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LOCK FOR SLIDING FIFTH-WHEEL TRUNNIONS

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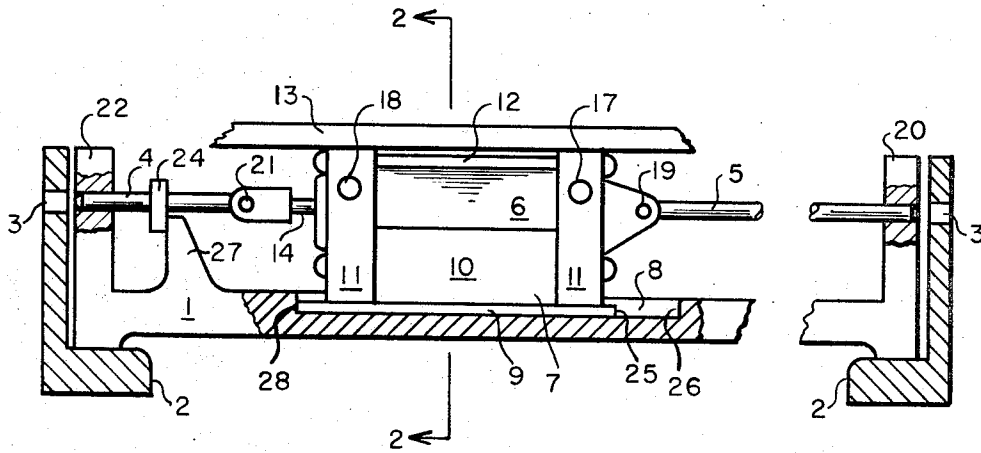


Fig. 1

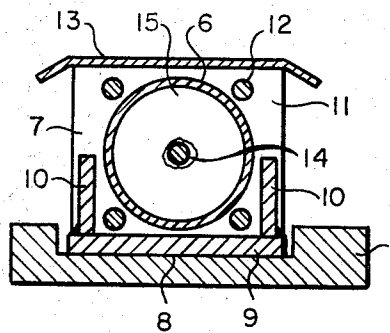


Fig. 2

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LOCK FOR SLIDING FIFTH-WHEEL
TRUNNIONSRay A. Braunberger, 221 N. La Salle St.,
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2 Claims. (Cl. 280—407)

This invention relates to a lock for sliding fifth-wheel trunnions.

Such locks, as illustrated in Patent 3,030,125 granted to applicant, can be actuated by a single cylinder movable relative to its support, the piston actuating one plunger and the cylinder moving the other plunger.

The present invention provides a cradle that supports the cylinder, guides the cylinder in the proper path to prevent incidental strains, absorbs the impact of coming to a stop that must otherwise be assumed by the cylinder, and provides a shield that deflects dirt that might shorten the life of piston and cylinder.

One object of the invention is to provide a cradle that holds the cylinder at the proper elevation and assures that cylinder, piston, and plungers will move along the same axis without slide strain.

Another object of the invention is to provide a groove in which the cradle moves with stops in the groove that enable the cradle to absorb inertia impacts that at present strain cylinder and piston functioning.

Another object of the invention is to provide a shield, moving with the cylinder and piston, that deflects foreign matter injurious to cylinder and piston movement.

FIGURE 1 shows in elevation a device such as shown in Patent 3,030,125 to actuate two plungers which has been improved by mounting the cylinder on a cradle that slides in a groove and provides stops limiting the movement of the cylinder and cradle.

FIGURE 2 is a vertical section of the cradle and cylinder and dirt deflector taken along lines 2—2 of FIGURE 1.

In the form of the invention illustrated, 1 is a platform adapted to slide along parallel tracks 2. Each of the tracks has a series of spaced holes 3 in the vertical section. The platform is locked into position by projecting plungers 4 and 5 into a pair of holes 3. A single cylinder 6 is mounted on a cradle 7 that slides in a groove or track 8 on platform 1 and actuates plungers 4 and 5.

