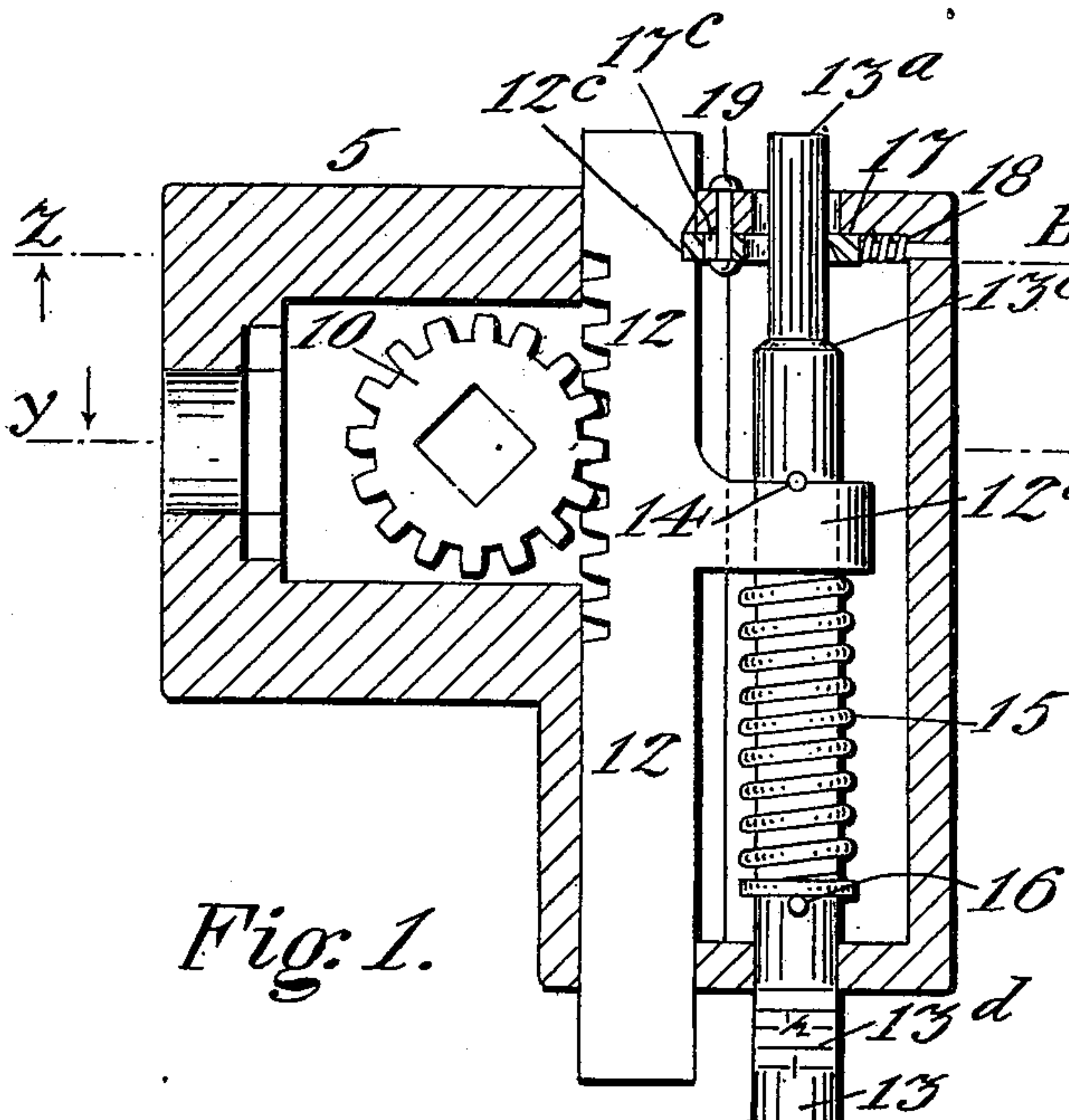
