

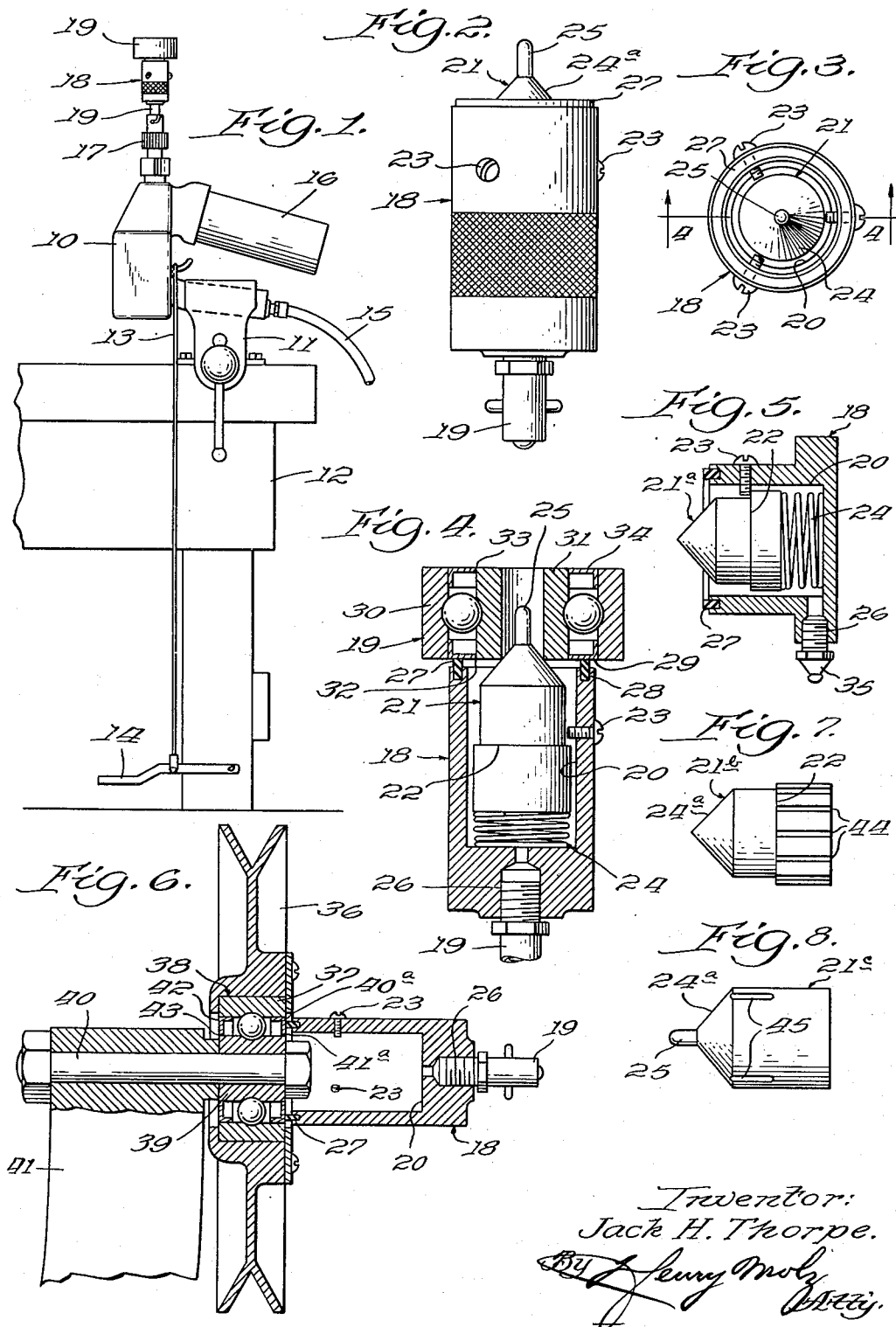
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J. H. THORPE

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SEALED BEARING CLEANING AND LUBRICATING HEAD

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Inventor:
 Jack H. Thorpe.
 By *Henry Moly*
 Att'y.

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SEALED BEARING CLEANING AND LUBRICATING HEAD

Jack H. Thorpe, Los Angeles, Calif.

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2 Claims. (Cl. 184—1)

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The primary purpose of my invention is the provision of an auxiliary cleaning and lubricating device adaptable for attachment to the standard lubricating guns purchasable in the open market, for example, the Alemite and Zerk guns to extend the usefulness and improve the operation thereof.

An important object of the invention is to provide a small and light weight device that may readily be carried about, be easily handled and readily permit a more thorough as well as quicker cleaning and lubricating job than is possible with any tool the market affords.

A further object of my invention is the provision of a device that will operate as effectively on either air or hand operated guns.

