April 3, 1962 G. D. ALLEN 3,027,974

CARRIER DEVICES

Filed Oct. 21, 1959

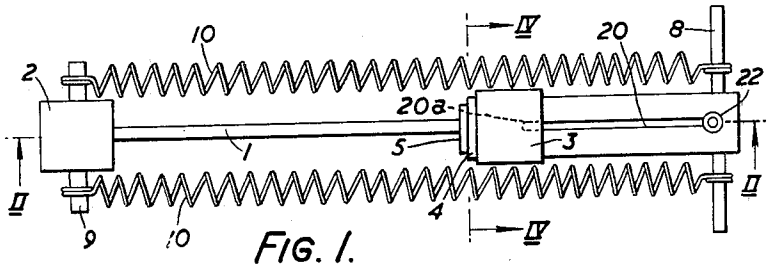


FIG. 1.

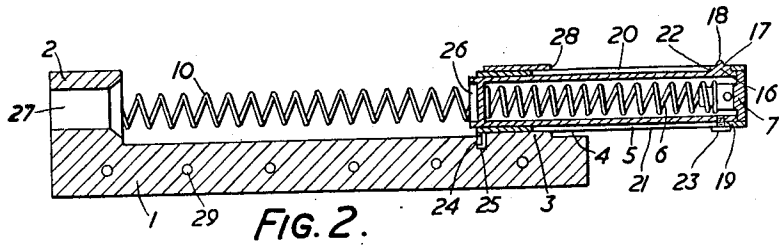


FIG. 2.

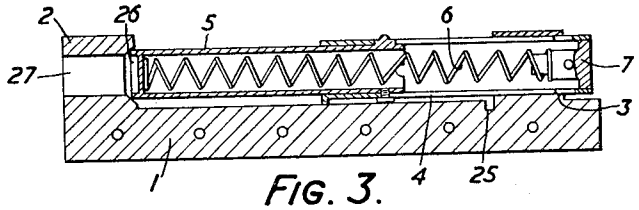


FIG. 3.

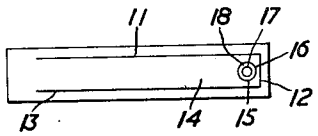


FIG. 5.

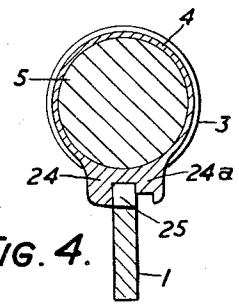


FIG. 4.

INVENTOR

GORDON DAVIS ALLEN

BY Hane and Nydick

ATTORNEYS

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CARRIER DEVICES

Gordon Davis Allen, Chalfont St. Peter, England, assignor to Allen Tool & Engineering Limited, Chiswick, London, England

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10 Claims. (Cl. 184—99)

This invention is concerned with improvements in or relating to carrier devices and in particular to a spring loaded holder used in conjunction with a solid lubricating rod.

In the lubrication of moving parts of vehicles and machines it has been proposed to use solid lubricating rods which are of generally circular or square section and may be composed of a graphite mixture encased in a harder carbon tube or of molybdenum disulphide in a synthetic plastic carrier. Such rods are carried in a spring loaded holder and are held by spring pressure in contact with that part of the vehicle or machine to be lubricated.

It is desirable that the spring pressure be maintained relatively constant so that the rod may be used economically, and it is an object of the present invention to provide a spring loaded holder which achieves this desirable result.

According to the present invention there is provided a holder comprising a guide member slidably carried by a support member, means for releasably locking the guide member in a first position relative to the support member against the action of means biasing the guide member from its locked position, and a carrier supported by the guide member releasably locked with respect thereto and biased relative to the guide member in the same sense as the bias of the guide member relative to the support member, the means locking the carrier and guide member co-operating with means carried by the support member to unlock the carrier from the guide member upon the guide member reaching a second position relative to the support member.

In order that the present invention may be well understood there will now be described one embodiment thereof, given by way of example only, reference being had to the drawings accompanying the provisional specification in which,

FIGURE 1 is a plan view of a spring loaded holder in a fully retracted position;

FIGURE 2 is a section view along the line II—II of FIGURE 1;

FIGURE 3 is a section view through the holder shown in FIGURES 1 and 2 but in a normal position;

FIGURE 4 is an enlarged section view along the line IV—IV of FIGURE 1 and,

FIGURE 5 is a plan view of a pusher tube of the holder shown in the preceding figures.

Referring to FIGURES 1 to 3 there is shown a base **1**, bearing mountings **2** and **3** spaced apart along the base and integral therewith, a guide sleeve **4** slidably and rotatably mounted in the bearing mounting **3**, and a pusher tube **5** slidably mounted in the guide sleeve **4**.

Referring now to FIGURES 2 to 5, the pusher tube **5** is shown to be a cylinder open at one end. A compression spring **6** is provided within the cylinder and is contained therein by a closure plug **7** secured by suitable means to the guide sleeve **4**. These means, not shown in the drawings, comprise a threaded end of two diametrically opposed rods **8**, each threaded end passing through a hole in the guide sleeve **4** and screwed into the closure plug **7**.

Two diametrically opposed lugs **9** are rigidly secured to the periphery of the bearing mounting **2**. Tension springs **10** are attached to the lugs **9** and the rods **8** as shown in FIGURE 1, the springs lying approximately parallel to each other.

