May 14, 1935. C. W. GINTER 2,001,190

NONSTICKING PNEUMATIC HAMMER GREASE GUN

Filed Dec. 5, 1932

Fig. 1.

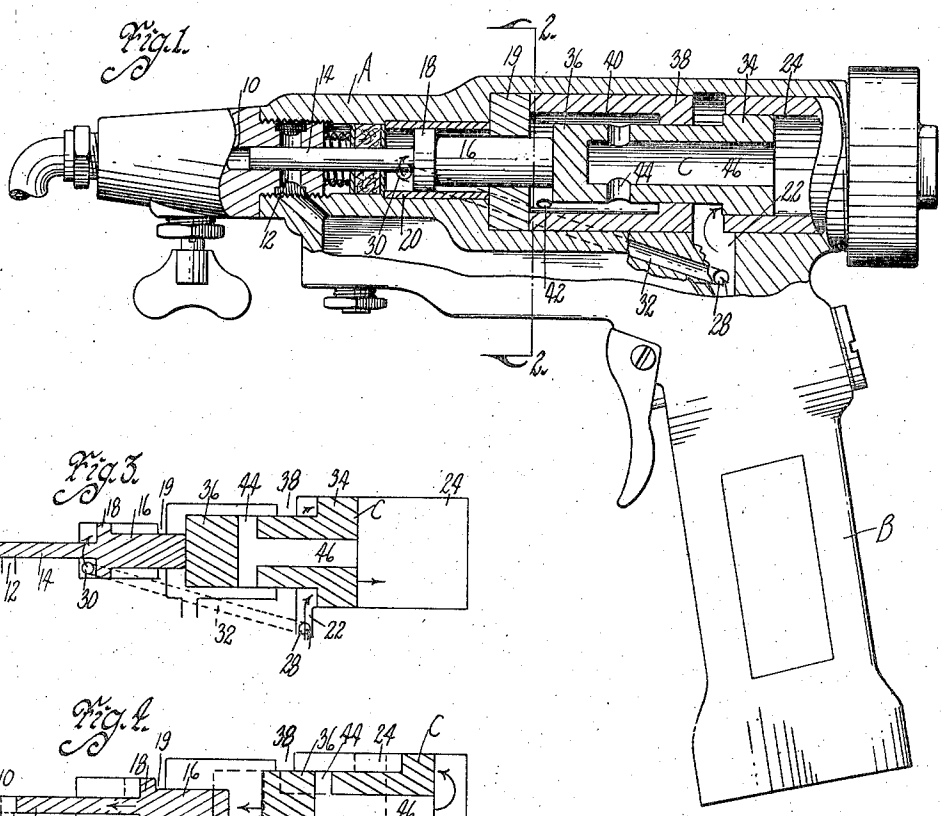


Fig. 3.

Fig. 4.

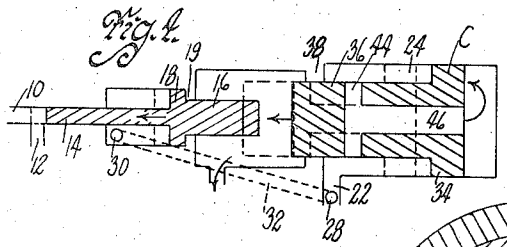
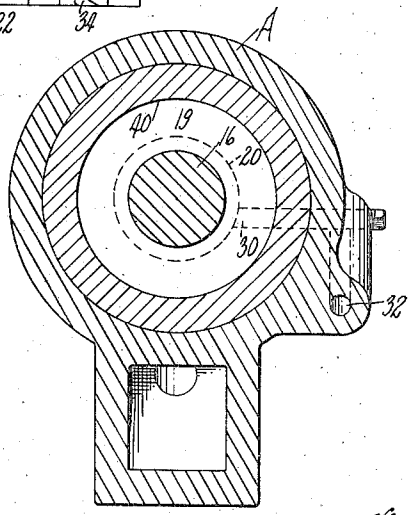


Fig. 2.



