Feb. 24, 1942. C. A. CAMPBELL 2,274,318

AIR BRAKE

Filed June 21, 1940

Fig. 1

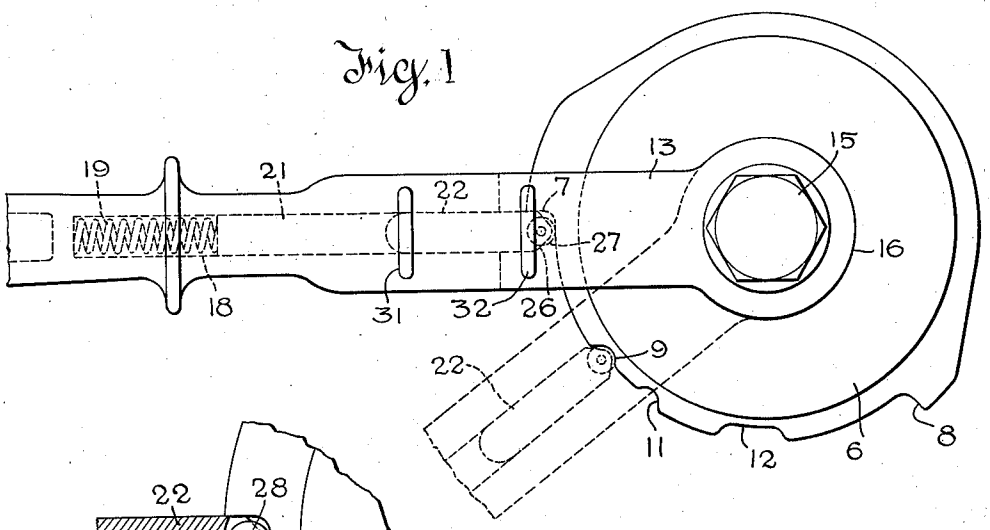


Fig. 2

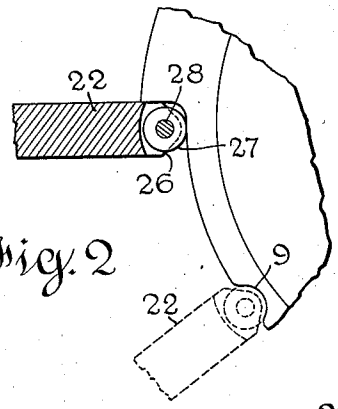


Fig. 3

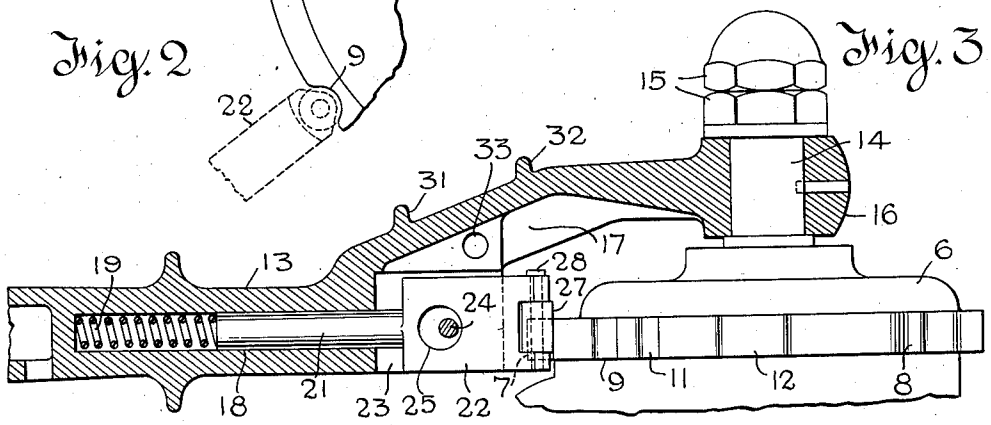


Fig. 4

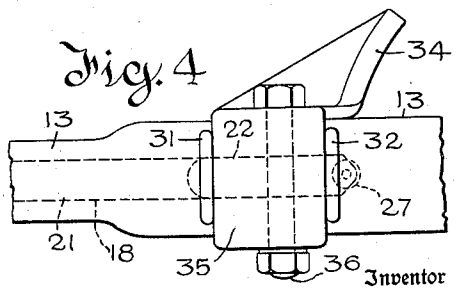
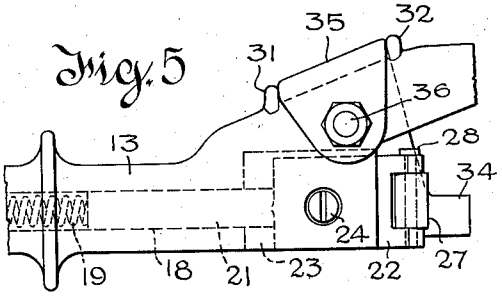


Fig. 5



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2,274,318

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Application June 21, 1940, Serial No. 341,772

2 Claims. (Cl. 303—56)

This invention relates to air brakes and particularly to engineer's brake valves, such for example as the well known H–6 valve. These and other similar valves are equipped with a latch sector having motion limiting stop shoulders at opposite ends of the sector and impositive detents at appropriate points between the ends of the sector. Thousands of these valves are in use and it is impossible to redesign the sectors.

Efforts have been made to use a latch having a roller nose which cooperates with the sector. This permits freer action, but roller latches heretofore used have been discarded because the pintle on which the roller is mounted soon becomes bent. I have discovered that this is caused by collision of the roller with the limiting stop shoulders of the sector, and has nothing to do with the ordinary detent action of the roller.

