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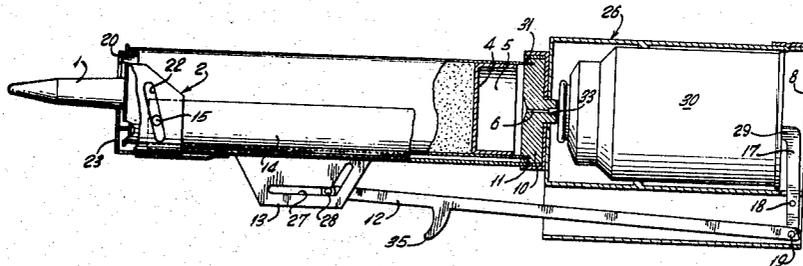
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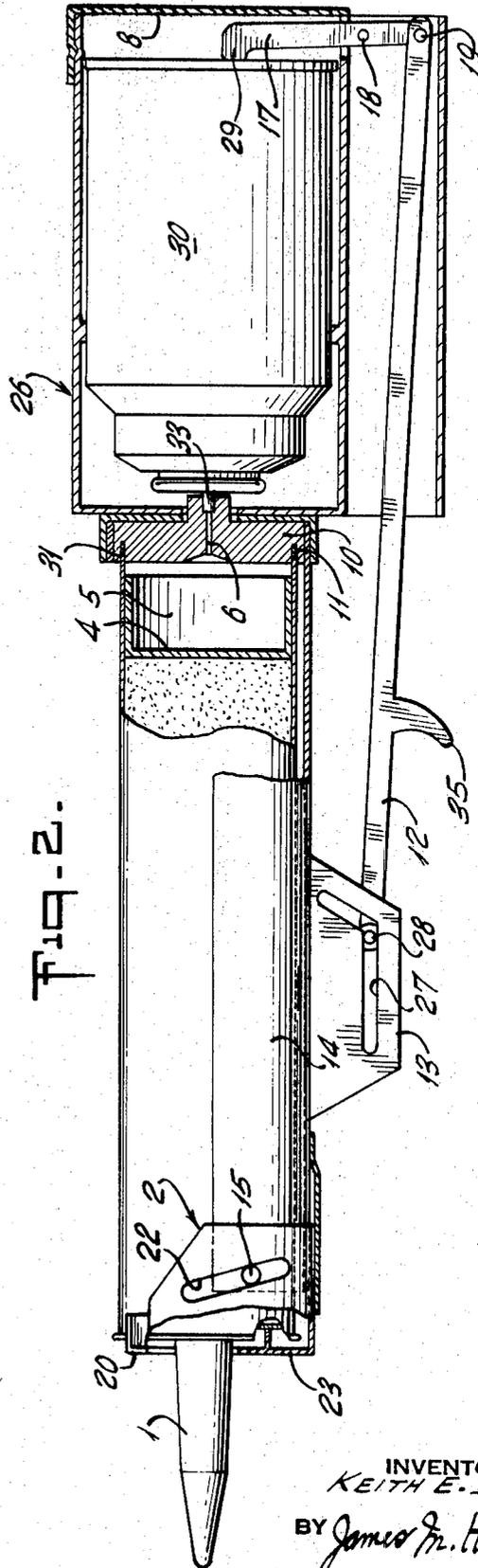
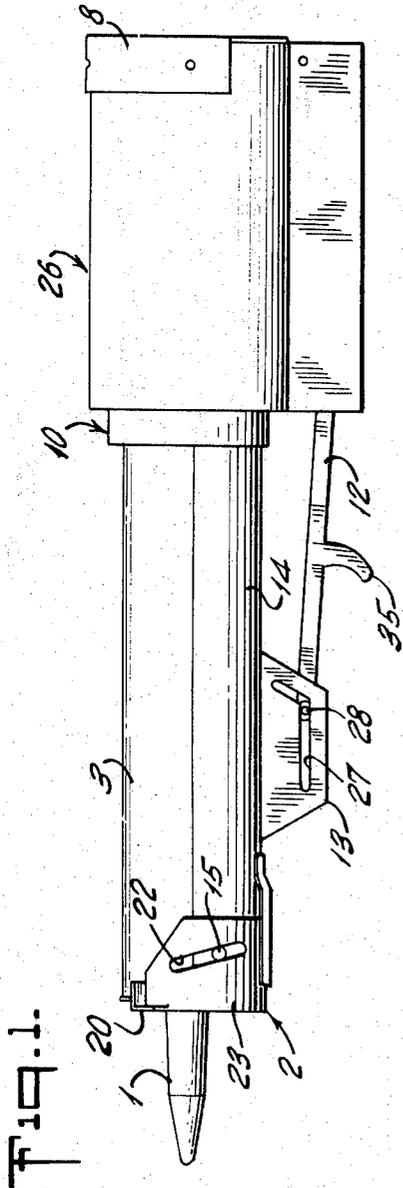
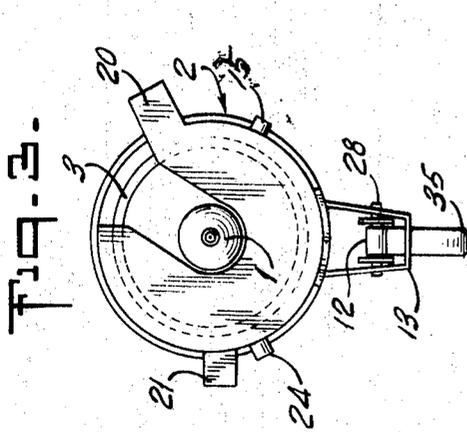
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[54] **AEROSOL CAULKING ASSEMBLY**
16 Claims, 10 Drawing Figs.
[52] U.S. Cl. 222/327,
222/389
[51] Int. Cl. B67d 5/46
[50] Field of Search 222/326,
327, 389, 399, 95