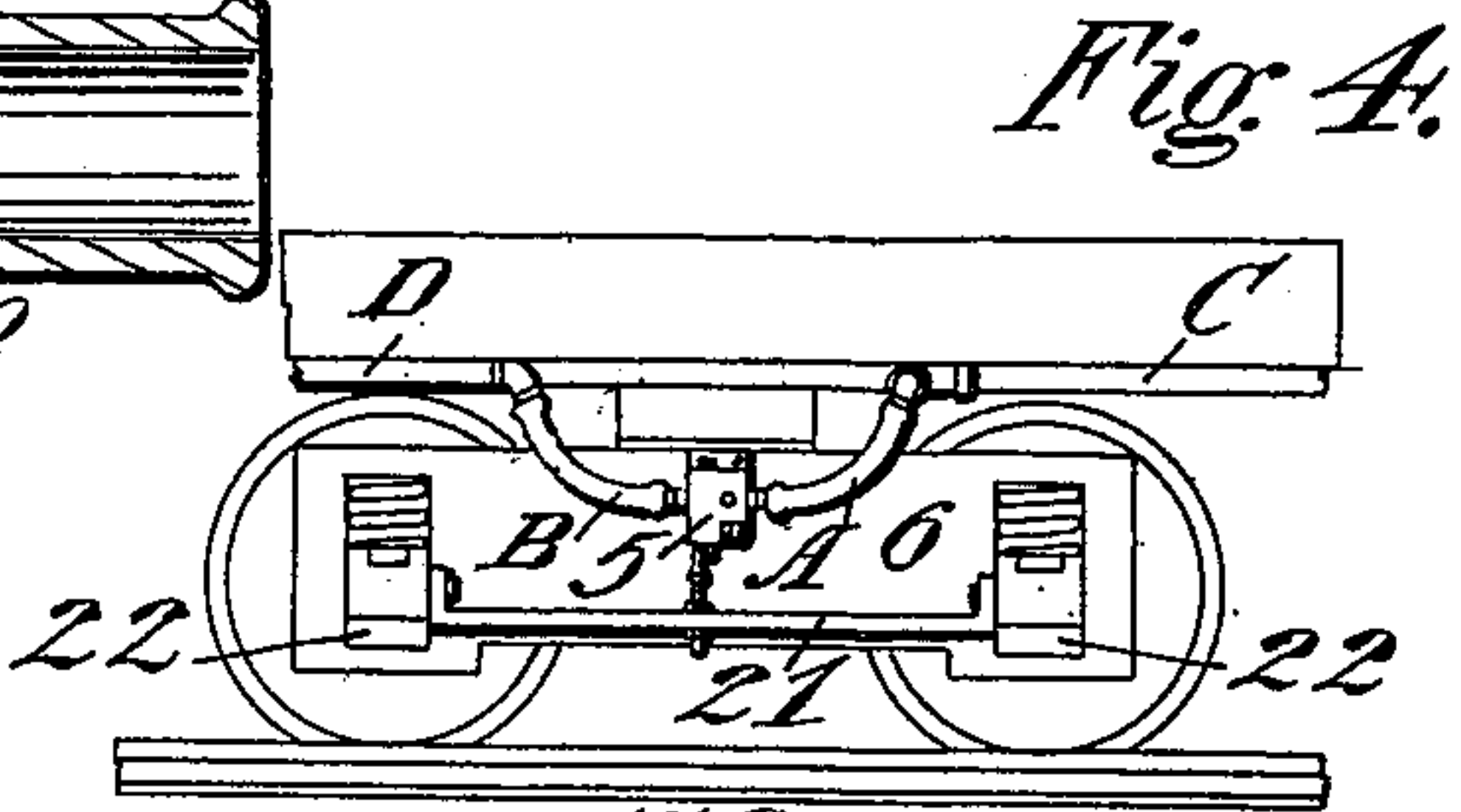