A still further object of my invention is the provision of a device that will positively clean and lubricate bearings of varying sizes and wherein the axle hole of the bearing is in keeping with the size of the device, that is, neither too large or too small for the sealing cone.

And a further object of my invention is the provision of a device that may readily be produced in varying sizes to meet varying sized bearing requirements, and wherein the principle of operation is identical for either cleaning or lubricating bearings, excepting that a pressure cleaning gun is used for the cleaning operation, and a lubricating gun for the lubricating operation.

Other objects and specific advantages of the invention will more fully appear from the following description and accompanying drawings, in which:

Figure 1 is an elevational view of a typical set-up for cleaning or lubricating sealed bearings through the use of a pressure operated grease gun and the cleaning and lubricating head of the present invention;

Figure 2 is an elevational view of a cleaning and lubricating head embodying the present invention;

Figure 3 is a plan view of the device as shown in Fig. 2;

Figure 4 is a longitudinal sectional view taken on the line 4—4 in Fig. 3, showing one type of sealed bearing for the purpose of illustrating an operation of the device of my invention;

Figure 5 is a sectional view showing a modified form of the device for use in less accessible places as where the bearing may be left in the machine;

Figure 6 shows a modified form of the device for use where the bearing is left in the machine

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and none of the surrounding parts of the machine are removed;

Figure 7 shows a modified form of piston forming a part of the invention, having grooves cut in the shoulder thereof; and

Figure 8 is another modified form of piston forming a part of the invention, but with no shoulder, and having grooves to receive the retaining screws.

Similar numerals of reference indicate like parts throughout the several views.

As shown in Fig. 1, a grease gun 10 is clamped in inverted position in a vise 11 which is secured to a bench 12. A cable or other linkage 13 is connected with the trigger of the gun at the upper end and runs down to a foot pedal 14, pivoted on a leg of the bench. Pressure on the pedal 14 pulls the trigger through the cable 13 to allow air from the line 15 connected to a source of supply of compressed air, not shown, to force grease or cleaning fluid from the chamber 16 up through the chuck 17 into the head 18 and thence into the sealed bearing 19, held down by the operator or any suitable means, not shown, against the seal of the head 18.

Where the bearing can be removed from the machine, an arrangement such as is shown in Fig. 1 is very advantageous as it leaves the hands free to hold the bearing in position.

The cleaning and lubricating head 18 as shown in Figures 1, 2, 3 and 4 is cylindrical in shape, open at the bearing engaging end and provided at the opposite end with a grease fitting 19. A bayonet type of fitting is shown although any type may be used. The grease fitting is adapted to be held in the chuck 17 of the grease gun 10, and may be either manually or air operated.

As best shown in Figure 4, the cleaning and lubricating head 18 has an internal bore 20 adapted to receive a piston 21 which is slightly smaller in diameter than the bore 20 so as to facilitate the passage of grease between the piston and the wall of the bore 20. The piston is provided between its ends with an annular shoulder 22 which normally engages stops in the form of screws 23, equally spaced around the periphery of the cylinder. A spring 24 bearing against the end wall of the cylinder and engaging the inner end surface of the piston, urges the latter outwardly and into engagement with the stops 23. The piston is tapered at its outer end as shown at 24a to provide a variable sealing means in the bore of the bearing 19. The outer end of the piston is further provided with a guide

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pin 25 to facilitate centering the device in the bearing.

The grease fitting 19 is screwed into the end wall of the cleaning and lubricating head in a bore 26 having a reduced diameter at its inner end which opens into the bore 20. Grease can be forced through the fitting 19, the bore 26 and into the bore 20. Pressure is built up in the cavity between the piston 21 and the end wall of the body to force the piston outwardly to cause the tapered end 24a to make a tight seal between the piston and the bore of the bearing 19.

At its bearing engaging end the head 18 is provided with a rubber sealing ring 27 which is carried in a groove 28 in the outer edge of the head. This sealing ring bears against either the sealing ring 29 or the outer race 30 of the bearing depending upon the diameter of the bearing to form an outer seal against the passage of grease. When the bearing is pressed down on the cleaning and lubricating head to contact both the piston and the sealing ring 27, the piston is pressed inwardly away from the stops 23. This provides for a tight seal of the tapered end 24a of the piston within the bore of the inner race 31 of the bearing and allows for the use of the device on various sizes of bearings within the range of the size of the device. It should be understood, however, that the device may be produced in varying sizes and modifications to handle sealed bearings of all types irrespective of size.

Grease or cleaning fluid is forced out around the piston and the wall of the bore 20. It enters the bearing at 32 between the outer periphery of the inner race 31 and the bore through the sealing member 29. The old grease can thus be carried off or flushed out through the crack 33 between the outer periphery of the inner race and the bore in the sealing member 24 on the opposite side of the bearing.