ABSTRACT: A caulking assembly wherein the plunger within the caulking cartridge is moved forward utilizing a gas secured from an aerosol container thereby permitting uniform and even application of the caulking compound only at the desired areas. The aerosol caulking gun mechanism comprises in combination a metal cartridge holding assembly, a power source holding assembly and an actuator assembly.





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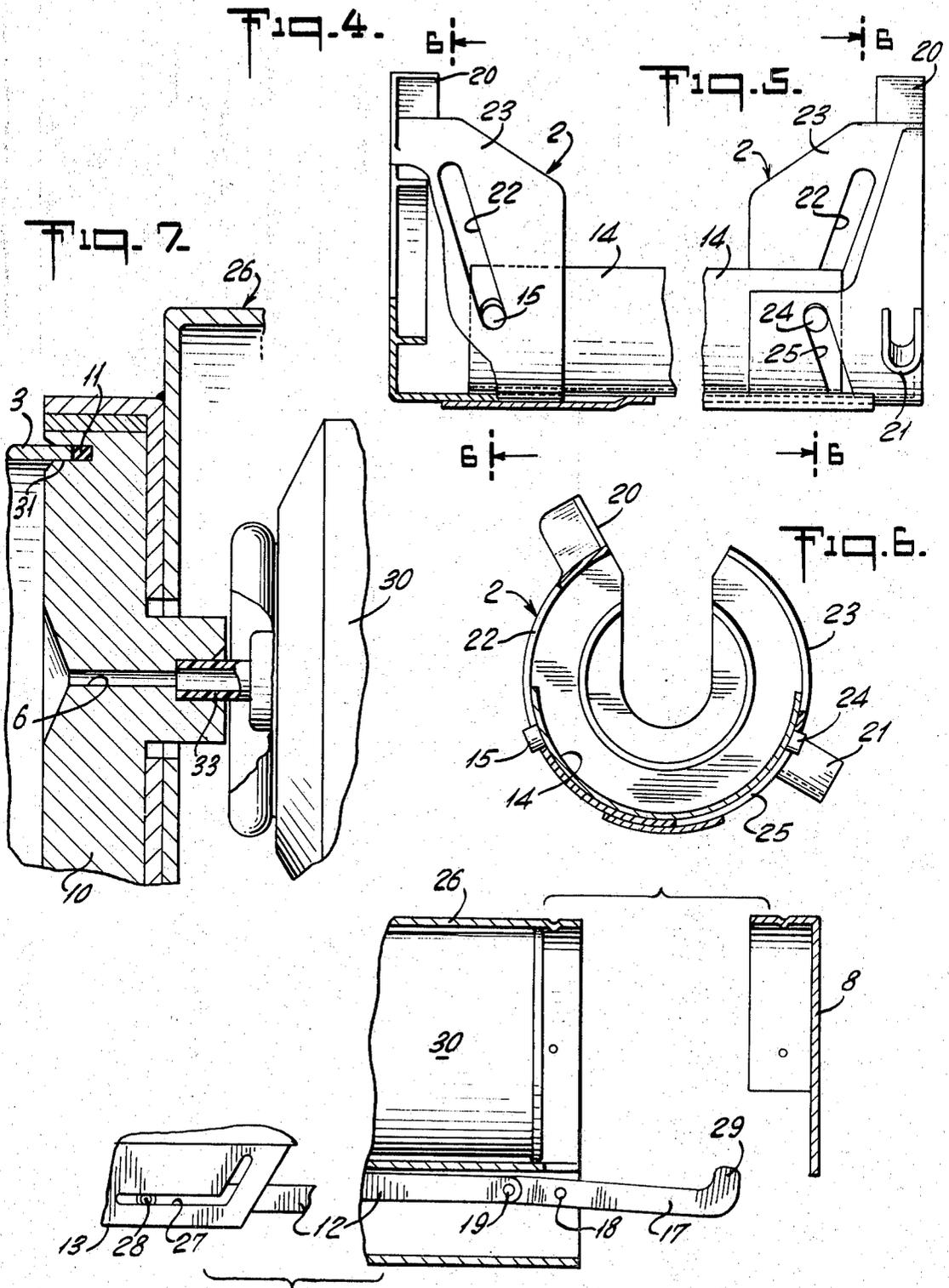
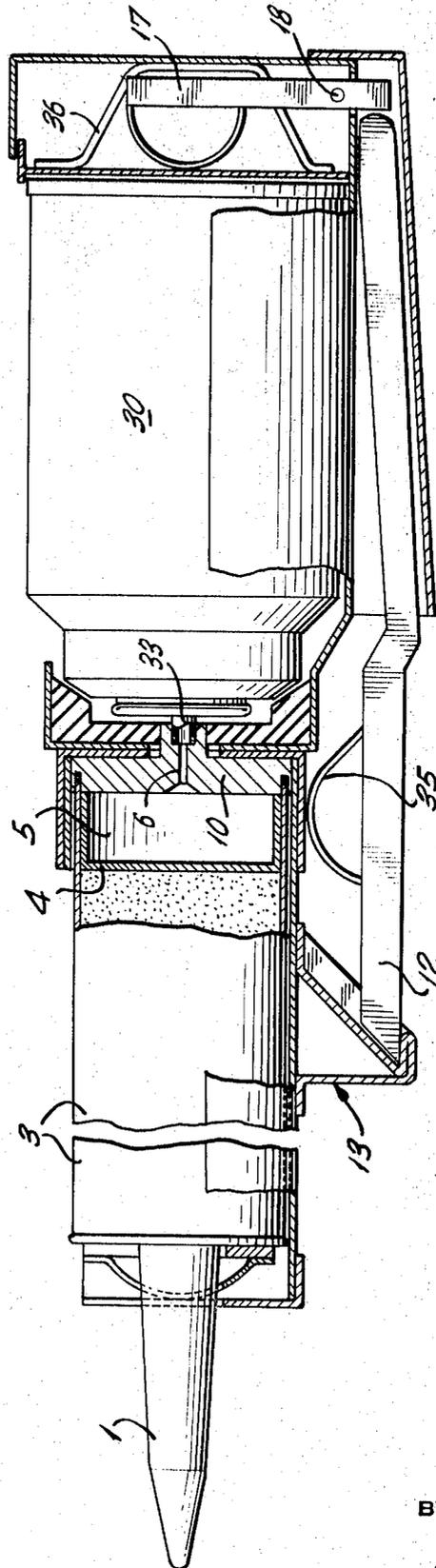