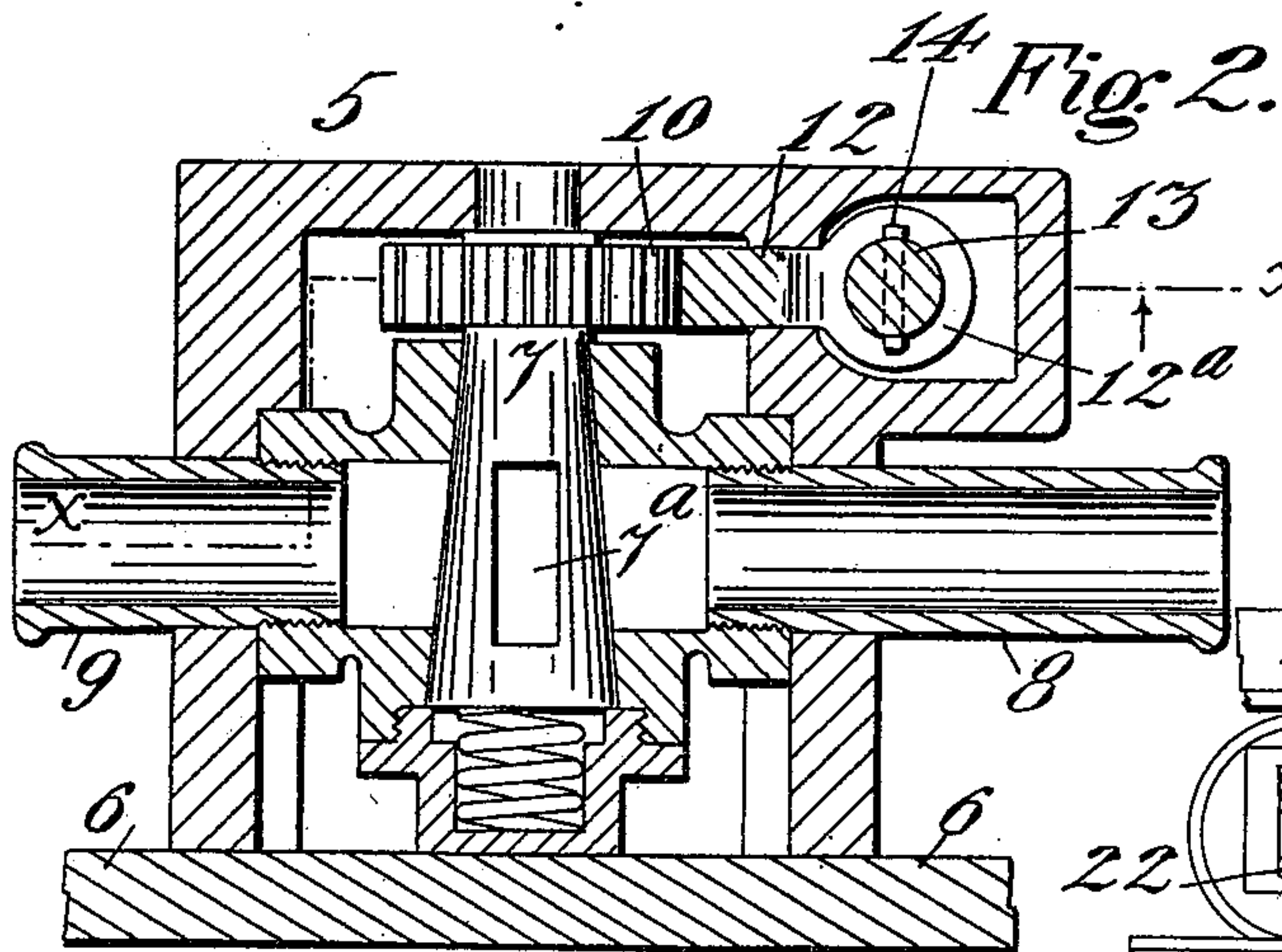
No. 671,911.