Slots **11**, **12** and **13**, shown in FIGURE 5, in the cylindrical wall of the pusher tube **5** define a resilient tongue **14**. The tongue is provided with a detent **15** comprising a boss **16** and a smaller boss **17** partly bevelled at **18**. A threaded hole **19** is provided in the cylindrical wall of the pusher tube **5** approximately diametrically opposite the boss **17**.

The guide sleeve **4** is of cylindrical form. The wall of the cylinder is provided with diametrically opposed slots **20** and **21**, one end of the slot **20** opening into an aperture **22**.

The pusher tube **5** is located within the guide sleeve **4** by a screw **23** threaded into the threaded hole **19** and either the boss **17** engaging in the slot **20** or the boss **16** engaging in the aperture **22**.

The holder is moved to the loading position in two stages. Firstly the guide sleeve is retracted to the position shown in FIGURES 1 and 2 in which position a lug **24** shown in FIGURE 4 integral with the guide sleeve **4** will register with a recess **25** in the base **1**. The sleeve is then angularly rotated so that a part **24***a* of the lug **24** is contained within the recess **25** whence the sleeve is locked with respect to the base.

Retraction of the guide sleeve causes the end **20***a* of the slot **20** to butt against the boss **17** of the pusher tube **5** and so move the tube to a position intermediate that shown in FIGURES 2 and 3.

The second stage is to force the pusher tube **5** away from the bearing mounting **2** against the pressure of the spring **6** until the boss **16** of the detent **15** is positioned in line with the aperture **22** of the guide sleeve **4**. In that position the resilient tongue **14** will tend to a normal position and in so doing register the boss **16** within the aperture **22** whence the pusher tube **5** is locked with respect to the guide sleeve **4**.

The holder may then be loaded with a solid lubricating rod by placing the rod between the bearing mountings **2** and **3** so that one end of the rod seats in a seating recess **26** of the pusher tube **5**, and the other end is in line with the bore **27** of the bearing mounting **2**.

In order to hold the lubricating rod against that part to be lubricated the guide sleeve **4** is angularly rotated to the position shown in FIGURE 4 whence the sleeve is free to move forward under the action of the springs **10** until the rods **8** butt against the bearing mounting **3**. When the lubricating rod has worn so that the bevelled part **18** of the detent **15** engages an edge **28** of the bearing mounting **3** the resilient tongue is depressed and the boss **16** moved out of engagement with the aperture **22**. The pusher tube **5** is then free to move forward until the recessed end **26** thereof butts against the bearing mounting **3**.

The carrier may be secured to the vehicle or machine to be lubricated in any suitable manner. In the embodiment shown the base **1** may be bolted to the vehicle or machine, the bolts passing through holes **29** in the base **1**.

It can be seen from the foregoing description that the spring loading on the lubricating rod is double acting. Firstly the tension springs **10** provide the load and secondly the compression spring **6**. This double acting spring loading gives a relatively constant loading on the lubricating rod and in so doing makes full economic use thereof.

What I claim is:

1. A holder for a consumable element comprising a guide member slidably carried by a support member, means for releasably locking the guide member in a first position relative to the support member against the action of means biasing the guide member from its locked position, and a carrier supported by the guide member and

adapted to hold the element in working contact with a surface, locking means releasably locking said carrier with respect to said guide member, spring means biasing said carrier relative to the guide member in the same sense as the bias of the guide member relative to the support member, said locking means locking the carrier and guide member co-operating with means carried by the support member to unlock the carrier from the guide member upon the guide member reaching a second position relative to the support member.

2. A holder according to claim 1 in which the locking means for releasably locking the guide member and the support comprise a first part carried by the guide member engageable with a second part carried by the support upon relative angular movement of the support and the guide member in said first position of the latter relative to the former.

3. A holder according to claim 2 in which one of said parts includes portions of said support member defining a recess and and the other one of said parts comprises a projection carried by the guide member.

4. A holder according to claim 3 in which a part carried by the carrier is movable relative thereto in one sense to a first position in which it will engage with a recess in the wall of the guide member and thereby lock the carrier and guide member relative to each other and movable in the opposite sense out of engagement with the guide member wall upon contact with the unlocking means carried by the support member.

5. A holder according to claim 4 in which the carrier part comprises a tongue biased to the first position.

6. A holder according to claim 5 in which the support member is coupled to and spaced apart from a further support member, the carrier having at or near to one end a recess, and the further support member having an aperture, the recess and aperture being substantially coaxial.

7. A holder according to claim 6 in which the carrier is biased relative to the guide member by said spring means seating at one end on means forming the base of the recess and at the other end on means coupled to the guide member.

8. A holder according to claim 7 in which the means for biasing the guide member from its locked position comprise tension spring means coupled at one end to the guide member and at the other end to means fast with respect to the further support member.

9. A holder according to claim 8 in which the guide member is of annular cross-section and is mounted in the support member, the carrier being mounted in the guide members.

10. A holder for a consumable element comprising a carrier adapted to urge the element into working contact with a surface, a guide member for the carrier, a support for the guide member, means for releasably locking the carrier with respect to the guide member, first spring means for biasing the guide member and the carrier when locked to the guide member, relative to the support in a direction for effecting the working contact of the element with said surface, and second spring means interposed between the carrier and the guide member and operable upon the carrier being unlocked with respect to the guide member for biasing the carrier relative to the guide member in said direction for effective working contact of the element with said surface.

References Cited in the file of this patent

UNITED STATES PATENTS

1,197,756	Morrow	Sept. 12, 1916
1,222,341	Wholey	Apr. 10, 1917
2,637,411	Harbison	May 15, 1953
2,763,882	Planka	Sept. 25, 1956