

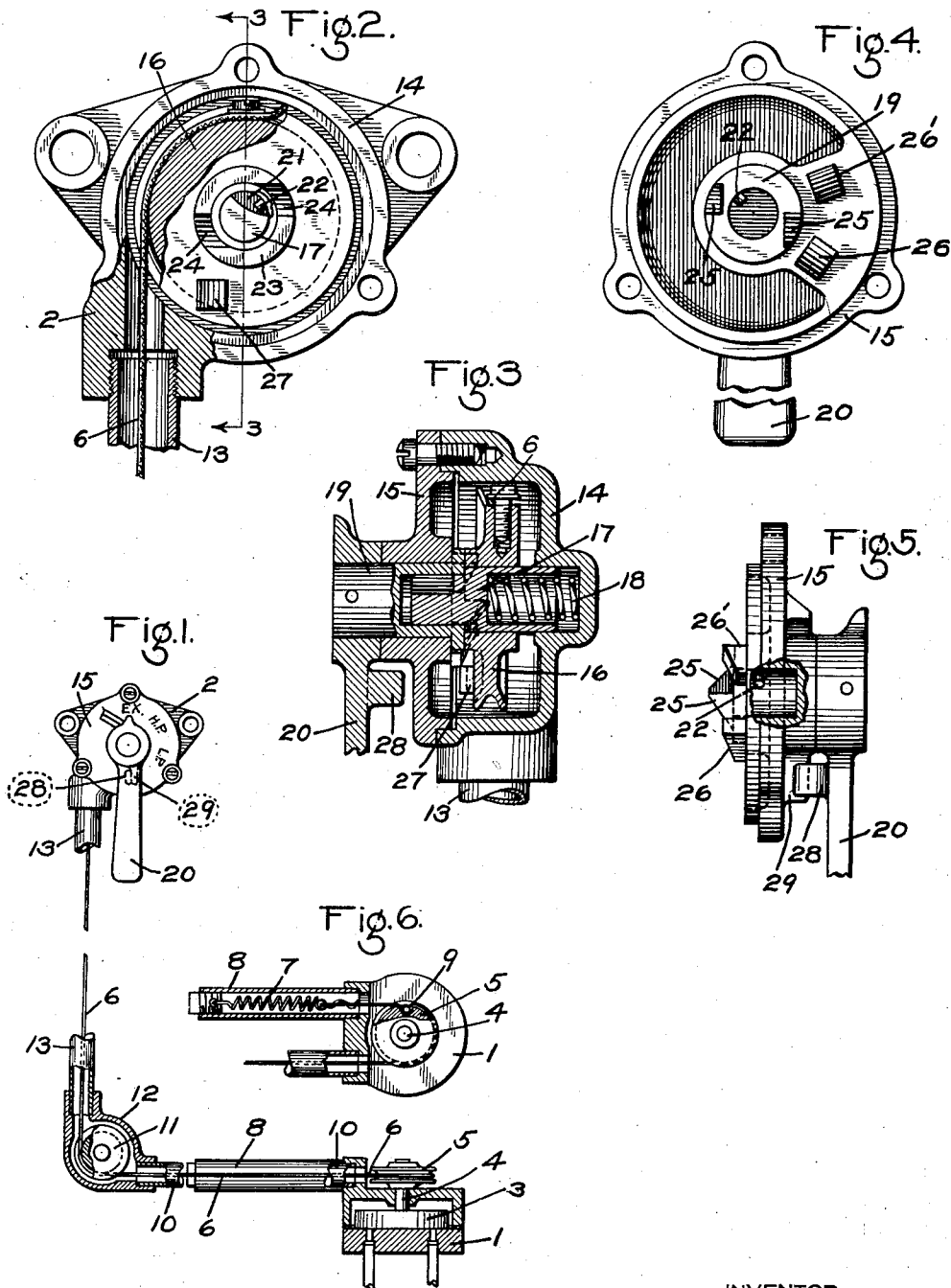
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FLUID PRESSURE BRAKE

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FLUID-PRESSURE BRAKE.