Patented Apr. 9, 1901.

W. H. SAUVAGE.  
VALVE OPERATING MECHANISM.

(Application filed June 5, 1900.)

(No Model.)



Witnesses,  
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# UNITED STATES PATENT OFFICE.

WILLIAM HENRY SAUVAGE, OF DENVER, COLORADO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE SAUVAGE DUPLEX AIR BRAKE COMPANY, OF SAME PLACE.

## VALVE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 671,911, dated April 9, 1901.

Application filed June 5, 1900. Serial No. 19,187. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HENRY SAUVAGE, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Valve-Operating Mechanism; 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in valve-operating mechanism; and it consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a vertical section taken through the valve-casing on the line X X, Fig. 2. Fig. 2 is a horizontal section taken on the line Y Y, Fig. 1. Fig. 3 is a fragmentary view taken on the line Z Z, Fig. 1. Fig. 4 is a side elevation of a car-truck, illustrating the use of my improved valve-operating mechanism. Fig. 5 is a side elevation of the valve-casing viewed in the direction opposite Fig. 1 and shown on a smaller scale.

As shown in the drawings, the valve-casing 5 is mounted on a vertically-movable spring-supported metal car-truck 6. In this casing is journaled the conical valve 7, having an opening 7<sup>a</sup>, arranged to register with the ports 8 and 9 of the valve-chamber when the valve is open. To one extremity of the valve is made fast a pinion 10, whose cogs mesh with the cogs of a vertical rack 12, passing through openings in the top and bottom of the casing. This rack is provided with a horizontal apertured lug or eye 12<sup>a</sup>, through which passes a vertical rod 13, provided with a stop-pin 14, which engages the top of the lug 12<sup>a</sup>. Below this lug a spring 15 is coiled around the rod, its lower extremity engaging a stop 16 on the rod. The rod 13 passes through top and bottom openings formed in the casing. The upper extremity 13<sup>a</sup> of the rod is reduced in size and passes through an opening formed in a

latch or dog 17. This opening in the latch is sufficiently large to allow the latter to move back and forth to engage and disengage a notch or recess 12<sup>c</sup>, formed in the rack 12. The opening in the latch is beveled on one side, and the rod 13 is provided with a beveled shoulder 13<sup>c</sup>, arranged to engage the bevel of the latch and open the latter when the valve-casing is depressed sufficiently to bring the latch into operative engagement with the shoulder of the rod. The latch 17 is provided with a stem 17<sup>a</sup>, which passes through an opening formed in the valve-casing. Surrounding this stem, between the casing and the body of the latch, is a spring 18, whose tendency is to hold the latch in the locking position—that is to say, in engagement with the notch or recess 12<sup>c</sup> of the cogged rack. The latch is provided with a slot 17<sup>c</sup>, through which passes a pin 19, fast on the casing. This pin limits the movement of the latch. The lower extremity of the rod 13 protrudes from the casing 5 and is provided with a threaded extension 20, which passes through a plain or unthreaded opening formed in a bar 21, mounted on a relatively stationary support. As shown in the drawings, this bar 21 is secured to the journal-boxes 22 of the car-axles, whereby it remains stationary while the truck-frame vibrates vertically. This extension is connected with the rod 13 by a joint 23, which allows sufficient movement to compensate for the unevenness of the track-surface. A nut 24 is applied to the threaded extension 20 on opposite sides of the bar 21, whereby the position of the rod 13 may be adjusted vertically, whereby the movement of the casing 5 before bringing the latch into operative engagement with the shoulder 13<sup>c</sup> of the rod may be greater or less, as desired.

When my improved valve-operating mechanism is used, as shown in the drawings, the operation is as follows: As the weight of the load on a car depresses the spring-supported car-body and truck-frame the valve-casing 5 is carried downwardly with the truck-frame, imparting a corresponding movement to the rack 13, since the latter is locked on the casing by the latch 17. When this downward movement is sufficient to bring the shoulder 13<sup>c</sup> of the rod 13 into engagement with the



latch 17, the latter is disengaged from the rack and the recoil of the compressed spring 15 moves the rack 12 upwardly sufficiently to open the valve. As shown in the drawings, 5 (see Fig. 4,) hose-pipe sections A and B connect pipes C and D on the car with the ports 8 and 9 of the valve-casing. Hence as the valve is opened the air is allowed to pass therethrough to auxiliary brake mechanism 10 (not shown) mounted on the car and arranged to be utilized as an extra braking force when the car is loaded. This mechanism is covered by another application, filed June 5, 1900, Serial No. 19,186.