The cradle, as shown in FIGURE 2, may consist of a plate 9 that slides in groove 8 and has vertical sections 10 that bear against the rectangular cylinder heads 11. The cylinder heads may be drawn together against cylinder 6 by bolts 12.

The cylinder heads support a canopy 13 that extends over the cylinder and the piston rod 14. Piston rod 14 is moved by a piston 15 in cylinder 6. The cylinder has two fluid inlets. When fluid is admitted to inlet 17 the piston rod is projected out of the cylinder and when fluid is admitted to inlet 18 the piston rod is drawn back into the cylinder.

Connected to one end of the cylinder by a pin 19 is plunger 5 which slides in a hole in the vertical extension 20 of the platform 1. Piston 15 in the cylinder is connected to piston rod 14 that is in turn connected to plunger 4 by a pin 21. This plunger 4 is supported by a vertical extension 22 of platform 1.

When the fluid is fed into inlet 17 the piston 15 moves the piston rod 14 outward and plug 4 enters a hole 3 in the rail. A shoulder 24 on the plunger 4 then engages extension 22 preventing further movement of the piston rod. The cylinder now moves relative to the stationary piston rod carrying the cradle 7 with it and plunger 5,

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connected to the cylinder, is entered into one of the holes 3. To absorb the inertia of the moving cylinder and bring it to a stop the end 25 of the cradle engages stop 26 at the end of groove 8.

When the platform is to be released, fluid is fed into inlet 18 and the piston draws the piston rod back into the cylinder drawing plunger 4 out of hole 3. When shoulder 24 engages stop 27 on platform 1, the piston rod comes to rest and the cylinder 6 moves to the left in FIGURE 1 carrying the cradle with it. This withdraws plunger 5 from hole 3 and releases the platform from locked condition. To absorb the impact of the moving cylinder and cradle, edge 28 of the cradle engages the end of the groove.

In the operation of the device, the platform is moved to the desired position on the tracks 2, fluid then admitted to the inlet 17 of the cylinder. Both the cylinder and the piston then move to insert plungers 4 and 5 in holes in the tracks. The cradle, moving in its grooves, gives assurance that no jolt can throw the two plungers, the piston rod, and the cylinder out of alignment.

When the locking pins are to be removed, fluid is fed into inlet 18 of the cylinder and both piston and cradle and piston rod move to withdraw plungers 4 and 5.

Referring to FIGURE 1, when the plunger 4 was withdrawn from the hole 3, the shoulder 24 engaged extension 27 of the cradle and the piston rod came to a complete stop. As fluid, usually air, continues to flow into the cylinder, the cylinder moves to the left in FIGURE 1. However, the plunger attached to the cylinder may stick in the hole 3 until the pressure in the cylinder builds up. The plunger is then released from hole 3 suddenly and the pressure in the cylinder causes it and the cradle to accelerate rapidly. The cradle then strikes the end 28 of the groove with a violent bang. This impact is transmitted by the vertical section of the cradle to the right hand cylinder end 11 at the level of the cylinder axis. The tie rods joining the two cylinder heads prevent the left cylinder head placing a strain on the cylinder. Thus the cradle prevents injury or wear on the cylinder, the pistons, or the air seals.

I claim:

1. In fluid operated means for locking in position a trunnion support which slides along tracks on a fifth wheel, two plungers extending thru opposite holes in said trunnion support that are adapted to be moved into holes in the fifth wheel, a fluid operated cylinder connected to one of said plungers, a piston in said cylinder whose piston rod is connected to the other of said plungers, a cross track on said trunnion support located below the cylinder, a cradle supporting said cylinder movable along said cross track, stops limiting the movement of said cradle along said cross track, vertical projections extending upward from said cradle which engage both ends of said cylinder at the level of the piston which transmit the impact when the cradle engages the stop to the cylinder without strain on the piston.

2. In a combination described in claim 1, a deflector carried by the cradle which extends over the cylinder and the piston to deflect foreign matter from the piston and cylinder.

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