Fig. 8.

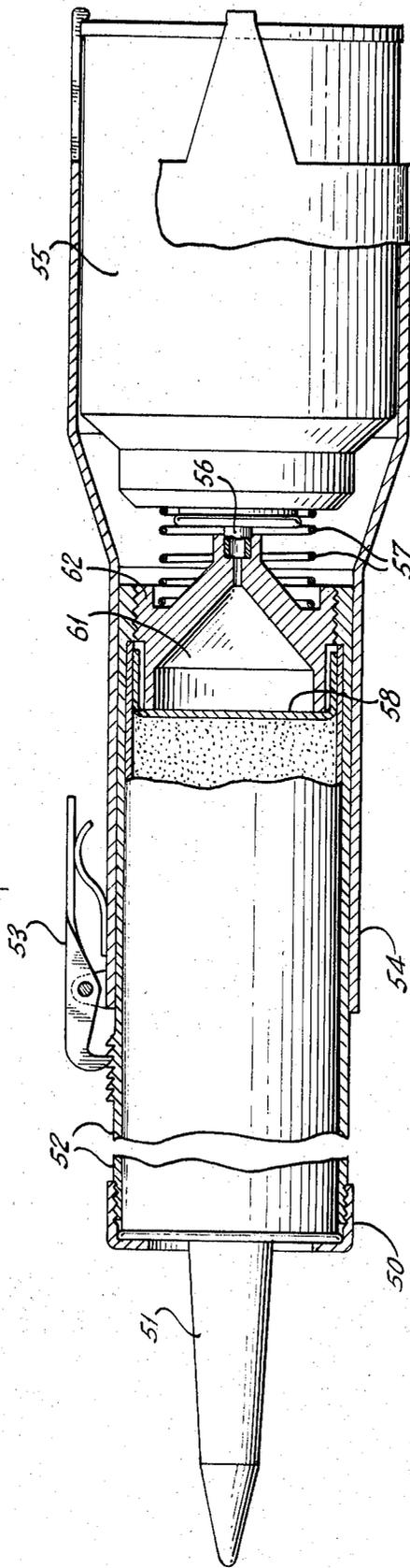
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Fig. 8.



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Fig. 10.



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AEROSOL CAULKING ASSEMBLY

The present invention broadly relates to an improved aerosol caulking mechanism by which viscous fluids of wide ranges of viscosities may be readily and efficiently applied to the desired areas. The mechanism is particularly useful since it permits the caulking operator to fully concentrate on the area of application of the caulking material and to uniformly apply the material to desired areas. The power required to displace the caulking material from the container is supplied by the unique aerosol caulking mechanism thereby permitting the operator to fully concentrate on the mode and degree of application.

The mechanism of the present invention may be readily understood by reference to the drawings illustrating adaptations of the same.

FIG. 1 is a side view of the overall mechanism at a reduced scale.

FIG. 2 is a view similar to FIG. 1 at a larger scale with parts broken away and in section.

FIG. 3 is an end view of FIG. 2.

FIG. 4 illustrates in some detail one side of the front locking element of the metal cartridge assembly when open.