As shown in Fig. 5, the device has been modified to provide a unit for use in inaccessible places. Parts similar to those in the first form are identified with the same numbers. In this form the bore 26 in the head 18 has been placed at right angles to the bore 20 in order to shorten the head and facilitate the use of the device in tight places. Pressure against the open end of the head holds it in engagement with the bearing to be treated. It will be noted that a different form of grease fitting 35 is provided in this device. It is adapted to either snap into the chuck of the grease gun or to be held in engaged position therewith by pressure on the gun. No guide pin is provided on the tapered outer end of the piston 21a in this form of my device, which in itself further helps to shorten the overall length thereof, this being of material advantage.

In Fig. 6, a cleaning and lubricating head 13 similar to that shown in the first form, excepting, however, that it omits the piston and spring. This form is adapted to be used for cleaning and lubricating sealed bearings which are not removed from the machine in which they are used. To illustrate the use of this device a pulley 36 is shown mounted on the outer race 37 of a bearing 38. The inner race 39 of the bearing is fixedly mounted on a stationary axle 40 which is carried in the upper end of a pedestal 41. The cleaning and lubricating head 13 is pressed against the outer surface of the bearing. The head of the axle enters the open end of the bore 20. Grease or cleaning fluid is forced into the bearing as before, that is, between the outer periphery of the

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inner race 39 of the bearing and the corresponding hole in the seal 40a at a position designated as 41a. The old grease is forced out on the opposite side of the bearing between the inner race and the hole in the seal 42, at a position designated as 43.

Figure 7 shows a modified form of piston 21b, the guide pin on the tapered end of the piston being omitted and the stepped portion thereof is provided with grooves 44. In this form of piston, the outer circumference may be of a working fit with the bore 20, in as much as the grooves allow for the passage of grease between the piston and the wall of the bore 20. The parts of the piston which are the same as those of the preceding forms are numbered identically with the numbering of said forms.

Figure 8 shows still another form of piston 21c. In this form the guide pin 25 on the tapered end of the piston has been retained, and the stepped portion is omitted. In lieu of the latter, but equally adaptable for engaging the stops 23, grooves 45 are provided for engagement therewith. The screws 23 ride in said grooves 45 and the inner ends of the latter act as stops to limit the outer movement of the piston.

With the exception of the above enumerated modifications, all types of the device are identical and serve their respective purposes equally well. The device provides a uniquely designed contrivance for its purpose. It is extremely light in weight, durable, and readily produced from materials the open market affords.

It may be made in varying sizes to best meet industrial and other requirements.

I am aware that slight modifications in structure may from time to time suggest themselves without departing, however, from the scope of the invention herein set forth. Hence, I do not limit my present invention to the exact arrangement and description disclosed, but what I do claim is:

1. An attachment adapted to be supported upon and to extend outwardly from the outlet of a lubricating gun, for facilitating the cleaning and lubrication of a sealed bearing having inner and outer races with a bore through the inner race, said attachment comprising a head having a bore closed at one end and opening at one end of the head with a diameter that will permit establishing close communication with the space between said races when said open end of the head is held against said bearing, a sealing member on said end of the head for forming an annular seal between the head and said bearing for confining the flow of cleaning fluid or lubricant to the space between said races, a piston in said bore of said head, displacing the major portion of the space in said bore and having a tapered end adapted to seal against an end of the wall of the bore in said inner race, a coiled spring having its end abutting the other end of said piston and said closed end respectively for urging said piston outwardly from said bore, means limiting the outward movement of said piston, there being a continuously open fluid passage between the piston and the wall of the bore through said head, and means for connecting said bore in the head with said outlet and for supporting the head upon the gun in outwardly extended relation thereto.

2. An attachment for facilitating the cleaning and lubrication of a sealed bearing having inner and outer races with a bore through the inner race, said attachment comprising a head having a bore opening at one end of the head and of a

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diameter adapted to establish communication with the space between said races when said end of the head is held against said bearing, a sealing member on said end of the head for forming an annular seal between the head and said bearing for confining the flow of cleaning fluid or lubricant to the space between said races, a piston in the bore of said head having a tapered end adapted to seal against an end of the wall of the bore in said inner race, a coiled spring in said bore abutting the other end of said piston for urging said piston outwardly from said bore, means limiting the outward movement of said piston, said piston being of a size to occupy the greater portion of the space in said bore and having a diameter forming an annular and continu-

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ously open supply passage through the bore of said head to said open end of said bore, a centering projection on said tapered end of said piston, and means for connecting said bore in said head with the outlet of a lubricating gun and for supporting the head upon the gun.

JACK H. THORPE.

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