Witness
Edw. Seeley

Inventor
Charles W. Ginter
by Bair, Freeman & Sinclair
Attorneys

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NONSTICKING PNEUMATIC HAMMER GREASE GUN

Charles W. Ginter, Bryan, Ohio, assignor to The Aro Equipment Corporation, Bryan, Ohio, a corporation of Ohio

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6 Claims. (Cl. 221—47.3)

The object of this invention is to provide a non-sticking pneumatic hammer grease gun which is simple, durable, and comparatively inexpensive to manufacture.

A further object is to provide a grease gun of pneumatic hammer type in which the parts are so arranged that the gun cannot get stuck during operation.

More particularly, it is my object to provide a pneumatic hammer grease gun in which a pneumatic hammer element is operable independent of the grease pumping mechanism and is so ported with respect to the travel of the grease plunger of the grease pumping mechanism that the pneumatic hammer element can reciprocate even when the plunger is stuck in its rearmost position, thus obtaining the advantage of hammer blows against the pumping mechanism to overcome the high resistance which has caused a stuck condition of the plunger.

Still a further object is to provide a grease plunger having an impact-receiving member integral therewith and a pneumatic hammer element for operating the grease plunger which is connected with the grease plunger but is adapted to strike the impact-receiving member during the operation of the gun.

A further object is to proportion the parts of the gun so that when the grease plunger just covers the intake port for the cylinder in which the grease plunger operates, the pneumatic hammer element can travel to an exhaust position thereby permitting its operation or reciprocation to hammer against the impact-receiving element of the grease plunger to thus receive the benefit of impact blows for breaking clogged grease loose.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:—

Figure 1 is a side elevation, partly in section, of a pneumatic grease gun of the non-sticking type embodying my invention.

Figure 2 is an enlarged sectional view on the line 2—2 of Figure 1.

Figure 3 is a diagrammatic view showing the pneumatic hammer element and the grease plunger being retracted; and

Figure 4 is a diagrammatic view showing retracted positions and operating positions by full and dotted lines respectively.

On the accompanying drawing I have used the reference character A to indicate generally a grease gun barrel. The handle thereof is indicated at B. Within the barrel A there is provided a grease cylinder 10, a grease intake 12 therefor and a grease plunger 14 which form a grease pumping mechanism.

The plunger 14 in my invention terminates at its rearmost end in an impact-receiving element 16. A piston 18 is provided which travels in a cylinder 20. Within the handle B a passageway 22 ordinarily extends to a pneumatic hammer cylinder 24. By means of ports 28 and 30 and a passageway 22, I provide continuous communication between the passageway 22 and the cylinder 20 ahead of the piston 18. This obviously provides a means tending to retract the plunger 14.

Within the hammer element cylinder 24 I provide a pneumatic hammer element C having a piston 34 and a plunger 36. The plunger 36 extends through a partition 38 and into an exhaust cylinder 40. An exhaust port 42 provides communication between the cylinder 40 and atmosphere.

The pneumatic hammer element C is ported as indicated at 44 and has a bore 46 communicating with the cylinder 24.

It will be noted that the hammer element C is independent of the grease plunger 14, that is it is not connected therewith. The ports 44 and 12 are so arranged and the parts of the pneumatic hammer element C and the grease plunger assembly 14, 16, and 18 are so proportioned that sticking of the plunger cannot occur, as will now be described.

Referring to Figure 3, air is entering through the port 22 and acting upon the piston 34 to retract the hammer element C. Air is also acting upon the piston 18 to retract the grease plunger 14. Under normal conditions the two will move in retracting direction simultaneously with each other until the piston 18 strikes a partition 19, which acts as a stop for it. The hammer element C, however, will continue to move toward the right until the ports 44 pass the partition 38 as shown in Figure 4, whereupon air will enter through the port 44 and the bore 46 to cushion the retracting movement of the element C and force it in the opposite direction.