FIG. 5 illustrates the other side of the front locking element when open.

FIG. 6 is a section on lines 6-6 of FIGS. 4 and 5.

FIG. 7 is an enlarged fragmentary view of a portion of FIG. 2.

FIG. 8 illustrates in some detail the actuator assembly.

FIG. 9 shows a modification of the mechanism.

FIG. 10 illustrates an adaptation of the invention wherein by suitable means the caulking cartridge is moved rearwardly in a manner to depress the aerosol tip of the energizer.

Referring specifically to FIG. 1, a cartridge nozzle 1 protrudes through the front locking ring element 2 which nozzle is securely attached to the caulking material cartridge 3. The material cartridge, or adhesive tube 3, seats in a material cartridge cradle 14 between front locking ring element 2 and base seating element 10 which will be hereinafter more specifically described. The front locking ring 2 comprises a face plate and a cap 23 which is rotatable about cradle 14. The locking ring element 2 is characterized by having diagonal slots 22 and 25 into which seat cam pins 15 and 24, which cam pins are rigidly affixed to cradle 14. (See FIGS. 4, 5 and 6.) Thus, as locking ring 2 is rotated about cradle 14, the locking ring 2 moves along the longitudinal axis of cradle 14 thereby securely seating caulking material cartridge 3 between locking ring 2 and the base seating element 10. An aerosol container housing 26 is rigidly affixed to base seating element 10.

Ears 21 and 20 (See FIG. 3.) are securely attached to locking ring 2 so as to permit easy rotation of the locking ring 2 about the longitudinal axis of cradle 14. Trigger assembly is positioned below cradle 14 and aerosol container housing 26. A housing 13 to support the front end of actuating bar 12 is securely affixed to the lower side of cradle 14. Housing 13 contains slots 27 the forward ends of which are horizontal and the rear ends of which protrude upwardly at an angle of about 45°. Cam pins 28 are securely attached to the front end of the forward actuating bar 12. These cam pins 28 move within slots 27 when the forward actuated bar 12 is moved by trigger 35. It is readily apparent that the rearward movement of bar 12 in the initial stages of activation is greater than in the later stages of trigger activation. FIG. 3 illustrates in detail a front view of the assembly with respect to FIG. 1 showing the trigger assembly, the rotating ears 20 and 21, the cams 15 and 24 which move in locking slots 22 and 25.

Referring specifically to FIG. 2, elements similar with respect to FIGS. 1 and 3 are similarly designated. Caulking cartridge 3 comprises a plunger 4 which, A base activated, moves forward in cartridge 3 to eject the caulking compound from the cartridge through nozzle 1. Forward actuating bar 12 is rotatably attached to a rear actuating trigger bar 17 by means of pivot pin 19. Rear actuating bar 17 rotates about pivot 18. One end of rear actuating bar 17 contains a contact hammer

29 which is adapted to press against the rear of aerosol energizer 30 moving the same forward in a manner to depress nozzle 33 and thus release gas through gas orifice 6. A base cap 8 is positioned on the rear of housing 26.

Base seating element 10 is characterized by having a circular recess in the face thereof into which is positioned a gasket 11. The rear circular edge of cartridge case 3 seats into recess 31 securely against gasket 11 thereby preventing any gas seepage therethrough. When nozzle 33 is depressed, gas flows from energizer 30 through orifice 6 into gas chamber 5 and thus moves plunger 4 forward.

FIGS. 4 and 5 illustrate details of the rotatable front locking ring 2 showing the locking slots groove therein, 25 and the cam pins 15 and 24 which pins are securely attached to cradle 14. FIG. 6 illustrates in further detail the structure of front locking ring element 2.