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This invention relates to valve operating devices, and more particularly where the valve is to be operated from a remote point.

With the present railway fluid pressure brake equipment, it is usual to provide a pressure retaining valve device which is located at the end and near the top of the car, so that the valve may readily be operated by the brakeman to either retain pressure in the brake cylinder to permit the full release of the brakes, or in some cases to vary the rate of blow down and consequently the time of release of the brakes.

With the above arrangement, there is always a possibility of leakage, due to a break in the pipe connecting the brake cylinder with the retaining valve device. In order to reduce the possibility of leakage, it has been proposed to install the retaining valve device close to the brake cylinder and then employ an operating means whereby the valve may be operated from the top of the car.

The principal object of my invention is to provide an improved operating means for operating a valve disposed at a remote point, such as the retaining valve above described.

In the accompanying drawing; Fig. 1 is a diagrammatic view, partly in section, of controlling mechanism associated with a brake release controlling valve device and embodying my invention; Fig. 2 a face view of the handle portion of the construction shown in Fig. 1, with the cover plate removed; Fig. 3 a section on the line 3—3 of Fig. 2; Fig. 4 a plan view of one of the casing sections of the handle portion; Fig. 5 a side elevation of the casing section shown in Fig. 4; and Fig. 6 a plan view of that portion of the controlling mechanism which is associated with the brake release valve device.

As shown in Fig. 1, a brake release valve device 1 is provided, which for the purpose of illustrating an application of my invention, may have three positions, a release or exhaust position, a high pressure position, and a low pressure position.

The valve device 1 may be located underneath the car and adjacent to the brake cylinder and is operable by a handle device 2 which may be located at the end and near the top of the car. The valve device 1 may include a rotary slide valve 3 having a stem 4 and secured to said stem is a pulley 5. An operating cable 6 is applied to the pulley and one end of the cable is connected to a coil spring 7 contained in a pipe section 8. At a point 9, the cable 6 is secured to the pulley, and after making a half turn on the pulley, the cable is carried through a section of pipe 10 to a pulley 11 which is mounted in a casing 12 secured to the end of the car. From the pulley 11, the cable extends vertically upward through a section of pipe 13 to the handle 2.

The handle device 2 may comprise a casing 14 having a cover plate 15 and mounted in the casing 14 is a pulley 16 to which one end of the cable 6 is secured. The pulley 16 is secured to a stub shaft 17 having a bearing at one end in the casing 14 and having a central bore for receiving a coil spring 18 which engages the casing 14.

Mounted in a central bore of the cover plate 14 is a stub shaft 19 having a handle 20 secured to one end and having a central bore at the other end adapted to receive one end of the stub shaft 17.

The end of the stub shaft 17 which extends into the stub shaft 19 has a portion cut away to form a recess 21 and into said recess extends a pin 22 which is carried by the stub shaft 19.

The hub 23 of the pulley 16 is provided with oppositely disposed notches 24 and the end of the stub shaft 19 is provided with oppositely disposed teeth 25 adapted to engage in the notches 24.

The cover plate 15 is provided with two teeth 26 and 26' and the pulley 16 with a tooth 27 adapted to coact with the teeth 26, 26'. In the exhaust position, a lug 28 carried by the handle 20 is adapted to engage a stop lug 29 carried by the cover plate 15, so that counter-clockwise movement of the

handle from the exhaust position is prevented.

In the exhaust position of the handle 20 the teeth 25 of the stub shaft 19 engage in the notches 24 of the pulley 16, so that counter-clockwise movement of the pulley is prevented and the valve 3 is consequently held in the exhaust position by the cable 6 and the spring 7.