15 It must be understood, however, that I do not limit the invention to the use herein shown and described, since it may be employed in any relation where its function is required.

The rod 13 adjacent the lower part of the casing 5 is provided with a graduated part 13<sup>d</sup> to facilitate the accurate adjustment of the rod for any desired car capacity or for varying loads.

25 The exposed extremity of the valve-stem (see Fig. 5) is provided with a mark E to indicate from the outside the position of the valve. When this mark occupies a certain position, as the vertical, for instance, (shown in the drawings,) it will be understood that 30 the valve is closed.

My improved construction prevents the movement and consequent wear of the valve incident to the vibration of the car-body and truck-frame while the car is running empty 35 or only partially loaded.

It will be observed that no movement is imparted to the valve until the car has been loaded to the required capacity, after which the rack is released from the casing and allowed to move sufficiently to open the valve 40 in response to the recoil of the spring. The length of the cog portion of the rack below the valve when the latter is closed is only sufficient to allow the opening of the valve, 45 after which, if the car-body moves farther downwardly, the spring 15 will yield, but the valve will not be moved.

The matter claimed in this application is also shown, but not broadly claimed, in my 50 application entitled "Air-brake mechanism," filed June 5, 1900, Serial No. 19,186.

Having thus described my invention, what I claim is—

1. In a valve-operating mechanism, the 55 combination of a valve mounted on a suitable support, a pinion fast on the valve, a rack engaging the pinion, means for locking the rack on the casing, a rod located in proximity to the rack, a spring surrounding the rod and engaging a projection on the rack, the rod being 60 provided with a stop which engages the lug opposite the spring whose opposite extremity also engages the stop on the rod, one of the said parts being mounted on a support stationary 65 with reference to the other part, the arrangement being such that when the one part is moved a predetermined distance, the rod en-

gages the locking device and releases the rack from the casing allowing the spring to act on the rack and operate the valve. 70

2. The combination of a casing, a valve located therein, a pinion fast on the valve, a rack engaging the pinion and provided with an apertured projection, a spring-held latch 75 mounted on the casing and arranged to engage a recess in the rack whereby the latter is locked on the casing, a rod passing through the lug of the rack and through an opening in the latch, the rod and the latch being so constructed that the rod will unlock the latch 80 when the casing is moved a predetermined distance, a stop fast on the rod and engaging the lug of the rack on one side, a spring surrounding the rod and engaging the lug of the rack on the opposite side, the opposite ex- 85 tremity of the spring engaging a stop on the rod, the valve-casing being movable and the rod being mounted on a relatively stationary support.

3. The combination of a casing mounted on 90 a movable support, a valve located in the casing, a rod mounted on a stationary support and projecting into the casing, and a spring-actuated connection between the valve and the rod, said connection being normally locked 95 to move with the casing, the arrangement being such that when the casing is moved a predetermined distance, the spring-actuated connection is released and the valve automatically opened. 100

4. The combination of a movable casing, a valve, a pinion fast on the valve, a rack engaging the pinion, means for locking the rack on the casing, and means mounted on a support stationary with reference to the valve- 105 casing, for unlocking the rack and causing the latter to operate the valve when the casing is moved a predetermined distance.

5. The combination of a movable casing, a valve, a pinion fast on the valve, a rack engaging the pinion, means for locking the rack on the casing, and adjustable means mounted on a support stationary with reference to the casing for unlocking the rack and causing 110 the latter to operate the valve, when the casing is moved a predetermined distance. 115

6. The combination of a casing mounted on a movable support, a valve located in the casing, a rod mounted on a stationary support and projecting into the casing, and an oper- 120 ating connection between the valve and the rod, said connection being normally locked to move with the casing, the arrangement being such that when the casing is moved a predetermined distance, the operating connection 125 is released from the casing and acts on the valve to open the latter.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HENRY SAUVAGE.

Witnesses:

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GRACE MYTINGER.