Another disadvantage of prior art latches was that the latch nose was eccentric with reference to the guide in which the latch nose was mounted. This caused cramping and is avoided in the new latch.

The present invention produces a new handle with a new type of latch having a roller nose. The latch head and the nose are so coordinated in form and dimension that the roller exclusively coacts with the impositive detents on the sector, and the latch head so shrouds the roller that the latch head itself engages the end stops of the sector and prevents engagement of the roller therewith. Consequently the pintle for the roller is never over-stressed and a successful roller latch nose is made available for the first time.

The preferred embodiment of the invention will now be described by reference to the accompanying drawing, in which:

Figure 1 is a plan view of an engineer's brake valve handle and latch sector with the handle in full release position, that is with the latch head against one of the end limiting stops. The running position of the handle, in which the roller on the latch head engages one of the impositive detent notches, is shown in dotted lines.

Fig. 2 is an enlarged fragmentary view of a portion of Fig. 1 indicating somewhat more clearly how the selective engagement above mentioned is secured.

Fig. 3 is a vertical axial section through the handle and sector in the position of Fig. 1.

Fig. 4 is a plan view similar to a portion of Fig 1 showing a preventer stop mounted on the handle to keep the valve from being moved to full release position.

Fig. 5 is an elevation showing the preventer stop mounted on the handle.

Referring first to Figs. 1, 2 and 3, the upper cap of the engineer's brake valve is indicated at **6** and, as usual, is formed on its periphery with a latch sector having end shoulders **7** and **8**. The shoulder **7** defines full release position and the shoulder **8** defines emergency position. The notch **9** defines running position, notch **11** defines holding position, and the left and the right ends respectively of the elongated notch **12** define lap and service positions. These sectors are standardized and are in extensive use. It is impracticable to change the design.

The problem solved by the present application is the provision for use with standard sectors of a roller type latch which will preserve its full operative characteristics regardless of rough usage.

The handle **13** is attached to the key **14** by nuts **15**. The key **14** turns the well known rotary valve (not shown) forming part of the engineer's brake valve. From the hub **16** which encircles the key **14** the handle is offset downward as indicated at **17** and is there of channel form. Outward from the offset, the handle assumes the generally slightly tapered form of circular cross-section, clearly indicated in the drawing.

Mounted in a bore **18** in the handle and urged radially inward by a coil compression spring **19** is a plunger **21** which is formed integrally with a flat latch head **22**. The latch head **22** fits snugly in the radial elongated guiding slot **23** in handle **13** beneath the offset **17**. The head **22** is retained by pin **24** which is fixed in the handle and passes through a larger drilled hole **25** in the head **22**. Latch head **22** is directly opposite to the latch sector and the stem **21** is very nearly centered thereon. The forward end of the latch nose **22** is beveled, as indicated at **26**, and a cross slot is milled therein to receive the roller **27** mounted on a pintle **28** which is fixed in place in the head **22**.

The diameter of the roller is less than the transverse dimension of the head **22** (see Fig. 2), so that the roller is exposed at the top but shrouded at the sides. Thus when the handle is moved to full release position (Fig. 1), or to emergency position (in which the head **22** engages the shoulder **8**), the roller **27** is not subjected to impact.

In all intermediate positions, including engagement with the notches **9**, **11** and **12**, the roller **27** and not the latch head **22** engages the sector. Since the engagement with the notches

9, 11 and 12 is of an impositive character and imparts little shock, no damage is done to the pintle 28 on which the roller 27 is mounted.

It has heretofore been proposed to mount removably on brake valve handles an auxiliary stop or preventer which is used when it is desired to prevent the engine driver from using full release position. The present invention permits the use of such a stop and for that purpose the handle adjacent the offset 17 is provided with two upstanding transverse ribs 31 and 32 and is cross-drilled, as indicated at 33.

The preventer stop 34 with the U-shaped attaching bracket 35 is mounted between the flanges 31 and 32 and held by a bolt 36, the mode of mounting being clearly indicated in Figs. 4 and 5. It will be observed that this preventer is attached at a point wholly above the latch and does not interfere with its design or operation. Since the roller 27 is virtually centered in the latch head 22, a better and freer action is secured than could be had with prior constructions in which the latch nose is offset. Thus by centering the roller and protecting it against shock, a highly successful roller latch is secured.

While an embodiment for the H–6 valve is specifically disclosed, other similar valves with similar sectors, for example, one lacking the holding position notch, may be similarly equipped.

I claim:

1. The combination of an engineer's brake valve body provided with a latch sector having terminal stops defining release and emergency positions and having an intermediate portion formed with impositive detent notches; a brake valve handle pivoted on said body concentrically with said latch sector; a latch head opposed to said sector; latch-head guides in said handle confining said head to radial motion toward and from said sector; a spring urging said head toward said sector; and a roller journaled and partially housed in said latch head, the arrangement being such that the head alone engages said limit stops and the roller alone engages intermediate portions of said sector including said detent notches.

2. The combination of an engineer's brake valve body provided with a latch sector having inclined impositive latching shoulders, and at least one terminal stop shoulder of greater radial depth than said latching shoulders; a brake valve handle pivoted to swing on said body concentrically with said latch sector; a latch head guided to move radially on said handle and opposed to said sector; a spring urging said latch head toward said sector; and a roller pivoted in said latch head and partly shrouded thereby, the parts being so arranged that the roller engages the impositive latching shoulders while the head engages the terminal shoulder and inhibits contact of the roller therewith.

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