If it is desired to turn the valve 3 to another position, such as the high pressure position, the handle 20 is moved in a clockwise direction, and the pulley 16 is rotated in the same direction by the engagement of the teeth 25 in the notches 24. During this movement the inclined face of the tooth 27 engages the inclined face of the tooth 26 carried by the cover plate 15 and as the rotation proceeds, the pulley 16 and the stub shaft 17 are forced axially to the right, as viewed in Fig. 3, compressing the spring 18. The tooth 27 is thus caused to ride over the top of the tooth 26. This movement of the stub shaft 17 also causes the notches 24 to move away from the teeth 25 but not sufficiently to permit complete disengagement of the teeth with the notches. As soon as the crest of the tooth 27 passes over the crest of the tooth 26, the stub shaft 17 and the pulley 16 are snapped back, so that the teeth 26 and 27 are interlocked to provide a stop for preventing counter-clockwise movement of the pulley 16, when the handle 20 is released. The above movement of the pulley 16 causes the cable 6 to be pulled, so that the pulley 5 is rotated in a clockwise direction and the valve 3 is turned to its high pressure position. If it is desired to move the valve 3 to its low pressure position, the handle 20 is turned from the position marked "H. P." in Fig. 1 toward the position marked "L. P.". During this movement the tooth 27 is rotated with the pulley 16 until the inclined face thereof engages the inclined face of the tooth 26' on the cover plate 15. The continued rotation of the handle 20 then causes the tooth 27 to ride over the tooth 26', so that the tooth 27 will engage the back of the tooth 26' to form a stop. The handle 20 is now in the low pressure position, and the engagement of the teeth 27 and 26' prevent counter-clockwise movement of the pulley 16.

When the handle 20 is moved from the low pressure position in a counter-clockwise direction, the stub shaft 19 is rotated and causes the inclined faces of teeth 25 to ride on the inclined faces of the notches 24 so as to cause a rearward movement of the pulley 16 and the stub shaft 17 until the crest of the tooth 26' rides over the crest of tooth 27. The teeth 25 still maintain partial engagement with the notches 24 and after the tooth 26' has passed the tooth 27, the pulley 16 and the stub shaft 17 move back so that

the teeth 25 fully engage in the notches 24. The handle may now be rotated in a counter-clockwise direction to the high pressure position, in which, if desired, the parts may be held by the engagement of the tooth 26 with the tooth 27. If it is desired to move the parts back to exhaust position, the handle 20 is turned from the high pressure position, and the tooth 26 is released from engagement with the tooth 27, by the movement of the pulley 16 to the rear, due to the action of the teeth 25 in the notches 24.

In the exhaust position, the parts are prevented from a further counter-clockwise movement by the engagement of the lug 28 with the lug 29. The pin 22 is provided and engages the recess 21 so that in assembling the parts, they can only be assembled in the proper relation.

It will now be seen that with the above described construction, the handle 20 may be turned in either direction of rotation to any one of the operating positions and when the handle is released the parts will be held in this position, merely by the movement of the handle, and without having to separately operate a locking device for that purpose, such as a pawl or the like.

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

1. The combination with a handle and a rotatable axially yielding member operable by said handle, of a fixed stop, a stop carried by said member for engaging said fixed stop, and means operable by the movement of said handle in either direction of rotation for moving said member axially to thereby release one stop from engagement with the other stop.

2. The combination with a handle and a rotatable axially yielding member operable by said handle, of a fixed stop, a stop carried by said member for engaging said fixed stop, means operable by the movement of the handle in one direction of rotation for moving said member axially to thereby release one stop from engagement with the other stop, and means operable by the movement of the handle in the opposite direction for also moving said member axially.

3. The combination with a rotatable and axially movable member and a handle for rotating said member, of notches in said member, teeth associated with said handle and adapted to engage in said notches, whereby rotation of said handle in one direction rotates said member and rotation in the opposite direction causes an axial movement of said member, a fixed tooth, a tooth carried by said member and adapted to engage the fixed tooth, whereby rotation of said member in one direction is prevented, and rotation of said member in the opposite

direction causes an axial movement of said member.

4. The combination with a handle and a rotatable laterally shiftable member adapted to be rotated by said handle, of a holding means for preventing rotation of said member in one direction and adapted to be re-

leased upon a lateral movement of said member, and means operative upon rotation of said handle in either direction for shifting said member laterally.

In testimony whereof I have hereunto set my hand.

CLYDE C. FARMER.