FIG. 7 illustrates in detail the base seating element 10 showing the gasket 11 positioned in recess 31 and the rear circular edge of cartridge 3 seated securely against the gasket. Energizer 30 is positioned within housing 26 in a manner that when the energizer moves forward nozzle 33 will be depressed thereby permitting gas to flow through orifice 6 into gas chamber 5. FIG. 8 illustrates the rear actuating trigger bar depressed in a manner to remove the base cap 8 and to position energizer 30 within housing 26. FIG. 9 illustrates a modification of the trigger assembly wherein, as when trigger 35 is moved rearwardly, the forward actuating trigger bar 12 will slide upwardly and rearwardly within a forward trigger housing 13. The rear end of bar 12 will press about pivot lower end of rear actuating trigger bar 17 causing it to rotate about pivot 18 and thus press against the rear of energizer 30 by a spring means 36.

As pointed out heretofore, the broad concept of the present invention comprises a caulking assembly applicator wherein the plunger is moved forward within the cartridge case by gas released from an aerosol or equivalent element or energizer. This action may be secured by means as described heretofore or may also be secured by a suitable apparatus wherein the caulking cartridge is moved rearwardly in a manner to depress the aerosol tip of the energizer. An apparatus of this type is shown in FIG. 10.

Referring specifically to FIG. 10 a tip locking cap 50 securely affixes tip 51 to cartridge case or holder 51. Cartridge tube 52 is held by lock 53 to housing 54 by grooves or series of screw threads around rotatable tube 52. The aerosol energizer 55 is suitably mounted in a housing and is stationary. A cartridge mating assembly is suitably attached to the rear end of cartridge holder tube 52. Plunger 58 moves forwardly within tube 52 so as to eject caulking compound from nozzle 51. A gas chamber 61 is defined by gasket 62, the walls of the cartridge case and plunger 58. This model or variation of the invention does away with most of the trigger linkage. As pointed out heretofore, the aerosol tube is stationary and the adhesive tube is loaded in holder 54 and affixed by lock 53. In operation the tube 51 is pressed against the surface to which the caulking material is applied, which moves cartridge to the rear. This rear movement by means of the mating assembly attached to the rear of tube 52 presses the aerosol energizer tip thus releasing gas into the gas area. The rearward movement also depresses spring 57. The mechanism will then continue to operate until a depression of locking device 53 will release tube 52 and spring 57 will move the component mating assembly and the tube forward thereby releasing the pressure on tip 56 thus causing the aerosol gas to be shut off.

Thus, the present invention is concerned with a unique caulking assembly which is actuated by means of energizing gas moving the plunger forward within the caulking cartridge. The mechanism of the present invention is completely free of any jerking or oscillating motion thereby permitting the operator to apply the caulking compound in a more workmanlike fashion securing even and uniform application only in the desired areas.

I claim:

1. Calking gun mechanism which comprises in combination: (1) a calking cartridge holding assembly having; (2) a base seating element; (3) a calking cartridge positioned in said holding assembly; (4) a gas chamber defined by the circular wall of said calking cartridge; (5) a plunger element within said calking cartridge and said base seating element; (6) means for introducing gas into said gas chamber in a manner to move said plunger element forward within said calking cartridge and thus eject calking compound from the front end of said calking cartridge, said means for introducing gas into said chamber comprising; (7) an aperture through said base seating element; (8) an aerosol container positioned in said calking gun mechanism within; and (9) an aerosol housing.

2. Mechanism as defined by claim 1 wherein said gas is introduced into said gas chamber by, (10) a trigger mechanism which forces said aerosol container forward within said aerosol housing in a manner to depress the nozzle on said aerosol container thereby permitting gas to flow from said aerosol container through said aperture in said base seating element into said gas chamber.

3. Mechanism as defined by claim 2 wherein said base seating element is characterized by having a circular groove therein, (11) packing at the bottom of said groove and onto which the rear edge of said circular wall securely seats.