The plunger 14 and the hammer element C are shown in dotted lines in Figure 4 in a position they would assume after traveling a certain distance in such opposite direction. It will be noted that the grease plunger 14 has just cut off the intake opening 12. The impact-receiving

member 16 has received the benefit of being forced in a grease expelling direction by the compressed air behind the piston 34 and also by the inertia of the hammer element C. It will be noted that the ports 44 in Figure 4 (dotted line position) have passed the partition 38, thus resulting in an exhaustion of the air from the cylinder 24 to the cylinder 40 and then to atmosphere through the exhaust port 42. Thus, if too great resistance is offered to the travel of the plunger 14 or in other words—if it is likely to become stuck it at least can travel to the dotted line position causing the grease in front of it to back up in the intake port 12 and if it can go no farther than the dotted line position of Figure 4 then the reciprocation of the hammer element C can be reversed and the hammer will actually keep delivering its impact blows to the impact-receiving member 16 to break the grease loose. It will thus be obvious that the hammer element C cannot become stuck in one position even though the plunger 14 fails to pump grease on account of a higher resistance encountered than it is possible for the available air pressure to overcome.

From the description of my invention it will be obvious that when the gun normally operates impact blows are delivered because of the space between the element 16 and the element C in Figure 4, and that when non-normal conditions, such as those which cause sticking of the grease plunger, occur there is still operation of the hammer element, the proportions of the parts and the positions of the ports being so arranged as to permit this.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:—

1. In a pneumatic hammer grease gun, a grease cylinder, a grease plunger reciprocable therein, a grease intake port in said cylinder, impact-receiving means connected with said grease plunger, a reciprocable pneumatic hammer element independently movable with respect to and engageable with said impact-receiving means to operate said grease plunger from position with said intake port open to discharge position with said intake port closed, said pneumatic hammer element having integral compressed air control valve ports arranged in position to cause reciprocation of said hammer element.

2. In a pneumatic hammer grease gun, a grease cylinder, a grease plunger reciprocable therein, a grease intake port in said cylinder, impact-receiving means connected with said grease plunger, a reciprocable pneumatic hammer element independently movable with respect to and engageable with said impact-receiving means to operate said grease plunger from position with said intake port open to discharge position with said intake port closed, said pneumatic hammer element having integral compressed air control valve ports arranged in position to cause reciprocation of said hammer element and means constraining said impact receiving member to draw grease into said pump mechanism.

3. In a pneumatic hammer grease gun, a grease cylinder, a grease plunger reciprocable therein, a grease intake port in said cylinder, impact-receiving means connected with said grease plunger, a reciprocable pneumatic hammer element independently movable with respect to and engageable with said impact-receiving means to operate said grease plunger from position with said intake port open to discharge position with said intake port closed, said pneumatic hammer element having integral compressed air control valve ports arranged in position to cause reciprocation of said hammer element and pneumatic means constraining said impact-receiving member toward retracted position.

4. In a pneumatic hammer grease gun, a grease pump comprising a grease cylinder, a grease plunger reciprocable therein having an impact-receiving element, a grease intake port in said cylinder and means to cause said impact receiving element to draw grease in through said port and a pneumatic hammer means for reciprocating said grease plunger comprising a cylinder having a ported pneumatic hammer element engageable with but unattached to said impact-receiving element.

5. In a pneumatic hammer grease gun, a grease pump comprising a grease cylinder, a grease plunger reciprocable therein having an impact-receiving element, a grease intake port in said cylinder and means to cause said impact receiving element to draw grease in through said port and a pneumatic hammer means for reciprocating said grease plunger comprising a cylinder having a ported pneumatic hammer element engageable with but unattached to said impact-receiving element under both normal and stuck plunger conditions.

6. In a pneumatic hammer grease gun, a grease pump comprising a grease cylinder, a grease plunger reciprocable therein having an impact-receiving element, a grease intake port in said cylinder and means to cause said impact receiving element to draw grease in through said port and a pneumatic hammer means for reciprocating said grease plunger comprising a cylinder, a pneumatic hammer element engageable with but unattached to said impact-receiving element, said pneumatic hammer element being ported so as to exhaust in a forward position engaging said impact-receiving element with said grease plunger just covering said grease intake port.

CHARLES W. GINTER.