4. Aerosol calking gun mechanism which comprises in combination: (1) a cartridge holding assembly; (2) a calking cartridge; (3) a power source holding assembly; (4) a trigger actuating assembly; (5) a rotatable cap attached to the front end of said cartridge holding assembly and adapted to securely seat said calking cartridge between said rotatable cap; (6) a base seating element affixed to the rear of said cartridge holding assembly; (7) a gas chamber defined by the circular wall of said calking cartridge; (8) a plunger element at the base of and within said calking cartridge and said base seating element; and (9) means for introducing gas into said gas chamber in a manner to move said plunger element forward thereby ejecting calking compound from the forward end of said calking cartridge.

5. Aerosol calking gun mechanism which comprises in combination: (1) a cartridge holding assembly; (2) a calking cartridge; (3) a power source holding assembly; (4) a trigger actuating assembly; (5) a rotatable cap attached to the front end of said cartridge holding assembly and adapted to securely seat said calking cartridge between said rotatable cap; (6) a base seating element affixed to the rear of said cartridge holding assembly; (7) a gas chamber defined by the circular wall of said calking cartridge; (8) a plunger element at the base of and within said calking cartridge and said base seating element; (9) means for introducing gas into said gas chamber in a manner to move said plunger element forward thereby ejecting calking compound from the forward end of said calking cartridge, said rotatable cap adapted to rotate about the longitudinal axis of said cartridge and move along said longitudinal axis, said movement secured by; (10) slanted slots in said

rotatable cap into which; and (11) protruding cams rigidly attached to said cartridge holding assembly seat.

6. Mechanism as defined by claim 5 wherein said rotatable cap rotates about the longitudinal axis of said cartridge holding assembly in a manner to move along said longitudinal axis.

7. Mechanism as defined by claim 5 wherein said means for introducing gas into said gas chamber is; (12) an aperture in said base seating element, said gas being emitted from; and (13) an aerosol container positioned in said power source holding assembly.

8. Mechanism as defined by claim 7 wherein said gas is ejected from said aerosol contained by said trigger actuating assembly which moves said air container forward in said power source holding assembly.

9. Mechanism as defined by claim 8 wherein said movement of said aerosol container forward within said power source holding assembly is secured by said trigger actuating assembly exerting a forward thrust on the base of said aerosol container.

10. Mechanism as defined by claim 9 wherein said trigger actuating assembly comprises; (14) a forward actuator arm containing therein a finger trigger permitting said forward actuator arm to be moved rearwardly; (15) a rear actuator arm having at one end thereof; and (16) a hammer adapted to press against the base of said aerosol container, the other end of said rear actuator arm being attached to the rear end of said forward actuator arm, said rear actuator arm being rotatably securely attached to said power source holding assembly by means of a pivot in a manner to permit rotation about said pivot.

11. Mechanism as defined by claim 10 wherein the forward end of said forward actuator arm moves within a slot of, (17) a front trigger housing rigidly attached to the lower side of said cartridge holding assembly.

12. Mechanism as defined by claim 11 wherein said slot in said front trigger housing is horizontal at its forward end with respect to said housing and extend upwardly and rearwardly at its rear end with respect to said housing.

13. Mechanism as defined by claim 5 wherein said base seating element is characterized by having a circular groove therein, (11) packing at the bottom of said groove and onto which the rear edge of said circular wall securely seats.

14. Mechanism as defined by claim 1 wherein said means for introducing gas into said gas chamber comprises means (11) moving said calking cartridge rearwardly and latching means for retaining said calking cartridge in the rear position, thereby permitting flow of gas into said gas chamber.

15. Mechanism as defined by claim 14 wherein said means for moving said calking cartridge rearwardly comprises the pressure applied by the nozzle of said calking cartridge against the surface to which the calking compound is applied.

16. Mechanism as defined by claim 15 wherein a spring is positioned at the rear of said calking cartridge, said spring being depressed when said calking cartridge is moved rearwardly and said spring adapted to move said calking cartridge forwardly when said latching means is released.

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